2.2 Air Quality

An Air Quality Technical Report was prepared for the project by RECON Environmental, Inc. (2013a). The following section is a summary of this report, which can be found in its entirety in Appendix D of this EIR. The impact analysis is based on the County's *Guidelines for Determining Significance* and *Report Format and Content Requirements* – Air Quality (County of San Diego 2007a).

2.2.1 Existing Conditions

2.2.1.1 Climate

The project area, like the rest of San Diego County's inland valley areas, has a Mediterranean climate characterized by warm, dry summers and mild, wet winters. The average annual precipitation is 13 inches, falling primarily from November to April. The mean annual temperature for the project area is 74 degrees Fahrenheit (°F). Winter low temperatures in the project area average about 44°F, and summer high temperatures average about 81°F (U.S. Department of Commerce 2006).

The dominant meteorological feature affecting the region is the Pacific High Pressure Zone, which produces the prevailing westerly to northwesterly winds. These winds tend to blow pollutants away from the coast toward the inland areas. Consequently, air quality near the coast is generally better than that which occurs at the base of the coastal mountain range.

Generally, atmospheric temperature decreases as one moves higher and further from the earth's surface; however, fluctuations in the strength and pattern of winds from the Pacific High Pressure Zone throughout the day produce periodic temperature inversions. A temperature inversion is a thin layer of the atmosphere where the decrease in temperature with elevation is less than normal. The inversion acts like a "lid" keeping pollutants "trapped" within the area under the inversion layer. This area is called the mixing depth. Generally, the morning inversion layer is lower than the afternoon inversion layer. The greater the change between the morning and afternoon mixing depths, the greater the ability of the atmosphere to disperse pollutants.

Throughout the year, the elevation of the temperature inversion within the San Diego Air Basin (SDAB) in the afternoon varies between approximately 1,500 and 2,500 feet above MSL. In winter, the morning inversion layer is about 800 feet above MSL. In summer, the morning inversion layer is about 1,100 feet above MSL. Therefore, air quality tends to be better in winter than in summer because there is a greater change in the morning and afternoon mixing depths, allowing the dispersal of "trapped" pollutants. The project site is situated at an elevation of approximately 650 feet above MSL.

The prevailing westerly wind pattern is sometimes interrupted by regional "Santa Ana" conditions. A Santa Ana occurs when a strong high pressure develops over the Nevada-Utah area and overcomes the prevailing westerly coastal winds, sending strong, steady, hot, dry northeasterly winds over the mountains and out to sea.

Strong Santa Anas tend to blow pollutants out over the ocean, producing clear days. However, at the onset or during breakdown of these conditions, or if the Santa Ana is weak, emissions from the South Coast Air Basin to the north are blown out over the ocean, and low pressure over Baja California draws this pollutant-laden air mass southward. As the high pressure weakens, prevailing northwesterly winds reassert themselves and send this cloud of contamination ashore in the SDAB. When this event does occur, the combination of transported and locally produced contaminants generates the worst air quality measurements within the SDAB.

2.2.1.2 Regulatory Framework

Federal Regulations

The federal Clean Air Act (CAA) was enacted in 1970 and amended in 1977 and 1990 (42 United States Code [U.S.C.] 7401) for the purposes of protecting and enhancing the quality of the nation's air resources to benefit public health, welfare, and productivity. In 1971, in order to achieve the purposes of the CAA the U.S. Environmental Protection Agency (EPA) developed primary and secondary national ambient air quality standards (NAAQS) for seven pollutants known as "criteria" pollutants: ozone (O_3), carbon monoxide (CO), sulfur dioxide (SO_2), nitrogen dioxide (NO_2), lead (Pb), and particulate matter less than 10- and 2.5-micron in size (PM_{10} and $PM_{2.5}$) (Table 2.2-1).

Primary NAAQS are required to protect human health with an adequate margin of safety. Secondary standards are designed to protect property and the public welfare from air pollutants in the atmosphere (42 U.S.C. 7409(b)(2)).

The SDAB is currently a federal non-attainment area for the 8-hour ozone standard and a maintenance area for the CO standard. The SDAB is in attainment for the NAAQS for all other criteria pollutants.

State Regulations

California Clean Air Act

The U.S. EPA allows the states the option to develop their own ambient air quality standards provided they are at least as stringent as the federal standards. The California Air Resource Board (CARB) has set more stringent limits on six of the seven criteria pollutants in the California Ambient Air Quality Standards (CAAQS). The standards are shown in Table 2.2-1.

Assembly Bill (AB) 2595, known as the California Clean Air Act, became effective on January 1, 1989, and requires that districts implement regulations to reduce emissions from mobile sources through the adoption and enforcement of transportation control measures and:

- Demonstrate the overall effectiveness of the air quality program;
- Reduce nonattainment pollutants at a rate of five percent per year, or include all feasible measures and expeditious adoption schedule;
- Ensure no net increase in emissions from new or modified stationary sources;

- Reduce population exposure to severe nonattainment pollutants according to a prescribed schedule;
- Include any other feasible controls that can be implemented, or for which implementation can begin, within 10 years of adoption of the most recent air quality plan; and
- Rank control measures by cost-effectiveness.

The SDAB is a non-attainment area for the state O_3, PM_{10}, and $PM_{2.5}$ standards. The SDAB is in attainment for the CAAQS for all other criteria pollutants.

Toxic Air Contaminants

The public's exposure to toxic air contaminants (TACs) is a significant public health issue in California. In 1983, the California Legislature enacted a program to identify the health effects of TACs and to reduce exposure to these contaminants to protect the public health (AB 1807: Health and Safety Code sections 39650-39674). The Legislature established a two-step process to address the potential health effects from TACs. The first step is the risk assessment (or identification) phase. The second step is the risk management (or control) phase of the process.

In April 2005, the CARB published the "Air Quality and Land Use Handbook: A Community Health Perspective." The handbook makes recommendations directed at protecting sensitive land uses while balancing a myriad of other land use issues (e.g., housing, transportation needs, economics). It notes that the handbook is not regulatory or binding on local agencies and recognizes that application takes a qualitative approach. As reflected in the CARB handbook, there is currently no adopted standard for the significance of health effects from mobile sources. Therefore, the CARB has provided guidelines for the siting of land uses near heavily traveled roadways. Of pertinence to this study, the CARB guidelines indicate that siting new sensitive land uses within 500 feet of a freeway, urban roads with 100,000 vehicles per day, or rural roads with 50,000 vehicles per day should be avoided when possible.

As an ongoing process, the CARB will continue to establish new programs and regulations for the control of diesel particulate emissions as appropriate. The continued development and implementation of these programs and policies will ensure that the public exposure to diesel particulate matter will continue to decline.

State Implementation Plan (SIP)

The SIP is a collection of documents that set forth the state's strategies for achieving air quality standards. The San Diego Air Pollution Control District (SDAPCD) is the local agency responsible for preparing and implementing the portion of the SIP applicable to the SDAB. The SDAPCD adopts rules, regulations, and programs to attain state and federal air quality standards, and appropriates money (including permit fees) to achieve the objectives of the SIP.

Local Regulations

San Diego Air Pollution Control District

The SDAPCD prepared the 1991/1992 Regional Air Quality Standards (RAQS) in response to the requirements set forth in AB 2595. The draft was adopted, with amendments, on June 30, 1992. Attached as part of the RAQS are the transportation control measures (TCM) for the air quality plan prepared by SANDAG in accordance with AB 2595 and adopted by SANDAG on March 27, 1992, as Resolution Number 92-49 and Addendum. The required triennial update of the RAQS and corresponding TCM were adopted in December 12, 1995, 1998, 2001, 2004, and 2009. The RAQS and TCM plan set forth the steps needed to accomplish attainment of state and federal ambient air quality standards.

The SDAPCD has also established a set of rules and regulations initially adopted on January 1, 1969, and periodically reviewed and updated. The rules and regulations define requirements regarding stationary sources of air pollutants and fugitive dust.

2.2.1.3 Existing Air Quality

As stated above, the project site is within the SDAB. Air quality at a particular location is a result of the types and amounts of pollutants being emitted both into the air locally and throughout the basin coupled with the dispersal rates of pollutants within the region. The major factors affecting pollutant dispersion are wind speed and direction, the vertical dispersion of pollutants, which is affected by inversions, and the local topography.

Air quality is commonly expressed as the number of days in which air pollution levels exceed state standards set by the CARB and federal standards set by the U.S. EPA (see Table 2.2-1). The concentration of pollutants within the SDAB is measured at 11 stations maintained by the SDAPCD and the CARB. Table 2.2-2 summarizes the number of days per year during which state and federal standards were exceeded in the SDAB during the years 2007 to 2011.

The Camp Pendleton monitoring station, located 15 miles southwest of the project area, the Escondido–East Valley Parkway monitoring station, located 10 miles southeast of the project area, and the Del Mar–Mira Costa College monitoring station, located 22 miles southwest of the project area, are the nearest stations to the project area. The Camp Pendleton monitoring station measures O_3, NO_2, PM_{10}, and $PM_{2.5}$. The Escondido–East Valley Parkway monitoring station measures O_3, CO, NO_2, PM_{10}, and $PM_{2.5}$. The Del Mar–Mira Cost College monitoring station measures O_3.

Table 2.2-3 provides a summary of measurements of O_3, CO, NO_2, SO_2, PM_{10}, and $PM_{2.5}$ collected at the Camp Pendleton, the Escondido–East Valley Parkway, and the Del Mar–Mira Costa College monitoring stations, for the years 2007 through 2011.

Ozone

Ozone, or smog, is the primary source of air pollution in the SDAB. Nitrogen oxides and hydrocarbons, known as reactive organic gases (ROGs), are the chief “precursors” of ozone. These compounds react in the presence of sunlight to produce ozone. Because sunlight plays such an important role in the formation of smog, it is at its highest concentration during the daytime in summer months. About half of these smog-forming pollutants come from automobiles (County of San Diego 2004). Population growth in San Diego has resulted in a large increase in the number of automobiles operating on area roadways.

In the SDAB overall, during the five-year period of 2007 to 2011 the state 1-hour O_3 standard of 0.09 ppm was exceeded 21 days in 2007, 18 days in 2008, 8 days in 2009, and 7 days in 2010, and 5 days in 2011.

The 1-hour state standard for O_3 of 0.09 ppm was exceeded one time at the Camp Pendleton monitoring station, four times at the Del Mar–Mira Costa College monitoring station, and 13 times at the Escondido–East Valley Parkway monitoring station during the five-year period of 2007 to 2011.

In order to address adverse health effects due to prolonged exposure, the U.S. EPA phased out the national one-hour ozone standard and replaced it with the more protective eight-hour ozone standard. The SDAB is currently a nonattainment area for the national eight-hour standard.

In the SDAB overall, the revised national 8-hour standard of 0.075 was exceeded by 35 days in 2008, 24 days in 2009, and 14 days in 2010 and 10 days in 2011. The stricter 50 days in 2007, 69 days in 2008, 47 days in 2009, and 21 days in 2010, and 33 days in 2011.

