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## **4.2 AIR QUALITY**

This section discusses the potential air emission impacts associated with the project. Discussions of impacts related to construction and operation emissions are provided. Construction-related air emission estimates were developed based on the proposed construction activities and equipment. Operation-related emissions were based on vehicle trips as well as the area sources planned for the project. The Air Quality Appendices are included as Appendix A to this EIR.

### **4.2.1 Existing Conditions**

#### **Climate and Meteorology**

The project site is located in Imperial County, which is in the Salton Sea Air Basin (SSAB). The SSAB includes Imperial Valley and the central part of Riverside County, including Coachella Valley. The Imperial Valley is located between the Salton Sea, which lies to its north; the Anza-Borrego Desert State Park, which lies to the west; the Chocolate Mountains, which lie to the northeast; and the U.S./Mexican Border, which constitutes its most southern boundary line. The proposed project is located approximately 12 miles north of the U.S./Mexican Border.

The climate of Imperial County is characterized as a semi-arid desert with hot, dry summers and warm winters. The high-pressure cell maintains clear skies for much of the year. It also drives the dominated onshore circulation and helps to create two types of temperature inversions, subsidence and radiation, that contribute to local air quality degradation.

The annual average temperature in the project area is approximately 72.5 degrees Fahrenheit. The project area experiences an average winter temperature of approximately 55 degrees Fahrenheit and an average summer temperature of 90 degrees Fahrenheit. Total precipitation in the project area averages approximately 2.6 inches annually. Precipitation occurs mostly during the winter and relatively infrequently during the summer. The average wind speed, as recorded at the Imperial County Airport Monitoring Station, is approximately 6.9 miles per hour (mph). Wind in the vicinity of the project site predominantly blows from the west. (Western Regional Climate Center 2005)

#### **Applicable Regulations, Plans, and Policies**

The air quality in the United States is governed by the Federal Clean Air Act (CAA). In addition to being subject to requirements of the CAA, air quality in California is also governed by more stringent regulations under the California Clean Air Act (CCAA). At the federal level, the CAA is administered by the United States Environmental Protection Agency (USEPA). In California, the CCAA is administered by the California Air Resources Board (CARB) at the state level and by the Imperial County Air Pollution Control District (ICAPCD) at the regional and local levels.

##### ***United States Environmental Protection Agency (USEPA)***

The USEPA is responsible for enforcing the CAA. The USEPA is also responsible for establishing the National Ambient Air Quality Standards (NAAQS). The NAAQS are required under the 1977 CAA and subsequent amendments. The USEPA regulates emission sources that are under the exclusive authority of the federal government, such as aircraft, ships, and certain types of locomotives. The agency has jurisdiction over emission sources outside state waters and establishes various emissions standards, including those for vehicles sold in states other than California. Automobiles sold in California must meet the stricter emission standards established by CARB.

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### ***California Air Resources Board (CARB)***

In California, the CARB, which became part of the California Environmental Protection Agency (CalEPA) in 1991, is responsible for meeting the state requirements of the Federal CAA, administering the CCAA, and establishing the California Ambient Air Quality Standards (CAAQS). The CCAA, as amended in 1992, requires all air districts in the State to endeavor to achieve and maintain the CAAQS. The CAAQS are generally more stringent than the corresponding federal standards and incorporate additional standards for sulfates, hydrogen sulfide, vinyl chloride and visibly reducing particles. The CARB regulates mobile air pollution sources, such as motor vehicles. The agency is responsible for setting emission standards for vehicles sold in California and for other emission sources, such as consumer products and certain off-road equipment. The CARB established passenger vehicle fuel specifications, which became effective in March 1996. The CARB oversees the functions of local air pollution control districts and air quality management districts, which in turn administer air quality activities at the regional and county levels.

### ***Imperial County Air Pollution Control District (ICAPCD)***

The ICAPCD operates entirely within the SSAB and has jurisdiction over the entire area of Imperial County. The ICAPCD is responsible for monitoring air quality, as well as planning, implementing and enforcing programs designed to attain and maintain state and federal ambient air quality standards in the district. Programs that were developed include air quality rules and regulations that regulate stationary source, area source, point source and certain mobile source emissions. The ICAPCD is also responsible for establishing permitting requirements for stationary sources and ensuring that new, modified or relocated stationary sources do not create net emission increases and, therefore, are consistent with the region's air quality goals. The proposed project is subject to the provisions of ICAPCD Regulation VIII - Fugitive Dust Rules. Regulation VIII applies to any activity or man-made condition capable of generating fugitive dust. It requires the use of best available control measures (BACM) to suppress fugitive dust emissions. (ICAPCD 2005a)

### **National and State Ambient Air Quality Standards**

As required by the CAA, the NAAQS have been established for major air pollutants: ozone, CO, nitrogen oxides (NO<sub>x</sub>), sulfur oxides (SO<sub>x</sub>), particulate matter, and lead. Pursuant to CCAA, the State of California has established the CAAQS. The CAAQS are generally more stringent than the corresponding federal standards (NAAQS) and incorporate additional standards for sulfates, hydrogen sulfide, vinyl chloride and visibility-reducing particles. Since the CAAQS are more stringent than the NAAQS, the CAAQS are used as the comparative standard in the air quality analysis contained in this report.

