CHAPTER 2

LOCAL AIR QUALITY

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2. LOCAL AIR QUALITY

2.1 INTRODUCTION

This chapter provides the background for this 2010 Plan by presenting an overview of the climate of Santa Barbara County, and an assessment of local air quality trends using California Air Resources Board (ARB) specified indicators. The description of the climate of Santa Barbara County is important for understanding the factors that influence air quality in the county, while the air quality data are important for assessing progress towards attainment of the state 8-hour ozone standard.

There are two related terms that are used frequently in this chapter: standard *exceedance* and standard *violation*. A *standard exceedance* occurs when a measured concentration exceeds the applicable air quality standard. A *standard violation* occurs after a certain number of exceedances have been measured and is dependent on the standard in question. For example, a state -8-hour ozone exceedance occurs when ozone is measured over the standard of 0.070 ppm. A state ozone standard violation occurs when the state 8-hour design value is greater than the standard itself. Design values are discussed in more detail later in this chapter. Attainment and nonattainment designations are based on violations of standards. It should be emphasized that both exceedances and violations are determined on a site-by-site basis. If any monitoring site experiences a violation of an ambient air quality standard, then the entire county would be designated as nonattainment for that standard.

The next section of this chapter, Section 2.2, discusses the local climate of Santa Barbara County and the relationship of the climate to air quality. Santa Barbara County's air quality monitoring network is described in Section 2.3. A summary of state ozone exceedances experienced in the county from 1988 through 2008~~5~~ are highlighted in Section 2.4 while Section 2.5 summarizes state air quality trends using air quality indicators. Section 2.6 discusses the State Designation Value and its relation to the air quality indicators. Section 2.7 highlights the conclusions of this chapter. For clarity, all tables and figures associated with this chapter will appear after the conclusions.

2.2 CLIMATE OF SANTA BARBARA COUNTY

Santa Barbara County's air quality is influenced by both local topography and meteorological conditions. Surface and upper-level wind flow varies both seasonally and geographically in the county and inversion conditions common to the area can affect the vertical mixing and dispersion of pollutants. The prevailing wind flow patterns in the county are not necessarily those that cause high ozone values. In fact, high ozone values are often associated with atypical wind flow patterns. Meteorological and topographical influences that are important to air quality in Santa Barbara County are as follows:

- Semi-permanent high pressure that lies off the Pacific Coast leads to limited rainfall (around 18 inches per year), with warm, dry summers and relatively damp winters. Maximum summer temperatures average about 70 degrees Fahrenheit near the coast and in the high 80s to 90s inland. During winter, average minimum temperatures range from the 40s along

the coast to the 30s inland. Additionally, cool, humid, marine air causes frequent fog and low clouds along the coast, generally during the night and morning hours in the late spring and early summer. The fog and low clouds can persist for several days until broken up by a change in the weather pattern.

- In the northern portion of the county (north of the ridgeline of the Santa Ynez Mountains), the sea breeze (from sea to land) is typically northwesterly throughout the year while the prevailing sea breeze in the southern portion of the county is from the southwest. During summer, these winds are stronger and persist later into the night. At night, the sea breeze weakens and is replaced by light land breezes (from land to sea). The alternation of the land-sea breeze cycle can sometimes produce a "sloshing" effect, where pollutants are swept offshore at night and subsequently carried back onshore during the day. This effect is exacerbated during periods when wind speeds are low.

- The terrain around Point Conception, combined with the change in orientation of the coastline from north-south to east-west can cause counterclockwise circulation (eddies) to form east of the Point. These eddies fluctuate temporally and spatially, often leading to highly variable winds along the southern coastal strip. Point Conception also marks the change in the prevailing surface winds from northwesterly to southwesterly.

- Santa Ana winds are northeasterly winds that occur primarily during fall and winter, but occasionally in spring. These are warm, dry winds blown from the high inland desert that descend down the slopes of a mountain range. Wind speeds associated with Santa Ana's are generally 15-20 mph, though they can sometimes reach speeds in excess of 60 mph. During Santa Ana conditions, pollutants emitted in Santa Barbara, Ventura County, and the South Coast Air Basin (the Los Angeles region) are moved out to sea. These pollutants can then be moved back onshore into Santa Barbara County in what is called a "post-Santa Ana condition." The effects of the post-Santa Ana condition can be experienced throughout the county. Not all post-Santa Ana conditions, however, lead to high pollutant concentrations in Santa Barbara County.

- Upper-level winds (measured at Vandenberg Air Force Base once each morning and afternoon) are generally from the north or northwest throughout the year, but occurrences of southerly and easterly winds do occur in winter, especially during the morning. Upper-level winds from the south and east are infrequent during the summer. When they do occur during summer, they are usually associated with periods of high ozone levels. Surface and upper-level winds can move pollutants that originate in other areas into the county.

- Surface temperature inversions (0-500 ft) are most frequent during the winter, and subsidence inversions (1000-2000 ft) are most frequent during the summer. Inversions are an increase in temperature with height and are directly related to the stability of the atmosphere. Inversions act as a cap to the pollutants that are emitted below or within them and ozone concentrations are often higher directly below the base of elevated inversions than they are at the earth's surface. For this reason, elevated monitoring sites will occasionally record higher ozone concentrations than sites at lower elevations. Generally, the lower the inversion base height and the greater the rate of temperature increase from the

base to the top, the more pronounced effect the inversion will have on inhibiting vertical dispersion. The subsidence inversion is very common during summer along the California coast, and is one of the principal causes of air stagnation.

- Poor air quality is usually associated with "air stagnation" (high stability/restricted air movement). Therefore, it is reasonable to expect a higher frequency of pollution events in the southern portion of the county where light winds are frequently observed, as opposed to the northern part of the county where the prevailing winds are usually strong and persistent.

2.3 AIR QUALITY MONITORING

Both the federal and state Clean Air Acts identify pollutants of specific importance, which are known as criteria pollutants. Ambient air quality standards are adopted by the ARB and the United States Environmental Protection Agency (USEPA) to protect public health, vegetation, materials and visibility, shown in **Table 2-1**. State standards for ozone and both respirable (less than 10 microns in diameter-PM_{10}) and fine (less than 2.5 microns in diameter– $PM_{2.5}$) particles are more stringent than federal standards.

Monitoring of ambient air pollutant concentrations is conducted by the ARB, Santa Barbara County Air Pollution Control District (APCD) and industry. Monitors operated by the ARB and APCD are part of the State and Local Air Monitoring System (SLAMS). The SLAMS stations are located to provide local and regional air quality information. Monitors operated by industry, at the direction of the APCD, are called Prevention of Significant Deterioration (PSD) stations. PSD stations are required by the APCD to ensure that new and modified sources under APCD permit do not interfere with the county's ability to attain or maintain air quality standards. Figure 2-1 shows the locations of all monitoring stations in Santa Barbara County that are currently in operation. ~~Note that data collection from the Santa Rosa Island monitoring ceased on December 31, 2004 due to both financial constraints and logistical challenges in collecting data from and maintaining the remote island site.~~

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2.4 STATE OZONE EXCEEDANCES

Figure 2-2a presents the number of state ozone exceedances in Santa Barbara County during the period of 1988 to 2008. As shown in the figure, Santa Barbara County has experienced as many as 42 days where the state 1-hour ozone standard was exceeded to no exceedance days in 2005. The number of state 8-hour ozone standard exceedances ranges from 98 days in 1989 to 12 exceedance days during 2008.

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The most striking feature of Figure 2-2a is the dramatic decrease in the number of state 1-hour ozone exceedances since 1988. The exceedance data show that there is a clear declining trend in the number of state 1-hour ozone exceedances from 1988 through 1999. Since 1999, however, the state 1-hour ozone exceedance trend is less discernable and likely more the result of natural year-to-year variability of weather patterns.

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The 8-hour ozone exceedance data also show a clear declining trend since 1988. These data, however, show that there are distinct periods where the number of 8-hour exceedances is relatively stable but decrease substantially from one period to the next. Between 1991 and 1992 the number of 8-hour exceedances decreased from 97 to 64 days; between 1996 and 1997 the number of exceedance days declined from 57 to 42; and from 2003 to 2004 the number of state 8-hour exceedances decreased from 40 day to 19 days.

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It is important to note that the long-term declining trend in both state 1-hour and 8-hour exceedance days has occurred concurrently with increases in both population and daily vehicle miles traveled in Santa Barbara County, shown in Figure 2-2b. This suggests that local, state and federal emission reduction programs have been effective in improving air quality in Santa Barbara County despite significant increases in population and vehicle miles traveled.

