2.2.6 Air Quality

2.2.6.1 Regulatory Setting

The Clean Air Act (CAA), as amended in 1990, is the federal law that governs air quality. Its counterpart in California is the California Clean Air Act of 1988 (CCAA). These laws set standards for the quantity of pollutants that can be in the air. At the federal level, these standards are called National Ambient Air Quality Standards (NAAQS). Standards have been established for carbon monoxide (CO), nitrogen dioxide (NO_2), ozone (O_3) and particulate matter that is 10 microns in diameter or smaller (PM_{10}) and $PM_{2.5}$ (2.5 microns in diameter or smaller).

Under the 1990 CAA, the United States Department of Transportation (DOT) cannot fund, authorize, or approve federal actions to support programs or projects that are not first found to conform to the CAA requirements. Conformity with the CAA takes place on two levels – first at the regional level and second at the project level. The proposed project must conform at both levels to be approved.

Regional level conformity in California is concerned with how well the region is meeting the standards set for carbon monoxide (CO), nitrogen dioxide (NO_2), ozone (O_3), and particulate matter (PM). California is in attainment for the other criteria pollutants. At the regional level, the Southern California Association of Governments (SCAG) is responsible for development of a Regional Transportation Plan (RTP) that includes all of the transportation projects planned for the southern California SCAG region over a period of twenty years. Based on the projects included in the RTP, an air quality model is run to determine whether or not the implementation of those projects would conform to emission budgets or other tests showing that attainment requirements of the CAA and CCAA are met. If the conformity analysis is successful, SCAG and the appropriate federal agencies, such as the Federal Highway Administration, make the determination that the RTP is in conformity with the State Implementation Plan (SIP) for achieving the goals of the CAA. Otherwise, the projects in the RTP must be modified until conformity is attained. If the design and scope of the proposed transportation project are the same as described in the RTP, then the proposed project is deemed to meet regional conformity requirements for purposes of project-level analysis.

Conformity at the project-level also requires “hot spot” analysis if an area is “nonattainment” or “maintenance” for CO and/or particulate matter. A region is a “nonattainment” area if one or more monitoring stations in the region fail to attain the relevant standard. Areas that were previously designated as nonattainment areas, but have recently met the standard, are called “maintenance” areas. “Hot spot” analysis is essentially the same, for technical purposes, as CO or particulate matter analysis performed for NEPA and CEQA purposes. Conformity does include some specific standards for projects that require a hot spot analysis. In general, projects must not cause the CO standard to be violated, and in “nonattainment” areas, the project must not cause any increase in the number and severity of violations. If a known CO or particulate matter violation is located in the project vicinity, the project must include measures to reduce or eliminate the existing violation(s) as well.

2.2.6.2 Affected Environment

An Air Quality Technical Study (Parsons, 2007a) was prepared as part of this project to assess the impacts of the project on air quality, locally and regionally. The information presented in this section is based on the results of the technical study.

A Environmental Setting

The proposed project is located in coastal Orange County, which is within the 6,600 square-mile South Coast Air Basin (SCAB). The SCAB encompasses all of Orange County and the nondesert portions of Los Angeles, Riverside, and San Bernardino Counties. It consists of a coastal plain with interconnecting broad valleys and low hills. Elevations range from sea level to over 11,000 feet above mean sea level (msl). The South Coast Air Quality Management District (SCAQMD) has jurisdiction over air quality issues within the SCAB. While the SCAB has some of the most unhealthful air quality in the nation, it continues to show remarkable improvement (SCAQMD, 2003).

The proposed project is located in the City of San Juan Capistrano, which was incorporated in 1961. The City has grown from a small community of approximately 10,000 persons in 1974 to a developed city of 36,078 in 2005, with a variety of land uses that provide open space, recreation, housing, jobs, shopping, and services (City of San Juan Capistrano, 2006b).

According to the California Geological Survey (formerly the Division of Mines and Geology), the project is not located in an area of naturally occurring asbestos. Naturally occurring asbestos is identified based on the type of rock found in that area. Asbestos-containing rocks found in California include ultramathic rock and serpentinite, which are not present in the project area (CDMG, 2003).

B Climate

Warm dry summers, low precipitation, and mild winters characterize the overall climate within the SCAB. The SCAB experiences a persistent temperature inversion (i.e., increasing air temperature with increasing altitude) because of the Pacific high. This inversion limits the vertical dispersion of air contaminants, holding them relatively near the ground. As the sun warms the ground and the lower air layer, the temperature of the lower air layer approaches the temperature of the base of the inversion (i.e., upper) layer until the inversion layer finally breaks, allowing vertical mixing with the lower layer. This phenomenon is observed in mid-afternoon to late afternoon on hot summer days, when the smog appears to suddenly clear. Winter inversions frequently break by mid-morning.

The City is located approximately three miles inland from the Pacific Ocean. The Capistrano Valley is located between the Ortega Mountain foothills to the west and the San Joaquin hills to the east. Because of this topography, southerly winds prevail much of the year, unlike in the Los Angeles basin, which has a predominant southwest-west prevailing flow. Like other coastal areas of the Los Angeles basin, important climatic influences are the onshore marine layer from the Pacific and the offshore Santa Ana Canyon winds, which are occasionally interspersed with periods of winter storms. There

is little stagnation of air in the project vicinity, especially during busy daytime traffic hours.