Both State and federal standards are summarized in Table 4.2-1. The "primary" standards have been established to protect public health. The "secondary" standards are intended to protect the nation's welfare and account for air pollutant effects on soil, water, visibility, materials, vegetation and other aspects of the general welfare.

**Table 4.2-1  
Ambient Air Quality Standards**

Pollutant	Average Time	California Standards		National Standards		
		Concentration	Measurement Method	Primary	Secondary	Measurement Method
Ozone	1 hour	0.09 ppm (180 µg/m <sup>3</sup> )	Ultraviolet Photometry	0.12 ppm (235 µg/m <sup>3</sup> )	0.12 ppm (235 µg/m <sup>3</sup> )	Ethylene Chemiluminescence
	8 hour	0.07 ppm (137 µg/m <sup>3</sup> )		0.08 ppm (157 µg/m <sup>3</sup> )	0.08 ppm (157 µg/m <sup>3</sup> )	
Carbon Monoxide (CO)	8 hours	9.0 ppm (10 mg/m <sup>3</sup> )	Non-Dispersive Infrared Spectroscopy (NDIR)	9 ppm (10 mg/m <sup>3</sup> )	None	Non-Dispersive Infrared Spectroscopy (NDIR)
	1 hour	20 ppm (23 mg/m <sup>3</sup> )		35 ppm (40 mg/m <sup>3</sup> )		
Nitrogen Dioxide (NO <sub>2</sub> )	Annual Average	--	Gas Phase Chemiluminescence	0.053 ppm (100 µg/m <sup>3</sup> )	0.053 ppm (100 µg/m <sup>3</sup> )	Gas Phase Chemiluminescence
	1 hour	0.25 ppm (470 µg/m <sup>3</sup> )		--	--	
Sulfur Dioxide (SO <sub>2</sub> )	Annual Average	--	Ultraviolet Fluorescence	0.03 ppm (80 µg/m <sup>3</sup> )	--	Pararosaniline
	24 hours	0.04 ppm (105 µg/m <sup>3</sup> )		0.14 ppm (365 µg/m <sup>3</sup> )	--	
	3 hours	--		--	0.5 ppm (1300 µg/m <sup>3</sup> )	
	1 hour	0.25 ppm (655 µg/m <sup>3</sup> )		--	--	
Respirable Particulate Matter (PM10)	24 hours	50 µg/m <sup>3</sup>	Gravimetric or Beta Attenuation	150 µg/m <sup>3</sup>	150 µg/m <sup>3</sup>	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	20 µg/m <sup>3</sup>		50 µg/m <sup>3</sup>	50 µg/m <sup>3</sup>	
Fine Particulate Matter (PM2.5)	Annual Arithmetic Mean	12 µg/m <sup>3</sup>	Gravimetric or Beta Attenuation	15 µg/m <sup>3</sup>	15 µg/m <sup>3</sup>	Inertial Separation and Gravimetric Analysis
	24 hours	--		65 µg/m <sup>3</sup>	65 µg/m <sup>3</sup>	
Sulfates	24 hours	25 µg/m <sup>3</sup>	Ion Chromatography	--	--	--
Lead	30-day Average	1.5 µg/m <sup>3</sup>	Atomic Absorption	--	--	Atomic Absorption
	Calendar Quarter	--		1.5 µg/m <sup>3</sup>	1.5 µg/m <sup>3</sup>	
Hydrogen Sulfide (H <sub>2</sub> S)	1 hour	0.03 ppm (42 µg/m <sup>3</sup> )	Ultraviolet Fluorescence	--	--	--
Vinyl Chloride	24 hours	0.010 ppm (26 µg/m <sup>3</sup> )	Gas Chromatography	--	--	--

ppm= parts per million

µg/m<sup>3</sup> = micrograms per cubic meter

mg/m<sup>3</sup> = milligrams per cubic meter

Source: CARB 2005b. <http://www.arb.ca.gov/aqs/aqs.htm> (Ambient Air Quality Standards)

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## **Attainment Status**

The CCAA requires the CARB to designate areas within California as either attainment or non-attainment for each criteria pollutant based on whether the CAAQS have been achieved. Under the CCAA, areas are designated as non-attainment for a pollutant if air quality data shows that a State standard for the pollutant was violated at least once during the previous three calendar years. Exceedances that are affected by highly irregular or infrequent events are not considered violations of a State standard, and are not used as a basis for designating areas as non-attainment.

