Maricopa County Air Quality Department

2004 Air Monitoring Network Review

MAY 2005

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Acknowledgements

The Maricopa County Air Monitoring Division maintains more than twenty ambient air monitoring sites throughout Maricopa County. There have been several challenges this year including the implementation of new sites and new monitors. Three new technicians were hired this year (Chris Hernandez, Dan Fields, and Ron Murdock). I would especially like to thank all of the air monitoring staff for the excellent job they did in maintaining Maricopa County's air monitoring network. They are Larry Seals, Tom Shorb, Gary Ensminger, Bill Searle, Dale Foster, Chris Hernandez, Dan Fields, Ron Murdock, Hugh Tom, Del Hawkins, and Robert Dyer.

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Abstract

This 2004 Annual Air Monitoring Network Review is being submitted by the Maricopa County Air Quality Department[1] (MCAQD) to the United States Environmental Protection Agency (USEPA) Region 9. The network review evaluates the adequacy of the ambient air monitoring network with respect to the monitoring objectives and spatial scales. This annual assessment is required by 40 CFR Part 58, Appendix F. The National Air Monitoring Stations (NAMS) and State and Local Air Monitoring Stations (SLAMS) are evaluated for their location and adequacy. Network changes, special projects, and 3-year data summaries are also included in the review.

Network Design

The purpose of the ambient air monitoring network is to sample air pollution in a variety of settings, assess the health and welfare effects, and assist in determining sources of air pollution. In general, six basic monitoring objectives and five measuring scales are used to determine the network design (see Tables 1 and 2). Additional considerations such as availability of power, accessibility to site, security, geographic location, and fiscal and personnel resources are also addressed in determining the feasibility of the network design.

Table 1. Site Monitoring Objectives

1. Determine highest concentrations expected to occur in the area covered by the network.
2. Determine representative concentrations in areas of high population density.
3. Determine the impact on ambient pollution levels of significant sources or source categories.
4. Determine general background concentration levels.
5. Determine the extent of regional pollutant transport from populated areas, with regards to the secondary standards (such as visibility impairment and effects on vegetation).
6. Determine the welfare-related impacts in more rural and remote areas.

To establish a new or evaluate an old site, one must link its monitoring objectives to the physical location of the site. This can be done by matching the spatial scale, which represents the sample of air around the monitor where pollutant concentrations are reasonably uniform, with the most appropriate monitoring objective. Thus, spatial scale represents the physical dimensions of the air parcel around the monitor, and monitoring objective represents the overall purpose of the monitor. Combining the proper spatial scale with the monitoring objective explains why air monitoring sites are located in particular areas.

Table 2. Spatial Measurement Scales

Scale	**Defined parameter (radius)**
Micro Scale	0 to 100 meters
Middle Scale	100 to 500 meters
Neighborhood Scale	0.5 to 4 kilometers
Urban Scale	4 to 50 kilometers
Regional Scale	10 to 100s of kilometers

[1] The functions of the former Air Quality Division of the Maricopa County Environmental Services Department (MCESD) were transferred to the newly-created Air Quality Department in November 2004.

Since it is physically and fiscally impossible to monitor air quality in every location, representative samples must be obtained. The optimal locations for obtaining these samples are determined by using the monitoring objectives and the spatial measurement scales described above. For example, there might be numerous locations where the highest concentration of carbon monoxide may occur. Using these principles, only one or two sites will be established to represent all of the high-concentration areas. The same reasoning can be used for different types of pollutants. This does not mean that the number of monitoring sites is fixed. To the contrary, the network must be dynamic enough to maintain a current representative sample of the air quality.

Special Projects and Network Changes

Air quality issues such as the Salt River SIP, natural events policy, and permits for new sources are diverse and controversial subjects for the citizens of Maricopa County. Since no policies can be made without high-quality monitoring data, the MCAQD Air Monitoring Division strives to provide the most reliable and relevant air monitoring data to the public. The following is a list of projects and changes that have occurred during the year 2004.

I. MCAQD continues to run some of its carbon monoxide (CO) monitors and ozone (O_3) monitors on a seasonal basis (Table 3). Having part of the network operating seasonally allows the County to upgrade instruments, perform preventive maintenance, extend the life expectancy of the instruments, reduce replacement costs, and better utilize its QA and QC resources on the remaining instruments.

Table 3. Seasonal Monitors

Seasonal Carbon Monoxide Monitors (Sept. 1 – Apr. 1)	**Seasonal Ozone Monitors (Apr. 1 – Nov. 1)**
Buckeye Site	Buckeye Site
Dysart Site	Cave Creek Site
Glendale Site	Dysart Site
Mesa Site	Falcon Field Site
North Phoenix Site	Glendale Site
South Phoenix Site	Humboldt Mountain Site
South Scottsdale Site	Mesa Site
Tempe Site	Rio Verde Site
West Chandler Site	Tempe Site
	West Chandler Site

MCAQD continues to operate the fine particulates ($PM_{2.5}$) monitors at the West Phoenix site. MCAQD has deployed an additional compliance $PM_{2.5}$ monitor at the South Phoenix site, as of January 1, 2005. A third monitor will be deployed in mid-2005. Possible sites include Central Phoenix, Mesa, or in the west valley (see ADDITIONAL COMMENTS).

II. The Maryvale site (04-013-3006) was shut down as of March 31, 2004 and the instruments were moved to the Buckeye site (established August 1, 2004).

III. MCAQD continues to participate in the Joint Air Toxic Assessment Project (JATAP) in conjunction with the Arizona Department of Environmental Quality (ADEQ) and Phoenix area Urban Tribal

Communities. We have been providing space at our existing sites (South Phoenix, West Phoenix, and Greenwood) for Hazardous Air Pollutants (HAP) monitoring.

IV. ADEQ, in conjunction with MCAQD, has developed a year-round air quality forecasting capability for the Phoenix metropolitan area. ADEQ takes the lead on air quality forecasting and issuing of High Pollution Advisories, while MCAQD provides monitoring data and designates No-Burn Days.

V. MCAQD is continuing its distribution of air monitoring data to the public by posting one-hour continuous data on the Internet. Additionally, MCAQD participates in the EPA Ozone Mapping AIRNOW website (see ADDITIONAL COMMENTS). The corresponding websites are as follows:

- Maricopa County Air Quality Dept: _____
- AIRNOW: http://www.epa.gov/airnow

VI. In accordance with 40 CFR Part 50 Appendix K; MCAQD has converted four of its one- and six-day particulate monitors to a continuous monitoring schedule (see ADDITIONAL COMMENTS).

VII. MCAQD continues to evaluate the PM_{10} network for possible additional sites for determining the impact on ambient pollution levels of significant sources or source categories. The significant sources would include industry and agriculture. The allocation of both financial and personnel resources continue to remain significant obstacles to the establishment of new monitoring sites.

Data Summaries

CRITERIA AIR POLLUTANTS

Certain air pollutants, called "criteria air pollutants," are common throughout the United States. These pollutants can cause health problems, pollute the environment, and cause property damage. These criteria pollutants are so named since the US EPA has regulations on allowable levels of these substances on the basis of health-based criteria. One set of limits, called "primary standards", protects health, while another set of "secondary" standards, are designed to protect property and the environment. MCAQD operates monitors for the following criteria pollutants: carbon monoxide, ozone, particulates, nitrogen dioxide, and sulfur dioxide. Since levels of lead have been consistently below national levels, MCAQD has been allowed to stop monitoring for lead.

The MCAQD monitors for these criteria pollutants by maintaining twenty-five ambient air-monitoring sites throughout Maricopa County (Table 4). The dates that the sites were established range from 1961 (Central Phoenix) to 2004 (Buckeye). Land use patterns around these sites vary from heavy populated urban areas to sparsely populated rural settings. Site elevations range from the Salt River channel to the top of Humboldt Mountain. Not all pollutants are measured at all sites, some sites measure all of the pollutants, while others only measure one or two pollutants (Table 5).

The following discussion focuses on Maricopa County's Ambient Air Monitoring Network as it relates to the criteria pollutants and monitoring objectives of the National Air Monitoring Stations (NAMS), State and Local Air Monitoring Stations (SLAMS), and Special Purpose Monitors (SPM).

Table 4. Maricopa County Ambient Air Monitoring Sites for 2004

Site Name	Site Abbr.	AQS Code
Blue Point	BP	04-013-9702
Buckeye	BE	04-013-4011
Cave Creek	CC	04-013-4008
Chandler	CH	04-013-0021
Central Phoenix	CP	04-013-3002
Durango Complex	DC	04-013-9812
Dysart	DY	04-013-4010
Falcon Field	FF	04-013-1010
Fountain Hills	FH	04-013-9704
Glendale	GL	04-013-2001
Greenwood	GR	04-013-3010
Higley	HI	04-013-4006
Humboldt Mountain	HM	04-013-9508

Site Name	Site Abbr.	AQS Code
Maryvale	MA	04-013-3006
Mesa	ME	04-013-1003
North Phoenix	NP	04-013-1004
Pinnacle Peak	PP	04-013-2005
Rio Verde	RV	04-013-9706
South Phoenix	SP	04-013-4003
South Scottsdale	SS	04-013-3003
Tempe	TE	04-013-4005
West Chandler	WC	04-013-4004
West 43rd Ave.	WF	04-013-4009
W. Indian School Rd.	WI	04-013-0016
West Phoenix	WP	04-013-0019

Table 5. Criteria Pollutants Monitored, by Site and Network

Site	O_3	CO	PM_{10}	NO_2	SO_2
Blue Point	NAMS				
Buckeye	SLAMS	SLAMS	SLAMS	SLAMS	
Cave Creek	SLAMS				
Chandler			NAMS		
Central Phoenix	NAMS	NAMS	NAMS	NAMS	NAMS
Durango Complex			SLAMS		
Dysart	SLAMS	SLAMS	SLAMS		
Falcon Field	SLAMS				
Fountain Hills	NAMS				
Glendale	SLAMS	SLAMS	NAMS		
Greenwood		SLAMS	SLAMS	SLAMS	
Higley			SLAMS		
Humboldt Mountain	SLAMS				
Maryvale			SLAMS		
Mesa		SLAMS	SLAMS		
North Phoenix	SLAMS	SLAMS	SLAMS		
Pinnacle Peak	SLAMS				
Rio Verde	SLAMS				
South Phoenix	SLAMS	SLAMS	SLAMS		
South Scottsdale	SLAMS	SLAMS	NAMS	NAMS	NAMS
Tempe	S.P.	S.P.			
West Chandler	SLAMS	SLAMS	SLAMS		
West 43rd Ave.			SLAMS		
W. Indian School Rd.		NAMS			
West Phoenix	SLAMS	NAMS	NAMS	SLAMS	

S.P. = Special-purpose monitor

)

CARBON MONOXIDE (CO)

During 2004, thirteen CO monitors were reported as operational to the USEPA Air Quality System (AQS). Three of the monitors were classified as NAMS, nine as SLAMS, and one reported as a Special Purpose Monitor (SPM) (Table 5). For calendar year 2004, no exceedances of the CO 1-hour or 8-hour standards were recorded at any MCAQD monitoring sites (see Table -6).

Table 6. 2004 1-hour and 8-hour Average Carbon Monoxide Summary

Site	CO 1-hour Average Max. (PPM) Date: Time	CO 1-hour Average 2nd High (PPM) Date: Time	Number of Samples	CO 8-hour Average Max. (PPM) Date: Time	CO 8-hour Average 2nd High (PPM) Date: Time	Number of Exceedances of 1/8-Hour average
Buckeye	0.9 12/10: 11	0.9 12/28: 09	2585	0.5 12/28: 11	0.4 11/27: 08	0/0
C. Phoenix	5.0 12/11: 22	4.4 12/10: 21	8629	3.4 12/11: 08	3.3 01/06: 03	0/0
Dysart	2.1 12/30: 06	1.8 10/06: 06	5024	1.1 01/28: 12	1.1 10/06: 10	0/0
Glendale	6.1 01/08: 21	3.2 09/06: 09	5045	2.4 01/07: 04	2.1 01/09: 00	0/0
Greenwood	7.6 01/06: 08	7.3 01/09: 08	8661	4.9 01/06: 10	4.3 01/09: 08	0/0
Mesa	3.0 02/18: 21	2.6 03/18: 21	5008	1.7 01/08: 00	1.7 02/15: 02	0/0
N. Phoenix	4.1 01/06: 08	3.7 01/05: 07	4933	2.2 12/25: 02	2.0 01/08: 00	0/0
S. Phoenix	6.7 01/09: 08	5.9 11/05: 19	5053	3.5 01/09: 10	3.3 12/11: 09	0/0
South Scottsdale	3.4 12/03: 07	3.1 01/05: 07	4875	2.4 01/08: 00	2.4 12/13: 00	0/0
Tempe	3.1 01/06: 08	2.6 01/26:21	4891	1.9 02/18: 00	1.7 12/25: 02	0/0
West Chandler	2.9 12/10: 22	2.7 01/18: 23	5032	2.1 01/19: 02	2.1 12/11: 00	0/0
W. Indian School	6.9 01/06: 07	6.7 01/06: 08	8448	4.7 01/06: 10	4.6 12/12: 02	0/0
W. Phoenix	7.7 01/06: 07	7.5 01/06: 08	8408	5.2 12/12: 02	5.1 12/11: 02	0/0

CO is the most widely distributed and most commonly occurring air pollutant. Total emissions of CO to the atmosphere exceed all other pollutants combined, on a weight basis. Fortunately, CO does not persist in the atmosphere, but is quickly converted to carbon dioxide (CO_2). CO can reach dangerous levels in localized areas or hotspots such as heavily traveled intersections or city streets. In addition, CO has been implicated in ozone formation. Most people are familiar with CO and are aware that automobiles produce this deadly odorless and colorless gas. In Maricopa County, more than 70% of all anthropogenic CO comes from motor vehicle emissions. In fact, this gas is produced almost anytime something is burned. All substances that are living (plants, animals) or that were once living (wood, coal, oil, gasoline) are composed of carbon compounds. If these substances are burned in the presence of sufficient oxygen, the carbon is converted to CO_2 gas. If, as is often the case, not enough oxygen is present, carbon monoxide gas is produced.

