

Chapter 7
**Current and Future Air Quality –
Desert Nonattainment Areas**

South Coast Air Quality Management District
Cleaning the air that we breathe...™



CHAPTER 7

CURRENT AND FUTURE AIR QUALITY – DESERT NONATTAINMENT AREAS

Introduction

Air Quality Setting

Future Air Quality

Conclusions

INTRODUCTION

The District has jurisdiction over the South Coast Air Basin and the desert portion of Riverside County in the Salton Sea Air Basin. Figure 7-1 shows a map of the area and topography. The Coachella Valley, located in the desert portion of Riverside County does not exceed the federal standard for PM_{2.5}. However, it exceeds the PM₁₀ federal standard on days when high wind events cause transport of windblown dust from both disturbed and natural desert areas (these days can be flagged as exceptional events¹ under U.S. EPA regulations). Also, the Coachella Valley exceeds the federal 8-hour ozone standards, both the 1997 standard (0.08 ppm, or 80 ppb) and the lower 2008 standard (0.075 ppm, or 75 ppb). For both ozone standards, the Coachella Valley is classified as a “severe” ozone nonattainment area. This chapter summarizes the current air quality setting for the Coachella Valley and the most recent updates to the attainment status.

While the 2007 AQMP addressed and satisfied the Clean Air Act (CAA) planning requirements for the Coachella Valley, the 2012 AQMP specifically addresses CAA planning requirements for the 24-hour PM_{2.5} standard in the South Coast Air Basin and not in the Coachella Valley, which is designated by U.S. EPA as unclassifiable/attainment of this standard. Since the Coachella Valley is not in attainment of the federal 8-hour ozone standards, this chapter will address the current status of ozone air quality and provide the latest projections of future ozone levels, based on the latest emissions inventories and modeling efforts. However, the 2007 AQMP adequately addressed and satisfied the CAA planning requirements for ozone in the Coachella Valley, and this chapter is for information only. This AQMP confirms that with the latest emissions and modeling projections, the strategy toward attainment of the federal ozone standards in the Coachella Valley remains effective.

On April 18, 2003, U.S. EPA approved the Coachella Valley State Implementation Plan (2003 CVSIP), which addressed future year attainment of the PM₁₀ standards and incorporated the latest mobile source emissions model results and planning assumptions. Over the past five years, annual average PM₁₀ concentrations have met the levels of the revoked federal annual standard (50 µg/m³), and peak 24-hour

¹The U.S. EPA Exceptional Events Rule, *Treatment of Data Influence by Exceptional Events*, became effective May 21, 2007. The previous U.S. EPA *Natural Events Policy* for Particulate Matter was issued on May 30, 1996. Under the Exceptional Events Rule, U.S. EPA allows certain data to be flagged in the U.S. EPA Air Quality System (AQS) database and not considered for NAAQS attainment status when that data is influenced by exceptional events, such as high winds, wildfires, volcanoes, or some cultural events (Independence Day fireworks) that meet strict requirements.

average PM10 concentrations have not exceeded the current federal standard (150 µg/m³). The Coachella Valley is currently eligible for redesignation as attainment (after high-wind natural events were flagged under the Exceptional Events Rule). Requests have been made to U.S. EPA to redesignate the Coachella Valley and South Coast Air Basin as attainment for PM10; the redesignations are still pending at this time². Since the 2012 AQMP does not include new modeling efforts for PM10, future projections for Coachella Valley PM10 levels in the 2003 CVSIP are still applicable.

Like the South Coast Air Basin, the Coachella Valley is a rapidly growing area, as shown in Table 7-1. By 2030, the population in the Coachella Valley is projected to more than double that of 2000. On a percentage basis, the Coachella Valley growth exceeds that of the Basin. This population growth is taken into account in the emissions projections for future years, used to demonstrate attainment of the air quality standards.

TABLE 7-1

Historic Population and Projections for South Coast Air Basin and Coachella Valley

AREA	1980	1990	2000	2010	2020	2030
South Coast Air Basin	10,500,000	13,022,000	14,681,000	15,759,412	16,901,492	18,129,690
Coachella Valley	139,000	267,000	320,892	439,357	558,321	710,430

² U.S. EPA has requested additional temporary PM10 monitoring in the southeastern Coachella Valley to further assess windblown dust in that area; this project is currently ongoing.