Under the California standard, Imperial County is moderate non-attainment for ozone and non-attainment for respirable particulate matter (PM10). It classifies Imperial County as an attainment area for carbon monoxide (CO) and fine particulate matter (PM2.5). Under the federal standard, Imperial County is “marginal” non-attainment for 8-hour ozone and “serious” non-attainment for PM10. (CARB 2005a)

## **Air Quality Management Plan**

All areas designated as non-attainment under the CCAA are required to prepare plans showing how the area would meet the State air quality standards by its attainment dates. The Air Quality Management Plan (AQMP) is the region’s plan for improving air quality in the region. It addresses the CAA and CCAA requirements and demonstrates attainment with ambient air quality standards. An air quality State Implementation Plan (SIP) has not yet been prepared for Imperial County. The ICAPCD is currently preparing an AQMP, which details goals, policies and programs for improving air quality and establishes thresholds for daily operation emissions. Environmental review of individual projects within Imperial County must demonstrate that daily construction and operational emissions thresholds, as established by ICAPCD, would not be exceeded. The environmental review must also demonstrate that individual projects would not increase the number or severity of existing air quality violations.

## **Pollutants and Effects**

Air quality studies generally focus on five pollutants that are most commonly measured and regulated: CO, ozone, nitrogen dioxide (NO<sub>2</sub>), sulfur dioxide (SO<sub>2</sub>), PM10, and PM2.5.

### ***Carbon Monoxide***

CO is a colorless and odorless gas, which can interfere with the transfer of oxygen to the brain. It can cause dizziness and fatigue, and can impair central nervous system functions. CO is emitted almost exclusively from the incomplete combustion of fossil fuels. In urban areas, CO is emitted by motor vehicles, power plants, refineries, industrial boilers, ships, aircraft, and trains. Automobile exhausts release most of the CO in urban areas. CO is a non-reactive air pollutant that dissipates relatively quickly, so ambient CO concentrations generally follow the spacial and temporal distributions of vehicular traffic. CO concentrations are influenced by local meteorological conditions, primarily wind speed, topography, and atmospheric stability. CO from motor vehicle exhaust can become locally concentrated when surface-based temperature inversions are combined with calm atmospheric conditions, a typical situation at dusk in urban areas between November and February. The highest CO concentrations measured in Imperial County are typically recorded during the winter.

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## ***Ozone***

Ozone is a colorless toxic gas, which is the chief component of urban smog. Ozone enters the blood stream and interferes with the transfer of oxygen, depriving sensitive tissues in the heart and brain of oxygen. Ozone also damages vegetation by inhibiting their growth. Although ozone is not directly emitted, it forms in the atmosphere through a chemical reaction between reactive organic gas (ROG) and  $\text{NO}_x$  under sunlight. The damaging effects of photochemical smog are generally related to the concentration of ozone. Meteorology and terrain play major roles in ozone formation. Ideal conditions occur during summer and early autumn, on days with low wind speeds or stagnant air, warm temperatures, and cloudless skies. The greatest source of smog-producing gases is the automobile.

## ***Nitrogen Dioxide***

$\text{NO}_2$  is a brownish gas that irritates the lungs. It can cause breathing difficulties at high concentrations. Like ozone,  $\text{NO}_2$  is not directly emitted, but is formed through a reaction between nitric oxide (NO) and atmospheric oxygen. NO and  $\text{NO}_2$  are collectively referred to as  $\text{NO}_x$  and are major contributors to ozone formation.  $\text{NO}_2$  also contributes to the formation of PM10 (see discussion of PM10 below). At atmospheric concentration,  $\text{NO}_2$  is only potentially irritating. In high concentrations, the result is a brownish-red cast to the atmosphere and reduced visibility. There is some indication of a relationship between  $\text{NO}_2$  and chronic pulmonary fibrosis. Some increase in bronchitis in children (two and three years old) has also been observed at concentrations below 0.3 parts per million (ppm).

## ***Sulfur Dioxide***

$\text{SO}_2$  is a product of high-sulfur fuel combustion. Main sources of  $\text{SO}_2$  are coal and oil used in power stations, in industries, and for domestic heating. Industrial chemical manufacturing is another source of  $\text{SO}_2$ .  $\text{SO}_2$  is an irritant gas that attacks the throat and lungs. It can cause acute respiratory symptoms and diminished ventilator function in children.  $\text{SO}_2$  can also cause plant leaves to turn yellow, as well as erode iron and steel. In recent years,  $\text{SO}_2$  concentrations have been reduced by the increasingly stringent controls placed on stationary source emissions of  $\text{SO}_2$  and limits on the sulfur content of fuels.  $\text{SO}_2$  concentrations have been reduced to levels well below the state and national standards, but further reductions in emissions are needed to attain compliance with standards for sulfates and PM10, of which  $\text{SO}_2$  is a contributor.

## ***Suspended Particulate Matter***

Particulate matter pollution consists of very small liquid and solid particles floating in the air, which can include smoke, soot, dust, salts, acids, and metals. Particulate matter also forms when gases emitted from industries and motor vehicles undergo chemical reactions in the atmosphere. PM10 and PM2.5 represent fractions of particulate matter. PM10 refers to particulate matter less than 10 microns in diameter, about one-seventh the thickness of a human hair. PM2.5 refers to particulate matter that is 2.5 microns or less in diameter, roughly 1/28<sup>th</sup> the diameter of a human hair. Major sources of PM10 include motor vehicles; wood burning stoves and fireplaces; dust from construction, landfills, and agriculture; wildfires and brush/waste burning; industrial sources; windblown dust from open lands; and atmospheric chemical and photochemical reactions. PM2.5 results from fuel combustion (from motor vehicles, power generation, industrial facilities), residential fireplaces, and wood stoves. In addition, PM2.5 can be formed in the atmosphere from gases such as  $\text{SO}_2$ ,  $\text{NO}_x$ , and volatile organic compounds (VOCs).

