

**Air Quality Analysis Report  
Public Safety Enterprise Communication Project  
Riverside County, California**

Prepared for:

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## ACRONYMS AND ABBREVIATIONS

<1	Less Than One
$\mu\text{g}/\text{m}^3$	Weight-to-Volume Ratio
$\mu\text{m}$	Micrometer
AQMD	Air Quality Management District
AQMP	Air Quality Management Plan
ARB	California Air Resources Control Board
BACM	Best Available Control Measures
CAAQS	California Ambient Air Quality Standards
CCAA	California Clean Air Act
CEQA	California Environmental Quality Act
$\text{CO}_2$	Carbon Dioxide
CO	Carbon Monoxide
CVSIP	Coachella Valley State Implementation Plan
DPM	Diesel Particulate Matter
EMFAC	Emission Factors
EPA	Environmental Protection Agency
FCAA	Federal Clean Air Act
$\text{H}_2\text{S}$	Hydrogen sulfide
LPG	Liquefied Petroleum Gas
LST	Localized Significance Thresholds
MDAB	Mojave Desert Air Basin
MDAQMD	Mojave Desert Air Quality Management District
MDPA	Mojave Desert Planning Area
NAAQS	National Ambient Air Quality Standards
$\text{NO}_2$	Nitrogen Dioxide
$\text{NO}_x$	Nitrogen oxides
PAH	Polycyclic Aromatic Hydrocarbons
Pb	Lead
$\text{PM}_{2.5}$	Particulate matter less than 2.5 microns in diameter
$\text{PM}_{10}$	Particulate matter less than 10 microns in diameter
ppm	Parts per Million
ppt	Parts per Trillion
PSEC	Public Safety Enterprise Communication Project

PVC	Polyvinyl Chloride
ROG	Reactive Organic Gases
RTP	Regional Transportation Plans
SCAG	Southern California Association of Governments
SCAQMD	South Coast Air Quality Management District
SIP	State Implementation Plans
SO <sub>2</sub>	Sulfur Dioxide
SO <sub>3</sub>	Sulfur Trioxide
SO <sub>x</sub>	Sulfur Oxides
SRA	Source Receptor Areas
SSAB	Salton Sea Air Basin
URBEMIS	Urban Emissions Model
USEPA	United States Environmental Protection Agency
VMT	Vehicle Miles Traveled
VOC	Volatile Organic Compounds

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## SECTION 1: INTRODUCTION

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### 1.1 - Purpose and Methods of Analysis

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This report documents an air quality assessment for the Public Safety Enterprise Communication Project (Project). The Project proposes to expand the operational coverage and data transmission capabilities of the Riverside County emergency services radio tower network. Doing so will require the construction of numerous new communications facilities throughout the entirety of Riverside County, and along the Riverside County borders in Orange, San Bernardino, and San Diego Counties.

The following air quality analysis was prepared to evaluate whether the expected criteria air pollutant emissions generated from the Project would cause significant impacts to air resources in the areas impacted by the Project. This assessment was conducted within the context of the California Environmental Quality Act (CEQA, California Public Resources Code Sections 21000 et seq.).

The Project has sites located within the jurisdiction of the South Coast Air Quality Management District (SCAQMD) and the Mojave Desert Air Quality Management District (MDAQMD). The methodology follows CEQA guidance prepared by the SCAQMD and the MDAQMD for quantification of emissions and evaluation of potential impacts to air resources.

Note that this report does not address climate change or the Project's contribution of greenhouse gases as the potential impact is assessed in a separate report.

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### 1.2 - Findings

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- The construction and operation of the Project will not exceed the SCAQMD regional significance emission thresholds after application of mitigation measures.
- The construction emissions from the Project will not exceed the SCAQMD localized significance thresholds (LST) after application of mitigation measures.
- The Project will not result in a cumulative impact.
- The Project will not result in an air quality violation after application of mitigation measures.
- The Project will not create objectionable odors that affect sensitive receptors in the vicinity of the Project area after application of mitigation measures.
- The Project is consistent with the applicable air quality management plan(s) and attainment plans in the respective air basins.

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### 1.3 - Mitigation Measures

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- AQ-1** All sites shall comply with the SCAQMD Rule 403 requirements, regardless of location.
- AQ-2** During Project construction, the developer shall require all contractors not to idle construction equipment onsite for more than five minutes.
- AQ-3** During Project construction, the workers should carpool to the greatest extent practical. Workers shall be informed in writing of this requirement. At a minimum, the workers shall leave their vehicles at a central location near the site so that fugitive dust generated by travel on dirt roads is limited.
- AQ-4** If the County wishes to develop additional sites in the future besides those assessed in this analysis, any additional full time generator sites shall be limited to one in the jurisdiction of the SCAQMD (South Coast Air Basin), three in the jurisdiction of the SCAQMD (Salton Sea Air Basin), and six in the jurisdiction of the MDAQMD.
- AQ-5** Any additional full time generators (besides the existing Santa Rosa Peak site) shall be propane fueled.

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### 1.4 - Project Description

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The Public Safety Enterprise Communication (PSEC) Project proposes to construct numerous new communications facilities throughout the entirety of Riverside County, and along the Riverside County borders in Orange, San Bernardino, and San Diego Counties (Exhibit 1).

The County of Riverside's fire and law enforcement agencies currently utilize approximately 20 communication sites to provide voice and data transmission capabilities to assigned personnel in the field. As currently configured, the system provides coverage to only about 60 percent of the County. The communication system now in use is at the end of its useful life, and is no longer adequate to meet the County's coverage and capacity needs. Population growth within the County necessitates the expansion of the coverage footprint. Additionally, due to increases in the County's radio usage, additional traffic-carrying capacity is required to meet the needs of emergency services personnel as they serve the public. The proposed PSEC project is the expansion of the system's capabilities and its associated infrastructure.

The Project will expand the Riverside County emergency services radio tower network from the current 25 sites to approximately 70 sites throughout the County. This expansion will increase the operational coverage of the emergency services telecommunication system to approximately 95 percent of the County's land area, and will also provide greatly expanded voice and data

transmission capability. The specific design, approval, and installation of the entire network is projected to take two to three years.

At this time, approximately 50 of the proposed towers consist of 3-legged, self-supporting tower structures. These towers would range in height from approximately 40 feet to 240 feet. The remaining two towers, Line and Spring Hill, are currently proposed as guyed towers with an approximate height of 330 feet. Exhibit 2 displays a typical site location.

Certain sites will require construction of additional infrastructure, such as access roads and utility lines; however, analysis of the potential impacts resulting from the installation of infrastructure is not included in this report, as those plans have yet to be developed.

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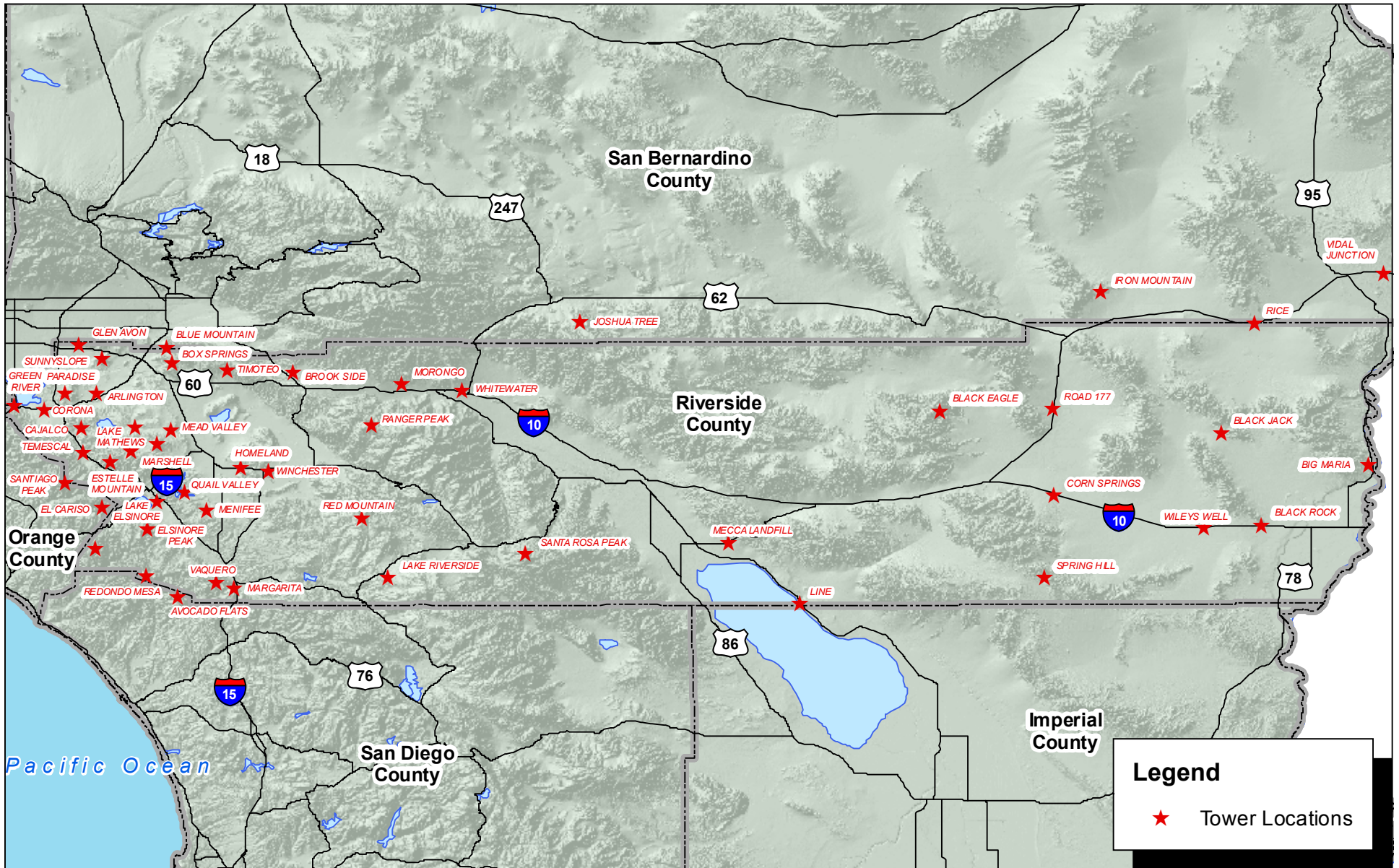
## **1.5 - Sensitive Receptors**

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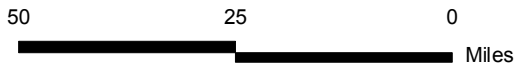
Those who are sensitive to air pollution include children, the elderly, and persons with preexisting respiratory or cardiovascular illness. For purposes of CEQA, the SCAQMD considers a sensitive receptor to be a location where a sensitive individual could remain for 24 hours, such as residences, hospitals, or convalescent facilities. Commercial and industrial facilities are not included in the definition because employees do not typically remain onsite for 24 hours. However, when assessing the impact of pollutants with 1-hour or 8-hour standards (such as nitrogen dioxide and carbon monoxide), commercial and/or industrial facilities would be considered sensitive receptors for those purposes.

The majority of the sites are not located near sensitive receptors, as they are located upon mountains in remote areas. However, some of the sites are located near residences. It is assumed for purposes of this analysis that the closest sensitive receptor is 25 meters from the Project.





Source: US Census Data and Riverside County



**Legend**

- ★ Tower Locations

# Exhibit 1 Regional Vicinity Map



Source: MBA, 2008

## SECTION 2: SETTING

Air pollutants are regulated at the national, state, and air basin level; each agency has a different degree of control. The United States Environmental Protection Agency (EPA) regulates at the national level. The California Air Resources Board (ARB) regulates at the state level. The air districts regulate at the air basin level. The Project sites are located within the jurisdiction of the SCAQMD and the MDAQMD.

### 2.1 - Federal and State Regulatory Agencies

The EPA handles global, international, national, and interstate air pollution issues and policies. The EPA sets national vehicle and stationary source emission standards, oversees approval of all State Implementation Plans (SIP), provides research and guidance in air pollution programs, and sets National Ambient Air Quality Standards (NAAQS), also known as federal standards. There are NAAQS for six common air pollutants, called criteria air pollutants, which were identified resulting from provisions of the Clean Air Act of 1970. The six criteria pollutants are:

- Ozone;
- Particulate matter (PM<sub>10</sub> and PM<sub>2.5</sub>);
- Nitrogen dioxide;
- Carbon monoxide (CO);
- Lead; and
- Sulfur dioxide.

The NAAQS were set to protect public health, including that of sensitive individuals; thus, the standards continue to change as more medical research is available regarding the health effects of the criteria pollutants.

A SIP is a document prepared by each state describing existing air quality conditions and measures that will be followed to attain and maintain NAAQS. The SIP for the State of California is administered by ARB who has overall responsibility for statewide air quality maintenance and air pollution prevention. The ARB also administers California Ambient Air Quality Standards (CAAQS), for the ten air pollutants designated in the California Clean Air Act (CCAA). The ten state air pollutants are the six NAAQS listed above as well as:

- Visibility reducing particulates;
- Hydrogen sulfide;
- Sulfates; and
- Vinyl chloride.

The national and state ambient air quality standards and the most relevant effects are summarized in Table 1.

**Table 1: Ambient Air Quality Standards**

Air Pollutant	Averaging Time	California Standard	National Standard	Most Relevant Effects
Ozone	1 Hour	0.09 ppm	—	(a) Decrease of pulmonary function and localized lung edema in humans and animals; (b) Risk to public health implied by alterations in pulmonary morphology and host defense in animals; (c) Increased mortality risk; (d) Risk to public health implied by altered connective tissue metabolism and altered pulmonary morphology in animals after long-term exposures and pulmonary function decrements in chronically exposed humans; (e) Vegetation damage; (f) Property damage.
	8 Hour	0.070 ppm	0.075 ppm	
Carbon Monoxide (CO)	1 Hour	20 ppm	35 ppm	(a) Aggravation of angina pectoris (chest pain or discomfort) and other aspects of coronary heart disease; (b) Decreased exercise tolerance in persons with peripheral vascular disease and lung disease; (c) Impairment of central nervous system functions; (d) Possible increased risk to fetuses.
	8 Hour	9.0 ppm	9 ppm	
Nitrogen Dioxide (NO <sub>2</sub> )	1 Hour	0.18 ppm	—	(a) Potential to aggravate chronic respiratory disease and respiratory symptoms in sensitive groups; (b) Risk to public health implied by pulmonary and extra-pulmonary biochemical and cellular changes and pulmonary structural changes; (c) Contribution to atmospheric discoloration.
	Mean	0.030 ppm	0.053 ppm	
Sulfur Dioxide (SO <sub>2</sub> )	1 Hour	0.25 ppm	—	Bronchoconstriction accompanied by symptoms which may include wheezing, shortness of breath and chest tightness, during exercise or physical activity in persons with asthma.
	24 Hour	0.04 ppm	0.14 ppm	
	Mean	—	0.030 ppm	
Particulate Matter (PM <sub>10</sub> )	24 hour	50 µg/m <sup>3</sup>	150 µg/m <sup>3</sup>	(a) Exacerbation of symptoms in sensitive patients with respiratory or cardiovascular disease; (b) Declines in pulmonary function growth in children; (c) Increased risk of premature death from heart or lung diseases in the elderly.
	Mean	20 µg/m <sup>3</sup>	—	
Particulate Matter (PM <sub>2.5</sub> )	24 Hour	—	35 µg/m <sup>3</sup>	
	Mean	12 µg/m <sup>3</sup>	15 µg/m <sup>3</sup>	
Sulfates	24 Hour	25 µg/m <sup>3</sup>	—	(a) Decrease in ventilatory function; (b) Aggravation of asthmatic symptoms; (c) Aggravation of cardio-pulmonary disease; (d) Vegetation damage; (e) Degradation of visibility; (f) Property damage.
Lead	30-day	1.5 µg/m <sup>3</sup>	—	(a) Learning disabilities; (b) Impairment of blood formation and nerve conduction.
	Quarter	—	1.5 µg/m <sup>3</sup>	
Abbreviations: ppm = parts per million (concentration)      µg/m <sup>3</sup> = micrograms per cubic meter Mean = Annual Arithmetic Mean      30-day = 30-day average      Quarter = Calendar quarter Source of effects: South Coast Air Quality Management District, 2007c. Source of standards: California Air Resources Board, Ambient Air Quality Standards, 2008.				

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## 2.2 - South Coast Air Quality Management District

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As shown in Exhibit 3, most of the sites are within the jurisdiction of the SCAQMD. The SCAQMD covers three air basins: the South Coast Air Basin, the Salton Sea Air Basin, and part of the Mojave District Air Basin. Air basins are regions where air tends to circulate and be trapped by barriers such as mountain ranges.

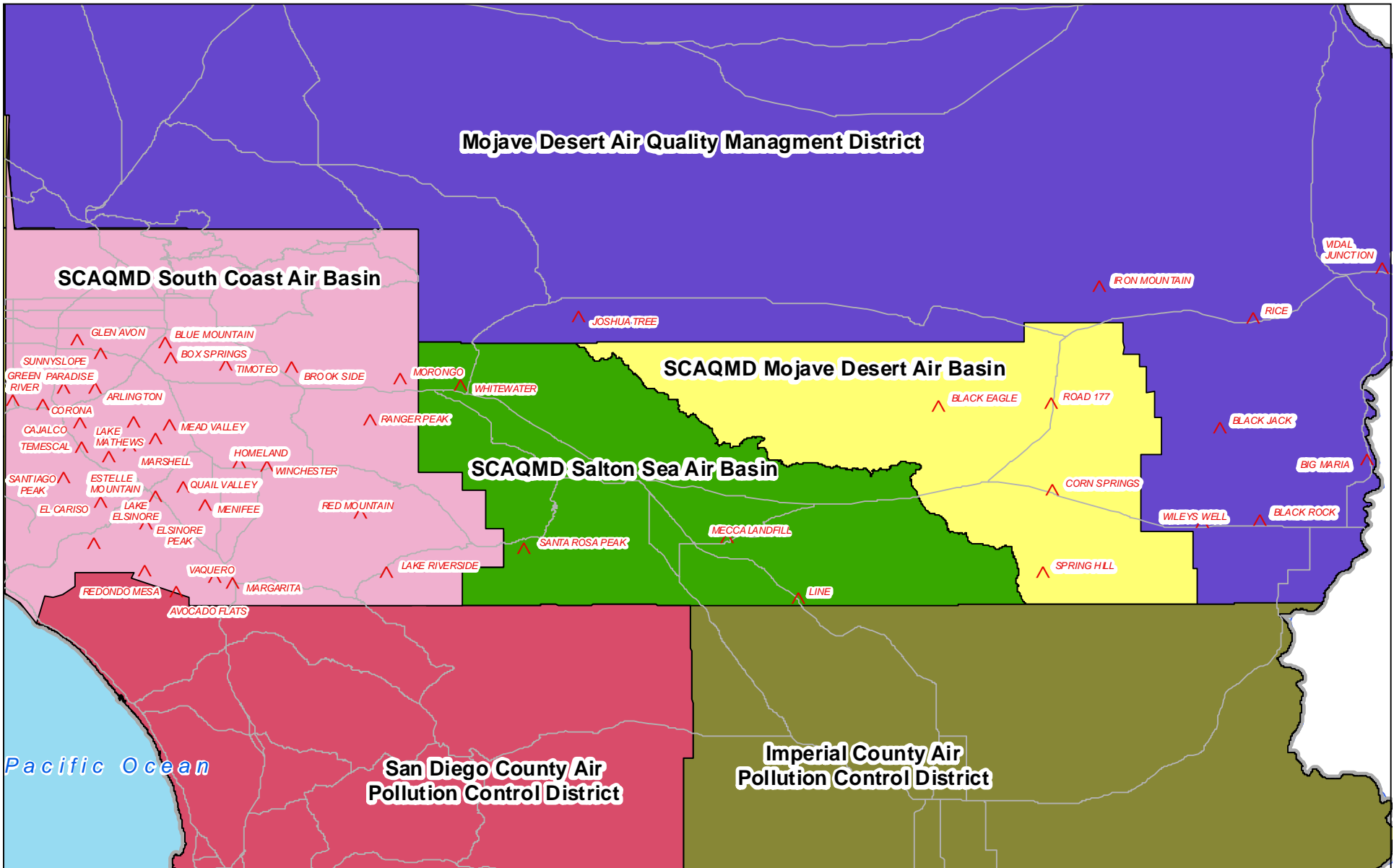
### 2.2.1 - South Coast Air Basin

The South Coast Air Basin is bounded on the west by the Pacific Ocean and on the north and east by the San Gabriel, San Bernardino, and San Jacinto Mountains. The southern limit of the Basin is the San Diego County line. The Basin consists of Orange County, all of Los Angeles County except for the Antelope Valley, the non-desert portion of western San Bernardino County, and the western and Coachella Valley portions of Riverside County. Regional and local air quality in the Basin is impacted by dominant airflows, topography, atmospheric inversions, location, season, and time of day.