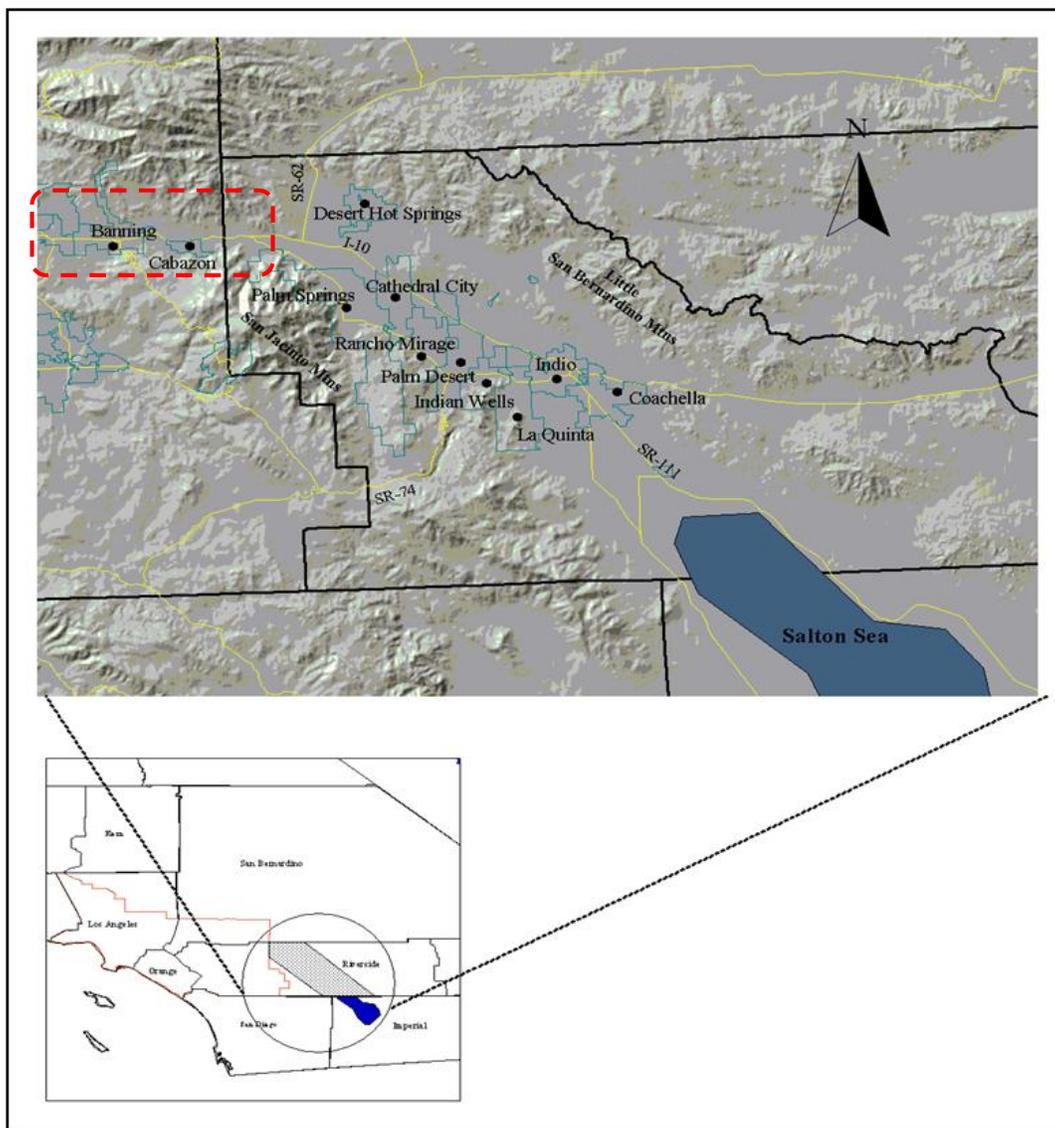


FIGURE 7-1

Location and Topography of the Coachella Valley (Dashed red box indicates the San Geronio Pass; SCAQMD Coachella Valley air monitoring stations at Palm Springs and Indio)

AIR QUALITY SETTING

Air Quality Summary

In 2011, the District monitored air quality at two permanent locations in the Riverside county portion of the Salton Sea Air Basin (SSAB), both in the Coachella Valley. One air monitoring station (Palm Springs) is located closer to the San Geronio Pass, predominantly downwind of the densely populated Basin. The other station (Indio)

is located further into the Coachella Valley, on the predominant downwind side of the main population areas of the Coachella Valley. A summary of the recent and historic air pollution data collected in the Coachella Valley is included in Appendix II. Information on the health effects associated with criteria air pollutants are summarized in Chapter 2 and detailed in Appendix I.

Attainment Status

In 2011, air pollutant concentrations in the Coachella Valley exceeded state and federal standards for both ozone and PM10. However, the two days that exceeded the federal 24-hour PM10 standard were associated with high-wind natural events and have been flagged in the U.S. EPA Air Quality System (AQS) database to be excluded for comparison to the National Ambient Air Quality Standards (NAAQS), as allowed by the U.S. EPA Exceptional Events Rule. After application of the U.S. EPA Exceptional Event Rule (and its predecessor, the Natural Events Policy) to high wind natural events in the Coachella Valley, no days since the mid-1990s have exceeded the federal 24-hour PM10 standard at Indio or Palm Springs. As a result, the District requested that U.S. EPA redesignate the Coachella Valley from nonattainment to attainment of the PM10 NAAQS. Further action by U.S. EPA on this request is still pending. The current federal NAAQS attainment designations for the Coachella Valley are presented in Table 7-2.

The maximum concentrations of ozone, PM2.5, PM10, nitrogen dioxide (NO₂), carbon monoxide (CO), and sulfate (SO₄²⁻) recorded at these locations in 2011 are shown in Figure 7-2, as percentages of the state and federal standards. Figure 7-3 shows the Coachella Valley design value³ for ozone, PM2.5 and PM10 for the 3-year period 2009-2011, as percentages of the current and revoked federal standards.

³ A design value is a statistic that describes the air quality status of a given area relative to the level and form of the National Ambient Air Quality Standards (NAAQS). For most criteria pollutants, the design value is a 3-year average and takes into account the form of the short-term standard (e.g., 98th percentile, fourth high value, etc.).

TABLE 7-2

National Ambient Air Quality Standards (NAAQS) Attainment Status
Coachella Valley Portion of the Salton Sea Air Basin

CRITERIA POLLUTANT	AVERAGING TIME	DESIGNATION ^{a)}	ATTAINMENT DATE ^{b)}
1979 1-Hour Ozone ^{c)}	1-Hour (0.12 ppm)	Nonattainment (Severe-17)	11/15/2007 (not timely attained) ^{c)}
1997 8-Hour Ozone ^{d)}	8-Hour (0.08 ppm)	Nonattainment (Severe-15)	6/15/2019
2008 8-Hour Ozone	8-Hour (0.075 ppm)	Nonattainment (Severe-15)	12/31/2027
CO	1-Hour (35 ppm) 8-Hour (9 ppm)	Unclassifiable/Attainment	Unclassifiable/Attainment
NO₂ ^{e)}	1-Hour (100 ppb)	Unclassifiable/Attainment	Unclassifiable/Attainment
	Annual (0.053 ppm)	Unclassifiable/Attainment	Unclassifiable/Attainment
SO₂ ^{f)}	1-Hour (75 ppb)	Designations Pending	Designations Pending
	24-Hour (0.14 ppm) Annual (0.03 ppm)	Unclassifiable/Attainment	Unclassifiable/Attainment
PM₁₀	24-hour (150 µg/m ³)	Nonattainment (Serious) ^{g)}	12/31/2006 (redesignation request submitted) ^{g)}
PM_{2.5}	24-Hour (35 µg/m ³) Annual (15.0 µg/m ³)	Unclassifiable/Attainment	Unclassifiable/Attainment
Lead	3-Months Rolling (0.15 µg/m ³)	Unclassifiable/Attainment	Unclassifiable/Attainment