PM10 and PM2.5 pose a greater health risk than larger-size particles. When inhaled, these tiny particles can penetrate the human respiratory system's natural defenses and damage the respiratory tract.  $\text{PM}^{10}$  and

PM<sub>2.5</sub> can increase the number and severity of asthma attacks, cause or aggravate bronchitis and other lung diseases, and reduce the body's ability to fight infections. Very small particles of substances, such as lead, sulfates, and nitrates, can cause lung damage directly. These substances can be absorbed into the blood stream and cause damage elsewhere in the body. These substances can transport absorbed gases such as chlorides or ammonium, into the lungs and cause injury. Whereas, particles 2.5 to 10 microns in diameter tend to collect in the upper portion of the respiratory system, particles 2.5 microns or less are so tiny that they can penetrate deeper into the lungs and damage lung tissues. Suspended particulates also damage and discolor surfaces on which they settle, as well as contributing to haze and reduce regional visibility.

## Background Air Quality

The ICAPCD maintains and operates a network of ambient air monitoring stations throughout Imperial County. The purpose of the monitoring stations is to measure ambient concentrations of the pollutants and determine whether the ambient air quality meets the CAAQS and the NAAQS. The nearest ambient monitoring station to the project site is the El Centro – 9<sup>th</sup> Street station, which measures ozone, particulate matter, CO, and NO<sub>2</sub>. Ambient concentrations of pollutants over the last three years from the El Centro monitoring station are presented in Table 4.2-2. The 1-hour NAAQS was exceeded twice in 2003, and the 1-hour CAAQS for ozone was exceeded 19 times in 2002, 19 times in 2003, and only once in 2004. The federal 8-hour ozone standard was exceeded 9 times in 2002 and 8 times in 2003, but was not exceeded in 2004.

Both federal and state 24-hour PM<sub>10</sub> standards were exceeded at the El Centro monitoring station; the annual CAAQS were exceeded at this monitoring station as well. The 24-hour NAAQS for PM<sub>2.5</sub> was exceeded once in 2004. PM<sub>2.5</sub> annual average concentration was not calculated for 2002; average annual NO<sub>2</sub> values are based on limited data recovery.

<b>Table 4.2-2 Ambient Background Concentrations El Centro – 9<sup>th</sup> Street Monitoring Station</b>			
<b>Pollutant Standards</b>	<b>2002</b>	<b>2003</b>	<b>2004</b>
<b>Ozone</b>			
Maximum 1-hour concentration (ppm)	0.122	0.130	0.096
Maximum 8-hour concentration (ppm)	0.098	0.092	0.080
<i>No. Days Standard Exceeded</i>			
NAAQS (1-hour) > 0.12 ppm	0	2	1
CAAQS (1-hour) > 0.09 ppm	19	19	1
NAAQS (8-hour) > 0.08 ppm	9	8	0
CAAQS (8-hour) > 0.07 ppm	NA	NA	NA
<b>Particulate Matter (PM<sub>10</sub>)</b>			
Maximum 24-hour concentration (µg/m <sup>3</sup> )	263	180	203
Annual average concentration (µg/m <sup>3</sup> ) <sup>a</sup>	45.6	48.6	54.2
<i>No. Days Standard Exceeded</i>			
NAAQS (24-hour) > 150 µg/m <sup>3</sup>	1	1	1
CAAQS (24-hour) > 50 µg/m <sup>3</sup>	18	25	19
NAAQS (annual) > 50 µg/m <sup>3</sup> exceeded?	No	No	Yes
CAAQS (annual) > 20 µg/m <sup>3</sup> exceeded?	Yes	Yes	Yes
<b>Particulate Matter (PM<sub>2.5</sub>)</b>			
Maximum 24-hour concentration (µg/m <sup>3</sup> )	28.9	26.0	74.2
Annual average concentration (µg/m <sup>3</sup> )	NA	9.2	9.7