Meteorological data from a weather station located in Laguna Beach (7.6 miles northwest) have indicated that an average high of 78.0 degrees Fahrenheit (°F) occurs during the summer months and a low of 43.1 °F occurs in the winter months. The average annual maximum temperature is 71.1 °F, and the average annual minimum temperature is 51.0 °F. Very little or no rainfall occurs during the summer months. Rainfall typically occurs from October through April, providing an average annual rainfall of 12.82 inches (Western Regional Climate Center, 2006).

C Current Air Quality Monitoring Data

The California Air Resources Board (CARB) maintains monitoring stations throughout the SCAB to monitor concentrations of criteria pollutants in the air. The nearest station is in Mission Viejo (MV) approximately seven miles north of the I-5/Ortega Highway interchange. This station is located at 26081 Via Pera, approximately eight miles (13 kilometers [km]) from the project site. NO_2 is measured at the Costa Mesa (CM) Station, located at 2850 Mesa Verde Drive, approximately 19 miles (31 km) from the project site. Table 2.2.6-1 provides monitored ambient air quality data from both stations for the last 3 years available (2004-2006). Table 2.2.6-1 shows data from the MV station for the 2004-2006 period for O_3, CO, PM_{10}, and $PM_{2.5}$. The ambient concentrations of NO_2 and sulfur dioxide (SO_2) are not measured at this station, so concentration data from the CM Station, is also presented in Table 2.2.6-1.

Table 2.2.6-1
Air Pollutant Data Summary from Nearest Monitoring Stations (2004-2006)[3]

Pollutant	CARB Monitoring Station Data		
	2004 (2002)	2005 (2003)	2006 (2004)
Ozone (O_3)			
Highest 1 hour, ppm	0.116 (MV)	0.125 (MV)	0.123 (MV)
Days > 0.12 ppm[1]	0	1	0
Days > 0.09 ppm[2]	11	3	13
Highest 8 hour, ppm	0.090 (MV)	0.085 (MV)	0.105 (MV)
Days > 0.08 ppm[1]	4	1	6
Measured at Mission Viejo (MV) station, approximately 7 miles north of the I-5/Ortega Highway interchange.			
Carbon Monoxide (CO)			
Highest 1 hour, ppm	NR	NR	NR
Days > 35.0 ppm[1]	0	0	0
Days > 20.0 ppm[2]	0	0	0
Highest 8 hour, ppm	1.49 (MV)	1.59 (MV)	1.64 (MV)
Days > 9.0 ppm[1,2]	0	0	0
Measured at Mission Viejo (MV) station, approximately 7 miles north of the I-5/Ortega Highway interchange.			
Nitrogen Dioxide (NO_2)			
Highest 1 hour, ppm	0.097 (CM)	0.085 (CM)	0.101 (CM)
Days > 0.25 ppm[2]	0	0	0
Annual Average	0.016 (CM)	0.014 (CM)	0.015 (CM)
Annual Standard Exceeded?	No	No	No
Measured at Costa Mesa (CM) station, approximately 18 miles northwest of the I-5/Ortega Highway interchange.			

Table 2.2.6-1
Air Pollutant Data Summary from Nearest Monitoring Stations (2004-2006)[3]

Pollutant	CARB Monitoring Station Data		
	2004 (2002)	2005 (2003)	2006 (2004)
Sulfur Dioxide (SO_2)			
Highest 24 hour, ppm	0.008 (CM)	0.008 (CM)	0.005 (CM)
Days > 0.14 ppm[1]	0	0	0
Days > 0.25 ppm[2]	0	0	0
Annual Average	0.002 (CM)	0.001 (CM)	0.001 (CM)
Annual Standard Exceeded?	No	No	No
Measured at Costa Mesa (CM) station, approximately 18 miles northwest of the I-5/Ortega Highway interchange.			
Particulates (PM_{10})			
Highest 24 hour	47.0 (MV)	41.0 (MV)	57.0 (MV)
Days > 150 $\mu g/m^3$ [1]	0	NR	NR
Days > 50 $\mu g/m^3$ [2]	0	NR	NR
Annual Average	23.7 (MV)	17.6 (MV)	21.1 (MV)
National Annual Standard Exceeded?	No	No	No
State Annual Standard Exceeded?	No	No	No
Measured at Mission Viejo (MV) station, approximately 7 miles north of the I-5/Ortega Highway interchange.			
Particulates ($PM_{2.5}$)			
Highest 24 hour	49.4 (MV)	35.3 (MV)	46.9 (MV)
National 24-Hour Standard Exceeded? (> 35 $\mu g/m^3$ [1])	Yes	Yes	Yes
Annual Average	12.0(MV)	10.6(MV)	IND
National Annual Standard Exceeded? (> 15 $\mu g/m^3$ [1])	No	No	IND
State Annual Standard Exceeded? (> 12 $\mu g/m^3$ [2])	No	No	IND
Measured at Mission Viejo (MV) station, approximately 7 miles north of the I-5/Ortega Highway interchange.			
Lead (Pb)	No Data	No Data	No Data

AAM – Annual Arithmetic Mean
AGM – Annual Geometric Mean
$\mu g/m^3$ – micrograms per cubic meter
ppm – parts per million
NR – Not reported since the 1-hour standard has not been exceeded in more than 25 years.
IND – Insufficient data
[1] Federal standard
[2] State standard
[3] Numbers in parenthesis represent monitoring data from years 2004 to 2006.

Source: CARB, 2006.