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2.5 STATE AIR QUALITY INDICATORS

The California Clean Air Act (CCAA) requires the ARB to evaluate and identify ~~three~~ air quality related indicators for districts to use in assessing their progress toward attainment of the state standards [Health and Safety Code section 39607(f)]. Districts are required to assess their progress triennially and report to the ARB as part of the triennial plan revisions. The assessment must address (1) the peak concentrations in the peak "hot spot" subarea, (2) the population-weighted average of the total exposure, and (3) the area-weighted average of the total exposure (ARB Resolution 90-96, November 8, 1990). The exposure data are typically provided by ARB and have been presented in previous plans. ARB, however, is no longer providing area-weighted and population-weighted exposure data to the districts and those data are not available to be included in this plan. As an alternative, ARB has recommended that in addition to peak 1-hour and 8-hour concentrations, the mean of the highest thirty 1-hour and 8-hour concentrations be included in this plan.

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2.5.1 Peak One-Hour Concentration Indicators

The indicator data were provided by the ARB with the recommendation that we report improvement in air quality using the Expected Peak Day Concentration (EPDC), and the mean of the highest 30 concentrations.

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The peak "hot spot" indicator is assessed in terms of the EPDC. The EPDC is provided to districts by the ARB for each monitoring site in the county and represents the maximum ozone concentration expected to occur once per year, on average. The EPDC is useful for tracking air quality progress at individual monitoring stations since it is relatively stable, thereby providing a trend indicator that is not highly influenced by year-to-year changes in weather. Simply, progress means the change or improvement in air quality over time that can be attributed to a reduction in emissions rather than the influence of other factors, such as variable weather. The EPDC is also used in the area designation process, which is described in Section 2.6.

The EPDC is calculated using ozone data for a three-year period (the summary year and the two years proceeding the summary year). For example, the 2007 EPDC for a monitoring site uses data

from 2005, 2006 and 2007. The data that are used in the calculation are the daily maximum 1-hour and 8-hour ozone concentrations. The EPDC is calculated using a complex statistical procedure that analytically determines for each monitoring site the highest ozone concentration that is expected to recur at a rate of once per year.

Figure 2-3 presents 1988 through 2008 peak 1-hour air quality indicators for monitoring sites in Santa Barbara County. Note that the Santa Barbara station was offline for several months during 2001, but came back online at the beginning of 2003. Due to the temporary loss of data, the 2002 EPDC value for the Santa Barbara site is not available.

Figure 2-3 shows that peak 1-hour air quality indicators have declined significantly from 1988 levels at all monitoring stations. 1999 EPDC values (based on 1997, 1998 and 1999 ozone data) fell below the state standard at the GTC-B, Santa Ynez, El Capitan, Goleta, Lompoc HS&P and Santa Barbara sites. The Carpinteria EPDC indicator dropped below the state ozone standard in 2002 from earlier levels that were significantly above the standard. Additionally, the peak indicator for the Las Flores Canyon site fell below the state standard in 2003 and has leveled-off at or below the standard since then. The Paradise Road monitoring site has also shown considerable improvement in air quality from earlier years. Based on 2004 through 2006 data, the Paradise Road site has come into compliance with the state 1-hour ozone standard for the first time since monitoring began at the site in 1986. The 2006 through 2008 data show that the EPDC at Paradise Road continues to remain below the state 1-hour ozone standard.

As discussed previously, the ARB requires that district's assess the peak "hot spot" subareas as one method of determining progress toward meeting state air quality standards. Since 1988, both the Paradise Road and Las Flores Canyon monitoring sites have experienced the most state ozone exceedances in the county, and therefore can be considered hot spot locations, shown in Table 2-2. The Las Flores Canyon monitoring site had a maximum of 24 state 1-hour ozone exceedances in 1990 with no exceedances during 2002, 2005 and 2006, while the number of state 1-hour ozone exceedances at the Paradise Road site has ranged from 24 in 1988 to no state ozone exceedances during 2000, 2005 and 2006.

Figure 2-4 presents the overall 1-hour EPDC trend improvement for both the Las Flores Canyon and Paradise Road sites from 1988 to 2008. The 1-hour EPDC indicators have improved significantly from earlier levels at both the Las Flores Canyon and Paradise Road sites. The EPDC indicator was as high as 0.140 ppm during 1989 and 1990 at the Las Flores Canyon site decreasing to 0.090 ppm during 2007 and 2008. At the Paradise Road site, the peak indicator was as high as 0.125 ppm in 1989 and 1991, decreasing to 0.090 ppm by 2006 and is currently at 0.091 ppm~~.~~. The overall 1-hour EPDC improvement for the Las Flores Canyon site from 1988 to 2008 is about 29%. The Paradise Road EPDC trend improvement is about 27 % over the period of 1988 to 2008.

2.5.2 Peak 8-Hour Concentration Indicators

Figure 2-5 presents 8-hour EPDC data from 1988 through 2008. Based on these data, five ~~seven~~ monitoring stations in Santa Barbara County have 8-hour EPDC's greater than the state standard (Carpinteria, Las Flores Canyon, Lompoc HS&P, Santa Ynez, and Paradise Road). Since 2004, two monitoring stations, Vandenberg AFB and Nojoqui Summit have seen a

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reduction in the 8-hour EPDC to below the state standard. The remaining sites in the county historically have had 8-hour EPDC values above the state 8-hour ozone standard but are now below the standard.

As with the1-hour standard, both the Paradise Road and Las Flores Canyon sites historically have measured more 8-hour ozone exceedances than any other site and are considered "hot spot" subareas within the county. As can be seen from Figure 2-6, both sites have EPDC indicator values that have improved significantly from 1988. The Las Flores Canyon 8-hour EPDC has decreased from 0.103 in 1988 to 0.080 in 2008, representing an improvement of 22 percent. The EPDC at this site has been as high as 0.112 in 1996, which is based on 1994 through1996 data. The Paradise Road site 8-hour EPDC has decreased from 0.107 in 1988 to 0.084 in 2008, a 21 percent improvement. The 1991 EPDC of 0.112 is the maximum for the 1988 to 2008 period at Paradise Road.

2.5.3 Mean of Highest 30 One-Hour and Eight-Hour Ozone Concentrations

The ARB has recommended that we use the mean of the highest thirty 1-hour and 8-hour ozone concentrations as an additional indicator of progress toward meeting the state ozone standards. This statistic is referred to as the "Top Thirty Mean." The 1988 through 2008 trend for these indicators are presented in Figure 2-7. This figure shows that while there is some year-to-year variability in the average of the highest thirty 1-hour and 8-hour concentrations, there is a clear downward long-term trend at each monitoring location. This can be seen in Figure 2-8 that graphically presents the percent change in the mean top thirty indicator values from 1988 to 2008.

These data show that the Paradise Road and Nojoqui Pass sites have experienced the greatest decline for both 1-hour and 8-hour highest thirty mean concentrations from 1988 to 2008. The Paradise Road 1-hour and 8-hour highest thirty concentrations have decreased from1988 to 2008 by 29.1 and 27.6 percent, respectively. The Nojoqui Pass 1-hour and 8-hour highest thirty have improved by 30.4 and 27.2 percent, respectively. The sites showing relatively low improvement are Santa Maria, Santa Barbara and Vandenberg, where peak ozone concentrations are generally low and somewhat stable on a year to year basis. The average improvement for all sites in the county based on 1988 to 2008 mean highest thirty data is 17.5 percent for 1-hour concentrations and 15.0 percent for 8-hour concentrations.

2.6 STATE DESIGNATION VALUES

Designation values (DV) are used to determine whether an area is in or out of attainment of applicable air quality standards. The designation value refers to the highest measured concentration remaining at a given site after all measured concentrations affected by extreme concentration events are excluded. In the state designation process, measured concentrations that are higher than the calculated EPDC are identified as being affected by an extreme concentration event (e.g., weather conditions conducive to high concentrations of ozone) and are not considered violations of the state

standard. If the highest designation value within an area does not exceed the state standard, then the area can be considered in attainment for that pollutant. For example, if the calculated 1-hour EPDC for a site is 0.096 ppm and the four highest measured ozone concentrations are 0.125, 0.113, 0.102 and 0.094 ppm, then the designation value is equal to 0.10 ppm.. This is because the EPDC of 0.096 is first rounded to 0.10 to be consistent with the precision of the state 1-hour standard, which is two decimal places, and 0.10 is the highest concentration measured (0.102 rounds down to 0.10) that is equal to or lower than the rounded EPDC. The concentrations of 0.125 ppm (rounded to 0.13 ppm) and 0.113 ppm (rounded to 0.11 ppm) are higher than the rounded EPDC of 0.10 and are excluded as an extreme concentrations and are not considered as the DV.