**Table 4.2-2  
Ambient Background Concentrations  
El Centro – 9<sup>th</sup> Street Monitoring Station (Continued)**

<i>No. Days Standard Exceeded</i>			
NAAQS (24-hour) > 65 µg/m <sup>3</sup>	0	0	1
NAAQS (annual) > 15 µg/m <sup>3</sup> exceeded?		No	No
CAAQS (annual) > 12 µg/m <sup>3</sup> exceeded?		No	No
<b>Nitrogen Dioxide (NO<sub>2</sub>)</b>			
Maximum 1-hour concentration (ppm)	0.096	0.071	0.067
Annual average concentration (ppm)	NA	0.012	0.013
<i>No. Days Standard Exceeded</i>			
CAAQS (1-hour) > 0.25 ppm	0	0	0
NAAQS (annual) > 0.053 ppm exceeded?		No	No
<b>Carbon Monoxide (CO)</b>			
Maximum 8-hour concentration (ppm)	2.93	2.38	0.3
Maximum 1-hour concentration (ppm)	6.4	14.3	0.3
<i>No. Days Standard Exceeded</i>			
NAAQS (8-hour) ≥ 9.0 ppm	0	0	
NAAQS (1-hour) ≥ 35 ppm	0	0	
CAAQS (8-hour) ≥ 9.0 ppm	0	0	
CAAQS (1-hour) ≥ 20 ppm	0	0	
<sup>a</sup> California averages reported for PM <sub>10</sub> NA not available from current website data ppm parts per million µg/m <sup>3</sup> micrograms per cubic meter mg/m <sup>3</sup> milligrams per cubic meter > greater than ≥ equal to or greater than Source: CARB 2005c. <a href="http://www.arb.ca.gov/adam/welcome.html">http://www.arb.ca.gov/adam/welcome.html</a> (Top 4 Summary, all pollutants except 1-hour CO) USEPA 2005. <a href="http://www.epa.gov/air/data/monvals.html">www.epa.gov/air/data/monvals.html</a> (Monitor Values Report – Criteria Air Pollutants, 1-hour CO)			

### Sensitive Receptors

Some land uses are considered more sensitive to changes in air quality than others, depending on the types of population groups and the activities involved. CARB has identified the following people who are most likely to be affected by air pollution: children under 14, the elderly over 65, athletes, and people with cardiovascular and chronic respiratory diseases. Locations that may contain a high concentration of these sensitive population groups are called sensitive receptors and include residential areas, hospitals, daycare facilities, elder care facilities, elementary schools, and parks.

No hospitals or nursing homes are currently located within 1 mile of the project site. Existing single-family homes are located directly to the east of the project site.

### 4.2.2 Impact Significance Criteria

Appendix G of the State CEQA Guidelines provides guidance that a project would have a significant environmental impact if it would:

- Conflict or obstruct the implementation of the applicable Air Quality Management Plan (AQMP) or applicable portions of the State Implementation Plan (SIP);

- Result in emissions that would violate any air quality standard or contribute substantially to an existing or projected air quality violation;
- Result in a cumulatively considerable net increase of PM<sub>10</sub> or exceed quantitative thresholds for ozone (O<sub>3</sub>) precursors, oxides of nitrogen (NO<sub>x</sub>), and reactive organic compounds (ROCs);
- Expose sensitive receptors (including, but not limited to, schools, hospitals, resident care facilities, or day-care centers) to substantial pollutant concentrations; or
- Create objectionable odors affecting a substantial number of people.

All areas designated as non-attainment under the CCAA are required to prepare plans showing how the area would meet the State air quality standards by its attainment dates. The AQMP is the region's plan for improving air quality in the region. It addresses the CAA and CCAA requirements and demonstrates attainment with ambient air quality standards. ICAPCD is currently preparing an AQMP, which details goals, policies and programs for improving air quality and establishes thresholds for daily operation emissions. Environmental review of individual projects within Imperial County must demonstrate that daily construction and operational emissions thresholds, as established by ICAPCD, would not be exceeded. The environmental review must also demonstrate that individual projects would not increase the number or severity of existing air quality violations.

To determine whether a project would result in a violation of an air quality standard or contribute substantially to an existing or projected violation, it is necessary to look at the quantitative emission thresholds adopted by the ICAPCD in their CEQA Air Quality Handbook (ICAPCD 2005b). According to the handbook, ICAPCD has established the emission thresholds for project operations as described below. No numerical emission thresholds for project construction were established by ICAPCD. To evaluate potential significance of the project construction, this impact analysis used the construction emission thresholds adopted by the South Coast Air Quality Management District (SCAQMD) in their CEQA Air Quality Handbook (SCAQMD 1993). The following are the significance criteria used to determine project impacts.

### Construction Significance Criteria

The proposed project would exceed the SCAQMD significance criteria if:

- Daily construction emissions were to exceed the SCAQMD construction emissions thresholds for CO, ROG, NO<sub>x</sub>, SO<sub>x</sub>, or PM<sub>10</sub>. The SCAQMD significance thresholds for construction activities appear in Table 4.2-3.

<b>Table 4.2-3 ICAPCD Daily Construction Emissions Thresholds</b>	
<b>Criteria Pollutant</b>	<b>Pounds Per Day</b>
Carbon Monoxide (CO)	550
Reactive Organic Gas (ROG)	75
Nitrogen Oxides (NO <sub>x</sub> )	100
Sulfur Oxides (SO <sub>x</sub> )	150
Respirable Particulate Matter (PM <sub>10</sub> )	150
Source: SCAQMD 1993 (CEQA Handbook).	

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## Operations Significance Criteria

The proposed project would exceed ICAPCD significance criteria if:

- Daily operational emissions were to exceed the ICAPCD operational emissions thresholds for CO, ROG, NO<sub>x</sub>, SO<sub>x</sub>, or PM10. The ICAPCD significance thresholds for operational emissions appear in Table 4.2-4; or
- Project-generated on-road traffic causes CO concentrations at study intersections to violate the CAAQS for either the one- or eight-hour period. CAAQS for the one- and eight-hour periods are 20.0 ppm and 9.0 ppm, respectively.