Carbon monoxide's danger lies in the extremely strong affinity that hemoglobin has for it. Hemoglobin, the special oxygen-transporting material in the red blood cell, has approximately 200 times stronger affinity for CO than for oxygen. Therefore, if both CO and O_2 are present the bonding between the CO and hemoglobin will prevent the O_2 from exchanging with a person's body. This puts a heavy burden on people with heart disease and can aggravate angina, but even healthy people can suffer from harmful side effects from CO. In 2004 Maricopa County achieved its eighth consecutive year of compliance with the eight-hour CO standard.

OZONE (O_3)

During 2004, seventeen ozone monitors were reported as operational in AQS. Four of the monitors were identified as NAMS, twelve were identified as SLAMS, and one was identified as a SPM (Table 5). For calendar year 2004, no exceedances of the ozone 1-hour average standard were recorded at Maricopa County monitoring sites (Table 7).

Table 7. 2004 One Hour Average Ozone Summary

Site	Max. (PPM) Date: Time	2nd High (PPM) Date: Time	3rd High (PPM) Date: Time	4th High (PPM) Date: Time	Number of Exceed.	Number of Samples
Blue Point	.110 08/09: 16	.098 08/03: 18	.098 08/11: 15	.092 08/12: 17	0	8443
Buckeye	.088 09/11:14	.080 09/06: 16	.071 09/10: 16	.070 08/08: 12	0	# 2070
Cave Creek	.092 08/10: 17	.091 09/10: 17	.089 08/01: 15	.087 09/01: 16	0	5067
C. Phoenix	.100 08/07: 14	.093 09/12: 13	.088 07/26: 15	.088 09/11: 16	0	8524
Dysart	.081 09/12: 12	.079 07/26: 15	.078 07/24: 13	.078 07/25: 18	0	5017
Falcon Field	.093 08/03: 17	.087 07/27: 15	.087 08/09: 15	.086 08/11: 14	0	5021
Fountain Hills	.098 08/09: 15	.095 08/03: 17	.095 08/11: 15	.089 07/12: 16	0	8615
Glendale	.100 07/26: 15	.091 07/27: 15	.089 07/24: 16	.089 09/12: 12	0	5061
Humboldt Mt.	.089 09/10: 19	.088 06/12:15	.087 07/12: 15	.086 05/15: 16	0	5041
N. Phoenix	.110 09/12: 13	.099 07/26: 17	.096 07/27: 16	.094 08/03: 14	0	8489
Pinnacle Peak	.084 07/12: 15	.082 07/14: 14	.080 08/03: 16	.079 05/15: 15	0	8316
Rio Verde	.107 08/11: 15	.092 05/15: 16	.092 07/14: 14	.091 08/09: 16	0	4313
S. Phoenix	.089 09/11: 15	.088 08/07: 14	.086 09/12: 13	.085 07/25: 15	0	8599
S. Scottsdale	.091 07/26: 17	.087 09/12: 13	.086 07/27: 16	.084 08/03: 15	0	8370
Tempe	.095 08/07: 15	.088 08/11: 13	.086 08/03: 15	.084 07/11: 14	0	4981
W. Chandler	.080 09/11: 17	.078 04/24: 16	.078 07/25: 14	.078 07/26: 15	0	5062
West Phoenix	.097 09/12: 12	.089 07/25: 16	.089 09/11: 15	.088 07/26: 16	0	8638

# indicates <75% data available

In 2004 Maricopa County achieved its eighth consecutive year of compliance with the one-hour ozone standard. However, the urbanized area of Maricopa County currently retains its designation as a serious non-attainment area. MAG has prepared a maintenance plan for submission to the USEPA to allow Maricopa County to be re-designated to an attainment area for the one-hour ozone standard. [Note: On March 21, 2005, the US EPA published a notice in the Federal Register proposing to re-designate the Phoenix metro area to attainment of the 1-hour ozone standard.]

On July 18, 1997 the Environmental Protection Agency promulgated a new ozone standard to ensure a more effective and efficient protection of public health and the environment. This new primary standard for ozone is 0.08 ppm. Compliance with the standard is determined by averaging the 4th highest eight-hour average over a

three-year period. This three-year average must be less than or equal to 0.08 ppm. It should be noted that the US Supreme Court has recently allowed the USEPA to implement the new ozone standard.

For calendar year 2004, there was one site that exceeded the eight-hour primary standard for ozone. Table 8 presents the 2004 data summary for eight-hour ozone at MCAQD monitoring sites. Additionally, one site violated the eight-hour primary standard (Table 22).

Table 8. 2004 8-hr Average Ozone Summary

Site	8-hour max. (PPM) Date: Time	2nd High (PPM) Date: Time	3rd High (PPM) Date: Time	4th High (PPM) Date: Time	Number of Days ≥ 0.085
Blue Point	.081 08/03: 13	.077 06/11: 12	.076 07/27: 11	.075 05/15: 11	0
Buckeye	.068 09/06: 11	.067 09/11: 10	.064 08/15: 10	.058 08/10: 11	0
Cave Creek	.079 09/10: 12	.077 08/10: 10	.076 06/10: 11	.076 06/11: 11	0
Central Phoenix	.078 07/25: 11	.077 07/26: 12	.075 07/27: 10	.074 07/24: 11	0
Dysart	.074 07/25: 11	.073 07/26: 12	.070 07/24: 10	.065 09/06: 11	0
Falcon Field	.077 07/27: 11	.077 08/03: 12	.072 07/26: 12	.070 05/15: 11	0
Fountain Hills	.077 05/15: 11	.077 06/11: 12	.076 07/27: 11	.075 08/03: 12	0
Glendale	.082 07/26: 11	.080 07/24: 10	.079 07/25: 12	.076 07/27: 10	0
Humboldt Mt.	.081 06/11: 12	.080 06/10: 11	.080 09/09: 18	.078 05/12: 12	0
North Phoenix	.087 07/27: 09	.084 07/26: 12	.082 07/24: 10	.080 08/01: 10	1
Pinnacle Peak	.071 05/15: 10	.070 03/19: 15	.069 05/14: 19	.068 07/26: 14	0
Rio Verde	.083 05/15: 11	.077 05/13: 12	.077 05/14: 11	.074 06/11: 12	0
South Phoenix	.079 07/25: 11	.073 06/11: 11	.073 09/11: 11	.072 04/25: 11	0
South Scottsdale	.081 07/26: 12	.079 07/27: 09	.077 07/25: 11	.073 07/24: 11	0
Tempe	.078 07/25: 11	.072 07/26: 11	.072 07/27: 10	.072 08/10: 12	0
West Chandler	.073 07/25: 10	.072 04/24: 11	.072 07/26: 12	.070 04/25: 10	0
West Phoenix	.080 07/25: 11	.077 07/26: 12	.074 07/24: 11	.072 07/27: 11	0

O_3 is a naturally occurring compound in which three oxygen atoms combine together. This is an unstable combination, and ozone is continually going through a natural cycle of being formed and then converting back to the more stable "normal" double oxygen compound (O_2). The cycle occurs fairly rapidly. In the stratosphere (6 miles and more above the earth), natural occurring ozone has a beneficial effect of screening out harmful ultraviolet light from the sun. Ozone is a major component of the brown haze smog. Ozone is not directly emitted into the air, but rather forms in a complex reaction that involves heat, sunlight, and a "soup" of toxic pollutants, especially volatile organic compounds (VOCs). Some of the most common sources of VOCs are gasoline vapors, chemical solvents, and combustion products of fuels and consumer products. Ozone is created by sunlight acting on nitrates (NO_X) and VOCs from motor vehicles and stationary sources, and can be carried hundreds of miles from their origins. Ozone affects the respiratory system in people and animals, and also affects the growth of plants.

PARTICULATE MATTER (PM_{10})

During 2004, sixteen PM_{10} monitors were reported as operational in AQS. Six monitors were identified as NAMS; ten were identified as SLAMS (Table 5). The Central Phoenix site (CP) has both a continuous particulate monitor and a 6-day SSI High Volume Monitor.

For calendar year 2004, there were four sites that exceeded the PM_{10} twenty-four hour standard. Additionally, there were two sites that exceeded the PM_{10} annual standard (Table 9). For calendar year 2004, there were eleven sites that violated the PM_{10} 24-hour standard and four sites that violated the PM_{10} annual standard (described in Tables 20 and 21).

Table 9. 2004 Particulate Summary

Site Name	24-hr Avg. Max ($\mu g/m^3$)	24-hr Avg. 2nd High ($\mu g/m^3$)	Number of Exceedances	Expected Exceedances	Annual Avg. ($\mu g/m^3$)	Number of Samples
Buckeye	289 *	82	1	1	# 51	95
Central Phoenix	81	55	0	0	32	60
Central Phoenix (continuous)	94	88	0	0	37	8,086
Chandler	150	80	0	0	40	61
Durango Complex	~ 209 *	139	1	1	52 *	138
Dysart	94	80	0	0	27	61
Glendale	69	47	0	0	26	59
Greenwood	100	82	0	0	44	61
Higley	~ 493 *	159 *	2	2	48	136
Mesa	49	40	0	0	23	61
North Phoenix	46	43	0	0	25	59
South Phoenix	132	126	0	0	46	58
South Scottsdale	77	41	0	0	26	61
West Chandler	70	55	0	0	30	61
West Forty Third	~ 251 *	145	1	1	61 *	133
West Phoenix	100	72	0	0	37	61

* Indicates an exceedance of the standard.
# Indicates <75% data availability.
~ Indicates Exceptional Events

In April of 2005 the EPA agreed with the ADEQ assessment that the exceedances of the 24-hr standard that occurred on August 13, 2004 were caused by exceptional events. The sites that exceeded were Durango Complex, Higley, and West Forty Third. With is designation, these values will not count against the County's attainment status for both the 24-hr and annual standard.

Particulate matter is the term for solid or liquid particles found in the air. While some particles are large or dark enough to be seen as soot or smoke, others can only be seen through an electron microscope. In 1987 the EPA replaced the Total Suspended Particulates (TSP) air quality standard with a standard for PM_{10} (particles measuring ten microns or less). Health research studies have found that PM_{10} has the ability to reach the lower

regions of the respiratory tract, and thus can affect the respiratory system in both humans and animals. Particulates that have high acid levels can cause damage to man-made materials and reduce visibility.

On July 2, 2002 (67 FR 44369), EPA found the state implementation plan (SIP) for the Metropolitan Phoenix (Maricopa County), Arizona serious PM_{10} non-attainment area to be inadequate to attain the 24-hour particulate (PM_{10}) air quality standard at the Salt River monitoring site. Under authority from the Clean Air Act, EPA has required a SIP revision to be submitted by the State of Arizona to correct the inadequacy. In 2004 the Arizona Department of Environmental submitted a SIP addressing the inadequacies in the Salt River Area to the EPA

Particulate Matter ($PM_{2.5}$)

Currently, MCAQD operates collocated compliance $PM_{2.5}$ monitors at the West Phoenix site (04-013-0019) and an additional monitor at the South Phoenix site (as of January 1, 2005). The Arizona Department of Environmental Quality (ADEQ) weighs the filters for both sites. Until MCAQD can completely take over the operation and maintenance of the monitor, ADEQ will report the West Phoenix data to the EPA. MCAQD will operate and maintain the monitor at the South Phoenix site, plus MCAQD will report the data to the EPA. Maricopa County is currently in attainment for $PM_{2.5}$.

NITROGEN DIOXIDE (NO_2)

All parts of Maricopa County are in attainment for nitrogen dioxide. During 2004, five NO_2 monitors were operational and were reported in AQS. Two monitors were designated as NAMS monitors and three were designated as SLAMS (see Table -5).

For calendar year 2004, no exceedances of the NO_2 annual standard were recorded at MCAQD monitoring sites (Table 10).

Table 10. 2004 Nitrogen Dioxide Summary

Site	NO_2 Avg. 1-hour Max. (PPM) Date: Time	NO_2 Avg. 1-hour 2nd High (PPM) Date: Time	Number of 1-hour Samples	Annual Average (PPM)
Buckeye	0.045 10/07: 18	0.042 09/10: 06	3229	0.011 #
Central Phoenix	0.077 01/07: 10	0.077 12/16: 08	8362	0.0247
Greenwood	0.104 01/06: 09	0.103 01/06: 07	8519	0.0314
South Scottsdale	0.076 05/14: 20	0.075 01/07: 17	8090	0.0194
West Phoenix	0.09 03/09: 09	0.088 09/24: 08	8540	0.0238

# Indicates <75% data available

NO_2 belongs to a family of highly reactive gases called nitrogen oxides. These gases are formed when fuel is burned at high temperatures, and are emitted primarily from automobile exhaust and power plants. Exposure to nitrogen dioxide can irritate the lungs and lower resistance to respiratory infections, particularly in people with existing respiratory illness such as asthma.