Figure 2-9 presents 1-hour designation value data for the period of 1988 to 2008 for the Las Flores Canyon and Paradise Road sites that historically measure the most ozone exceedances. Based on these data, the Paradise Road site came into compliance with the state 1-hour ozone standard in 2006, marking the first time the standard has been attained at the site since it began operation in 1986. Both the Las Flores Canyon and Paradise Road sites continue to be in compliance with the 1-hour state ozone standard.

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Compliance with the 8-hour standard is determined in a manner similar to the state 1-hour standard using the same expected peak day and design value approach. The state 8-hour standard, however, has a higher level of precision than the current 1-hour standard. The level of precision for the 1-hour standard is two decimal places whereas the level of precision for the new 8-hour standard is three decimal places. Typically, ozone concentrations are measured in parts per billion (ppb) then converted to ppm then rounded to the appropriate level of precision. The ARB rounding convention is that values of 5 or more round up and values below 5 rounds down. For example, a measured 1-hour ozone concentration of 84 ppb is 0.084 ppm, which is rounded down to 0.08 ppm to meet the level of precision of the 1-hour standard. A 1-hour ozone concentration of 85 ppb is 0.085 ppm and rounded up to 0.09 ppm. Since the new state 8-hour ozone standard has a higher level of precision, the same rounding process does not apply. That is, an 8-hour concentration of 85 ppb is converted to 0.085 ppm and rounding is not necessary because the level of precision of the 8-hour standard is three decimal places. As a consequence of the precision of the new state 8-hour standard, a concentration of 71 ppb (0.071 ppm) is an exceedance of the new standard.

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State 8-hour designation data are presented in Figure 2-10 for all sites in the county. These data show that 8-hour designation values have been declining since 1988 although four sites in the county remain out of compliance with the standard. Based on data collected from 2006 through 2008, the Carpinteria, Las Flores Canyon, Paradise Road and Santa Ynez monitoring stations in Santa Barbara County are out of compliance with the state 8-hour standard. The peak "hot spot" locations, Paradise Road and Las Flores Canyon, while still out of compliance with the standard, have seen a significant reduction in the designation value since 1988. The Las Flores Canyon site has experienced a 23 percent reduction in the 8-hour designation value since 1988, while the Paradise Road site designation value has been reduced by about 22 percent.

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2.7 CONCLUSION

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This 2010 Plan has been prepared to document progress toward meeting the state 1-hour and 8-hour ozone standards. Although Santa Barbara County violates the state 8-hour ozone standard, recent data show that the county continues to attain (since 2006) the state 1-hour ozone standard of 0.09 ppm, evidence that the air quality of the county has improved dramatically over the years. This air quality improvement is clearly seen in the 1-hour EPDC data, which show that the EPDC has decreased below that state 1-hour ozone standard at all sites in the county including Paradise Road, where the EPDC has historically exceeded the standard. Long-term improvement can also be seen in the 8-hour EPDC data. In addition, the mean of the highest 30 1- and 8-hour concentrations for 2008 has been reduced by as much as 30 percent below 1988 levels.

A further indication of air quality improvement is shown in the historical exceedance data, where the number of state 1-hour exceedances has decreased from 42 days in 1988 to no exceedances in 2005, with only one exceedance in 2006. Additionally, the number of state 8-hour exceedances has decreased from 98 days in 1989 to 12 days in 2008. Although the state 8-hour designation value has decreased significantly since 1988 throughout county monitoring sites, Santa Barbara County remains out of compliance with the 8-hour standard.

Reductions in the number of exceedance days and significant improvement in each of the indicators clearly demonstrates that air quality has substantially improved in Santa Barbara County. This suggests that local, state and federal emission reduction programs have been effective in the long-term improvement of air quality of Santa Barbara County.
Based on current monitoring data, Santa Barbara County is ~~will be~~ out of compliance with the state 8-hour standard. ~~when designations are made by the ARB.~~

TABLE 2-1
AMBIENT AIR QUALITY STANDARDS

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		California Standards[1]		National Standards[2]		
Pollutant	**Averaging Time**	**Concentration[3]**	**Attainment Status**	**Primary[2, 4]**	**Secondary[2, 5]**	**Attainment Status**
Ozone	8 Hour	0.070 ppm (137 ug/m^3)	**N[8]**	0.0758 ppm (147 ~~157~~ ug/m^3)	Same as Primary	A
	1 Hour	0.09 ppm (180 ug/m^3)	**A**	0.12 ppm[9] (235 ug/m^3)	Same as Primary	A
Carbon Monoxide	8 Hour	9.0 ppm (10 mg/m^3)	A	9.0 ppm (10 mg/m^3)	Same as Primary	A
	1 Hour	20.0 ppm (23 mg/m^3)	A	35.0 ppm (40 mg/m^3)		A
Nitrogen Dioxide[10]	Annual Average	0.03 ppm (56 µg/m^3)	A	0.053 ppm (100 ug/m^3)	Same as Primary	A
	1 Hour	0.18 ppm (339 µg/m^3)	A	--		-
Sulfur Dioxide	Annual Average	--	-	0.03 ppm (80 ug/m^3)		A
	24 Hour	0.04 ppm[6] (105 ug/m^3)	A	0.14 ppm (365 ug/m^3)	--	A
	3 Hour	--	-	--	0.5 ppm (1,300 ug/m^3)	A
	1 Hour	0.25 ppm (655 ug/m^3)	A	--	--	-
Respirable Particulate Matter (PM_{10})	Annual Arithmetic Mean	20 ug/m^3	**N**	--	--	
	24 Hour	50 ug/m^3	**N**	150 ug/m^3	Same as Primary	A
Fine Particulate Matter ($PM_{2.5}$)	Annual Arithmetic Mean	12 ug/m^3	U	15 ug/m^3	Same as Primary	U
	24 Hour	--	-	35 ug/m^3 [11]	Same as Primary	U
Sulfates	24 Hour	25 ug/m^3	A		--	-
Lead	Calendar Quarter	--	A	1.5 ug/m^3	Same as Primary	A
	30 Day Average	1.5 ug/m^3	-	0.15 ug/m^3	--	-
Hydrogen Sulfide	1 Hour	0.03 ppm (42 ug/m^3)	A		--	-
Vinyl Chloride (Chloroethene)	24 Hour	0.010 ppm (26 ug/m^3)	A		--	-
Visibility Reducing Particles[7]	8 Hour (1000 to 1800 PST)		A		--	-

TABLE 2-1 (CONCLUDED)

FOOTNOTES:

1) California standards for ozone, carbon monoxide, sulfur dioxide (1 hour), nitrogen dioxide and particulate matter - PM_{10}, and visibility reducing particles are values that are not to be exceeded. The sulfur dioxide (24-hour), sulfates, lead, hydrogen sulfide, and vinyl chloride are not to be equaled or exceeded.

2) National standards, other than ozone and those based on annual averages or annual arithmetic means are not to be exceeded more than once a year. The ozone standard is attained when the expected number of days per calendar year with maximum hourly average concentrations above the standard is equal to or less than one.

3) Concentration expressed first in units in which it was promulgated. Equivalent units given in parenthesis are based upon a reference temperature of 25°C and a reference pressure of 760 mm of mercury. All measurements of air quality are to be corrected to a reference temperature of 25°C and a reference pressure of 760 mm of mercury (1,013.2 millibar); ppm in this table refers to ppm by volume, or micromoles of pollutant per mole of gas.

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

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

6) At locations where the state standards for ozone and/or suspended particulate matter are violated. National standards apply elsewhere.

7) This standard is intended to limit the frequency and severity of visibility impairment due to regional haze and is equivalent to a 10-mile nominal visual range when relative humidity is less than 70 percent.

8) This state 8-hour ozone standard went into effect in June, 2006. Official designations have not yet been announced; our data indicate we will be considered in nonattainment of this standard.

9) This federal 1-hour ozone standard was revoked in 2005.

10) The state Nitrogen Dioxide ambient air quality standard was amended on February 22, 2007, to lower the 1-hour standard to 0.18 ppm and establish a new annual standard of 0.030 ppm. These changes become effective after regulatory changes are submitted and approved by the Office of Administrative Law, expected at the end of 2007.

11) Effective December 18, 2006, the USEPA revoked the annual PM10 standard and lowered the 24-hour PM2.5 standard, with the changes reflected in the table.