<b>Criteria Pollutant</b>	<b>Pounds Per Day</b>
Carbon Monoxide (CO)	550
Reactive Organic Gas (ROG)	55
Nitrogen Oxides (NO <sub>x</sub> )	55
Sulfur Oxides (SO <sub>x</sub> )	150
Respirable Particulate Matter (PM10)	150

Source: ICAPCD 2005b (CEQA Air Quality Handbook).

### 4.2.3 Impact Analysis

The proposed project includes both construction and operational impacts. Construction impacts include emissions associated with the construction activities with the 40-acre site, including approximately 14850 single-family units and 1.6 acres of park area. The project construction is scheduled for 2006 to 2007. Operational impacts include emissions associated with the project, including traffic, at full buildout. For purposes of estimating emissions and evaluating air quality impacts, it was assumed full buildout of the proposed project would occur by the year 2007.

#### **Construction Impacts**

##### *Construction Emissions*

Emissions of pollutants generated during construction include fugitive dust and equipment tailpipe emissions of NO<sub>x</sub>, CO, and ROG that are generated during construction are generally highest near the construction site. Emissions from the construction activities of the project were estimated using the URBEMIS2002 model. It was estimated that the project construction would require a total of 12 months in 2006 and 2007 to complete. To estimate fugitive dust emissions associated with site grading, it was assumed that a maximum of 12.5 acres (31% of the total acreage) would be disturbed on a single day.

The project construction would be subject to the requirements of ICAPCD Regulation VIII - Fugitive Dust Rules, which requires the implementation of all BACM to control fugitive dust. BACM to reduce the amount of fugitive dust (PM10) generated from construction of the proposed project include the following dust control measures. The following list is representative of the control measures required under Rule 801 – Construction and Earthmoving Activities, but is not intended to list every requirement under Regulation VIII and Rule 801.

- 
- **Inactive Construction Areas.** Apply non-toxic soil stabilizers according to manufacturers' specification to all inactive construction areas.
  - **Exposed Stockpiles.** Enclose, cover, water twice daily, or apply non-toxic soil binders according to manufacturers' specification to exposed piles.
  - **Active Site Areas.** Water active site twice daily.
  - **Hauling.** All haul trucks hauling dirt, sand, soil, or other loose materials shall be covered or shall maintain two feet of freeboard.
  - **Adjacent Roadways.** Install wheel washers where vehicles enter and exit unpaved roads onto paved roads, or wash off trucks and any equipment leaving the project site.
  - **Adjacent Roadways.** Sweep streets at the end of the day if visible soil material is carried onto adjacent public paved roads.
  - **Unpaved Roads and Parking/Staging Areas.** Apply water three times daily or non-toxic soil stabilizers according to manufacturers' specification to all unpaved roads and parking or staging areas.
  - **Speed Limit.** Traffic speeds on unpaved roads shall be limited to 15 miles per hour.
  - **Construction Roadways.** Pave construction roads that have a traffic volume of more than 50 daily trips by construction equipment, 150 total daily trips for all vehicles.
  - **Construction Roadways.** Access roads leading into the construction site shall be paved for at least 110 feet from their intersection with a main road.
  - **Disturbed Areas.** When active construction ceases on the site, replace ground cover as quickly as possible.

For purposes of applying the URBEMIS 2002 model, it was assumed that all of the above dust control measures would be implemented as part of the project (i.e., not CEQA mitigations). The measures were applied in the URBEMIS2002 model to reduce fugitive dust emissions.

Construction heavy equipment requirements and associated emissions were estimated based on URBEMIS2002 default values for site grading, building construction, and paving activities. Non-mitigated ROG emissions from architectural coatings were estimated assuming the facility wide average coatings exhibit a ROG content of 250 grams per liter (that ROG content corresponds to use of solvent-based coatings). Emissions associated with worker travel to the construction site and construction truck deliveries were estimated based on default values in the URBEMIS2002 model.

Table 4.2-5 provides a summary of the emission estimates for the construction phase of the proposed project. URBEMIS2002 model outputs are provided in Appendix A of the Air Quality Appendices.

<b>Table 4.2-5 Estimated Construction Emissions</b>						
<b>Construction Activity</b>	<b>Year</b>	<b>Maximum Daily Emissions (pounds)</b>				
		<b>CO</b>	<b>ROG</b>	<b>NO<sub>x</sub></b>	<b>SO<sub>x</sub></b>	<b>PM10<sup>a</sup></b>
Site Grading	2006	649.99	87.95	699.58	0.21	50.98
Building Construction	2006	272.87	36.77	280.19	0.00	12.83
<b>2006 Maximum Value</b>		<b>649.99</b>	<b>87.95</b>	<b>699.58</b>	<b>0.21</b>	<b>50.98</b>
Building Construction (including architectural coating and asphalt paving)	2007 Maximum Value	<b>379.41</b>	356.53	<b>339.98</b>	<b>0.02</b>	<b>14.53</b>
<b>2007 Maximum Value</b>		<b>379.41</b>	<b>356.53</b>	<b>339.98</b>	<b>0.02</b>	<b>14.53</b>
Significance Criteria		550	75	100	150	150
<i>Significant?</i>		<i>No</i>	<i>Yes</i>	<i>Yes</i>	<i>No</i>	<i>No</i>

<sup>a</sup> PM10 emission includes the required fugitive dust control under ICAPCD Rule 800.