Dominant airflows provide the driving mechanism for transport and dispersion of air pollution. The mountains surrounding the region form natural horizontal barriers to the dispersion of air contaminants. Air pollution created in the coastal areas and around the Los Angeles area is transported inland until it reaches the mountains where the combination of mountains and inversion layers generally prevent further dispersion. This poor ventilation results in a gradual degradation of air quality from the coastal areas to inland areas. Air stagnation may occur during the early evening and early morning during periods of transition between day and nighttime flows. The region also experiences periods of hot, dry winds from the desert, known as Santa Ana winds. If the Santa Ana winds are strong, they can surpass the sea breeze, which blows from the ocean to the land, and carry the suspended dust and pollutants out to the ocean. If they are weak, they are opposed by the sea breeze and cause stagnation, resulting in high pollution events.

Temperature inversions limit the vertical depth through which pollution can be mixed. Among the most common temperature inversions in the basin, radiation inversions form on clear winter nights when cold air off mountains sink to the valley floor while the air aloft over the valley remains warm. These inversions, in conjunction with calm winds, trap pollutants near the source. Other types of temperature inversions include marine, subsidence, and high-pressure inversions.

Summers are often periods of hazy visibility and occasionally unhealthy air, while winter air quality impacts tend to be highly localized and can consist of odors from agricultural operations.



Source: <https://www.arb.ca.gov/ei/gislib/gislib.htm>, California Air Resources Board, 2008



### **South Coast Air Basin Air Quality Management Plan**

The SCAQMD is responsible for controlling emissions primarily from stationary sources. SCAQMD maintains air quality monitoring stations throughout the basin. SCAQMD, in coordination with the Southern California Association of Governments (SCAG), is also responsible for developing, updating, and implementing the Air Quality Management Plan (AQMP) for the basin. An AQMP is a plan prepared by an air pollution control district for a county or region designated as nonattainment of the national and/or California ambient air quality standards. The term nonattainment area is used to refer to an air basin where one or more ambient air quality standards are exceeded.

The current AQMP for the Basin is the 2007 AQMP, which was adopted by the SCAQMD on June 1, 2007. On July 13, 2007, the SCAQMD Board adopted 2007 Final AQMP Transportation Conformity Budgets and directed the Executive Officer to forward them to ARB for its approval and subsequent submittal to the U.S. EPA. On September 27, 2007, ARB adopted the State Strategy for the 2007 State Implementation Plan (SIP) and the 2007 AQMP as part of the SIP.

The 2007 AQMP incorporates significant new emissions inventories, ambient measurements, scientific data, control strategies, and air quality modeling. The 2007 AQMP outlines a detailed strategy for meeting the federal health-based standards for PM<sub>2.5</sub> by 2015 and 8-hour ozone by 2024 while accounting for and accommodating future expected growth. Most of the reductions will be from mobile sources, which are currently responsible for about 75 percent of all smog and particulate forming emissions. The 2007 AQMP includes 37 control measures proposed for adoption by the SCAQMD, including measures to reduce emissions from new commercial and residential developments, more reductions from industrial facilities, and reductions from wood-burning fireplaces and restaurant charbroilers.

### **Local Air Quality**

The local air quality can be evaluated by reviewing relevant air pollution concentrations near the Project area. SCAQMD has divided the basin into 38 Source Receptor Areas (SRA) for evaluation purposes and operates monitoring stations within each one. Existing levels of ambient air quality and historical trends and Projections of air quality in the Project area are best documented from measurements made near the Project site. As shown in Exhibit 4, the Project sites are located within SRAs 19, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, and 35.

The 2007 AQMP summarizes the air quality in the South Coast Air Basin. Exhibit 5a displays the maximum pollutant concentrations as a percent of the standards for all criteria pollutants. As shown in Exhibit 5a, carbon monoxide, nitrogen dioxide, sulfur dioxide, sulfate, and lead are below the standards. Ozone, PM<sub>10</sub>, and PM<sub>2.5</sub> exceed the standards and are therefore the pollutants of concern in the South Coast Air Basin.

Exhibit 5b displays the number of days that the fine particulate matter (PM<sub>2.5</sub>) concentration exceeded the annual average standard in the South Coast Air Basin. As shown in Exhibit 5b, the yellow and green areas exceeded the federal standard of 15 µg/m<sup>3</sup>.

Exhibit 6 displays the number of days that the ozone standard was exceeded in the South Coast Air Basin. As shown in the exhibit, most of the South Coast Air Basin exceeded the 1-hour and 8-hour ozone standards at least once in 2005.

**Attainment Status**

Air basins where ambient air quality standards are exceeded are designated as “nonattainment” areas. If standards are met, the area is designated as an “attainment” area. If there is inadequate or inconclusive data to make a definitive attainment designation, they are considered “unclassified.” Federal nonattainment areas are further designated as marginal, moderate, serious, severe, or extreme as a function of deviation from standards.

The current attainment designations for the Project area are shown in Table 2. The basin is designated as nonattainment for the state and federal ozone, PM<sub>10</sub>, and PM<sub>2.5</sub>, standards.

**Table 2: South Coast Air Basin Attainment Status**

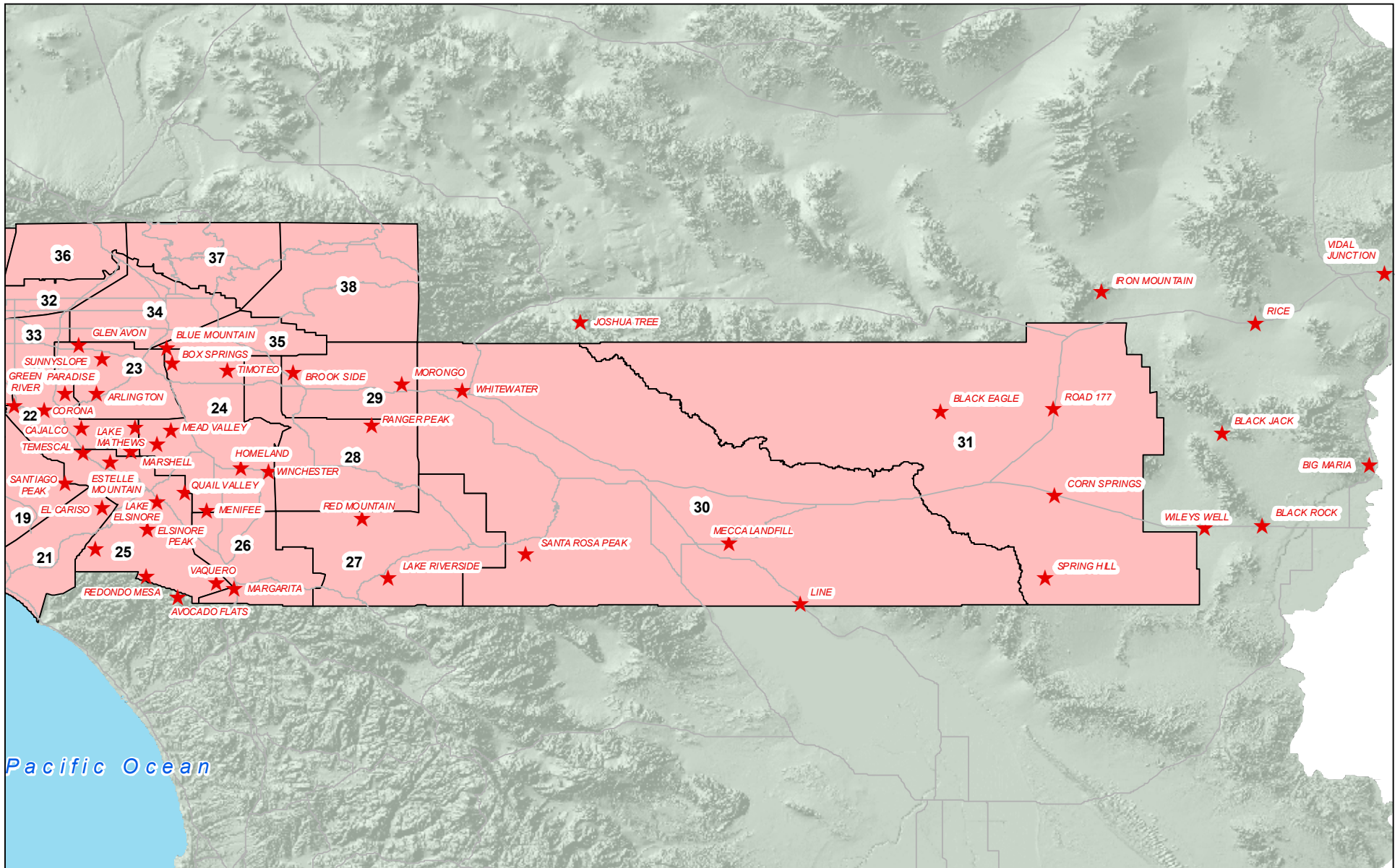
Pollutant	State Status	National Status
Ozone (1-hour)	Extreme Nonattainment	No Standard
Ozone (8-hour)	Unclassified	Severe Nonattainment
Carbon Monoxide	Attainment	Attainment
Nitrogen Dioxide	Attainment	Attainment
Sulfur Dioxide	Attainment	Attainment
PM <sub>10</sub>	Nonattainment	Serious Nonattainment
PM <sub>2.5</sub>	Nonattainment	Nonattainment

Source: State Status from California Air Resources Board (ARB 2006). National Status from U.S. Environmental Protection Agency (EPA 2007g).

**2.2.2 - Salton Sea Air Basin**

The Coachella Valley is located within the Salton Sea Air Basin (SSAB). The SSAB is aligned in a northwest-southeast orientation stretching from Banning Pass to the Salton Sea. The Valley is bounded by the San Jacinto Mountains to the west and the Little San Bernardino Mountains to the east. Elevation ranges from approximately 500 feet above sea level to 150 feet below sea level near the Salton Sea.



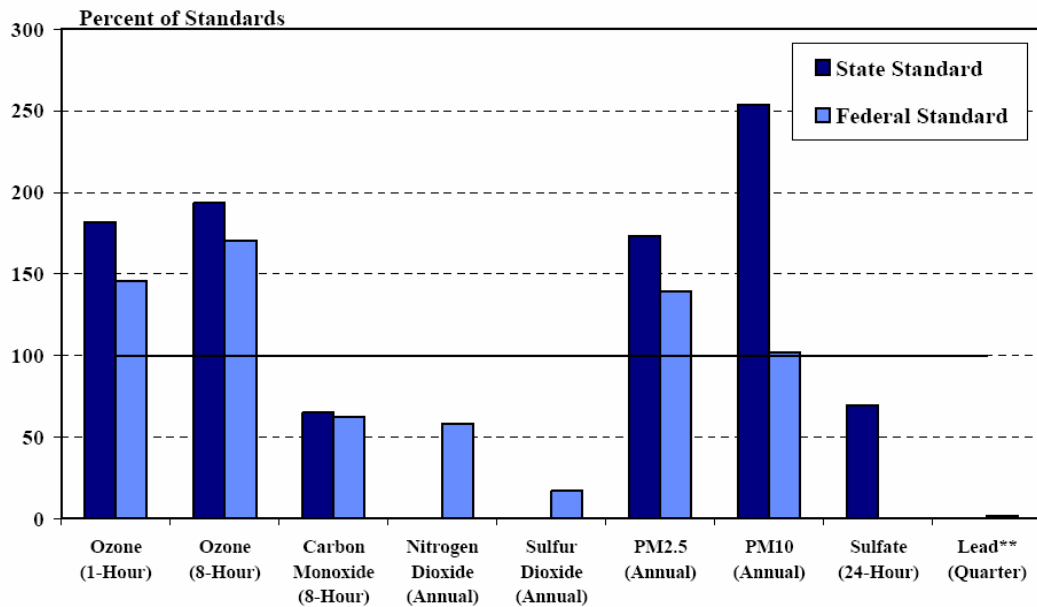


Source: South Coast Air Quality Management District, 2008

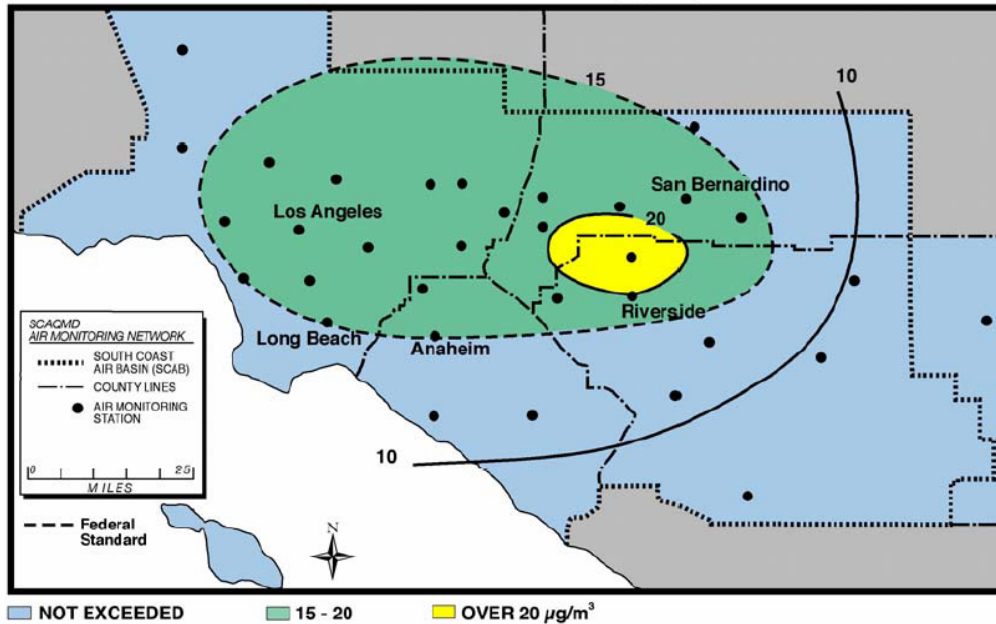


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**Exhibit 5a: 2005 Maximum Pollutant Concentrations as Percent of Standards**



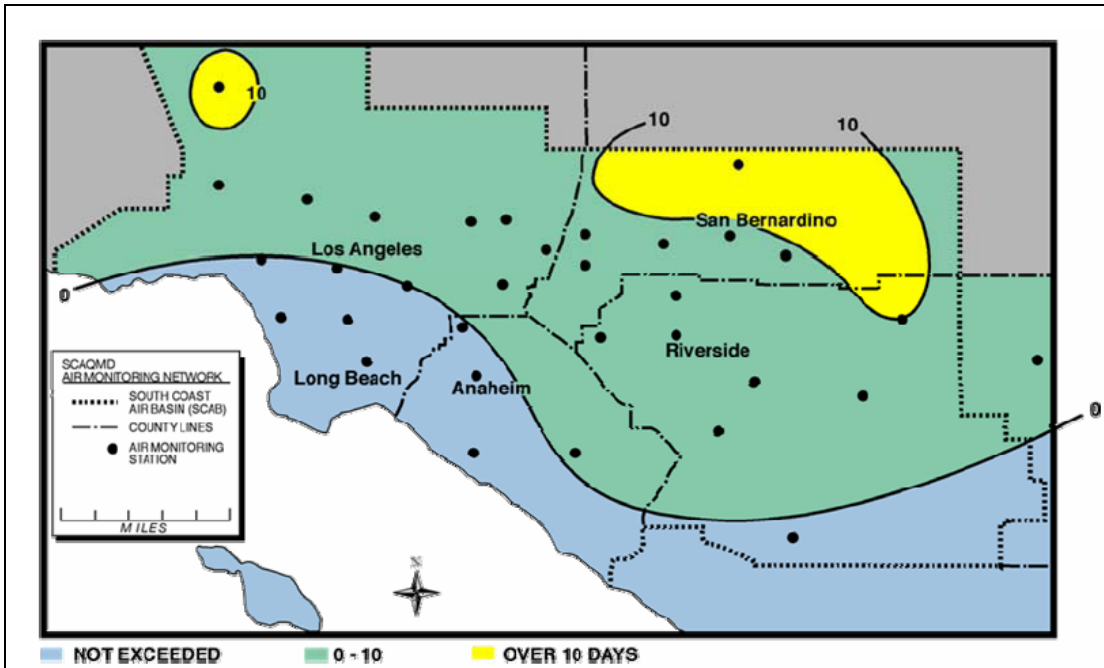
**Exhibit 5b: Fine Particulate Matter (PM2.5) - 2005 Annual Arithmetic Mean**

Source: South Coast Air Quality Management District, Air Quality Management Plan, 2007.