The revised national 8-hour standard of 0.075 ppm was exceeded four times at the Camp Pendleton monitoring station, seven times at the Del Mar–Mira Costa College monitoring station, and 22 times at the Escondido-East Valley Parkway monitoring station during the 5-year period from 2007 to 2011. The stricter state 8-hour ozone standard of 0.07 ppm was exceeded 15 times at the Camp Pendleton monitoring station, 21 times at the Del Mar–Mira Costa College monitoring station, and 25 times at the Escondido-East Valley Parkway monitoring station during the five-year period from 2007 to 2011.

Not all of the ozone within the SDAB is derived from local sources. Under certain meteorological conditions, such as during Santa Ana wind events, ozone and other pollutants are transported from the South Coast Air Basin (the air basin to the north that includes portions of Los Angeles) and combine with ozone formed from local emissions sources to produce elevated ozone levels in the SDAB. Local agencies can control neither the source nor the transportation of pollutants from outside the SDAB. The SDAPCD's policy, therefore, has been to control local sources effectively enough to reduce locally produced contamination to clean air standards. Through the use of air pollution control measures outlined in the RAQS, the SDAPCD has effectively reduced ozone levels in the SDAB; however, the SDAB remains designated a nonattainment area for both national and state standards for ozone.

Carbon Monoxide

The SDAB is classified as a state attainment area for CO and as a federal maintenance area for carbon monoxide. Until 2003, no violations of the state standard for CO had been recorded in the SDAB since 1991, and no violations of the national standard had been recorded in the SDAB since 1989. The violations that took place in 2003 were likely the result of massive wildfires that occurred through the county. Such an event would be covered under the U.S. EPA's Natural Events Policy, which provides for the exclusion of air quality data attributable to uncontrollable natural events (e.g., volcanic activity, wildland fires, and high wind events). No violations of the state or federal CO standards have occurred since 2003. As shown in Tables 2.2-2 and 2.2-3, the state and federal standards have not been exceeded in the SDAB or at the Camp Pendleton monitoring station during the five-year period from 2007 through 2011.

Small-scale, localized concentrations of CO above the state and national standards are called "CO hot spots." These have the potential to occur at intersections with stagnation points, such as those that occur on major highways and heavily traveled and congested roadways.

PM_{10}

PM_{10} is a particulate matter with an aerodynamic diameter of 10 microns or less. Ten microns is about one-seventh of the diameter of a human hair. Particulate matter is a complex mixture of very tiny solid or liquid particles composed of chemicals, soot, and dust. Sources of PM_{10} emissions in the SDAB consist mainly of activities that disturb the soil including travel on roads and construction, mining, or agricultural operations, dust suspended by vehicle traffic, as well as secondary aerosols formed by reactions in the atmosphere. Other sources include windblown dust, salts, brake dust, and tire wear (County of San Diego 1998).

Under typical conditions (i.e., no wildfires) particles classified under the PM_{10} category are mainly emitted directly from activities that disturb the soil including travel on roads and construction, mining, or agricultural operations. Other sources include windblown dust, salts, brake dust, and tire wear (County of San Diego 1998). For several reasons hinging on the area's dry climate and coastal location, the SDAB has special difficulty in developing adequate tactics to meet present state particulate standards.

The SDAB is designated as federal unclassified and state non-attainment for PM_{10}. The measured federal PM_{10} standard was exceeded once in 2007, and once in 2008 in the SDAB. The 2007 exceedance occurred on October 21, 2007, at a time when major wildfires were raging throughout San Diego County. Consequently, this exceedance was likely caused by or was a subsequent result of the wildfires and would be beyond the control of the SDAPCD (CARB 2010b). As such, these events are covered under the U.S. EPA's Natural Events Policy that permits, under certain circumstances, the exclusion of air quality data attributable to uncontrollable natural events (e.g., volcanic activity, wildland fires, and high wind events). The 2008 exceedance did not occur during wildfires and is not covered under this policy.

The stricter state standard was exceeded a calculated number of days of 158.6 days in 2007, 163.4 days in 2008, 146.4 days in 2009, 136 days in 2010, and 138.5 days in 2011. Calculated days are the estimated number of days that a measurement would have been greater than the level of the standard, had measurements been collected every day. Particulate measurements are collected every six days.

At the Escondido—East Valley Parkway monitoring station, the national 24-hour PM_{10} standard was not exceeded during the years 2007 through 2011. The stricter state 24-hour standard was exceeded two days in 2007, one day in 2008, and one day in 2009

(CARB 2012). These exceedances resulted in a calculated number of days that the state standard was exceeded of 11.5 days in 2007 and 5.6 days in 2009. Information was available for the calculated number of days in 2008.

$PM_{2.5}$

Airborne, inhalable particles with aerodynamic diameters of 2.5 microns or less have been recognized as a pollutant requiring regular monitoring. Federal regulations required that $PM_{2.5}$ monitoring begin January 1, 1999 (County of San Diego 1999). The Escondido–East Valley Parkway monitoring station is one of five stations in the SDAB that monitors $PM_{2.5}$. Federal $PM_{2.5}$ standards established in 1997 include an annual arithmetic mean of 15 micrograms per cubic meter ($\mu g/m^3$) and a 24-hour concentration of 65 $\mu g/m^3$. The 24-hour $PM_{2.5}$ standard has since been revised to 35 $\mu g/m^3$. State $PM_{2.5}$ standards established in 2002 are an annual arithmetic mean of 12 $\mu g/m^3$.

The SDAB was classified as an attainment area for the previous federal 24-hour $PM_{2.5}$ standard of 65 $\mu g/m^3$ and has also been classified as an attainment area for the revised federal 24-hour $PM_{2.5}$ standard of 35 $\mu g/m^3$ (U.S. EPA 2009). The SDAB is a non-attainment area for the state $PM_{2.5}$ standard (CARB 2005).

In the SDAB overall the new national standard of 35 $\mu g/m^3$ was exceeded a calculated number of days of 11.4 days in 2007, 3.5 days in 2008, 3.4 days in 2009, 2 days in 2010, and 3 days in 2011. Additionally, although the federal annual standard was not exceeded during the period from 2007 through 2011, the state annual standard was routinely exceeded during this period in the SDAB overall.

The new 24-hour $PM_{2.5}$ standard of 35 $\mu g/m^3$ was not exceeded at the Camp Pendleton Street monitoring station during the years 2007 through 2011. The new standard of 35 $\mu g/m^3$ was exceeded a calculated 11.4 days in 2007, 2 days in 2009, and 2 days in 2010, and 3 days in 2011 at the Escondido–East Valley Parkway monitoring station.

Other Criteria Pollutants

The federal and state standards for NO_2, SO_2, and lead are being met in the SDAB and the latest pollutant trends suggest that these standards will not be exceeded in the foreseeable future. New standards for these pollutants have been adopted, and new designations for the SDAB will be determined in the future. The SDAB is also in attainment of the state standards for hydrogen sulfides, sulfates, and visibility reducing particles.

2.2.2 Analysis of Project Impacts and Determination of Significance

The project would result in a significant impact if it would:

1. *Conformance to Regional Air Quality Strategy*: Conflict with a regional air quality plan or strategy.

2. *Conformance to Federal and State Ambient Air Quality Standards:* Violate any air quality standard.

3. *Cumulatively Considerable Net Increase of Criteria Pollutants*: Result in the net increase of any criteria pollutant during construction or operational phases.

4. *Impacts to Sensitive Receptors:* Expose sensitive receptors to substantial pollutant concentrations.

5. *Odor Impacts:* Generate objectionable odors near sensitive receptors.

2.2.2.1 Issue 1: Conformance to Regional Air Quality Strategy

Guidelines for the Determination of Significance

Based on the County's Guidelines for Determining Significance – Air Quality (County of San Diego 2007a), a significant impact would occur if the project would conflict with or obstruct the implementation of the San Diego RAQS and/or applicable portions of the SIP.

Impact Analysis

The RAQS was developed pursuant to California CAA requirements and identifies feasible emission control measures to provide expeditious progress in the County toward attaining the state O_3 standard. The pollutants addressed are ROGs and oxides of nitrogen (NO_X), precursors to the photochemical formation of O_3, the primary component of smog. The RAQS does not address CO or particulates; however, the 2007 SIP includes a CO maintenance plan for the region (SDAPCD 2004). The RAQS control measures focus on emission sources under SDAPCD authority, specifically stationary sources and some area-wide sources. The RAQS identifies area-wide sources as mostly residential sources, including water heaters, furnaces, architectural coatings, and consumer products. It is noted that fireplaces are not included. Assumptions for land use development used in the RAQS are taken from local and regional planning documents, including general plan land use designations.

Consistency with the RAQS is determined by analyzing a project with the assumptions in the RAQS. Thus, the emphasis of this criterion is to evaluate if the project's land uses would be consistent with or less than the emission forecasts for the project site contained in the RAQS. Forecasts used in the RAQS are developed by SANDAG. SANDAG forecasts are based on local general plans and other related documents that are used to develop population projections and traffic projections.

As discussed above, the County's General Plan specifies the project site as a semi-rural area. The project would require a General Plan Amendment, a Specific Plan, and a Rezone in order to implement the Master and Phase I Implementing Maps and an MUP. These changes are necessary to accommodate the 903 single-family detached residences, 164 single-family attached residences, 468 single-family senior residences, 211 mixed-use residences, 75,000 square feet of commercial use, a school site, a group residential/group care facility, an RF, an on-site a WRF, and other project features.

Given that these uses are not currently permitted under the existing General Plan, the refinement in land uses would exceed and intensify the land uses planned for under the County General Plan. Therefore, the project is inconsistent with the RAQS. Accordingly, implementation of the project would conflict with and exceed the assumptions used to develop the current RAQS. While the project contains smart growth features, which would serve to reduce vehicle miles traveled (VMT), a major goal of the RAQS TCMs, this would not eliminate this inconsistency with RAQS for the SDAB. This inconsistency can only be rectified when SANDAG updates the RAQS based on the growth projections after the project has been approved. Thus, the project would result in a **significant impact** (**Impact AQ-1**).

2.2.2.2 Issue 2: Conformance to Federal and State Ambient Air Quality Standards

Guidelines for the Determination of Significance

Based on the County's Guidelines for Determining Significance: Air Quality (County of San Diego 2007a), a significant impact would occur if the project would:

- Result in emissions that exceed 250 pounds per day of NOx, or 75 pounds per day of volatile organic compound (VOC).
- Result in emissions of carbon monoxide that when totaled with the ambient concentrations will exceed a 1-hour concentration of 20 parts per million (ppm) or an 8-hour average of 9 ppm.
- Result in emissions of $PM_{2.5}$ that exceed 55 pounds per day.
- Result in emissions of PM_{10} that exceed 100 pounds per day and increase the ambient PM_{10} concentration by 5 μg/m^3 or greater at the maximum exposed individual.