SULFUR DIOXIDE (SO_2)

Maricopa County is in attainment for SO_2. During 2004, two SO_2 monitors were operational and were reported in AQS. Both of these monitors were designated NAMS sites (see Table 5). For calendar year 2004 no exceedances of the SO_2 annual, 24-hour, or 3-hour standard were recorded at Maricopa County monitoring sites (see Table 11).

Table 11. 2004 Sulfur Dioxide Summary

Site	1-hour Max. (PPM) Date: Time	1-hour 2nd High (PPM) Date: Time	3-hour Max. (PPM) Date: Time	3-hour 2nd High (PPM) Date: Time	24-hour Max. (PPM) Date: Time	24-hour 2nd High (PPM) Date: Time	Annual Avg. (PPM)	Number of Samples
Central Phoenix	.015 12/16: 08	.014 01/06: 08	.012 01/06: 08	.011 01/07: 02	.009 01/07: 23	.008 01/06: 23	.0025	7849
South Scottsdale	.010 01/19: 10	.010 03/01: 11	.007 01/19: 14	.007 02/18: 20	.006 02/18: 23	.005 02/16: 23	.0016	8272

* Indicates an exceedance of the standard.

SO_2 is emitted (in gaseous form) largely from burning high-sulfur coal, oil, and diesel fuel. Because this gas is usually found in association with particulate pollution, as SO_2 is the precursor for fine sulfate particles, separating the health effects of these two pollutants is difficult. Together SO_2 and PM_{10} make up a major portion of the pollutant load in many cities, acting separately and in concert to threaten public health.

LEAD / TSP

The monitoring of lead/TSP was discontinued in 1997.

REQUIRED INFORMATION

Tables 12 through 16 below present data on the distribution of monitored values for various air pollutants (in parts per million), as required by the 40 CFR Part 58 App. F.

2004 CONCENTRATION RANGES

Table 12. Distribution of 8-hour Carbon Monoxide Concentrations

Site	Number of 8-hr Average Values (PPM)							
	0 to 4	5 to 8	9 to 12	13 to 16	17 to 20	21 to 24	25 to 28	Greater than 28
Central Phoenix	8720	0	0	0	0	0	0	0
Dysart	5068	0	0	0	0	0	0	0
Glendale	5104	0	0	0	0	0	0	0
Greenwood	8741	5	0	0	0	0	0	0
Mesa	5055	0	0	0	0	0	0	0
North Phoenix	4969	0	0	0	0	0	0	0
South Phoenix	5109	0	0	0	0	0	0	0
South Scottsdale	4916	0	0	0	0	0	0	0
Tempe	4935	0	0	0	0	0	0	0
West Chandler	5087	0	0	0	0	0	0	0
W. Indian School	8534	7	0	0	0	0	0	0
West Phoenix	8484	9	0	0	0	0	0	0

Table 13. Distribution of 1-hour Ozone Concentrations

Site	Number of 1-hr Average Values (PPM)							
	0.00 to 0.04	0.05 to 0.08	0.09 to 0.12	0.13 to 0.16	0.17 to 0.20	0.21 to 0.24	0.25 to 0.28	Greater than 0.28
Blue Point	5955	2472	16	0	0	0	0	0
Cave Creek	2334	2725	8	0	0	0	0	0
Central Phoenix	7060	1455	9	0	0	0	0	0
Dysart	4008	1009	0	0	0	0	0	0
Falcon Field	3393	1620	8	0	0	0	0	0
Fountain Hills	6188	2410	17	0	0	0	0	0
Glendale	3723	1328	10	0	0	0	0	0
Humboldt Mt.	935	4097	9	0	0	0	0	0
North Phoenix	6543	1916	30	0	0	0	0	0
Pinnacle Peak	5347	2969	0	0	0	0	0	0
Rio Verde	2451	1850	12	0	0	0	0	0
South Phoenix	6757	1837	5	0	0	0	0	0
South Scottsdale	6824	1540	6	0	0	0	0	0
Tempe	3575	1403	3	0	0	0	0	0
West Chandler	3616	1446	0	0	0	0	0	0
West Phoenix	7000	1627	11	0	0	0	0	0

Table 14. Distribution of 1-hour Nitrogen Dioxide Concentrations

Site	Number of 1-hr Average Values (PPM)							
	0.00 to 0.04	0.05 to 0.08	0.09 to 0.12	0.13 to 0.16	0.17 to 0.20	0.21 to 0.24	0.25 to 0.28	Greater than 0.28
Central Phoenix	7290	1072	0	0	0	0	0	0
Greenwood	6704	1807	8	0	0	0	0	0
South Scottsdale	7689	401	0	0	0	0	0	0
West Phoenix	7767	768	5	0	0	0	0	0

Table 15. Distribution of 24-hr Sulfur Dioxide Concentrations

Site	Number of 24-hr Average Values (PPM)							
	0.00 to 0.04	0.05 to 0.08	0.09 to 0.12	0.13 to 0.16	0.17 to 0.20	0.21 to 0.24	0.25 to 0.28	Greater than 0.28
Central Phoenix	319	10	1	0	0	0	0	0
South Scottsdale	346	3	0	0	0	0	0	0

Table 16. Distribution of 24-hour PM_{10} Concentrations

Site	Number of 24-hr Average Values ($\mu g/m^3$)							
	0 to 50	51 to 100	101 to 150	151 to 200	201 to 250	251 to 300	301 to 400	Greater than 400
Buckeye	71	23	0	0	0	1	0	0
Central Phoenix	57	3	0	0	0	0	0	0
Chandler	42	18	1	0	0	0	0	0
Durango	62	61	14	0	1	0	0	0
Dysart	58	3	0	0	0	0	0	0
Glendale	58	1	0	0	0	0	0	0
Greenwood	43	18	0	0	0	0	0	0
Higley	80	49	5	1	0	0	0	1
Mesa	61	0	0	0	0	0	0	0
North Phoenix	59	0	0	0	0	0	0	0
South Phoenix	38	18	2	0	0	0	0	0
South Scottsdale	60	1	0	0	0	0	0	0
West Chandler	57	4	0	0	0	0	0	0
West 43rd Ave.	51	63	18	0	0	1	0	0
West Phoenix	50	11	0	0	0	0	0	0

DATA COMPLETENESS

Before any data set can be considered valid it must first pass a data recovery test that consists of determining the ratio of actual samples to scheduled samples by quarter. This ratio must be greater than 75% for a data set to pass the first validity test. After all validation test have been passed, the data can be used to determine compliance with the NAAQS.

The following is a summary of the annual data completeness for all criteria pollutants (Table 17).

Table 17. 2004 Criteria Pollutant Data Completeness

	Number of Actual Samples	Number of Scheduled Samples	Data Completeness (Actual/Schedule)
Carbon Monoxide	76,592	78,768	97.2%
Ozone	109,627	113,568	96.5%
PM_{10} (1 in 6 day)	812	820	99.0%
PM_{10} (continuous)	8,439	9,152	92.2%
Nitrogen Dioxide	36,740	38,808	94.7%
Sulfur Dioxide	16,121	17,568	91.8%
Total	**248,331**	**258,684**	**96.0%**

COMPLIANCE - NATIONAL AMBIENT AIR QUALITY STANDARDS (NAAQS)

The EPA Office of Air Quality Planning and Standards (OAQPS) manages programs to improve air quality in areas where the current quality is unacceptable and to prevent deterioration in areas where the air is relatively free of contamination. To accomplish this task, OAQPS establishes the National Ambient Air Quality Standard (NAAQS) for each of the criteria pollutants.

There are two types of standards. Primary standards protect against adverse health effects; secondary standards protect against welfare effects, such as damage to farm crops and vegetation and damage to buildings. Because different pollutants have different effects, the NAAQS are also different. Some pollutants have standards for both long-term and short-term averaging times. The short-term standards are designed to protect against acute, or short-term, health effects, while the long-term standards are established to protect against chronic health effects. Table 18 lists the NAAQS for six criteria pollutants.

Table 18. National Ambient Air Quality Standards

Pollutant	Primary Standards	Averaging Times	Secondary Standard
Carbon Monoxide	9 ppm	8-hour[1]	None
	35 ppm	1-hour[1]	None
Lead	1.5 µg/m^3	Quarterly Average	Same as Primary
Nitrogen Dioxide	0.053 ppm	Annual (Arithmetic Mean)	Same as Primary
PM_{10}	50 µg/m^3	Annual[2] (Arithmetic. Mean)	Same as Primary
	150 µg /m^3	24-hour[1]	
$PM_{2.5}$	15 µg/m^3	Annual[3] (Arithmetic Mean)	Same as Primary
	65 µg/m^3	24-hour[4]	
Ozone	0.08 ppm	8-hour[5]	Same as Primary
	0.12 ppm	1-hour[6]	Same as Primary
Sulfur Oxides	0.03 ppm	Annual (Arithmetic Mean)	-------
	0.14 ppm	24-hour[1]	-------
	-------	3-hour[1]	0.5 ppm

[1] Not to be exceeded more than once per year.

[2] To attain this standard, the three year average of the annual arithmetic mean PM_{10} concentration at each monitor within an area must not exceed 50 µg/m^3.

[3] To attain this standard, the 3-year average of the annual arithmetic mean $PM_{2.5}$ concentrations from single or multiple community-oriented monitors must not exceed 15 µg/m^3.

[4] To attain this standard, the 3-year average of the 98th percentile of 24-hour concentrations at each population-oriented monitor within an area must not exceed 65 µg/m^3.

[5] To attain this standard, the 3-year average of the fourth-highest daily maximum 8-hour average ozone concentrations measured at each monitor within an area over each year must not exceed 0.08 ppm.

[6] (a) The standard is attained when the expected number of days per calendar year with maximum hourly average concentrations above 0.12 ppm is $\leq$ 1,
(b) The 1-hour standard is applicable to all areas notwithstanding the promulgation of 8-hour ozone standards under Sec. 50.10. On June 2, 2003, (68 FR 32802) EPA proposed several options for when the 1-hour standard would no longer apply to an area.

2004 NAAQS EXCEEDANCE AND VIOLATION SUMMARY

The following is a summary of the number, types and dates of exceedances of the NAAQS for 2004 (Table 19).

Table 19. 2004 NAAQS Exceedances

Carbon Monoxide	No Exceedances of the 1-hr or 8hr NAAQS standard were logged.		
Ozone	No Exceedances of 1-hr NAAQS were logged. See Table 8 for 8-hr summary.		
Nitrogen Dioxide	No Exceedances of NAAQS were logged.		
Sulfur Dioxide	No Exceedances of NAAQS were logged.		
Particulates	**There were three days when at least one monitor exceeded the 24 hr. NAAQS**		
	Site	**Date**	**Value**
	BE	09/18/04	289 µg/m^3
	DC	08/13/04	~ 209 µg/m^3
	HI	08/13/04	~493 µg/m^3
	HI	10/9/04	159 µg/m^3
	WF	08/13/04	~ 251 µg/m^3
	Three sites exceeded the PM_{10} annual standard:		
	Site	**Value**	
	DC	52 µg/m^3	
	WF	61 µg/m^3	

~ Indicates Exceptional Events

2004 VIOLATIONS OF THE 24-HOUR PARTICULATE STANDARD

The 24hr NAAQS for particulates is violated when the rate of expected occurrence of exceedances (samples greater than or equal to 150 µg/m^3) is greater than one over three consecutive years (Table 20) (40 CFR Part 50.6 (a)).

Table 20. Violations of the 24-hr PM_{10} Standard

Site	2002		2003		2004		Rate of Expected Exceedances
	24-hr Max. (µg/m^3)	Expected Exceedances	24-hr Max. (µg/m^3)	Expected Exceedances	24-hr Max. (µg/m^3)	Expected Exceedances	
Buckeye	NA	NA	NA	NA	# 289	8.7	#
Central Phoenix	81	0	114	0	81	0	0
Central Phoenix (continuous)	96	0	183	3.1	94	0	1
Chandler	128	0	240	6	150	0	2
Durango Complex	232	12	195	6	~ 209	0	3
Dysart	NA	NA	133 #	0	94	0	#
Glendale	88	0	151	0	69	0	0
Greenwood	116	0	166	6	100	0	2
Higley	138	0	225	6	~ 493	1	2.3
Mesa	102	0	176	6	49	0	2
North Phoenix	80	0	155	6	46	0	2
South Phoenix	137	0	164	6	132	0	2
South Scottsdale	64	0	172	6	77	0	2
West Chandler	80	0	206	14	70	0	4.6
West Forty Third	172	6	157	6	~ 251	0	4
West Phoenix	122	0	158	6.4	100	0	2.1

■ Indicates violation of the standard.
# Indicates <75% data available.
~ Indicates Exceptional Events

2004 VIOLATIONS OF THE ANNUAL PARTICULATE STANDARD

The Annual NAAQS for particulates is violated when the three-year average of the annual averages is greater than 50 µg/m^3 (Table 21) (40 CFR Part 50.6 (b)).