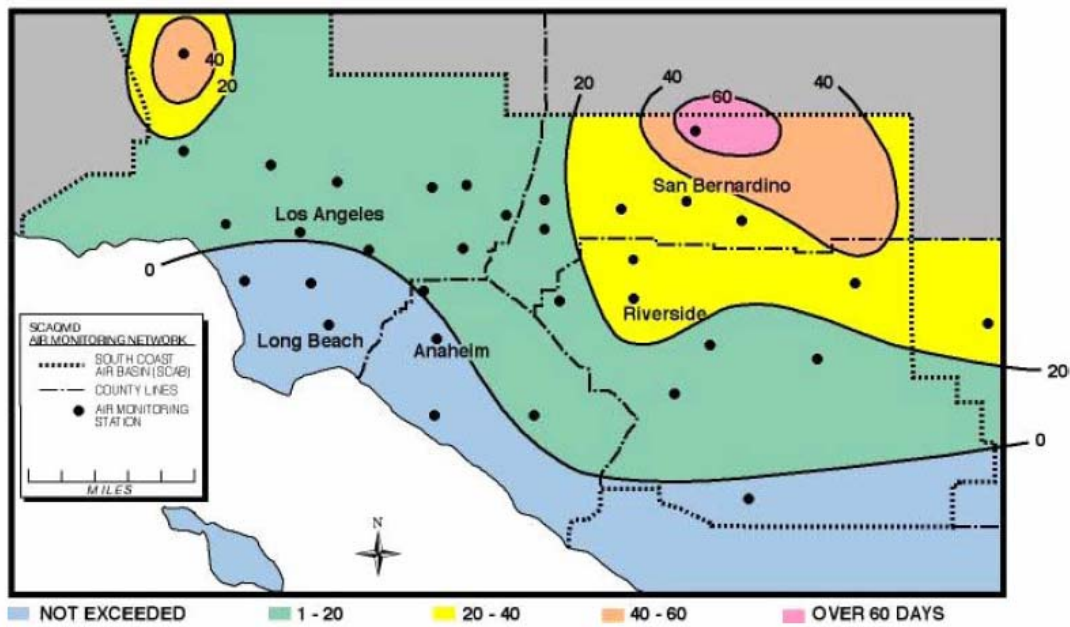


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**Exhibit 5  
South Coast Air Basin Air Quality**



**Exhibit 6a: Number of Days exceeding 1-Hour Federal Ozone Standard**



**Exhibit 6b: Number of Days exceeding 8-hour Federal Ozone Standard**

Source: South Coast Air Quality Management District, Air Quality Management Plan, 2007.

The SSAB is a continental, desert region with a climate characterized by low annual rainfall, low humidity, hot days, and cool nights. Temperatures exceed 100 degrees Fahrenheit during the summer with daily highs near 110 degrees Fahrenheit during July and August. The mean temperature in the summer is 89 degrees Fahrenheit, while the mean temperature in the winter is 57 degrees Fahrenheit. Rainfall in the area varies considerably; precipitation normally occurs November through April.

The Coachella Valley is exposed to frequent gusty winds, the strongest of which occur directly to the east of the project in the Banning Pass, which is a wind power generation area. Stronger winds tend to occur in the open mid-portion of the valley, while lighter winds tend to occur closer to the foothills. Widespread gusty winds can frequently occur over all areas of the valley. Within the project area, there is a natural sand migration process that has direct and indirect effects on air quality. Called "blowsand," this natural sand migration process generates PM<sub>10</sub> in two ways: 1) by direct particle erosion and fragmentation; and 2) by secondary effects (i.e., sand deposits on road surfaces being entrained by road traffic).

Wind plays an important role in air pollutant concentration. The wind speed and direction determine the horizontal dispersion and transport of air pollutants. During late autumn to early spring, the Basin is subject to wind flows associated with storms moving through the region from the northwest. This period also brings five to ten periods of strong, dry offshore winds, known as the Santa Ana winds. Summer wind flows can be created by pressure differences between the relatively cold ocean and the unevenly heated and cooled land surfaces that modify the general northwesterly wind circulation over southern California. The prevailing winds in the project area for a 24-hour period move predominantly from northwest to southeast, with an average of 3 meters per second. During 7:00 a.m. to 5:00 p.m., the wind blows from south to north with occasional winds blowing from northwest to southeast.

Inversions limit the vertical depth through which air pollution can be mixed. During clear winter nights, cold air off the mountains sinks to the valley floor while the air aloft over the valley remains warm, which forms radiation inversions.

### **State Implementation Plan**

The 2002 Coachella Valley PM<sub>10</sub> State Implementation Plan (2002 CVSIP) met all applicable federal CAA requirements, including the most stringent measures analysis, control measures, and attainment demonstration. However, when the U.S. EPA approved the 2002 CVSIP on April 18, 2003, the emissions inventories did not take into account the newer version of EMFAC. Therefore, the SCAQMD revised the CVSIP with the latest approved mobile source emissions estimates, planning assumptions, and fugitive dust source emission estimates. The 2003 CVSIP contains updated emissions inventories, emission budgets, and attainment modeling. The U.S. EPA approved the transportation conformity budgets in the 2003 CVSIP with an effective date of April 9, 2004.

**Local Air Quality**

As shown in Exhibit 7a, in the Coachella Valley (the Riverside County portion of the Salton Sea Air Basin), ozone national and state standards exceeded the standard in 2005 and the PM<sub>10</sub> annual standard exceeded the state PM<sub>10</sub> annual standard. The other pollutants did not exceed the applicable standards.

As shown in Exhibit 7b, the air quality trend in the Coachella Valley for the number of days that the concentrations of ozone exceed the national standards has decreased since 1990. However, the 8-hour ozone concentration still exceeds the national standard about 50 days per year.

**Attainment Status**

Attainment status for the Salton Sea Air Basin is shown in Table 3. As shown in the table, the basin is in nonattainment for ozone and PM<sub>10</sub>.

**Table 3: Salton Sea Air Basin Attainment Status**

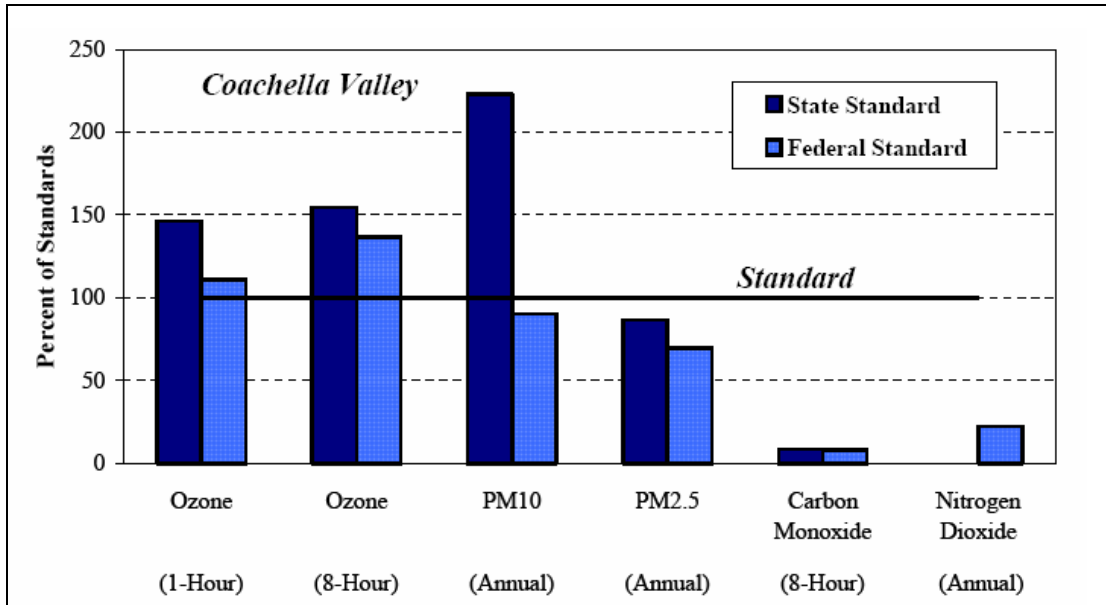
Pollutant	State Status	National Status
Ozone (1-hour)	Nonattainment, extreme	No Data
Ozone (8-hour)	Nonattainment	Nonattainment
Carbon Monoxide	Attainment	Unclassifiable/Attainment
Nitrogen Dioxide	Attainment	Unclassifiable/Attainment
Sulfur Dioxide	Attainment	Unclassified
PM <sub>10</sub>	Nonattainment	Nonattainment
PM <sub>2.5</sub>	Unclassified	Unclassifiable/Attainment
Source: State Status from California Air Resources Board (ARB 2006). National Status from U.S. Environmental Protection Agency (EPA 2007g).		

**2.3 - Mojave Desert Air Quality Management District**

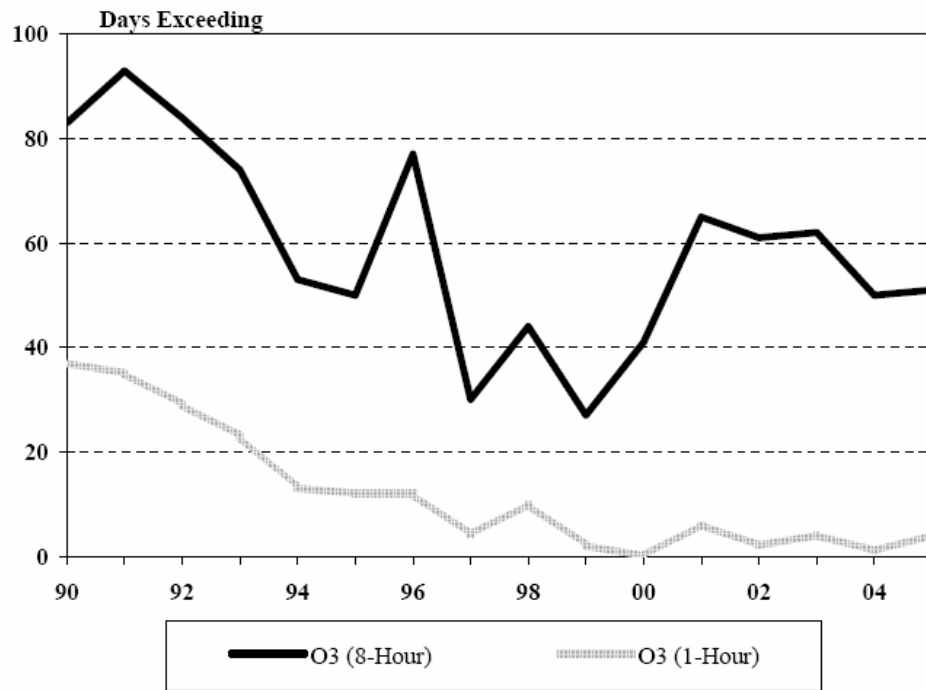
**Mojave Desert Air Basin**

The following discussion regarding the Mojave Desert Air Basin (MDAB) is from the MDAQMD CEQA Guidelines (MDAQMD 2007).

The MDAQMD covers the majority of the MDAB. The MDAB is an assemblage of mountain ranges interspersed with long broad valleys that often contain dry lakes. Many of the lower mountains, which dot the vast terrain, rise from 1,000 to 4,000 feet above the valley floor. Prevailing winds in the MDAB are out of the west and southwest. These prevailing winds are due to the proximity of the MDAB to coastal and central regions and the blocking nature of the Sierra Nevada Mountains to the north; air masses pushed onshore in Southern California by differential heating are channeled through the MDAB. The MDAB is separated from the southern California coastal and central California



**Exhibit 7a: 2005 Maximum Pollutant Concentrations as Percent of Standards - Riverside County SSAB**



**Exhibit 7b: Number of Days exceeding National Standards - Riverside County SSAB**

Source: South Coast Air Quality Management District, Air Quality Management Plan, 2007.



Michael Brandman Associates

**Exhibit 7  
Salton Sea Air Basin Air Quality**

Valley regions by mountains (highest elevation approximately 10,000 feet), whose passes form the main channels for these air masses. The Antelope Valley is bordered in the northwest by the Tehachapi Mountains, separated from the Sierra Nevadas in the north by the Tehachapi Pass (3,800 ft elevation). The Antelope Valley is bordered in the south by the San Gabriel Mountains, bisected by Soledad Canyon (3,300 ft). The Mojave Desert is bordered in the southwest by the San Bernardino Mountains, separated from the San Gabriels by the Cajon Pass (4,200 ft). A lesser channel lies between the San Bernardino Mountains and the Little San Bernardino Mountains, the Morongo Valley. The Palo Verde Valley portion of the Mojave Desert lies in the low desert, at the eastern end of a series of valleys (notably the Coachella Valley) whose primary channel is the San Gorgonio Pass (2,300 ft) between the San Bernardino and San Jacinto Mountains.

During the summer the MDAB is generally influenced by a Pacific Subtropical High cell that sits off the coast, inhibiting cloud formation and encouraging daytime solar heating. The MDAB is rarely influenced by cold air masses moving south from Canada and Alaska, as these frontal systems are weak and diffuse by the time they reach the desert. Most desert moisture arrives from infrequent warm, moist and unstable air masses from the south. The MDAB averages between three and seven inches of precipitation per year (from 16 to 30 days with at least 0.01 inches of precipitation). The MDAB is classified as a dry-hot desert climate, with portions classified as dry-very hot desert, to indicate at least three months have maximum average temperatures over 100.4° F.

### **Air Quality Attainment Plan**

The MDAQMD currently has two air quality attainment plans, one for ozone and one for PM<sub>10</sub>.

The current ozone air quality management plan is the 2004 Attainment Plan (MDAQMD 2004). The 2004 Attainment Plan lays out a strategy to attain the federal ozone standards by 2007. There is a draft Federal 8-Hour Ozone Attainment Plan for the Western Mojave Desert Nonattainment Area that is expected to be adopted on June 9, 2008 (MDAQMD 2008). The 2008 Attainment Plan contains strategies to attain the ozone standard in the Western Mojave Desert Nonattainment Area by the year 2021.

The PM<sub>10</sub> attainment plan for the MDAB is the Final Mojave Desert Planning Area Federal PM<sub>10</sub> Attainment Plan (MDAQMD 1995). A large portion of the MDAQMD has become a classified nonattainment area due to violations of regional PM<sub>10</sub> levels. The FCAA required the state air agency to make revisions to the SIP for federal PM<sub>10</sub> attainment planning in July 20, 1995. The USEPA therefore designated a major portion of the San Bernardino County's Southeast Desert Air Basin as a PM<sub>10</sub> nonattainment area. These areas include Victor Valley, Morongo Basin, Barstow, and Lucerne Valley (referred to as the Mojave Desert Planning Area or MDPA). Strategies to reduce PM<sub>10</sub> levels in these areas were focused on unpaved road travel, construction, and local disturbed areas in populated areas, and certain stationary sources operating in the rural Lucerne Valley. However, control measures to reduce dust from regional wind events are not feasible. The MDAQMD then estimated that attainment with the NAAQS would be achieved no later than December 31, 2000

within the MDPA. The demonstration of attainment would be based on progress toward attaining the NAAQS after the successful implementation of the control strategy.

### Local Air Quality

Ozone and particulates are the two air pollutants monitored in the MDAB because they are most likely to cause a violation of any of the pollutants that have ambient standards. Table 4 summarizes measurement data from the Twentynine Palms air monitoring station, which is located near the Joshua Tree site. The more stringent state standard for ozone was exceeded an average of 7 days per year in Twentynine Palms during the 2001-2005 period. The federal 8-hour ozone standard also averages about six violations per year. State PM<sub>10</sub> standards are exceeded two or three times per year unless windstorms create a “natural” high particulate level. As baseline air quality has gradually improved in the Los Angeles Basin, so has air quality improved in the High Desert.

**Table 4: Mojave Desert Local Air Quality**

Pollutant/Standard	2001	2002	2003	2004	2005
<b>Ozone</b>					
1-Hour > 0.09 ppm	12	2	4	7	8
8-Hour > 0.08 ppm	9	4	3	7	5
Max 1-Hour (ppm)	0.124	0.099	0.100	0.103	0.105
Max 8-Hour (ppm)	0.112	0.091	0.091	0.094	0.091
<b>Inhalable Particulates (PM<sub>10</sub>)*</b>					
24-Hour > 50 ug/m <sup>3</sup>	2	2	3	0	2
24-Hour > 150 ug/m <sup>3</sup>	0	0	0	0	0
Max. 24 Hour (ug/m <sup>3</sup> )	84	55	64	43	58
*Incomplete data year Source: California Air Resources Board (ARB 2008). Twentynine Palms, Adobe Road monitoring station.					

### Attainment Status

The current attainment designations for the MDAB are shown in Table 5. The basin is designated as nonattainment for ozone, PM<sub>10</sub>, and PM<sub>2.5</sub>.

**Table 5: Mojave Desert Air Basin Attainment Status**

Pollutant	State Status	National Status
Ozone (1-hour)	Nonattainment, moderate	Nonattainment, Severe
Ozone (8-hour)	Nonattainment, moderate	Nonattainment
Carbon Monoxide	Attainment	Attainment
Nitrogen Dioxide	Attainment/unclassified	Attainment/unclassified



**Table 5: Mojave Desert Air Basin Attainment Status (Cont)**

Pollutant	State Status	National Status
Sulfur Dioxide	Attainment/unclassified	Attainment/unclassified
PM <sub>10</sub>	Nonattainment	Nonattainment
PM <sub>2.5</sub>	Nonattainment	Attainment/unclassified
Source: MDAQMD 2007.		

## 2.4 - Rules and Regulations

### ***South Coast Air Quality Management District***

The AQMP for the basin establishes a program of rules and regulations administered by SCAQMD to obtain attainment of the state and national air quality standards. The rules and regulations that apply to this Project include, but are not limited to the following:

- SCAQMD Rule 402 prohibits a person from discharging from any source whatsoever such quantities of air contaminants or other material which cause injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public, or which endanger the comfort, repose, health or safety of any such persons or the public, or which cause, or have a natural tendency to cause, injury or damage to business or property.
- SCAQMD Rule 403 governs emissions of fugitive dust during construction and operation activities. Compliance with this rule is achieved through application of standard best management practices, such as application of water or chemical stabilizers to disturbed soils, covering haul vehicles, restricting vehicle speeds on unpaved roads to 15 miles per hour, sweeping loose dirt from paved site access roadways, cessation of construction activity when winds exceed 25 mph, and establishing a permanent ground cover on finished sites. Rule 403 also requires submission of a Fugitive Dust Plan to the SCAQMD for Projects that disturb over 100 acres of soil or move 5,000 cubic yards per day of material.
- SCAQMD Rule 1470, Requirements for Stationary Diesel-fueled Internal Combustion and Other Compression Ignition Engines, applies to any person who owns or operates a stationary CI engine in the SCAQMD with a rated brake horsepower greater than 50.

