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UNIVERSITY CROSSINGS APARTMENTS
AIR QUALITY IMPACT ANALYSIS
COUNTY OF SAN BERNARDINO, CALIFORNIA

March 5, 2011

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HQ

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UNIVERSITY CROSSINGS APARTMENTS
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1.0 INTRODUCTION

This report presents the results of the air quality impact analysis (AQIA) prepared by Urban Crossroads, Inc. for the proposed University Crossings Apartments development (referred to as "Project"), which is generally located north of Lugonia Avenue and west of Alabama Street in the County of San Bernardino, as shown on Exhibit 1-1.

The purpose of this AQIA is to evaluate the potential impacts to air quality associated with construction and operation of the proposed Project, and recommend measures to mitigate impacts considered significant in comparison to established regulatory thresholds.

1.1 PROJECT OVERVIEW

The Project includes the development of 321 apartment units. For the purposes of this traffic impact analysis, it is assumed that the Project will be constructed and at full occupancy by 2014.

1.2 SUMMARY OF FINDINGS

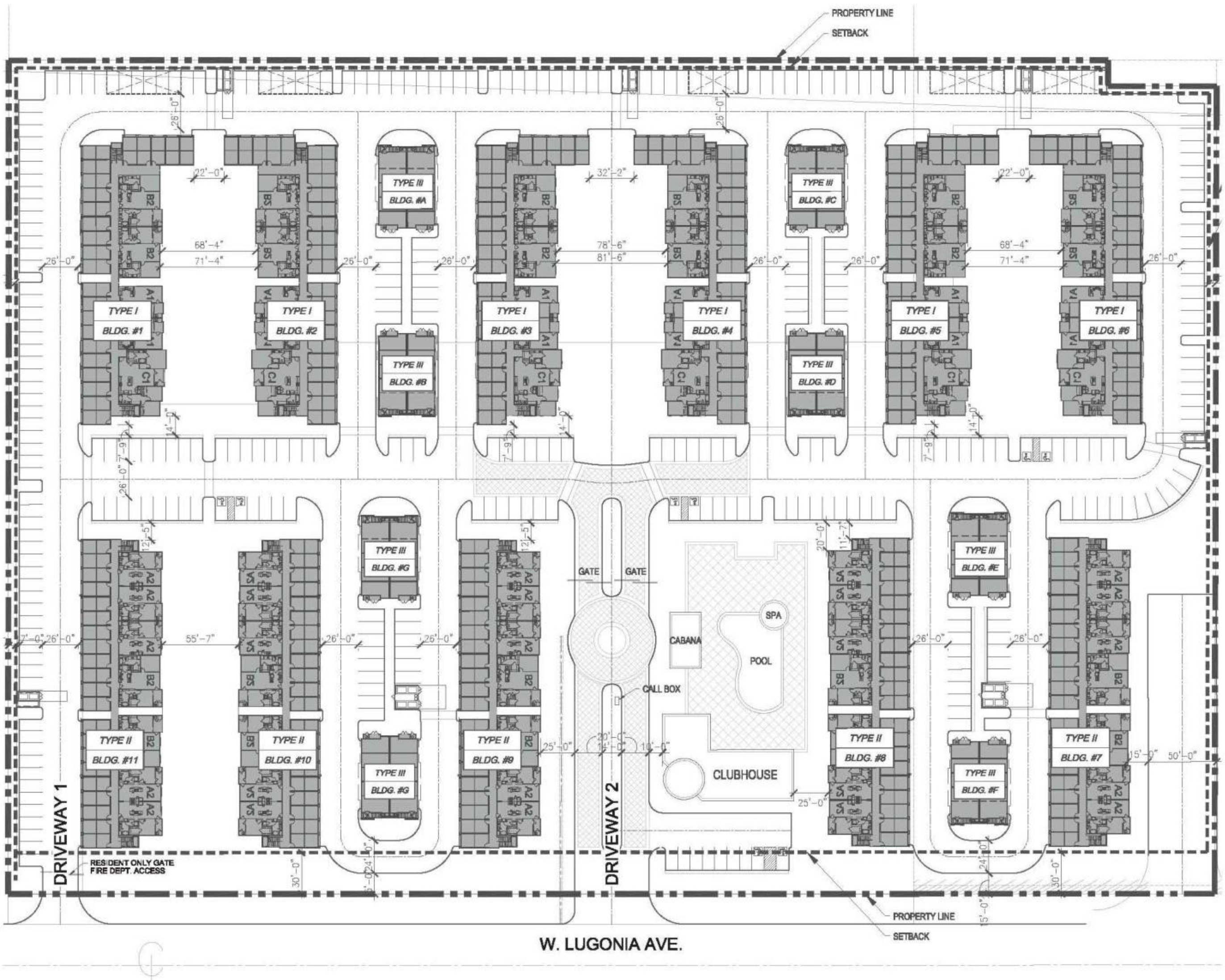
For regional emissions construction activity will not exceed the regional pollutant thresholds established by the South Coast Air Quality Management District (SCAQMD).

For localized emissions after implementation of the recommended BACMs, the results of the analysis indicate that emissions resulting from short-term construction activity will not exceed the localized pollutant thresholds.

For regional emissions, long-term operational activity emissions will not exceed the regional pollutant threshold established by the SCAQMD.

The project will not result in a CO "hotspot" and concequently would not result in a significant impact to off-site sensitive receptors.

EXHIBIT 1-1
SITE PLAN



1.3 STANDARD REGULATORY REQUIREMENTS/BEST AVAILABLE CONTROL MEASURES (BACMS)

SCAQMD Rules that are currently applicable during construction activity for this Project include but are not limited to: Rule 1113 (Architectural Coatings); Rule 431.2 (Low Sulfur Fuel); Rule 403 (Fugitive Dust); and Rule 1186 / 1186.1 (Street Sweepers). In order to facilitate monitoring and compliance, applicable SCAQMD regulatory requirements are summarized below, and are restated as recommended mitigation measures (MM AQ-#).

MM AQ-1

The following measures are recommended to be incorporated into Project plans and specifications as implementation of Rule 403:

- All clearing, grading, earth-moving, or excavation activities shall cease when winds exceed 25 mph per SCAQMD guidelines in order to limit fugitive dust emissions.

- The contractor shall ensure that all disturbed unpaved roads and disturbed areas within the Project are watered at least three times daily during dry weather. Watering, with complete coverage of disturbed areas, shall occur at least three times a day, preferably in the mid-morning, afternoon, and after work is done for the day. As shown in Table XI-A, located in Appendix "B", implementation of this measure is estimated to reduce PM_{10} and $PM_{2.5}$ fugitive dust emissions by approximately 61%.

- The contractor shall ensure that traffic speeds on unpaved roads and Project site areas are reduced to 15 miles per hour or less to reduce PM10 and PM2.5 fugitive dust haul road emissions by approximately 44%.

Additional regulatory requirements that are in effect during Project construction include the following:

MM AQ-2

The California Air Resources Board, in Title 13, Chapter 10, Section 2485, Division 3 of the of the California Code of Regulations, imposes a requirement that heavy duty trucks accessing the site shall not idle for greater than five minutes at any location. This measure is intended to apply to construction traffic. Prior to issuance of a grading permit, the grading plans shall reference that a sign shall be posted on-site stating that construction workers shall not idle diesel engines in excess of five minutes.

1.4 CONSTRUCTION ACTIVITY RECOMMENDED MITIGATION MEASURES

Since the proposed project will not result in a significant regional or localized air quality impact during construction activity after the implementation of the above-cited BACMs, additional mitigation is not required.

1.5 OPERATIONAL ACTIVITY RECOMMENDED MITIGATION MEASURES

Since the proposed project will not result in a significant regional or localized air quality impact during operational activity, mitigation is not required.

2.0 EXISTING CONDITIONS

This section provides an overview of the existing air quality conditions in the project area and region.

2.1 SOUTH COAST AIR BASIN

The project site is located in the SCAB within the jurisdiction of SCAQMD. The SCAQMD was created by the 1977 Lewis-Presley Air Quality Management Act, which merged four county air pollution control bodies into one regional district. Under the Act, the SCAQMD is responsible for bringing air quality in areas under its jurisdiction into conformity with federal and state air quality standards. As discussed above, the Project site is located within the South Coast Air Basin, a 6,745-square mile subregion of the SCAQMD, which includes portions of Los Angeles, Riverside, and San Bernardino Counties, and all of Orange County.

The SCAB is bound by the Pacific Ocean to the west and the San Gabriel, San Bernardino, and San Jacinto Mountains to the north and east. The Los Angeles County portion of the Mojave Desert Air Basin is bound by the San Gabriel Mountains to the south and west, the Los Angeles / Kern County border to the north, and the Los Angeles / San Bernardino County border to the east. The Riverside County portion of the Salton Sea Air Basin is bound by the San Jacinto Mountains in the west and spans eastward up to the Palo Verde Valley.

2.2 REGIONAL CLIMATE

The regional climate has a substantial influence on air quality in the SCAB. In addition, the temperature, wind, humidity, precipitation, and amount of sunshine influence the air quality.

The annual average temperatures throughout the SCAB vary from the low to middle 60s (degrees Fahrenheit). Due to a decreased marine influence, the eastern portion of the SCAB shows greater variability in average annual minimum and maximum temperatures. January is the coldest month throughout the SCAB, with average minimum temperatures of 47°F in downtown Los Angeles and 36°F in San Bernardino. All portions of the SCAB have recorded maximum temperatures above 100°F.

Although the climate of the SCAB can be characterized as semi-arid, the air near the land surface is quite moist on most days because of the presence of a marine layer. This shallow layer of sea air is an important modifier of SCAB climate. Humidity restricts visibility in the SCAB, and the conversion of sulfur dioxide to sulfates is heightened in air with high relative humidity. The marine layer provides an environment for that conversion process, especially during the spring and summer months. The annual average relative humidity within the SCAB is 71 percent along the coast and 59 percent inland. Since the ocean effect is dominant, periods of heavy early morning fog are frequent and low stratus clouds are a characteristic feature. These effects decrease with distance from the coast.

More than 90 percent of the SCAB's rainfall occurs from November through April. The annual average rainfall varies from approximately nine inches in Riverside to fourteen inches in downtown Los Angeles. Monthly and yearly rainfall totals are extremely variable. Summer rainfall usually consists of widely scattered thunderstorms near the coast and slightly heavier shower activity in the eastern portion of the SCAB with frequency being higher near the coast.

Due to its generally clear weather, about three-quarters of available sunshine is received in the SCAB. The remaining one-quarter is absorbed by clouds. The ultraviolet portion of this abundant radiation is a key factor in photochemical reactions. On the shortest day of the year there are approximately 10 hours of possible sunshine, and on the longest day of the year there are approximately 14-1/2 hours of possible sunshine.

The importance of wind to air pollution is considerable. The direction and speed of the wind determines the horizontal dispersion and transport of the air pollutants. During the late autumn to early spring rainy season, the SCAB is subjected to wind flows associated with the traveling storms moving through the region from the northwest. This period also brings five to ten periods of strong, dry offshore winds, locally termed "Santa Anas" each year. During the dry season, which coincides with the months of maximum photochemical smog concentrations, the wind flow is bimodal, typified by a daytime onshore sea breeze and a nighttime offshore drainage wind. Summer wind flows are created by the 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. Nighttime drainage begins with the radiational cooling of the mountain slopes. Heavy, cool air descends the slopes and flows through the mountain passes and canyons as it follows the lowering terrain toward the ocean. Another characteristic wind regime in the SCAB is the "Catalina Eddy," a low level cyclonic (counterclockwise) flow centered over Santa Catalina Island which results in an offshore flow to the southwest. On most spring and summer days, some indication of an eddy is apparent in coastal sections.

In the SCAB, there are two distinct temperature inversion structures that control vertical mixing of air pollution. During the summer, warm high-pressure descending (subsiding) air is undercut by a shallow layer of cool marine air. The boundary between these two layers of air is a persistent marine subsidence/inversion. This boundary prevents vertical mixing which effectively acts as an impervious lid to pollutants over the entire SCAB. The mixing height for the inversion structure is normally situated 1,000 to 1,500 feet above mean sea level.

A second inversion-type forms in conjunction with the drainage of cool air off the surrounding mountains at night followed by the seaward drift of this pool of cool air. The top of this layer forms a sharp boundary with the warmer air aloft and creates nocturnal radiation inversions. These inversions occur primarily in the winter, when nights are longer and onshore flow is weakest. They are typically only a few hundred feet above mean sea level. These inversions effectively trap pollutants, such as NO_X and CO from vehicles, as the pool of cool air drifts seaward. Winter is therefore a period of high levels of primary pollutants along the coastline.

2.3 WIND PATTERNS AND PROJECT LOCATION

The distinctive climate of the Project area and the SCAB is determined by its terrain and geographical location. The Basin is located in a coastal plain with connecting broad valleys and low hills, bounded by the Pacific Ocean in the southwest quadrant with high mountains forming the remainder of the perimeter.

Wind patterns across the south coastal region are characterized by westerly and southwesterly on-shore winds during the day and easterly or northeasterly breezes at night. Winds are characteristically light although the speed is somewhat greater during the dry summer months than during the rainy winter season.

Because wind speed and direction data is not monitored by the California Air Resources Board (CARB) or SCAQMD for the Project area (Source Receptor Area (SRA) 24) this data was obtained from the nearest site at the Redlands monitoring station (SRA 35), located approximately 13.34 miles northeast of the Project site. As shown in the following wind rose exhibit (Exhibit 2-1), the prevailing winds move predominately from the northwest to the southeast and southeast to northwest with an average wind speed of 0.94 meters (3.08 feet) per second (m/s).

2.4 EXISTING AIR QUALITY

Existing air quality is measured based upon ambient air quality standards. These standards are the levels of air quality that are considered safe, with an adequate margin of safety, to protect the public health and welfare. National Ambient Air Quality Standards (NAAQS) and California Ambient Air Quality Standards (CAAQS) currently in effect, as well health effects of each pollutant regulated under these standards are shown in Table 2-1.

The determination of whether a region's air quality is healthful or unhealthful is determined by comparing contaminant levels in ambient air samples to the state and federal standards presented in Table 2-1. The air quality in a region is considered to be in attainment by the state if the measured ambient air pollutant levels for O_3, CO, SO_2, NO_2, PM_{10}, and $PM_{2.5}$ are not equaled or exceeded at any time in any consecutive three-year period; and the federal standards (other than O_3, PM_{10}, $PM_{2.5}$, and those based on annual averages or arithmetic mean) are not exceeded more than once per year. The O_3 standard is attained when the fourth highest eight-hour concentration in a year, averaged over three years, is equal to or less than the standard. For PM_{10}, the 24-hour standard is attained when 99 percent of the daily concentrations, averaged over three years, are equal to or less than the standard.

2.5 REGIONAL AIR QUALITY

The SCAQMD monitors levels of various criteria pollutants at 30 monitoring stations throughout the air district. In 2009, the federal and state standards were exceeded on one or more days for ozone, PM_{10}, and $PM_{2.5}$ at most monitoring locations. No areas of the SCAB exceeded federal or state standards for NO_2, SO_2, CO, sulfates or lead. See Table 3-2 for attainment designations for the SCAB.