D Federal Regulations and Standards

Pursuant to the federal CAA of 1970, the United States Environmental Protection Agency (EPA) established NAAQS. The NAAQS were established for several major pollutants, termed "criteria" pollutants because the standards are supported by specific medical evidence. The NAAQS are two-tiered – primary standards to protect public health and secondary standards to prevent degradation to the environment (e.g., impairment of visibility, damage to vegetation and property).

The six criteria pollutants are O_3; CO; PM_{10}, which includes diesel particulate matter; NO_2; SO_2; and lead (Pb). In 1997, EPA promulgated new federal standards for a seventh pollutant – $PM_{2.5}$ – and established an 8-hour O_3 standard.

Table 2.2.6-2 shows the federal primary and secondary standards for these pollutants, and Table 2.2.6-3 shows the health effects resultant from exposure to these pollutants.

Table 2.2.6-2
Ambient Air Quality Standards

Pollutant	Average Time	State Standards	Federal Primary	Federal Secondary
Ozone (O_3)	1-Hour	0.09 ppm (180 µg/m^3)	–	Same as Primary Standard
	8-Hour	0.07 ppm (137 µg/m^3)	0.08 ppm (157 µg/m^3)	
Nitrogen Dioxide (NO_2)	Annual Arithmetic Mean	0.03 ppm (56 µg/m^3)	0.053 ppm (100 µg/m^3)	Same as Primary Standard
	1-Hour	0.18 ppm (338 µg/m^3)	–	
Carbon Monoxide (CO)	8-Hour	9.0 ppm (10 mg/m^3)	9 ppm (10 mg/m^3)	None
	1-Hour	20 ppm (23 mg/m^3)	35 ppm (40 mg/m^3)	
Respirable Particulate Matter (PM_{10})	24-Hour	50 µg/m^3	150 µg/m^3	Same as Primary Standard
	Annual Arithmetic Mean	20 µg/m^3	–	
Fine Particulate Matter ($PM_{2.5}$)	24-Hour	–	35 µg/m^3	Same as Primary Standard
	Annual Arithmetic Mean	12 µg/m^3	15 µg/m^3	
Sulfur Dioxide (SO_2)	Annual Average	–	0.03 ppm (80 µg/m^3)	–
	24-Hour	0.04 ppm (105 µg/m^3)	0.14 ppm (365 µg/m^3)	–
	3-Hour	–	–	0.5 ppm (1,300 µg/m^3)
	1-Hour	0.25 ppm (655 µg/m^3)	–	–
Lead (Pb)	30-Day Average	1.5 µg/m^3	–	–
	Calendar Quarter	–	1.5 µg/m^3	Same as Primary Standard
Sulfates	24-Hour	24 µg/m^3	–	–
Hydrogen Sulfide	1-Hour	0.03 ppm (42 µg/m^3)	–	–
Vinyl Chloride (chloroethene)	24-Hour	0.01 ppm (26 µg/m^3)	–	–
Visibility-Reducing Particles	8-Hour (10:00 a.m. to 6:00 p.m., PST)	**	–	–

** Extinction coefficient of 0.23 per kilometer —visibility of ten miles or more due to particles when relative humidity is less than 70 percent.
µg/m^3 – micrograms per cubic meter
mg/m^3 – milligrams per cubic meter
ppm – parts per million

Source: CARB, 2006.

Table 2.2.6-3
Health Effects Summary for Air Pollutants

Pollutant	Sources	Primary Effects
Ozone	Atmospheric reaction of organic gases with nitrogen oxides in sunlight.	Aggravation of respiratory and cardiovascular diseases; irritation of eyes; impairment of cardiopulmonary function; plant leaf injury.
Nitrogen Dioxide	Motor vehicle exhaust; high temperature; stationary combustion; atmospheric reactions.	Aggravation of respiratory illness; reduced visibility; reduced plant growth; formation of acid rain.
Carbon Monoxide	Incomplete combustion of fuels and other carbon-containing substances, such as motor vehicle exhaust; and natural events, such as decomposition of organic matter.	Reduced tolerance for exercise; impairment of mental function; impairment of fetal development; death at high levels of exposure; aggravation of some heart disease (angina).
PM_{10}, $PM_{2.5}$	Combustion of gasoline, oil, diesel, wood; construction activities; industrial processes; atmospheric chemical reactions; wind-blown dust.	Reduced lung function; aggravation of the effects of gaseous pollutants; aggravation of respiratory and cardiorespiratory diseases; increased cough and chest discomfort; soiling; reduced visibility.
Sulfur Dioxide	Combustion of sulfur-containing fossil fuels; smelting of sulfur-bearing metal ores; industrial processes.	Aggravation of respiratory diseases (i.e., asthma, emphysema); reduced lung function; irritation of eyes; reduced visibility; plant injury. Deterioration of metals, textiles, leather, finishes, coating, etc.
Lead	Contaminated soil.	Impairment of blood function and nerve construction; behavioral and hearing problems in children.

Source: CARB, 2006.

EPA uses data collected at permanent monitoring stations to classify regions as "attainment" if the primary NAAQS have been achieved, or "nonattainment" if the NAAQS are not achieved. The CARB classifies regions as "attainment" if California Ambient Air Quality Standards (CAAQS) have been achieved, or "nonattainment" if CAAQS are not achieved. Table 2.2.6-4 presents the federal and state classification status of the SCAB for the criteria air pollutants.