Impact Analysis

Construction

Construction emissions associated with development of the project were quantified using the California Emissions Estimator Model (CalEEMod). Construction emissions were modeled using project-specific construction information when available. Where project-specific information was not available, default assumptions contained in CalEEMod were used to estimate construction emissions.

The project applicant has provided approximate timeframes for the five phases of construction activities. Each phase is estimated to be approximately 1.5 years in length with the exception of Phase III, which is estimated to be three to four years in length.

Assumptions used to model construction emissions for each of the phases were based on equipment lists and cut and fill calculation provided by the project applicant. Construction equipment, schedule, and phase overlap assumptions are detailed in the Air Quality Technical Report contained in Appendix D.

Blasting operations would also be required for site preparation. For modeling purposes it was assumed that blasting operations would occur during the grading stage of each phase of construction; however, actual blasting operations would occur independently from grading activities. Assuming that blasting would occur during grading operations results in a worst-case analysis, blasting operations would occur in all five phases of the project, and the explosive material would consist of ammonium nitrate and fuel oil, known as ANFO. It is estimated that each blast would require 10,000 pounds of explosive per blast and there would be a total of 8 blasts for the project. This totals to 80,000 pounds of ANFO for the project.

Project-specific data was input into CalEEMod and used to calculate maximum daily emissions associated with construction of each phase of the project. To present a reasonable worst-case assessment of the potential impacts, the construction schedule in CalEEMod was developed with overlapping phases. For air quality modeling purposes, construction activities were assumed to commence in July 2014 and conclude in December 2021, which represents a slightly compressed construction schedule as compared to that proposed. Emission rates for equipment and vehicles would be expected to decrease with time. Therefore, the modeled construction scenario represents the highest emission rates for individual pieces of construction equipment and vehicles.

In accordance with Section 87.428 of the County's *Grading, Clearing, and Watercourses Ordinance*, specific dust-control measures have been identified for implementation during grading activities, which have been included in the construction emissions modeling. These would consist of watering the project site three times a day, applying nonchemical soil stabilizers to disturbed areas during grading activities or equivalent measures. With respect to architectural coatings, a limited VOC content per gallon of coating is required by SDAPCD Rule 67.

Emissions from construction equipment were quantified by overlapping the on-site construction phases. The worst-case scenarios of the overlapping phases were analyzed for impact determination. Additionally, for purposes of the air quality analysis, all off-site emissions were modeled during construction of Phase I improvements. The off-site impacts consist of road widening activities over a total area of approximately 2.7 acres and were calculated using the Road Construction Emissions Model. Table 2.2-4 summarizes the total emissions for each of the overlapping phases during construction.

TABLE 2.2-4
UNMITIGATED MAXIMUM DAILY CONSTRUCTION EMISSIONS (ON- AND OFF-SITE)
(pounds per day)

Construction Phase[1]	ROG	NO_X	CO	SO_2	PM_{10}[2]	$PM_{2.5}$[2]
Phase 1						
With Blasting	18.3	236.4	411.6	10.2	**469.7**	**103.7**
Without Blasting	18.3	151.43	76.6	0.3	**469.7**	**103.7**
Phase 1/Phase 4						
With Blasting	39.2	**262.5**	448.7	10.2	**447.8**	**100.6**
Without Blasting	39.2	177.5	113.7	0.2	**447.8**	**100.6**
Phase 4/Phase 2						
With Blasting	32.4	249.7	454.0	10.3	**449.3**	**99.8**
Without Blasting	32.4	164.7	119.0	0.3	**449.3**	**99.8**
Phase 2/Phase 5						
With Blasting	50.1	238.3	451.3	10.3	**448.8**	**99.1**
Without Blasting	50.1	153.3	116.3	0.3	**448.8**	**99.1**
Phase 5/Phase 3						
With Blasting	34.0	240.6	454.7	10.3	**449.6**	**99.2**
Without Blasting	34.0	155.6	119.7	0.3	**449.6**	**99.2**
Maximum Daily Emissions	50.1.	**262.5**	454.7	10.3	**469.7**	**103.7**
Screening Level Thresholds	75	250	550	250	100	55
Significant Impact?	No	Yes	No	No	Yes	Yes

ROG =reactive organic gases; NO_X = oxides of nitrogen; CO = carbon monoxide; SO_2 = sulfur dioxide; PM_{10} = suspended particulate matter; $PM_{2.5}$ = fine particulate matter; SLT = Screening Level Thresholds
[1]Blasting would occur during the grading phase of all construction phases.
[2]PM emissions include water site 3x/day and a “track-out” gravel bed.
Bold data indicate a threshold has been exceeded.

As shown in Table 2.2-4, criteria pollutant emissions would exceed the Screening Level Thresholds (SLT) for PM_{10}, $PM_{2.5}$ and NO_X, and would therefore result in a significant direct impact. The remaining criteria pollutants would be below the SLT and would not result in significant impacts. Design considerations in the modeling include implementing standard dust control measures, using SDAPCD-compliant ROG paints for architectural coating, as well as using Tier III or better equipment during the construction phases as detailed in the Air Quality Technical Report (see Appendix D). Even with implementation of these design considerations, construction emissions would result in a **significant impact (Impact AQ-2)**.

Operation

The operation of the project would result in emissions from the area and mobile sources. Vehicle trip generation rates are used by CalEEMod to estimate the mobile source operational emissions for each corresponding land use. Daily trip generation rates were estimated in the project’s Traffic Impact Study (see Appendix E). CalEEMod defaults were used for vehicle fleet mix and trip lengths.

Area sources associated with the project would include architectural coating, consumer products, hearths, landscaping, and natural gas. The following project design considerations were included:

- No wood-burning fireplaces will be installed and all fireplaces were assumed to be natural gas. No fireplaces at all were assumed for the 200-person congregate care facility, while 90 percent of the other residential land uses were assumed to have no fireplaces.

- The proposed project also includes pedestrian friendly design and includes traffic reduction measures, such as complete sidewalk coverage within the project, internal trails, and bike lanes.

- All new residential units will have smart meters installed.

- The project includes a planting plan for approximately 35,000 additional trees within the project site to reduce energy consumption through the provision of shade.

- The project is designed to achieve a 30 percent improvement in energy efficiency of the 2008 Title 24 energy efficiency requirements.

The analysis of traffic operations is based on information provided by the Traffic Impact Study (see Appendix E). The traffic report uses five scenarios to characterize operations, Phase 1 only corresponds to Scenario A, Phases 1 and 4 together are Scenario B, Phases 1, 2, and 4 together are Scenario C, Phases 1, 2, 4, and 5 together are Scenario D, and project build-out is Scenario E (Chen Ryan 2013). The total maximum daily operational emissions for Scenarios A through E are summarized in Table 2.2-5. Each consecutive phase adds land uses; therefore, the total emissions increase as they are implemented in the order of A to E. Starting at Scenario C, operational emissions would exceed the County's SLT for ROG, CO, and PM_{10}. Operational assumptions are detailed in the Air Quality Technical Report contained in Appendix D.

Table 2.2-5 summarizes the total emissions that would occur from project operation.

TABLE 2.2-5
OPERATIONAL SOURCE EMISSIONS
(pounds per day)

Operational Scenario/ Emissions Source	ROG	NO_X	CO	SO_2	PM_{10}	$PM_{2.5}$
Scenario A Operations						
Mobile Sources	21.45	46.22	216.33	0.39	45.43	2.73
Area Sources[1]	18.8	0.35	29.66	0	0.58	0.58
Total Scenario A	40.25	46.57	245.99	0.39	46.01	3.31
Scenario B Operations						
Mobile Sources	32.23	69.47	325.16	0.59	68.29	4.11
Area Sources[1]	30.25	0.71	61.09	0	0.96	0.95
Total Scenario B	62.48	70.18	386.25	0.59	69.25	5.06
Scenario C Operations						
Mobile Sources	68.14	144	**672.31**	1.2	**138.32**	8.35
Area Sources[1]	54.03	1.16	100.19	0.01	1.73	1.72
Total Scenario C	**122.17**	145.16	**772.5**	1.21	**140.05**	10.07
Scenario D Operations						
Mobile Sources	**81.46**	172.62	**806.18**	1.44	**166.32**	10.04
Area Sources[1]	70.31	1.44	124.93	0.01	2.79	2.76
Total Scenario D	**151.77**	174.06	**931.11**	1.45	**169.11**	12.8
Scenario E "Build-out" Operations						
Mobile Sources	**113.61**	241.44	**1,127.97**	2.02	**233.42**	14.08
Area Sources[1]	**97.32**	1.87	162.78	0.01	3	2.98
Total Scenario E “Build-out”	**210.93**	243.31	**1,290.75**	2.03	**236.42**	17.06
Screening Level Thresholds	75	250	550	250	100	55
Significant Impact?	Yes	No	Yes	No	Yes	No

ROG = reactive organic gases; NO_X = oxides of nitrogen; CO = carbon monoxide; SO_2 = sulfur dioxide; PM_{10} = suspended particulate matter; $PM_{2.5}$ = fine particulate matter; SLT = Screening Level Threshold
[1]The area sources calculation includes the natural gas energy calculations from CalEEMod.
Bold data indicate a threshold has been exceeded.

As shown, emissions are projected to exceed the applicable SLTs for ROG, CO, and PM_{10}. Operation emissions would be considered a **significant impact** to regional air quality (**Impact AQ-3**).

2.2.2.3 Issue 3: Cumulatively Considerable Net Increase of Criteria Pollutants

Guidelines for the Determination of Significance

Based on the County’s Guidelines for Determining Significance: Air Quality (County 2007i), a significant impact would occur if the project would result in a cumulatively considerable net increase of any criteria pollutant for which the SDAB is non-attainment under an applicable federal or state AAQS.

As discussed above, the SDAB is a federal non-attainment area for ozone, and a state non-attainment area for ozone, PM_{10}, and $PM_{2.5}$. Based on the County's Guidelines for Determining Significance: Air Quality (San Diego County 2007a), the following Guidelines for Determining Significance must be used for determining the cumulatively considerable net increases during the construction phase:

- A project that has a significant direct impact on air quality with regard to emissions of PM_{10}, $PM_{2.5}$, NO_X and/or VOCs would also have a significant cumulatively considerable net increase.

- In the event direct impacts from a proposed project are less than significant, a project may still have a cumulatively considerable impact on air quality if the emissions of concern from the proposed project, in combination with the emissions of concern from other proposed projects or reasonably foreseeable future projects within a proximity relevant to the pollutants of concern, are in excess of the guidelines identified in subchapter 2.2.2.1.

Additionally, the following Guidelines for Determining Significance must be used for determining the cumulatively considerable net increases during the operational phase:

- A project that does not conform to the RAQS and/or has a significant direct impact on air quality with regard to operational emissions of PM_{10}, $PM_{2.5}$, NO_X and/or VOCs, would also have a significant cumulatively considerable net increase.

- Projects that cause road intersections to operate at or below a level of service (LOS) E (analysis only required when the addition of peak-hour trips from the proposed project and the surrounding projects exceeds 2,000) and create a CO "hotspot" create a cumulatively considerable net increase of CO.