As shown in Table 4.2-5, emissions of CO, SO<sub>x</sub>, and PM10 are below the significance thresholds for construction. The less than significant impact to PM10 is contingent on the application of BACM found within Regulation VIII. ROG and NO<sub>x</sub> emissions would exceed the significance thresholds for construction. Thus, significant impacts are anticipated for ROG and NO<sub>x</sub> during the site grading and building construction phases of project construction.

### ***Construction Related Diesel Health Risk***

Diesel particulate matter is considered a carcinogenic by California regulatory agencies, and it is recognized that sensitive receivers exposed to high concentrations of diesel particulate matter for many years of duration could experience a significant cancer risk. An example of such a significant cancer risk would be people living for many years next to a heavily used railroad line. However, it is highly unlikely that off-site receptors downwind of temporary construction sites would experience any significant cancer risk directly associated with diesel emissions from the construction project.

The assessment of human health cancer risk is typically based on a 70-year exposure period. Construction activities are sporadic, transitory, and short-term in nature, and once construction activities have ceased, so too have emissions from construction activities. Because the duration of exposure to diesel exhaust during the temporary construction projects will be much shorter than the assumed 70 year exposure period used to estimate lifetime cancer risks, construction of the proposed project is not anticipated to result in an elevated cancer risk to exposed persons due to the short-term nature construction-related diesel exposure. It is estimated that construction activities for the project would continue for approximately 12 months, and most of the diesel emissions would occur during site grading for approximately 1.3 months.

In addition, Table 4.2-5 indicates that PM10 emissions from diesel equipment are relatively low and well below the SCAQMD's daily threshold of 150 pounds per day. Consequently, the human health impact of diesel risks associated with construction activities is considered to be less than significant.

## **Operational Impacts**

### ***Operational Emissions***

The main operational impacts associated with the project would be mainly associated with project-related traffic. Minor impacts would be associated with area sources, such as space heating and landscaping.

To address whether the proposed project would result in emissions that would violate any air quality standard or contribute substantially to an existing or proposed air quality violation, the emissions associated with project-generated traffic were compared with the Imperial County significance criteria. According to the Traffic Impact Analysis (Linscott, Law, & Greenspan 2005), the project-generated daily traffic is estimated to be 1,540 total trips by the completion of the project. The traffic analysis estimated that approximately 116 AM peak hour and 172 PM peak hour trips would be generated from the project.

To estimate emissions associated with project operations, the URBEMIS2002 model was used. Operational emissions were modeled for 2007 assuming that the project will be completed in one year, beginning in 2006. The URBEMIS2002 model outputs are presented in Appendix A of the Air Quality Appendices (Appendix A). Emissions associated with landscaping and energy use were also included in the area source emission estimates. Table 4.2-6 presents the total operational emissions anticipated from the project.

<b>Table 4.2-6 Operational Emissions (2007 Full Buildout Conditions)</b>					
	<b>Maximum Daily Emissions (pounds)</b>				
	<b>CO</b>	<b>ROG</b>	<b>NO<sub>x</sub></b>	<b>SO<sub>x</sub></b>	<b>PM10</b>
<b>Summer</b>					
Area Source Emissions	6.74	1.00	1.91	0.05	0.03
Vehicular Emissions	264.43	21.77	17.87	0.15	20.41
<b>Total Emissions</b>	<b>271.17</b>	<b>22.77</b>	<b>19.78</b>	<b>0.20</b>	<b>20.43</b>
<b>Winter</b>					
Area Source Emissions	1.06	0.18	2.50	0.00	0.05
Vehicular Emissions	177.38	17.49	23.52	0.12	20.41
<b>Total Emissions</b>	<b>178.44</b>	<b>17.67</b>	<b>26.02</b>	<b>0.12</b>	<b>20.46</b>
Significance Criteria	550	55	55	150	150
<i>Significant?</i>	<i>No</i>	<i>No</i>	<i>No</i>	<i>No</i>	<i>No</i>

Based on the estimates of the emissions associated with project operations emissions would be below the significance criteria and would therefore not cause or contribute to a violation of an air quality standard.

***Traffic Related CO Concentrations (CO Hot Spot Analysis)***

Project-generated truck and employee vehicle trips would increase traffic volumes at roadway intersections in the project vicinity. During periods of near-calm winds, heavily congested intersections can produce elevated levels of CO that could potentially impact nearby sensitive receptors. Therefore, a CO hot spot analysis was conducted to determine whether the project would contribute to a violation of the ambient air quality standards for CO at any local intersections.