Table 2.2.6-4
Federal and State Attainment Status for South Coast Air Basin

Pollutants	Federal Classification	State Classification
Ozone (1-hour)	Extreme Nonattainment	Extreme Nonattainment
Ozone (8-hour)	Severe – 17 Nonattainment	Pending
PM_{10}	Serious Nonattainment	Serious Nonattainment
$PM_{2.5}$	Nonattainment	Nonattainment
Carbon Monoxide	Serious Nonattainment[a]	Attainment
Nitrogen Dioxide	Attainment	Attainment
Sulfur Dioxide	Attainment	Attainment

Source: EPA, 2004; CARB, 2005a.

[a] On May 11, 2007, the federal register (Volume 72, Number 91), noted that the EPA granted approval to the SCAQMD's re-designation request for the SCAB as an "Attainment" area for carbon monoxide. This rule became effective on June 11, 2007. Due to the fact that the air quality analysis for the proposed project was prepared prior to June 2007, the former federal classification of the SCAG as "Serious Nonattainment" status for carbon monoxide is noted.

The CAA originally set a 5-year deadline for NAAQS attainment; however, the attainment date was subsequently revised by the Clean Air Act Amendments (CAAAs), which also required states to identify nonattainment subareas within their borders and to develop an EPA-approved SIP demonstrating attainment of all NAAQS by 1982. In a later EPA mandate, that attainment deadline was extended to 1987. The 1990 CAAAs specify new strategies for attaining NAAQS nationwide over the next twenty years, including a mandatory three percent annual reduction of air pollutant emissions for both existing and new stationary sources, the scheduled introduction of low-emission cars and trucks into the nation's motor vehicle fleet, and the development of mass transit or higher-occupancy vehicle alternatives to the single-passenger automobile.

The 1990 CAAAs designated the SCAB as follows: "Extreme" for 1-hour O_3, requiring attainment with the federal O_3 standard by 2010; "Severe – 17" for 8-hour O_3, requiring attainment with the federal O_3 standard by 2021; "Serious" for PM_{10}, requiring attainment with federal standards by 2006; and "Serious Nonattainment"[1] for CO and "Nonattainment" for $PM_{2.5}$, with attainment likely by 2014. The SIPs to demonstrate attainment with the 1997 8-hour O_3 and the 24-hour and annual $PM_{2.5}$ standards are expected to be due in 2007 (SCAQMD, 2003).

The SCAB has not violated the federal 1-hour standard for more than 25 years, and it attained the federal 8-hour standard for CO in 2002. Since then, the SCAB has continued to demonstrate compliance with both the 1-hour and 8-hour federal standards. These standards will continue to be met because of the introduction of cleaner fuels and vehicles. Consequently, in 2004, SCAQMD submitted a request to the EPA for redesignation of the SCAB as an "Attainment" area for CO. The SCAQMD also submitted a CO Maintenance Plan to CARB for inclusion in the SIP. (SCAQMD, 2005a). On May 11, 2007 the federal register (Volume 72, Number 91), noted that the EPA granted approval to the SCAQMD's re-designation request for the SCAB as an "Attainment" area for CO. The EPA also approved a SIP revision for the SCAB area in California to meet the CAA requirements for the maintenance plan for CO. This rule became effective on June 11, 2007.

E State Regulations/Standards

The state of California began to set CAAQS in 1969 under the mandate of the Mulford-Carrell Act. The CAAQS are generally more stringent than the NAAQS. In addition to the six criteria pollutants covered by the NAAQS, there are CAAQS standards for sulfates, hydrogen sulfide, vinyl chloride, and visibility-reducing particles. Table 2.2.6-2 also lists these standards.

Originally, there were no attainment deadlines for the CAAQS. However, the CCAA of 1988 provided a time frame and planning structure to promote attainment. The CCAA required nonattainment areas in the state to prepare attainment plans, and it proposed to

[1] On May 11, 2007, the federal register (Volume 72, Number 91), noted that the EPA granted approval to the SCAQMD's re-designation request for the SCAB as an "Attainment" area for carbon monoxide. This rule became effective on June 11, 2007. Due to the fact that the air quality analysis for the proposed project was prepared prior to June 2007, the former federal classification of the SCAG as "Serious Nonattainment" status for carbon monoxide is noted.

classify each such area on the basis of the submitted plan, as follows: "Moderate," if CAAQS attainment could not occur before December 31, 1994; "Serious," if CAAQS attainment could not occur before December 31, 1997; and "Severe," if CAAQS attainment could not be conclusively demonstrated at all. The State nonattainment area classifications for the criteria air pollutants are also presented in Table 2.2.6-4. The attainment plans are required to achieve a minimum 5 percent annual reduction in the emissions of nonattainment pollutants, unless all feasible measures have been implemented.

F Regional Air Quality Planning

CARB coordinates and oversees both state and federal air pollution control programs in California. CARB has divided the state into 15 air basins. Authority for air quality control within them has been delegated to local Air Pollution Control Districts or Air Quality Management Districts, which regulate stationary source emissions and develop local nonattainment plans. CARB has designated all of Los Angeles County south of the San Gabriel Mountains, Orange County, and the non-desert portions of Riverside and San Bernardino Counties as the basin under the jurisdiction of SCAQMD. SCAQMD is responsible for regulating stationary source emissions, and it has the authority to regulate mobile emissions as an indirect source. SCAQMD and SCAG jointly conduct air quality planning in the basin. CARB regulates motor vehicles and fuels.