Impact Analysis

As discussed previously, construction and operational emissions would result in **significant direct impacts** (**Impacts AQ-1, AQ-2, and AQ-3**). As phases of construction become operational, later phases would continue to be constructed, thus resulting in combined daily construction and operational emissions from the project. Table 2.2-6 summarizes the cumulative unmitigated construction emissions with the unmitigated operational emissions that would overlap during the same period. This cumulative analysis provides information on which combination of operational and construction phases surpass the significance thresholds.

TABLE 2.2-6
CONSTRUCTION + OPERATIONAL EMISSIONS

Overlapping Project Phases	ROG (lb/day)	NOx (lb/day)	CO (lb/day)	SO_2 (lb/day)	PM_{10} (lb/day)	$PM_{2.5}$ (lb/day)
Phase 1	18.3	236.4	411.6	10.2	469.7	103.7
Phases 1 & 4	39.2	262.5	448.7	10.2	447.8	100.6
Phases 2 & 4	32.4	249.7	454.0	0.0	449.3	99.8
Scenario A Operational	40.3	46.6	246.0	0.4	46.0	3.3
Total A + Maximum Construction	***79.4***	***309.1***	***700.0***	*10.5*	***495.3***	***107.0***
Phases 2 & 5	50.1	238.3	451.3	10.3	448.8	99.1
Scenario B Operational	62.5	70.2	386.3	0.6	69.3	5.1
Total B + 2&5	***112.5***	***308.5***	***837.6***	*10.9*	***518.1***	***104.2***
Phases 3 & 5	34.0	240.6	454.7	10.3	449.6	99.2
Scenario C Operational	**122.2**	145.2	**772.5**	1.2	140.1	10.1
Total C + 3&5	***156.2***	***385.7***	***1227.2***	*11.5*	***589.7***	***109.3***
Phase 3	16.9	207.7	411.0	10.2	442.2	97.3
Scenario D Operational	**151.8**	174.1	**931.1**	1.5	169.1	12.8
Total D + 3	***168.7***	***381.7***	***1342.1***	*11.6*	***611.3***	***110.1***
Scenario E Operational	***210.9***	*243.3*	***1290.8***	*2.0*	***236.4***	*17.1*
SLT	75	250	550	250	100	55
Significant Impact?	Yes	Yes	Yes	No	Yes	No

Note: SLT = Significance Level Threshold; *Italicized* = Combined totals of operational and construction phases for the project. **Bold** = Emissions exceeds SLT.

As show in Table 2.2-6, air emissions of ROG, NO_X, CO, $PM_{2.5}$, and PM_{10} would exceed the County's SLT when construction emissions are combined with operational emissions after opening of Phase 1 and with the exception of NO_X and $PM_{2.5}$, which are primarily associated with diesel-fueled engines, these emissions would continue to exceed the County SLT at full build-out.

Additionally, the County's General Plan specifies the project area as a semi-rural area. The project would require a General Plan Amendment, a Specific Plan, and a Rezone in order to implement the Master and Phase 1 Implementing Tentative Maps. Given these uses are not currently permitted under the existing General Plan, the refinement in land uses would exceed and intensify the land uses planned for under the County General Plan. Therefore, the project is considered inconsistent with the RAQS.

Implementation of the project would therefore result in a cumulatively considerable net increase of criteria pollutants because the project conflicts with the SDAPCD RAQS, leads to long-term operational emissions that exceed the County SLT and as a result of operational and construction impacts occurring simultaneously. Thus, this impact would be **a significant impact** (**AQ-4**).

2.2.2.4 Issue 4: Impacts to Sensitive Receptors

Guidelines for the Determination of Significance

Based on the County's Guidelines for Determining Significance: Air Quality (San Diego County 2007a), a significant impact would occur if the project would:

- Place sensitive receptors near CO "hotspots" or create CO "hotspots" near sensitive receptors.

- Result in exposure to TACs resulting in a maximum incremental cancer risk greater than one in one million without application of Toxics-Best Available Control Technology or a health hazard index greater than one.

<u>Impact Analysis</u>

Construction

Carbon Monoxide

Roadway segments and intersections are rated by a LOS standard developed as a professional industry standard to determine area traffic impacts. The LOS standards range from A to F depending on the amount of typical traffic flow measured in average daily traffic (ADT). The generally accepted regionwide goal is LOS D (or better). According to the Traffic Impact Analysis there are existing intersections that operate at LOS E or worse. Construction-related traffic is not anticipated to significantly impact the LOS rating. Additionally, construction trips are estimated to be below the 3,000 vehicle trips used by the County as a screening level for hotspot analysis and therefore are not required to be analyzed. The phased approach to development would also limit the daily volume of construction workers on local roads associated with the project. Thus, construction-related traffic is not expected to impact local intersections or cause an exceedance of the County of San Diego's guidelines for assessing impacts to sensitive receptors. This impact would be **less than significant**.

Toxic Air Contaminants—Diesel Particulate Matter

Construction of the project would result in short-term diesel exhaust emissions from on-site heavy-duty equipment. Particulate exhaust emissions from diesel-fueled engines (diesel PM or DPM) were identified as a TAC by CARB in 1998. Project construction would result in the generation of DPM emissions from the use of off-road diesel construction equipment required for mass site grading and earthmoving, trenching, asphalt paving, and other construction activities. Other construction-related sources of DPM include material delivery trucks and construction worker vehicles; however, these sources are minimal relative to construction equipment. Not all construction worker vehicles would be diesel fueled and most DPM emissions associated with material delivery trucks and construction worker vehicles would occur off-site.

Generation of DPM from construction projects typically occur in a single area for a short period. The dose (of TACs) to which receptors are exposed to is the primary factor used to determine health risk. Dose is a function of the concentration of a substance or substances in the environment and the extent of exposure a person has with the substance. Dose is positively correlated with time, meaning that a longer exposure period to a fixed amount of emissions would result in a higher exposure level for the Maximally Exposed Individual (MEI) and higher health risks. According to the Office of Environmental Health Hazard Assessment (OEHHA), health risk assessments (HRA), which are the tool used to determine the exposure of sensitive receptors to TAC emissions, should be based on a 70-year exposure period, however, such assessments should be limited to the period/duration of activities associated with the project. The

OEHHA Guidance Manual for Preparation of Health Risk Assessments (HRA Guidance) allows a nine-year exposure period to represent the first nine years of a child's life, which physiologically and behaviorally result in higher exposure levels. However, the HRA Guidance does not support a HRA for exposures less than nine years. For cases where exposure would last for less than nine years, OEHHA suggests assuming a minimum exposure of nine years.

Construction activities would occur for approximately 8 years (July 2014 to December 2021) over the length of five phases. Grading, trenching, and asphalt paving operations typically generate the most DPM emissions because these activities require the most heavy-duty construction equipment. A health risk assessment was performed combining all the annual exhaust PM_{10} emissions for the entire project calculated by CalEEMod and averaging them over an 8-year period. The Maximally Exposed Individual (MEI) was assumed to be the nearest sensitive receptor to the existing project site, which is modeled to be located as close as one meter from the project site. In reality, the exposure of all sensitive receptors to construction-related emissions of DPM would vary, as construction activities would move between Phases 1 through 5 of the project.

Although some proposed residents are expected to begin living in the initially completed phases as construction starts on the next sequential phase, the construction activities are planned to occur at further distances from these residents. Therefore, construction activities would occur for a total length of 8 years with the exposure level changing as the construction activities move further away.

The DPM emissions for the construction phases were estimated using exhaust PM_{10} values from CalEEMod annual emission estimates. These values were summed and averaged over the length of the 8-year project. The resulting exhaust PM_{10} value was then converted into grams per second and input into the AERSCREEN modeling program, which calculates pollutant concentrations from various types of sources. The assessment considers exposure via inhalation.

Using guidance provided by OEHHA, maximum diesel PM concentrations and cancer risks were calculated. Health risks assumptions are detailed in the Air Quality Technical Report contained in Appendix E. It was calculated that the maximum annual DPM concentration would be 0.1910 $\mu g/m^3$ and would occur at 431 meters from the modeled area. This value would represent a cancer risk of 6.95 in one million. Therefore, while the modeled cancer risks would exceed the County's significance threshold of one in one million, the project design incorporated the use of best available control technologies (BACT), i.e., Tier II or better equipment. The County's threshold for projects implementing BACT is 10 in 1 million, which the project would comply with. Thus, the project's construction-related TAC impacts to sensitive receptors would be **less than significant**.

Additionally, DPM has chronic (i.e., long-term) non-cancer health impacts. The chronic non-cancer inhalation hazard indices for the project were calculated by dividing the modeled annual average concentrations of the DPM by the Reference Exposure Level (REL). The OEHHA has recommended an ambient concentration of 5 $\mu g/m^3$ as the chronic inhalation REL for DPM.

The REL is the concentration at or below which no adverse health effects are anticipated and this is referenced as the acute, 8-hour, and chronic hazard index. The resulting value is 0.0382 µg/m^3. This DPM concentration for the project is below the REL and is under the County's more stringent significance threshold of 1 for non-cancer health impacts. Therefore, the non-cancer health impacts associated with the project's construction-related TAC impacts to sensitive receptors would be **less than significant**.

Crystalline Silica

Crystalline silica was evaluated for its effect on existing residents, future project occupants, and construction workers. Overexposure to respirable crystalline silica can cause silicosis which is a disabling, nonreversible and sometimes fatal lung disease. Crystalline silica is a basic component of soil, granite, and most other types of rock (Occupational Safety & Health Administration [OSHA] 2012). Silicosis is considered an occupational hazard that is primarily limited to construction workers and miners.

The following are sources of crystalline silica:

- Sandblasting for surface preparation
- Crushing and drilling rock and concrete
- Masonry and concrete work/building and road construction and repair
- Mining/tunneling/demolition work.

There are currently no adopted CEQA significance thresholds for environmental exposure of nearby receptors to airborne crystalline silica generated by construction activities. In a literature search, a study was produced by the SCAQMD that involved crystalline silica monitoring in Duarte and Azusa, California (South Coast Air Quality Management District [SCAQMD] 2008) near a rock quarry operation. The atmospheric sampling for crystalline silica is based on sampling particulate matter, specifically PM_4. OEHHA defines an inhalation REL of 3 µg/m^3 for crystalline silica as the level below which no adverse health effect would occur.

The Azusa Rock Quarry is permitted by the SCAQMD to specifically operate aggregate crushing and screening at no more than 900,000 tons per month (which equates to 37,500 tons per day) or 10.8 million tons per year (City of Azusa 2010); this includes a 6-day work week and operational hours between 6 A.M. and 10 P.M. The total size of the mine is a proposed 270 acres, with a 190-acre disturbance footprint. The maximum 24-hour reported value in the SCAQMD study was 1.3 µg/m^3 and the average was 0.5 µg/m^3; therefore, the results of the SCAQMD study show levels lower than the REL.