### ***Mojave Desert Air Quality Management District***

The rules that would apply to the sites located within the MDAQMD include, but are not limited, to the following:

- MDAQMD Rule 403 - Fugitive Dust. The purpose of this rule is to reduce emissions of fugitive dust. The rule indicates that a person shall not cause or allow the emissions of fugitive dust from any transport, handling, construction or storage activity so that the presence of such

dust remains visible in the atmosphere beyond the property line of the emission source. The rule indicates that every reasonable precaution shall be taken to minimize fugitive dust emissions from wrecking, excavation, grading, clearing of land, and solid waste disposal operations.

- MDAQMD Rule 462 - Organic Liquid Loading. The purpose of this rule is to limit the emissions of volatile organic compounds (VOC) and toxic compounds (such as benzene) from Organic Liquid Loading (any organic liquid, including gasoline), and in conjunction with Rules 461 and 463, limit the emissions from the storage, transfer, and dispensing of organic liquids. This rule applies to the transport of organic liquids, including fuels such as gasoline, between facilities and the transfer of such organic liquids into tanks, including motor vehicle fuel tanks, tank trucks, trailers or railroad tank cars. Facilities subject to this rule include, but are not limited to, bulk facilities, retail and non-retail service stations or any other facility where organic liquids are stored or transferred.
- MDAQMD Rule 463 - Storage of Organic Liquids. The purpose of this rule is to limit the emissions of VOCs and toxic compounds (such as benzene) during the Storage of Organic Liquids, and in conjunction with Rules 461 and 462, limit the emissions from the storage, transfer, and dispensing of organic liquids, including bulk facilities, retail service stations, and others, the transport of fuels between these facilities and the transfer of fuel into motor vehicle tanks. This rule applies to any facility storing the compound of carbon, including organic materials, organic solvents and gasoline, which is in a liquid phase at ambient or storage conditions.
- MDAQMD Rule 1520, Control of Toxic Air Contaminants from Existing Sources, would apply to the diesel generator to be operating full time within the MDAQMD. The rule is designed to reduce the health risk associated with emissions of toxic air contaminants from existing Facilities.
- Regulation XIII, New Source Review, consists of several rules that set forth the requirements for the preconstruction review of all new or modified Facilities. The provisions of this Regulation shall apply to any new or modified Facility or Emissions Unit which requires a permit pursuant to the provisions of District Regulation II. A "Facility" is any building, structure, Emissions Unit, combination of Emissions Units, or installation which emits or may emit a Regulated Air Pollutant and which are: (1) Located on one or more Contiguous or adjacent properties within the District; (2) Under the control of the same person (or by persons under common control); and (3) Belong to the same industrial grouping, as determined by being within the same two digit Standard Industrial Classification Code. (4) For the purpose of this regulation, such above-described grouping, remotely located but connected only by land carrying a pipeline, shall not be considered one Facility.

Regulation XIII also ensures that the construction, or modification of Facilities subject to this Regulation, does not interfere with the attainment and maintenance of Ambient Air Quality

Standards. It also ensures that there is no net increase in the emissions of any nonattainment air pollutants from new or modified Major Facilities which emit or have the potential to emit any nonattainment air pollutant in an amount greater than or equal to the amounts set forth in Rule 1303(B)(1), which is currently 25 pounds per day. If a Facility emits more than 25 pounds per day, it has to be equipped with Best Available Control Technology. A Facility may also have to offset its emissions, if greater than the thresholds described in the Regulation.

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## 2.5 - Pollutants

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Air pollutants can be categorized into two main sources, stationary and mobile. A point source is a stationary source, which is an emission from an identifiable location, usually associated with manufacturing and industrial sources. Area sources are considered stationary sources, which are widely distributed and produce many small emissions. Mobile source emissions are associated with motor vehicles and include on-road and off-road sources. On-road sources are emissions from vehicles, trucks, motorcycles, buses, etc. Off-road sources include equipment and vehicles in the following sectors: recreational, construction, mining, industrial, lawn and garden, farm, airport service, and rail. A brief summary of the pollutants of concern follows.

### **Carbon Monoxide**

**Description and Properties:** Carbon monoxide (CO) is a colorless, odorless, toxic gas produced by incomplete combustion of carbon-containing fuels (e.g., gasoline, diesel fuel, and biomass). CO is a primary pollutant, which means that it is emitted directly into the air (unlike secondary pollutants such as ozone that are formed by the reactions of other pollutants). CO levels tend to be highest during the winter months when the meteorological conditions favor the accumulation of the pollutants. This occurs when relatively low inversion levels trap pollutants near the ground and concentrate the CO (EPA 2007). However, because CO is somewhat soluble in water, rainfall and fog can suppress CO conditions.

**Health Effects:** CO is essentially inert to plants and materials but can have significant effects on human health. CO gas enters the body through the lungs, dissolves in the blood, and replaces oxygen as an attachment to hemoglobin. This binding reduces available oxygen in the blood and; therefore, reduces oxygen delivery to the body's organs and tissues. Effects on humans range from slight headaches to nausea to death. Elevated levels of CO can also cause visual impairments, reduced manual dexterity, poor learning ability, reduced work capacity, and trouble performing complex tasks. For people with heart disease, exposure to CO at low levels may cause chest pain and reduced ability to exercise; repeated exposures may contribute to other cardiovascular effects (EPA 2007h).

**Sources:** CO is produced by incomplete combustion of carbon-containing fuels (e.g., gasoline, diesel fuel, and biomass). The primary source of CO is from on-road motor vehicles. It is a component of motor vehicle exhaust, which contributes about 56 percent of all CO emissions nationwide. Other non-road engines and vehicles (such as construction equipment and boats) contribute about 22 percent

of all CO emissions nationwide. Higher levels of CO generally occur in areas with heavy traffic congestion. Other sources of CO emissions include industrial processes (such as metals processing and chemical manufacturing), residential wood burning, and natural sources such as forest fires. Woodstoves, gas stoves, cigarette smoke, and unvented gas and kerosene space heaters are sources of CO concentrations indoors.

### **Ozone**

**Description and Physical Properties:** Ozone is a photochemical pollutant as it is not emitted directly into the atmosphere, but is formed by a complex series of chemical reactions between volatile organic compounds (VOC), NO<sub>x</sub>, and sunlight. VOC and NO<sub>x</sub>, also called “ozone precursors,” are emitted from automobiles, solvents and fuel combustion. Ozone is a regional pollutant that is generated over a large area and is transported and spread by the wind. In order to reduce ozone, it is necessary to control emissions of ozone precursors. Significant ozone formation generally requires an adequate amount of precursors in the atmosphere and several hours in a stable atmosphere with strong sunlight. These conditions are prevalent during the summer when thermal inversions are most likely to occur. As a result, summertime conditions of long periods of daylight and hot temperatures form ozone in the greatest quantities. During the summer, thermal inversions trap ozone from dispersing vertically, and high concentrations of this pollutant are prevalent.

**Health Effects:** Health effects of ozone can include the following: respiratory system irritation, reduction of lung capacity, asthma aggravation, inflammation, and damage to lung cells, aggravated cardiovascular disease, chronic lung disease aggravation, and permanent lung damage (EPA 1999). The greatest health risk is to those who are active outdoors during smoggy periods, such as children, athletes, and outdoor workers. Ozone also damages natural ecosystems such as forests and foothill communities, and damages agricultural crops and materials such as rubber, paint, and plastics.

**Sources:** Ozone is a secondary pollutant, thus is not emitted directly into the lower level of the atmosphere. The sources of ozone precursors (VOC and NO<sub>x</sub>) are discussed above in the description of ozone as well as the discussions concerning VOC and NO<sub>x</sub>.

### **Nitrogen Oxides**

**Description and Physical Properties:** During combustion of fossil fuels, oxygen reacts with nitrogen to produce NO<sub>x</sub> (NO, NO<sub>2</sub>, NO<sub>3</sub>, N<sub>2</sub>O, N<sub>2</sub>O<sub>3</sub>, N<sub>2</sub>O<sub>4</sub>, and N<sub>2</sub>O<sub>5</sub>). This occurs primarily in motor vehicle internal combustion engines and fossil fuel-fired electric utility and industrial boilers. As discussed previously, NO<sub>x</sub> is an ozone precursor, which means that when it is emitted into the atmosphere, it forms or may cause ozone to be formed. When NO<sub>x</sub> and VOC are released in the atmosphere, they can chemically react with one another in the presence of sunlight to form ozone. NO<sub>x</sub> can also be a precursor to PM<sub>10</sub> and PM<sub>2.5</sub>. NO<sub>x</sub> can react with moisture, ammonia, and other compounds to form nitric acid and related particles. This deposition can harm natural resources and materials.

**Health Effects:** The EPA has concluded that the only form of  $\text{NO}_x$  that exists at a level high enough to cause public health concerns is nitrogen dioxide ( $\text{NO}_2$ ) (EPA 1997). Nitrogen dioxide is a brown gas with a strong odor. The main human health concerns of nitrogen dioxide include lung damage, increased incidence of chronic bronchitis, eye, and mucus membrane damage, negative effects on the respiratory system, pulmonary dysfunction, and premature death. Small particles can penetrate deeply into the sensitive tissue of the lungs and can cause or worsen respiratory disease such as emphysema, asthma, and bronchitis, and can also aggravate existing heart disease (EPA 2007d).

Because  $\text{NO}_x$  is an ozone precursor, the health effects associated with ozone (as discussed above) are also indirect health effects associated with unhealthy levels of  $\text{NO}_x$  emissions.

**Sources:** Natural sources of oxides of nitrogen ( $\text{NO}_x$ ) include lightning, soils, wildfires, stratospheric intrusion, and the oceans. Natural sources accounted for approximately seven percent of 1990 emissions of  $\text{NO}_x$  for the United States.

### **Sulfur Dioxide**

**Description and Physical Properties:** Sulfur dioxide ( $\text{SO}_2$ ) is a colorless, pungent gas. At levels greater than 0.5 ppm, the gas has a strong odor, similar to rotten eggs. Sulfuric acid is formed from sulfur dioxide, which is an aerosol particle component that may lead to acid deposition. Acid deposition into water, vegetation, soil, or other materials can harm natural resources and materials. Sulfur oxides ( $\text{SO}_x$ ) include sulfur dioxide and sulfur trioxide ( $\text{SO}_3$ ). Although sulfur dioxide concentrations have been reduced to levels well below state and national standards, further reductions are desirable because sulfur dioxide is a precursor to sulfate and  $\text{PM}_{10}$ . Sulfates are particulates formed through the photochemical oxidation of sulfur dioxide.

**Health Effects:** Sulfur dioxide is a soluble gas; therefore, it can be absorbed in the mucous membranes of the respiratory tract and nose. Long-term exposure to high levels of sulfur dioxide can cause irritation of existing cardiovascular disease, respiratory illness, and changes in the defense systems of the lungs. When people with asthma are exposed to high levels of sulfur dioxide for short periods of time during moderate activity, effects may include wheezing, chest tightness, or shortness of breath (EPA 2004).

**Sources:** Anthropogenic, or human caused, sources include fossil-fuel combustion, mineral ore processing, and chemical manufacturing. Volcanic emissions are a natural source of sulfur dioxide. The gas can also be produced in the air by dimethylsulfide and hydrogen sulfide. Sulfur dioxide is removed from the air by dissolution in water, chemical reactions, and transfer to soils and ice caps. The ARB demonstrates that sulfur dioxide levels in the State are well below the maximum standards (ARB 2006b, Page 107, 408, and 409).

## **Lead**

**Description and Physical Properties:** Lead (Pb) is a solid heavy metal that can exist in air pollution as an aerosol particle component. An aerosol is a collection of solid, liquid, or mixed-phase particles suspended in the air. Lead was first regulated as an air pollutant in 1976. Leaded gasoline was first marketed in 1923 and was used in motor vehicles until around 1970. Lead concentrations once exceeded the state and national air quality standards by a wide margin, but have not exceeded state or national air quality standards at any regular monitoring station since 1982. The exclusion of lead from gasoline helped to decrease emissions of lead in the United States from 219,000 to 4,000 short tons per year between 1970 and 1997. Leaded gasoline has been phased out in most countries, but is still in use in some areas.

**Health Effects:** Lead accumulates in bones, soft tissue, and blood and can affect the kidneys, liver, and nervous system. The more serious effects of lead poisoning include behavior disorders, mental retardation, and neurological impairment. Low levels of lead in fetuses and young children can result in nervous system damage, which can cause learning deficiencies and low IQs. Lead may also contribute to high blood pressure and heart disease.

**Sources:** Lead ore crushing, lead-ore smelting, and battery manufacturing are currently the largest sources of lead in the atmosphere in the United States. Other sources include dust from soils contaminated with lead-based paint, solid waste disposal, and crustal physical weathering. The mechanisms by which lead can be removed from the atmosphere (sinks) include deposition to soils, ice caps, and oceans, and inhalation.

## **Particulate Matter (PM<sub>10</sub> and PM<sub>2.5</sub>)**

**Description and Physical Properties:** Particulate matter is a generic term that defines a broad group of chemically and physically different particles (either liquid droplets or solids) that can exist over a wide range of sizes. Examples of atmospheric particles include those produced from combustion (diesel soot or fly ash), light produced (urban haze), sea spray produced (salt particles), and soil-like particles from re-suspended dust. In discussions of air pollution, particulate matter is typically divided into two size categories: PM<sub>10</sub> and PM<sub>2.5</sub> because of the adverse health effects associated with the smaller sized particles. PM<sub>10</sub> refers to particulate matter that is 10 microns or less in diameter (1 micron is one-millionth of a meter, also known as micrometer [ $\mu\text{m}$ ]). PM<sub>2.5</sub> refers to particulate matter that is 2.5 microns or less in diameter. Soil dust consists of the minerals and organic material found in soil being lifted up into the air by winds. Fugitive dust is entrained particulate matter caused by anthropogenic (grading, road dust) or natural (windblown dust) activities.

**Health Effects:** Particulate matter can be inhaled into the lungs where it can be absorbed into the bloodstream. It is a respiratory irritant and can cause direct pulmonary effects such as coughing, bronchitis, lung disease, respiratory illnesses, increased airway reactivity, and exacerbation of asthma. Particulate matter is also thought to have direct effects on the heart (EPA 2003). Relatively recent

mortality studies have shown a statistically significant direct association between mortality and daily concentrations of particulate matter in the air. Non-health effects include reduced visibility and soiling of property.

**Sources:** Particulate matter originates from a variety of stationary and mobile sources. Stationary sources include: fuel combustion for electrical utilities, residential space heating, and industrial processes; construction and demolition; metals, minerals, and petrochemicals; wood products processing; mills and elevators used in agriculture; erosion from tilled lands; waste disposal, and recycling. Mobile or transportation-related sources include particulate matter from highway vehicles and non-road vehicles and fugitive dust from paved and unpaved roads.

### **Diesel Particulate Matter**

**Description and Physical Properties:** Diesel particulate matter (DPM) is a source of PM<sub>2.5</sub>—diesel particles are typically 2.5 microns and smaller. In 1998, DPM made up about 6 percent of the total PM<sub>2.5</sub> inventory nationwide (EPA 2002). Diesel exhaust is a complex mixture of thousands of particles and gases that is produced when an engine burns diesel fuel. Organic compounds account for 80 percent of the total particulate matter mass, which is comprised of compounds such as hydrocarbons and their derivatives, and polycyclic aromatic hydrocarbons (PAHs) and their derivatives. Fifteen PAHs are confirmed carcinogens, a number of which are found in diesel exhaust (NTP 2005b). The chemical composition and particle sizes of DPM vary between different engine types (heavy-duty, light-duty), engine operating conditions (idle, accelerate, decelerate), expected load, engine emission controls, fuel formulations (high/low sulfur fuel), and engine year (EPA 2002).

**Non-Cancer Health Effects:** Some short-term (acute) effects of diesel exhaust exposure include eye, nose, throat, and lung irritation, and can cause coughs, headaches, light-headedness, and nausea. Diesel exhaust is a major source of ambient particulate matter pollution in urban environments. Numerous studies have linked elevated particle levels in the air to increased hospital admissions, emergency room visits, asthma attacks, and premature deaths among those suffering from respiratory problems (OEHHA 2002).

**Cancer Health Effects:** Human studies on the carcinogenicity of DPM demonstrate an increased risk of lung cancer, although the increased risk cannot be clearly attributed to diesel exhaust exposure (NTP 2005b).

**Sources:** In 2002 in the SCAQMD, the main sources of diesel particulate matter were due to the combustion of diesel fuel in diesel-powered engines. Such engines can include on-road vehicles like diesel trucks, off-road construction vehicles, diesel electrical generators, and various pieces of stationary construction equipment. Over 97 percent of the diesel emissions were from mobile sources (SCAQMD 2007c).

### **Visibility Reducing Particles**

**Description and Physical Properties:** Visibility-reducing particles consist of suspended particulate matter, which is a complex mixture of tiny particles that consists of dry solid fragments, solid cores with liquid coatings, and small droplets of liquid. These particles vary greatly in shape, size and chemical composition, and can be made up of many different materials such as metals, soot, soil, dust, and salt. The State standard is intended to limit the frequency and severity of visibility impairment due to regional haze.

**Health Effects:** Health effects of particulate matter are addressed under the PM<sub>10</sub> and PM<sub>2.5</sub> section. Non-health effects include reduced visibility and soiling of property. Reduced visibility occurs when light interacts with the particles, becoming modified or reduced. Visibility effects include changes in apparent color as well as reduction of clarity and visible distance.

**Sources:** Particulate matter originates from a variety sources. Stationary sources include: fuel combustion for electrical utilities, residential space heating, and industrial processes; construction and demolition; metals, minerals, and petrochemicals; wood products processing; mills and elevators used in agriculture; erosion from tilled lands; waste disposal and recycling. Mobile or transportation-related sources include particulate matter from highway vehicles and non-road vehicles and fugitive dust from paved and unpaved roads. In addition, wildfires and windblown dust contribute to visibility reducing particulates.

### **Vinyl Chloride**

**Description and Physical Properties:** Vinyl chloride, or chloroethene, is a chlorinated hydrocarbon and a colorless gas with a mild, sweet odor. In 1978, ARB established a state ambient air quality standard for vinyl chloride. The standard was set at 0.01 ppm for a 24-hour duration because that was the lowest level that could be detected at that time. In 1990, ARB identified vinyl chloride as a toxic air contaminant and estimated a cancer unit risk factor.

**Health Effects:** Short-term exposure to high levels of vinyl chloride in air causes central nervous system effects, such as dizziness, drowsiness, and headaches (ARB 2005b). Epidemiological studies of occupationally exposed workers have linked vinyl chloride exposure to development of a rare cancer, liver angiosarcoma, and have suggested a relationship between exposure and lung and brain cancers.

**Sources:** Most vinyl chloride is used to make polyvinyl chloride (PVC) plastic and vinyl products, including pipes, wire and cable coatings, and packaging materials. Vinyl chloride is formed when other substances such as trichloroethane, trichloroethylene, and tetrachloroethylene are broken down. This can occur when plastics containing these substances are left to decompose in solid waste landfills. Vinyl chloride has been detected near landfills, sewage plants, and hazardous waste sites due to microbial breakdown of chlorinated solvents.