2.6 LOCAL AIR QUALITY

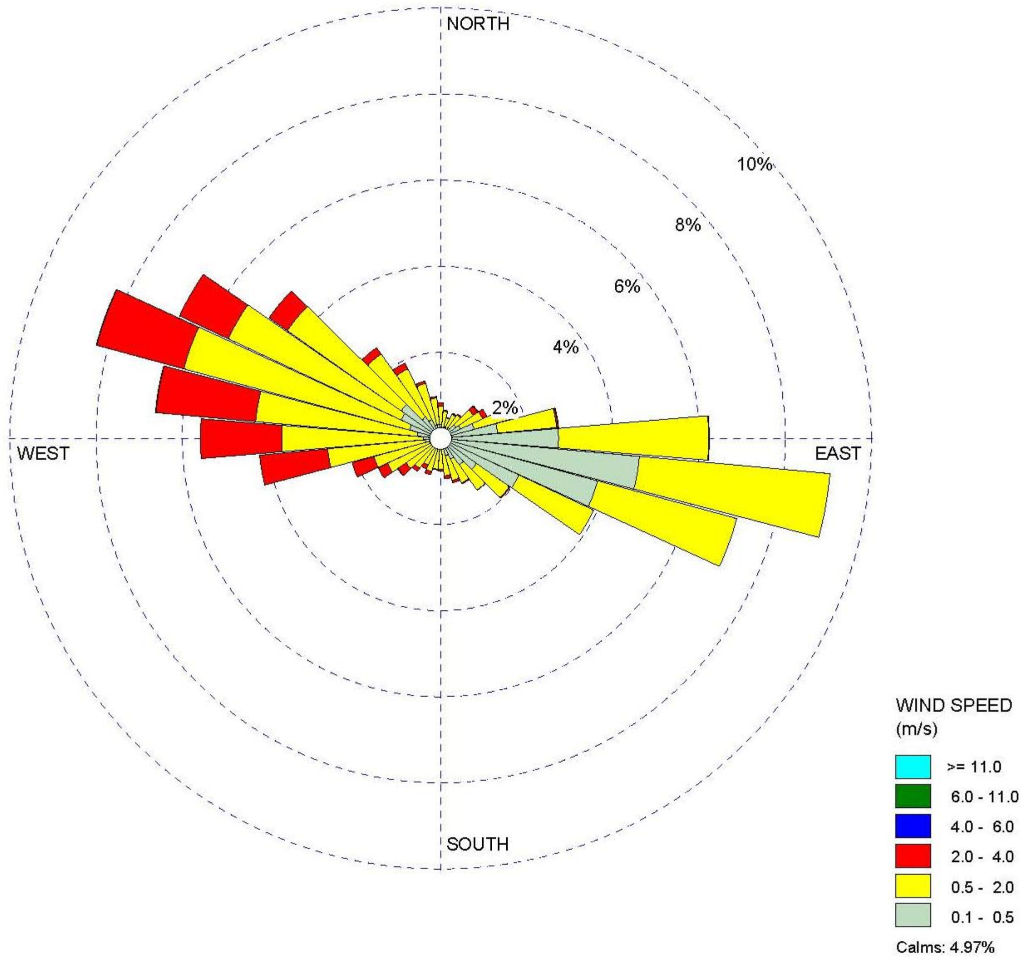
Relative to the Project site, the nearest long-term air quality monitoring site for Ozone (O_3) and Inhalable Particulates (PM_{10}) is the South Coast Air Quality Management District Redlands monitoring station, located approximately 13.34 miles northeast of the Project site. Data for Carbon Monoxide (CO), Nitrogen Dioxide (NO_2), and Ultra-Fine Particulates ($PM_{2.5}$) was obtained from the San Bernardino monitoring station, located approximately 15.5 miles northwest of the Project site. It should be noted that the San Bernardino monitoring station was utilized in lieu of the Redlands monitoring station only in instances where data was not available from the Redlands site.

The three (3) years of data in Table 2-3 shows the number of days standards were exceeded for the study area, which was chosen to be representative of the local air quality at the Project site. Additionally, data for SO_2 has been omitted as attainment is regularly met in the South Coast Air Basin and few monitoring stations measure SO_2 concentrations.

EXHIBIT 2-1

WIND ROSE

WIND ROSE PLOT:	DISPLAY:
rdld	**Wind Speed** **Direction (blowing from)**



COMMENTS:	DATA PERIOD:	COMPANY NAME:	
	2007 **Jan 1 - Dec 31** **00:00 - 23:00**	MODELER:	
	CALM WINDS: **4.97%**	TOTAL COUNT: **8715 hrs.**	
	AVG. WIND SPEED: **0.94 m/s**	DATE: **1/28/2009**	PROJECT NO.:

WRPLOT View - Lakes Environmental Software

TABLE 2-1

STATE AND NATIONAL CRITERIA POLLUTANT STANDARDS, EFFECTS, AND SOURCES

Pollutant	Averaging Time	State Standard	National Standard	Health and Atmospheric Effects	Major Sources
Ozone	1 hour 8 hours	0.09 ppm 0.07 ppm1	--- 0.075 ppm	High concentrations can directly affect lungs, causing irritation. Long-term exposure may cause damage to lung tissue.	Formed when reactive organic gases (ROG) and nitrogen oxides (NOx) react in the presence of sunlight. Major sources include on-road motor vehicles, solvent evaporation, and commercial / industrial mobile equipment.
Carbon Monoxide	1 hour 8 hours	20 ppm 9.0 ppm	35 ppm 9 ppm	Classified as a chemical asphyxiant, carbon monoxide interferes with the transfer of fresh oxygen to the blood and deprives sensitive tissues of oxygen.	Internal combustion engines, primarily gasoline-powered motor vehicles.
Nitrogen Dioxide	1 hour Annual Avg.	0.18 ppm 0.030	--- 0.053 ppm	Irritating to eyes and respiratory tract. Colors atmosphere reddish-brown.	Motor vehicles, petroleum refining operations, industrial sources, aircraft, ships, and railroads.
Sulfur Dioxide	1 hour 3 hours 24 hours	0.25 ppm --- 0.04 ppm	75 ppb --- ---	Irritates upper respiratory tract; injurious to lung tissue. Can yellow the leaves of plants, destructive to marble, iron, and steel. Limits visibility and reduces sunlight.	Fuel combustion, chemical plants, sulfur recovery plants, and metal processing.
Inhalable Particulate Matter (PM-10)	24 hours Annual Avg.	50 µg/m3 20 µg/m3	150 µg/m3 ---	May irritate eyes and respiratory tract, decreases in lung capacity, cancer and increased mortality. Produces haze and limits visibility.	Dust and fume-producing industrial and agricultural operations, combustion, atmospheric photochemical reactions, and natural activities (e.g., wind-raised dust and ocean sprays).
Fine Particulate Matter (PM-2.5)	24 hours Annual Avg.	--- 12 µg/m3	35 µg/m3 15 µg/m3	Increases respiratory disease, lung damage, cancer, and premature death. Reduces visibility and results in surface soiling.	Fuel combustion in motor vehicles, equipment, and industrial sources; residential and agricultural burning; Also, formed from photochemical reactions of other pollutants, including NOx, sulfur oxides, and organics.
Lead	Monthly Ave. Quarterly Rolling 3-Month Avg.	1.5 µg/m3 --- ---	--- 1.5 µg/m3 0.15 µg/m3	Disturbs gastrointestinal system, and causes anemia, kidney disease, and neuromuscular and neurological dysfunction.	Present source: lead smelters, battery manufacturing & recycling facilities. Past source: combustion of leaded gasoline.
Hydrogen Sulfide	1 hour	0.03 ppm	No National Standard	Nuisance odor (rotten egg smell), headache and breathing difficulties (higher concentrations)	Geothermal Power Plants, Petroleum Production and refining
Sulfates	24 hour	25 µg/m3	No National Standard	Breathing difficulties, aggravates asthma, reduced visibility	Produced by the reaction in the air of SO2.
Visibility Reducing Particles	8 hour	Light extinction of 0.23/km; visibility of 10 miles or more	No National Standard	Reduces visibility, reduced airport safety, lower real estate value, discourages tourism.	See PM10/PM2.5.

NOTE: ppm = parts per million; $\mu g/m^3$ = micrograms per cubic meter.

[1] This concentration was approved by the Air Resources Board on April 28, 2005 and became effective May 17, 2006.

SOURCE: California Air Resources Board, 09/08/2010 (http://www.arb.ca.gov/research/aaqs/aaqs2.pdf). *Ambient Air Quality Standards,* available at http://www.arb.ca.gov/research/aaqs/aaqs2.pdf Standards last updated November 17, 2008. California Air Resources Board, 2001. *CARB Fact Sheet: Air Pollution Sources, Effects and Control,* http://www.arb.ca.gov/research/health/fs/fs2/fs2.htm, page last updated December 2005.

Criteria pollutants are pollutants that are regulated through the development of human health based and/or environmentally based criteria for setting permissible levels. Examples of sources and effects of the criteria pollutants are identified below:

- Carbon Monoxide (CO): Is a colorless, odorless gas produced by the incomplete combustion of carbon-containing fuels, such as gasoline or wood. CO concentrations tend to be the highest during the winter morning, when little to no wind and surface-based inversions trap the pollutant at ground levels. Because CO is emitted directly from internal combustion engines, unlike ozone, motor vehicles operating at slow speeds are the primary source of CO in the Basin. The highest ambient CO concentrations are generally found near congested transportation corridors and intersections.
- Sulfur Dioxide (SO_2): Is a colorless, extremely irritating gas or liquid. It enters the atmosphere as a pollutant mainly as a result of burning high sulfur-content fuel oils and coal and from chemical processes occurring at chemical plants and refineries. When SO2 oxidizes in the atmosphere, it forms sulfates (SO4). Collectively, these pollutants are referred to as sulfur oxides (SOX).

- Nitrogen Oxides (Oxides of Nitrogen, or NO_x): Nitrogen oxides (NO_x) consist of nitric oxide (NO), nitrogen dioxide (NO_2) and nitrous oxide (N_2O) and are formed when nitrogen (N_2) combines with oxygen (O_2). Their lifespan in the atmosphere ranges from one to seven days for nitric oxide and nitrogen dioxide, to 170 years for nitrous oxide. Nitrogen oxides are typically created during combustion processes, and are major contributors to smog formation and acid deposition. NO_2 is a criteria air pollutant, and may result in numerous adverse health effects; it absorbs blue light, resulting in a brownish-red cast to the atmosphere and reduced visibility. Of the seven types of nitrogen oxide compounds, NO2 is the most abundant in the atmosphere. As ambient concentrations of NO2 are related to traffic density, commuters in heavy traffic may be exposed to higher concentrations of NO2 than those indicated by regional monitors.

- Ozone (O_3): Is a highly reactive and unstable gas that is formed when volatile organic compounds (VOCs) and nitrogen oxides (NOX), both byproducts of internal combustion engine exhaust, undergo slow photochemical reactions in the presence of sunlight. Ozone concentrations are generally highest during the summer months when direct sunlight, light wind, and warm temperature conditions are favorable to the formation of this pollutant.

- PM_{10} (Particulate Matter less than 10 microns): A major air pollutant consisting of tiny solid or liquid particles of soot, dust, smoke, fumes, and aerosols. The size of the particles (10 microns or smaller, about 0.0004 inches or less) allows them to easily enter the lungs where they may be deposited, resulting in adverse health effects. PM_{10} also causes visibility reduction and is a criteria air pollutant.

- $PM_{2.5}$ (Particulate Matter less than 2.5 microns): A similar air pollutant consisting of tiny solid or liquid particles which are 2.5 microns or smaller (which is often referred to as fine particles). These particles are formed in the atmosphere from primary gaseous emissions that include sulfates formed from SO_2 release from power plants and industrial facilities and nitrates that are formed from NO_X release from power plants, automobiles and other types of combustion sources. The chemical composition of fine particles highly depends on location, time of year, and weather conditions. $PM_{2.5}$ is a criteria air pollutant.

- Volatile Organic Compounds (VOC): Volatile organic compounds are hydrocarbon compounds (any compound containing various combinations of hydrogen and carbon atoms) that exist in the ambient air. VOCs contribute to the formation of smog through atmospheric photochemical reactions and/or may be toxic. Compounds of carbon (also known as organic compounds) have different levels of reactivity; that is, they do not react at the same speed or do not form ozone to the same extent when exposed to photochemical processes. VOCs often have an odor, and some examples include gasoline, alcohol, and the solvents used in paints. Exceptions to the VOC designation include: carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates, and ammonium carbonate. VOCs are a criteria pollutant since they are a precursor to O_3, which is a criteria pollutant.

- Reactive Organic Gasses (ROG): Similar to VOC, Reactive Organic Gasses (ROG) are also precursors in forming ozone and consist of compounds containing methane, ethane, propane, butane, and longer chain hydrocarbons, which are typically the result of some type of combustion/decomposition process. Smog is formed when ROG and nitrogen oxides react in the presence of sunlight. ROGs are a criteria pollutant since they are a precursor to O_3, which is a criteria pollutant.

- Lead (Pb): Lead is a heavy metal that is highly persistent in the environment. In the past, the primary source of lead in the air was emissions from vehicles burning leaded gasoline. As a result of the removal of lead from gasoline, there have been no violations at any of the SCAQMD's regular air monitoring stations since 1982. Currently, emissions of lead are largely limited to stationary sources such as lead smelters. It should be noted that the proposed Project is not anticipated to generate a quantifiable amount of lead emissions. Lead is a criteria air pollutant.

Health Effects of Air Pollutants

Ozone

Individuals exercising outdoors, children, and people with preexisting lung disease, such as asthma and chronic pulmonary lung disease, are considered to be the most susceptible sub-groups for ozone effects. Short-term exposure (lasting for a few hours) to ozone at levels typically observed in Southern California can result in breathing pattern changes, reduction of breathing capacity, increased susceptibility to infections, inflammation of the lung tissue, and some immunological changes. Elevated ozone levels are associated with increased school absences. In recent years, a correlation between elevated ambient ozone levels and increases in daily hospital admission rates, as well as mortality, has also been reported. An increased risk for asthma has been found in children who participate in multiple sports and live in communities with high ozone levels.

Ozone exposure under exercising conditions is known to increase the severity of the responses described above. Animal studies suggest that exposure to a combination of pollutants that includes ozone may be more toxic than exposure to ozone alone. Although lung volume and resistance changes observed after a single exposure diminish with repeated exposures, biochemical and cellular changes appear to persist, which can lead to subsequent lung structural changes.

Carbon Monoxide

Individuals with a deficient blood supply to the heart are the most susceptible to the adverse effects of CO exposure. The effects observed include earlier onset of chest pain with exercise, and electrocardiograph changes indicative of decreased oxygen supply to the heart. Inhaled CO has no direct toxic effect on the lungs, but exerts its effect on tissues by interfering with oxygen transport and competing with oxygen to combine with hemoglobin present in the blood to form carboxyhemoglobin (COHb). Hence, conditions with an increased demand for oxygen supply can be adversely affected by exposure to CO. Individuals most at risk include fetuses, patients with diseases involving heart and blood vessels, and patients with chronic hypoxemia (oxygen deficiency) as seen at high altitudes.

Reduction in birth weight and impaired neurobehavioral development have been observed in animals chronically exposed to CO, resulting in COHb levels similar to those observed in smokers. Recent studies have found increased risks for adverse birth outcomes with exposure to elevated CO levels; these include pre-term births and heart abnormalities.