Table 21. Violations of the Annual PM_{10} Standard

Site	2002 Annual Avg. (µg/m^3)	2003 Annual Avg. (µg/m^3)	2004 Annual Avg. (µg/m^3)	Three-Year Average (µg/m^3)
Buckeye	Not Operating	Not Operating	#51	#
Central Phoenix	43	40	32	38
Central Phoenix (continuous)	42	43	37	41
Chandler	56	50	40	49
Durango Complex	70	62	~ 52	61
Dysart	Not Operating	#	27	27
Glendale	40	36	26	34
Greenwood	55	51	44	50
Higley	62	62	~ 48	57
Mesa	36	34	23	31
North Phoenix	37	34	25	32
South Phoenix	60	52	46	53
South Scottsdale	37	36	26	33
West Chandler	39	42	30	37
West Forty Third	68	62	~ 61	64
West Phoenix	53	46	37	45

■ Indicates violation of the standard.
# Indicates <75% data available.
~ Indicates Exceptional Events

VIOLATIONS OF THE 8-HR OZONE STANDARD 2004 SUMMARY

The 8-hour average NAAQS for ozone is violated when the three-year average of the fourth high is greater than 0.08 ppm. Because of mathematical rounding the value is actually 0.085 PPM or greater (Table 22) (40 CFR Part 50.10 (a)).

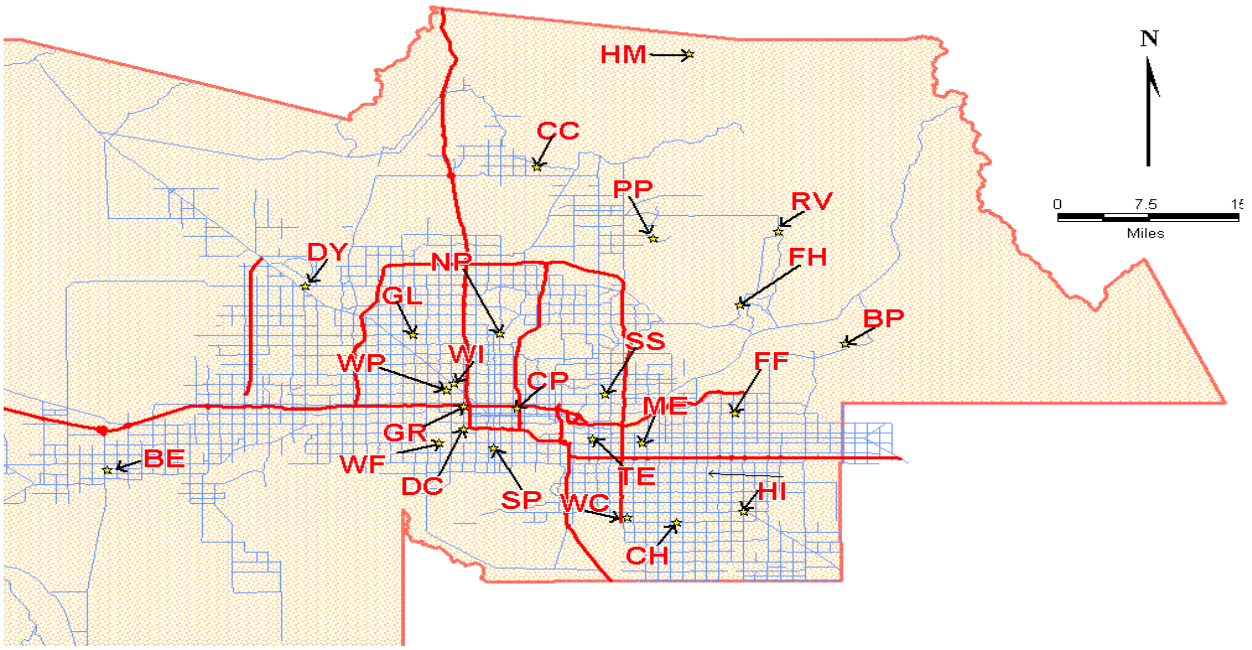
Table 22. Violations of the 8-hr Ozone Standard

Site	2002 4th High (PPM)	2003 4th High (PPM)	2004 4th High (PPM)	3 Yr. Avg. of 4th High (PPM)
Blue Point	0.086	0.086	0.075	0.082
Cave Creek	0.086	0.083	0.076	0.081
Central Phoenix	0.076	0.079	0.074	0.076
Falcon Field	0.084	0.079	0.070	0.077
Fountain Hills	0.086	0.083	0.075	0.081
Glendale	0.083	0.085	0.076	0.081
Humboldt Mt.	0.090	0.087	0.078	0.085
North Phoenix	0.084	0.083	0.080	0.082
Pinnacle Peak	0.084	0.083	0.068	0.078
Rio Verde	0.081	0.076	0.074	0.077
South Phoenix	0.081	0.076	0.072	0.076
South Scottsdale	0.079	0.079	0.073	0.077
Tempe	0.080	0.080	0.072	0.077
West Chandler	0.083	0.078	0.070	0.077
West Phoenix	0.084	0.077	0.072	0.077

■ Indicates violation of the standard.

MONITORING SITES

Maricopa County Air Monitoring Sites - 2004



http://www.maricopa.gov/sbeap/AIR_MONI.HTM

Site Abbreviation	Site Name
BP	Blue Point
BE	Buckeye
CC	Cave Creek
CP	Central Phoenix
CH	Chandler
DC	Durango Complex
DY	Dysart
FF	Falcon Field
FH	Fountain Hills
GL	Glendale
GR	Greenwood
HI	Higley Site
HM	Humboldt Mountain
ME	Mesa
NP	North Phoenix
PP	Pinnacle Peak
RV	Rio Verde
SP	South Phoenix
SS	South Scottsdale
TE	Tempe Site
WC	West Chandler
WF	West Forty Third
WI	W. Indian School
WP	West Phoenix

Table 23. Site Location

Site	Latitude	Longitude	Site Location	AIRS ID
BP	33° 33' 09.263"	-111° 36' 25.465"	Usery Pass & Bush Highway	04-013-9702
BE	33.36980	-112.62014	MC85 & HWY 85	04-013-4001
CC	33° 49.32'	-112° 1.02'	32nd St. & Carefree Highway	04-013-4008
CH	33° 17' 09.630"	-111° 49' 03.691"	Pecos & McQueen	04-013-0021
CP	33° 27' 29.130"	-112° 02' 28.809"	19th St & Roosevelt	04-013-3002
DC	33° 25' 60"	-112° 07' 12"	27th Ave. & Durango St.	04-013-9812
DY	33.6370	-112.3394	Bell Rd. & Dysart Rd.	04-013-4010
FF	33° 27' 09.371"	-111°43' 58.462"	McKellips & Greenfield	04-013-1010
FH	33° 36' 39.545"	-111° 40' 16.368"	Palisades & Fountain Hills Blvd.	04-013-9704
GL	33° 34' 09.487"	-112° 11' 26.855"	59th Ave & W. Olive	04-013-2001
GR	33° 27' 38.872"	-112° 07' 00.526"	27th Ave. & Interstate 10	04-013-3010
HI	33° 18.47'	-111° 43.33'	Higley Rd. & Chandler Blvd	04-013-4006
HM	33° 58' 53.255"	-111° 47' 50.478"	Top of Humboldt Mountain	04-013-9508
ME	33° 24' 37.798"	-111° 51' 51.518"	Broadway Rd. & Alma School Rd.	04-013-1003
NP	33° 33' 37.055"	-112° 03' 55.797"	7th Street & Dunlap Avenue	04-013-1004
PP	33° 42' 43.440"	-111° 51' 05.644"	Pima Rd & Pinnacle Peak	04-013-2005
RV	33° 43' 06.418"	-111° 40' 16.142"	Forest Rd & Del Ray Ave.	04-013-9706
SP	33° 24' 12.410"	-112° 04' 23.196"	Central Ave. & Broadway	04-013-4003
SS	33° 28' 46.049"	-111° 54' 59.250"	Scottsdale Rd. & Thomas Rd.	04-013-3003
TE	33° 24.67'	-111°56.10'	College Ave. & Apache Blvd.	04-013-4005
WC	33° 17.93'	-111° 53.04'	Ellis St. & Frye Rd.	04-013-4004
WF	33° 24.37'	-112° 88.66'	43rd Ave. & Broadway Rd.	04-013-4009
WI	33° 29' 40.950"	-112° 07' 48.825"	33rd Ave. & Indian School Rd.	04-013-0016
WP	33° 29' 01.280"	-112° 08' 31.463"	39th Ave. & Earll Dr.	04-013-0019

Table 24. Site Instrument Setup

AIR MONITORING NETWORK OPERATIONS																													
Sites	WS/WD		O_3		CO		NOX		SO2		Press	Del-T	TEOM		Temp	R-Hum	Room	Rain	$PM_{2.5}$		PM_{10}		Multi-Gas	AQS Code	Logger	Total			
BP	1	s	1	n											1		1							04-013-9702	1	5			
BE	1	s	1	s *	1	s *	1	s *			1		1	s	1	1	1						1	04-013-4011	1	11			
CC	1	s	1	s *											1	1	1							04-013-4008	1	6			
CH	1	s															1				2	n		04-013-0021	1	5			
CP	1	s	1	n	1	n	1	n	1	n	1		1	s	1		1				1	n	1	04-013-3002	1	12			
DC	1	s									1		2	sp	1									04-013-9812	1	6			
DY	1	s	1	s *	1	s *									1	1	1				1	s		04-013-4010	1	8			
FF	1	s	1	s *													1							04-013-1010	1	4			
FH	1	s	1	n							1				1	1	1							04-013-9704	1	7			
GL	1	s	1	s *	1	s *					1						1				1	n		04-013-2001	1	7			
GR	1	s			1	s	1	s									1	1			1	s	1	04-013-3010	1	8			
HI	1	s									1	1	1	s	1									04-013-4006	1	6			
HM			1	s *													1							04-013-9508	1	3			
ME	1	s			1	s *					1				1	1	1				2	s		04-013-1003	1	9			
NP	1	s	1	s	1	s *					1	1			1		1				1	s		04-013-1004	1	9			
PP	1	s	1	s													1							04-013-2005	1	4			
RV			1	s *																				04-013-9706	1	2			
SP	1	s	1	s	1	s *									1		1		1	s	1	n		04-013-4003	1	8			
SS	1	s	1	n	1	s *	1	n	1	n	1				1	1	1				1	n		04-013-3003	1	11			
TE	1	sp	1	sp *	1	sp *						1			1		1	1						04-013-4005	1	8			
WC	1	s	1	s *	1	s *					1				1	1	1				1	s		04-013-4004	1	9			
WF	1	sp									1	1	2	s	1		1							04-013-4009	1	8			
WI	1	s			1	n											1							04-013-0016	1	4			
WP	1	s	1	s	1	n	1	s			1	1			1		1				2	n	1	04-013-0019	1	12			
Total	22		17		13		5		2		12	5	7		16	7	21	2	1		14		4		24				

n = NAMS	s = SLAMS	sp =SPM	x = inactive instruments	* = seasonal monitor	Total # of Active Sites = **24**	Total # of Active Instruments = **172**

Maricopa County Blue Point Air Monitoring Site

Blue Point (BP) (04-013-9702)
Location: Bush Highway and Usery Pass Rd., Maricopa County
Spatial Scale: Urban
Monitoring Objective: High downwind maximum concentrations, category (a)

Site Description*:* The Blue Point site became operational in July 1995 and is located in a Maricopa County Sheriff's Sub-Station in Tonto National Forest. This site represents the maximum ozone concentration, and urban-scale downwind transport conditions. This site is located approximately 40 miles east of the Phoenix metropolitan area. Ozone is the only criteria pollutant monitored at this NAMS station. Wind speed and direction are also monitored at the site.

	2002	**2003**	**2004**
Max. 1-hr O_3 Avg. (PPM)	0.110	0.122	0.110
Number exceedances 1-hr O_3	0	0	0
Max. 8-hr O_3 Avg. (PPM)	0.091	0.103	0.081
Number of Daily Exceedances >0.08 PPM	5	4	0
Three year average of 4th High	0.084	0.084	0.082

*Indicates an exceedance of the standard.

Maricopa County Buckeye Air Monitoring Site

Buckeye (BE) (04-013-4011)
Location: US 85 & MC 85, Buckeye
Spatial Scale: Neighborhood
Monitoring Objective: High Population Exposure with High Concentration

Site Description: The Buckeye site was established on August 1, 2004. This site is a SLAMS location for carbon monoxide, ozone, PM_{10}, and NO_2 criteria pollutants. The site is located in the Maricopa County Department of Transportation Southwest Facility. The site is in an area of agriculture and encroaching residential development. The PM_{10} monitor was changed from one- and six-day to hourly as of October 1, 2004.

	2002	2003	2004
Max. 8-hr CO Avg. (PPM)	Not operating	Not operating	0.5
Number exceedances 8-hr CO	Not operating	Not operating	0
Max. 1-hr O_3 Avg. (PPM)	Not operating	Not operating	0.088
Number exceedances 1-hr O_3	Not operating	Not operating	0
Max. 8-hr O_3 Avg. (PPM)	Not operating	Not operating	0.068
Number of Daily Exceedances >0.08	Not operating	Not operating	0
Three year avg. of 4th High	Not operating	Not operating	#
Max. 24-hr PM_{10} Avg. ($\mu g/m^3$)	Not operating	Not operating	~ 289 *
Number exceedances 24-hr PM_{10}	Not operating	Not operating	1
Annual PM_{10} Avg. ($\mu g/m^3$)	Not operating	Not operating	~# 51
Annual NO_2 Avg. (PPM)	Not operating	Not operating	#

*Indicates an exceedance of the standard.
# Indicates <75% data recovery.
~ Indicates Exceptional Events

Maricopa County Cave Creek Air Monitoring Site

Cave Creek (CC) (04-013-4008)
Location: 32nd St. & Carefree Highway, Cave Creek
Spatial Scale: Urban
Monitoring Objective: Downwind Maximum Concentrations

Site Description: The Cave Creek site became operational in August 2001 and is located in the Maricopa County Cave Creek Recreation Area (Park Office). This site was chosen through discussions on modifying the ozone network for the new 8-hr ozone standard (see ADDITIONAL COMMENTS). Ozone is the only criteria pollutant monitored at this SLAMS station. Wind speed and direction are also monitored at the site.