## **Hydrogen Sulfide**

**Description and Physical Properties:** Hydrogen sulfide (H<sub>2</sub>S) is a flammable, colorless, poisonous gas that smells like rotten eggs.

**Health Effects:** High levels of hydrogen sulfide can cause immediate respiratory arrest. It can irritate the eyes and respiratory tract and cause symptoms like headache, nausea, vomiting, and cough. Long exposure to hydrogen sulfide can cause pulmonary edema.

**Sources:** Hydrogen sulfide and other reduced-sulfur compounds form by the anaerobic decomposition of manure. Some types of bacteria found in animal and human by-products produce hydrogen sulfide during reduction of sulfur-containing compounds, such as proteins. Manure, storage tanks, ponds, anaerobic lagoons, and land application sites are the primary sources of hydrogen sulfide emissions. Anthropogenic sources include the combustion of sulfur containing fuels (oil and coal) and organic matter that undergoes putrefaction. Hydrogen sulfide is used in the production of heavy water for nuclear reactors, the manufacture of chemicals, in metallurgy, and as an analytical reagent.

## **Volatile Organic Compounds and Reactive Organic Gases**

**Description and Physical Properties:** Reactive organic gases (ROGs), or volatile organic compounds (VOCs), are defined as any compound of carbon, excluding carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates, and ammonium carbonate, which participates in atmospheric photochemical reactions. Although there are slight differences in the definition of ROG and VOC, the two terms are often used interchangeably. VOC consist of non-methane hydrocarbons and oxygenated hydrocarbons. Hydrocarbons are organic compounds that contain only hydrogen and carbon atoms. Non-methane hydrocarbons are hydrocarbons that do not contain the unreactive hydrocarbon, methane. Oxygenated hydrocarbons are hydrocarbons with oxygenated functional groups attached.

There are no state or national ambient air quality standards for VOC because they are not classified as criteria pollutants. They are regulated, however, because VOC is an ozone precursor. As such, a reduction in VOC emissions reduces certain chemical reactions that contribute to the formulation of ozone. VOCs are also transformed into organic aerosols in the atmosphere, which contribute to higher PM<sub>10</sub> and lower visibility.

**Health Effects:** Although health-based standards have not been established for ROG, health effects can occur from exposures to high concentrations because of interference with oxygen uptake. In general, concentrations of VOCs are suspected to cause eye, nose, and throat irritation; headaches, loss of coordination, nausea, damage to liver, kidney, and the central nervous system (EPA 2007e). There are many ROGs that have been classified as toxic air contaminants. A particular VOC of concern is benzene, which is described in more detail below. EPA maintains a list of all air

substances that have been classified as hazardous to humans and/or animals, and include VOCs, pesticides, herbicides, and radionuclides (EPA 2007f).

### **Benzene**

**Description and Physical Properties:** Benzene is a VOC. It is a clear or colorless light-yellow, volatile, highly flammable liquid with a gasoline-like odor. The EPA has classified benzene as a “Group A” carcinogen.

**Health Effects:** Short-term (acute) exposure of high doses from inhalation of benzene may cause dizziness, drowsiness, headaches, eye irritation, skin irritation, and respiratory tract irritation, and at higher levels, unconsciousness can occur. Long-term (chronic) occupational exposure of high doses by inhalation has caused blood disorders, including aplastic anemia and lower levels of red blood cells (EPA 1992). Occupational exposure to benzene has been shown to cause leukemia (mainly acute myelogenous leukemia) (NTP 2005). Studies have also found that benzene exposure increased the risks of lymphatic and hematopoietic cancer (cancers of the lymphatic system and of organs and tissues involved in the production of blood), total leukemia, and specific histologic types of leukemia (NTP 2005).

**Sources:** Benzene is emitted into the air from gasoline service stations (fuel evaporation), motor vehicle exhaust, tobacco smoke, and from burning oil and coal. Benzene is also used as a solvent for paints, inks, oils, waxes, plastic, and rubber. It is used in the extraction of oils from seeds and nuts. It is also used in the manufacture of detergents, explosives, dyestuffs, and pharmaceuticals.

## SECTION 3: THRESHOLDS

### 3.1 - CEQA Guidelines

The following are from Appendix G of the CEQA Guidelines. A significant impact would occur if the Project would:

- a) Conflict with or obstruct implementation of the applicable air quality plan;
- b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation;
- c) Result in a cumulatively considerable net increase of any criteria pollutant for which the Project region is nonattainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors);
- d) Expose sensitive receptors to substantial pollutant concentrations; or
- e) Create objectionable odors affecting a substantial number of people.

### 3.2 - South Coast Air Quality Management District Thresholds

CEQA Guidelines define a significant effect on the environment as “a substantial, or potentially substantial, adverse change in the environment.” To determine if a Project would have a significant impact on air quality, the type, level, and impact of emissions generated by the Project must be evaluated. While the final determination of whether or not a Project is significant is within the purview of the lead agency pursuant to Section 15064(b) of the State CEQA Guidelines, SCAQMD recommends that its quantitative air pollution thresholds be used to determine the significance of Project emissions. If the lead agency finds that the Project has the potential to exceed these air pollution thresholds, the Project should be considered to have significant air quality impacts.

#### 3.2.1 - Regional Thresholds - South Coast Air Basin

The following regional significance thresholds have been established by SCAQMD. Projects within the South Coast Air Basin region with construction or operation related emissions in excess of any of the thresholds presented in Table 6 are considered significant.

**Table 6: SCAQMD Regional Thresholds - South Coast Air Basin**

Pollutant	Construction (pounds per day)	Operation (pounds per day)
Oxides of Nitrogen (NO <sub>x</sub> )	100	55
Volatile Organic Compounds (VOC)	75	55

**Table 6: SCAQMD Regional Thresholds - South Coast Air Basin (Cont)**

Pollutant	Construction (pounds per day)	Operation (pounds per day)
Particulate Matter (PM <sub>10</sub> )	150	150
Particulate Matter (PM <sub>2.5</sub> )	55	55
Oxides of Sulfur (SO <sub>x</sub> )	150	150
Carbon Monoxide (CO)	550	550
Source: South Coast Air Quality Management District, 2007d.		

### 3.2.2 - Regional Thresholds - Salton Sea Air Basin

Regional significance thresholds have been established by SCAQMD. Projects within the Salton Sea Air Basin with construction or operation related emissions in excess of any of the thresholds presented in Table 7 are considered significant. Note that the thresholds for construction and operation are the same.

**Table 7: SCAQMD Regional Thresholds - Salton Sea Air Basin**

Pollutant	Construction (pounds per day)	Operation (pounds per day)
Oxides of Nitrogen (NO <sub>x</sub> )	100	100
Volatile Organic Compounds (VOC)	75	75
Particulate Matter (PM <sub>10</sub> )	150	150
Particulate Matter (PM <sub>2.5</sub> )	55	55
Oxides of Sulfur (SO <sub>x</sub> )	150	150
Carbon Monoxide (CO)	550	550
Source: South Coast Air Quality Management District, 2007d.		

### 3.2.3 - Local Significance Thresholds

The SCAQMD Governing Board adopted a methodology for calculating localized air quality impacts through localized significance thresholds (LSTs), which is consistent with SCAQMD's Environmental Justice Enhancement Initiative I-4. LSTs represent the maximum emissions from a Project that will not cause or contribute to an exceedance of the most stringent applicable state or national ambient air quality standard. The LSTs are developed based on the ambient concentrations of that pollutant for each source receptor area and are applicable to NO<sub>x</sub>, CO, PM<sub>10</sub>, and PM<sub>2.5</sub>.

To facilitate the LST assessment process, the SCAQMD LST methodology provides two approaches for calculating LSTs. The first approach applies to projects up to 5 acres in size and provides a series

of look-up emission tables that quantify the level of construction emissions above which a project would be considered significant. The second approach is for projects that would impact more than 5 acres per day and utilizes dispersion modeling.

This assessment uses the first approach. The LSTs were obtained from the look-up tables in the SCAQMD Final LST Methodology (2003) for a 1-acre project. The distance to the nearest receptor was chosen to be 25 meters because that is where it was assumed the nearest sensitive receptor would be located. As shown in Exhibit 4, the Project sites are located within SRAs 19, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, and 35. Therefore, the most stringent LSTs were chosen from the look up tables from the SRAs listed above and are summarized in Table 8.

**Table 8: Localized Significance Thresholds**

Pollutant	Localized Significance Threshold (pounds per day)	Source Receptor Area
Nitrogen Dioxide	160	19
Carbon Monoxide	509	35
PM <sub>10</sub>	4	Multiple
PM <sub>2.5</sub>	3	Multiple
South Coast Air Quality Management District, 2003 and 2006.		

### 3.3 - Mojave Desert Air Quality Management District Thresholds

Regional significance thresholds have been established by MDAQMD. Projects within the MDAQMD jurisdiction with construction or operation related emissions in excess of any of the thresholds presented in Table 9 are considered significant. Note that the thresholds for construction and operation are the same. The MDAQMD does not have an equivalent to the SCAQMD's LSTs, but this assessment utilizes the SCAQMD's LSTs for consistency purposes and to ensure that the air quality standards are not violated.

**Table 9: MDAQMD Regional Thresholds**

Pollutant	Threshold (tons per year)	Threshold (pounds per day)
Oxides of Nitrogen (NO <sub>x</sub> )	25	137
Volatile Organic Compounds (VOC)	25	137
Particulate Matter (PM <sub>10</sub> )	15	82
Particulate Matter (PM <sub>2.5</sub> )*	15	82
Oxides of Sulfur (SO <sub>x</sub> )	25	137

Table 9: MDAQMD Regional Thresholds (Cont)

Pollutant	Threshold (tons per year)	Threshold (pounds per day)
Carbon Monoxide (CO)	100	548

Source: South Coast Air Quality Management District, 2007d.  
\* The MDAQMD does not have published thresholds for PM<sub>2.5</sub>; therefore, the thresholds for PM<sub>10</sub> were used.

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## SECTION 4: REGIONAL AND LOCAL ANALYSIS

This section calculates the expected emissions from the construction and operation of the Project as a necessary requisite for assessing the regulatory significance of Project emissions on a regional level.

### 4.1 - Short-Term Regional Impacts

Short-term impacts refer to emissions generated during construction because they occur on a short-term basis. Construction emissions can vary substantially from day to day, depending on the level of activity, the specific type of operation, and prevailing weather conditions. Construction emissions result from onsite and offsite activities. Onsite emissions principally consist of exhaust emissions (NO<sub>x</sub>, SO<sub>x</sub>, CO, VOC, PM<sub>10</sub>, and PM<sub>2.5</sub>) from heavy-duty construction equipment, motor vehicle operation, and fugitive dust (mainly PM<sub>10</sub>) from disturbed soil. Offsite emissions are caused by motor vehicle exhaust from delivery vehicles, worker traffic, and road dust (PM<sub>10</sub> and PM<sub>2.5</sub>). Major construction-related activities include the following: grading and clearing and building construction of the onsite structures.

The County plans to construct 5 to 6 sites at a time. The typical construction period is 120 days, with about 2-3 weeks of ground disturbing/excavation activities at the beginning of the construction period. Four to six workers will typically be working at the sites during any given time. The typical lease area will be 100 feet by 100 feet. Some sites may also utilize an additional 100 feet by 100 feet for staging the construction equipment. Excavation will be confined to the lease area. There would only be two roads constructed, each about 500 feet in length and no more than 20 feet wide. The other sites will utilize existing roadways. The County does not anticipate demolishing any structures; any abandoned structures will be left in place. In summary, it is anticipated that each site would not impact more than 1 acre of property.

The anticipated construction equipment is shown in Table 10. Note that grading and building will occur for each of the sites. The emissions associated with the two roads that would need to be constructed are included in the grading phase.

**Table 10: Construction Equipment**

Construction Phase	Equipment	Quantity
Grading for each site (includes road construction)	Drill Rig	1
	Tractors/Loaders/Backhoes	1
	Bulldozer	1
	Water Truck	1
Building for each site	Cement/Mortar Mixers	2
	Crane	1
Source: GRD, Inc., personal communication, 2008.		

#### 4.1.1 - South Coast Air Quality Management District

Five to six sites would be constructed at one time during the construction phase of the project. It is assumed for purposes of this analysis that six sites would be constructed at the same time for projects located within the SCAQMD, either in the Salton Sea Air Basin or in the South Coast Air Basin.

Note that the emissions estimated during grading/excavation assumes compliance with SCAQMD Rule 403. Rule 403 applies to any activity or man-made condition capable of generating fugitive dust. The project has to comply with the Best Available Control Measures (BACM) contained in Table 1 of Rule 403. The emissions are noted as “mitigated” in the URBEMIS output because the model does not distinguish between Rule 403 and mitigation. However, the emissions below represent the emissions without mitigation. The BACMs associate to the “mitigation” in URBEMIS as noted in Table 11 below.

**Table 11: Best Available Control Measures**

SCAQMD Rule 403 Best Available Control Measure <sup>1</sup>	Associated Measure in URBEMIS <sup>2</sup>
02-1 Maintain stability of soil through pre-watering of site prior to clearing and grubbing 08-1 Pre-apply water to depth of proposed cuts 08-2 Re-apply water as necessary to maintain soils in a damp condition and to ensure that visible emissions do not exceed 100 feet in any direction	Water exposed surfaces two times per day
02-2 Stabilize soil during clearing and grubbing activities 02-3 Stabilize soil after clearing and grubbing activities 08-3 Stabilize soils once earth-moving activities are complete	Apply soil stabilizers
10-1 Stabilize soils, materials, slopes	Replace ground cover in disturbed areas.
13-1 Stabilize staging areas during use by limiting vehicle speeds to 15 miles per hour	Reduce speed on unpaved roads to 15 miles per hour.
Sources: 1) SCAQMD Rule 403; 2) URBEMIS output in Appendix A.	

#### **Level of Significance before Mitigation**

Less than significant.

Emissions during construction are shown in Table 12. The emission estimates were derived from the ARB URBEMIS2007 Version 9.2 emission model. As shown in the table, if six sites were conducting grading at the same time, emissions would not exceed the SCAQMD regional thresholds. Therefore, without mitigation, the short-term emissions would have a less than significant regional impact.



**Table 12: Construction Emissions (SCAQMD, Unmitigated)**

Source	Emissions (pounds per day)					
	VOC	NO <sub>x</sub>	CO	SO <sub>x</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>
Grading for one site (includes road construction and worker vehicles)	2	16	9	0	3	1
Building/construction for one site	1	8	3	0	<1	<1
Maximum: grading for six sites*	12	96	54	0	18	6
SCAQMD Threshold	75	100	550	150	150	55
Exceed Threshold?	No	No	No	No	No	No
*The maximum values are the grading emissions for one site multiplied by six. VOC = volatile organic compounds    NO <sub>x</sub> = nitrous oxides    CO = carbon monoxide SO <sub>x</sub> = sulfur oxides    PM <sub>10</sub> and PM <sub>2.5</sub> = particulate matter    <1 = less than one Source: URBEMIS2007 output, Appendix A.						

**4.1.2 - Mojave Desert Air Quality Management District**

Five to six sites would be constructed at one time during the construction phase of the project. It is assumed for purposes of this analysis that six sites would be constructed at the same time in the area under the MDAQMD’s jurisdiction.

As discussed in Section 2.4, the MDAQMD has Rule 403, which governs emissions of fugitive dust. However, the rule is not very specific and does not indicate specific best available control measures like the SCAQMD Rule 403. The emission estimates were derived from the ARB URBEMIS2007 Version 9.2 emission model.

**Level of Significance before Mitigation**

Potentially significant.

Daily emissions during construction are shown in Table 13. As shown in Table 13, if six sites were conducting grading on the same day, emissions of PM<sub>10</sub> would exceed the MDAQMD regional daily threshold. Therefore, without mitigation, the short-term emissions are considered to have a significant regional impact.

**Table 13: Construction Emissions (MDAQMD, Daily, Unmitigated)**

Source	Emissions (pounds per day)					
	VOC	NO <sub>x</sub>	CO	SO <sub>x</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>
Grading for one site (includes road construction and worker vehicles)	2	16	9	0	16	4

**Table 13: Construction Emissions (MDAQMD, Daily, Unmitigated) (Cont)**

Source	Emissions (pounds per day)					
	VOC	NO <sub>x</sub>	CO	SO <sub>x</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>
Building/construction for one site	1	8	3	0	<1	<1
Maximum: grading for six sites*	12	96	54	0	96	24
MDAQMD Daily Threshold	137	137	548	137	82	82
Exceed Threshold?	No	No	No	No	Yes	No
* The maximum values are the grading emissions for one site multiplied by six sites. VOC = volatile organic compounds    NO <sub>x</sub> = nitrous oxides    CO = carbon monoxide SO <sub>x</sub> = sulfur oxides    PM <sub>10</sub> and PM <sub>2.5</sub> = particulate matter    <1 = less than one Source: URBEMIS2007 output, Appendix A.						

Annual emissions are shown in Table 14. It was assumed that eighteen sites would be constructed in one year because the County anticipates completion of one site in 120 days. As shown in Table 14, emissions would not exceed the MDAQMD annual significance threshold.

**Table 14: Construction Emissions (MDAQMD, Annual, Unmitigated)**

Source	Emissions (tons per year)					
	VOC	NO <sub>x</sub>	CO	SO <sub>x</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>
Grading for one site (includes road construction and worker vehicles)	0.02	0.14	0.08	0.00	0.13	0.03
Building/construction for one site	0.05	0.45	0.19	0.00	0.02	0.02
Subtotal	0.07	0.59	0.27	0.00	0.15	0.05
Maximum*	1.26	10.62	4.86	0.00	2.70	0.90
MDAQMD Annual Threshold	25	25	100	25	15	15
Exceed Threshold?	No	No	No	No	No	No
* Maximum = subtotal multiplied by 18 sites. VOC = volatile organic compounds    NO <sub>x</sub> = nitrous oxides    CO = carbon monoxide SO <sub>x</sub> = sulfur oxides    PM <sub>10</sub> and PM <sub>2.5</sub> = particulate matter Source: URBEMIS2007 output, Appendix A.						

**Mitigation Measures**

Mitigation measures AQ-1 through AQ-3 are required.

**Level of Significance After Mitigation**

Less than significant.

As shown in Table 15, emissions do not exceed the MDAQMD daily significance threshold after application of mitigation measures. Therefore, emissions are less than significant.