G Regional Air Quality Management Plan

As part of the CAA requirements, an Air Quality Management Plan (AQMP) is required to be prepared and updated to demonstrate continuous progress towards meeting the air quality standards. SCAQMD and SCAG, which has been designated by EPA as the Metropolitan Planning Organization (MPO) responsible for ensuring compliance with the requirements of the CAA, updated the AQMP in 2003 (SCAQMD, 2005a). The plan is revised every 3 years, with the latest version being approved by the SCAQMD governing board on August 1, 2003. CARB adopted the latest AQMP on October 23, 2003, and included this AQMP in the SIP that was sent to EPA. The SIP was submitted to EPA for its review and approval on January 9, 2004; however, EPA has not yet made a final approval on the AQMP. SCAQMD and SCAG are currently developing the draft 2007 AQMP.

2.2.6.3 Environmental Consequences

A Consistency with Applicable Regional Plans/Conformity Determination

The project is included in the adopted 2006 Regional Transportation Improvement Program (RTIP) under State Highway Projects. The 2006 RTIP programs $19.5 billion for implementing transportation projects within the next 6 fiscal years from 2006/07 to 2011/12 (SCAG, 2006). All projects incorporated into the 2006 RTIP are consistent with the 2004 RTP policies, programs, and projects.

The CAAAs of 1990 require that transportation plans, programs, and projects that are funded by or approved under Title 23 United States Code (U.S.C.) or the Federal Transit

Act conform to state or federal air quality plans. To be in conformance, a project must come from approved transportation plans and programs such as the SIP, RTP, and RTIP. SCAG, as the federally recognized MPO and the designated regional transportation planning agency, is responsible for preparing the RTP and RTIP. As part of its regional planning responsibilities, SCAG prepares the demographic projections and integrated land use, housing, employment, and transportation programs, measures, and strategies portions of the AQMP. These projections are used for determining conformity to the AQMP for proposed federal projects, plans, and programs.

The proposed project is identified in the "Orange County State Highway" project listing of the federally approved 2006 RTIP as "ORA120326". The 2006 RTIP was approved on October 2, 2006, and it was found to conform to all of the air quality requirements. The project is listed in the 2006 RTIP under the conformity category "nonexempt," meaning that it is not exempt from air quality conformity requirements. The proposed project has been modeled, and it has been included in the 2006 RTIP with Model Number O341 and Project Description "OCTA-AT I-5 AND SR-74/ORTEGA HWY-REBUILD INTERCHANGE INCLUDING WIDENING OF SR-74 OVERCROSSING." Given that the proposed project is consistent with the 2004 RTP and included in the adopted 2006 RTIP, it would not interfere with the timely implementation of all Transportation Control Measures (TCMs) identified in the currently approved SIP.

The 2006 RTIP was developed in compliance with state and federal requirements. County transportation commissions have the responsibility under state law of proposing county projects, using policies, programs, and projects of the current RTP as a guide, from among submittals by cities and local agencies. The locally-prioritized lists of projects were forwarded to SCAG for review. From this list, SCAG developed the 2006 RTIP based on consistency with the current RTP, intercounty connectivity, financial constraint, and conformity satisfaction. The current operating 2006 RTIP was approved by the federal agencies (including its final conformity determination) on October 2, 2006. The 2004 RTP was federally approved on June 7, 2004.

B Temporary Impacts

Alternatives 3 and 5. Temporary emissions of criteria pollutants and asbestos would occur during the project's construction phase. Because of the short term of the construction phase, all temporary impacts associated with emissions of criteria pollutants and asbestos would not have the potential to result in adverse effects. Best efforts would be made to minimize construction-related emissions by adherence to standard requirements for construction emission control measures, as described below.

<u>PM_{10} Control</u>: Control of particulate emissions from construction activities is best controlled through the requirements contained in Tables 1 through 4 of SCAQMD's Rule 403. The information is condensed and reproduced here as Tables 2.2.6-5 through 2.2.6-8. The measures contained in these tables are presented as an option to the air quality monitoring option under Rule 403.

Table 2.2.6-5 contains SCAQMD Rule 403 measures, such as stabilizing soil during clearing and grubbing activities, prewatering soils prior to cut and fill activities,

stabilizing material while loading and transporting to reduce fugitive dust emissions, and limiting vehicular travel to established unpaved roads (haul routes) and unpaved parking lots. Table 2.2.6-6 identifies SCAQMD Rule 403 dust control measures for large operations, such as maintaining soil moisture content at a minimum of 12 percent, conducting watering as necessary to prevent visible emissions from extending more than 100 feet (ft) (30.48 meters [m]) in length in any direction, and applying dust suppressants in sufficient quantity and frequency to maintain a stabilized surface. Table 2.2.6-7 contains SCAQMD Rule 403 contingency control measures for large operations, such as applying water to soil not more than 15 minutes prior to moving soil, applying chemical stabilizers prior to wind events, and applying water twice per hour. Table 2.2.6-8 identifies SCAQMD Rule 403 conservation management practices, such as maintaining at least 70 percent vegetative cover on vacant portions of the facility, controlling vehicles no more than 15 miles (24.14 km) per hour on unpaved roads, and applying material with low silt content on equipment parking areas.