	2002	2003	2004
Max. 1-hr O_3 Avg. (PPM)	0.102	0.102	0.092
Number exceedances 1-hr O_3	0	0	0
Max. 8-hr O_3 Avg. (PPM)	0.090	0.088	0.079
Number of Daily Exceedances >0.08	4	2	0
Three year avg. of 4th High	NA	0.084	0.081

Maricopa County Central Phoenix Air Monitoring Site

Central Phoenix (CP) (04-013-3002)
Location: 19th St. and Roosevelt
Spatial Scale: Neighborhood
Monitoring Objective: High Population Exposure category (b)

Site Description: The Central Phoenix site has been in existence for over three decades and has provided a long-term historical database with a high rate of data recovery. The site is representative of high population exposure (greater than 5000 people per square mile) in the central Phoenix area. This site is a NAMS location for carbon monoxide, ozone, PM_{10}, SO_2 and NO_2 criteria pollutants.

	2002	2003	2004
Max. 8-hr CO Avg. (PPM)	4.4	4.6	3.4
Number exceedances 8-hr CO	0	0	0
Max. 1-hr O_3 Avg. (PPM)	0.123	0.102	.100
Number exceedances 1-hr O_3	0	0	0
Max. 8-hr O_3 Avg. (PPM)	0.088	0.084	.078
Number of Daily Exceedances >0.08	1	0	0
Three year avg. of 4th High	0.075	0.076	.076
Max. 24-hr PM_{10} Avg. ($\mu g/m^3$)	81	114	81
Number exceedances 24-hr PM_{10}	0	0	0
Annual PM_{10} Avg. ($\mu g/m^3$)	43	40	32
Max. 24-hr PM_{10} Avg. Continuous ($\mu g/m^3$)	NA	183 *	94
Number exceedances Continuous 24-hr PM_{10}	NA	3	0
Annual PM_{10} Avg. Continuous ($\mu g/m^3$)	NA	43	37
Annual NO_2 Avg. (PPM)	0.029	0.029	0.025
Max. 24-hr SO2 Avg. (PPM)	0.012	0.007	.008
Number of Exceedances	0	0	0
Annual SO2 Avg. (PPM)	0.003	0.003	.003

*Indicates an exceedance of the standard.

Maricopa County Chandler Air Monitoring Site

Chandler (CH) (04-013-0021)
Location: Pecos Rd. and McQueen Rd.
Spatial Scale: Neighborhood
Monitoring Objective: High Population Exposure, category (b)

Site Description: The Chandler site is located on the property of the City of Chandler's Wastewater Treatment Plant (CWTP). The area immediately surrounding the CWTP was a low population density area; however, it is experiencing rapid residential growth. The site is a NAMS (category b) location for PM_{10}. Future air quality data from this location may be threatened since the CWTP has given notice of proposed expansion plans where the platform presently stands. Additionally, the site has become a storage location for street signs, water valves, and other municipal equipment. The site often measures a higher than expected particulate value, which has become more indicative of yard activity than reliable ambient air quality data. The present Higley site is being considered as a replacement.

	2002	**2003**	**2004**
Max. 24-hr PM_{10} Avg. ($\mu g/m^3$)	128	240 *	150
Number exceedances 24-hr PM_{10}	0	1	0
Annual PM_{10} Avg. ($\mu g/m^3$)	56 *	50	40

*Indicates an exceedance of the standard.

Maricopa County Durango Complex Air Monitoring Site

Durango Complex (DC) (04-013-9812)
Location: 27th Ave and Durango St.
Spatial Scale: Middle
Monitoring Objective: Maximum Concentration

Site Description: This site is located one mile northwest from the former Salt River site in the Maricopa County Flood Control District storage yard. Sampling began on January 6,1999 with the intent to replace the Salt River site. However, in 2000 the USEPA determined that the site is not equivalent to the Salt River site. Particulates (SLAMS PM_{10}) and wind speed and direction are monitored at the site. This site is part of the Salt River Monitoring Study (see ADDITIONAL COMMENTS).

	2002	**2003**	**2004**
Max. 24-hr PM_{10} Avg. ($\mu g/m^3$)	232 *	195 *	~ 209 *
Number exceedances 24-hr PM_{10}	2	1	0
Annual PM_{10} Avg. ($\mu g/m^3$)	70 *	62 *	~ 52 *

*Indicates an exceedance of the standard.
~ Indicates Exceptional Events

Maricopa County Dysart Air Monitoring Site

Dysart (DY) (04-013-4010)
Location: Bell Rd. & Dysart Rd., Surprise
Spatial Scale: Neighborhood
Monitoring Objective: High Population Exposure

Site Description: The Dysart site was established in July 2003. It is located at the Maricopa County Facility Maintenance Yard at the corner of Bell Rd. and Dysart Rd. The site is in a growing population area in the north-west valley. The land use around the site consists of subdivisions of single family homes, commercial, and industrial. The site is approx. one mile west of the Agua Fria riverbed. The site will take over for the shutdown Surprise site (04-013-4007) 2.3 miles to the north northwest. Seasonal carbon monoxide, seasonal ozone, (SLAMS) and PM_{10} (SLAMS) are the criteria pollutants monitored at this station.

	2002	2003	2004
Max. 8-hr CO Avg. (PPM)	Not Operating	1.2	1.1
Number exceedances 8-hr CO	Not Operating	0	0
Max. 1-hr O_3 Avg. (PPM)	Not Operating	0.090	0.081
Number exceedances 1-hr O_3	Not Operating	0	0
Max. 8-hr O_3 Avg. (PPM)	Not Operating	0.082	0.074
Number of Daily Exceedances >0.08	Not Operating	0	0
Three year avg. of 4th High	Not Operating	#	#
Max. 24-hr PM_{10} Avg. ($\mu g/m^3$)	Not Operating	133	94
Number exceedances 24-hr PM_{10}	Not Operating	0	0
Annual PM_{10} Avg. ($\mu g/m^3$)	Not Operating	#	27

# Indicates <75% data recovery rate.

Maricopa County Falcon Field Air Monitoring Site

Falcon Field (FF) (04-013-1010)
Location: Greenfield and McKellips
Spatial Scale: Urban
Monitoring Objective: High Downwind Concentrations

Site Description: Ozone is the seasonal SLAMS criteria pollutant monitored at this station. Monitoring began in June of 1989. It is located near an airfield in a fire station within a growing residential area.

	2002	**2003**	**2004**
Max. 1-hr O_3 Avg. (PPM)	0.113	0.111	0.093
Number exceedances 1-hr O_3	0	0	0
Max. 8-hr O_3 Avg. (PPM)	0.093	0.099	0.077
Number of Daily Exceedances >0.08	3	1	0
Three year avg. of 4th High	0.080	0.081	0.077

Maricopa County Fountain Hills Air Monitoring Site

Fountain Hills (FH) (04-013-9704)
Location: Fountain Hills Blvd. and Palisades Blvd.
Spatial Scale: Neighborhood
Monitoring Objective: High Downwind Concentrations, category (b)

Site Description: The site is located at a Fountain Hills fire station. This site became operational in April of 1996. The site monitors ozone (NAMS category b) and wind speed and direction. This site is located approximately 15 miles downwind from the Phoenix metropolitan area. This site represents the high downwind concentrations on the fringes of the central basin district along the predominant summer/fall daytime wind direction.

	2002	**2003**	**2004**
Max. 1-hr O_3 Avg. (PPM)	0.114	0.117	0.098
Number exceedances 1-hr O_3	0	0	0
Max. 8-hr O_3 Avg. (PPM)	0.092	0.099	0.077
Number of Daily Exceedances >0.08	5	1	0
Three year avg. of 4th High	0.085 *	0.084	0.081

* Indicates a violation of the standard.

Maricopa County Glendale Air Monitoring Site

Glendale (GL) (04-013-2001)
Location: 59th Ave. and Olive Ave.
Spatial Scale: Neighborhood
Monitoring Objective: High Population Exposure

Site Description: The Glendale site was established over two decades ago and is located on the grounds of Glendale Community College in a growing residential area. Homes, various strip malls, food establishments, and parks surround the site. Seasonal carbon monoxide, Seasonal Ozone, (SLAMS) and PM_{10} (NAMS category b) are the criteria pollutants monitored at this station.

	2002	2003	2004
Max. 8-hr CO Avg. (PPM)	3.2	2.4	2.4
Number exceedances 8-hr CO	0	0	0
Max. 1-hr O_3 Avg. (PPM)	0.101	0.107	0.100
Number exceedances 1-hr O_3	0	0	0
Max. 8-hr O_3 Avg. (PPM)	0.094	0.092	0.082
Number of Daily Exceedances >0.08	2	4	0
Three year avg. of 4th High	0.080	0.082	0.081
Max. 24-hr PM_{10} Avg. ($\mu g/m^3$)	88	151	69
Number exceedances 24-hr PM_{10}	0	0	0
Annual PM_{10} Avg. ($\mu g/m^3$)	40	36	26


Maricopa County Greenwood Air Monitoring Site

Greenwood (GR) (04-013-3010)
Location: 27th Ave. and I-10, Phoenix
Spatial Scale: Middle Scale
Monitoring Objective: High Population Exposure

Site Description: Monitoring began at this site in December 1993. The station is bordered on the north by Interstate 10, on the west and south by neighborhood homes, and to the east by Greenwood Cemetery. Interstate 17 is approximately one mile to the east of the site. Carbon monoxide, NO_2, and PM_{10} are the criteria pollutants monitored at this SLAMS facility.

	2002	**2003**	**2004**
Max. 8-hr CO Avg. (PPM)	5.4	5.4	4.9
Number exceedances 8-hr CO	0	0	0
Max. 24-hr PM_{10} Avg. ($\mu g/m^3$)	116	166 *	100
Number exceedances 24-hr PM_{10}	0	1	0
Annual PM_{10} Avg. ($\mu g/m^3$)	55 *	51 *	44
Annual NO_2 Avg. (PPM)	0.035	0.034	0.031

* Indicates an exceedance of the standard.

Maricopa County Higley Air Monitoring Site

Higley (HI) (04-013-4006)
Location: Higley Rd. and Chandler Blvd.
Spatial Scale: Neighborhood
Monitoring Objective: High Population Exposure with High Concentration

Site Description: Originally, in 1994 ADEQ set up this site to monitor for background particulate concentrations near the urban limits of Maricopa County. Since then, urban expansion has enveloped the site, so it no longer serves its original intended purpose. MCAQD installed a (1-6 day) PM_{10} (SLAMS) in the second quarter of 2000. The data from this site was compared to the Chandler site and was found to be comparable. If the City of Chandler requests MCAQD to remove the Chandler site, it is our intention for the Higley site to replace the Chandler site). As of October 2004 the 1-6 day PM_{10} monitor was replaced with an hourly continuous PM_{10} monitor in accordance with 40 CFR 50, Appendix K.

	2002	2003	2004
Max. 24-hr PM_{10} Avg. ($\mu g/m^3$)	138	225 *	~ 493 *
Number exceedances 24-hr PM_{10}	0	1	1
Annual PM_{10} Avg. ($\mu g/m^3$)	63 *	62 *	~ 55 *

* Indicates an exceedance of the standard.
# Indicates <75% data recovery rate.
~ Indicates Exceptional Events


Maricopa County Humboldt Mountain Air Monitoring Site

Humboldt Mountain (HM) (04-013-9508)
Location: Humboldt Mountain Summit
Spatial Scale: Regional
Monitoring Objective: High Downwind Concentrations

Site Description: This site became operational in May 1996. The Humboldt Mountain site is located on Federal Aviation Agency property, in a National Forest Service building, in the Tonto National Forest. This site is located approximately 40 miles north-northeast of the Phoenix metropolitan area at an elevation of 5230 feet. Ozone is the only criteria pollutant that is monitored at this seasonal SLAMS site.

	2002	**2003**	**2004**
Max. 1-hr O_3 Avg. (PPM)	0.124	0.104	0.089
Number exceedances 1-hr O_3	0	0	0
Max. 8-hr O_3 Avg. (PPM)	0.102	0.089	0.081
Number of Daily Exceedances >0.08	8	5	0
Three year avg. of 4th High	0.085 *	0.087 *	0.085 *

* Indicates a violation of the standard.

Maricopa County Mesa Air Monitoring Site

Mesa (ME) (04-013-1003)
Location: Broadway Rd. and Brooks Ave.
Spatial Scale: Neighborhood
Monitoring Objective: High Population Exposure

Site Description: This site is located at Brooks Reservoir at the western edge of the city near the Tempe border. It is centered in an area that is residential, industrial, and a small amount of agricultural. An open field borders the site on the west with commercial development to the north, and light industry east and south of the site. Carbon monoxide, ozone, and PM_{10} are the criteria pollutants monitored at this SLAMS site. MCAQD will operate a $PM_{2.5}$ FRM monitor as of May 2005.