**Table 15: Construction Emissions (MDAQMD, Daily, Mitigated)**

Source	Emissions (pounds per day)					
	VOC	NO <sub>x</sub>	CO	SO <sub>x</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>
Grading for one site (includes road construction and worker vehicles)	2	16	9	0	3	1
Building/construction for one site	1	8	3	0	<1	<1
Maximum: grading for six sites*	12	96	54	0	18	6
MDAQMD Threshold	137	137	548	137	82	82
Exceed Threshold?	No	No	No	No	No	No
*The maximum values are the grading emissions for one site multiplied by six sites. VOC = volatile organic compounds    NO <sub>x</sub> = nitrous oxides    CO = carbon monoxide SO <sub>x</sub> = sulfur oxides    PM <sub>10</sub> and PM <sub>2.5</sub> = particulate matter    <1 = less than one Source: URBEMIS2007 output, Appendix A.						

## 4.2 - Criteria Pollutant Localized Analysis - Construction

The SCAQMD Governing Board adopted a methodology for calculating localized air quality impacts through localized significance thresholds (LSTs), which is consistent with SCAQMD’s Environmental Justice Enhancement Initiative I-4. LSTs represent the maximum emissions from a Project that will not cause or contribute to an exceedance of the most stringent applicable state or national ambient air quality standard.

The onsite emissions during construction of one site in the SCAQMD’s jurisdiction are compared with the localized significance thresholds and are summarized in Table 16. Note that the emissions take into account SCAQMD Rule 403. The onsite emissions were generated by URBEMIS, as discussed in the regional analysis. Onsite emissions are from fugitive dust during grading and off-road diesel emissions. As shown in Table 16, unmitigated emissions during construction do not exceed the localized significance thresholds.

**Table 16: Localized Significance Analysis (SCAQMD, Unmitigated)**

Activity	Onsite Emissions (pounds per day)			
	NO <sub>x</sub>	CO	PM <sub>10</sub>	PM <sub>2.5</sub>
Grading	16.08	7.38	3.32	1.22
Building	8.27	3.45	0.34	0.31
Maximum Daily Emissions	16.08	7.38	3.32	1.22

**Table 16: Localized Significance Analysis (SCAQMD, Unmitigated) (Cont)**

Activity	Onsite Emissions (pounds per day)			
	NO <sub>x</sub>	CO	PM <sub>10</sub>	PM <sub>2.5</sub>
Localized Significance Threshold	160	509	4	3
Exceed Threshold?	No	No	No	No
Note: Each of the above activities does not occur at the same time; therefore, the maximum daily emissions represent the maximum emissions that would occur in one day. Source: URBEMIS output, Appendix A.				

The onsite emissions for the sites located within the MDAQMD jurisdiction are shown in Table 17. Although the MDAQMD does not utilize LSTs, they are used for the sites in the district for consistency purposes. Note that the particulate matter emissions do not take into account SCAQMD Rule 403 as the SCAQMD emissions do. As shown in the table, emissions exceed the LSTs for PM<sub>10</sub> and PM<sub>2.5</sub>. Therefore, this results in a potentially significant localized impact.

**Table 17: Localized Significance Analysis (MDAQMD, Unmitigated)**

Activity	Onsite Emissions (pounds per day)			
	NO <sub>x</sub>	CO	PM <sub>10</sub>	PM <sub>2.5</sub>
Grading	16.08	7.38	15.73	3.82
Building	8.27	3.45	0.34	0.31
Maximum Daily Emissions	16.08	7.38	15.73	3.82
Localized Significance Threshold	160	509	4	3
Exceed Threshold?	No	No	Yes	Yes
Note: Each of the above activities does not occur at the same time; therefore, the maximum daily emissions represent the maximum emissions that would occur in one day. Source: URBEMIS output, Appendix A.				

**Mitigation Measures**

Mitigation measures AQ-1 through AQ-3 are required.

**Level of Significance After Mitigation**

Less than significant.

Mitigation requires compliance with the control measures in SCAQMD Rule 403 for all sites. As shown in Table 18, emissions in the MDAQMD jurisdiction do not exceed the LSTs with mitigation.

**Table 18: Localized Significance Analysis (MDAQMD, Mitigated)**

Activity	Onsite Emissions (pounds per day)			
	NO <sub>x</sub>	CO	PM <sub>10</sub>	PM <sub>2.5</sub>
Grading	16.08	7.38	3.32	1.22
Building	8.27	3.45	0.34	0.31
Maximum Daily Emissions	16.08	7.38	3.32	1.22
Localized Significance Threshold	160	509	4	3
Exceed Threshold?	No	No	No	No
Note: Each of the above activities does not occur at the same time; therefore, the maximum daily emissions represent the maximum emissions that would occur in one day. Source: URBEMIS output, Appendix A.				

### 4.3 - Long-Term Impacts

Operational, or long-term, emissions occur over the life of the Project. The only sources of operational emission from the Project are from generators and worker trips to the sites for site maintenance.

Fifty sites would have propane generators installed. The generators would be for standby emergency use only in the event of power failure. These generators automatically run for 30 minutes each week for maintenance and system checks. All generators in the current system run at the same time on Tuesdays. The remainder of the sites will connect to commercial power. Two sites would operate generators full time for power, Santa Rosa Peak and Spring Hill. They are both located in the SCAQMD jurisdiction in the Salton Sea Air Basin. Santa Rosa Peak is the only location that would use diesel fuel to run its generator. Propane tanks automatically send a signal for refill once they are below 55 percent capacity. For standby generators, this may occur only every six months. For the generators that run full time, refills could occur as frequently as once per month.

Emission factors for the generator exhaust emissions are from the U.S. EPA model, NONROAD (EPA 2005). The emission factors are for diesel and propane gas generator sets for a horsepower between 50 and 75 horsepower.

Propane is normally a gas but can be compressed to a liquid to be transportable. It is made from petroleum products during oil or natural gas processing. It is commonly known as liquefied petroleum gas (LPG or LP-gas), which is a mixture of propane and small amounts of propylene, butane, and butylene. There is also an odorant added so that people can smell it if there is a leak. The propane tanks can hold typically 2,000 gallons of LPG.

There would be some leakage emissions during the transfer of the propane from the maintenance vehicle to the propane tank onsite. However, the emission factors from this transfer are not available at this time. It is anticipated that the emissions would be a negligible amount of VOC.

Typically, a maintenance technician will visit a site once per month for standard maintenance of the radio equipment and refills of propane. If there is an outage or a problem, they will be dispatched as needed. The emissions from the maintenance worker vehicles were estimated using URBEMIS2007, as operational emissions.

**Total Operational Emissions**

The total operational emissions for all the sites are displayed in Table 19. For worst-case purposes, it was assumed that five trips per day would be made. This is based on information that each site would have a maintenance worker once per month. There are 70 sites total, so assuming twenty working days per month, there would be 3.5 trips per day, rounded up to 5 trips per day. The emissions are broken down by basin, as shown below.

**Table 19: Total Operational Emissions**

Source	Emissions (pounds per day)					
	VOC	NO <sub>x</sub>	CO	SO <sub>x</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>
Worker vehicles	0.10	0.19	1.14	0.00	0.17	0.04
Full time diesel generator	0.99	8.12	4.48	1.12	0.90	0.83
Full time propane generator	3.92	18.98	61.49	0.03	0.13	0.12
Emergency generators	4.08	19.78	64.05	0.03	0.13	0.12
Total	9.09	47.07	131.16	1.18	1.33	1.11
VOC = volatile organic compounds      NO <sub>x</sub> = nitrous oxides      CO = carbon monoxide SO <sub>x</sub> = sulfur oxides      PM <sub>10</sub> and PM <sub>2.5</sub> = particulate matter Sources: Emissions from worker vehicles are from URBEMIS output, Appendix A, all pollutants except CO are during the winter season. Emergency generator emissions are from emission factors and spreadsheets located in Appendix B.						

**South Coast Air Basin**

It was assumed for worst-case purposes that there would be 50 emergency generators in the South Coast Air Basin and that all five daily worker vehicle trips would occur in the South Coast Air Basin. As shown in Table 20, the Project’s emissions do not exceed the SCAQMD’s regional thresholds and are considered less than significant.

**Table 20: Operational Emissions (SCAQMD, South Coast, Unmitigated)**

Source	Emissions (pounds per day)					
	VOC	NO <sub>x</sub>	CO	SO <sub>x</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>
Worker vehicles	0.10	0.19	1.14	0.00	0.17	0.04
Emergency generators	4.08	19.78	64.05	0.03	0.13	0.12
Total	4.18	19.97	65.19	0.03	0.30	0.16
SCAQMD South Coast Regional Significance Threshold	55	55	550	150	150	55
Significant Impact?	No	No	No	No	No	No
VOC = volatile organic compounds    NO <sub>x</sub> = nitrous oxides    CO = carbon monoxide SO <sub>x</sub> = sulfur oxides    PM <sub>10</sub> and PM <sub>2.5</sub> = particulate matter Sources: Emissions from worker vehicles are from URBEMIS output, Appendix A, all pollutants except CO are during the winter season. Emergency generator emissions are from spreadsheets located in Appendix B.						

**Salton Sea and Mojave Desert Air Basins**

The two generators that would be running full time are located within the Salton Sea Air Basin and the SCAQMD portion of the Mojave Desert Air Basin. There are six other sites within the basins; it was assumed that each site would require an emergency generator. The emissions are shown in Table 21. As shown in the table, the emissions do not exceed the operational SCAQMD Salton Sea Air Basin threshold.

**Table 21: Operational Emissions (SCAQMD, Salton Sea and Mojave Desert Air Basins, Unmitigated)**

Source	Emissions (pounds per day)					
	VOC	NO <sub>x</sub>	CO	SO <sub>x</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>
Worker vehicles	0.10	0.19	1.14	0.00	0.17	0.04
Full time diesel generator	0.99	8.12	4.48	1.12	0.90	0.83
Full time propane generator	3.92	18.98	61.49	0.03	0.13	0.12
Emergency generators	0.49	2.37	7.69	0.00	0.02	0.01
Total	5.50	29.66	74.80	1.15	1.22	1.00
SCAQMD Salton Sea Regional Significance Threshold	75	100	550	150	150	55
Significant Impact?	No	No	No	No	No	No
VOC = volatile organic compounds    NO <sub>x</sub> = nitrous oxides    CO = carbon monoxide SO <sub>x</sub> = sulfur oxides    PM <sub>10</sub> and PM <sub>2.5</sub> = particulate matter Sources: Emissions from worker vehicles are from URBEMIS output, Appendix A, all pollutants except CO are during the winter season. All other emissions are from spreadsheets located in Appendix B.						

**Mojave Desert Air Quality Management District**

The daily and annual emissions for sites located within the MDAQMD’s jurisdiction are displayed in Table 22 and Table 23, respectively. As shown in the tables, the emissions do not exceed the significance thresholds.

**Table 22: Operational Emissions (MDAQMD, Daily, Unmitigated)**

Source	Emissions (pounds per day)					
	VOC	NO <sub>x</sub>	CO	SO <sub>x</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>
Worker vehicles	0.10	0.19	1.14	0.00	0.17	0.04
Emergency generators	0.65	3.16	10.25	0.00	0.02	0.02
Total	0.75	3.35	11.39	0.00	0.19	0.06
MDAQMD Daily Threshold	137	137	548	137	82	82
Exceed Threshold?	No	No	No	No	No	No
VOC = volatile organic compounds    NO <sub>x</sub> = nitrous oxides    CO = carbon monoxide SO <sub>x</sub> = sulfur oxides    PM <sub>10</sub> and PM <sub>2.5</sub> = particulate matter    <1 = less than one Sources: Emissions from worker vehicles are from URBEMIS output, Appendix A, all pollutants except CO are during the winter season. All other emissions are from spreadsheets located in Appendix B.						

**Table 23: Operational Emissions (MDAQMD, Annual, Unmitigated)**

Source	Emissions (tons per year)					
	VOC	NO <sub>x</sub>	CO	SO <sub>x</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>
Worker vehicles	0.02	0.03	0.21	0.00	0.03	0.01
Emergency generators	0.02	0.08	0.27	0.00	0.00	0.00
Total	0.04	0.11	0.48	0.00	0.03	0.01
MDAQMD Annual Threshold	25	25	100	25	15	15
Exceed Threshold?	No	No	No	No	No	No
VOC = volatile organic compounds    NO <sub>x</sub> = nitrous oxides    CO = carbon monoxide SO <sub>x</sub> = sulfur oxides    PM <sub>10</sub> and PM <sub>2.5</sub> = particulate matter    <1 = less than one Sources: Emissions from worker vehicles are from URBEMIS output, Appendix A, all pollutants except CO are during the winter season. All other emissions are from spreadsheets located in Appendix B.						

**Additional Sites**

The program-level analysis for this project allows any additional sites to tier off this analysis. However, if the County installs additional full time generator sites, the emissions from these potential sites would need to stay below the regional significance thresholds. Therefore, additional mitigation is suggested to ensure that emissions remain below significance thresholds. The number of additional sites was based on the potential of the emissions to exceed the NO<sub>x</sub> threshold, which is the pollutant that is closest to the threshold. The emissions for one full time propane generator are approximately 19 pounds per day. Therefore, in the SCAQMD-South Coast Air Basin, using the data in Table 20,



the maximum number would be one site with full time generators. In the SCAQMD-SSAB, using the data in Table 21, the maximum number of additional full time generators would be three. In the MDAQMD, using the data in Table 22, the maximum number of additional full time generators would be six (allowing a small buffer for additional miscellaneous emissions).

**Level of Significance before Mitigation**

Less than significant.

**Mitigation Measures**

Refer to Mitigation Measure AQ-4, which limits the number of additional full time generators sets that may be used in the future.

**Level of Significance after Mitigation**

Less than significant.

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**4.4 - Carbon Monoxide Hotspot Analysis**

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A carbon monoxide (CO) hotspot is a localized concentration of CO that is above the state or national 1-hour or 8-hour CO ambient air standards. Localized high levels of CO are associated with traffic congestion and idling or slow-moving vehicles. Typically, CO hotspot analyses are conducted for projects that have a high quantity of operational vehicles, such as residential and commercial projects. The Project is not anticipated to generate a large quantity of operational vehicles. Therefore, a CO hotspot analysis was not conducted.

## SECTION 5: IMPACT ANALYSIS

This section contains an analysis of the criteria in the CEQA Guidelines regarding air quality as well as an assessment of Project conformity with the General Plan.

### 5.1 - Conformance with Air Quality Management Plan

The CEQA Guidelines indicate that a significant impact would occur if the Project would conflict with or obstruct implementation of the applicable air quality plan. This assessment will use the following criteria for determining Project consistency with the current AQMP, as discussed below.

#### 5.1.1 - South Coast Air Quality Management District

##### *Project's Contribution to Air Quality Violations*

According to the SCAQMD (1993), the Project is consistent with the AQMP if the Project will not result in an increase in the frequency or severity of existing air quality violations or cause or contribute to new violations, or delay timely attainment of air quality standards or the interim emission reductions specified in the AQMP (SCAQMD 1993, Page 12-3). As shown in Section 5.2, the Project would not violate any air quality standard or contribute substantially to an existing or projected air quality violation. Therefore, the Project meets the first indicator.

##### *Control Measures*

The next criterion is compliance with the control measures in the 2007 AQMP. The 2007 AQMP aims to attain the federal PM<sub>2.5</sub> and 8-hour ozone standards by 2015 and 2024, respectively. This is done by building upon improvements from the previous plans and incorporating all feasible control measures while balancing costs and socioeconomic impacts. The 2007 AQMP indicates that PM<sub>2.5</sub> is formed from secondary reactions. Therefore, instead of reducing fugitive dust, the strategy for reducing PM<sub>2.5</sub> focuses on reducing precursor emissions of SO<sub>x</sub>, directly-emitted PM<sub>2.5</sub>, NO<sub>x</sub>, and VOC. The Final 2007 AQMP control measures consist of four components: 1) the SCAQMD's Stationary and Mobile Source Control Measures; 2) ARB's Proposed State Strategy; 3) SCAQMD Staff's Proposed Policy Options to Supplement ARB's Control Strategy; and 4) Regional Transportation Strategy and Control Measures provided by SCAG.

The Project will comply with all of the SCAQMD's applicable rules and regulations. Therefore, the Project complies with this criterion.

##### *Compliance with the SCAQMD Regional Thresholds*

Although there is no known guidance that correlates AQMP consistency with the SCAQMD regional thresholds, it is common to use the thresholds in assessing AQMP compliance. The regional analysis demonstrated that emissions would be below the regional significance thresholds. Therefore, the Project complies with this criterion.

### **Level of Significance Before Mitigation**

Less than significant.

### **5.1.2 - Mojave Desert Air Quality Management District**

The MDAQMD Guidelines (2007) states the following:

A project is non-conforming if it conflicts with or delays implementation of any applicable attainment or maintenance plan. A project is conforming if it complies with all applicable District rules and regulations, complies with all proposed control measures that are not yet adopted from the applicable plan(s), and is consistent with the growth forecasts in the applicable plan(s) (or is directly included in the applicable plan). Conformity with growth forecasts can be established by demonstrating that the project is consistent with the land use plan that was used to generate the growth forecast. An example of an inconsistent project would be one that increases the gross number of dwelling units, increases the number of trips, and/or increases the overall vehicle miles traveled in an affected area (relative to the applicable land use plan).

The Project will comply with all applicable rules and regulations (as listed in Section 2.4) and will comply with any proposed control measures that are not yet adopted from those plans. Applicable permits obtained by the MDAQMD will cover emissions from onsite generators. The Project will not be associated with a large number of trips or vehicle miles traveled. The Project is not associated with a land use plan or growth forecasts because the Project is not a typical residential, commercial, or industrial project. The Project will provide appropriate and adequate telecommunication coverage to County emergency services personnel and their cooperators over at least 95 percent of the County's land area. The Project will also allow for interoperability between providers in a manner that assures adequate communication capability during emergency incidents that cross jurisdictional boundaries or require multiple-agency cooperation. The Project provides an increase in efficiency for an existing operation. Therefore, the Project will not conflict with the MDAQMD attainment plans.

### **Level of Significance Before Mitigation**

Less than significant.

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## **5.2 - Potential for Air Quality Standard Violation**

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The CEQA Guidelines indicate that a significant impact would occur if the Project would violate any air quality standard or contribute substantially to an existing or projected air quality violation.

The South Coast Air Basin and the Mojave Desert Air Basin are in nonattainment for PM<sub>10</sub>, PM<sub>2.5</sub>, and ozone. The Salton Sea Air Basin is in nonattainment for ozone and PM<sub>10</sub>. Levels of PM<sub>10</sub> (and PM<sub>2.5</sub> in the South Coast and Mojave Desert Air Basins) are locally high enough that contributions

from new sources may add to the concentrations of those pollutants and contribute to a projected air quality violation. Although background levels of ozone are high in the basins, the Project alone (without other cumulative sources) would not contribute substantially to a projected air quality violation of ozone. Project emissions of VOC and NO<sub>x</sub> (ozone precursors) and their cumulative contribution to ozone concentrations are discussed in Cumulative Impacts below.