TABLE 2-2

ATTAINMENT STATUS OF CRITERIA POLLUTANTS IN THE SOUTH COAST AIR BASIN (SCAB)

Criteria Pollutant	State Designation	Federal Designation
Ozone - 1hour standard	Nonattainment	No Standard
Ozone - 8 hour standard	Nonattainment	Extreme Nonattainment[1]
PM_{10}	Nonattainment	Serious Nonattainment
$PM_{2.5}$	Nonattainment	Nonattainment
Carbon Monoxide	Attainment	Attainment/Maintenance
Nitrogen Dioxide	Nonattainment[2]	Attainment/Maintenance
Sulfur Dioxide	Attainment	Attainment
Lead	Attainment/Nonattainment[3]	Attainment/Nonattainment[4]
All others	Attainment/Unclassified	Attainment/Unclassified

Source: California Air Resources Board 2010 (http://www.arb.ca.gov/regact/2010/area10/area10.htm, http://www.arb.ca.gov/desig/feddesig.htm)

[1] The USEPA approved redesignation from Severe 17 to Extreme Nonattainment on May 5, 2010 to be effective June 4, 2010.

[2] The SCAB was reclassified from attainment to nonattainment for nitrogen dioxide on March 25, 2010.

[3] Los Angeles County was reclassified from attainment to nonattainment for lead on March 25, 2010; the remainder of the SCAB is in attainment of the State Standard.

[4] The Los Angeles County portion of the SCAB is classified as nonattainment; the remainder of the SCAB is in attainment of the State Standard.

TABLE 2-3
PROJECT AREA AIR QUALITY MONITORING SUMMARY 2007-2009
REDLANDS (SRA 35), AND SAN BERNARDINO (SRA 34) AIR MONITORING STATION DATA[a]

POLLUTANT	STANDARD	YEAR		
		2007	2008	2009
Ozone (O_3)				
Maximum 1-Hour Concentration (ppm)		0.149	0.154	0.145
Maximum 8-Hour Concentration (ppm)		0.124	0.120	0.122
Number of Days Exceeding State 1-Hour Standard	> 0.09 ppm	54	72	62
Number of Days Exceeding State 8-Hour Standard	> 0.07 ppm	79	100	91
Number of Days Exceeding Federal 1-Hour Standard	> 0.12 ppm	7	12	1
Number of Days Exceeding Federal 8-Hour Standard	> 0.075 ppm	25	75	73
Number of Days Exceeding Health Advisory	≥ 0.15 ppm	0	1	1
Carbon Monoxide (CO)[b]				
Maximum 1-Hour Concentration (ppm)		4	2	3
Maximum 8-Hour Concentration (ppm)		2.3	1.8	1.9
Number of Days Exceeding State 1-Hour Standard	> 20 ppm	0	0	0
Number of Days Exceeding Federal / State 8-Hour Standard	> 9.0 ppm	0	0	0
Number of Days Exceeding Federal 1-Hour Standard	> 35 ppm	0	0	0
Nitrogen Dioxide (NO_2)[b]				
Maximum 1-Hour Concentration (ppm)		0.08	0.09	0.08
Annual Arithmetic Mean Concentration (ppm)		0.025	0.0217	0.0196
Number of Days Exceeding State 1-Hour Standard	> 0.18[c] ppm	0	0	0
Inhalable Particulates (PM_{10})				
Maximum 24-Hour Concentration ($\mu g/m^3$)		97	58	60
Number of Samples		60	61	52
Number of Samples Exceeding State Standard	> 50 $\mu g/m^3$	19	4	2
Number of Samples Exceeding Federal Standard	> 150 $\mu g/m^3$	0	0	0
Ultra-Fine Particulates ($PM_{2.5}$)[b]				
Maximum 24-Hour Concentration ($\mu g/m^3$)		72.1	43.5	37.9
Annual Arithmetic Mean ($\mu g/m^3$)		18.3	13.5	13
Number of Samples Exceeding Federal 24-Hour Standard	> 35[d] $\mu g/m^3$	11	3	3

[a] Redlands Monitoring Station used unless otherwise noted.

[b] San Bernardino Monitoring Station data

[c] CARB has revised the NO2 1-hour state standard from 0.25 ppm to 0.18 ppm, effective March 20, 2008.

[d] U.S. EPA has revised the federal 24-hour $PM_{2.5}$ standard from 65 $\mu g/m^3$ to 35 $\mu g/m^3$, effective December 17, 2006.

Source: South Coast AQMD (www.aqmd.gov)

Particulate Matter

A consistent correlation between elevated ambient fine particulate matter (PM10 and PM2.5) levels and an increase in mortality rates, respiratory infections, number and severity of asthma attacks and the number of hospital admissions has been observed in different parts of the United States and various areas around the world. In recent years, some studies have reported an association between long-term exposure to air pollution dominated by fine particles and increased mortality, reduction in life-span, and an increased mortality from lung cancer.

Daily fluctuations in PM2.5 concentration levels have also been related to hospital admissions for acute respiratory conditions in children, to school and kindergarten absences, to a decrease in respiratory lung volumes in normal children, and to increased medication use in children and adults with asthma. Recent studies show lung function growth in children is reduced with longterm exposure to particulate matter.

The elderly, people with pre-existing respiratory or cardiovascular disease, and children appear to be more susceptible to the effects of high levels of PM10 and PM2.5.

Nitrogen Dioxide

Population-based studies suggest that an increase in acute respiratory illness, including infections and respiratory symptoms in children (not infants), is associated with long-term exposure to NO2 at levels found in homes with gas stoves, which are higher than ambient levels found in Southern California. Increase in resistance to air flow and airway contraction is observed after short-term exposure to NO2 in healthy subjects. Larger decreases in lung functions are observed in individuals with asthma or chronic obstructive pulmonary disease (e.g., chronic bronchitis, emphysema) than in healthy individuals, indicating a greater susceptibility of these sub-groups.

In animals, exposure to levels of NO2 considerably higher than ambient concentrations results in increased susceptibility to infections, possibly due to the observed changes in cells involved in maintaining immune functions. The severity of lung tissue damage associated with high levels of ozone exposure increases when animals are exposed to a combination of ozone and NO2.

Sulfur Dioxide

A few minutes of exposure to low levels of SO2 can result in airway constriction in some asthmatics, all of whom are sensitive to its effects. In asthmatics, increase in resistance to air flow, as well as reduction in breathing capacity leading to severe breathing difficulties, are observed after acute exposure to SO2. In contrast, healthy individuals do not exhibit similar acute responses even after exposure to higher concentrations of SO2.

Animal studies suggest that despite SO2 being a respiratory irritant, it does not cause substantial lung injury at ambient concentrations. However, very high levels of exposure can cause lung edema (fluid accumulation), lung tissue damage, and sloughing off of cells lining the respiratory tract.

Some population-based studies indicate that the mortality and morbidity effects associated with fine particles show a similar association with ambient SO2 levels. In these studies, efforts to separate the effects of SO2 from those of fine particles have not been successful. It is not clear whether the two pollutants act synergistically or one pollutant alone is the predominant factor.

Lead

Fetuses, infants, and children are more sensitive than others to the adverse effects of Pb exposure. Exposure to low levels of Pb can adversely affect the development and function of the central nervous system, leading to learning disorders, distractibility, inability to follow simple commands, and lower intelligence quotient. In adults, increased Pb levels are associated with increased blood pressure.

Pb poisoning can cause anemia, lethargy, seizures, and death; although it appears that there are no direct effects of Pb on the respiratory system. Pb can be stored in the bone from early age environmental exposure, and elevated blood Pb levels can occur due to breakdown of bone tissue during pregnancy, hyperthyroidism (increased secretion of hormones from the thyroid gland) and osteoporosis (breakdown of bony tissue). Fetuses and breast-fed babies can be exposed to higher levels of Pb because of previous environmental Pb exposure of their mothers.

Odors

The science of odor as a health concern is still new. Merely identifying the hundreds of VOCs that cause odors poses a big challenge. Offensive odors can potentially affect human health in several ways. First, odorant compounds can irritate the eye, nose, and throat, which can reduce respiratory volume. Second, studies have shown that the VOCs that cause odors can stimulate sensory nerves to cause neurochemical changes that might influence health, for instance, by compromising the immune system. Finally, unpleasant odors can trigger memories or attitudes linked to unpleasant odors, causing cognitive and emotional effects such as stress.

2.7 REGULATORY BACKGROUND

2.7.1 FEDERAL REGULATIONS

The U.S. EPA is responsible for setting and enforcing the NAAQS for O_3, CO, NO_x, SO_2, PM_{10}, and lead. The U.S. EPA has jurisdiction over emissions sources that are under the authority of the federal government including aircraft, locomotives, and emissions sources outside state waters (Outer Continental Shelf). The U.S. EPA also establishes emission standards for vehicles sold in states other than California. Automobiles sold in California must meet the stricter emission requirements of the CARB.

The Federal Clean Air Act (CAA) was first enacted in 1955, and has been amended numerous times in subsequent years (1963, 1965, 1967, 1970, 1977, and 1990). The CAA establishes the federal air quality standards, the NAAQS, and specifies future dates for achieving compliance. The CAA also mandates that states submit and implement State Implementation Plans (SIPs) for local areas not meeting these standards. These plans must include pollution control measures that demonstrate how the standards will be met.

The 1990 amendments to the CAA that identify specific emission reduction goals for areas not meeting the NAAQS require a demonstration of reasonable further progress toward attainment and incorporate additional sanctions for failure to attain or to meet interim milestones. The sections of the CAA most directly applicable to the development of the Project site include Title I (Non-Attainment Provisions) and Title II (Mobile Source Provisions).

Title I provisions were established with the goal of attaining the NAAQS for the following criteria pollutants O_3, NO_2, SO_2, PM_{10}, CO, $PM_{2.5}$, and lead. The NAAQS were amended in July 1997 to include an additional standard for O_3 and to adopt a NAAQS for $PM_{2.5}$. Table 3-1 (previously presented) provides the NAAQS within the basin.

Mobile source emissions are regulated in accordance with Title II provisions. These provisions require the use of cleaner burning gasoline and other cleaner burning fuels such as methanol and natural gas. Automobile manufacturers are also required to reduce tailpipe emissions of hydrocarbons and nitrogen oxides (NO_x). NO_x is a collective term that includes all forms of nitrogen oxides (NO, NO_2, NO_3) which are emitted as byproducts of the combustion process.

2.7.2 CALIFORNIA REGULATIONS

The CARB, which became part of the California EPA in 1991, is responsible for ensuring implementation of the California Clean Air Act (AB 2595), responding to the federal CAA, and for regulating emissions from consumer products and motor vehicles. The California CAA mandates achievement of the maximum degree of emissions reductions possible from vehicular and other mobile sources in order to attain the state ambient air quality standards by the earliest practical date. The CARB established the CAAQS for all pollutants for which the federal government has NAAQS and, in addition, establishes standards for sulfates, visibility, hydrogen sulfide, and vinyl chloride. However at this time, hydrogen sulfide and vinyl chloride are not measured at any monitoring stations in the SCAB because they are not considered to be a regional air quality problem. Generally, the CAAQS are more stringent than the NAAQS.

Local air quality management districts, such as the SCAQMD, regulate air emissions from commercial and light industrial facilities. All air pollution control districts have been formally designated as attainment or non-attainment for each CAAQS.

Serious non-attainment areas are required to prepare air quality management plans that include specified emission reduction strategies in an effort to meet clean air goals. These plans are required to include:

- Application of Best Available Retrofit Control Technology to existing sources;
- Developing control programs for area sources (e.g., architectural coatings and solvents) and indirect sources (e.g. motor vehicle use generated by residential and commercial development);
- A District permitting system designed to allow no net increase in emissions from any new or modified permitted sources of emissions;
- Implementing reasonably available transportation control measures and assuring a substantial reduction in growth rate of vehicle trips and miles traveled;
- Significant use of low emissions vehicles by fleet operators;
- Sufficient control strategies to achieve a five percent or more annual reduction in emissions or 15 percent or more in a period of three years for ROGs, NO_x, CO and PM_{10}. However, air basins may use alternative emission reduction strategy that achieves a reduction of less than five percent per year under certain circumstances.

2.7.3 AIR QUALITY MANAGEMENT PLANNING

Currently, the NAAQS and CAAQS are exceeded in most parts of the SCAB. In response, the SCAQMD has adopted a series of Air Quality Management Plans (AQMPs) to meet the state and federal ambient air quality standards. AQMPs are updated regularly in order to more effectively reduce emissions, accommodate growth, and to minimize any negative fiscal impacts of air pollution control on the economy. A detailed discussion on the AQMP and Project consistency with the AQMP is provided in Section 3.8.

2.8 EXISTING PROJECT SITE AIR QUALITY CONDITIONS

The Project site is currently vacant, and therefore does not generate quantifiable emissions. Existing air quality conditions at the Project site would generally reflect ambient monitored conditions as presented previously at Table 2-3.

3.0 PROJECT AIR QUALITY IMPACT

3.1 INTRODUCTION

The Project has been evaluated to determine if it will violate an air quality standard or contribute to an existing or projected air quality violation. Additionally, the proposed Project has been evaluated to determine if it will result in a cumulatively considerable net increase of a criteria pollutant for which the SCAB is non-attainment under an applicable federal or state ambient air quality standard. The significance of these potential impacts is described in the following section.

3.2 STANDARDS OF SIGNIFICANCE

The criteria used to determine the significance of potential Project-related air quality impacts are taken from the Initial Study Checklist in Appendix G of the State CEQA Guidelines (14 California Code of Regulations §§15000, et seq.). Based on these thresholds, a project would result in a significant impact related to air quality if it would:

(1) Conflict with or obstruct implementation of the applicable air quality plan.

(2) Violate any air quality standard or contribute to an existing or projected air quality violation.

(3) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is in non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions, which exceed quantitative thresholds for ozone precursors).

(4) Expose sensitive receptors to substantial pollutant concentrations.

(5) Create objectionable odors affecting a substantial number of people.

Within the context of the above threshold considerations, based on the SCAQMD's CEQA Air Quality Handbook (1993), project impacts would be significant if they exceed the following California standards for localized CO concentrations:

- 1-hour CO standard of 20.0 parts per million (ppm)
- 8-hour CO standard of 9.0 ppm.

The SCAQMD has also developed regional and localized significance thresholds for other regulated pollutants, as summarized at Table 3-1. The SCAQMD's CEQA Air Quality Significance Thresholds

(March 2009) indicate that any projects in the SCAB with daily emissions that exceed any of the indicated thresholds should be considered as having an individually and cumulatively significant air quality impact.

TABLE 3-1

MAXIMUM DAILY EMISSIONS THRESHOLDS (REGIONAL THRESHOLDS)		
Pollutant	**Construction**	**Operational**
NO_x	100 lbs/day	55 lbs/day
VOC	75 lbs/day	55 lbs/day
PM_{10}	150 lbs/day	150 lbs/day
$PM_{2.5}$	55 lbs/day	55 lbs/day
SO_x	150 lbs/day	150 lbs/day
CO	550 lbs/day	550 lbs/day
Lead	3 lbs/day	3 lbs/day

3.3 PROJECT-RELATED SOURCES OF POTENTIAL IMPACT

Land uses such as the proposed Project impact air quality through emissions associated with short-term construction, and long-term operational activity.

On February 3, 2011, the SCAQMD released the California Emissions Estimator Model™ (CalEEMod™). The purpose of this model is to more accurately calculate criteria pollutant (NOx, VOC, PM10, PM2.5, SOx, and CO) and greenhouse gas (GHG) emissions from direct and indirect sources and quantify applicable air quality and GHG reductions achieved from mitigation measures. As such, the latest version of CalEEMod™ has been used for this Project to determine construction and operational air quality impacts. Output from the model runs for both construction and operational activity are provided in Appendix "A".