The proposed project involves construction grading of five individual phases of the following sizes: 121.6 acres for Phase 1, 85.1 acres for Phase 2, 225.8 acres for Phase 3, 60.3 for Phase 4, and 115.2 for Phase 5. It has been conservatively assumed each of these phases would involve grading of 50,000 tons per day of material, with the total movement of material, including aggregate rock, to be 4 million tons. The aggregate rock quantities are estimated to be approximately 15,000 tons per day (10,000 cy * 1.5 tons/cy = 15,000 tons), based on the blasting analysis. The project has a work schedule of 5 days a week, 8 hours a day. Thus, the project would not exceed the actual or permitted aggregate mining operations assessed at the Azusa Rock Quarry.

The levels of crystalline silica resulting from the rock quarry operations at the Azusa Rock Quarry are expected to be higher than the project given the lower level of activity and lower daily and total aggregate handling associated with the project. It can then be inferred that levels due to construction of the proposed project would be less than those associated with the studied Azusa Rock Quarry, therefore, in the absence of additional empirical evidence specific to construction projects, it is anticipated the project would generate concentrations of crystalline silica lower than the OEHHA REL of 3 $\mu g/m^3$. Thus, construction and blasting activities from the project are expected to have impacts that are **less than significant** due to crystalline silica.

Operation

Carbon Monoxide

Localized CO concentration is a direct function of motor vehicle activity at signalized intersections (e.g., idling time and traffic flow conditions), particularly during peak commute hours and meteorological conditions. Under specific meteorological conditions (e.g., stable conditions that result in poor dispersion), CO concentrations may reach unhealthy levels with respect to local sensitive land uses. A CO "hot spot" occurs when localized CO concentrations exceed the NAAQS or CAAQS. As a result, the County recommends analysis of CO emissions at a local as well as a regional level.

Following construction of the project, the project-related traffic would contribute vehicle trips on existing and future intersections. The addition of these trips could degrade the LOS of intersections to a level where a CO hotspot could occur. The County's Air Quality Guidelines state that intersections that are likely to result in a CO hotspot would operate at a LOS E or worse and would include peak-hour trips exceeding 3,000 vehicle trips.

Another appropriate procedure for evaluating CO hot spots is provided in the procedures and guidelines contained in the *Caltrans Transportation Project-Level Carbon Monoxide Protocol* (Caltrans Protocol) to determine whether a project poses the potential for a CO hotspot (UCD ITS 1997). Similar to the County screening criteria, the Caltrans Protocol indicates projects may worsen air quality if they worsen traffic flow, defined as increasing average delay at signalized intersections operating at LOS E or F or causing an intersection that would operate at LOS D or better without the project, to operate at LOS E or F. Unsignalized intersections are not evaluated as they are typically signalized as volumes increase and delays increase. The Caltrans Protocol also provides guidance for preparing a detailed CO hotspot analysis.

Project-related traffic would contribute vehicle trips to existing and future intersections. The addition of these trips could degrade the LOS of intersections to a level where a CO hotspot could occur. The County's Air Quality Guidelines state that intersections that are likely to result in a CO hotspot would operate at a LOS E or worse and would include peak-hour trips exceeding 3,000 vehicle trips. This analysis included studying traffic volumes in both Scenario A and the Build-out Scenarios in order to assess varying degrees of CO under two different levels of development intensity. It was determined that there was one signalized intersection operating at LOS E or worse, exceeding 3,000 trips; this was the SR-76/Old River Road/E. Vista Way intersection. Under Scenario A, this intersection has 3,074 trips and under the Build-out Scenario it has 3,195 trips. These volumes surpass the County's threshold for a hot spot analysis and therefore a detailed analysis was done for the intersection.

The CALINE4 model was used for inputting the trip volumes from the Traffic Impact Study and the emission factors for idling vehicles, which were taken from the 2011 EMFAC database. Table 2.2-7 shows the PM volumes that were modeled in the hot spot analysis:

TABLE 2.2-7
MAXIMUM CO CONCENTRATIONS AT
SR-76/OLD RIVER ROAD/EAST VISTA WAY

Scenario	Peak Hour Volumes PM	1-Hour CO ppm	1-Hour CO Standard CAAQS/ NAAQS	8-Hour CO ppm	8-Hour CO Standard CAAQS/ NAAQS
Scenario A	3,074	6.5	20/35	3.9	9/9
Scenario A-E (Build-out)	3,195	6.6		2.16	

CO = carbon monoxide; CAAQS = California Ambient Air Quality Standards;
NAAQS = national ambient air quality standards

The ambient concentration of CO at this intersection would be 3.5 ppm. The hot spot analysis showed that the increases of CO due to the project would be 3.0 ppm for Scenario A and 3.1 for the Build-out Scenario. The combined concentrations of 6.5 and 6.6 ppm are less than the CAAQS and NAAQS threshold of 20 and 35 ppm, respectively. In order to calculate the 8-hour concentration, the 1-hour value was multiplied by a conversion factor of 0.6, as recommended in the Protocol (UCD ITS 1997). This resulted in a value of 3.9 ppm (Scenario A) and 4 ppm (Build-out), which is also below the standard threshold of 9 ppm. Therefore, the project would not result in a significant increase in CO, and the impact would be **less than significant**.

PM_{10}

Guidance for assessing localized impacts from PM_{10} generated by traffic is provided by the Federal Highway Administration (FHWA) in the *Transportation Conformity Guidance for Quantitative Hot-spot Analyses in $PM_{2.5}$ and PM_{10} Nonattainment and Maintenance Areas*. Based on this guidance, projects of air quality concern include:

- A project on a new highway or expressway that serves a significant volume of diesel truck traffic, such as facilities with greater than 125,000 annual average daily traffic (AADT) and 8 or more of such AADT is diesel truck traffic;

- New exit ramps and other highway facility improvements to connect a highway or expressway to a major freight, bus, or intermodal terminal;

- Expansion of an existing highway or other facility that affects a congested intersection (operated at LOS D, E, or F) that has a significant increase in the number of diesel trucks; and,

- Similar highway projects that involve a significant increase in the number of diesel transit busses and/or diesel trucks.

The project does not meet any of the thresholds for projects of air quality concern based on the following:

- The project is not a highway improvement project and the volume on I-15 in this area is less than 125,000 AADT (Caltrans 2011).
- Based on the Caltrans traffic volume data for I-15 between Deer Springs Road and SR-76, the diesel truck traffic, the primary source of diesel exhaust, represent approximately 7 percent of the total traffic volume.
- The project would not create new freeway ramps that would connect to a major freight, bus, or intermodal terminal.
- The project is primarily residential and would not generate a substantial increase in diesel trucks or transit busses.
- The project would result in the degradation of the intersection at SR-76/Old River/East Vista Way, SR-76/Olive Hill Road/Camino del Rey, and Old Highway 395/SR-76; however, based on the I-15 traffic data, roadways in the project area are comprised of less than 8 percent diesel trucks and the project would not substantially increase the number of diesel trucks.

Therefore, the proposed project would not result in adverse concentrations of localized PM_{10} emissions and this would be a less **than significant impact**.

2.2.2.5 Issue 5: Odor Impacts

<u>Guidelines for Determining Significance</u>

Based on the County's Guidelines for Determining Significance: Air Quality (San Diego County 2007a), a significant impact would occur if the project would generate objectionable odors or place sensitive receptors next to existing objectionable odors.

<u>Impact Analysis</u>

The project's WRF is designed to include measures to reduce any potential odor impacts to the surrounding areas. Pursuant to Section 6300 of the County of San Diego Zoning Ordinance, odor control units would be designed to treat odorous air from within treatment structures so not to emit matter causing unpleasant odors which are perceptible by the average person at or beyond the lot line of the WRF. Foul air from the plant headworks would be treated on-site prior to discharge. There are multiple technologies that are available to treat odors which are generated within a treatment plant. Some technologies are most efficient at reducing only specific odor generating compounds (for example wet scrubbers are efficient at the removal of H2S only). The proposed means of foul air treatment would be activated carbon towers.

Activated charcoal or carbon has a large internal surface area (lots of micro-pores) which creates adsorption of odor. As contaminated water or air passes through an activated carbon filter (or tower), the carbon traps a wide range of impurities and contaminants, catching them in the carbon filter. Activated carbon filters have many applications in medicine, water and air filtration. In wastewater treatment plants, these towers are used to trap the volatile organic compounds that are corrosive or odorous. These active carbon adsorption units provide excellent treatment of highly hydrophobic odorants (90–99 percent) (Lebrero et al. 2011).

With the inclusion of the carbon towers, the project would not result in a substantial increase in odor levels at nearby sensitive receptors. Implementation of the project would result in **less than significant** odor impacts

2.2.3 Cumulative Impact Analysis

Because air quality is a regional issue, the cumulative study area for air quality impacts cannot be limited to a defined localized area, but rather include the SDAB as a whole. Therefore, impacts to regional plans and policies, such as the RAQS and SIPs, must be considered as part of the cumulative analysis. Additionally, a project would have a significant cumulative impact on air quality if it would result in a cumulatively considerable net increase of any criteria pollutant for which the SDAB is listed as nonattainment under an applicable CAAQS. As previously stated, the SDAB is currently classified as a federal nonattainment area for ozone and a state nonattainment area for ozone, PM_{10}, and $PM_{2.5.}$

Additionally, according to the County's guidelines, projects that cause road intersections to operate at or below a LOS E and create a CO "hotspot" create a cumulatively considerable net increase of CO. A detailed CO hotspot analysis is required when signalized intersections result in a 2,000 trip increase between the existing conditions and the cumulative plus project plus the existing conditions.

There are three intersections, listed in Table 2.2-8, that result in an increase of over 2,000 trips. These three intersections were modeled in CALINE4 in order to determine if the CO emissions exceeded the thresholds.

TABLE 2.2-8
TRIP VOLUMES FOR SIGNALIZED INTERSECTIONS WITH A CHANGE OVER 2,000 ADT

Intersection	Existing Conditions	Cumulative +Project +Existing	Change
SR-76/Old River/E. Vista Way	3,054	5,601	**2,547**
SR-76/Olive Hill Road/Camino del Rey	2,948	5,668	**2,720**
Old Highway 395/SR-76	1,947	4,031	**2,084**

NOTE: Bold numbers are those that exceed the County's threshold of 2,000.

In this cumulative analysis, the 2022 emission factors at a 5-miles-per-hour (mph) velocity for a combined vehicle mix were used for the three intersections. As shown in Table 2.2-9, the 1-hour and the 8-hour concentrations of CO at these intersections are below the CAAQS and NAAQS thresholds.