TABLE 2-2
NUMBER OF DAYS EXCEEDING STATE OZONE STANDARDS BY SITE AND COUNTYWIDE
1988 – 2008

		1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Carpinteria	State 8-Hour	26	22	8	10	16	19	15	13	18	9	3	2	7	3	0	3	5	0	0		
	State 1-Hour	10	14	5	8	9	6	11	7	8	4	3	1	1	1	0	1	0	0	0		
El Capitan	State 8-Hour	10	5	5	3	8	7	4	6	5	1	1	2	0	2	0	1	3	0	0	1	0
	State 1-Hour	0	3	2	2	6	3	2	5	4	0	1	0	0	0	0	1	1	0	0		
Goleta	State 8-Hour	14	10	7	9	12	12	5	10	8	4	1	1	0	0	0	1	2	0	0	0	0
	State 1-Hour	5	6	5	5	8	5	3	3	5	0	1	1	0	0	0	1	0	0	0		
Nojoqui	State 8-Hour	6	7	11	10	9	9	3	6	13	1	2	1	0	1	0	3	2	0	0	0	0
	State 1-Hour	4	5	4	7	5	5	2	3	5	1	0	0	1	0	0	1	0	0	0		
Las Flores Canyon	State 8-Hour	33	56	54	39	31	25	39	40	30	23	23	9	11	11	3	4	16	4	4		
	State 1-Hour	10	23	24	12	15	9	15	15	14	5	5	1	4	1	0	1	2	0	0	1	1
Lompoc HS&P	State 8-Hour	17	7	5	4	3	11	4	4	10	6	1	5	2	2	1	7	6	0	0	0	1
	State 1-Hour	4	5	1	3	1	3	1	1	3	0	1	0	1	0	0	1	1	0	0		
Lompoc H Street	State 8-Hour	3	2	1	1	3	2	0	2	2	0	0	0	0	0	1	0	1	0	0	0	1
	State 1-Hour	1	1	0	1	1	1	1	2	0	0	0	0	0	0	0	0	0	0	0		
Paradise Road	State 8-Hour	76	70	61	85	44	38	20	22	40	23	34	24	30	28	32	35	15	10	10	9	2
	State 1-Hour	24	20	10	22	12	7	5	6	10	3	11	3	0	4	3	6	0	0	0		
Santa Ynez	State 8-Hour	11	8	5	4	11	8	9	7	14	3	2	1	0	2	1	6	3	1	1	2	3
	State 1-Hour	3	6	0	3	4	1	1	1	4	1	2	0	0	1	0	0	0	0	0		
Vandenberg STS	State 8-Hour	2	9	8	3	7	10	3	5	6	1	2	2	0	0	1	5	5	0	0	2	2
	State 1-Hour	0	3	3	2	1	1	0	1	2	0	0	1	0	0	0	0	0	0	0		
Countywide	State 8-Hour	97	98	87	97	64	55	50	57	57	42	48	31	37	34	35	40	19	13	13	19	12
	State 1-Hour	42	39	37	37	25	18	22	24	23	10	15	3	6	5	3	7	2	0	0		

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Figure 2-1
Santa Barbara County Air Quality Monitoring Stations