	2002	**2003**	**2004**
Max. 8-hr CO Avg. (PPM)	3.5	2.5	1.7
Number exceedances 8-hr CO	0	0	0
Max. 1-hr O_3 Avg. (PPM)	0.097	Not Operating	Not Operating
Number exceedances 1-hr O_3	0	Not Operating	Not Operating
Max. 8-hr O_3 Avg. (PPM)	.082	Not Operating	Not Operating
Number of Daily Exceedances >0.08	0	Not Operating	Not Operating
Three year Avg. of 4th High	0.073	NA	NA
Max. 24-hr PM_{10} Avg. ($\mu g/m^3$)	102	176 *	49
Number exceedances 24-hr PM_{10}	0	1	0
Annual PM_{10} Avg. ($\mu g/m^3$)	36	34	23

* Indicates an exceedance of the standard.

Maricopa County North Phoenix Air Monitoring Site

North Phoenix (NP) (04-013-1004)
Location: 7th St. and Butler Ave.
Spatial Scale: Neighborhood
Monitoring Objective: High Population Exposure

Site Description: This site is located in the Sunnyslope area of North Phoenix. Sunnyslope is an old established neighborhood, primarily residential. High-density population surrounds the site. CO, ozone, and PM_{10} (SLAMS) are monitored at this site, along with temperature inversion.

	2002	2003	2004
Max. 8-hr CO Avg. (PPM)	3.3	2.3	2.2
Number exceedances 8-hr CO	0	0	0
Max. 1-hr O_3 Avg. (PPM)	0.111	0.113	0.110
Number exceedances 1-hr O_3	0	0	0
Max. 8-hr O_3 Avg. (PPM)	0.093	0.093	0.087
Number of Daily Exceedances >0.08	5	4	1
Three year Avg. of 4th High	0.085 *	0.085	0.082
Max. 24-hr PM_{10} Avg. ($\mu g/m^3$)	80	155 *	46
Number exceedances 24-hr PM_{10}	0	1	0
Annual PM_{10} Avg. ($\mu g/m^3$)	37	34	25

* Indicates a violation of the standard.


Maricopa County Pinnacle Peak Air Monitoring Site

Pinnacle Peak (PP) (04-013-2005)
Location: Pima Rd & Pinnacle Peak
Spatial Scale: Urban
Monitoring Objective: High Downwind Concentrations

Site Description: This SLAMS site for ozone is located at a golf course country club and is surrounded by residential homes. It is located in a geographic area of low-density population (less than 2500 people per square mile). In previous years, ozone exceedances have been recorded due to transport of ozone and precursors from more urbanized areas of metropolitan Phoenix.

	2002	**2003**	**2004**
Max. 1-hr O_3 Avg. (PPM)	0.115	0.103	0.084
Number exceedances 1-hr O_3	0	0	0
Max. 8-hr O_3 Avg. (PPM)	0.089	0.093	0.071
Number of Daily Exceedances >0.08	3	3	0
Three year Avg. of 4th High	0.085 *	.084	0.078

***** Indicates Violation of standard

Maricopa County Rio Verde Air Monitoring Site

Rio Verde (RV) (04-013-9706)
Location: Forest Rd. and Del Ray Ave.
Spatial Scale: Urban
Monitoring Objective: High Downwind Concentrations

Site description: This seasonal ozone site became operational in spring of 1997. The monitor is located at the fire station / County Sheriff's office sub-station located in a residential area surrounded by the desert of Tonto National Forest. The site is eight miles north of the Fountain Hills NAMS station, on the edge of a Class I Wilderness Area.

	2002	**2003**	**2004**
Max. 1-hr O_3 Avg. (PPM)	0.101	0.113	0.107
Number exceedances 1-hr O_3	0	0	0
Max. 8-hr O_3 Avg. (PPM)	0.089	0.096	0.083
Number of Daily Exceedances >0.08	4	2	0
Three year Avg. of 4th High	0.084	.083	0.077

Maricopa County South Phoenix Air Monitoring Site

South Phoenix (SP) (04-013-4003)
Location: Central Ave. and Broadway Rd.
Spatial Scale: Neighborhood
Monitoring Objective: High Population Exposure

Site Description: The site was opened at its current location October 1999. The site is at the edge of a high population area, but also borders on a mixture of residential and commercial (retail stores, food establishments, and office parks) land use. The station has two high population areas (> 5000 people per square miles) north and west of the site. Carbon monoxide, ozone, and PM_{10} (SLAMS) are the criteria pollutants monitored at this station. MCAQD will operate a $PM_{2.5}$ FRM monitor as of May 2005.

	2002	**2003**	**2004**
Max. 8-hr CO Avg. (PPM)	3.8	3.6	3.5
Number exceedances 8-hr CO	0	0	0
Max. 1-hr O_3 Avg. (PPM)	0.104	0.095	0.089
Number exceedances 1-hr O_3	0	0	0
Max. 8-hr O_3 Avg. (PPM)	0.090	0.083	0.079
Number of Daily Exceedances >0.08	2	0	0
Three year Avg. of 4th High	0.080	0.077	0.076
Max. 24-hr PM_{10} Avg. ($\mu g/m^3$)	137	164 *	132
Number exceedances 24-hr PM_{10}	0	1	0
Annual PM_{10} Avg. ($\mu g/m^3$)	60 *	52 *	46

* Indicates an exceedance of the standard.

Maricopa County South Scottsdale Air Monitoring Site

South Scottsdale (SS) (04-013-3003)
Location: Thomas Rd. and Miller Rd.
Spatial Scale: Urban Neighborhood
Monitoring Objective: High Population Exposure, category (b)

Site Description*:* The South Scottsdale site is located at the City of Scottsdale Fire Station. The area surrounding the site is residential with a density of 2500 to 5000 persons per square mile. This site is located 12 miles east of metropolitan Central Phoenix. Carbon monoxide, (SLAMS) ozone**,** NO_2, SO_2, and PM_{10} (all NAMS) are the criteria pollutants monitored at this station.

	2002	**2003**	**2004**
Max. 8-hr CO Avg. (PPM)	3.0	2.3	2.4
Number exceedances 8-hr CO	0	0	0
Max. 1-hr O_3 Avg. (PPM)	0.102	0.107	0.091
Number exceedances 1-hr O_3	0	0	0
Max. 8-hr O_3 Avg. (PPM)	0.087	0.097	0.081
Number of Daily Exceedances >0.08	1	3	0
Three year Avg. of 4th High	0.078	0.078	0.077
Max. 24-hr PM_{10} Avg. ($\mu g/m^3$)	64	172 *	77
Number exceedances 24-hr PM_{10}	0	0	0
Annual PM_{10} Avg. ($\mu g/m^3$)	37	36	26
Annual NO_2 Avg. (PPM)	0.024	#	0.019
Max. 24-hr SO2 Avg. (PPM)	0.004	0.005	0.006
Number of Exceedances	0	0	0
Annual SO2 Avg. (PPM)	0.002	0.002	0.002

* Indicates an exceedance of the standard.
# Indicates <75% data recovery.

Maricopa County Tempe Air Monitoring Site

Tempe (TE) (04-013-4005)
Location: Apache Blvd. & College Ave.
Spatial Scale: Neighborhood Scale
Monitoring Objective: High Population Exposure

Site Description: The site was established in 2000. The site was established to fill in a spatial gap between the metropolitan Phoenix area and the city of Mesa. Ozone (SPM), carbon monoxide (SPM) are monitored at the site.

	2002	**2003**	**2004**
Max. 8-hr CO Avg. (PPM)	3.4	2.9	1.9
Number exceedances 8-hr CO	0	0	0
Max. 1-hr O_3 Avg. (PPM)	0.100	0.109	0.095
Number exceedances 1-hr O_3	0	0	0
Max. 8-hr O_3 Avg. (PPM)	0.086	0.086	0.078
Number of Daily Exceedances >0.08	2	1	0
Three year Avg. of 4th High	0.079	0.079	0.077

# Indicates <75% data recovery.

Maricopa County West Chandler Air Monitoring Site

West Chandler (WC) (04-013-4004)
Location: Frye Rd. and Ellis St.
Spatial Scale: Neighborhood Scale
Monitoring Objective: High Population Exposure

Site Description: This site was first established in January 1995. The site was moved ½ mile to the southeast in May 2000. A wide range of land uses surrounds the site, including residential, agriculture, and heavy industry (semiconductor manufacturing plants and liquid air storage). Carbon monoxide, ozone, and PM_{10} are the criteria pollutants monitored at this SLAMS site.

	2002	**2003**	**2004**
Max. 8-hr CO Avg. (PPM)	2.2	2.6	2.1
Number exceedances 8-hr CO	0	0	0
Max. 1-hr O_3 Avg. (PPM)	0.110	0.101	0.080
Number exceedances 1-hr O_3	0	0	0
Max. 8-hr O_3 Avg. (PPM)	0.094	0.082	0.073
Number of Daily Exceedances >0.08	2	0	0
Three year Avg. of 4th High	NA	0.079	0.077
Max. 24-hr PM_{10} Avg. ($\mu g/m^3$)	80	* 206	70
Number exceedances 24-hr PM_{10}	0	2	0
Annual PM_{10} Avg. ($\mu g/m^3$)	39	42	30

* Indicates an exceedance of the standard.

Maricopa County West Forty Third Air Monitoring Site

West Forty Third (WF) (04-013-4009)
Location: 43rd Ave. & Broadway Rd.
Spatial Scale: Middle Scale
Monitoring Objective: Maximum Concentration

Site Description: Monitoring began at the site in the 2nd quarter of 2002. This site is located at a Maricopa County Department of Transportation storage lot. The site is surrounded by a combination of heavy industry and residential homes. The site has one 6-day SS HI-VOL particulate monitor. The main purpose of the monitor is to measure maximum concentration PM_{10} and to determine the impact on ambient pollution levels of significant sources or source categories. The sources around the site include sand and gravel operations, auto and metal recycling, landfills, paved and unpaved haul roads, and cement casting (see ADDITIONAL COMMENTS section).

	2002	2003	2004
Max. 24-hr PM_{10} Avg. ($\mu g/m^3$)	# 172	157*	~ 251 *
Number exceedances 24-hr PM_{10}	1	1	1
Annual PM_{10} Avg. ($\mu g/m^3$)	# 68	62 *	~ 61 *

* Indicates an exceedance of the standard.
# Indicates <75% data available.
~ Indicates Exceptional Events

Maricopa County West Indian School Road Air Monitoring Site

West Indian School Rd. (WI) (04-013-0016)
Location: 33rd Ave. and Indian School Rd.
Spatial Scale: Micro-scale
Monitoring Objective: Maximum Pollutant Concentration and Impact of Significant Sources, category (a)

Site Description: The site is located at the City of Phoenix Wellness Evaluation Center. This site is used to monitor micro-scale maximum concentrations and is based on high vehicular traffic. The Average Weekday Traffic (AWT) volume past this location on Indian School Road is estimated to be approximately 55,000 vehicles/day. The site is also in close proximity to Grand Ave. and 35th Ave., which have AWT volumes of about 35,000 vehicles/day. Carbon monoxide is monitored at this NAMS site.

	2002	2003	2004
Max. 8-hr CO Avg. (PPM)	5.5	5.4	4.7
Number exceedances 8-hr CO	0	0	0


Maricopa County West Phoenix Air Monitoring Site

West Phoenix (WP) (04-013-0019)
Location: 39th Ave. and Earll Dr.
Spatial Scale: Neighborhood
Monitoring Objective: High Population Exposure

Site Description: This site became operational in 1984. It is located about one-mile southwest of the West Indian School Road micro-scale CO monitor. The spatial scale for the West Phoenix site is neighborhood. It is located in an area of stable, high population density. Carbon monoxide (NAMS), PM_{10} (NAMS), ozone (SLAMS), and NO_2 (SLAMS) are the criteria pollutants monitored at this site. MCAQD has been operating collocated $PM_{2.5}$ FRM monitors.

	2002	2003	2004
Max. 8-hr CO Avg. (PPM)	5.5	6.2	5.2
Number exceedances 8-hr CO	0	0	0
Max. 1-hr O_3 Avg. (PPM)	0.123	0.099	0.097
Number exceedances 1-hr O_3	0	0	0
Max. 8-hr O_3 Avg. (PPM)	0.102	0.081	0.08
Number of Daily Exceedances >0.08	2	0	0
Three year Avg. of 4th High	0.080	0.078	0.077
Max. 24-hr PM_{10} Avg. ($\mu g/m^3$)	122	158 *	100
Number exceedances 24-hr PM_{10}	0	1	0
Annual PM_{10} Avg. ($\mu g/m^3$)	53 *	46	37
Annual NO_2 Avg. (PPM)		#	0.024

* Indicates an exceedance of the standard.
# Indicates <75% data available.