- a) U.S. EPA often only declares Nonattainment areas; everywhere else is listed as Unclassifiable/Attainment or Unclassifiable
- b) A design value below the NAAQS for data through the full year or smog season prior to the attainment date is typically required for attainment demonstration
- c) 1-hour ozone standard (0.13 ppm) was revoked, effective June 15, 2005; the Southeast Desert Modified Air Quality Management Area, including the Coachella Valley, did not attain this standard based on 2005-2007 data and has some continuing obligations under the former standard (latest 2009-2011 data shows attainment)
- d) 1997 8-hour ozone standard (0.08 ppm) was reduced (0.075 ppm), effective May 27, 2008; the 1997 ozone standard and most related implementation rules remain in place until the 1997 standard is revoked by U.S. EPA
- e) New NO₂ 1-hour standard, effective August 2, 2010; attainment designations January 20, 2012; annual NO₂ standard retained
- f) The 1971 Annual and 24-hour SO₂ standards were revoked, effective August 23, 2010; however, these 1971 standards will remain in effect until one year after U.S. EPA promulgates area designations for the 2010 SO₂ 1-hour standard. Area designations expected in 2012 with Unclassifiable /Attainment designation likely for SSAB Coachella Valley
- g) Annual PM₁₀ standard was revoked, effective December 18, 2006; redesignation request to Attainment of the 24-hour PM₁₀ standard is pending with U.S. EPA

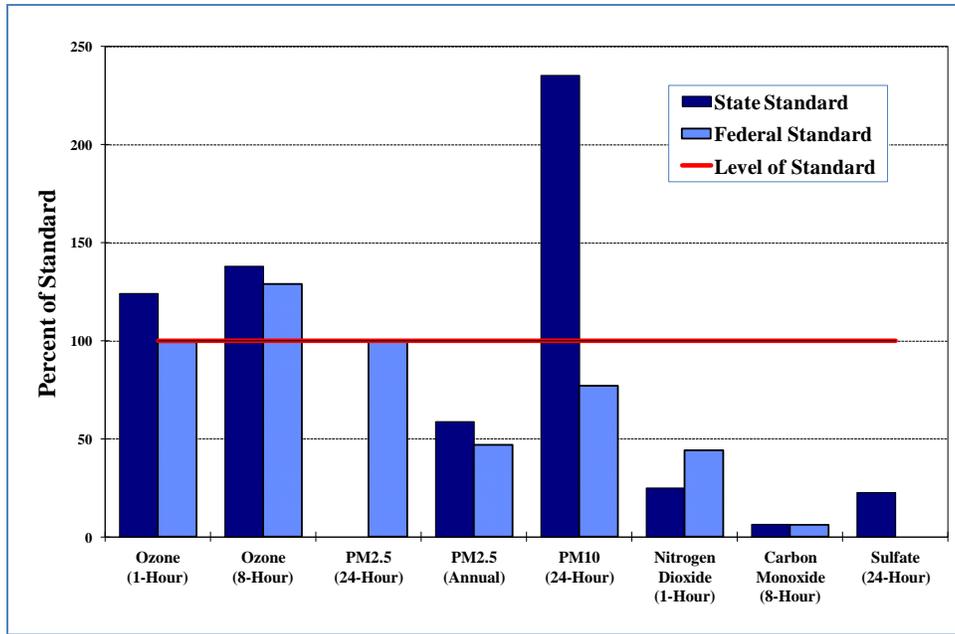


FIGURE 7-2

Coachella Valley 2011 Maximum Pollutant Concentrations as Percent of State and Federal Standards

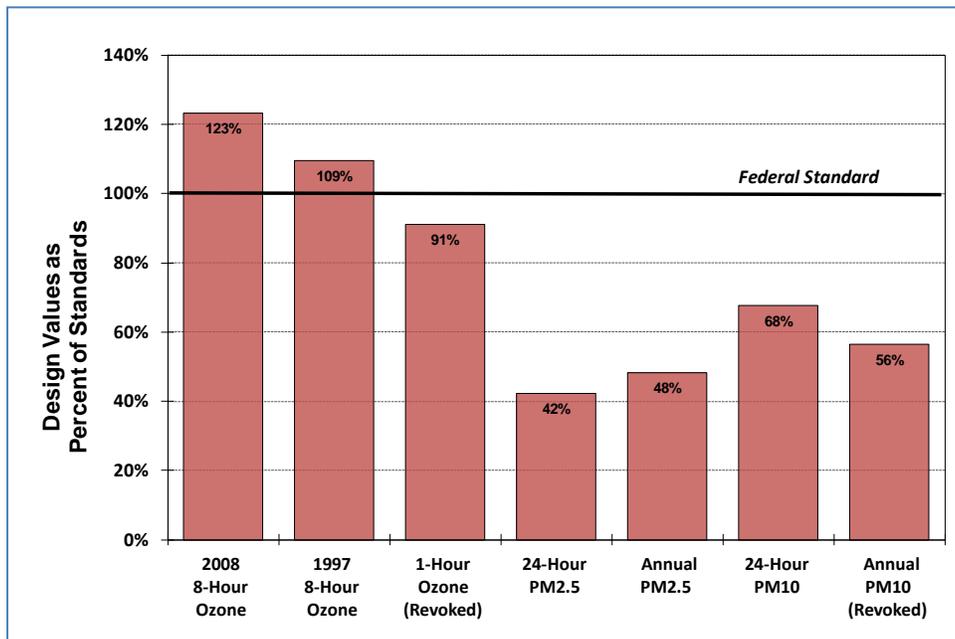


FIGURE 7-3

Coachella Valley 3-Year (2009-2011) Design Values as Percent of Federal Standards

PM10

PM10 is measured daily at both Indio and Palm Springs by supplementing the (primary) 1-in-3-day Federal Reference Method (FRM) filter sampling at Indio and the 1-in-6-day FRM sampling at Palm Springs with (secondary) continuous hourly Federal Equivalent Method (FEM) measurements at both stations.