To assess the potential for a CO hot spot analysis, the Transportation Project-Level Carbon Monoxide Protocol (Garza et al. 1997) was followed to determine whether a CO hot spot is likely to form due to project-generated traffic. In accordance with the Protocol, CO hot spots are typically evaluated when (a) the level of service (LOS) of an intersection decreases to a LOS E or worse; (b) signalization and/or channelization is added to an intersection; and (c) sensitive receptors such as residences, commercial developments, schools, hospitals, etc. are located in the vicinity of the affected intersection. In general, CO hot spots would be anticipated near affected intersections because operation of vehicles in the vicinity of congested intersections involves vehicle stopping and idling for extended periods.

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The Traffic Impact Analysis (Linscott, Law, & Greenspan 2005) evaluated five signalized intersections in the project vicinity to evaluate the existing, existing plus project, and cumulative traffic conditions. Based on the analysis, the project-generated traffic itself would not cause the LOS to degrade to E or worse at any signalized intersections analyzed. Considering that the project would not cause the LOS at intersections to degrade, the project would not directly increase congestion and therefore would not significantly increase local CO concentration levels. Therefore there will be no direct significant impact from CO emissions. However, cumulative impacts will occur and will be discussed in Section 7.0 - Cumulative Impacts of this Draft EIR.

#### **4.2.4 Significant Impacts**

In summary, the proposed project would result in emissions of air pollutants for both the construction phase and operational phase of the project. The air quality impact analysis evaluated the potential for adverse impacts to the ambient air quality due to construction and operational emissions.

##### **Construction Impacts**

**AQ 1** Construction emissions would include emissions associated with fugitive dust, heavy construction equipment, and construction worker commuting to and from the site. It was assumed in the analysis above that all of the Regulation VIII fugitive dust control measures would be implemented. The control measures were applied in the URBEMIS2002 model to reduce fugitive dust emissions. No significant impact is anticipated for PM10 during project construction. However, impacts from project construction would result in a temporary significant impact for ROG and NO<sub>x</sub>.

#### **4.2.5 Mitigation Measures**

##### **Construction Impacts**

Under ICAPCD's Rule 801 and CEQA Air Quality Handbook requirements, all standard mitigation measures for construction equipment and fugitive PM10 controls shall be implemented at all times. Contractors shall use the CARB's Tier II certification standard for all off-road heavy-duty construction equipment during the construction of the proposed project.

**AQ 1.1** Contractors shall implement measures to reduce ROG and NO<sub>x</sub> emissions from off-road construction equipment during construction activities. During construction, the following measures shall be included in construction specifications, and implemented during construction.

- The contractor shall properly maintain equipment according to manufacturers' specifications.
- The contractor shall restrict the idling of construction equipment to no longer than 10 minutes.
- The contractor shall use only diesel equipment or diesel vehicles with engines built in 1996 or later.
- The contractor shall restrict off-road machinery to those pieces equipped with cooled exhaust gas recirculation (EGR) where feasible.

It is recommended that the lead agency investigate the availability of off-road mobile sources equipped with EGR and indicate the availability of these technologies in the final EIR. Currently, the availability of these technologies is relatively limited, so they may not be available for use by the project proponent. Based on the possibility that technologies to mitigate mobile source emissions may not be available, the lead agency needs to document their availability. Alternatively, a more conservation approach would be to turn off these mitigation measures and not take credit for control efficiencies associated with them.

**AQ 1.2** Building Contractors shall implement measures to reduce ROG emissions from architectural coatings. Building contractors should be required to use water-based coatings for both exterior and interior walls on all building structures. The recommend average solvent content for architectural coatings is approximately 6 grams per liter. That ROG content corresponds to using water-based coatings for everything other than limited specialty uses.

#### **4.2.6 Impacts After Mitigation**

As shown in Table 4.2-7, with implementation of the Mitigation Measure AQ 1.1 and AQ 1.2, construction emissions would reduce the impact of CO and ROG to a less-than-significant level. The impacts of NO<sub>x</sub> will still be unavoidable and will require a statement of overriding considerations. URBEMIS2002 model outputs are provided in Appendix A of the Air Quality Appendices.

<b>Table 4.2-7 Estimated Construction Emissions with Mitigations</b>						
<b>Construction Activity</b>	<b>Year</b>	<b>Maximum Daily Emissions (pounds)</b>				
		<b>CO</b>	<b>ROG</b>	<b>NO<sub>x</sub></b>	<b>SO<sub>x</sub></b>	<b>PM10</b>
Site Grading	2006	95.89	9.85	420.32	0.21	23.65
Building Construction	2006	35.60	4.26	168.25	0.00	2.08
<b>2006 Maximum Value</b>		<b>95.89</b>	<b>9.85</b>	<b>420.32</b>	<b>0.21</b>	<b>23.65</b>
Building Construction(including architectural coating and asphalt paving)	2007 Maximum Value	54.20	<b>15.33</b>	204.27	<b>0.02</b>	<b>2.51</b>
<b>2007 Maximum Value</b>		<b>54.20</b>	<b>15.33</b>	<b>204.27</b>	<b>0.02</b>	<b>2.51</b>
Significance Criteria		550	75	100	150	150
<i>Significant?</i>		<i>No</i>	<i>No</i>	<i>Yes</i>	<i>No</i>	<i>No</i>