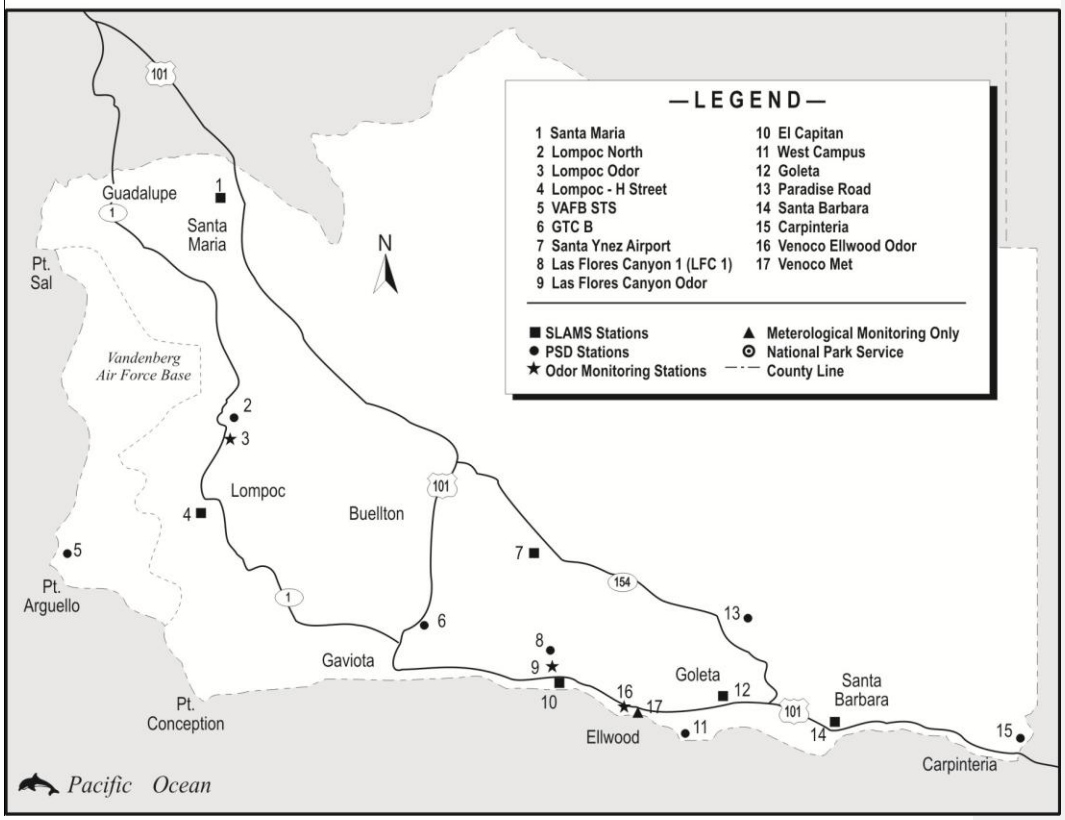

FIGURE 2-2A
NUMBER OF DAYS EXCEEDING STATE 1-HOUR AND 8-HOUR OZONE STANDARDS
SANTA BARBARA COUNTY
1988 - 2008

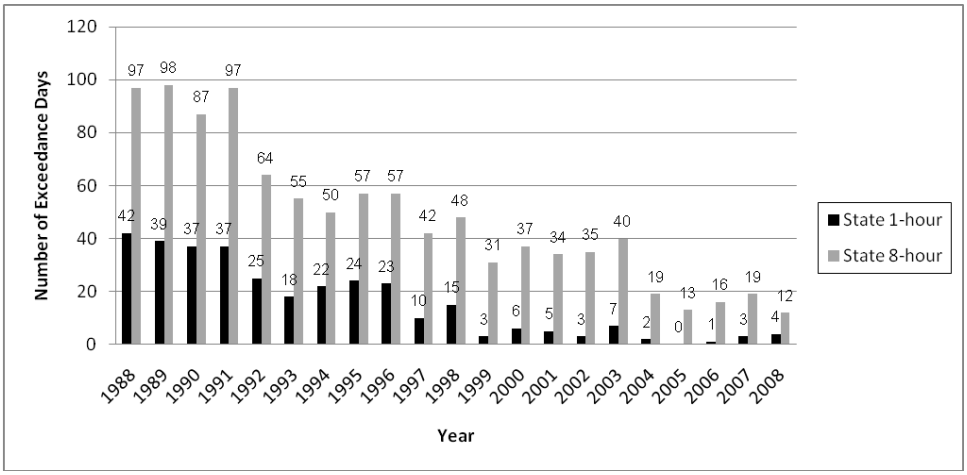

FIGURE 2-2B
POPULATION AND DAILY VEHICLE MILES TRAVELED
SANTA BARBARA COUNTY
1988 - 2007

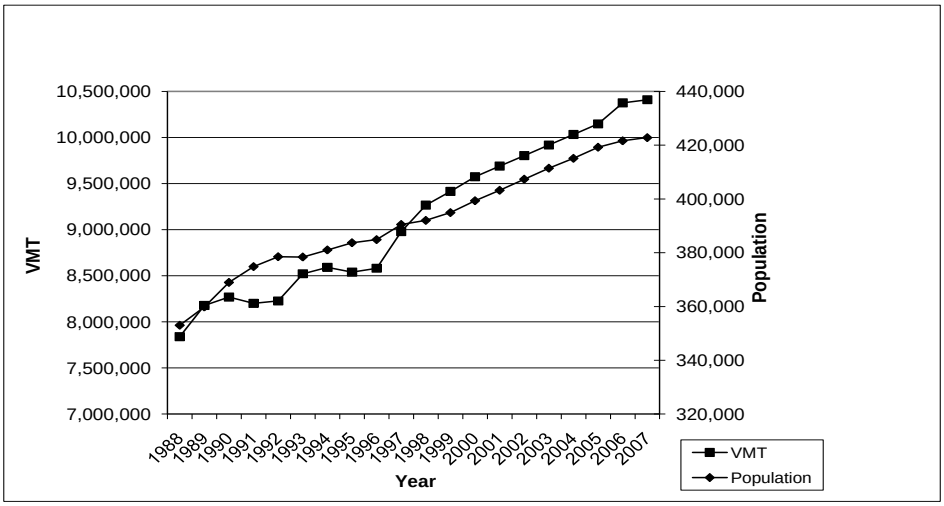

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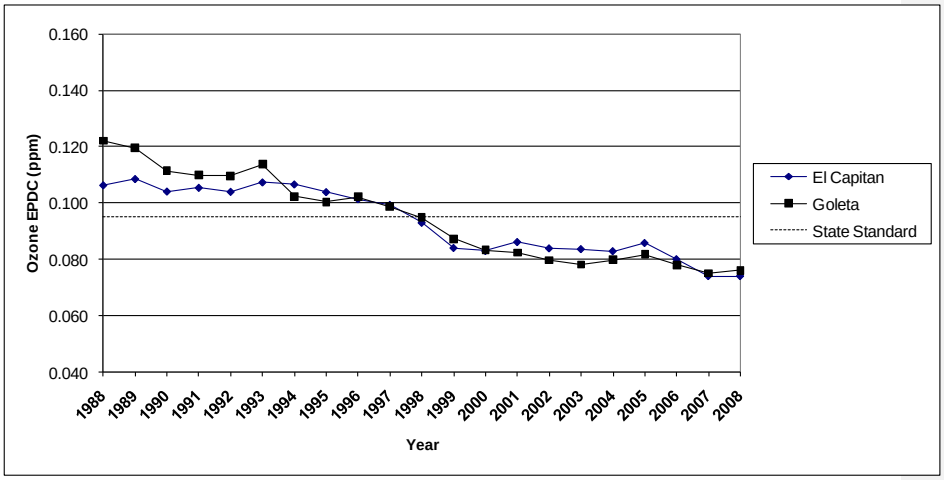
FIGURE 2-3
STATE 1-HOUR OZONE EXPECTED PEAK DAY CONCENTRATION
SANTA BARBARA COUNTY MONITORING SITES
1988 - 2008



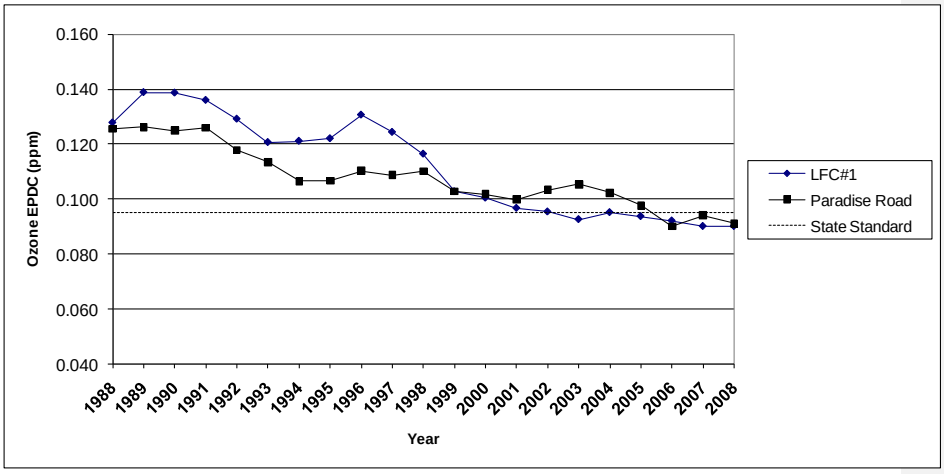


FIGURE 2-3 CONCLUDED
STATE 1-HOUR OZONE EXPECTED PEAK DAY CONCENTRATION
SANTA BARBARA COUNTY MONITORING SITES
1988 – 2008

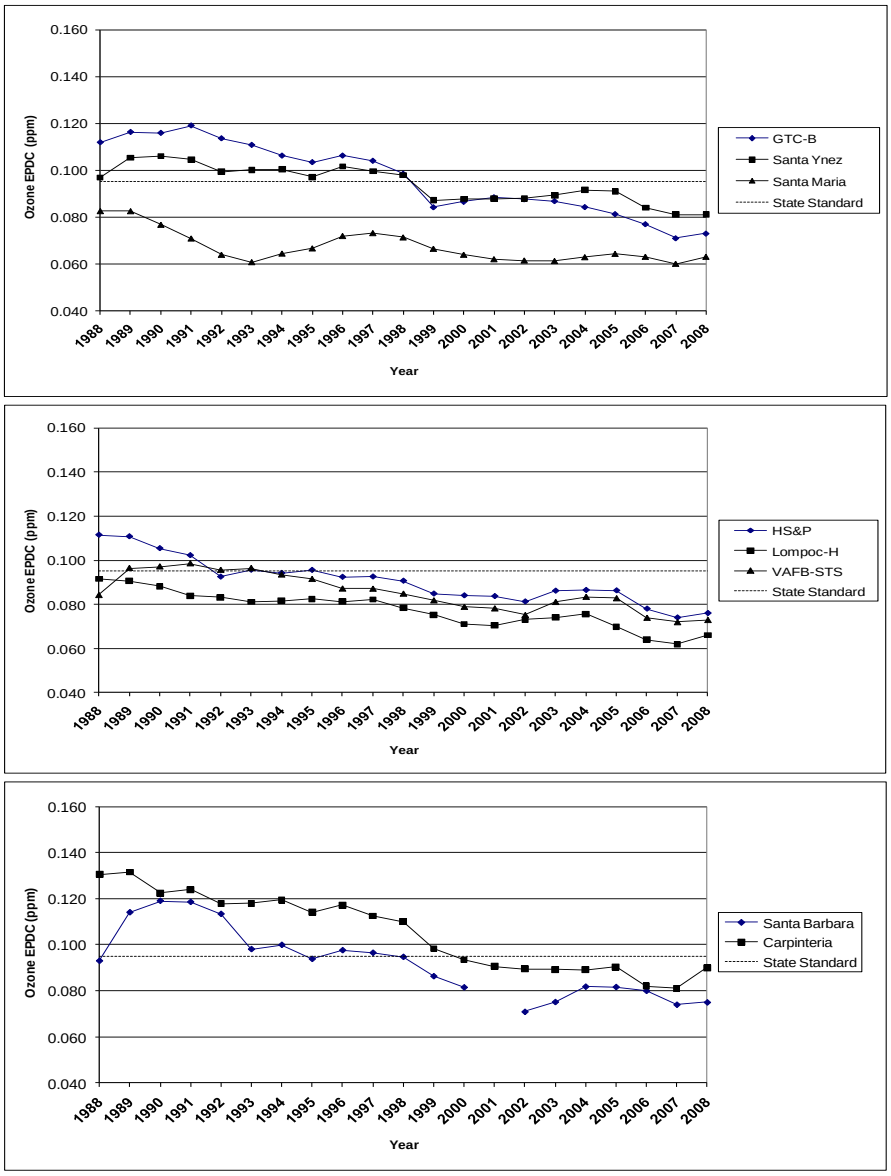
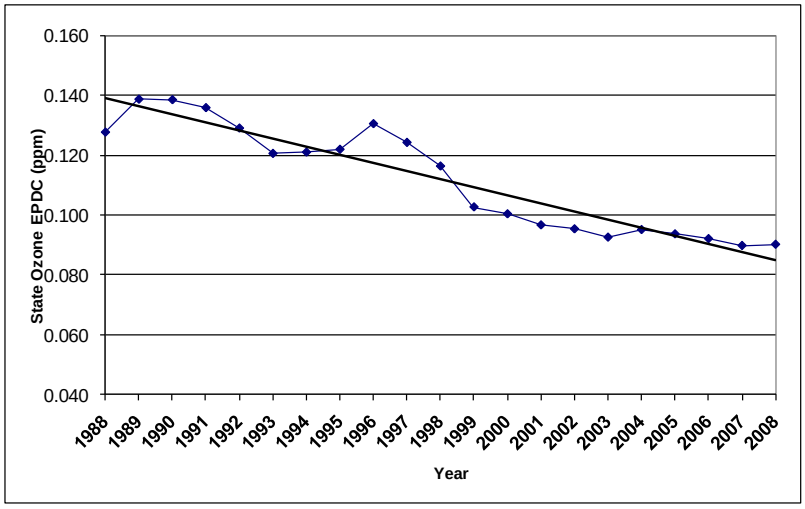