3.4 CONSTRUCTION EMISSIONS

Construction activities associated with the proposed project will result in emissions of CO, VOCs, NO_x, SO_x, PM_{10}, and $PM_{2.5}$. Construction related emissions are expected from the following construction activities:

- Site Preparation
- Grading
- Trenching
- Paving
- Building Construction
- Architectural Coatings (Painting)

- Construction Workers Commuting

CalEEMod™ model defaults for duration of specific construction activity and the number and type of equipment that would be used were utilized. Please refer to specific detailed modeling inputs/outputs contained in Appendix "A" of this Analysis. A detailed summary of construction equipment assumptions by phase is provided on Table 3-2.

Dust is typically a major concern during rough grading activities. Because such emissions are not amenable to collection and discharge through a controlled source, they are called "fugitive emissions". Emissions rates vary as a function of many parameters (soil silt, soil moisture, wind speed, area disturbed, number of vehicles, depth of disturbance or excavation, etc.). The CalEEMod™ model was utilized to calculate fugitive dust emissions resulting from this phase of activity. Additionally, based on discussion with the project team it is anticipated that the site will balance, and no import or export of soil will be required.

Construction emissions for construction worker vehicles traveling to and from the project site, as well as vendor trips (construction materials delivered to the project site) were estimated using the CalEEMod™ model.

3.4.1 CONSTRUCTION EMISSIONS SUMMARY

Assuming the scenario for construction activity outlined in Section 3.4, the estimated maximum daily construction emissions are summarized on Table 3-3. Detailed construction model outputs are presented in Appendix "A". Under the assumed scenarios, emissions resulting from Project construction will not exceed criteria pollutant thresholds established by the SCAQMD (before mitigation).

TABLE 3-2 CONSTRUCTION EQUIPMENT ASSUMPTIONS

Operation	Scraper	Grader	Rubber Tired Dozer	Tractor / Loader / Backhoe	Pavers	Paving Equipment	Rollers	Forklift	Cranes	Air Compressor	Generator Set	Welder
Site Preparation			3	4								
Grading	2	1	1	2								
Building Construction				3				3	1		1	1
Paving					2	2	2					
Painting										1		

TABLE 3-3 EMISSIONS SUMMARY OF OVERALL CONSTRUCTION (MAXIMUM DAILY EMISSIONS) (WITHOUT MITIGATION)

Year	VOC	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$
2012	37.77	88.65	65.31	0.12	22.62	14.22
2013	36.95	52.57	61.48	0.12	10.02	3.42
Maximum Daily Emissions	**37.77**	**88.65**	**65.31**	**0.12**	**22.62**	**14.22**
SCAQMD Regional Threshold	75	100	550	150	150	55
Significant?	**NO**	**NO**	**NO**	**NO**	**NO**	**NO**

Note: Please refer to Appendix A for the CalEEMod™ output files and additional hand calculations for the estimated emissions.

3.5 OPERATIONAL EMISSIONS

Operational activities associated with the proposed Project will result in emissions of ROG, NO_X, CO, SO_X, PM_{10}, and $PM_{2.5}$. Operational emissions would be expected from the following primary sources:

- Vehicles
- Combustion Emissions Associated with Natural Gas and Electricity
- Fugitive dust related to vehicular travel
- Landscape maintenance equipment
- Emissions from consumer products
- Architectural coatings

3.5.1 VEHICLES

Project operational (vehicular) impacts are dependent on both overall daily vehicle trip generation and the effect of the project on peak hour traffic volumes and traffic operations in the vicinity of the project. The project related operational air quality impact centers primarily on the vehicle trips generated by the project. Trip characteristics available from the report, University Crossings Apartments Traffic Impact Analysis (Urban Crossroads, Inc., March 2012) were utilized in this analysis. The estimated emissions resulting from vehicle operations are summarized in Table 3-4.

3.5.2 COMBUSTION EMISSIONS ASSOCIATED WITH NATURAL GAS AND ELECTRICITY

Electricity and natural gas are used by almost every project. Criteria pollutant emissions are emitted through the generation of electricity and consumption of natural gas. However, because electrical generating facilities for the Project area are located either outside the region (state) or offset through the use of pollution credits (RECLAIM) for generation within the SCAB, criteria pollutant emissions from offsite generation of electricity is generally excluded from the evaluation of significance and only natural gas use is considered. The emissions associated with natural gas use were calculated using the CalEEMod™ model. The estimated combustion emissions are provided in Table 3-4 (presented later in this report.) Detailed emission calculations are provided in Appendix "A".

3.5.3 FUGITIVE DUST RELATED TO VEHICULAR TRAVEL

Vehicles traveling on paved roads would be a source of fugitive emissions due to the generation of road dust. The emissions estimates for travel on paved roads were calculated using the CalEEMod™ model. The estimated PM_{10} and $PM_{2.5}$ emissions from vehicles for fugitive dust are summarized in Table 3-4 (presented later in this report.) Detailed emission calculations are provided in Appendix "A".

3.5.4 LANDSCAPE MAINTENANCE EQUIPMENT

Landscape maintenance equipment would generate emissions from fuel combustion and evaporation of unburned fuel. Equipment in this category would include lawnmowers, shedders/grinders, blowers, trimmers, chain saws, and hedge trimmers used to maintain the landscaping of the Project. The emissions associated with landscape maintenance equipment were calculated based on assumptions provided in the CalEEMod™ model. The estimated landscape maintenance emissions are provided in Table 3-4 (presented later in this report.) Detailed emission calculations are provided in Appendix “A”.

3.5.5 CONSUMER PRODUCTS

Consumer projects include, but are not limited to detergents, cleaning compounds, polishes, personal care products, and lawn and garden products. Many of these products contain organic compounds which when released in the atmosphere can react to form ozone and other photochemically reactive pollutants. The estimated emissions from consumer products are provided in Table 3-4 (presented later in this report.) Detailed emission calculations are provided in Appendix “A”.

3.5.6 ARCHITECTURAL COATINGS

Over a period of time the buildings that are part of this Project will be subject to emissions resulting from the evaporation of solvents contained in paints, varnishes, primers, and other surface coatings as part of Project maintenance. The emissions associated with architectural coatings were calculated using the CalEEMod™ model. The estimated architectural coating emissions are provided in Table 3-4 (presented later in this report.) Detailed emission calculations are provided in Appendix “A”.

3.5.7 OPERATIONAL EMISSIONS SUMMARY

The Project-related operations emissions burdens, along with a comparison of SCAQMD recommended significance thresholds, are shown on Table 3-4.

Detailed construction model outputs are presented in Appendix “A”. Results of the analysis indicate that operation of the Project will will not exceed criteria pollutant thresholds established by the SCAQMD. Thus no mitigation is required.

TABLE 3-4

SUMMARY OF PEAK OPERATIONAL EMISSIONS (SUMMER)
(POUNDS PER DAY) (WITHOUT MITIGATION)

Operational Activities	VOC	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$
Area Source Emissions [a]	14.50	0.32	27.46	0	0.15	0.15
Energy Source Emissions [b]	0.14	1.24	0.53	0.01	0.10	0.10
Mobile Emissions [c]	14.08	38.42	137.30	0.24	26.87	2.41
Maximum Daily Emissions	**28.72**	**39.98**	**165.29**	**0.22**	**27.12**	**2.66**
SCAQMD Regional Threshold	55	55	550	150	150	55
Significant?	**NO**	**NO**	**NO**	**NO**	**NO**	**NO**

SUMMARY OF PEAK OPERATIONAL EMISSIONS (WINTER)
(POUNDS PER DAY) (WITHOUT MITIGATION)

Operational Activities	VOC	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$
Area Source Emissions [a]	14.50	0.32	27.46	0	0.15	0.15
Energy Source Emissions [b]	0.14	1.24	0.53	0.01	0.10	0.10
Mobile Emissions [c]	13.87	40.60	126.69	0.21	26.89	2.43
Maximum Daily Emissions	**28.51**	**42.16**	**154.68**	**0.22**	**27.14**	**2.68**
SCAQMD Regional Threshold	55	55	550	150	150	55
Significant?	**NO**	**NO**	**NO**	**NO**	**NO**	**NO**

Note: Please refer to Appendix A for the CalEEMod™ output files and additional supporting information for the estimated emissions.

[a] Includes emissions of landscape maintenance equipment and architectural coatings emissions

[b] Includes emissions of natural gas consumption

[c] Includes emissions of vehicle emissions and fugitive dust related to vehicular travel

3.6 LOCALIZED SIGNIFICANCE – CONSTRUCTION ACTIVITY

The analysis makes use of methodology included in the SCAQMD *Final Localized Significance Threshold Methodology* (Methodology) (SCAQMD, June 2003). As previously discussed, the SCAQMD has established that impacts to air quality are significant if there is a potential to contribute or cause localized exceedances of the federal and/or state ambient air quality standards (NAAQS/CAAQS). Collectively, these are referred to as Localized Significance Thresholds (LSTs).

The significance of localized emissions impacts depends on whether ambient levels in the vicinity of the project are above or below State standards. In the case of CO and NO_2, if ambient levels are below the standards, a project is considered to have a significant impact if project emissions result in an exceedance of one or more of these standards. If ambient levels already exceed a state or federal standard, then project emissions are considered significant if they increase ambient concentrations by a measurable amount. This would apply to PM_{10} and $PM_{2.5}$; both of which are non-attainment pollutants.

The SCAQMD established LSTs in response to the SCAQMD Governing Board's Environmental Justice 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 federal or state ambient air quality standard at the nearest residence or sensitive receptor. The SCAQMD states that lead agencies can use the LSTs as another indicator of significance in its air quality impact analyses.

LSTs were developed in response to environmental justice and health concerns raised by the public regarding exposure of individuals to criteria pollutants in local communities. To address the issue of localized significance, the SCAQMD adopted LSTs that show whether a project would cause or contribute to localized air quality impacts and thereby cause or contribute to potential localized adverse health effects. The analysis makes use of methodology included in the SCAQMD *Final Localized Significance Threshold Methodology* (Methodology) (SCAQMD, June 2003).

The SCAQMD issued guidance on applying CalEEMod™ to LSTs. Since CalEEMod™ calculates construction emissions based on the number of equipment hours and the maximum daily soil disturbance activity possible for each piece of equipment, the following table should be used to determine the maximum daily disturbed-acreage for comparison to LSTs.

Equipment Type	Acres/8-hr-day
Crawler Tractors	0.5
Graders	0.5
Rubber Tired Dozers	0.5
Scrapers	1

Based on this table, the proposed Project will result in a maximum of 4 acres would be disturbed during the peak construction activity (grading) (2 Scrapers x 1 + 1 Rubber Tired Dozers x 0.5 + 1 Grader x 0.5 + 2 Tractors/Loaders/Backhoes x 0.5 = 4 acres disturbed).

For this Project, the appropriate Source Receptor Area (SRA) for the LST is the Redlands area (SRA 35). LSTs apply to carbon monoxide (CO), nitrogen dioxide (NO_2), particulate matter ≤ 10 microns (PM_{10}), and particulate matter ≤ 2.5 microns ($PM_{2.5}$). The SCAQMD produced look-up tables for projects that disturb less than or equal to 5 acres in size. Larger Projects are advised to rely on dispersion modeling to determine localized pollutant concentrations. Since the Project will not disturb more than 5 acres in size, the SCAQMD's look-up tables were utilized to determine project impacts.

EMISSIONS CONSIDERED

SCAQMD's Methodology clearly states that "off-site mobile emissions from the Project should NOT be included in the emissions compared to LSTs." Therefore, for purposes of the construction LST analysis only emissions included in the CalEEMod "on-site" emissions output were considered.

RECEPTORS

The nearest existing sensitive receptor to the development boundaries is located further than 50 meters from the Project boundary. As a conservative measure, the SCAQMD's look-up table thresholds for a 4-acre project at 50 meters were considered in this analysis.

IMPACTS WITHOUT MITIGATION

Without mitigation, emissions during construction activity will exceed the SCAQMD's localized significance thresholds for emissions of PM10 and PM2.5. Table 3-5 identifies the unmitigated localized impacts at the nearest receptor location in the vicinity of the Project. It should be noted that the impacts without mitigation do not take credit for reductions achieved through best management practices (BMPs) and standard regulatory requirements (SCAQMD's Rule 403). As discussed in Section's 1.0 and 4.0, although SCAQMD's Rule 403 is a project requirement, in order to facilitate monitoring and compliance, Rule 403 requirements are restated as recommended mitigation measures (MM AQ1).

IMPACTS WITH MITIGATION

After the implementation of applicable mitigation measures (MM AQ1), emissions during construction activity will not exceed the SCAQMD's localized significance threshold for any of the applicable emissions. Table 3-6 identifies the mitigated localized impacts at the nearest receptor location in the vicinity of the Project.

TABLE 3-5

LOCALIZED SIGNIFICANCE SUMMARY CONSTRUCTION (WITHOUT MITIGATION)

Activity	NO_x	CO	PM_{10}	$PM_{2.5}$
2012	88.65	65.31	22.62	14.22
2013	52.57	61.48	10.02	3.42
Maximum Daily Emissions	**88.65**	**65.31**	**22.62**	**14.22**
SCAQMD Localized Threshold	268	2,497	35	10
Significant?	**NO**	**NO**	**YES**	**YES**

NOTE: PLEASE REFER TO ATTACHMENT "A" FOR CALEEMOD™ OUTPUT FILES FOR THE ESTIMATED EMISSIONS.

TABLE 3-6

LOCALIZED SIGNIFICANCE SUMMARY CONSTRUCTION (WITH MITIGATION)

Activity	NO_x	CO	PM_{10}	$PM_{2.5}$
2012	88.65	65.31	11.60	8.16
2013	52.57	61.48	10.02	3.42
Maximum Daily Emissions	**88.65**	**65.31**	**11.60**	**8.16**
SCAQMD Localized Threshold	268	2,497	35	10
Significant?	**NO**	**NO**	**NO**	**NO**

NOTE: PLEASE REFER TO ATTACHMENT "A" FOR CALEEMOD™ OUTPUT FILES FOR THE ESTIMATED EMISSIONS.

3.7 CO "HOT SPOT" ANALYSIS

A carbon monoxide (CO) "hot spots" analysis is not needed to determine whether the change in the level of service (LOS) of an intersection due to the Project would have the potential to result in exceedances of the California or National Ambient Air Quality Standards (CAAQS or NAAQS).

It has long been recognized that CO exceedances are caused by vehicular emissions, primarily when idling at intersections. Vehicle emissions standards have become increasingly more stringent in the last twenty years. Currently, the CO standard in California is a maximum of 3.4 grams/mile for passenger cars (there are requirements for certain vehicles that are more stringent). With the turnover of older vehicles, introduction of cleaner fuels and implementation of control technology on industrial facilities, CO concentrations in the Project vicinity have steadily declined, as shown based on historical data presented on Table 2-3.

Accordingly, with the steadily decreasing CO emissions from vehicles, even very busy intersections do not result in exceedances of the CO standard.