TABLE 2.2-9
MAXIMUM CO CONCENTRATIONS AT SR-76/OLD RIVER ROAD/EAST VISTA WAY

Scenario	Peak Hour Volumes	1-hour CO (ppm)	1-hour CO Standard CAAQS/ NAAQS	8-hour CO (ppm)	8-hour CO Standard CAAQS/ NAAQS
SR-76/Old River/East Vista Way	5,601	6.9	20/35	4.14	9/9
SR-76/Olive Hill Road/Camino del Rey	5,668	8		4.8	
Old Highway 395/SR-76	4,031	7.5		4.5	

CO = carbon dioxide
ppm = parts per million
CAAQS = California Ambient Air Quality Standard
NAAQS = National Ambient Air Quality Standard

The ambient concentration of CO at these intersections is 3.5 ppm. The Hot Spot analysis showed that the increases of CO due to the project would be 3.4 ppm at SR-76/Old River/East Vista Way, 4.5 ppm at SR-76/Olive Hill Road/Camino del Rey, and 4 ppm at Old Highway 395/SR-76. The combined concentrations of 6.9, 8.0, and 7.5 ppm are less than the CAAQS threshold of 20 ppm and the NAAQS threshold of 35 ppm. In order to calculate the 8-hour concentration, the 1-hour value was multiplied by a conversion factor of 0.6, as recommended in the Caltrans Transportation Project-Level Carbon Monoxide Protocol (the Protocol) (UCD ITS 1997). This results in values of 4.14, 4.8, and 4.5 ppm which are also below the standard state and national threshold of 9.0 ppm. Therefore, no cumulatively considerable impacts associated with CO would result from implementation of the project. Cumulative impacts to sensitive receptors would be **less than significant**.

As discussed in subchapter 2.2.2.1 under direct impacts, because the project includes densities not currently described in the General Plan, the project is not represented in SANDAG growth forecasts nor included in the current RAQS or SIP. Because the entire air basin is affected by project level impacts, the project would result in a cumulatively considerable net increase in emissions, representing a **cumulatively significant impact**. **(Impact AQ-5)**.

Additionally, as discussed in subchapter 2.2.2.3 direct operational emissions and construction and operational emissions occurring simultaneously would result in a significant impact). In combination with the emissions of pollutants from other proposed projects or reasonably foreseeable future projects, impacts would be **cumulatively significant** (**AQ-6**).

2.2.4 Significance of Impacts Prior to Mitigation

The following significant impacts related to air quality would occur with project implementation:

Impact AQ-1: Implementation of the project would conflict with and exceed the assumptions used to develop the current RAQS.

Impact AQ-2: Construction emissions are projected to exceed the applicable SLTs for PM_{10} and NO_X.

Impact AQ-3: Operational emissions are projected to exceed the applicable SLTs for ROG, CO, and PM_{10}.

Impact AQ-4: The phasing of project construction would result in a cumulatively considerable net increase of criteria pollutants as a result of operational and construction impacts occurring simultaneously.

Impact AQ-5: Implementation of the project would result in a cumulatively considerable increase in emissions conflicting with the current RAQS.

Impact AQ-6: Operational and construction impacts associated with the project's phasing of construction, in combination with the emissions from other proposed projects or reasonably foreseeable future projects, would be cumulatively significant.

2.2.5 Mitigation

The following mitigation measure is required for **Impacts AQ-1** and **AQ-5**.

M-AQ-1: The County shall provide a revised housing forecast to SANDAG to ensure that any revisions to the population and employment projects used in updating the RAQS and the SIP will accurately reflect anticipated growth due to the proposed project.

The following mitigation measures are required for **Impacts AQ-2, AQ-4 and AQ-6**.

M-AQ-2: The following dust control measures will be implemented:

- A “trackout” gravel bed shall be installed at every access point used during construction or at every location off-road equipment transitions to paved surfaces. The gravel bed shall be 25 feet long and the width of the access point/roadway.
- Chemical stabilizers shall be applied annually to all unpaved storage/maintenance yards, parking areas, and unpaved roads.
- Speeds will be limited to 15 miles an hour or less and shall be randomly verified by radar enforcement.

M-AQ-3: The following measure shall be implemented to reduce NO_X emission levels during blasting days:

All construction activity shall be halted during any blasting operation and only equipment required as part of the blasting operations, e.g., drill rig or equipment used to excavate and remove material, shall operate on the same day as blasting occurs during the construction of Phase 4, given the exceedance of NO_X during this phase.

M-AQ-4: The following measure shall be implemented to reduce PM_{10} and $PM_{2.5}$ emissions levels during rock crushing days:

Any permit conditions for crushing equipment shall be followed. Material shall be pre-watered prior to loading into the crusher as required to comply with permit and opacity emission limits. The crusher's emissions opacity shall be monitored once every 30 days of operation and an opacity limit of 20 percent as average over a six-minute period shall be maintained. Water shall be applied to crushed material to prevent dust plumes.

M-AQ-5: The following measure shall be implemented to reduce PM_{10} and $PM_{2..5}$ emissions levels during blasting:

Blasting activities shall adhere to permitting requirements by the California Division of Industrial Safety or the best management practices for control of fugitive dust from construction and demolition for blasting, such as wet drilling and wetting the surface area prior to blasting.

The following mitigation measures are required for **Impacts AQ-3 and AQ-6.**

M-AQ-6: The project applicant/phase developer shall develop a Green Cleaning Product education program consisting of:

1) Provision of educational materials in rental offices, leasing spaces and/or on websites, on low ROG/VOC consumer products for planned households and institutional consumers;

2) Educational materials shall be provided for detergents; cleaning compounds; polishes; floor finishes; cosmetics; personal care products; home, lawn and garden products; disinfectants; sanitizers; aerosol paints; automotive specialty products; low ROG/VOC paints and architectural coatings; and low emission landscape equipment.

3) Educational materials will include information on the importance of recycling and purchasing recycled material.

M-AQ-7: Promote and encourage ride share and alternative forms of transportation.

2.2.6 Conclusion

2.2.6.1 Consistency with RAQS/SIP

Implementation of the project would conflict with the existing San Diego RAQS and applicable SIP because the density proposed is not consistent with current land use plans and SANDAG housing forecasts (Impacts AQ-1 and AQ-4). This represents a significant impact. M-AQ-1 requires that the County provide a revised housing forecast to SANDAG to ensure that any revisions to the population and employment projects. The provision of housing information would assist SANDAG in revising the housing forecast; however, until the anticipated growth is included in the emission estimates of the RAQS and the SIP, the direct and cumulative impacts (Impacts AQ-1 and AQ-4)) would remain significant and unavoidable.

2.2.6.2 Construction Emissions

As shown in Table 2.2-4, criteria pollutant emissions would exceed the SLTs for PM_{10} and NO_X (Impact AQ-2). Construction emissions were calculated taking the mitigation measures M-AQ-2 through M-AQ-5 into account. The results are summarized in Table 2.2-10.

TABLE 2.2-10
MITIGATED CONSTRUCTION EMISSIONS (ON- AND OFF-SITE)
(pounds per day)

Construction Phase[1]	ROG	NO_X	CO	SO_2	PM_{10}	$PM_{2.5}$
Phase 1	13.6	175.9	425.5	10.2	49.4	14.5
Phase 1/Phase 4	38.6	177.5	113.7	0.2	27.3	16.2
Phase 4/Phase 2	33.1	202.4	466.1	10.3	52.5	16.3
Phase 2/Phase 5	52.1	238.3	474.2	10.3	52.8	16.4
Phase 5/Phase 3	36.14	203.7	474.0	10.3	53.6	16.5
Maximum Daily Emissions	52.1	238.3	474.2	10.3	53.6	16.5
SLT	75	250	550	250	100	55
Significant Impact?	No	No	No	No	No	No

ROG = reactive organic gases; NO_X = oxides of nitrogen; CO = carbon monoxide; SO_2 = sulfur dioxide; PM_{10} = suspended particulate matter; $PM_{2.5}$ = fine particulate matter; SLT = Screening Level Threshold
[1]Blasting would occur during the grading phase of all construction phases.

Implementation of mitigation measure M-AQ-2 requires additional dust-control measures beyond standard dust and emission controls during grading operations. M-AQ-3 requires stopping construction activities during blasting operations. M-AQ-4 requires pre-watering of materials prior to loading into the crusher and to apply water to crushed material to prevent dust plumes. M-AQ-5 requires best management practices for control of fugitive dust from blasting materials. As shown in Table 2.2-10, implementation of these mitigation measures would reduce construction related emissions to below the SLTs. Therefore, direct construction emissions would be a less than significant impact to regional air quality.

Construction-related traffic on local roads would not contribute traffic volumes to intersections that would cause a CO hotspot. Thus, construction-related impacts on localized CO concentrations would be considered less than significant.

The modeled cancer risks would not exceed the County's significance threshold of 1 in 1 million and the non-cancer health impacts would not exceed the REL or County thresholds; therefore, the project's construction-related TAC impacts to sensitive receptors would be less than significant.

Overall, implementation of M-AQ-2 through M-AQ-5 would reduce direct and cumulative significant construction related impacts to less than significant.

2.2.6.3 Operational Emissions

Implementation of the project would result in traffic and area source emissions greater than the applicable thresholds for ROG, CO, and PM_{10} (Impact AQ-3). CO emissions in excess of the County's SLT are not considered significant as the project would not result in a CO hot spot. ROG and PM_{10} emissions in excess of the County's SLT are considered significant and unavoidable. The primary source of ROG emission would be from consumer products, such as cleaning products and solvents, and the primary source of PM_{10} would be from vehicles tire and brake wear which increases with VMT and would not be improved with vehicle efficiencies.

Operational emissions were calculated with the incorporation of the design consideration and mitigation measures described above. Mitigated operational emissions are summarized in Table 2.2-11. As shown, emissions of ROG, CO, and PM_{10} would remain greater than the SLT for these pollutants despite incorporation of all of the project design considerations. There is an approximate 2 percent reduction in ROG and CO and an approximate 2.5 percent reduction in PM_{10} attributed to mitigation and project design measures reflected in CalEEMod. These pollutants cannot be fully mitigated as the source is principally from motor vehicle and area sources that are dependent on consumer behavior; however, mitigation measure M-AQ-6 includes the Green Cleaning Product education program, which will partially mitigate for ROG emissions over time as substantial ROG emissions result from consumer products. Additionally, M-A-7 requires the promotion of ridesharing and alternate forms of transportation, as the ROG, CO, and PM_{10} emissions are primarily from motor vehicles which are associated with occupants of the project area commuting to and from the project site. However, given that commuting and consumer behavior cannot be regulated, and the effects of these mitigation measures cannot be quantified direct and cumulative operational related impacts (Impacts AQ-3, AQ-4 and AQ-6) would remain significant and unavoidable.

In accordance with Section 15126.6(a), Chapter 4.0 of the EIR includes an analysis of alternatives to the proposed project that would reduce or avoid significant impacts. Table 4-2 shows those alternatives that would reduce significant and unavoidable air quality impacts associated with the project. Refer to Chapter 4.0 for a detailed analysis of the alternatives.