FIGURE 2-4

PEAK "HOT SPOT" 1- HR EPDC TRENDS
1988 – 2008

LAS FLORES CANYON



PARADISE ROAD

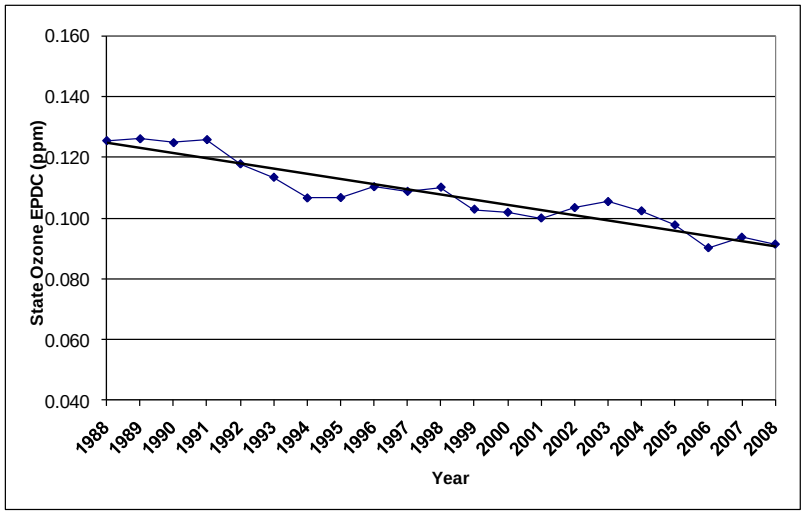
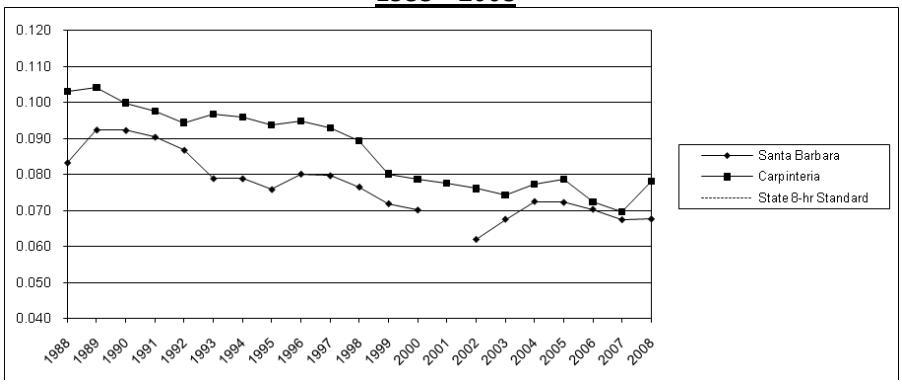
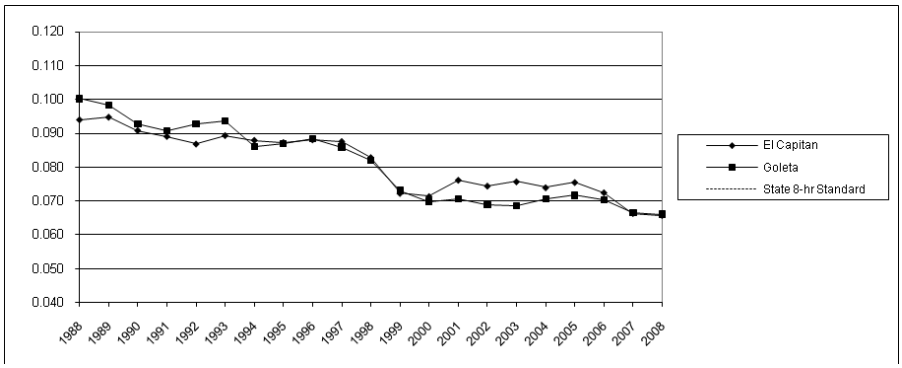


FIGURE 2-5
STATE 8-HOUR OZONE EXPECTED PEAK DAY CONCENTRATION
SANTA BARBARA COUNTY MONITORING SITES
1988 – 2008





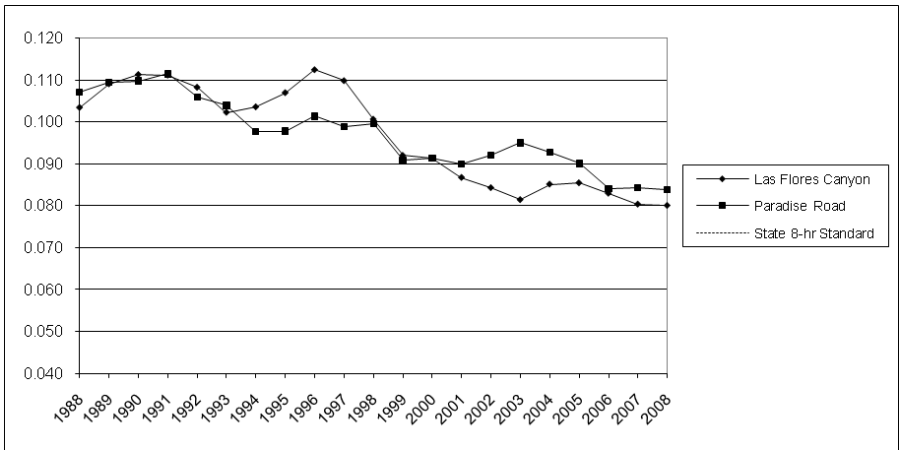
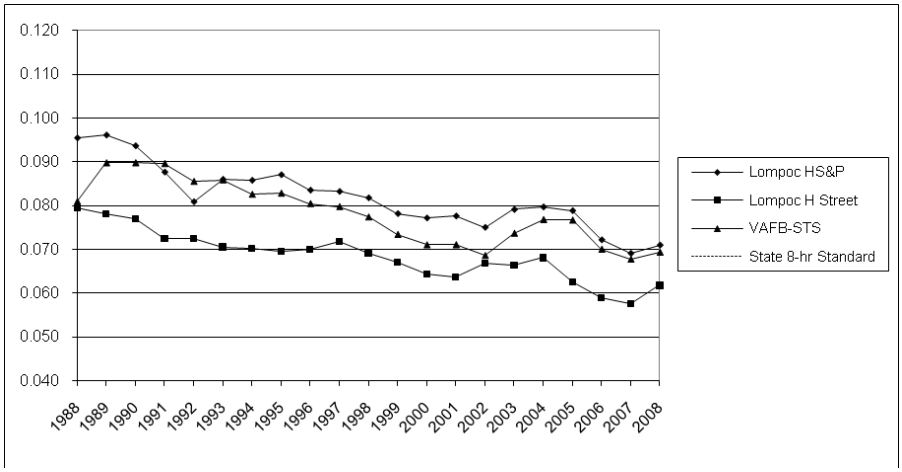


FIGURE 2-5 CONCLUDED
STATE 8-HOUR OZONE EXPECTED PEAK DAY CONCENTRATION
SANTA BARBARA COUNTY MONITORING SITES
1988 – 2008



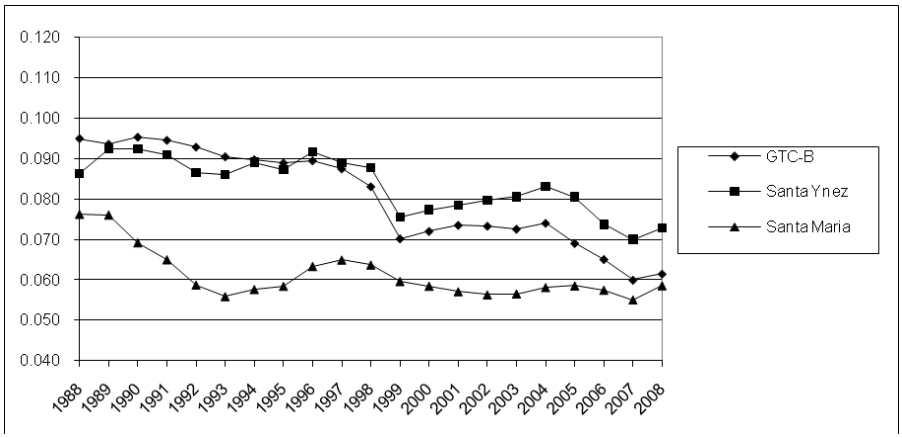
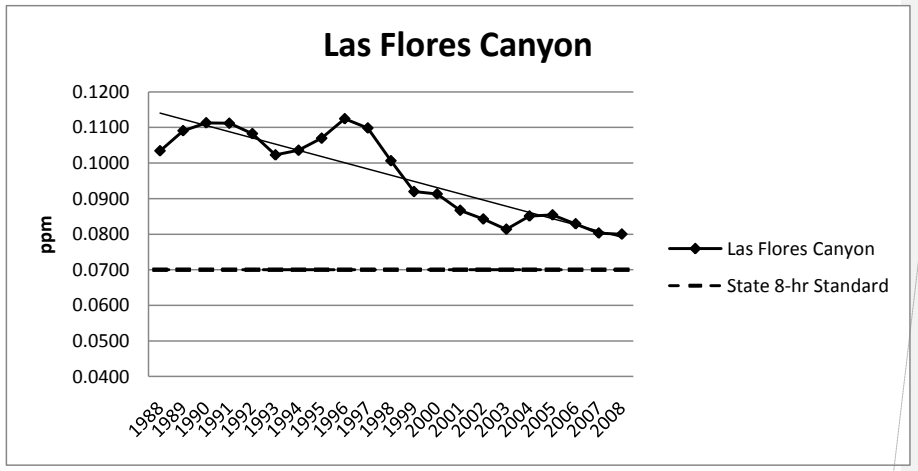