The analysis prepared for CO attainment in the SCAB by the SCAQMD can be used to assist in evaluating the potential for CO exceedances in the South Coast Air Basin. CO attainment was thoroughly analyzed as part of the SCAQMD's 2003 Air Quality Management Plan (2003 AQMP) and the 1992 Federal Attainment Plan for Carbon Monoxide (1992 CO Plan). As discussed in the 1992 CO Plan, peak carbon monoxide concentrations in the South Coast Air Basin are due to unusual meteorological and topographical conditions, and not due to the impact of particular intersections. Considering the region's unique meteorological conditions and the increasingly stringent CO emissions standards, CO modeling was performed as part of 1992 CO Plan and subsequent plan updates and air quality management plans.

In the 1992 CO Plan, a CO hot spot analysis was conducted for four busy intersections in Los Angeles at the peak morning and afternoon time periods. The intersections evaluated included: Long Beach Blvd. and Imperial Highway (Lynwood); Wilshire Blvd. and Veteran Ave. (Westwood); Sunset Blvd. and Highland Ave. (Hollywood); and La Cienega Blvd. and Century Blvd. (Inglewood). These analyses did not predict a violation of CO standards. The busiest intersection evaluated was that at Wilshire Blvd. and Veteran Ave., which has a daily traffic volume of approximately 100,000 vehicles per day. The Los Angeles County Metropolitan Transportation Authority evaluated the LOS in the vicinity of the Wilshire Blvd. /Veteran Ave. intersection and found it to be Level E at peak morning traffic and Level F at peak afternoon traffic.

At buildout of the Project, the highest number of average daily trips would be 45,800 for Alabama St. between the I-10 Freeway and Redlands Blvd., which is lower than the values studied in the 1992 CO Plan. Consequently at buildout of the Project, according to the Traffic Impact Analysis, none of the intersections in the vicinity of the Proposed Project Site would have peak hourly traffic volumes exceeding those at the intersections modeled in the 2003 AQMP, nor would there be any reason unique to project area meteorology to conclude that this intersection would yield higher CO concentrations if modeled in detail. As a result, the South Coast Air Basin has been designated as attainment for CO since 2007 (SCAQMD 2007) and even very busy intersections do not result in exceedances of the CO standard.

3.8 AIR QUALITY MANAGEMENT PLANNING

The Project site is located within the SCAB, which is characterized by relatively poor air quality. The SCAQMD has jurisdiction over an approximately 12,000 square-mile area consisting of the four-county Basin and the Los Angeles County and Riverside County portions of what use to be referred to as the Southeast Desert Air Basin. In these areas, the SCAQMD is principally responsible for air pollution control, and works directly with the Southern California Association of Governments (SCAG), county transportation commissions, local governments, as well as state and federal agencies to reduce emissions from stationary, mobile, and indirect sources to meet state and federal ambient air quality standards.

Currently, these state and federal air quality standards are exceeded in most parts of the Basin. In response, the SCAQMD has adopted a series of Air Quality Management Plans (AQMPs) to meet the state and federal ambient air quality standards. AQMPs are updated regularly in order to more effectively reduce emissions, accommodate growth, and to minimize any negative fiscal impacts of air pollution control on the economy.

SCAQMD 2007 AQMP

The SCAQMD has published the Draft Final 2007 AQMP, which was adopted by the SCAQMD Governing Board on June 1, 2007. In September 2007, the CARB Board adopted the SCAQMD 2007 AQMP as part of the SIP. The purpose of the 2007 AQMP for the SCAB (and those portions of the Salton Sea Air Basin under the SCAQMD's jurisdiction) is to set forth a comprehensive program that will lead these areas into compliance with federal and state air quality planning requirements for ozone and PM2.5. On September 27, 2007, the CARB Board adopted the State Strategy for the 2007 State Implementation Plan and the 2007 South Coast Air Quality Management Plan as part of the (SIP). Additionally, the 2007 AQMP has been submitted to the U.S. EPA for approval, no timeline on the approval is available at this time.

As part of the 2007 AQMP, the SCAQMD requested, and the U.S. EPA's subsequently approved a "bump-up" to the "extreme" nonattainment classification for ozone in the SCAB, which extends the attainment date to 2024 and allow for the attainment demonstration to rely on emission reductions from measures that anticipate the development of new technologies or improvement of existing control technologies. Although $PM_{2.5}$ plans for nonattainment areas were due in April 2008, the 2007 AQMP also focuses on attainment strategies for the $PM_{2.5}$ standard through stricter control of sulfur oxides, directly-emitted $PM_{2.5}$, NO_X, and VOCs. The need to commence $PM_{2.5}$ control strategies before April 2008 is due to the attainment date for $PM_{2.5}$ (2015) being much earlier than that for ozone (2021 for the current designation of severe-17 or 2024 for the extreme designation). However, it should be noted that the PM2.5 plans are still in the process of being submitted. Control measures and strategies for $PM_{2.5}$ will also help control ozone generation in the region because $PM_{2.5}$ and ozone share similar precursors (e.g., NO_X). The SCAQMD has integrated $PM_{2.5}$ and ozone reduction control measures and strategies in the 2007 AQMP. In addition, the AQMP focuses on reducing VOC emissions, which have not been reduced at the same rate as NO_X emissions in the past. Hence, the SCAB has not achieved the reductions in ozone as were expected in previous plans.

The 2007 AQMP was based on assumptions provided by both CARB and SCAG in the new EMFAC2007 model for the most recent motor vehicle and demographics information, respectively. The air quality levels projected in the 2007 AQMP are based on several assumptions. For example, the 2007 AQMP has assumed that development associated with general plans, specific plans, residential projects, and wastewater facilities will be constructed in accordance with population growth projections identified by SCAG in its 2004 RTP. The 2007 AQMP also has assumed that such development projects will implement strategies to reduce emissions generated during the construction and operational phases of development. The Project's consistency with the 2007 AQMP is discussed as follows:

Criteria for determining consistency with the AQMP are defined in Chapter 12, Section 12.2 and Section 12.3 of the SCAQMD's CEQA Air Quality Handbook (1993). These indicators are discussed below:

- Consistency Criterion No. 1: The proposed 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 the timely attainment of air quality standards or the interim emissions reductions specified in the AQMP.

The violations that Consistency Criterion No. 1 refers to are the CAAQS and NAAQS. As evaluated as part of the Project LST analysis (previously presented), the Project will not exceed the short-term construction standards for localized emissions (after mitigation) and a less than significant impact is expected.

Additionally, operational emissions will not be generated in excess of SCAQMD's regional threshold criteria. On the basis of the preceding discussion, the Project is determined to be consistent with the first criterion.

- Consistency Criterion No. 2: The proposed project will not exceed the assumptions in the AQMP in 2011 or increments based on the years of project build-out phase.

As previously discussed, the Project will not exceed any applicable numeric thresholds established by the SCAQMD on a local or regional level. Additionally, the Project provides residential land use in close proximity to existing commercial development and further promotes a live-work atmosphere which will reduce trips and vehicle miles traveled.

Since the Project does satisfies both of the two aforementioned criterion for determining consistency, the Project is deemed consistent with the AQMP and a less than significant impact is expected.

3.9 POTENTIAL IMPACTS TO SENSITIVE RECEPTORS

The potential impact of Project-generated air pollutant emissions at sensitive receptors has also been considered. Sensitive receptors can include uses such as long term health care facilities, rehabilitation centers, and retirement homes. Residences, schools, playgrounds, child care centers, and athletic facilities can also be considered as sensitive receptors.

Potential sensitive receptors in the Project vicinity include existing residences and schools that may be located in close proximity to the Project site.

As discussed in the LST analysis previously presented in this report, for conservative analysis purposes, sensitive receptors were placed at a distance of 50 meters from the Project boundary. Results of the LST analysis indicate that the proposed Project will not exceed the SCAQMD localized significance thresholds during construction activity (after mitigation). Therefore sensitive receptors would not be subject to a significant air quality impact during Project construction.

The proposed Project would not result in a significant CO "hotspot" as a result of Project related traffic during ongoing operations, thus a less than significant impact to sensitive receptors during operational activity is expected.

3.10 ODORS

The potential for the Project to generate objectionable odors has also been considered. Land uses generally associated with odor complaints include:

- Agricultural uses (livestock and farming)
- Wastewater treatment plants
- Food processing plants
- Chemical plants
- Composting operations
- Refineries
- Landfills
- Dairies
- Fiberglass molding facilities

The Project does not contain land uses typically associated with emitting objectionable odors. Potential odor sources associated with the proposed Project may result from construction equipment exhaust and the application of asphalt and architectural coatings during construction activities, and the temporary storage of typical solid waste (refuse) associated with the proposed Project's (long-term operational) uses. Standard construction requirements would minimize odor impacts resulting from construction activity. It should be noted that any construction odor emissions generated would be temporary, short-term, and intermittent in nature and would cease upon completion of the respective phase of construction activity and is thus considered less than significant. It is expected that Project-generated refuse would be stored in covered containers and removed at regular intervals in compliance with the County's solid waste regulations. The proposed Project would also be required to comply with SCAQMD Rule 402 to prevent occurrences of public nuisances. Therefore, odors associated with the proposed Project construction and operations would be less than significant and no mitigation is required.

3.11 CUMULATIVE IMPACTS

The Project area is designated as an extreme non-attainment area for ozone, and a non-attainment area for PM10 and PM2.5. Germane to this non-attainment status, the Project-specific evaluation of emissions presented in the preceding analysis demonstrates that the Project will not result in exceedances of any applicable thresholds which are designed to assist the region in attaining the applicable state and national ambient air quality standards. The Project would comply with SCAQMD's Rule 403 (fugitive dust control) during construction, as well as all other adopted AQMP emissions control measures. Per SCAQMD rule and mandates, as well as the CEQA requirement that significant impacts be mitigated to the extent feasible, these same requirements would also be imposed on all projects Basin-wide, which would include all related projects. As such, cumulative impacts with respect to criteria pollutant emissions would be less than significant.

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4.0 REGULATORY REQUIREMENTS AND MITIGATION MEASURES

4.1 STANDARD REGULATORY REQUIREMENTS/BEST AVAILABLE CONTROL MEASURES (BACMS)

SCAQMD Rules that are currently applicable during construction activity for this Project include but are not limited to: Rule 1113 (Architectural Coatings); Rule 431.2 (Low Sulfur Fuel); Rule 403 (Fugitive Dust); and Rule 1186 / 1186.1 (Street Sweepers). In order to facilitate monitoring and compliance, applicable SCAQMD regulatory requirements are summarized below, and are restated as recommended mitigation measures (MM AQ-#).

MM AQ-1

The following measures are recommended to be incorporated into Project plans and specifications as implementation of Rule 403:

- All clearing, grading, earth-moving, or excavation activities shall cease when winds exceed 25 mph per SCAQMD guidelines in order to limit fugitive dust emissions.

- The contractor shall ensure that all disturbed unpaved roads and disturbed areas within the Project are watered at least three times daily during dry weather. Watering, with complete coverage of disturbed areas, shall occur at least three times a day, preferably in the mid-morning, afternoon, and after work is done for the day. As shown in Table XI-A, located in Appendix "B", implementation of this measure is estimated to reduce PM_{10} and $PM_{2.5}$ fugitive dust emissions by approximately 61%.

- The contractor shall ensure that traffic speeds on unpaved roads and Project site areas are reduced to 15 miles per hour or less to reduce PM10 and PM2.5 fugitive dust haul road emissions by approximately 44%.

Additional regulatory requirements that are in effect during Project construction include the following:

MM AQ-2

The California Air Resources Board, in Title 13, Chapter 10, Section 2485, Division 3 of the of the California Code of Regulations, imposes a requirement that heavy duty trucks accessing the site shall not idle for greater than five minutes at any location. This measure is intended to apply to construction traffic. Prior to issuance of a grading permit, the grading plans shall reference that a sign shall be posted on-site stating that construction workers shall not idle diesel engines in excess of five minutes.

4.2 CONSTRUCTION ACTIVITY RECOMMENDED MITIGATION MEASURES

Since the proposed project will not result in a significant regional or localized air quality impact during construction activity after the implementation of the above-cited BACMs, additional mitigation is not required.

4.3 OPERATIONAL ACTIVITY RECOMMENDED MITIGATION MEASURES

Since the proposed project will not result in a significant regional or localized air quality impact during operational activity, mitigation is not required.

5.0 REFERENCES

1. California Air Resources Board, 2007. *California Air Resources Board Almanac.*

2. California Air Resources Board, 2007. *EMFAC 2007.*

3. South Coast Air Quality Management District (SCAQMD), 1993. *CEQA Air Quality Handbook.*

4. South Coast Air Quality Management District (SCAQMD), 2011. *California Emissions Estimator Model (CalEEMod™).*

5. South Coast Air Quality Management District (SCAQMD), March 2009. *CEQA Air Quality Significance Thresholds.*

6. South Coast Air Quality Management District (SCAQMD), 2003. *Final Localized Significance Threshold Methodology.*

7. Urban Crossroads, Inc., 2012. *University Crossings Apartments Traffic Impact Analysis.*

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APPENDIX A

CalEEMod™ Input/Output
Construction and Operational Emissions

University Crossings Apartments
San Bernardino-South Coast County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric
Parking Lot	627	Space
Apartments Mid Rise	321	Dwelling Unit

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Utility Company**	Southern California Edison
Climate Zone	10	**Precipitation Freq (Days)**	32		

1.3 User Entered Comments

Project Characteristics -

Land Use - 12 acres total lot acreage

Construction Phase - Building Construction/Architectural Coating overlap

Off-road Equipment -

Vehicle Trips - ts

Construction Off-road Equipment Mitigation -

Mobile Land Use Mitigation -

Area Mitigation -

Energy Mitigation -

Water Mitigation -

Woodstoves - No Woodstoves, Hearth/Fireplace

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2012	37.77	88.65	65.31	0.12	18.34	4.28	22.62	9.94	4.28	14.22	0.00	11,404.31	0.00	0.95	0.00	11,424.22
2013	36.95	52.57	61.48	0.12	6.88	3.14	10.02	0.28	3.14	3.42	0.00	11,296.86	0.00	0.82	0.00	11,314.15
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

2.1 Overall Construction (Maximum Daily Emission)

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2012	37.77	88.65	65.31	0.12	7.32	4.28	11.60	3.88	4.28	8.16	0.00	11,404.31	0.00	0.95	0.00	11,424.22
2013	36.95	52.57	61.48	0.12	6.88	3.14	10.02	0.28	3.14	3.42	0.00	11,296.86	0.00	0.82	0.00	11,314.15
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

2.2 Overall Operational

<u>Unmitigated Operational</u>

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	14.50	0.32	27.46	0.00		0.00	0.15		0.00	0.15	0.00	48.27		0.05	0.00	49.35
Energy	0.14	1.24	0.53	0.01		0.00	0.10		0.00	0.10		1,577.83		0.03	0.03	1,587.43
Mobile	14.08	38.42	137.30	0.24	25.35	1.52	26.87	0.89	1.52	2.41		24,128.89		0.91		24,148.00
Total	**28.72**	**39.98**	**165.29**	**0.25**	**25.35**	**1.52**	**27.12**	**0.89**	**1.52**	**2.66**	**0.00**	**25,754.99**		**0.99**	**0.03**	**25,784.78**

<u>Mitigated Operational</u>

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	14.50	0.32	27.46	0.00		0.00	0.15		0.00	0.15	0.00	48.27		0.05	0.00	49.35
Energy	0.12	1.02	0.43	0.01		0.00	0.08		0.00	0.08		1,303.15		0.02	0.02	1,311.08
Mobile	12.09	31.76	112.49	0.19	19.96	1.21	21.18	0.70	1.21	1.91		19,139.50		0.74		19,154.94
Total	**26.71**	**33.10**	**140.38**	**0.20**	**19.96**	**1.21**	**21.41**	**0.70**	**1.21**	**2.14**	**0.00**	**20,490.92**		**0.81**	**0.02**	**20,515.37**