Although exceedances of the ozone standard in the Coachella Valley area are due to the transport of ozone from the densely populated areas of the upwind Basin, the same cannot be said for PM10 exceedances. PM10 in the Coachella Valley is primarily due to locally generated sources of fugitive dust (e.g., construction activities, re-entrained dust from paved and unpaved road travel, and natural wind-blown sources) and not as a result of secondary PM generated from precursor gaseous emissions. The Coachella Valley is subject to frequent high winds that generate wind-blown sand and dust, leading to high episodic PM10 concentrations, especially from disturbed soil and natural desert blowsand areas. PM10 is the only pollutant which has sometimes reached higher concentrations in the SSAB than in the Basin. On some of the high days, transport of wind-generated dust and sand occurs with relatively light winds in the Coachella Valley, when deeply entrained dust from desert thunderstorm outflows travels to the Coachella Valley from the desert areas of southeastern California, Arizona, Nevada or northern Mexico. All days in recent years that exceeded the 24-hour federal PM10 standard at Indio or Palm Springs would not have exceeded except for the contribution of windblown dust and sand due to strong winds in the upwind source area (high-wind natural events).

In 2011, two high-wind exceptional events occurred in the Coachella Valley that caused high 24-hour PM10 concentrations (397 and 344 $\mu\text{g}/\text{m}^3$, at Palm Springs and Indio, respectively on July 3; 375 and 265 $\mu\text{g}/\text{m}^3$ at Indio and Palm Springs, respectively on August 28). Both of these days had high PM10 due to strong outflows from thunderstorms over Arizona and northern Mexico that deeply entrained dust and sand and transported it to the Coachella Valley. They have been flagged as high-wind exceptional events in accordance with the U.S. EPA Exceptional Events Rule, with further documentation and U.S. EPA concurrence pending. After flagging these high-wind natural events, the federal 24-hour and former annual PM10 standards were not exceeded in the Riverside County part of the SSAB in 2011. Therefore, the maximum 24-hour and annual average PM10 concentrations were 120 $\mu\text{g}/\text{m}^3$ and 32.6 $\mu\text{g}/\text{m}^3$, 77 percent and 65 percent of the current 24-hour federal PM10

standard ($150 \mu\text{g}/\text{m}^3$) and the revoked annual federal standard ($50 \mu\text{g}/\text{m}^3$), respectively.

When considering the form of the federal PM10 standards, after taking the exceptional events into account, the 3-year (2009-2011) design values for the Coachella Valley are 68 percent of the 24-hour PM10 NAAQS and 56 percent of the revoked annual PM10 NAAQS. For the year 2011 and without the two exceptional events included, the Coachella Valley maximum 24-hour average PM10 concentration ($120 \mu\text{g}/\text{m}^3$) was 77 percent of the federal 24-hour PM10 standard ($150 \mu\text{g}/\text{m}^3$) and 238 percent of the state 24-hour standard ($50 \mu\text{g}/\text{m}^3$). The annual average PM10 concentration ($32.6 \mu\text{g}/\text{m}^3$) was 65 percent of the revoked federal annual PM10 standard ($50 \mu\text{g}/\text{m}^3$) and 151 percent of the state annual PM10 standard ($20 \mu\text{g}/\text{m}^3$).

In 2011, the state 24-hour PM10 standard ($50 \mu\text{g}/\text{m}^3$) was exceeded on a maximum of 19 days (21 days if the high-wind events are included) in the Coachella Valley, which is 5.2 percent of the sampling days (FRM and FEM data combined). The state annual standard ($20 \mu\text{g}/\text{m}^3$) was also exceeded. The maximum annual average PM10 concentration was 151 percent of the state standard. Figure 7-4 shows the trend of the annual average PM10 concentrations in the Coachella Valley for the station showing the highest PM10 measurements from 1990 through 2011.