The localized construction analysis uses thresholds that represent the maximum emissions for a Project that would not cause or contribute to an exceedance of the most stringent applicable national or state ambient air quality standard. These LSTs are specific to each source receptor area (SCAQMD 2003). If the Project results in emissions that do not exceed those thresholds, it would not cause or contribute to a local exceedance of the standard. The localized construction analysis demonstrated that the sites located in the SCAQMD jurisdiction would not exceed the localized thresholds for CO, nitrogen dioxide, PM<sub>10</sub>, or PM<sub>2.5</sub>. However, the sites located within the MDAQMD would exceed the LSTs for PM<sub>10</sub> and PM<sub>2.5</sub>. Therefore, according to this criterion, the air pollutant emissions during construction would result in a significant impact and could result in a violation of an ambient air quality standard for PM<sub>10</sub> and PM<sub>2.5</sub>.

During operation, the emissions of criteria pollutants would not be great enough to cause an exceedance of any standards.

#### **Level of Significance Before Mitigation**

Potentially significant.

#### **Mitigation Measures**

Mitigation measures AQ-1 through AQ-3 are required.

#### **Level of Significance After Mitigation**

Less than significant. After mitigation is applied, emissions of PM<sub>10</sub> and PM<sub>2.5</sub> for the sites located within the MDAQMD would not exceed the LSTs and would therefore not violate those ambient air quality standards.

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### **5.3 - Cumulative Impacts**

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According to the checklist in the CEQA Guidelines, a Project would create a significant impact if it would “result in a cumulatively considerable net increase of any criteria pollutant for which the Project region is nonattainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors).”

Section 15130(b) of the CEQA Guidelines states the following:

The following elements are necessary to an adequate discussion of significant cumulative impacts: 1) Either: (A) A list of past, present, and probable future Projects producing related

or cumulative impacts, including, if necessary, those Projects outside the control of the agency, or (B) A summary of Projections contained in an adopted general plan or related planning document, or in a prior environmental document which has been adopted or certified, which described or evaluated regional or areawide conditions contributing to the cumulative impact.

In accordance with CEQA Guidelines 15130(b), this analysis of cumulative impacts incorporates a summary of Projections. The following tiered approach is to assess cumulative air quality impacts.

1. Consistency with the regional thresholds for nonattainment pollutants;
2. Project consistency with existing air quality plans; and
3. Assessment of the cumulative health effects of the pollutants.

### **Regional Analysis**

If an area is in nonattainment for a criteria pollutant, then the background concentration of that pollutant has historically been over the ambient air quality standard. It follows that if a Project exceeds the regional threshold for that nonattainment pollutant, then it would result in a cumulatively considerable net increase of that pollutant and result in a significant cumulative impact.

The South Coast Air Basin and the Mojave Desert Air Basin are in nonattainment for PM<sub>10</sub>, PM<sub>2.5</sub>, and ozone. The Salton Sea Air Basin is in nonattainment for ozone and PM<sub>10</sub>. Therefore, if the Project exceeds the regional thresholds for PM<sub>10</sub> or PM<sub>2.5</sub>, then it contributes to a cumulatively considerable impact for those pollutants. Additionally, if the Project exceeds the regional threshold for NO<sub>x</sub> or VOC, then it follows that the Project would contribute to a cumulatively considerable impact for ozone.

The regional significance analysis of construction emissions demonstrated that emissions in the MDAQMD could exceed the regional significance threshold for PM<sub>10</sub>. Therefore, emissions of PM<sub>10</sub> during construction could cumulatively contribute to a net increase of a nonattainment pollutant.

### **Plan Approach**

The geographic scope for cumulative air quality impacts are the basins in which the Project sites are located because that is the area in which the air pollutants generated by the sources within the basin circulate and are often trapped. The air districts are required to prepare and maintain an AQMP and a State Implementation Plan to document the strategies and measures to be undertaken to reach attainment of ambient air quality standards. While the air districts do not have direct authority over land use decisions, it was recognized that changes in land use and circulation planning were necessary to maintain clean air. The air districts evaluated their respective basins when developing the attainment and management plans.

According to the analysis contained in Section 5.1, the Project is consistent with the applicable attainment and management plans. Therefore, the Project results in a less than significant impact according to this criterion.

### **Cumulative Health Impacts**

The South Coast Air Basin and the Mojave Desert Air Basin are in nonattainment for PM<sub>10</sub>, PM<sub>2.5</sub>, and ozone. The Salton Sea Air Basin is in nonattainment for ozone and PM<sub>10</sub>. That means that the background levels of those pollutants are at times higher than the ambient air quality standards. The air quality standards were set to protect public health, including the health of sensitive individuals (i.e., elderly, children, and the sick). Therefore, when the concentration of those pollutants exceeds the standard, it is likely that some sensitive individuals in the population experience health effects as described above in the sub-section, Air Pollutants. However, the health effects are a factor of the dose-response curve. Concentration of the pollutant in the air (dose), the length of time exposed, and the response of the individual are factors involved in severity and nature of health impacts. If a significant health impact results from Project emissions, it does not mean that 100 percent of the population would experience health effects.

It was determined that PM<sub>10</sub> emissions during construction of sites within the MDAQMD would exceed the regional significance thresholds before mitigation. Therefore, the Project could result in a significance cumulative contribution to PM<sub>10</sub>. Sensitive individuals may experience health impacts when concentrations of those pollutants exceed the ambient air quality standards. Health impacts from particulate matter may include the following: (a) exacerbation of symptoms in sensitive patients with respiratory or cardiovascular disease; (b) declines in pulmonary function growth in children; (c) and/or increased risk of premature death from heart or lung diseases in the elderly.

### **Level of Significance Before Mitigation**

Potentially significant.

### **Mitigation Measures**

Refer to mitigation measures AQ-1 through AQ-3.

### **Level of Significance After Mitigation**

Less than significant.

With mitigation, emissions of PM<sub>10</sub> during construction of sites within the MDAQMD would not exceed the regional significance thresholds. Therefore, the Project would not be associated with a cumulatively considerable contribution to PM<sub>10</sub> and would not be associated with cumulative health risks.

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## 5.4 - Expose Sensitive Receptors to Substantial Pollutant Concentrations

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The CEQA Guidelines indicate that a significant impact would occur if the Project would expose sensitive receptors to substantial pollutant concentrations.

### **Construction**

The localized construction analysis uses thresholds that represent the maximum emissions for a Project that will not cause or contribute to an exceedance of the most stringent applicable federal or state ambient air quality standard, and are developed based on the ambient concentrations of that pollutant for each source receptor area (SCAQMD 2003). The thresholds are also based on the location of the sensitive receptors. If the Project results in emissions under those thresholds, it follows that the Project would not cause or contribute to an exceedance of the standard. If the standards are not exceeded at the sensitive receptor locations, it follows that the receptors would not be exposed to substantial pollutant concentrations.

The localized construction analysis demonstrated that the sites located in the SCAQMD jurisdiction would not exceed the localized thresholds for CO, nitrogen dioxide, PM<sub>10</sub>, or PM<sub>2.5</sub>. However, the sites located within the MDAQMD would exceed the LSTs for PM<sub>10</sub> and PM<sub>2.5</sub>. Therefore, according to this criterion, the air pollutant emissions during construction would result in a significant impact and could result in a violation of an ambient air quality standard for PM<sub>10</sub> and PM<sub>2.5</sub> and expose sensitive receptors to substantial pollutant concentrations.

The construction equipment would emit diesel particulate matter, which is a carcinogen. However, the diesel particulate matter emissions are short term in nature. Determination of risk from diesel particulate matter is considered over a 70-year exposure time. Additionally, the majority of the sites are located far away from the nearest sensitive receptor. Therefore, considering the dispersion of the emissions and the short time frame, exposure to diesel particulate matter is anticipated to be less than significant.

### **Operation**

Emissions of NO<sub>x</sub> and VOC (ozone precursors) during construction and operation from only the Project would not expose sensitive receptors to substantial pollutant concentrations (see Cumulative Impact analysis for an assessment of the cumulative contribution of ozone precursors).

The ARB Air Quality and Land Use Handbook contains recommendations that will “help keep California’s children and other vulnerable populations out of harm’s way with respect to nearby sources of air pollution” (ARB 2005), including recommendations for distances between sensitive receptors and certain land uses. Some of the land uses includes freeways, urban roads, distribution centers, fueling stations, and dry cleaners. The project is not one of the land uses contemplated by the ARB as associated with substantial air pollutants.

The onsite operational generators are propane; the exhaust emissions are not associated with substantial health risks operating in this capacity. Only the Santa Rosa Peak site uses diesel fuel in its generator. Diesel exhaust contains known carcinogens. However, the Santa Rosa Peak site is located at least five miles from a sensitive receptor. At that distance, the concentrations of diesel particulate matter would be very minimal and would not expose sensitive receptors to substantial pollutant concentrations.

Any additional sites that may require full time generators may be diesel or propane. Because any future sites are not known at this time, this potential impact could be significant based on the location of the generator, its use, and the type of fuel. Therefore, mitigation is suggested to reduce any potential future impacts.

**Level of Significance Before Mitigation**

Potentially significant.

**Mitigation Measures**

Refer to mitigation measures AQ-1, AQ-2, AQ-3, and AQ-5.

**Level of Significance After Mitigation**

Less than significant. With mitigation, the emissions for the sites in the MDAQMD would not exceed the localized significance thresholds. Therefore, with mitigation, the Project would not expose sensitive receptors to substantial pollutant concentrations.

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**5.5 - Odors**

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The CEQA Guidelines indicate that a significant impact would occur if the Project would create objectionable odors affecting a substantial number of people.

**Background Information**

Individual responses to odors are highly variable and can result in a variety of effects. Generally, the impact of an odor results from a variety of interacting factors such as frequency, duration, offensiveness, location, and sensory perception. The frequency is a measure of how often an individual is exposed to an odor in the ambient environment. The intensity refers to an individual's or group's perception of the odor strength or concentration. The duration of an odor refers to the elapsed time over which an odor is experienced. The offensiveness of the odor is the subjective rating of the pleasantness or unpleasantness of an odor. The location accounts for the type of area in which a potentially affected person lives, works or visits; the type of activity they are engaged in, and the sensitivity of the impacted receptor.

Sensory perception has four major components: detectability, intensity, character, and hedonic tone. The detection (or threshold) of an odor is based on a panel of responses to the odor. There are two types of thresholds: the odor detection threshold and the recognition threshold. The detection



threshold is the lowest concentration of an odor that will elicit a response in a percentage of the population, typically presented as the mean (or 50 percent of the population) but is sometimes indicated as 100 percent or 10 percent. The recognition threshold is the minimum concentration that is recognized as having a characteristic odor quality by x percent (usually 50 percent) of the population (AIHA 1989). The intensity refers to the perceived strength of the odor. The odor character is what the substance smells like. The hedonic tone is a judgment of the pleasantness or unpleasantness of the odor. The hedonic tone varies based on subjective experience, frequency, odor character, odor intensity, and duration.

Odor is typically a warning system that prevents animals and humans from consuming spoiled food or toxic materials. Odor-related symptoms reported in a number of studies include nervousness, headache, sleeplessness, fatigue, dizziness, nausea, loss of appetite, stomach ache, sinus congestion, eye irritation, nose irritation, runny nose, sore throat, cough, and asthma exacerbation (SCAQMD 2007e).

The SCAQMD's role is to protect the public's health from air pollution by overseeing and enforcing regulations (SCAQMD 2007e). SCAQMD odor complaint resolution activity is mandated under California Health & Safety Code Section 41700, and falls under AQMD Rule 402. This rule on Public Nuisance Regulation states: "A person shall not discharge from any source whatsoever such quantities of air contaminants or other material which cause injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public, or which endanger the comfort, repose, health or safety of any such persons or the public, or which cause, or have a natural tendency to cause, injury or damage to business or property. The provisions of this rule shall not apply to odors emanating from agricultural operations necessary for the growing of crops or the raising of fowl or animals."

The SCAQMD indicates that the number of overall complaints has declined over the last five years. Over the last four years, odor complaints make up 50-55 percent of the total nuisance complaints. Over the past decade, odors from paint and coating operations have decreased from 27 to 7 percent and odors from refuse collection stations has increased from 9 to 34 percent (SCAQMD 2007e).

### **Project Analysis**

Land uses typically considered to be associated with odors include wastewater treatment facilities, waste-disposal facilities, or agricultural operations. The Project does not contain land uses typically associated with emitting objectionable odors.

Diesel exhaust and VOCs will be emitted during construction of the Project, which are objectionable to some; however, emissions will disperse rapidly from the Project site and therefore should not be at a level to induce a negative response.

### **Level of Significance Before Mitigation**

Less than significant.

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**Appendix A:URBEMIS Output**

draft

Urbemis 2007 Version 9.2.4

Combined Summer Emissions Reports (Pounds/Day)

File Name: S:\Client\2749 RivCo Facil. Mngmt\0003\Air Quality\PSEC.urb924

Project Name: PSEC

Project Location: Riverside County

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

Summary Report:

CONSTRUCTION EMISSION ESTIMATES

	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10 Dust</u>	<u>PM10 Exhaust</u>	<u>PM10</u>	<u>PM2.5 Dust</u>	<u>PM2.5 Exhaust</u>	<u>PM2.5</u>	<u>CO2</u>
2009 TOTALS (lbs/day unmitigated)	1.80	16.18	9.05	0.00	15.01	0.74	15.75	3.14	0.68	3.82	1,935.24
2009 TOTALS (lbs/day mitigated)	1.80	16.18	9.05	0.00	2.58	0.74	3.32	0.54	0.68	1.22	1,935.24

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10</u>	<u>PM2.5</u>	<u>CO2</u>
TOTALS (lbs/day, unmitigated)	0.09	0.16	1.14	0.00	0.17	0.04	105.30

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10</u>	<u>PM2.5</u>	<u>CO2</u>
TOTALS (lbs/day, unmitigated)	0.09	0.16	1.14	0.00	0.17	0.04	105.30

Construction Unmitigated Detail Report:

CONSTRUCTION EMISSION ESTIMATES Summer Pounds Per Day, Unmitigated

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	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10 Dust</u>	<u>PM10 Exhaust</u>	<u>PM10</u>	<u>PM2.5 Dust</u>	<u>PM2.5 Exhaust</u>	<u>PM2.5</u>	<u>CO2</u>
Time Slice 1/5/2009-1/23/2009 Active Days: 17	<b>1.80</b>	<b>16.18</b>	<b>9.05</b>	<b>0.00</b>	<b>15.01</b>	<b>0.74</b>	<b>15.75</b>	<b>3.14</b>	<b>0.68</b>	<b>3.82</b>	<b>1,935.24</b>
Mass Grading 01/05/2009-01/23/2009	1.80	16.18	9.05	0.00	15.01	0.74	15.75	3.14	0.68	3.82	1,935.24
Mass Grading Dust	0.00	0.00	0.00	0.00	15.00	0.00	15.00	3.13	0.00	3.13	0.00
Mass Grading Off Road Diesel	1.75	16.08	7.38	0.00	0.00	0.73	0.73	0.00	0.68	0.68	1,741.83
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.05	0.10	1.67	0.00	0.01	0.01	0.01	0.00	0.00	0.01	193.41
Time Slice 1/26/2009-5/30/2009 Active Days: 108	0.87	8.27	3.45	0.00	0.00	0.34	0.34	0.00	0.31	0.31	819.30
Building 01/26/2009-05/30/2009	0.87	8.27	3.45	0.00	0.00	0.34	0.34	0.00	0.31	0.31	819.30
Building Off Road Diesel	0.87	8.24	3.32	0.00	0.00	0.34	0.34	0.00	0.31	0.31	802.32
Building Vendor Trips	0.00	0.03	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.59
Building Worker Trips	0.00	0.01	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	12.38

Phase Assumptions

- Phase: Mass Grading 1/5/2009 - 1/23/2009 - Grading and excavation
- Total Acres Disturbed: 1
- Maximum Daily Acreage Disturbed: 1
- Fugitive Dust Level of Detail: Default
- 15 lbs per acre-day
- On Road Truck Travel (VMT): 0
- Off-Road Equipment:
  - 1 Bore/Drill Rigs (291 hp) operating at a 0.75 load factor for 4 hours per day
  - 1 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 4 hours per day
  - 1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 4 hours per day
  - 1 Water Trucks (189 hp) operating at a 0.5 load factor for 2 hours per day



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Phase: Building Construction 1/26/2009 - 5/30/2009 - Construction of tower

Off-Road Equipment:

2 Cement and Mortar Mixers (10 hp) operating at a 0.56 load factor for 8 hours per day

1 Cranes (399 hp) operating at a 0.43 load factor for 8 hours per day

Construction Mitigated Detail Report:

CONSTRUCTION EMISSION ESTIMATES Summer Pounds Per Day, Mitigated

	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10 Dust</u>	<u>PM10 Exhaust</u>	<u>PM10</u>	<u>PM2.5 Dust</u>	<u>PM2.5 Exhaust</u>	<u>PM2.5</u>	<u>CO2</u>
Time Slice 1/5/2009-1/23/2009 Active Days: 17	<b>1.80</b>	<b>16.18</b>	<b>9.05</b>	<b>0.00</b>	<b>2.58</b>	<b>0.74</b>	<b>3.32</b>	<b>0.54</b>	<b>0.68</b>	<b>1.22</b>	<b>1,935.24</b>
Mass Grading 01/05/2009-01/23/2009	1.80	16.18	9.05	0.00	2.58	0.74	3.32	0.54	0.68	1.22	1,935.24
Mass Grading Dust	0.00	0.00	0.00	0.00	2.57	0.00	2.57	0.54	0.00	0.54	0.00
Mass Grading Off Road Diesel	1.75	16.08	7.38	0.00	0.00	0.73	0.73	0.00	0.68	0.68	1,741.83
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.05	0.10	1.67	0.00	0.01	0.01	0.01	0.00	0.00	0.01	193.41
Time Slice 1/26/2009-5/30/2009 Active Days: 108	0.87	8.27	3.45	0.00	0.00	0.34	0.34	0.00	0.31	0.31	819.30
Building 01/26/2009-05/30/2009	0.87	8.27	3.45	0.00	0.00	0.34	0.34	0.00	0.31	0.31	819.30
Building Off Road Diesel	0.87	8.24	3.32	0.00	0.00	0.34	0.34	0.00	0.31	0.31	802.32
Building Vendor Trips	0.00	0.03	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.59
Building Worker Trips	0.00	0.01	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	12.38

Construction Related Mitigation Measures

The following mitigation measures apply to Phase: Mass Grading 1/5/2009 - 1/23/2009 - Grading and excavation

For Soil Stabilizing Measures, the Apply soil stabilizers to inactive areas mitigation reduces emissions by:

PM10: 84% PM25: 84%

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For Soil Stabilizing Measures, the Replace ground cover in disturbed areas quickly mitigation reduces emissions by:

PM10: 5% PM25: 5%

For Soil Stabilizing Measures, the Water exposed surfaces 2x daily watering mitigation reduces emissions by:

PM10: 55% PM25: 55%

For Unpaved Roads Measures, the Reduce speed on unpaved roads to less than 15 mph mitigation reduces emissions by:

PM10: 44% PM25: 44%

Operational Unmitigated Detail Report:

OPERATIONAL EMISSION ESTIMATES Summer Pounds Per Day, Unmitigated

Source	ROG	NOX	CO	SO2	PM10	PM25	CO2
Operational Maintenance	0.09	0.16	1.14	0.00	0.17	0.04	105.30
TOTALS (lbs/day, unmitigated)	0.09	0.16	1.14	0.00	0.17	0.04	105.30

Operational Settings:

Does not include correction for passby trips

Does not include double counting adjustment for internal trips

Analysis Year: 2009 Temperature (F): 80 Season: Summer

Emfac: Version : Emfac2007 V2.3 Nov 1 2006

Summary of Land Uses

Land Use Type	Acreage	Trip Rate	Unit Type	No. Units	Total Trips	Total VMT
Operational Maintenance		5.00	1000 sq ft	1.00	5.00	100.00

5.00 100.00

Vehicle Fleet Mix

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Light Auto	45.7	1.5	98.3	0.2
Light Truck < 3750 lbs	9.6	3.1	90.7	6.2
Light Truck 3751-5750 lbs	21.8	0.9	99.1	0.0
Med Truck 5751-8500 lbs	12.0	0.8	98.4	0.8
Lite-Heavy Truck 8501-10,000 lbs	1.9	0.0	73.7	26.3
Lite-Heavy Truck 10,001-14,000 lbs	0.6	0.0	50.0	50.0
Med-Heavy Truck 14,001-33,000 lbs	0.8	0.0	12.5	87.5
Heavy-Heavy Truck 33,001-60,000 lbs	1.5	0.0	0.0	100.0
Other Bus	0.1	0.0	0.0	100.0
Urban Bus	0.0	0.0	0.0	0.0
Motorcycle	4.4	70.5	29.5	0.0
School Bus	0.1	0.0	0.0	100.0
Motor Home	1.5	6.7	80.0	13.3

Travel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
Urban Trip Length (miles)	12.7	7.0	9.5	13.3	7.4	8.9
Rural Trip Length (miles)	20.0	20.0	20.0	20.0	20.0	20.0
Trip speeds (mph)	30.0	30.0	30.0	30.0	30.0	30.0
% of Trips - Residential	32.9	18.0	49.1			

Travel Conditions

	Residential				Commercial	
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer

% of Trips - Commercial (by land use)

Operational Maintenance				2.0	1.0	97.0
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Operational Changes to Defaults

The urban/rural selection has been changed from Urban to Rural

Home-based work rural trip length changed from 17.6 miles to 20 miles

Home-based shop rural trip length changed from 12.1 miles to 20 miles

Home-based other rural trip length changed from 14.9 miles to 20 miles

Commercial-based commute rural trip length changed from 15.4 miles to 20 miles

Commercial-based non-work rural trip length changed from 9.6 miles to 20 miles

Commercial-based customer rural trip length changed from 12.6 miles to 20 miles

Urbemis 2007 Version 9.2.4

Combined Winter Emissions Reports (Pounds/Day)

File Name: S:\Client\2749 RivCo Facil. Mngmt\0003\Air Quality\PSEC.urb924

Project Name: PSEC

Project Location: Riverside County

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

Operational Unmitigated Detail Report:

OPERATIONAL EMISSION ESTIMATES Winter Pounds Per Day, Unmitigated

Source	ROG	NOX	CO	SO2	PM10	PM25	CO2
Operational Maintenance	0.10	0.19	1.10	0.00	0.17	0.04	95.86
TOTALS (lbs/day, unmitigated)	0.10	0.19	1.10	0.00	0.17	0.04	95.86

Operational Settings:

Does not include correction for passby trips

Does not include double counting adjustment for internal trips

Analysis Year: 2009 Temperature (F): 60 Season: Winter

Summary of Land Uses

Land Use Type	Acreage	Trip Rate	Unit Type	No. Units	Total Trips	Total VMT
Operational Maintenance		5.00	1000 sq ft	1.00	5.00	100.00
					5.00	100.00

Vehicle Fleet Mix

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Light Auto	45.7	1.5	98.3	0.2
Light Truck < 3750 lbs	9.6	3.1	90.7	6.2
Light Truck 3751-5750 lbs	21.8	0.9	99.1	0.0
Med Truck 5751-8500 lbs	12.0	0.8	98.4	0.8
Lite-Heavy Truck 8501-10,000 lbs	1.9	0.0	73.7	26.3
Lite-Heavy Truck 10,001-14,000 lbs	0.6	0.0	50.0	50.0
Med-Heavy Truck 14,001-33,000 lbs	0.8	0.0	12.5	87.5
Heavy-Heavy Truck 33,001-60,000 lbs	1.5	0.0	0.0	100.0
Other Bus	0.1	0.0	0.0	100.0
Urban Bus	0.0	0.0	0.0	0.0
Motorcycle	4.4	70.5	29.5	0.0
School Bus	0.1	0.0	0.0	100.0
Motor Home	1.5	6.7	80.0	13.3

Travel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
Urban Trip Length (miles)	12.7	7.0	9.5	13.3	7.4	8.9
Rural Trip Length (miles)	20.0	20.0	20.0	20.0	20.0	20.0
Trip speeds (mph)	30.0	30.0	30.0	30.0	30.0	30.0
% of Trips - Residential	32.9	18.0	49.1			
% of Trips - Commercial (by land use)						
Operational Maintenance				2.0	1.0	97.0

Operational Changes to Defaults

- The urban/rural selection has been changed from Urban to Rural
- Home-based work rural trip length changed from 17.6 miles to 20 miles
- Home-based shop rural trip length changed from 12.1 miles to 20 miles
- Home-based other rural trip length changed from 14.9 miles to 20 miles
- Commercial-based commute rural trip length changed from 15.4 miles to 20 miles
- Commercial-based non-work rural trip length changed from 9.6 miles to 20 miles
- Commercial-based customer rural trip length changed from 12.6 miles to 20 miles





Phase Assumptions

Phase: Mass Grading 1/5/2009 - 1/23/2009 - Grading and excavation

Total Acres Disturbed: 1

Maximum Daily Acreage Disturbed: 1

Fugitive Dust Level of Detail: Default

15 lbs per acre-day

On Road Truck Travel (VMT): 0

Off-Road Equipment:

1 Bore/Drill Rigs (291 hp) operating at a 0.75 load factor for 4 hours per day

1 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 4 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 4 hours per day

1 Water Trucks (189 hp) operating at a 0.5 load factor for 2 hours per day

Phase: Building Construction 1/26/2009 - 5/30/2009 - Construction of tower

Off-Road Equipment:

2 Cement and Mortar Mixers (10 hp) operating at a 0.56 load factor for 8 hours per day

1 Cranes (399 hp) operating at a 0.43 load factor for 8 hours per day

Operational Unmitigated Detail Report:

OPERATIONAL EMISSION ESTIMATES Annual Tons Per Year, Unmitigated

Source	ROG	NOX	CO	SO2	PM10	PM25	CO2
Operational Maintenance	0.02	0.03	0.21	0.00	0.03	0.01	18.64
<b>TOTALS (tons/year, unmitigated)</b>	<b>0.02</b>	<b>0.03</b>	<b>0.21</b>	<b>0.00</b>	<b>0.03</b>	<b>0.01</b>	<b>18.64</b>

Operational Settings:

Does not include correction for passby trips

Does not include double counting adjustment for internal trips

Analysis Year: 2009 Season: Annual

Erfac: Version : Erfac2007 V2.3 Nov 1 2006

Summary of Land Uses

Land Use Type	Acreage	Trip Rate	Unit Type	No. Units	Total Trips	Total VMT
Operational Maintenance		5.00	1000 sq ft	1.00	5.00	100.00
					5.00	100.00

Vehicle Fleet Mix

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Light Auto	45.7	1.5	98.3	0.2
Light Truck < 3750 lbs	9.6	3.1	90.7	6.2
Light Truck 3751-5750 lbs	21.8	0.9	99.1	0.0
Med Truck 5751-8500 lbs	12.0	0.8	98.4	0.8
Lite-Heavy Truck 8501-10,000 lbs	1.9	0.0	73.7	26.3
Lite-Heavy Truck 10,001-14,000 lbs	0.6	0.0	50.0	50.0
Med-Heavy Truck 14,001-33,000 lbs	0.8	0.0	12.5	87.5
Heavy-Heavy Truck 33,001-60,000 lbs	1.5	0.0	0.0	100.0
Other Bus	0.1	0.0	0.0	100.0
Urban Bus	0.0	0.0	0.0	0.0
Motorcycle	4.4	70.5	29.5	0.0
School Bus	0.1	0.0	0.0	100.0

Vehicle Fleet Mix

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Motor Home	1.5	6.7	80.0	13.3

Travel Conditions

	Residential			Commuter	Commercial	
	Home-Work	Home-Shop	Home-Other		Non-Work	Customer
Urban Trip Length (miles)	12.7	7.0	9.5	13.3	7.4	8.9
Rural Trip Length (miles)	20.0	20.0	20.0	20.0	20.0	20.0
Trip speeds (mph)	30.0	30.0	30.0	30.0	30.0	30.0
% of Trips - Residential	32.9	18.0	49.1			

% of Trips - Commercial (by land use)

Operational Maintenance	2.0	1.0	97.0
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Operational Changes to Defaults

The urban/rural selection has been changed from Urban to Rural

Home-based work rural trip length changed from 17.6 miles to 20 miles

Home-based shop rural trip length changed from 12.1 miles to 20 miles

Home-based other rural trip length changed from 14.9 miles to 20 miles

Commercial-based commute rural trip length changed from 15.4 miles to 20 miles

Commercial-based non-work rural trip length changed from 9.6 miles to 20 miles

Commercial-based customer rural trip length changed from 12.6 miles to 20 miles

draft

**Appendix B:  
Spreadsheets**

## Generator Exhaust Emissions

Project: Riverside County PSEC  
 Prepared by: Michael Brandman Associates  
 Date: 5/5/2008

	Number	Hours per day or year	THC	NOx	CO	SO2	PM10	PM2.5**	CO2
<b>NONROAD Emission Factors* (grams per operating hour)</b>									
Diesel Generator Set			18.7	153.8	84.8	21.2	17.1		15163
LPG Generator Set			74.2	359.6	1164.6	0.5	2.4		27222
<b>Total Emissions (pounds/day)</b>									
Diesel Generator (full time)	1	24	0.99	8.12	4.48	1.12	0.90	0.83	801
LPG Generator (full time)	1	24	3.92	18.98	61.49	0.03	0.13	0.12	1437
LPG Emergency Generators	50	0.5	4.08	19.78	64.05	0.03	0.13	0.12	1497
<i>Total (pounds per day)</i>			<i>8.98</i>	<i>46.88</i>	<i>130.02</i>	<i>1.18</i>	<i>1.16</i>	<i>1.07</i>	<i>3735</i>
<b>Total Emissions (tons per year)</b>									
Diesel Generator (full time)	1	8760	0.18	1.48	0.82	0.20	0.16	0.15	146
LPG Generator (full time)	1	8760	0.71	3.46	11.22	0.01	0.02	0.02	262
LPG Emergency Generators	50	26	0.11	0.51	1.67	0.00	0.00	0.00	39
<i>Total (tons per year)</i>			<i>1.00</i>	<i>5.46</i>	<i>13.70</i>	<i>0.21</i>	<i>0.19</i>	<i>0.18</i>	<i>447</i>
<b>Salton Sea Emissions (pounds /day)</b>									
Diesel Generator (full time)	1	24	0.99	8.12	4.48	1.12	0.90	0.83	801
LPG Generator (full time)	1	24	3.92	18.98	61.49	0.03	0.13	0.12	1437
LPG Emergency Generators	6	0.5	0.49	2.37	7.69	0.00	0.02	0.01	180
<i>Total</i>			<i>5.39</i>	<i>29.48</i>	<i>73.65</i>	<i>1.15</i>	<i>1.04</i>	<i>0.96</i>	<i>2418</i>
<b>South Coast Emissions (pounds /day)</b>									
LPG Emergency Generators	50	0.5	4.08	19.78	64.05	0.03	0.13	0.12	1497
<b>MDAQMD Emissions (pounds /day)</b>									
LPG Emergency Generators	8	0.5	0.65	3.16	10.25	0.00	0.02	0.02	240
<b>MDAQMD Emissions (tons/year)</b>									
LPG Emergency Generators	8	26	0.02	0.08	0.27	0.00	0.00	0.00	6

\* NONROAD report output is contained in Appendix.

\*\* Note that PM2.5 was not reported by NONROAD. Therefore, it was assumed to be 92 percent of PM10 emissions pursuant to SCAQMD guidance (2006).

To estimate the annual emissions for the emergency generators, it was assumed that each generator would run half an hour once per week during the year.

**Emission Factors by Horsepower, SCC, and Pollutant**

**All Fuels** **Grams/Operating Hour** **#Name?**  
 #Name?  
 #Error  
 #Error Today's Date: 5/1/2008

Fuel Type	SCC	Equipment Description	Engine Type	Horsepower	Exhaust THC	Exhaust NOx	Exhaust CO	Exhaust PM10	Exhaust SO2	Exhaust CO2	Crankcase THC	Diurnal THC
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**Diesel**

**Commercial Equipment**

2270006005		Generator Sets	Diesel									
			3 < HP <= 6	2.39	16.28	11.24	1.98	1.89	1,350.53	0.04	0.00	
			6 < HP <= 11	3.76	25.62	17.69	3.12	2.97	2,125.00	0.07	0.00	
			11 < HP <= 16	5.91	36.58	21.83	4.09	4.79	3,423.48	0.11	0.00	
			16 < HP <= 25	9.27	57.43	34.27	6.42	7.52	5,375.07	0.17	0.00	
			25 < HP <= 40	12.76	80.89	45.68	9.18	11.82	8,448.34	0.24	0.00	
			40 < HP <= 50	17.24	109.31	61.73	12.41	15.98	11,416.88	0.33	0.00	
			50 < HP <= 75	18.31	153.83	84.78	17.10	21.22	15,162.96	0.36	0.00	
			75 < HP <= 100	26.39	221.71	122.19	25.00	30.59	21,854.29	0.53	0.00	
			100 < HP <= 175	31.03	351.99	121.73	26.73	43.23	30,887.89	0.62	0.00	
			175 < HP <= 300	51.03	596.20	198.14	43.30	75.84	54,184.15	1.02	0.00	
			300 < HP <= 600	78.94	1,048.75	369.24	67.19	133.67	95,494.73	1.58	0.00	
			600 < HP <= 750	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
			750 < HP <= 1000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
			1000 < HP <= 1200	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
			1200 < HP <= 2000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	

## Emission Factors by Horsepower, SCC, and Pollutant

All Fuels

Grams/Operating Hour

#Name?

#Name?

#Error

#Error

Today's Date: 5/1/2008

Fuel Type	SCC	Equipment Description	Engine Type Horsepower	Vapor Displacement THC	Spillage THC	Hot Soak THC	Running Loss THC	Tank Permeation THC	Hose Permeation THC	Total THC
<b>Diesel</b>										
<b>Commercial Equipment</b>										
2270006005		Generator Sets	Diesel							
			3 < HP <= 6	0.00	0.00	0.00	0.00	0.00	0.00	2.43
			6 < HP <= 11	0.00	0.00	0.00	0.00	0.00	0.00	3.83
			11 < HP <= 16	0.00	0.00	0.00	0.00	0.00	0.00	6.02
			16 < HP <= 25	0.00	0.00	0.00	0.00	0.00	0.00	9.45
			25 < HP <= 40	0.00	0.00	0.00	0.00	0.00	0.00	13.00
			40 < HP <= 50	0.00	0.00	0.00	0.00	0.00	0.00	17.57
			50 < HP <= 75	0.00	0.00	0.00	0.00	0.00	0.00	18.67
			75 < HP <= 100	0.00	0.00	0.00	0.00	0.00	0.00	26.92
			100 < HP <= 175	0.00	0.00	0.00	0.00	0.00	0.00	31.65
			175 < HP <= 300	0.00	0.00	0.00	0.00	0.00	0.00	52.05
			300 < HP <= 600	0.00	0.00	0.00	0.00	0.00	0.00	80.52
			600 < HP <= 750	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			750 < HP <= 1000	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			1000 < HP <= 1200	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			1200 < HP <= 2000	0.00	0.00	0.00	0.00	0.00	0.00	0.00

#Name?

Fuel Type	SCC	Equipment Description	Engine Type	Exhaust THC	Exhaust NOx	Exhaust CO	Exhaust PM10	Exhaust SO2	Exhaust CO2	Crankcase THC	Diurnal THC
<b>Horsepower</b>											
			2000 < HP <= 3000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>LPG</b>											
<b>Commercial Equipment</b>											
	2267006005*	Generator Sets	LPG								
			25 < HP <= 40	25.79	162.30	550.76	1.16	0.25	12,978.85	7.97	0.00
			40 < HP <= 50	39.12	246.18	835.41	1.75	0.38	19,686.58	12.10	0.00
			50 < HP <= 75	56.48	359.56	1,164.62	2.38	0.53	27,221.87	17.69	0.00
			75 < HP <= 100	72.97	464.55	1,504.69	3.08	0.68	35,170.78	22.86	0.00
			100 < HP <= 175	124.61	793.31	2,569.53	5.25	1.17	60,060.35	39.03	0.00
			175 < HP <= 300	215.11	1,369.43	4,435.58	9.07	2.01	103,677.67	67.38	0.00
			300 < HP <= 600	333.97	2,126.16	6,886.63	14.08	3.13	160,968.63	104.61	0.00

\* Under 25 horsepower spark-ignition engines are lumped into either 2- or 4-stroke.



Fuel Type	SCC	Equipment Description	Engine Type Horsepower	Vapor Displacement THC	Spillage THC	Hot Soak THC	Running Loss THC	Tank Permeation THC	Hose Permeation THC	Total THC
			2000 < HP <= 3000	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>LPG</b>										
<b>Commercial Equipment</b>										
	2267006005*	Generator Sets	LPG							
			25 < HP <= 40	0.00	0.00	0.00	0.00	0.00	0.00	33.76
			40 < HP <= 50	0.00	0.00	0.00	0.00	0.00	0.00	51.21
			50 < HP <= 75	0.00	0.00	0.00	0.00	0.00	0.00	74.17
			75 < HP <= 100	0.00	0.00	0.00	0.00	0.00	0.00	95.83
			100 < HP <= 175	0.00	0.00	0.00	0.00	0.00	0.00	163.64
			175 < HP <= 300	0.00	0.00	0.00	0.00	0.00	0.00	282.48
			300 < HP <= 600	0.00	0.00	0.00	0.00	0.00	0.00	438.58

\* Under 25 horsepower spark-ignition engines are lumped into either 2- or 4-stroke.