3.0 Construction Detail

3.1 Mitigation Measures Construction

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

3.2 Site Preparation - 2012

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					18.07	0.00	18.07	9.93	0.00	9.93						0.00
Off-Road	10.43	84.72	47.82	0.07		4.27	4.27		4.27	4.27		7,997.69		0.93		8,017.28
Total	**10.43**	**84.72**	**47.82**	**0.07**	**18.07**	**4.27**	**22.34**	**9.93**	**4.27**	**14.20**		**7,997.69**		**0.93**		**8,017.28**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.13	0.13	1.47	0.00	0.28	0.01	0.28	0.01	0.01	0.02		224.51		0.01		224.79
Total	**0.13**	**0.13**	**1.47**	**0.00**	**0.28**	**0.01**	**0.28**	**0.01**	**0.01**	**0.02**		**224.51**		**0.01**		**224.79**

3.2 Site Preparation - 2012

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					7.05	0.00	7.05	3.87	0.00	3.87						0.00
Off-Road	10.43	84.72	47.82	0.07		4.27	4.27		4.27	4.27	0.00	7,997.69		0.93		8,017.28
Total	**10.43**	**84.72**	**47.82**	**0.07**	**7.05**	**4.27**	**11.32**	**3.87**	**4.27**	**8.14**	**0.00**	**7,997.69**		**0.93**		**8,017.28**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.13	0.13	1.47	0.00	0.28	0.01	0.28	0.01	0.01	0.02		224.51		0.01		224.79
Total	**0.13**	**0.13**	**1.47**	**0.00**	**0.28**	**0.01**	**0.28**	**0.01**	**0.01**	**0.02**		**224.51**		**0.01**		**224.79**

3.3 Grading - 2012

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					8.67	0.00	8.67	3.31	0.00	3.31						0.00
Off-Road	10.44	88.54	44.47	0.08		4.10	4.10		4.10	4.10		9,064.37		0.94		9,084.05
Total	**10.44**	**88.54**	**44.47**	**0.08**	**8.67**	**4.10**	**12.77**	**3.31**	**4.10**	**7.41**		**9,064.37**		**0.94**		**9,084.05**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.11	0.11	1.22	0.00	0.23	0.01	0.24	0.01	0.01	0.02		187.09		0.01		187.32
Total	**0.11**	**0.11**	**1.22**	**0.00**	**0.23**	**0.01**	**0.24**	**0.01**	**0.01**	**0.02**		**187.09**		**0.01**		**187.32**

3.3 Grading - 2012

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					3.38	0.00	3.38	1.29	0.00	1.29						0.00
Off-Road	10.44	88.54	44.47	0.08		4.10	4.10		4.10	4.10	0.00	9,064.37		0.94		9,084.05
Total	**10.44**	**88.54**	**44.47**	**0.08**	**3.38**	**4.10**	**7.48**	**1.29**	**4.10**	**5.39**	**0.00**	**9,064.37**		**0.94**		**9,084.05**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.11	0.11	1.22	0.00	0.23	0.01	0.24	0.01	0.01	0.02		187.09		0.01		187.32
Total	**0.11**	**0.11**	**1.22**	**0.00**	**0.23**	**0.01**	**0.24**	**0.01**	**0.01**	**0.02**		**187.09**		**0.01**		**187.32**

3.4 Building Construction - 2012

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	5.63	37.37	23.73	0.04		2.54	2.54		2.54	2.54		4,040.62		0.51		4,051.23
Total	**5.63**	**37.37**	**23.73**	**0.04**		**2.54**	**2.54**		**2.54**	**2.54**		**4,040.62**		**0.51**		**4,051.23**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	1.07	13.54	6.81	0.02	0.70	0.46	1.16	0.05	0.46	0.51		2,055.88		0.05		2,056.98
Worker	2.36	2.39	27.35	0.04	5.16	0.15	5.30	0.19	0.15	0.34		4,190.93		0.24		4,196.06
Total	**3.43**	**15.93**	**34.16**	**0.06**	**5.86**	**0.61**	**6.46**	**0.24**	**0.61**	**0.85**		**6,246.81**		**0.29**		**6,253.04**

3.4 Building Construction - 2012

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	5.63	37.37	23.73	0.04		2.54	2.54		2.54	2.54	0.00	4,040.62		0.51		4,051.23
Total	**5.63**	**37.37**	**23.73**	**0.04**		**2.54**	**2.54**		**2.54**	**2.54**	**0.00**	**4,040.62**		**0.51**		**4,051.23**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	1.07	13.54	6.81	0.02	0.70	0.46	1.16	0.05	0.46	0.51		2,055.88		0.05		2,056.98
Worker	2.36	2.39	27.35	0.04	5.16	0.15	5.30	0.19	0.15	0.34		4,190.93		0.24		4,196.06
Total	**3.43**	**15.93**	**34.16**	**0.06**	**5.86**	**0.61**	**6.46**	**0.24**	**0.61**	**0.85**		**6,246.81**		**0.29**		**6,253.04**

3.4 Building Construction - 2013

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	5.17	34.66	23.45	0.04		2.28	2.28		2.28	2.28		4,040.62		0.46		4,050.31
Total	**5.17**	**34.66**	**23.45**	**0.04**		**2.28**	**2.28**		**2.28**	**2.28**		**4,040.62**		**0.46**		**4,050.31**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	0.98	12.37	6.27	0.02	0.70	0.41	1.11	0.05	0.41	0.47		2,057.88		0.05		2,058.89
Worker	2.16	2.15	24.86	0.04	5.16	0.15	5.30	0.19	0.15	0.34		4,099.67		0.23		4,104.41
Total	**3.14**	**14.52**	**31.13**	**0.06**	**5.86**	**0.56**	**6.41**	**0.24**	**0.56**	**0.81**		**6,157.55**		**0.28**		**6,163.30**

3.4 Building Construction - 2013

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	5.17	34.66	23.45	0.04		2.28	2.28		2.28	2.28	0.00	4,040.62		0.46		4,050.31
Total	**5.17**	**34.66**	**23.45**	**0.04**		**2.28**	**2.28**		**2.28**	**2.28**	**0.00**	**4,040.62**		**0.46**		**4,050.31**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	0.98	12.37	6.27	0.02	0.70	0.41	1.11	0.05	0.41	0.47		2,057.88		0.05		2,058.89
Worker	2.16	2.15	24.86	0.04	5.16	0.15	5.30	0.19	0.15	0.34		4,099.67		0.23		4,104.41
Total	**3.14**	**14.52**	**31.13**	**0.06**	**5.86**	**0.56**	**6.41**	**0.24**	**0.56**	**0.81**		**6,157.55**		**0.28**		**6,163.30**

3.5 Architectural Coating - 2012

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	27.72					0.00	0.00		0.00	0.00						0.00
Off-Road	0.52	3.16	1.96	0.00		0.29	0.29		0.29	0.29		281.19		0.05		282.18
Total	**28.24**	**3.16**	**1.96**	**0.00**		**0.29**	**0.29**		**0.29**	**0.29**		**281.19**		**0.05**		**282.18**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.47	0.48	5.45	0.01	1.03	0.03	1.06	0.04	0.03	0.07		835.69		0.05		836.72
Total	**0.47**	**0.48**	**5.45**	**0.01**	**1.03**	**0.03**	**1.06**	**0.04**	**0.03**	**0.07**		**835.69**		**0.05**		**836.72**

3.5 Architectural Coating - 2012

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	27.72					0.00	0.00		0.00	0.00						0.00
Off-Road	0.52	3.16	1.96	0.00		0.29	0.29		0.29	0.29	0.00	281.19		0.05		282.18
Total	**28.24**	**3.16**	**1.96**	**0.00**		**0.29**	**0.29**		**0.29**	**0.29**	**0.00**	**281.19**		**0.05**		**282.18**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.47	0.48	5.45	0.01	1.03	0.03	1.06	0.04	0.03	0.07		835.69		0.05		836.72
Total	**0.47**	**0.48**	**5.45**	**0.01**	**1.03**	**0.03**	**1.06**	**0.04**	**0.03**	**0.07**		**835.69**		**0.05**		**836.72**

3.5 Architectural Coating - 2013

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	27.72					0.00	0.00		0.00	0.00						0.00
Off-Road	0.49	2.96	1.94	0.00		0.27	0.27		0.27	0.27		281.19		0.04		282.10
Total	**28.21**	**2.96**	**1.94**	**0.00**		**0.27**	**0.27**		**0.27**	**0.27**		**281.19**		**0.04**		**282.10**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.43	0.43	4.96	0.01	1.03	0.03	1.06	0.04	0.03	0.07		817.49		0.04		818.44
Total	**0.43**	**0.43**	**4.96**	**0.01**	**1.03**	**0.03**	**1.06**	**0.04**	**0.03**	**0.07**		**817.49**		**0.04**		**818.44**

3.5 Architectural Coating - 2013

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	27.72					0.00	0.00		0.00	0.00						0.00
Off-Road	0.49	2.96	1.94	0.00		0.27	0.27		0.27	0.27	0.00	281.19		0.04		282.10
Total	**28.21**	**2.96**	**1.94**	**0.00**		**0.27**	**0.27**		**0.27**	**0.27**	**0.00**	**281.19**		**0.04**		**282.10**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.43	0.43	4.96	0.01	1.03	0.03	1.06	0.04	0.03	0.07		817.49		0.04		818.44
Total	**0.43**	**0.43**	**4.96**	**0.01**	**1.03**	**0.03**	**1.06**	**0.04**	**0.03**	**0.07**		**817.49**		**0.04**		**818.44**

3.6 Paving - 2013

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	5.53	33.81	20.89	0.03		2.93	2.93		2.93	2.93		2,917.64		0.50		2,928.05
Paving	0.39					0.00	0.00		0.00	0.00						0.00
Total	**5.92**	**33.81**	**20.89**	**0.03**		**2.93**	**2.93**		**2.93**	**2.93**		**2,917.64**		**0.50**		**2,928.05**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.10	0.10	1.11	0.00	0.23	0.01	0.24	0.01	0.01	0.02		183.02		0.01		183.23
Total	**0.10**	**0.10**	**1.11**	**0.00**	**0.23**	**0.01**	**0.24**	**0.01**	**0.01**	**0.02**		**183.02**		**0.01**		**183.23**

3.6 Paving - 2013

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	5.53	33.81	20.89	0.03		2.93	2.93		2.93	2.93	0.00	2,917.64		0.50		2,928.05
Paving	0.39					0.00	0.00		0.00	0.00						0.00
Total	**5.92**	**33.81**	**20.89**	**0.03**		**2.93**	**2.93**		**2.93**	**2.93**	**0.00**	**2,917.64**		**0.50**		**2,928.05**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.10	0.10	1.11	0.00	0.23	0.01	0.24	0.01	0.01	0.02		183.02		0.01		183.23
Total	**0.10**	**0.10**	**1.11**	**0.00**	**0.23**	**0.01**	**0.24**	**0.01**	**0.01**	**0.02**		**183.02**		**0.01**		**183.23**

4.0 Mobile Detail

4.1 Mitigation Measures Mobile

Increase Density

Increase Diversity

Improve Pedestrian Network

Limit Parking Supply

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	12.09	31.76	112.49	0.19	19.96	1.21	21.18	0.70	1.21	1.91		19,139.50		0.74		19,154.94
Unmitigated	14.08	38.42	137.30	0.24	25.35	1.52	26.87	0.89	1.52	2.41		24,128.89		0.91		24,148.00
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Mid Rise	2,115.39	2,298.36	1948.47	7,053,101	5,553,546
Parking Lot	0.00	0.00	0.00		
Total	2,115.39	2,298.36	1,948.47	7,053,101	5,553,546

4.3 Trip Type Information

	Miles			Trip %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW
Apartments Mid Rise	12.70	7.00	9.50	40.20	19.20	40.60
Parking Lot	8.90	13.30	7.40	0.00	0.00	0.00

5.0 Energy Detail

5.1 Mitigation Measures Energy

Exceed Title 24

Install Energy Efficient Appliances

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.12	1.02	0.43	0.01		0.00	0.08		0.00	0.08		1,303.15		0.02	0.02	1,311.08
NaturalGas Unmitigated	0.14	1.24	0.53	0.01		0.00	0.10		0.00	0.10		1,577.83		0.03	0.03	1,587.43
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU	lb/day										lb/day					
Apartments Mid Rise	13411.6	0.14	1.24	0.53	0.01		0.00	0.10		0.00	0.10		1,577.83		0.03	0.03	1,587.43
Parking Lot	0	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00	0.00	0.00
Total		**0.14**	**1.24**	**0.53**	**0.01**		**0.00**	**0.10**		**0.00**	**0.10**		**1,577.83**		**0.03**	**0.03**	**1,587.43**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU	lb/day										lb/day					
Apartments Mid Rise	11.0768	0.12	1.02	0.43	0.01		0.00	0.08		0.00	0.08		1,303.15		0.02	0.02	1,311.08
Parking Lot	0	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00	0.00	0.00
Total		**0.12**	**1.02**	**0.43**	**0.01**		**0.00**	**0.08**		**0.00**	**0.08**		**1,303.15**		**0.02**	**0.02**	**1,311.08**

6.0 Area Detail

6.1 Mitigation Measures Area

No Hearths Installed

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	14.50	0.32	27.46	0.00		0.00	0.15		0.00	0.15	0.00	48.27		0.05	0.00	49.35
Unmitigated	14.50	0.32	27.46	0.00		0.00	0.15		0.00	0.15	0.00	48.27		0.05	0.00	49.35
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	2.28					0.00	0.00		0.00	0.00						0.00
Consumer Products	11.32					0.00	0.00		0.00	0.00						0.00
Hearth	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00		0.00	0.00	0.00
Landscaping	0.90	0.32	27.46	0.00		0.00	0.15		0.00	0.15		48.27		0.05		49.35
Total	**14.50**	**0.32**	**27.46**	**0.00**		**0.00**	**0.15**		**0.00**	**0.15**	**0.00**	**48.27**		**0.05**	**0.00**	**49.35**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	2.28					0.00	0.00		0.00	0.00						0.00
Consumer Products	11.32					0.00	0.00		0.00	0.00						0.00
Hearth	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00		0.00	0.00	0.00
Landscaping	0.90	0.32	27.46	0.00		0.00	0.15		0.00	0.15		48.27		0.05		49.35
Total	**14.50**	**0.32**	**27.46**	**0.00**		**0.00**	**0.15**		**0.00**	**0.15**	**0.00**	**48.27**		**0.05**	**0.00**	**49.35**

7.0 Water Detail

7.1 Mitigation Measures Water

Install Low Flow Bathroom Faucet

Install Low Flow Kitchen Faucet

Install Low Flow Toilet

Install Low Flow Shower

Use Water Efficient Irrigation System

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Vegetation

University Crossings Apartments

San Bernardino-South Coast County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric
Parking Lot	627	Space
Apartments Mid Rise	321	Dwelling Unit

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Utility Company**	Southern California Edison
Climate Zone	10	**Precipitation Freq (Days)**	32		