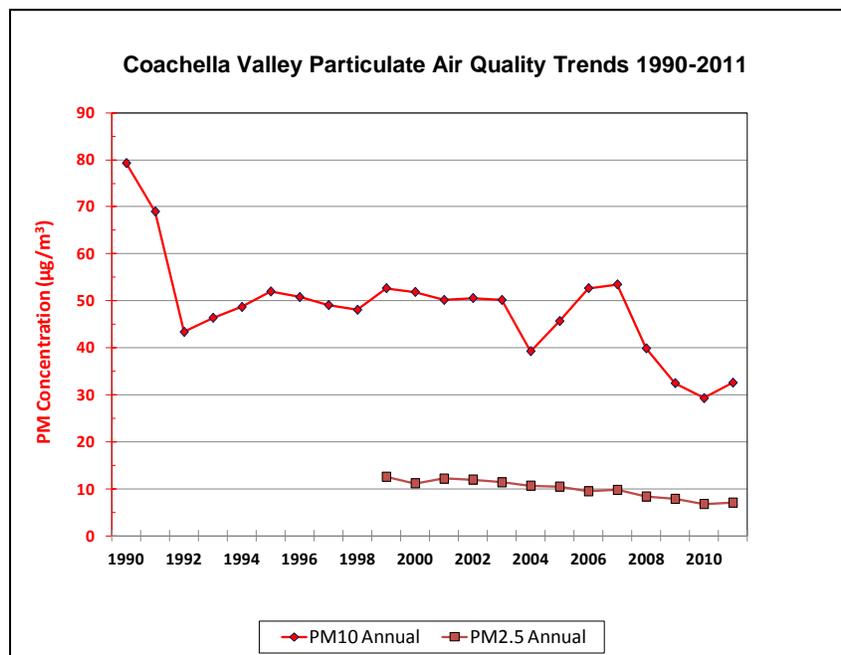


FIGURE 7-4

Coachella Valley Trend of Annual Average PM2.5 and PM10, 1990-2011

PM2.5

PM2.5 has been measured in Coachella Valley since 1999, when the District began PM2.5 monitoring. It has remained relatively low compared to the South Coast Air Basin due to fewer combustion sources and the increased vertical mixing and horizontal dispersion in the desert area. In 2011, federal PM2.5 standards (35 $\mu\text{g}/\text{m}^3$ 24-hour and 15.0 $\mu\text{g}/\text{m}^3$ annual) were not exceeded at either of the two Coachella Valley air-monitoring sites. The Coachella Valley maximum 24-hour average and annual average concentrations recorded in 2011 (35.4 $\mu\text{g}/\text{m}^3$ and 7.2 $\mu\text{g}/\text{m}^3$) were, respectively, 99.7 percent and 48 percent of the federal 24-hour and annual standards. While not technically exceeding the 24-hour federal standard (with rounding, a value of at least 35.5 is needed to exceed the NAAQS), the relatively high 24-hour concentration of 35.4 $\mu\text{g}/\text{m}^3$ was unusual for the Coachella Valley and occurred at Indio on one of the exceptional event days that had extremely high PM10. The second highest 24-hour PM2.5 average for the Coachella Valley was 26.3 $\mu\text{g}/\text{m}^3$ (74 percent of the federal standard), at Palm Springs. When looking at the 3-year design value (2009-2011) that considers the form of the federal standard, the Coachella Valley PM2.5 design value is 42 percent of the PM2.5 24-hour standard and 48 percent of the annual standard.

The annual PM2.5 state standard (12.0 $\mu\text{g}/\text{m}^3$) was not exceeded in the Coachella Valley, with the maximum annual average of 7.2 $\mu\text{g}/\text{m}^3$ (at Palm Springs) at 60 percent of the standard. This gives insight that the Coachella Valley will also be in attainment of the proposed new annual PM2.5 federal standard that will be between 12.0 and 13.0 $\mu\text{g}/\text{m}^3$ (proposed June 14, 2012). Figure 7-4 (above) shows the trend of the annual average PM2.5 concentrations in the Coachella Valley for the station measuring the highest PM2.5 from 1990 through 2011.

Ozone (O₃)

Atmospheric ozone in the Riverside county portion of SSAB is both directly transported from the Basin and formed photochemically from precursors emitted upwind. These precursors are emitted in greatest quantity in the coastal and central Los Angeles County areas of the Basin. The Basin's prevailing sea breeze causes polluted air to be transported inland. As the air is being transported inland, ozone is formed, with peak concentrations occurring in the inland valleys of the Basin, extending from eastern San Fernando Valley through the San Gabriel Valley into the Riverside-San Bernardino area and the adjacent mountains. As the air is transported

still further inland into the desert areas, ozone concentrations typically decrease due to dilution, although ozone standards can be exceeded.

In 2011, the former 1-hour federal ozone standard level was not exceeded in the Coachella Valley. The maximum 1-hour concentration measured was 0.124 ppm, just below (99 percent) the former 1-hour federal standard (0.125 ppm is required to exceed). The 1997 8-hour federal ozone standard (0.08 ppm) was exceeded on 18 days. The most recent (2008) and more stringent 8-hour federal standard (0.075 ppm) was exceeded on 54 days. The maximum 8-hour ozone concentration was 0.098 ppm (129 percent of the 2008 standard and 115 percent of the 1997 standard). Ozone concentrations and the number of days exceeding the federal ozone standard are greatest in summer, with no exceedances during the winter months.

The 1-hour and 8-hour state ozone standards were exceeded on 25 days and 78 days, respectively, in the Coachella Valley in 2011. The 1-hour ozone health advisory level (0.15 ppm) has not been exceeded in the Coachella Valley area since 1999. No 1-hour Stage 1 episode levels (0.20 ppm) have been recorded in the Coachella Valley area since 1989.

Figure 7-5 shows the trend of the annual highest ozone concentrations (1-hour and 8-hour averages) measured in the Coachella Valley between 1990 and 2011. Figure 7-6 shows the annual number of days exceeding federal ozone standards at Coachella Valley monitoring sites for the years 1990-2011.

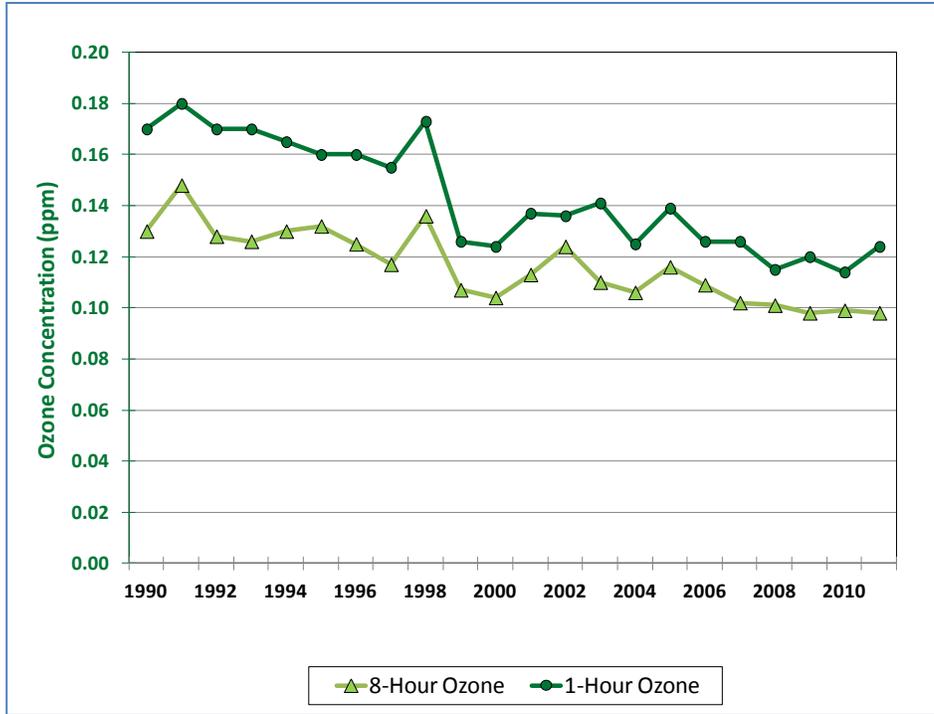


FIGURE 7-5

Trends of Coachella Valley Maximum 1-hour and 8-hour Ozone Concentrations, 1990-2011