FIGURE 2-6

PEAK "HOT SPOT" 8- HR EPDC TRENDS
1988 – 2008



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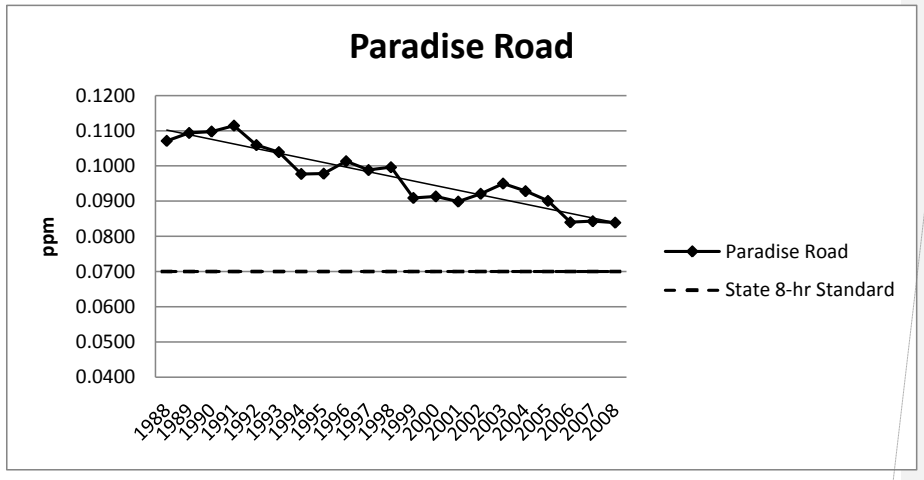

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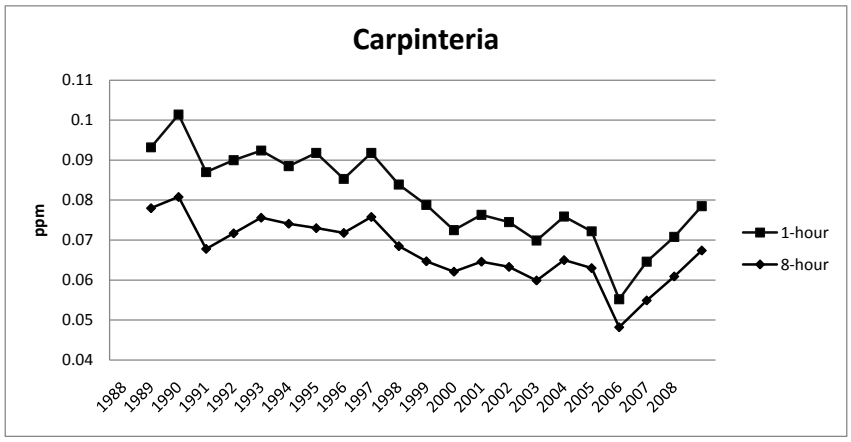
FIGURE 2-7
MEAN OF HIGHEST 30 1-HR AND 8-HR CONCENTRATIONS
1988-2008



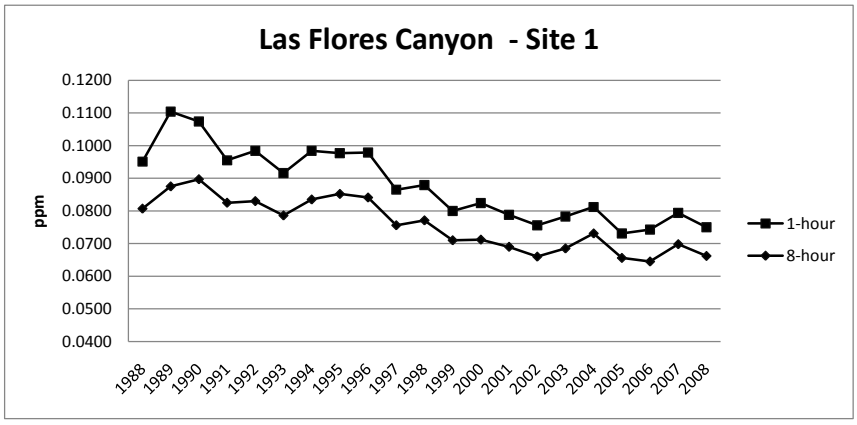


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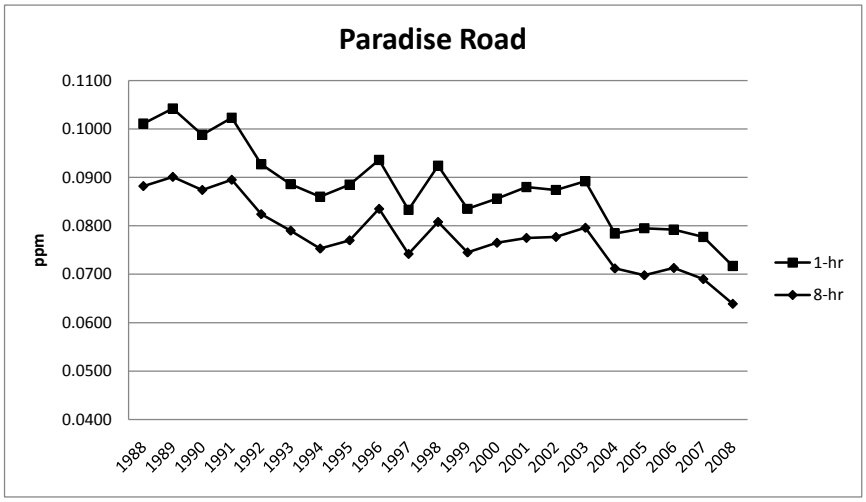
FIGURE 2-7 CONCLUDED
MEAN OF HIGHEST 30 1-HR AND 8-HR CONCENTRATIONS
1988-2008



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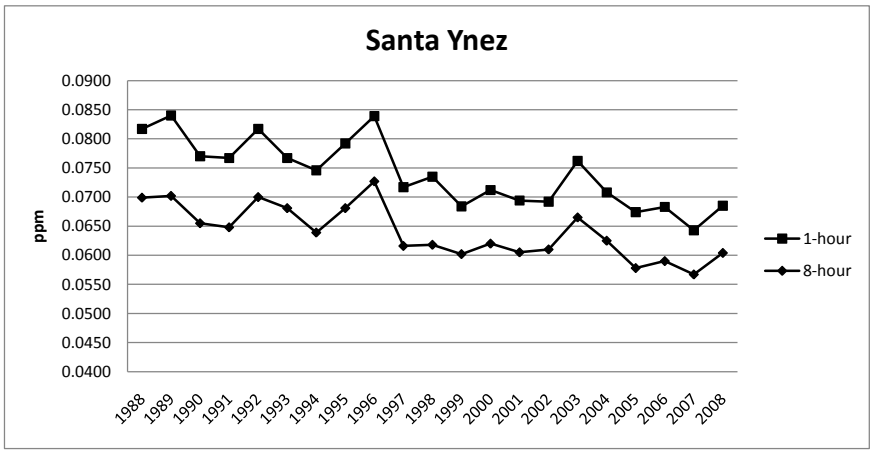

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FIGURE 2-8
MEAN OF HIGHEST 30 1-HR AND 8-HR CONCENTRATIONS
PERCENT IMPROVEMENT FROM 1988 TO 2008
ALL SITES