1.3 User Entered Comments

Project Characteristics -

Land Use - 12 acres total lot acreage

Construction Phase - Building Construction/Architectural Coating overlap

Off-road Equipment -

Vehicle Trips - ts

Construction Off-road Equipment Mitigation -

Mobile Land Use Mitigation -

Area Mitigation -

Energy Mitigation -

Water Mitigation -

Woodstoves - No Woodstoves, Hearth/Fireplace

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2012	37.83	88.66	62.00	0.11	18.34	4.28	22.62	9.94	4.28	14.22	0.00	10,810.36	0.00	0.95	0.00	10,830.26
2013	37.00	53.23	58.48	0.11	6.88	3.15	10.03	0.28	3.15	3.43	0.00	10,714.07	0.00	0.81	0.00	10,731.01
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

2.1 Overall Construction (Maximum Daily Emission)

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2012	37.83	88.66	62.00	0.11	7.32	4.28	11.60	3.88	4.28	8.16	0.00	10,810.36	0.00	0.95	0.00	10,830.26
2013	37.00	53.23	58.48	0.11	6.88	3.15	10.03	0.28	3.15	3.43	0.00	10,714.07	0.00	0.81	0.00	10,731.01
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	14.50	0.32	27.46	0.00		0.00	0.15		0.00	0.15	0.00	48.27		0.05	0.00	49.35
Energy	0.14	1.24	0.53	0.01		0.00	0.10		0.00	0.10		1,577.83		0.03	0.03	1,587.43
Mobile	13.87	40.60	126.69	0.21	25.35	1.54	26.89	0.89	1.54	2.43		21,956.95		0.89		21,975.55
Total	**28.51**	**42.16**	**154.68**	**0.22**	**25.35**	**1.54**	**27.14**	**0.89**	**1.54**	**2.68**	**0.00**	**23,583.05**		**0.97**	**0.03**	**23,612.33**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	14.50	0.32	27.46	0.00		0.00	0.15		0.00	0.15	0.00	48.27		0.05	0.00	49.35
Energy	0.12	1.02	0.43	0.01		0.00	0.08		0.00	0.08		1,303.15		0.02	0.02	1,311.08
Mobile	11.81	33.42	105.61	0.17	19.96	1.23	21.19	0.70	1.23	1.93		17,421.50		0.72		17,436.62
Total	**26.43**	**34.76**	**133.50**	**0.18**	**19.96**	**1.23**	**21.42**	**0.70**	**1.23**	**2.16**	**0.00**	**18,772.92**		**0.79**	**0.02**	**18,797.05**

3.0 Construction Detail

3.1 Mitigation Measures Construction

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

3.2 Site Preparation - 2012

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					18.07	0.00	18.07	9.93	0.00	9.93						0.00
Off-Road	10.43	84.72	47.82	0.07		4.27	4.27		4.27	4.27		7,997.69		0.93		8,017.28
Total	**10.43**	**84.72**	**47.82**	**0.07**	**18.07**	**4.27**	**22.34**	**9.93**	**4.27**	**14.20**		**7,997.69**		**0.93**		**8,017.28**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.13	0.14	1.28	0.00	0.28	0.01	0.28	0.01	0.01	0.02		198.74		0.01		199.00
Total	**0.13**	**0.14**	**1.28**	**0.00**	**0.28**	**0.01**	**0.28**	**0.01**	**0.01**	**0.02**		**198.74**		**0.01**		**199.00**

3.2 Site Preparation - 2012

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					7.05	0.00	7.05	3.87	0.00	3.87						0.00
Off-Road	10.43	84.72	47.82	0.07		4.27	4.27		4.27	4.27	0.00	7,997.69		0.93		8,017.28
Total	**10.43**	**84.72**	**47.82**	**0.07**	**7.05**	**4.27**	**11.32**	**3.87**	**4.27**	**8.14**	**0.00**	**7,997.69**		**0.93**		**8,017.28**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.13	0.14	1.28	0.00	0.28	0.01	0.28	0.01	0.01	0.02		198.74		0.01		199.00
Total	**0.13**	**0.14**	**1.28**	**0.00**	**0.28**	**0.01**	**0.28**	**0.01**	**0.01**	**0.02**		**198.74**		**0.01**		**199.00**

3.3 Grading - 2012

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					8.67	0.00	8.67	3.31	0.00	3.31						0.00
Off-Road	10.44	88.54	44.47	0.08		4.10	4.10		4.10	4.10		9,064.37		0.94		9,084.05
Total	**10.44**	**88.54**	**44.47**	**0.08**	**8.67**	**4.10**	**12.77**	**3.31**	**4.10**	**7.41**		**9,064.37**		**0.94**		**9,084.05**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.11	0.12	1.07	0.00	0.23	0.01	0.24	0.01	0.01	0.02		165.62		0.01		165.83
Total	**0.11**	**0.12**	**1.07**	**0.00**	**0.23**	**0.01**	**0.24**	**0.01**	**0.01**	**0.02**		**165.62**		**0.01**		**165.83**

3.3 Grading - 2012

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					3.38	0.00	3.38	1.29	0.00	1.29						0.00
Off-Road	10.44	88.54	44.47	0.08		4.10	4.10		4.10	4.10	0.00	9,064.37		0.94		9,084.05
Total	**10.44**	**88.54**	**44.47**	**0.08**	**3.38**	**4.10**	**7.48**	**1.29**	**4.10**	**5.39**	**0.00**	**9,064.37**		**0.94**		**9,084.05**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.11	0.12	1.07	0.00	0.23	0.01	0.24	0.01	0.01	0.02		165.62		0.01		165.83
Total	**0.11**	**0.12**	**1.07**	**0.00**	**0.23**	**0.01**	**0.24**	**0.01**	**0.01**	**0.02**		**165.62**		**0.01**		**165.83**

3.4 Building Construction - 2012

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	5.63	37.37	23.73	0.04		2.54	2.54		2.54	2.54		4,040.62		0.51		4,051.23
Total	**5.63**	**37.37**	**23.73**	**0.04**		**2.54**	**2.54**		**2.54**	**2.54**		**4,040.62**		**0.51**		**4,051.23**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	1.13	14.02	7.65	0.02	0.70	0.47	1.17	0.05	0.47	0.52		2,038.89		0.06		2,040.05
Worker	2.36	2.63	23.89	0.04	5.16	0.15	5.30	0.19	0.15	0.34		3,709.89		0.23		3,714.66
Total	**3.49**	**16.65**	**31.54**	**0.06**	**5.86**	**0.62**	**6.47**	**0.24**	**0.62**	**0.86**		**5,748.78**		**0.29**		**5,754.71**

3.4 Building Construction - 2012

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	5.63	37.37	23.73	0.04		2.54	2.54		2.54	2.54	0.00	4,040.62		0.51		4,051.23
Total	**5.63**	**37.37**	**23.73**	**0.04**		**2.54**	**2.54**		**2.54**	**2.54**	**0.00**	**4,040.62**		**0.51**		**4,051.23**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	1.13	14.02	7.65	0.02	0.70	0.47	1.17	0.05	0.47	0.52		2,038.89		0.06		2,040.05
Worker	2.36	2.63	23.89	0.04	5.16	0.15	5.30	0.19	0.15	0.34		3,709.89		0.23		3,714.66
Total	**3.49**	**16.65**	**31.54**	**0.06**	**5.86**	**0.62**	**6.47**	**0.24**	**0.62**	**0.86**		**5,748.78**		**0.29**		**5,754.71**

3.4 Building Construction - 2013

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	5.17	34.66	23.45	0.04		2.28	2.28		2.28	2.28		4,040.62		0.46		4,050.31
Total	**5.17**	**34.66**	**23.45**	**0.04**		**2.28**	**2.28**		**2.28**	**2.28**		**4,040.62**		**0.46**		**4,050.31**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	1.03	12.77	7.11	0.02	0.70	0.42	1.12	0.05	0.42	0.48		2,040.58		0.05		2,041.63
Worker	2.16	2.37	21.66	0.04	5.16	0.15	5.30	0.19	0.15	0.34		3,628.20		0.21		3,632.60
Total	**3.19**	**15.14**	**28.77**	**0.06**	**5.86**	**0.57**	**6.42**	**0.24**	**0.57**	**0.82**		**5,668.78**		**0.26**		**5,674.23**

3.4 Building Construction - 2013

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	5.17	34.66	23.45	0.04		2.28	2.28		2.28	2.28	0.00	4,040.62		0.46		4,050.31
Total	**5.17**	**34.66**	**23.45**	**0.04**		**2.28**	**2.28**		**2.28**	**2.28**	**0.00**	**4,040.62**		**0.46**		**4,050.31**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	1.03	12.77	7.11	0.02	0.70	0.42	1.12	0.05	0.42	0.48		2,040.58		0.05		2,041.63
Worker	2.16	2.37	21.66	0.04	5.16	0.15	5.30	0.19	0.15	0.34		3,628.20		0.21		3,632.60
Total	**3.19**	**15.14**	**28.77**	**0.06**	**5.86**	**0.57**	**6.42**	**0.24**	**0.57**	**0.82**		**5,668.78**		**0.26**		**5,674.23**

3.5 Architectural Coating - 2012

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	27.72					0.00	0.00		0.00	0.00						0.00
Off-Road	0.52	3.16	1.96	0.00		0.29	0.29		0.29	0.29		281.19		0.05		282.18
Total	**28.24**	**3.16**	**1.96**	**0.00**		**0.29**	**0.29**		**0.29**	**0.29**		**281.19**		**0.05**		**282.18**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.47	0.53	4.76	0.01	1.03	0.03	1.06	0.04	0.03	0.07		739.77		0.05		740.72
Total	**0.47**	**0.53**	**4.76**	**0.01**	**1.03**	**0.03**	**1.06**	**0.04**	**0.03**	**0.07**		**739.77**		**0.05**		**740.72**

3.5 Architectural Coating - 2012

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	27.72					0.00	0.00		0.00	0.00						0.00
Off-Road	0.52	3.16	1.96	0.00		0.29	0.29		0.29	0.29	0.00	281.19		0.05		282.18
Total	**28.24**	**3.16**	**1.96**	**0.00**		**0.29**	**0.29**		**0.29**	**0.29**	**0.00**	**281.19**		**0.05**		**282.18**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.47	0.53	4.76	0.01	1.03	0.03	1.06	0.04	0.03	0.07		739.77		0.05		740.72
Total	**0.47**	**0.53**	**4.76**	**0.01**	**1.03**	**0.03**	**1.06**	**0.04**	**0.03**	**0.07**		**739.77**		**0.05**		**740.72**

3.5 Architectural Coating - 2013

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	27.72					0.00	0.00		0.00	0.00						0.00
Off-Road	0.49	2.96	1.94	0.00		0.27	0.27		0.27	0.27		281.19		0.04		282.10
Total	**28.21**	**2.96**	**1.94**	**0.00**		**0.27**	**0.27**		**0.27**	**0.27**		**281.19**		**0.04**		**282.10**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.43	0.47	4.32	0.01	1.03	0.03	1.06	0.04	0.03	0.07		723.48		0.04		724.36
Total	**0.43**	**0.47**	**4.32**	**0.01**	**1.03**	**0.03**	**1.06**	**0.04**	**0.03**	**0.07**		**723.48**		**0.04**		**724.36**

3.5 Architectural Coating - 2013

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	27.72					0.00	0.00		0.00	0.00						0.00
Off-Road	0.49	2.96	1.94	0.00		0.27	0.27		0.27	0.27	0.00	281.19		0.04		282.10
Total	**28.21**	**2.96**	**1.94**	**0.00**		**0.27**	**0.27**		**0.27**	**0.27**	**0.00**	**281.19**		**0.04**		**282.10**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.43	0.47	4.32	0.01	1.03	0.03	1.06	0.04	0.03	0.07		723.48		0.04		724.36
Total	**0.43**	**0.47**	**4.32**	**0.01**	**1.03**	**0.03**	**1.06**	**0.04**	**0.03**	**0.07**		**723.48**		**0.04**		**724.36**

3.6 Paving - 2013

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	5.53	33.81	20.89	0.03		2.93	2.93		2.93	2.93		2,917.64		0.50		2,928.05
Paving	0.39					0.00	0.00		0.00	0.00						0.00
Total	**5.92**	**33.81**	**20.89**	**0.03**		**2.93**	**2.93**		**2.93**	**2.93**		**2,917.64**		**0.50**		**2,928.05**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.10	0.11	0.97	0.00	0.23	0.01	0.24	0.01	0.01	0.02		161.97		0.01		162.17
Total	**0.10**	**0.11**	**0.97**	**0.00**	**0.23**	**0.01**	**0.24**	**0.01**	**0.01**	**0.02**		**161.97**		**0.01**		**162.17**

3.6 Paving - 2013

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	5.53	33.81	20.89	0.03		2.93	2.93		2.93	2.93	0.00	2,917.64		0.50		2,928.05
Paving	0.39					0.00	0.00		0.00	0.00						0.00
Total	**5.92**	**33.81**	**20.89**	**0.03**		**2.93**	**2.93**		**2.93**	**2.93**	**0.00**	**2,917.64**		**0.50**		**2,928.05**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.10	0.11	0.97	0.00	0.23	0.01	0.24	0.01	0.01	0.02		161.97		0.01		162.17
Total	**0.10**	**0.11**	**0.97**	**0.00**	**0.23**	**0.01**	**0.24**	**0.01**	**0.01**	**0.02**		**161.97**		**0.01**		**162.17**

4.0 Mobile Detail

4.1 Mitigation Measures Mobile

Increase Density

Increase Diversity

Improve Pedestrian Network

Limit Parking Supply

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	11.81	33.42	105.61	0.17	19.96	1.23	21.19	0.70	1.23	1.93		17,421.50		0.72		17,436.62
Unmitigated	13.87	40.60	126.69	0.21	25.35	1.54	26.89	0.89	1.54	2.43		21,956.95		0.89		21,975.55
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Mid Rise	2,115.39	2,298.36	1948.47	7,053,101	5,553,546
Parking Lot	0.00	0.00	0.00		
Total	2,115.39	2,298.36	1,948.47	7,053,101	5,553,546

4.3 Trip Type Information

	Miles			Trip %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW
Apartments Mid Rise	12.70	7.00	9.50	40.20	19.20	40.60
Parking Lot	8.90	13.30	7.40	0.00	0.00	0.00

5.0 Energy Detail

5.1 Mitigation Measures Energy

Exceed Title 24

Install Energy Efficient Appliances

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.12	1.02	0.43	0.01		0.00	0.08		0.00	0.08		1,303.15		0.02	0.02	1,311.08
NaturalGas Unmitigated	0.14	1.24	0.53	0.01		0.00	0.10		0.00	0.10		1,577.83		0.03	0.03	1,587.43
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU	lb/day										lb/day					
Apartments Mid Rise	13411.6	0.14	1.24	0.53	0.01		0.00	0.10		0.00	0.10		1,577.83		0.03	0.03	1,587.43
Parking Lot	0	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00	0.00	0.00
Total		**0.14**	**1.24**	**0.53**	**0.01**		**0.00**	**0.10**		**0.00**	**0.10**		**1,577.83**		**0.03**	**0.03**	**1,587.43**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU	lb/day										lb/day					
Apartments Mid Rise	11.0768	0.12	1.02	0.43	0.01		0.00	0.08		0.00	0.08		1,303.15		0.02	0.02	1,311.08
Parking Lot	0	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00	0.00	0.00
Total		**0.12**	**1.02**	**0.43**	**0.01**		**0.00**	**0.08**		**0.00**	**0.08**		**1,303.15**		**0.02**	**0.02**	**1,311.08**