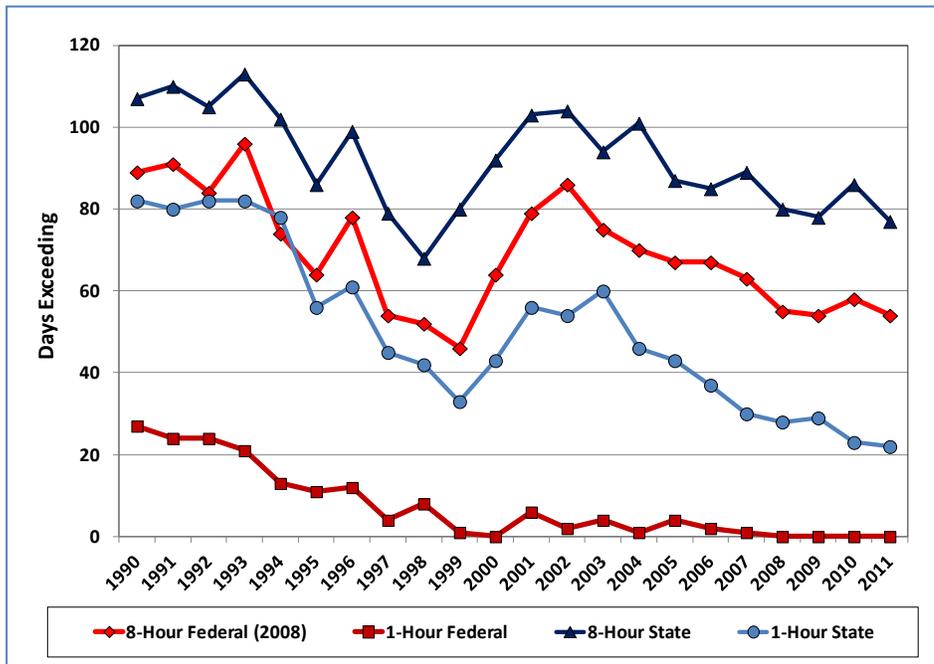


FIGURE 7-6

Coachella Valley Federal and State Ozone Trends, 1990-2011
(Number of Days Exceeding Standards)

Other Criteria Pollutants

Carbon monoxide (CO) was measured at one Coachella Valley air monitoring station (Palm Springs) in 2011. Neither the federal nor state standards were exceeded. The maximum 8-hour average CO concentration recorded in 2011 (0.6 ppm) was less than 7 percent of both the federal and state standards. The maximum 1-hour CO concentration (3.0 ppm) was 8 percent of the federal and 15 percent of the state 1-hour CO standards. Historical carbon monoxide air quality and trends in the Riverside county SSAB area show that the area has not exceeded the federal CO standards in nearly three decades.

Nitrogen dioxide (NO₂) was measured at one station in the Coachella Valley in 2011. The maximum annual average NO₂ concentration (8.0 ppb) was approximately 15 percent of the federal annual standard and 27 percent of the state annual standard. The maximum 1-hour average concentration (44.7 ppb) was 44 percent of the new (2010) federal and 25 percent of the state 1-hour standard.

Sulfur dioxide (SO₂) concentrations were not measured in the Riverside County SSAB in 2011. Historical measurements have shown SO₂ concentrations to be well below the state and federal standards and there are no significant emissions sources in the Coachella Valley.

Sulfate (SO₄²⁻) from PM₁₀ was measured at one station in the Coachella Valley in 2011. The maximum 24-hour average sulfate concentration was 5.7 µg/m³ (23 percent of the 25 µg/m³ state sulfate standard). There is no federal sulfate standard.

Lead (Pb) concentrations were not measured at either of the two Coachella Valley air monitoring stations in 2011. Measurements in past years have shown concentrations to be less than the state and federal standards and no major sources of lead emissions are located in the Coachella Valley.

Pollutant Transport

The pollutant transport pathway from the South Coast Air Basin to the Salton Sea Air Basin is through the San Geronio Pass (sometimes referred to as the Banning Pass) to the Coachella Valley.⁴ The transport pathway to the Coachella Valley is well documented and this phenomenon has been studied considerably in the past.

⁴ Keith, R.W. 1980. A Climatological Air Quality Profile: California's South Coast Air Basin. Staff Report, South Coast Air Quality Management District.

An experiment to study this transport pathway concluded that the South Coast Air Basin was the source of the observed high oxidant levels in the Coachella Valley.⁵ Transport from Anaheim to Palm Springs was directly identified with an inert sulfur hexafluoride tracer release.⁶ A comprehensive study of transport from the South Coast Air Basin to the Salton Sea Air Basin confirmed the ozone transport pathways to the Coachella Valley.⁷

Ozone pollutant transport to the Coachella Valley can be demonstrated by examining averaged ozone concentration by time of day for various stations along the transport corridor from Los Angeles County to the Coachella Valley. Figure 7-7 shows the diurnal distribution of averaged 1-hour ozone concentrations for the May-October smog season, by hour for 2011. The Coachella Valley transport route is represented, starting at Central Los Angeles in the main emissions source region and passing through Riverside-Rubidoux and Banning and finally through San Geronio Pass to Palm Springs in the Coachella Valley. Near the source regions, ozone peaks occur just after at mid-day (1:00 to 2:00 p.m. Pacific Standard Time, PST), on average, during the peak of incoming solar radiation and therefore the peak of ozone production. Downwind of the source region, ozone peaks occur later in the day as ozone and ozone precursors are transported downwind and photochemical reactions continue. At Palm Springs, ozone concentration peaks occur between 5:00 and 6:00 p.m. PST. If this peak were locally generated, it would be occurring closer to near mid-day, as is seen in the major source areas of the South Coast Air Basin, and not in the late afternoon or early evening, as is seen at Palm Springs.