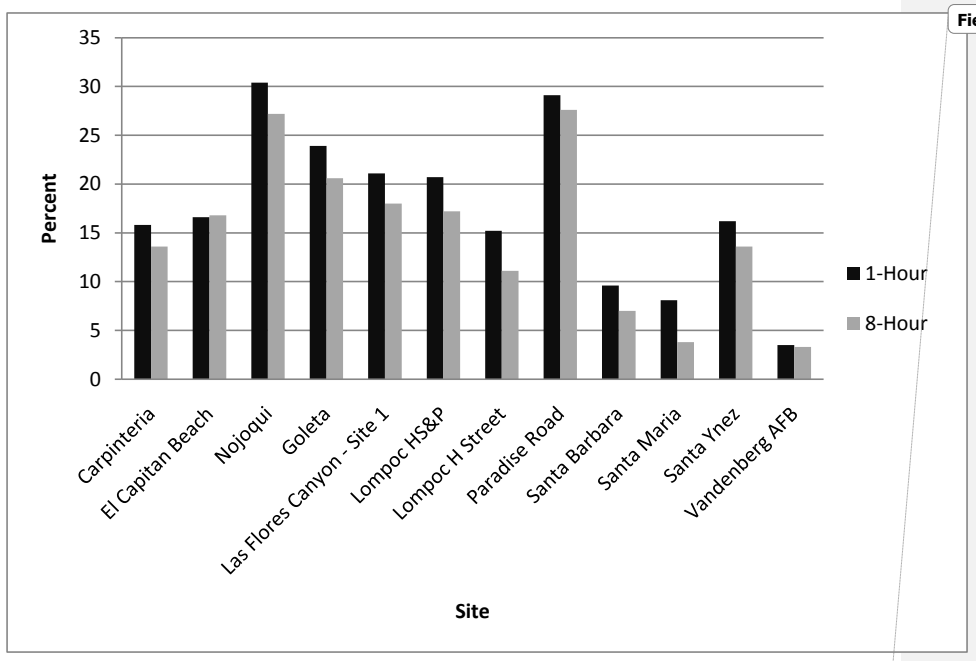

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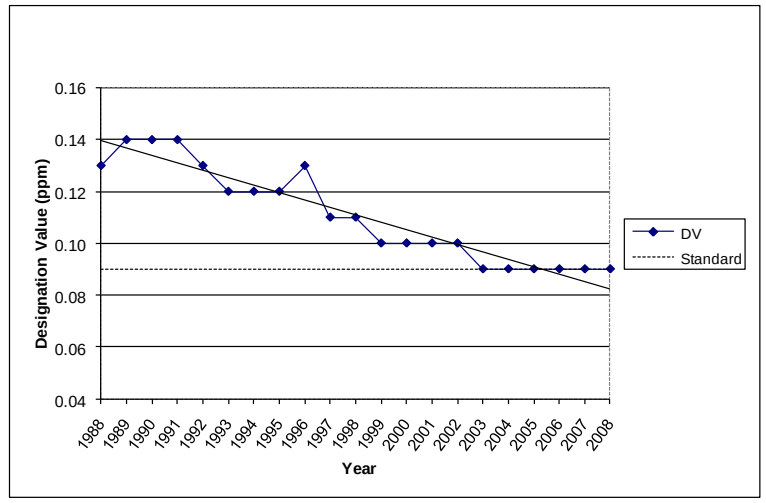
FIGURE 2-9
1988 – 2008 1-HOUR DESIGNATION VALUES
LAS FLORES CANYON AND PARADISE ROAD

LAS FLORES CANYON



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PARADISE ROAD

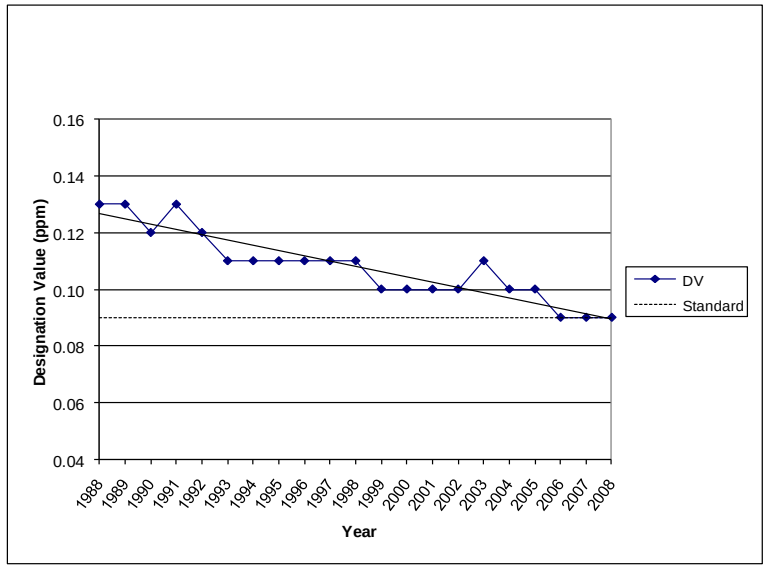

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FIGURE 2-10
1988 – 2008 STATE 8-HOUR OZONE DESIGNATION VALUES
ALL SITES

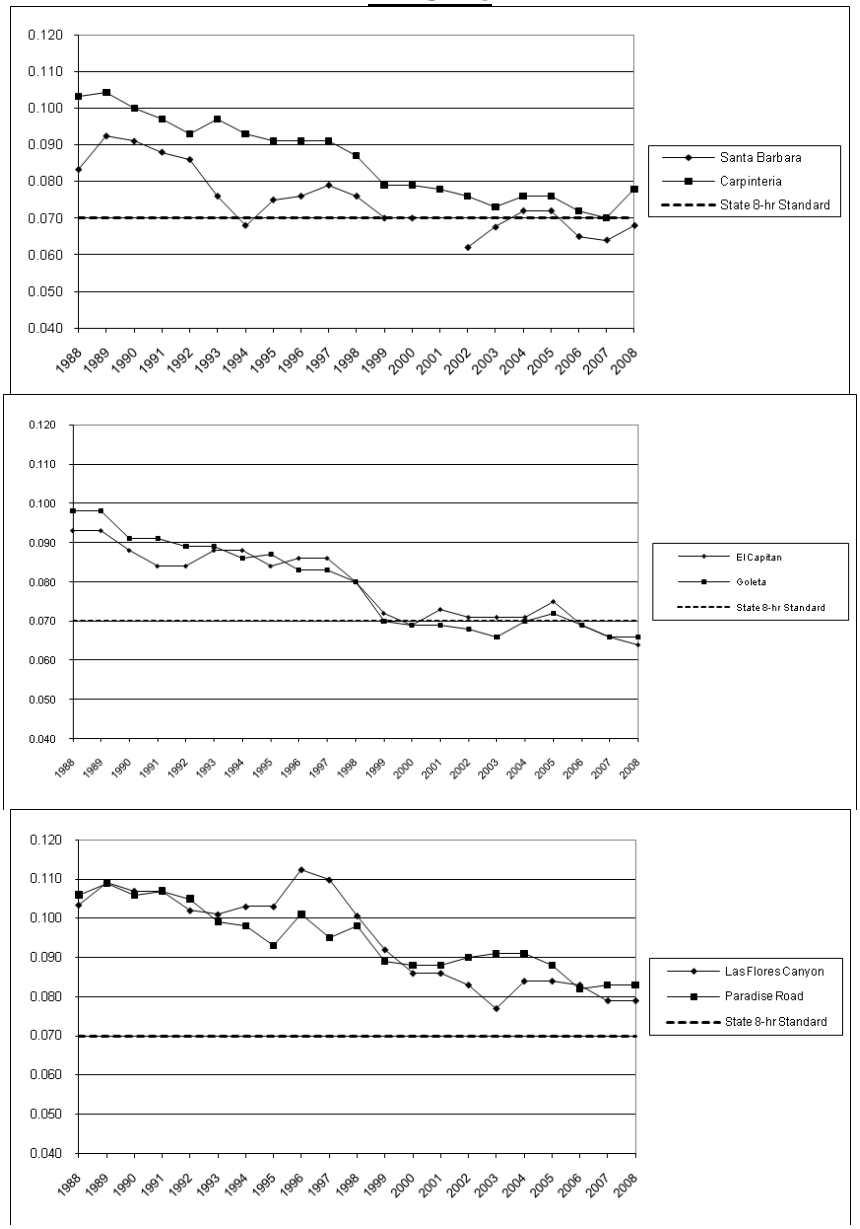

FIGURE 2-10 CONCLUDED
1988 – 2008 STATE 8-HOUR OZONE DESIGNATION VALUES
ALL SITES