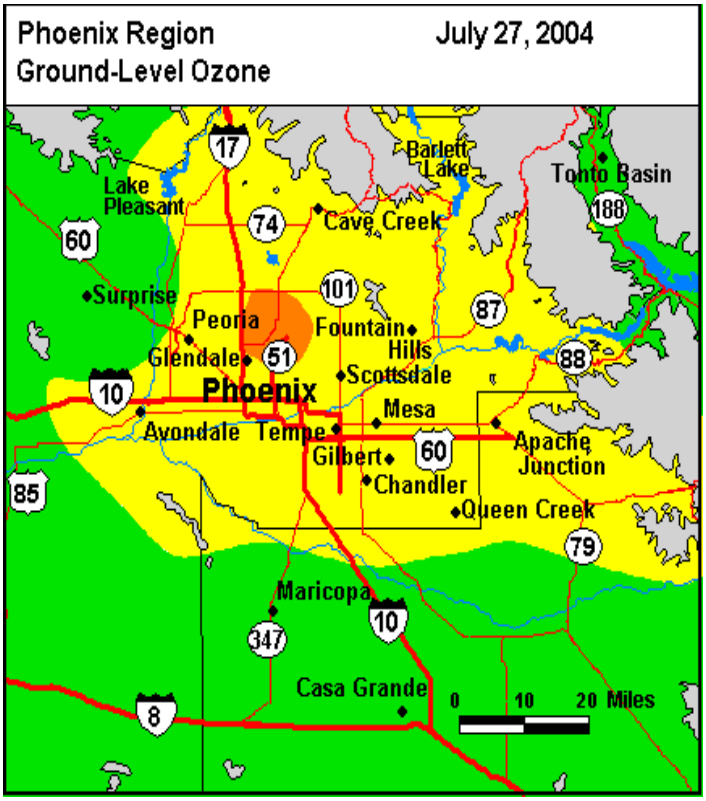
ADDITIONAL COMMENTS

EPA Ozone Mapping

The AIRNOW website (http://www.epa.gov/airnow) provides real-time air pollution (ozone) maps for major metropolitan areas around the United States, including the Phoenix Metropolitan Area. MCAQD has participated in the program since 2001.

MCAQD, in cooperation with ADEQ and the Pinal County Air Pollution Control District, has expanded the area that the maps cover. This area now includes sites as far east as Queen Valley, as far south as Casa Grande, and as far west as Palo Verde.

This website can be used as a tool for which the public can plan their daily activities and limit their exposure to air pollution. Eight-hour average peak ozone concentration maps (Map 1) and real-time eight-hour ozone animation maps are provided. Colors on the map indicate different concentrations of ozone pollution. The one-hour average values are given in parts per billion. The eight-hour averages are converted into Air Quality Index (AQI) numbers. The AQI is based on the NAAQS. The index was developed to convert pollution measurements into a common index that the general public can more easily understand. Different colors on the map correspond to different categories of air quality and health impacts (Table 23).



Map 1

Table 25. Air Quality Index

Index	Color Designation	Air Quality	Health Impact
0 – 50	Green	Good	No harmful effects expected.
51 – 100	Yellow	Moderate	Unusually sensitive people should consider limiting prolonged outdoor exertion.
101 – 150	Orange	Unhealthy for Sensitive Groups	Active children & adults, people with respiratory disease (i.e., asthma) should limit prolonged outdoor exertion.
151 – 200	Red	Unhealthy	Everyone should observe caution. Avoid prolonged outdoor exertion.
201 – 300	Purple	Very Unhealthy	Avoid all outdoor exertion. Use extreme caution outdoors
301 – 500	Maroon	Hazardous	Everyone should avoid all outdoor exertion.

The animated map is updated every hour from 8am to 8pm seven days a week. Updates to the site will be made during the ozone season (April through October). Archived maps of the 2000-2004 ozone seasons are available. MCAQD plans to continue with the project for the 2005 ozone season.

Maricopa County's Interactive Pollution Map

In keeping with our mission statement of "Ensuring a Safe and Healthy Environment" MCAQD has brought real-time pollution data to the Internet. All of the MCAQD continuous data will be available to the public through an interactive map. The air pollutants that are available include CO, Ozone, NO_2, SO_2, and Particulates. All of the values are currently one-hour averages. The information is updated on an hourly basis at half past the hour. Data can be accessed at the web address: http://www.maricopa.gov/aq/airday/ozair_map.asp

One of the major problems in providing "real-time" pollution data to a public medium is providing quality data. The data available on the Internet goes through an automated quality assurance check program before it is released; however, some invalid data can slip through. Normal quality assurance checks take between 1-3 months. Consequently, information provided at this site should be used for informational purposes only and should not be relied on for comparison with NAAQS.

Converting to Continuous Particulate Monitoring

As of October 1, 2004, in accordance with 40 CFR Part 50 Appendix K, MCAQD has converted four of its one- and six-day particulate monitors to continuous. These monitors are at the following sites: Buckeye (04-013-4011), Durango (04-013-9812), Higley (04-013-4006), and West 43rd (04-013-4009). Since the Air Quality System (AQS) database will not allow the existing monitors to be change from one and six-day to hourly (at least not until the beginning of the year), MCAQD had to manually insert the 24-hr daily averages for the fourth quarter of 2004 into the database.

$PM_{2.5}$

Currently, MCAQD operates collocated compliance $PM_{2.5}$ monitors at the West Phoenix site (04-013-0019) and an additional $PM_{2.5}$ monitor at the South Phoenix site (as of January 1, 2005). The ADEQ continues to weigh the filters for all of the monitors. Until MCAQD can completely take over the operation and maintenance of the monitor, ADEQ will report the West Phoenix data to the EPA. MCAQD will operate, maintain, and report the monitor at the South Phoenix site. A third monitor will be deployed in mid-2005. Possible sites include Central Phoenix, Mesa, or in the west valley.

New Sites

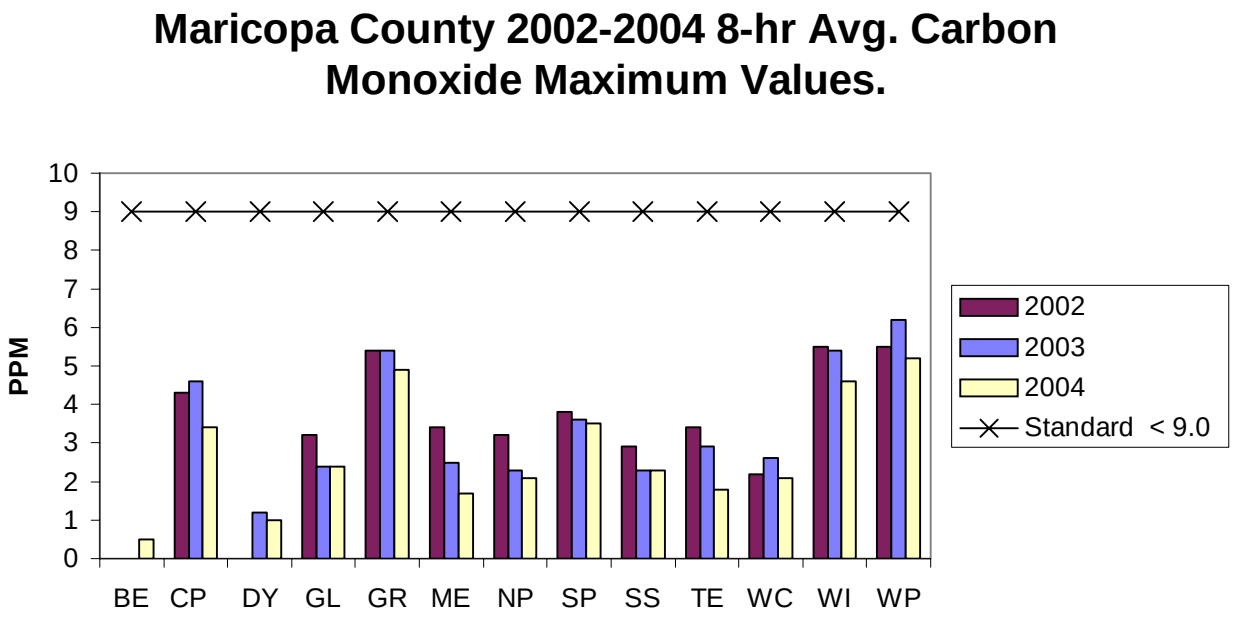
MCAQD has redeployed the Maryvale site to the town of Buckeye (04-013-4011) in 2004. An NO_2 monitor will also be installed at the site to monitor the impacts of the new power plants in the area.

Possible new site location include near Estrella Mountain Community College, along Interstate 17, and along US60.

POLLUTION TRENDS

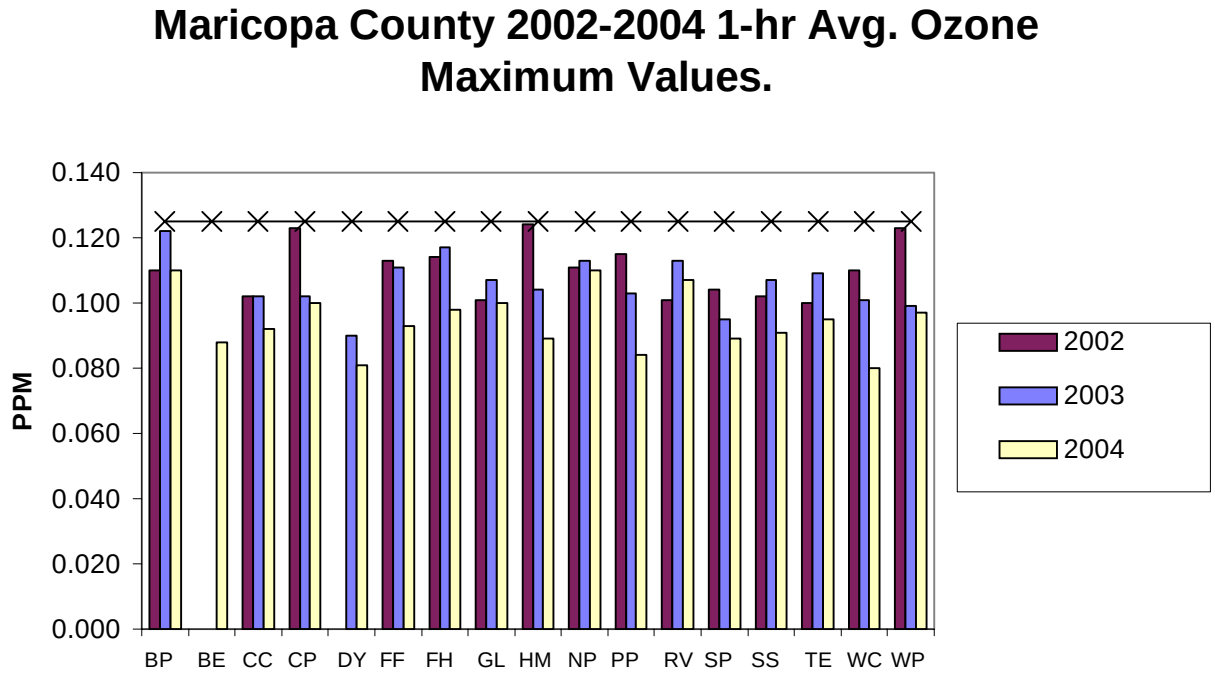
The following charts depict the most recent three-year trends (2002–2004) for each criteria pollutant.

Carbon Monoxide



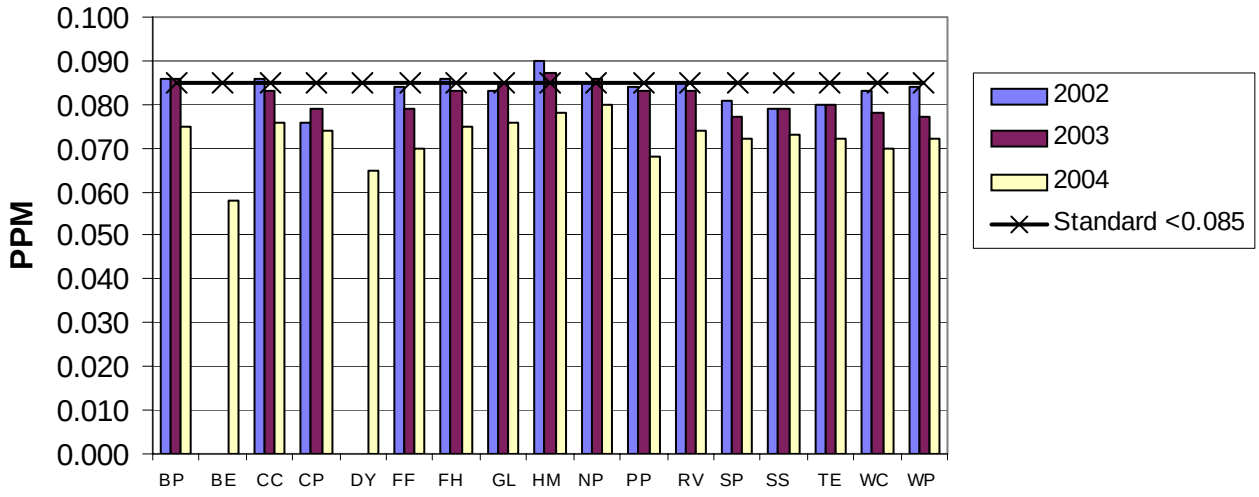
(Chart -1)

Ozone



(Chart –2)

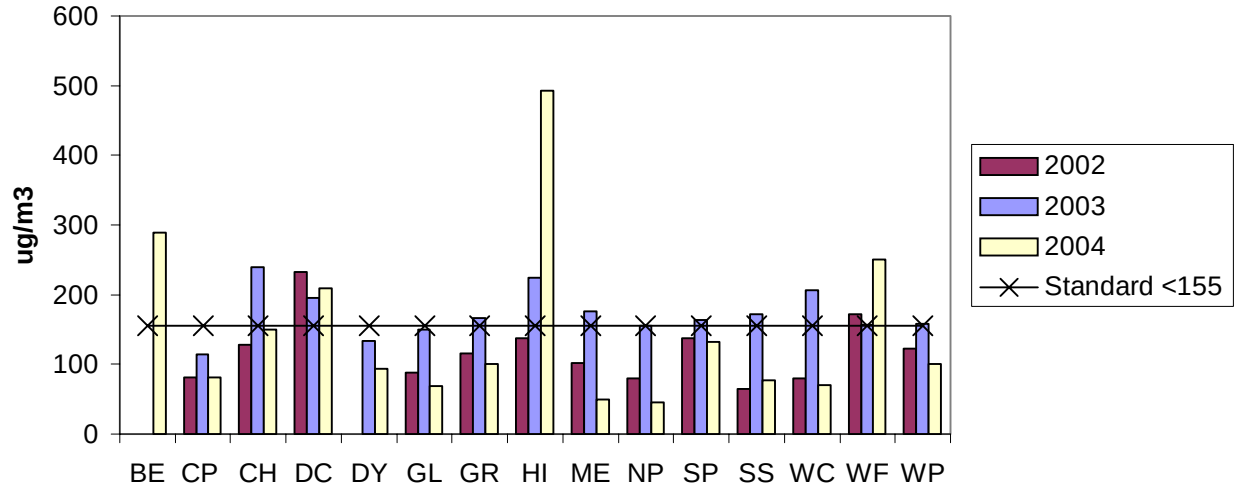
Maricopa County 2002-2004 Ozone 4th high 8-hr Avg.