Adherence to the applicable SCAQMD Rule 403 measures described in Tables 2.2.6-5 through 2.2.6-8 potentially results in a much higher reduction of particulate emissions than if the air monitoring option contained in Rule 403 was employed. Applying the measures contained in Tables 1 through 4 of Rule 403 would reduce the fugitive dust emissions generated by project construction by approximately 50 percent and would avoid adverse effects to air quality.

Construction Equipment Emission Control: While the above control measures address PM_{10} emissions from construction activities that are related to fugitive dust, operation of construction equipment would also contribute to PM_{10}, $PM_{2.5}$, and other criteria pollutant emissions. The generation of these emissions would be almost entirely because of engine combustion in construction equipment and because of employee commuting. Project-related construction emissions would be temporary and would not be of a magnitude that would cause an adverse effect upon local or regional air quality. Minimization measures are recommended to minimize construction equipment emissions.

Table 2.2.6-5
Best Available Control Measures
(Applicable to All Construction Sources)

Source Category		Control Measure
Backfilling	01-1	Stabilize backfill material when not actively handling; and
	01-2	Stabilize backfill material during handling; and
	01-3	Stabilize soil at completion of activity.
Clearing and grubbing	02-1	Maintain stability of soil through prewatering of site prior to clearing and grubbing; and
	02-2	Stabilize soil during clearing and grubbing activities; and
	02-3	Stabilize soil immediately after clearing and grubbing activities.
Clearing forms	03-1	Use water spray to clear forms; or
	03-2	Use sweeping and water spray to clear forms; or
	03-3	Use vacuum system to clear forms.
Crushing	04-1	Stabilize surface soils prior to operation of support equipment; and
	04-2	Stabilize material after crushing.

Table 2.2.6-5
Best Available Control Measures
(Applicable to All Construction Sources)

Source Category		Control Measure
Cut and fill	05-1	Prewater soils prior to cut and fill activities; and
	05-2	Stabilize soil during and after cut and fill activities.
Demolition – mechanical/manual	06-1	Stabilize wind-erodible surfaces to reduce dust; and
	06-2	Stabilize surface soil where support equipment and vehicles would operate; and
	06-3	Stabilize loose soil and demolition debris; and
	06-4	Comply with Air Quality Management District (AQMD) Rule 1403.
Disturbed soil	07-1	Stabilize disturbed soil throughout the construction site; and
	07-2	Stabilize disturbed soil between structures.
Earth-moving activities	08-1	Preapply water to depth of proposed cuts; and
	08-2	Reapply water as necessary to maintain soils in a damp condition and to ensure that visible emissions do not exceed 100 feet in any direction; and
	08-3	Stabilize soils once earth-moving activities are complete.
Importing/exporting of bulk materials	09-1	Stabilize material while loading to reduce fugitive dust emissions; and
	09-2	Maintain at least 6 inches of freeboard on haul vehicles; and
	09-3	Stabilize material while transporting to reduce fugitive dust emissions; and
	09-4	Stabilize material while unloading to reduce fugitive dust emissions; and
	09-5	Comply with Vehicle Code Section 23114.
Landscaping	10-1	Stabilize soils, materials, and slopes.
Road shoulder maintenance	11-1	Apply water to unpaved shoulders prior to clearing; and
	11-2	Apply chemical dust suppressants and/or washed gravel to maintain a stabilized surface after completing road shoulder maintenance.
Screening	12-1	Prewater material prior to screening; and
	12-2	Limit fugitive dust emissions to opacity and plume length standards; and
	12-3	Stabilize material immediately after screening.
Staging areas	13-1	Stabilize staging areas during use; and
	13-2	Stabilize staging area soils at project completion.
Stockpiles/bulk material handling	14-1	Stabilize stockpiled materials.
	14-2	Stockpiles within 100 yards of offsite occupied buildings must not be greater than 8 feet in height; or must have a road bladed to the top to allow water truck access; or must have an operational water irrigation system that is capable of complete stockpile coverage.
Traffic areas for construction activities	15-1	Stabilize all off-road traffic and parking areas; and
	15-2	Stabilize all haul routes; and
	15-3	Direct construction traffic over established haul routes.
Trenching	16-1	Stabilize surface soils where trencher or excavator and support equipment would operate; and
	16-2	Stabilize soils at the completion of trenching activities.
Truck loading	17-1	Prewater material prior to loading; and
	17-2	Ensure that freeboard exceeds 6 inches (California Vehicle Code 23114).
Turf overseeding	18-1	Apply sufficient water immediately prior to conducting turf vacuuming activities to meet opacity and plume length standards; and
	18-2	Cover haul vehicles prior to exiting the site.

Table 2.2.6-5
Best Available Control Measures
(Applicable to All Construction Sources)

Source Category		Control Measure
Unpaved roads/ parking lots	19-1 19-2	Stabilize soils to meet the applicable performance standards; and Limit vehicular travel to established unpaved roads (haul routes) and unpaved parking lots.
Vacant land	20-1	In instances where vacant lots are 0.10-acre or larger and have a cumulative area of 500 square feet or more that are driven over and/or used by motor vehicles and/or off-road vehicles, prevent motor vehicle and/or off-road vehicle trespassing, parking, and/or access by installing barriers, curbs, fences, gates, posts, signs, shrubs, trees, or other effective control measures.