⁵ Kauper, E.K. 1971. Coachella Valley Air Quality Study. Final Report, Pollution Res. & Control Corp., Riverside County Contract & U.S. Public Health Service Grant No. 69-A-0610 RI.

⁶ Drivas, P.J., and F.H. Shair. 1974. A Tracer Study of Pollutant Transport in the Los Angeles Area. Atmos. Environ. 8: 1155-1163.

⁷ Smith, T.B., et al. 1983. The Impact of Transport from the South Coast Air Basin on Ozone Levels in the Southeast Desert Air Basin. CARB Research Library Report No. ARB-R-83-183. ARB Contract to MRI/Caltech.

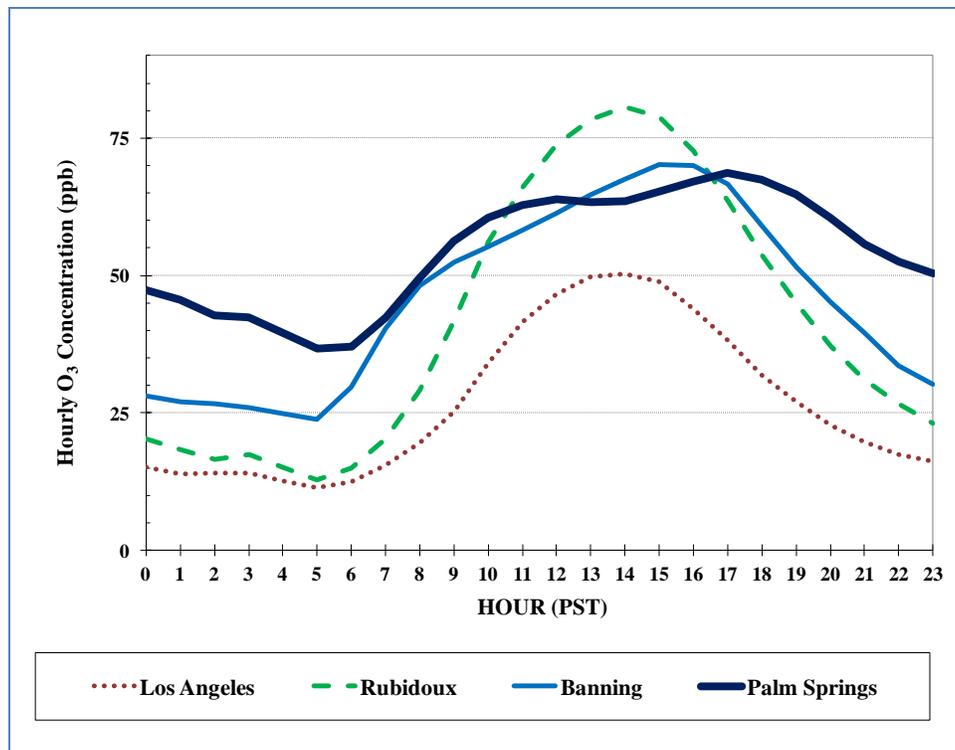


FIGURE 7-7

Diurnal Profile of 2011 Hourly Ozone Concentrations
along the Coachella Valley Transport Route

(Hours in Pacific Standard Time, Averaged for the May-October Ozone Season by Hour)

Palm Springs also exhibits an early ozone concentration increase that is not seen in the South Coast Air Basin near the main emissions source areas (i.e., Los Angeles and Rubidoux). The stations in the South Coast have more local NO_x emissions (mostly from mobile sources) to help scavenge the ozone after dark when the ozone production photochemistry ceases. The Coachella Valley has limited local NO_x emissions to help scavenge the ozone at night. This elevated overnight ozone contributes to an early morning bump in the Coachella Valley ozone concentrations, starting around 8 a.m. PST, with the ample sunlight and strong overnight temperature inversions in the desert. Ozone concentrations in this area reach an initial peak before noon and then drop slightly with increased mixing in the early afternoon, before climbing to the daily peak as the normal onshore flow reaches the Coachella Valley through the San Gorgonio Pass, transporting new ozone from the South Coast Air Basin.

Emissions Inventories

For illustrative purposes only, Table 7-3A shows base year (2008) and future-year emission inventories for the Coachella Valley, based on the AQMP inventory methodology as described in Appendix III. Emissions, in tons per day, of volatile organic compounds (VOC), oxides of nitrogen (NO_x), carbon monoxide (CO), sulfur oxides (SO_x), PM₁₀, PM_{2.5} and ammonia (NH₃) are shown. Table 7-3B adds the Coachella Valley emissions for the Competitive Power Ventures, LLC (CPV) Sentinel power plant, as it is projected to be operational in Desert Hot Springs in 2014 and after. The corresponding inventories for the South Coast Air Basin are shown for comparison in Table 7-3C. The South Coast Air Basin emissions, typically upwind of the Coachella Valley, overwhelm the locally-generated emissions. Depending on the pollutant, emissions in the South Coast Air Basin are 10 to over 350 times greater than emissions in the Coachella Valley. It is clear that improved air quality in the Coachella Valley depends on reduced emissions in the South Coast Air Basin. This is further illustrated by the trends in ozone air quality described earlier.