6.0 Area Detail

6.1 Mitigation Measures Area

No Hearths Installed

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	14.50	0.32	27.46	0.00		0.00	0.15		0.00	0.15	0.00	48.27		0.05	0.00	49.35
Unmitigated	14.50	0.32	27.46	0.00		0.00	0.15		0.00	0.15	0.00	48.27		0.05	0.00	49.35
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	2.28					0.00	0.00		0.00	0.00						0.00
Consumer Products	11.32					0.00	0.00		0.00	0.00						0.00
Hearth	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00		0.00	0.00	0.00
Landscaping	0.90	0.32	27.46	0.00		0.00	0.15		0.00	0.15		48.27		0.05		49.35
Total	**14.50**	**0.32**	**27.46**	**0.00**		**0.00**	**0.15**		**0.00**	**0.15**	**0.00**	**48.27**		**0.05**	**0.00**	**49.35**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	2.28					0.00	0.00		0.00	0.00						0.00
Consumer Products	11.32					0.00	0.00		0.00	0.00						0.00
Hearth	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00		0.00	0.00	0.00
Landscaping	0.90	0.32	27.46	0.00		0.00	0.15		0.00	0.15		48.27		0.05		49.35
Total	**14.50**	**0.32**	**27.46**	**0.00**		**0.00**	**0.15**		**0.00**	**0.15**	**0.00**	**48.27**		**0.05**	**0.00**	**49.35**

7.0 Water Detail

7.1 Mitigation Measures Water

Install Low Flow Bathroom Faucet

Install Low Flow Kitchen Faucet

Install Low Flow Toilet

Install Low Flow Shower

Use Water Efficient Irrigation System

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Vegetation

APPENDIX B

Rule 403 Regulatory Requirements and Mitigation Measure Example

Table 1
Fugitive Dust Best Available Control Measure
(Applicable to All Construction Activity Sources)

Source Category	Control Measure	Guidance
Backfilling	01-1 Stabilize backfill material when not actively handling; and 01-2 Stabilize backfill material during handling; and 01-3 Stabilize soil at completion of activity.	• Mix backfill soil with water prior to moving. • Dedicate water truck or high capacity hose to backfilling equipment. • Empty loader bucket slowly so that no dust plumes are generated. • Minimize drop height from loader bucket.
Clearing and grubbing	02-1 Maintain stability of soil through pre-watering of site prior to clearing and grubbing; and 02-2 Stabilize soil during clearing and grubbing activities; and 02-3 Stabilize soil immediately after clearing and grubbing activities.	• Maintain live perennial vegetation where possible. • Apply water in sufficient quantity to prevent generation of dust plumes.
Clearing forms	03-1 Use water spray to clear forms; or 03-2 Use sweeping and water spray to clear forms; or 03-3 Use vacuum system to clear forms.	• Use of high-pressure air to clear forms may cause exceedance of Rule requirements.
Crushing	04-1 Stabilize surface soils prior to operation of support equipment; and 04-2 Stabilize material after crushing.	• Follow permit conditions for crushing equipment. • Prewater material prior to loading into crusher. • Monitor crusher emissions opacity. • Apply water to crushed material to prevent dust plumes
Cut and fill	05-1 Prewater soils prior to cut and fill activities; and 05-2 Stabilize soil during and after cut and fill activities.	• For large site, prewater with sprinklers or water trucks and allow time for penetration. • Use water trucks/pull to water soils to depth of cut prior to subsequent cuts.

Demolition—mechanical/ manual	06-1 Stabilize wind erodible surfaces to reduce dust; and 06-2 Stabilize surface soil where support equipment and vehicles will operate; and 06-3 Stabilize loose soil and demolition debris; and 06-4 Comply with AQMD Rule 1403.	• Apply water in sufficient quantities to prevent the generation of visible dust plumes.
Disturbed soil	07-1 Stabilize disturbed soil throughout the construction site; and 07-2 Stabilize disturbed soil between structures.	• Limit vehicular traffic and disturbances on soils where possible. • If interior block walls are planned, install as early as possible. • Apply water or a stabilizing agent in sufficient quantities to prevent the generation of visible dust plumes.
Earth-moving activities	08-1 Preapply water to depth of proposed cuts; and 08-2 Reapply water as necessary to maintain soils in a damp condition and to ensure that visible emissions do not exceed 100 feet in any direction; and 08-3 Stabilize soils once earth moving activities are complete	• Grade each project phase separately, times to coincide with construction phase. • Upwind fencing can prevent material movement on-site. • Apply water or a stabilizing agent in sufficient quantities to prevent the generation of visible dust plumes.
Importing/ exporting of bulk materials	09-1 Stabilize material while loading to reduce fugitive dust emissions; and 09-2 Maintain at least six inches of freeboard on haul vehicles; and 09-3 Stabilize material while transporting to reduce fugitive dust emissions; and 09-4 Stabilize material while unloading to reduce fugitive dust emissions; and 09-5 Comply with Vehicle Code Section 23114.	• Use tarps or other suitable enclosures on haul trucks. • Check belly-dump truck seals regularly and remove and trapped rocks to prevent spillage. • Comply with track-out prevention/ Mitigation requirements. • Provide water while loading and unloading to reduce visible dust plumes.

Landscaping	10-1 Stabilize soils, materials, slopes.	• Apply water to materials to stabilize. • Maintain materials in a crusted condition. • Maintain effective cover over materials. • Stabilize sloping surfaces using soil binders until vegetation or ground cover can effectively stabilize the slopes. • Hydroseed prior to rain season.
Road shoulder maintenance	11-1 Apply water to unpaved shoulders prior to clearing; and 11-2 Apply chemical dust suppressants and/or washed gravel to maintain a stabilized surface after completing road shoulder maintenance.	• Installation of curbing and/or paving road shoulders can reduce recurring maintenance costs. • Use of chemical dust suppressants can inhibit vegetation growth and reduce future road shoulder maintenance costs.
Screening	12-1 Prewater material prior to screening; and 12-2 Limit fugitive dust emissions to opacity and plum length standards; and 12-3 Stabilize material immediately after screening.	• Dedicate water truck or high capacity hose to screening operation. • Drop material through the screen slowly and minimize drop height. • Install wind barrier with a porosity of no more than 50% upwind of screen to the height of the drop point.
Staging areas	13-1 Stabilize staging areas during use; and 13-2 Stabilize staging area soils at project completion.	• Limit size of staging area. • Limit vehicle speeds of 15 miles per hour • Limit number and size of staging area entrances/exits.
Stockpiles/ Bulk Material Handling	14-1 Stabilize stockpiled materials. 14-2 Stockpiles within 100 yards of off-site occupied buildings must not be greater than eight feet in height; or must have a road bladed to the top to allow water truck access or must have an operational water irrigation system that is capable of complete stockpile coverage.	• Add or remove material from the downwind portion of the storage pile. • Maintain storage piles to avoid steep sides or faces.

Traffic Areas for Contruction	15-1 Stabilize all off-road traffic and parking areas; and 15-2 Stabilize all haul routes; and 15-3 Direct construction traffic over established haul routes.	• Apply gravel/paving to all haul routes as soon as possible to all future roadway areas. • Barriers can be used to ensure vehicles are only used on established parking areas/haul routes.
Trenching	16-1 Stabilize surface soils where trencher or excavator and support equipment will operate; and 16-2 Stabilize soils at the completion of trenching activities.	• Pre-watering of soils prior to trenching is an effective preventive measure. For deep trenching activities, pre-trench to 18-inches soak soils via the pre-trench and resuming trenching. • Washing mud and soils from equipment at the conclusion of trenching activities can prevent crusting and drying of soil on equipment.
Truck loading	17-1 Prewater material prior to loading; and 17-2 Ensure that freeboard exceeds six inches (CVC 23114).	• Empty loader bucket such that no visible dust plumes are created. • Ensure that the loader bucket is closer to the truck to minimize drop height while loading.
Turf Overseeding	18-1 Apply sufficient water immediately prior to conducting turf vacuuming activities to meet opacity and plum length standards; and 18-2 Cover haul vehicles prior to exiting the site.	• Haul waste material immediately off site.
Unpaved roads/ parking lots	19-1 Stabilize soils to meet the applicable performance standards; and 19-2 Limit vehicular travel to established unpaved roads (haul routes) and unpaved parking lots.	• Restricting vehicular access to established unpaved travel path and parking lots can reduce stabilization requirements.
Vacant land	20-1 In instances where vacant lots are 0.10 acre or larger and have a cumulative area of 500 square feet or more that are driven over and/or used by	

	motor vehicles and/or off-road vehicles, prevent motor vehicles and/or off-road vehicle trespassing, parking and/or access by installing barriers curbs, fences, gates, posts, signs, shrubs, trees, or other effective control measures.	

Table 2
Dust Control Measures for Large Operations

Fugitive Dust Source Category	Control Actions
Earth-moving (except construction cutting and filling area, and mining operations)	1a Maintain soil moisture content at a minimum of 12 percent, as determined by ASTM method D-2216, or equivalent method approved by the Executive Officer, CARB, and the USEPA. Two soil moisture evaluations must be conducted during the first three hours or active operations during a calendar day, and two such evaluations each subsequent four-hour period of active operations; or 1a-1 For any earth-moving which is more than 100 feet from all property lines, conduct watering as necessary to prevent visible dust emissions from exceeding 100 feet in length in any direction.
Earth-moving: Construction fill areas	1b Maintain soil moisture content at a minimum of 12 percent, as determined by ASTM method D-2216, or other equivalent method approved by the Executive Officer, the California Air Resources Board, and the U.S. EPA. For areas which have an optimum moisture content for compaction of less than 12 percent, as determined by ASTM Method 1557 or other equivalent method approved by the Executive Officer and the California Air Resources Board and the U.S. EPA, complete the compaction process as expeditiously as possible after achieving at least 70 percent of the optimum soil moisture content. Two soil moisture evaluations must be conducted during the first three hours of active operations during a calendar day, and two such evaluations during each subsequent four hour period of active operations
Earth-moving: Construction cut areas and mining operations:	1c Conduct watering as necessary to prevent visible emissions from extending more than 100 feet beyond the active cut or mining area unless the area is inaccessible to watering vehicles due to slope conditions or other safety factors.
Disturbed surface areas (except completed grading areas)	2a/b Apply dust suppression in sufficient quantity and frequency to maintain a stabilized surface. Any areas which cannot be stabilized, as evidenced by wind-driven fugitive dust, must have an application of water at least twice per day to at least 80 percent of the unstabilized area.
Disturbed surface areas: Completed grading areas	2c Apply chemical stabilizers within five working days of grading completion; 2d Take actions (3a) or (3c) specified for inactive disturbed surface areas.

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

Table 3
Contingency Control Measures for Large Operations

Fugitive Dust Source Category	Control Measures
Earth-moving	1A Cease all active operations; or 2A Apply water to soil not more than 15 minutes prior to moving such soil.
Disturbed surface areas	0B On the last day of active operations prior to a weekend, holiday, or any other period when active operations will not occur for not more than four consecutive days: apply water with a mixture of chemical stabilizer diluted to not less than 1/20 of the concentration required to maintain a stabilized surface for a period of six months; or 1B Apply chemical stabilizers prior to wind event; or 2B Apply water to all unstabilized disturbed areas 3 times per day. If there is any evidence of wind-driven fugitive dust, watering frequency is increased to a minimum of four times per day; or 3B Take the actions specified in this Table, Item (3c); or 4B Utilize any combination of control actions (1B), (2B), and (3B) such that, in total, these actions apply to all disturbed surface areas.
Unpaved roads	1C Apply chemical stabilizers prior to wind event; or 2C Apply water twice per hour during active operation; or 3C Stop all vehicular traffic.
Open storage piles	1D Apply water twice per hour; or 2D Install temporary coverings.
Paved road track-out	1E Cover all haul vehicles; or 2E Comply with the vehicle freeboard requirements of Section 23114 of the California Vehicle Code for both public and private roads.
All Categories	1F Any other control measures approved by the Executive Officer and the USEPA as equivalent to the methods specified in this Table may be used.

TABLE XI-A
MITIGATION MEASURE EXAMPLES:
FUGITIVE DUST FROM CONSTRUCTION & DEMOLITION

Source Activity	Mitigation Measure[1]	PM10 Control Efficiency	Comments	Estimated Cost[2]
Active demolition and debris removal	Apply water every 4 hours to the area within 100 feet of a structure being demolished, to reduce vehicle trackout.	36%		ND
Trackout	Use a gravel apron, 25 feet long by road width, to reduce mud/dirt trackout from unpaved truck exit routes.	46%		$1,360/year (gravel apron dimensions: 50' x 30' x 3" thick)
Post-demolition stabilization	Apply dust suppressants (e.g., polymer emulsion) to disturbed areas upon completion of demolition.	84%	For actively disturbed areas.	$5,340/acre-year (Useful life of 1 year)
Demolition Activities	Apply water to disturbed soils after demolition is completed or at the end of each day of cleanup.	10%	14-hour watering interval.	$68-$81/acre-day
Demolition Activities	Prohibit demolition activities when wind speeds exceed 25 mph.	98%	Estimated for high wind days in absence of soil disturbance activities. Demolition of 1,000 ft^2 structure on 1.2 acres.	$1.36 per 8 hour day idled
Construction Activities	Apply water every 3 hours to disturbed areas within a construction site.	61%	3.2-hour watering interval.	ND
Scraper loading and unloading	Require minimum soil moisture of 12% for earthmoving by use of a moveable sprinkler system or a water truck. Moisture content can be verified by lab sample or moisture probe.	69%	AP-42 emission factor equation for materials handling due to increasing soil moisture from 1.4% to 12%.	$138/acre (sprinkler system to maintain minimum soil moisture of 12%)
Construction traffic	Limit on-site vehicle speeds (on unpaved roads) to 15 mph by radar enforcement.	57%	Assume linear relationship between PM10 emissions and uncontrolled vehicle speed of 35 mph.	$22/inspection $180/sign

[1]Unless otherwise noted, information presented in this table is from the following reference: *WRAP Fugitive Dust Handbook*, September 7, 2006 (http://www.wrapair.org/forums/dejf/fdh/content/FDHandbook_Rev_06.pdf). ND = No Data.
[2]2003 dollars.

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AQMD

TABLE XI-A
MITIGATION MEASURE EXAMPLES:
FUGITIVE DUST FROM CONSTRUCTION & DEMOLITION

Source Component	Mitigation Measure[1]	PM10 Control Efficiency	References & Assumptions	Estimated Cost[2]
Grading	Replace ground cover in disturbed areas as quickly as possible.	5%[3]	EPA, "Control of Fugitive Dust Sources" EPA-450/3-88-008, September 1988	ND
Grading	All trucks hauling dirt, sand, soil, or other loose materials are to be tarped with a fabric cover and maintain a freeboard height of 12 inches.	91%	Arizona Department of Transportation Construction Analysis Services, "Final Field Study Report - PM10 Control Management Study for ADOT Construction Projects, June 1994	ND

[1] Unless otherwise noted, information presented in this table is from the following reference: *WRAP Fugitive Dust Handbook*, September 7, 2006 (http://www.wrapair.org/forums/dejf/fdh/content/FDHandbook_Rev_06.pdf). ND = No Data.
[2] 2003 dollars.
[3] Higher than 5% control efficiency may be used. However, please provide the supporting analysis and data in the environmental documentation.