Table 2.2.6-6
Dust Control Measures for Large Operations

Fugitive Dust Source Category		Control Actions
Earth-moving (except construction cutting and filling areas, and mining operations)	(1a) (1a-1)	Maintain soil moisture content at a minimum of 12 percent, as determined by American Society for Testing and Materials (ASTM) method D2216, or other equivalent method approved by the Executive Officer, CARB, and EPA. Two soil moisture evaluations must be conducted during the first 3 hours of active operations during a calendar day, and two such evaluations each subsequent 4-hour period of active operations; OR For any earth-moving that is more than 100 feet from all property lines, conduct watering as necessary to prevent visible dust emissions from exceeding 100 feet in length in any direction.
Earth-moving: Construction fill areas	(1b)	Maintain soil moisture content at a minimum of 12 percent, as determined by ASTM method D2216, or other equivalent method approved by the Executive Officer, CARB, and EPA. For areas that have optimum moisture content for compaction of less than 12 percent, as determined by ASTM Method 1557 or other equivalent method approved by the Executive Officer, CARB, and EPA, complete the compaction process as expeditiously as possible after achieving at least 70 percent of the optimum soil moisture content. Two soil moisture evaluations must be conducted during the first 3 hours of active operations during a calendar day, and two such evaluations during each subsequent 4-hour period of active operations.
Earth-moving: Construction cut areas and mining operations	(1c)	Conduct watering as necessary to prevent visible emissions from extending more than 100 feet beyond the active cut or mining area unless the area is inaccessible to watering vehicles due to slope conditions or other safety factors.
Disturbed surface areas (except completed grading areas)	(2a/b)	Apply dust suppression in sufficient quantity and frequency to maintain a stabilized surface. Any areas that cannot be stabilized, as evidenced by wind-driven fugitive dust, must have an application of water at least twice per day to at least 80 percent of the unstabilized area.
Disturbed surface areas: Completed grading areas	(2c) (2d)	Apply chemical stabilizers within 5 working days of grading completion; OR Take actions (3a) or (3c) specified for inactive disturbed surface areas.

Table 2.2.6-6
Dust Control Measures for Large Operations

Fugitive Dust Source Category		Control Actions
Inactive disturbed surface areas	(3a)	Apply water to at least 80 percent of all inactive disturbed surface areas on a daily basis when there is evidence of wind-driven fugitive dust, excluding any areas that are inaccessible to watering vehicles due to excessive slope or other safety conditions; OR
	(3b)	Apply dust suppressants in sufficient quantity and frequency to maintain a stabilized surface; OR
	(3c)	Establish a vegetative groundcover within 21 days after active operations have ceased. Groundcover must be of sufficient density to expose less than 30 percent of unstabilized ground within 90 days of planting, and at all times thereafter; OR
	(3d)	Use any combination of control actions (3a), (3b), and (3c) such that, in total, these actions apply to all inactive disturbed surface areas.
Unpaved roads	(4a)	Water all roads used for any vehicular traffic at least once per every 2 hours of active operations [3 times per normal 8-hour workday]; OR
	(4b)	Water all roads used for any vehicular traffic once daily and restrict vehicle speeds to 15 miles per hour; OR
	(4c)	Apply a chemical stabilizer to all unpaved road surfaces in sufficient quantity and frequency to maintain a stabilized surface.
Open storage piles	(5a)	Apply chemical stabilizers; OR
	(5b)	Apply water to at least 80 percent of the surface area of all open storage piles on a daily basis when there is evidence of wind-driven fugitive dust; OR
	(5c)	Install temporary coverings; OR
	(5d)	Install a three-sided enclosure with walls with no more than 50 percent porosity that extend, at a minimum, to the top of the pile. This option may only be used at aggregate-related plants or at cement manufacturing facilities.
All categories	(6a)	Any other control measures approved by the Executive Officer and EPA as equivalent to the methods specified in Table 2 may be used.

Table 2.2.6-7
Contingency Control Measures for Large Operations

Fugitive Dust Source Category		Control Actions
Earth-moving	(1A)	Cease all active operations; OR
	(2A)	Apply water to soil not more than 15 minutes prior to moving such soil.
Disturbed surface areas	(0B)	On the last day of active operations prior to a weekend, holiday, or any other period when active operations would not occur for not more than 4 consecutive days, apply water with a mixture of chemical stabilizer diluted to not less than 1/20 of the concentration required to maintain a stabilized surface for a period of 6 months; OR
	(1B)	Apply chemical stabilizers prior to wind event; OR
	(2B)	Apply water to all unstabilized disturbed areas 3 times per day. If there is any evidence of wind-driven fugitive dust, watering frequency is increased to a minimum of 4 times per day; OR
	(3B)	Take the actions specified in Table 2, Item (3c); OR
	(4B)	Use any combination of control actions (1B), (2B), and (3B) such that, in total, these actions apply to all disturbed surface areas.

Table 2.2.6-7
Contingency Control Measures for Large Operations

Fugitive Dust Source Category		Control Actions
Unpaved roads	(1C) (2C) (3C)	Apply chemical stabilizers prior to wind event; OR Apply water twice per hour during active operation; OR Stop all vehicular traffic.
Open storage piles	(1D) (2D)	Apply water twice per hour; OR Install temporary coverings.
Paved road track-out	(1E) (2E)	Cover all haul vehicles; OR Comply with the vehicle freeboard requirements of Section 23114 of the California Vehicle Code for both public and private roads.
All categories	(1F)	Any other control measures approved by the Executive Officer and EPA as equivalent to the methods specified in Table 3 may be used.