TABLE 7-3A

Coachella Valley Annual Average Emissions for Base Year (2008) and Future Years

COACHELLA VALLEY EMISSIONS (TONS/DAY)							
YEAR	VOC	NO _x	CO	SO _x	PM ₁₀	PM _{2.5}	NH ₃
2008	15.60	32.27	76.13	0.14	17.13	3.92	2.55
2012	13.34	23.62	64.38	0.14	15.33	3.49	2.46
2014	13.25	21.89	60.72	0.15	17.23	3.48	2.46
2017	13.39	19.06	56.59	0.17	19.61	3.75	2.41
2019	13.38	16.73	53.66	0.18	20.97	3.86	2.38
2020	13.39	15.72	53.15	0.18	21.57	3.92	2.39
2023	14.12	13.22	52.85	0.20	23.25	4.18	2.37
2030	16.08	12.65	56.99	0.24	26.62	4.73	2.39
2035	16.24	13.15	60.01	0.27	28.17	4.90	2.40

TABLE 7-3B

Coachella Valley Annual Average Emissions for Base Year (2008) and Future Years with the CPV Sentinel Power Plant Emissions starting in 2014

COACHELLA VALLEY EMISSIONS (TONS/DAY) WITH CPV SENTINEL POWER PLANT							
YEAR	VOC	NO_x	CO	SO_x	PM10	PM2.5	NH₃
2008	15.60	32.27	76.13	0.14	17.13	3.92	2.55
2012	13.34	23.62	64.38	0.14	15.33	3.49	2.46
2014	13.37	22.28	61.26	0.17	17.43	3.68	2.46
2017	13.51	19.45	57.13	0.19	19.81	3.95	2.41
2019	13.50	17.12	54.20	0.20	21.17	4.06	2.38
2020	13.51	16.11	53.69	0.20	21.77	4.12	2.39
2023	14.24	13.61	53.39	0.22	23.45	4.38	2.37
2030	16.20	13.04	57.53	0.26	26.82	4.93	2.39
2035	16.36	13.54	60.55	0.29	28.37	5.10	2.40

TABLE 7-3C

South Coast Air Basin Annual Average Emissions for Base Year (2008) and Future Years

SOUTH COAST AIR BASIN EMISSIONS (TONS/DAY)							
Year	VOC	NO_x	CO	SO_x	PM10	PM2.5	NH₃
2008	592.71	757.25	2880.52	54.24	167.22	79.83	108.59
2012	478.92	550.00	2306.35	23.93	154.73	71.76	102.92
2014	451.11	506.22	2094.59	18.40	155.34	69.89	102.13
2017	427.43	451.63	1867.07	18.05	158.99	70.26	99.62
2019	414.70	404.93	1715.54	17.61	161.24	70.18	97.76
2020	411.66	385.03	1675.50	17.60	162.58	70.29	97.15
2023	405.85	328.14	1583.20	18.12	164.33	70.69	95.72
2030	406.72	289.27	1501.25	20.00	171.47	73.19	97.31
2035	386.80	285.84	1473.01	21.76	173.40	72.85	96.65

FUTURE AIR QUALITY

In the 2007 AQMP and the subsequent SIP submittal, the District requested that U.S. EPA redesignate the Riverside County portion of the Salton Sea Air Basin from “Serious” nonattainment to “Severe-15” and extend the attainment date of the 1997 8-hour ozone standard (80 ppb) to 2019. This Severe-15 nonattainment redesignation was approved by U.S. EPA and subsequently applied to the nonattainment designation for the new 2008 8-hour ozone standard (75 ppb), for a new attainment date of December 31, 2027. This chapter is intended to update the progress toward attainment of the current ambient air quality standards; it is not an update to the Ozone SIP attainment demonstration. A new Ozone SIP attainment demonstration for the 2008 ozone standard will be required to be submitted to U.S. EPA in 2015.

The CAA requires that ozone nonattainment areas designated as serious and above use a regional photochemical model to demonstrate attainment. To meet this requirement, the Community Multi-scale Air Quality (CMAQ) modeling system is used in this analysis for the Coachella Valley. To provide further confidence with the CMAQ model and to establish consistency with the 2007 AQMP, comparisons were also made with the Comprehensive Air Quality Model with Extensions (CAMx), with comparable results. The complete SCAQMD modeling system and its application is described in detail in Chapter 5 and Appendix V, along with base and future year results, sensitivity analyses and performance evaluations. To develop relative response factors (RRFs) to project future air quality, CMAQ was run using a full 3-month period (June, July and August of 2008; 91 days) during the peak of the ozone season. During this period, seven well-defined, multi-day high ozone episodes occurred that ranked high in terms of meteorological potential for ozone production. Of the modeled days in 2008, the 1997 8-hour federal ozone standard was exceeded on 75 days in the South Coast Air Basin and 19 days in the Coachella Valley.

The 8-hour average ozone design values (based on a 5-year weighted average as recommended in U.S. EPA modeling guidance) for the Coachella Valley air quality stations, Palm Springs and Indio, in base year 2008 were 96 ppb and 86 ppb, respectively. The baseline emissions inventory assumes no further control beyond existing rules and regulations. Between 2008 and 2019, controls are being implemented in the South Coast Air Basin to reduce emissions.

The results of the CMAQ model simulations and corresponding RRFs using the baseline emissions for 2019 project a maximum 8-hour concentration in the Coachella Valley of 84 ppb, meeting the 1997 federal ozone standard. The CMAQ simulations of the future year ozone using the baseline regional emissions indicate that the 2008

federal 8-hour ozone standard (75 ppb) will not be attained in the Coachella Valley by the 2027 attainment date. However, using the Final 2012 AQMP controlled emissions inventory, the Coachella Valley attains the 2008 federal ozone standard by 2024, in advance of the required attainment date. Further details of the future-year air quality projections in South Coast Air Basin and the Coachella Valley are presented in Appendix V.

CONCLUSIONS

With the Severe-15 ozone nonattainment designation, the Coachella Valley attainment date for the 1997 8-hour federal ozone NAAQS is in 2019. Modeling simulations of the ozone episodes indicate that the 1997 federal 8-hour standard will be attained in the Coachella Valley in 2019 with no additional emissions controls. The attainment date for the more stringent 2008 8-hour federal ozone standard is 2027. With future emissions controls in place in the South Coast Air Basin, the 2008 federal 8-hour federal ozone standard will be attained in the Coachella Valley by 2024, three years in advance of the attainment date for that standard. Future emissions reductions implemented in the South Coast Air Basin will ensure timely attainment of existing standards, and also help to achieve potentially more stringent PM_{2.5} and ozone standards in the future.