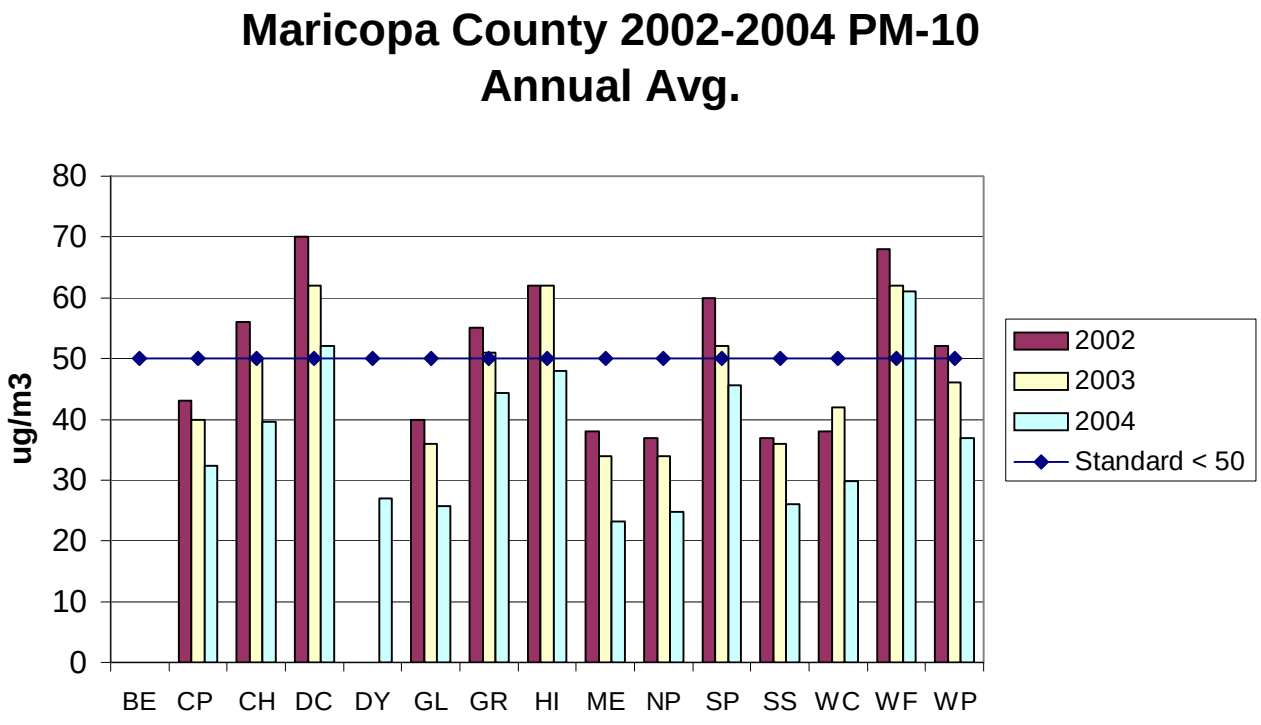
(Chart –3)

Particulates

Maricopa County 2002-2004 PM-10 24-hr Avg. Maximum Values

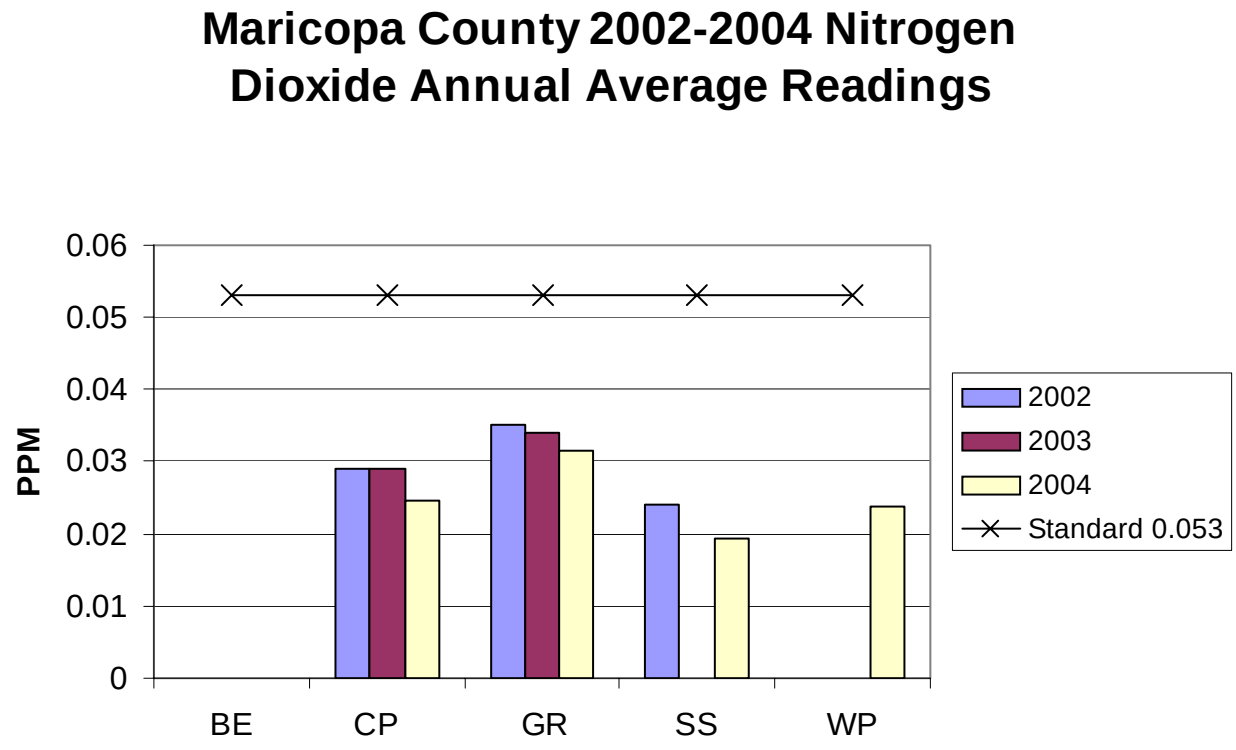


(Chart –4)



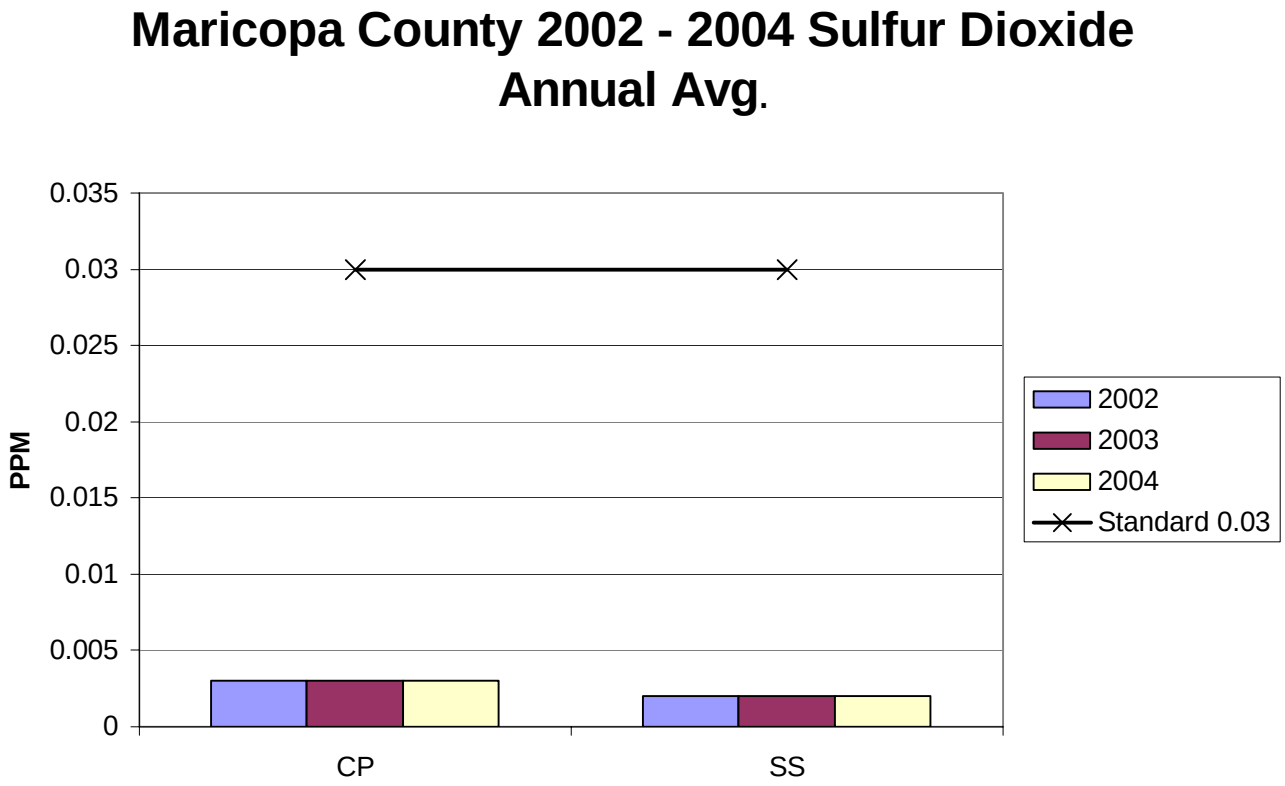
(Chart –5)

Nitrogen Dioxide



(Chart –6)

Sulfur Dioxide



(Chart –7)

Acronyms and Abbreviations

Acronym or Abbreviation	Definition
ADEQ	Arizona Department of Environmental Quality
ADOT	Arizona Department of Transportation
CFR	Code of Federal Regulations
Class I	Federally designated park or wilderness area with mandated visibility protection
CO	Carbon monoxide
Delta T	Difference between two levels of temperature measurements
EPA	U. S. Environmental Protection Agency
HAPs	Hazardous air pollutants
km	kilometer(s)
m	meter(s)
MCAQD	Maricopa County Air Quality Department
$\mu g/m^3$	Microgram per cubic meter
NAAQS	National Ambient Air Quality Standards
NAMS	National Air Monitoring Station
NO_2	Nitrogen dioxide
NO_x	Sum of NO and NO_2
O_3	Ozone
Pb	Lead
PM	Particulate matter
$PM_{2.5}$	Particulate matter $\leq$ 2.5 microns
PM_{10}	Particulate matter $\leq$ 10 microns
PPB	Parts per billion
PPM	Parts per million
SIP	State Implementation Plan
SLAMS	State and Local Air Monitoring Station
SO_2	Sulfur dioxide
SPM	Special purpose monitor
TEOM	Tapered Element Oscillating Microbalance
TSP	Total suspended particulate
USFS	U.S. Forest Service
VOC	Volatile organic compounds

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2. Phase II Recommendations for Maricopa County Air Quality Monitoring Network, AV-R-93/6025, Aero-Vironment, Inc., Monrovia, CA, March 1993

3. Air Quality Modeling of Carbon Monoxide Concentrations in Support of the Federal Implementation Plan for Phoenix, AZ, SYSAPP-93/039, Systems Application International, San Rafael, CA, April 30, 1993.

4. Code of Federal Regulations, Chapter 40, Part 58, Appendix D, 1997.

5. Maricopa Association of Governments, Transportation Planning Office, Average Weekday Traffic Analysis for 1998 (Map dated August 1999).

6. Maricopa Association of Governments, Total Resident Population Density, 1994, by Traffic Analysis Zone (Map dated 1998).

7. http://www.adeq.state.az.us/environ/air/plan/index.html

8. http://www.epa.gov/rgytgrnj/programs/artd/air/quality/quality.htm

9. http://www.maricopa.gov/sbeap/airday.htm

10. http://www.maricopa.gov/sbeap/AIR_MONI.HTM

11. http://www.epa.gov/empact

12. http://www.epa.gov/oar/aqtrnd00/sixpoll.html

13. MCAQD 2001 Network Review (http://www.maricopa.gov/envsvc/AIR/AIRDAY/review1a.pdf)

14. SLAMS / NAMS / PAMS Network Review Guidance--EPA-454/R-98-003

15. Guideline on data handling conventions of the PM NAAQS