Table 2.2.6-8
Conservation Management Practices

Source Category	Conservation Management Practices	
Disturbed surfaces	(3a) (3b) (3c)	Maintain at least 70 percent vegetative cover on vacant portions of the facility; OR Use conservation tillage practices to manage the amount, orientation, and distribution of crop and other plant residues on the soil surface year-round, while growing crops (if applicable) in narrow slots or tilled strips; OR Apply dust suppressants in sufficient concentrations and frequencies to maintain a stabilized surface.
Unpaved roads	(4a) (4b) (4c)	Restrict access to private unpaved roads either through signage or physical access restrictions and control vehicular speeds to no more than 15 miles per hour through worker notifications, signage, or any other necessary means; OR Cover frequently traveled unpaved roads with low silt content material (i.e., asphalt, concrete, recycled road base, or gravel to a minimum depth of 4 inches); OR Treat unpaved roads with water, mulch, chemical dust suppressants, or other cover to maintain a stabilized surface.
Equipment parking areas	(5a) (5b)	Apply dust suppressants in sufficient quantity and frequency to maintain a stabilized surface; OR Apply material with low silt content (i.e., asphalt, concrete, recycled road base, or gravel to a depth of 4 inches).

C Permanent Impacts

No Build Alternative. There is the potential for air pollutant emissions in the long term as the level of service at the I-5/Ortega Highway interchange continues to decline in the future because of increasing traffic congestion. Under the No Build Alternative scenario, the I-5/Ortega Highway interchange would operate at level of service (LOS) E/F during peak traffic hours in year 2030; therefore, a potential deterioration in air quality at the project location would be expected.

Alternatives 3 and 5. Neither project alternative is expected to result in localized CO, PM_{10}, or $PM_{2.5}$ hot spots, as demonstrated through qualitative analyses that are based on

UC Davis and EPA guidance documents. The project is exempt from transportation mobile source air toxics (MSAT) analysis based upon FHWA guidance. The project is not expected to result in an adverse effect related to local air quality.

The proposed project improvements are consistent with the proposed improvements included in the regional analysis of the RTIP; therefore, an additional regional analysis is not required for this project. The project is not expected to result in an adverse effect related to regional air quality. No Avoidance and Minimization is required for regional emissions since the project conforms to the 2004 RTP.

D Year 2035 Traffic Sensitivity Analysis - Air Quality Impact Conclusions

Alternatives 3 and 5. A supplemental traffic study sensitivity analysis was completed to evaluate the potential impacts of extending the traffic study planning horizon year from 2030 to 2035. Refer to Section 2.1.4.3C [Environmental Consequences, Permanent Impacts (Year 2035 Supplemental Traffic Sensitivity Analysis)] for a discussion of the year 2035 traffic analysis results. The purpose of the year 2035 traffic sensitivity analysis was to evaluate the implications of extending the traffic study planning horizon year from 2030 to 2035 and determine whether the longer time frame would change the future year traffic performance of Alternatives 3 or 5 in any significant manner.

The year 2035 traffic volumes are somewhat higher than the official year 2030 traffic forecasts provided in the project's Traffic Impact Study (Austin-Foust, 2007a). The higher volumes for year 2035 compared to year 2030 result in some differences in the intersection delay values and ramp V/C ratios for Alternatives 3 and 5; however, these differences are relatively minor in magnitude. The overall conclusion is that both build Alternatives 3 and 5 achieve the required traffic performance criteria and will operate satisfactorily with the projected year 2035 traffic volumes.

Anticipated higher traffic volumes for year 2035 compared to year 2030 would potentially result in some differences in vehicle emissions; however, these differences would be relatively minor and commensurate with the minor differences in the year 2030 versus 2035 traffic volumes. Extending the traffic study planning horizon from 2030 to 2035 is not anticipated to have an adverse effect upon local air quality within the project area or regional air quality within the SCAB.

2.2.6.4 Avoidance, Minimization, and/or Mitigation Measures

A Temporary Measures

All of the temporary measures apply to Alternatives 3 and 5.

MM AQ-1 Measures contained in Tables 1 through 4 of SCAQMD Rule 403 shall be followed, as applicable, during project construction. The Department shall be responsible for selection of appropriate applicable Rule 403 measures to be followed during project construction and for overseeing compliance with the measures by the construction contractors. The construction contractors shall be required to obtain

construction permits from the City and the Department and the permits shall state the required Rule 403 measures that must be followed by the contractors.

MM AQ-2 Construction Equipment Emission Control: The following measures shall be included in project plans and construction specifications for implementation by the construction contractors.

- Use low-emission mobile construction equipment.
- Maintain construction equipment engines by keeping them tuned.
- Use low-sulfur fuel for stationary construction equipment. This is required by SCAQMD Rules 431.1 and 431.2.
- Use existing power sources (i.e., power poles) when feasible. This measure would minimize the use of higher-polluting gas or diesel generators.
- Develop a "Diesel Fuel Reduction Plan" that identifies the actions to be taken to reduce diesel fuel emissions during construction activities, inclusive of grading and excavation activities. Reductions in diesel fuel can be achieved by measures including, but not limited to, (a) use of alternative energy sources, such as compressed natural gas or liquefied petroleum gas, in mobile equipment and vehicles; (b) use of "retrofit technology," including diesel particulate trips, on existing diesel engines and vehicles; and (c) other appropriate measures. Prior to the issuance of a grading permit, the Diesel Fuel Reduction Plan shall be filed with the City of San Juan Capistrano Planning Division.

B Permanent Measures

None required.