TABLE 2.2-11
MITIGATED OPERATIONAL EMISSIONS
(pounds per day)

Operational Scenario/ Emissions Source	ROG	NO_X	CO	SO_2	PM_{10}	$PM_{2.5}$
Scenario A Operations[1]						
Mobile Sources	21.05	45.21	211.52	0.38	44.26	2.66
Area Sources[2]	18.8	0.35	29.66	0	0.58	0.58
Total Scenario A	39.85	45.56	241.18	0.38	44.84	3.24
Scenario B Operations						
Mobile Sources	31.64	67.96	317.92	0.58	66.53	4
Area Sources	30.25	0.71	61.09	0	0.96	0.95
Total Scenario B	61.89	68.67	379.01	0.58	67.49	4.95
Scenario C Operations						
Mobile Sources	66.93	140.93	657.64	1.17	134.75	8.15
Area Sources	54.03	1.16	100.19	0.01	1.73	1.72
Total Scenario C	**120.96**	142.09	**757.83**	1.18	**136.48**	9.87
Scenario D Operations						
Mobile Sources	80.02	168.93	788.54	1.4	162.04	9.79
Area Sources	70.31	1.44	124.93	0.01	2.79	2.76
Total Scenario D	**150.33**	170.37	**913.47**	1.41	**164.83**	12.55
Scenario E Build-out Operations						
Mobile Sources	111.58	236.25	1,103.22	1.97	227.42	13.73
Area Sources	97.32	1.87	162.78	0.01	3	2.98
Total Scenario E Build-out	**208.9**	238.12	**1,266**	1.98	**230.41**	16.71
SLT	75	250	550	250	100	55
Significant Impact?	Yes	No	Yes	No	Yes	No

ROG =reactive organic gases; NO_X = oxides of nitrogen; CO = carbon monoxide; SO_2 = sulfur dioxide; PM_{10} = suspended particulate matter; $PM_{2.5}$ = fine particulate matter; SLT = Screening Level Threshold
[1]Emissions shown represent the maximum daily motor vehicle- or area-source emissions that would occur from summertime operations calculated by CalEEMod.
[2]The area sources calculation includes the natural gas energy calculations from CalEEMod.
Bold data indicate a threshold has been exceeded.

2.2.6.3 Cumulative Emissions

As the project would result in a cumulatively significant impact, the applicant shall implement mitigation measures described in subchapter 2.2.5 to reduce construction emissions.

Table 2.2-12 includes the combination of the mitigated construction and operation emissions would occur at the same point in time. This cumulative analysis provides a summary of which combination of operational and constructional phases surpass the significance thresholds even after application of all design considerations and mitigation measures previously identified are included.

TABLE 2.2-12
MITIGATED CONSTRUCTION + OPERATIONAL EMISSIONS

Overlapping Project Phases	ROG (lb/day)	NO_X (lb/day)	CO (lb/day)	SO_2 (lb/day)	PM_{10} (lb/day)	$PM_{2.5}$ (lb/day)
Phase 1	13.6	175.9	425.5	10.2	49.4	14.5
Phases 1 & 4	38.6	201.5	466.1	10.2	27.3	11.4
Phases 2 & 4	33.1	202.4	474.2	10.3	29.6	11.5
Scenario A Operational	39.9	45.6	241.2	0.4	44.8	3.2
Total A + 2 & 4	*73.0*	*247.9*	***715.4***	*10.6*	*74.4*	*14.7*
Phases 2 & 5	52.1	203.7	474.0	10.3	29.9	11.6
Scenario B Operational	61.9	68.7	379.0	0.6	67.5	5.0
Total B + 2 & 5	***114.0***	***272.4***	***853.0***	*10.8*	*97.4*	*16.5*
Phases 3 & 5	36.1	206.0	477.4	10.3	30.7	11.7
Scenario C Operational	121.0	142.1	**757.8**	1.2	**136.5**	9.9
Total C + 3 & 5	***157.0***	***348.1***	***1235.2***	*11.5*	***167.2***	*21.5*
Phase 3	14.1	173.2	432.0	10.2	23.1	9.5
Scenario D Operational	150.3	170.4	**913.5**	1.4	**164.8**	12.6
Total D + 3	***164.4***	***343.6***	***1345.4***	*11.6*	***187.9***	*22.1*
Scenario E Operational	***208.9***	*238.1*	***1266.0***	*2.0*	***230.4***	*16.7*
SLT	75	250	550	250	100	55
Significant Impact?	Yes	No	Yes	No	Yes	No

Note: SLT = Significance Level Threshold; *Italicized* = Combined totals of operational and construction phases for the project. **Bold** = Emissions exceeds SLT.

As discussed previously, even with incorporation of project design considerations and mitigation measures, these pollutants cannot be fully mitigated as the source is principally from motor vehicle and area sources that are dependent on consumer behavior. However, given that commuting and consumer behavior cannot be regulated, cumulative impacts would remain significant and unavoidable.

TABLE 2.2-1
AMBIENT AIR QUALITY STANDARDS

Pollutant	Averaging Time	California Standards[1]		Federal Standards[2]		
		Concentration[3]	Method[4]	Primary[3,5]	Secondary[3,6]	Method[7]
Ozone	1 Hour	0.09 ppm (180 $\mu g/m^3$)	Ultraviolet Photometry	–	Same as Primary Standard	Ultraviolet Photometry
	8 Hour	0.07 ppm (137 $\mu g/m^3$)		0.075 ppm (147 $\mu g/m^3$)		
Respirable Particulate Matter (PM_{10})	24 Hour	50 $\mu g/m^3$	Gravimetric or Beta Attenuation	150 $\mu g/m^3$	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	20 $\mu g/m^3$		–		
Fine Particulate Matter ($PM_{2.5}$)	24 Hour	No Separate State Standard		35 $\mu g/m^3$	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	12 $\mu g/m^3$	Gravimetric or Beta Attenuation	15 $\mu g/m^3$		
Carbon Monoxide (CO)	1 Hour	20 ppm (23 mg/m^3)	Non-dispersive Infrared Photometry	35 ppm (40 mg/m^3)	–	Non-dispersive Infrared Photometry
	8 Hour	9.0 ppm (10 mg/m^3)		9 ppm (10 mg/m^3)	–	
	8 Hour (Lake Tahoe)	6 ppm (7 mg/m^3)		–	–	
Nitrogen Dioxide (NO_2)[8]	1 Hour	0.18 ppm (339 $\mu g/m^3$)	Gas Phase Chemi-luminescence	100 ppb (188 $\mu g/m^3$)	–	Gas Phase Chemi-luminescence
	Annual Arithmetic Mean	0.030 ppm (57 $\mu g/m^3$)		53 ppb (100 $\mu g/m^3$)	Same as Primary Standard	
Sulfur Dioxide (SO_2)[9]	1 Hour	0.25 ppm (655 $\mu g/m^3$)	Ultraviolet Fluorescence	75 ppb (196 $\mu g/m^3$)	–	Ultraviolet Fluorescence; Spectro photometry (Pararosaniline Method)
	3 Hour	–		–	0.5 ppm (1300 $\mu g/m^3$)	
	24 Hour	0.04 ppm (105 $\mu g/m^3$)		0.14 ppm (for certain areas)[9]	–	
	Annual Arithmetic Mean	–		0.030 ppm (for certain areas)[9]	–	
Lead[10,11]	30 Day Average	1.5 $\mu g/m^3$	Atomic Absorption	–	–	High Volume Sampler and Atomic Absorption
	Calendar Quarter	–		1.5 $\mu g/m^3$ (for certain areas)[11]	Same as Primary Standard	
	Rolling 3-Month Average	–		0.15 $\mu g/m^3$		
Visibility Reducing Particles[12]	8 Hour	See footnote 12	Beta Attenuation and Transmittance through Filter Tape	No Federal Standards		
Sulfates	24 Hour	25 $\mu g/m^3$	Ion Chroma-tography			
Hydrogen Sulfide	1 Hour	0.03 ppm (42 $\mu g/m^3$)	Ultraviolet Fluorescence			
Vinyl Chloride[10]	24 Hour	0.01 ppm (26 $\mu g/m^3$)	Gas Chroma-tography			

See footnotes on next page.

SOURCE: State of California 2012a.

TABLE 2.2-1
AMBIENT AIR QUALITY STANDARDS
(continued)

ppm = parts per million; ppb = parts per billion; µg/m^3 = micrograms per cubic meter; – = not applicable.

[1]California standards for ozone, carbon monoxide (except 8-hour Lake Tahoe), sulfur dioxide (1 and 24 hour), nitrogen dioxide, particulate matter (PM_{10}, $PM_{2.5}$, and visibility reducing particles), are values that are not to be exceeded. All others are not to be equaled or exceeded. California ambient air quality standards are listed in the Table of Standards in Section 70200 of Title 17 of the California Code of Regulations.

[2]National standards (other than ozone, particulate matter, and those based on annual arithmetic mean) are not to be exceeded more than once a year. The ozone standard is attained when the fourth highest 8-hour concentration measured at each site in a year, averaged over three years, is equal to or less than the standard. For PM_{10}, the 24-hour standard is attained when the expected number of days per calendar year with a 24-hour average concentration above 150 µg/m^3 is equal to or less than one. For $PM_{2.5}$, the 24-hour standard is attained when 98 percent of the daily concentrations, averaged over three years, are equal to or less than the standard. Contact the U.S. EPA for further clarification and current national policies.

[3]Concentration expressed first in units in which it was promulgated. Equivalent units given in parentheses are based upon a reference temperature of 25°C and a reference pressure of 760 torr. Most measurements of air quality are to be corrected to a reference temperature of 25°C and a reference pressure of 760 torr; ppm in this table refers to ppm by volume, or micromoles of pollutant per mole of gas.

[4]Any equivalent measurement method which can be shown to the satisfaction of the Air Resources Board to give equivalent results at or near the level of the air quality standard may be used.

[5]National Primary Standards: The levels of air quality necessary, with an adequate margin of safety to protect the public health.

[6]National Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.

[7]Reference method as described by the U.S. EPA. An “equivalent method” of measurement may be used but must have a “consistent relationship to the reference method” and must be approved by the U.S. EPA.

[8]To attain the 1-hour national standard, the 3-year average of the annual 98th percentile of the 1-hour daily maximum concentrations at each site must not exceed 100 ppb. Note that the national standards are in units of parts per billion (ppb). California standards are in units of parts per million (ppm). To directly compare the national standards to the California standards the units can be converted from ppb to ppm. In this case, the national standards of 53 ppb and 100 ppb are identical to 0.053 ppm and 0.100 ppm, respectively.

[9]On June 2, 2010, a new 1-hour SO_2 standard was established and the existing 24-hour and annual primary standards were revoked. To attain the 1-hour national standard, the 3-year average of the annual 99th percentile of the 1-hour daily maximum concentrations at each site must not exceed 75 ppb. The 1971 SO_2 national standards (24-hour and annual) remain in effect until one year after an area is designated for the 2010 standard, except that in areas designated nonattainment for the 1971 standards, the 1971 standards remain in effect until implementation plans to attain or maintain the 2010 standards are approved.

Note that the 1-hour national standard is in units of parts per billion (ppb). California standards are in units of parts per million (ppm). To directly compare the 1-hour national standard to the California standard the units can be converted to ppm. In this case, the national standard of 75 ppb is identical to 0.075 ppm.

[10]The ARB has identified lead and vinyl chloride as ‘toxic air contaminants’ with no threshold level of exposure for adverse health effects determined. These actions allow for the implementation of control measures at levels below the ambient concentrations specified for these pollutants.

[11]The national standard for lead was revised on October 15, 2008 to a rolling 3-month average. The 1978 lead standard (1.5 µg/m^3 as a quarterly average) remains in effect until one year after an area is designated for the 2008 standard, except that in areas designated nonattainment for the 1978 standard, the 1978 standard remains in effect until implementation plans to attain or maintain the 2008 standard are approved.

[12]In 1989, the ARB converted both the general statewide 10-mile visibility standard and the Lake Tahoe 30-mile visibility standard to instrumental equivalents, which are “extinction of 0.23 per kilometer” and “extinction of 0.07 per kilometer” for the statewide and Lake Tahoe Air Basin standards, respectively.

TABLE 2.2-2
AMBIENT AIR QUALITY SUMMARY—SAN DIEGO AIR BASIN

Pollutant	Average Time	California Ambient Air Quality Standards[a]	Attain-ment Status	National Ambient Air Quality Standards[b]	Attain-ment Status[c]	Maximum Concentration					Number of Days Exceeding State Standard					Number of Days Exceeding National Standard				
						2007	2008	2009	2010	2011	2007	2008	2009	2010	2011	2007	2008	2009	2010	2011
O_3	1 hour	0.09 ppm	N	N/A	N/A	0.134	0.139	0.119	0.107	0.114	21	18	8	7	5	1	2	0	0	0
O_3	8 hours	0.07ppm	N	0.08 ppm (1997)	N	0.092	0.110	0.098	0.088	0.093	50	69	47	21	33	7	11	4	1	3
O_3	8 hours	---	---	0.075 ppm (2008)	N	0.092	0.109	0.097	0.088	0.093	---	---	---	--	--	27	35	24	14	10
CO	1 hour	20 ppm	A	35 ppm	A	8.7	4.6	Na	Na	Na	0	0	Na	Na	Na	0	0	Na	Na	Na
CO	8 hours	9 ppm	A	9 ppm	A	5.18	3.51	3.54	2.46	2.44	0	0	0	0	0	0	0	0	0	0
NO_2	1 hour	0.18 ppm	A	N/A	N/A	0.101	0.123	0.091	0.091	0.1	0	0	0	0	0	N/A	N/A	N/A	N/A	N/A
NO_2	Annual	0.030 ppm	N/A	0.053 ppm	A	0.015	0.015	0.016	0.013	0.013	N/A	N/A	N/A	N/A	N/A	NX	NX	NX	NX	NX
SO_2	1 hour	25 pphm	A	N/A	N/A	2.7	1.9	Na	Na	Na	0	0	Na	Na	Na	N/A	N/A	N/A	N/A	N/A
SO_2	3 hour	---	N/A	50 pphm[d]	A	1.7	1.4	Na	Na	Na	N/A	N/A	N/A	N/A	N/A	0	0	Na	Na	Na
SO_2	24 hours	4 pphm	A	14 pphm	A	0.9	0.7	Na	Na	Na	0	0	Na	Na	Na	0	0	Na	Na	Na
SO_2	Annual	N/A	N/A	3 pphm	A	0.3	0.2	Na	Na	Na	N/A	N/A	N/A	N/A	N/A	NX	NX	Na	Na	Na
PM_{10}	24 hours	50 $\mu g/m^3$	N	150 $\mu g/m^3$	U	394	158	126	108	125	27/ 158.6*	30/ 163.4*	25/ 146.4*	22/ 136*	23/ 138.5*	1/6.1*	1/Na*	0/Na*	0/0*	0/0*
PM_{10}	Annual	20 $\mu g/m^3$	N	N/A	N/A	58.4	56.1	53.9	47	46.2	EX	EX	EX	EX	EX	N/A	N/A	N/A	N/A	N/A
$PM_{2.5}$	24 hours	N/A	N/A	35 $\mu g/m^3$	A	151	44	78.4	52.2	35.5	N/A	N/A	N/A	N/A	N/A	17/ 11.4	5/3.5	4/3.4	2/2	3/3
$PM_{2.5}$	Annual	12 $\mu g/m^3$	N	15 $\mu g/m^3$	A	13.3	14.9	12.2	10.8	10.9	EX	EX	EX	EX	EX	NX	NX	NX	NX	NX

SOURCE: State of California 2011a; U.S. EPA 2011a
*Measured Days/Calculated Days—Calculated days are the estimated number of days that a measurement would have been greater than the level of the standard had measurements been collected every day. Particulate measurements are collected every six days. The number of days above the standard is not necessarily the number of violations of the standard for the year.
[a]California standards for ozone, carbon monoxide (except at Lake Tahoe), sulfur dioxide (1-hour and 24-hour), nitrogen dioxide, and PM_{10} are values that are not to be exceeded. Some measurements gathered for pollutants with air quality standards that are based upon 1-hour, 8-hour, or 24-hour averages, may be excluded if the CARB determines they would occur less than once per year on average.
[b]National standards other than for ozone and particulates, and those based on annual averages or annual arithmetic means are not to be exceeded more than once a year. The 1-hour ozone standard is attained if, during the most recent 3-year period, the average number of days per year with maximum hourly concentrations above the standard is equal to or less than one.
[c]A = attainment; N = non-attainment; U = Unclassifiable
N/A = not applicable; Na = data not available; NX = annual average not exceeded; EX = annual average exceeded.
ppm = parts per million, pphm = parts per hundred million, $\mu g/m^3$ = micrograms per cubic meter.
[d]Secondary Standard

TABLE 2.2-3
SUMMARY OF AIR QUALITY MEASUREMENTS RECORDED AT THE CAMP PENDLETON, DEL MAR–MIRA COSTA COLLEGE, AND THE ESCONDIDO–EAST VALLEY PARKWAY MONITORING STATIONS

Pollutant/Standard	2007	2008	2009	2010	2011
CAMP PENDLETON					
Ozone					
Days State 1-hour Standard Exceeded (0.09 ppm)	0	1	0	0	0
Days State 8-hour Standard Exceeded (0.07 ppm)	4	3	5	1	2
Days Federal 1-hour Standard Exceeded (0.12 ppm)	0	0	0	0	0
Days 08' Federal 8-hour Standard Exceeded (0.075 ppm)	0	2	1	1	0
Max. 1-hr (ppm)	0.083	0.104	0.090	0.092	0.085
Max 8-hr (ppm)	0.074	0.077	0.077	0.079	0.071
Nitrogen Dioxide					
Days State 1-hour Standard Exceeded (0.18 ppm)	0	0	0	0	0
Max 1-hr (ppm)	0.068	0.089	0.068	0.081	0.066
Annual Average (ppm)	0.010	0.010	0.010	0.008	0.007
$PM_{2.5}$*					
Measured Days Federal 24-hour Standard Exceeded (35 $\mu g/m^3$)	0	Na	0	0	0
Calculated Days Federal 24-hour Standard Exceeded (35 $\mu g/m^3$)	Na	Na	Na	Na	Na
Max. Daily ($\mu g/m^3$)	Na	34.2	26.9	26.1	30.7
State Annual Average ($\mu g/m^3$)	Na	Na	NA	Na	NA
Federal Annual Average ($\mu g/m^3$)	Na	Na	Na	Na	Na
DEL MAR – MIRA COSTA COLLEGE					
Ozone					
Days State 1-hour Standard Exceeded (0.09 ppm)	1	2	1	0	0
Days State 8-hour Standard Exceeded (0.07 ppm)	4	11	3	2	1
Days Federal 1-hour Standard Exceeded (0.12 ppm)	0	0	0	0	0
Days 08' Federal 8-hour Standard Exceeded (0.075 ppm)	3	3	1	0	0
Max. 1-hr (ppm)	0.110	0.117	0.097	0.085	0.091
Max 8-hr (ppm)	0.079	0.079	0.084	0.072	0.075
ESCONDIDO–EAST VALLEY PARKWAY					
Ozone					
Days State 1-hour Standard Exceeded (0.09 ppm)	0	9	0	2	1
Days State 8-hour Standard Exceeded (0.07 ppm)	5	23	9	2	2
Days Federal 1-hour Standard Exceeded (0.12 ppm)	0	0	0	0	0
Days 08' Federal 8-hour Standard Exceeded (0.075 ppm)	3	13	1	3	2
Max. 1-hr (ppm)	0.094	0.116	0.093	0105	0.098
Max 8-hr (ppm)	0.078	0.099	0.081	0.085	0.089
Nitrogen Dioxide					
Days State 1-hour Standard Exceeded (0.18 ppm)	0	0	0	0	0
Max 1-hr (ppm)	0.072	0.081	0.073	0.064	0.062
Annual Average (ppm)	0.016	0.018	0.016	0.014	0.013
Carbon Monoxide					
Days State 1-hour Standard Exceeded (20 ppm)	0	0	0	0	0
Days State 8-hour Standard Exceeded (9 ppm)	0	0	0	0	0
Days Federal 1-hour Standard Exceeded (35 ppm)	0	0	0	0	0
Days Federal 8-hour Standard Exceeded (9 ppm)	0	0	0	0	0
Max. 1-hr (ppm)	5.2	5.6	4.4	3.9	3.5
Max. 8-hr (ppm)	3.19	2.81	3.54	2.46	2.30
PM_{10}*					
Measured Days State 24-hour Standard Exceeded (50 $\mu g/m^3$)	2	1	1	0	0
Calculated Days State 24-hour Standard Exceeded (50 $\mu g/m^3$)	11.5	Na	5.6	0	0
Measured Days Federal 24-hour Standard Exceeded (150 $\mu g/m^3$)	0	0	0	0	0
Calculated Days Federal 24-hour Standard Exceeded (150 $\mu g/m^3$)	0	0	0	0	0
Max. Daily ($\mu g/m^3$)	68.0	84.0	74.0	430.	40.0
State Annual Average ($\mu g/m^3$)	26.8	Na	24.6	21.0	18.8
Federal Annual Average ($\mu g/m^3$)	26.7	24.6	24.9	20.9	18.8
$PM_{2.5}$*					
Measured Days Federal 24-hour Standard Exceeded (35 $\mu g/m^3$)	11	3	2	2	3
Calculated Days Federal 24-hour Standard Exceeded (35 $\mu g/m^3$)	11.4	Na	2	2	3
Max. Daily ($\mu g/m^3$)	151	44	78.4	52.2	27.4
State Annual Average ($\mu g/m^3$)	13.3	12.4	Na	Na	10.4
Federal Annual Average ($\mu g/m^3$)	13.3	Na	13.4	12.2	12.2

SOURCE: State of California 2012b.; Na = Not available.

*Calculated days value. Calculated days are the estimated number of days that a measurement would have been greater than the level of the standard had measurements been collected every day. The number of days above the standard is not necessarily the number of violations of the standard for the year.

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