AIR QUALITY ANALYSIS

BLOOMINGTON TRUCK TERMINAL

SAN BERNARDINO COUNTY, CALIFORNIA

LSA

June 2013

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LSA

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TABLE OF CONTENTS

1.0 EXECUTIVE SUMMARY 1
2.0 PROJECT DESCRIPTION 3
2.1 PROJECT LOCATION 3
2.2 PROJECT DESCRIPTION 3
2.3 SENSITIVE LAND USES IN THE PROJECT VICINITY 6
3.0 SETTING 7
3.1 REGIONAL AIR QUALITY 7
4.0 THRESHOLDS AND METHODOLOGY 28
4.1 THRESHOLDS OF SIGNIFICANCE 28
5.0 IMPACTS AND MITIGATION 36
5.1 CONSTRUCTION IMPACTS 36
5.2 LONG-TERM AIR QUALITY IMPACTS 40
5.3 LONG-TERM MICROSCALE (CO HOT-SPOT) ANALYSIS 52
5.4 AIR QUALITY MANAGEMENT PLAN CONSISTENCY 53
5.5 CUMULATIVE IMPACTS 56
5.6 STANDARD CONDITIONS 56
5.7 ADDITIONAL RECOMMENDED MEASURES 57
5.8 MITIGATION MEASURES 58
5.9 MINIMIZATION MEASURES 59
5.10 IMPACTS TO THE PROPOSED PROJECT FROM GLOBAL CLIMATE CHANGE 61
6.0 REFERENCES 62

APPENDICES

A: CALEEMOD MODEL PRINTOUTS
B: CALINE4 MODEL PRINTOUTS
C: HEALTH RISK ASSESSMENT WORKSHEETS

FIGURES AND TABLES

FIGURES

Figure 1: Project Location Map 4
Figure 2: Site Plan 5

TABLES

Table A: Ambient Air Quality Standards 8
Table B: Summary of Health Effects of the Major Criteria Air Pollutants 10
Table C: Global Warming Potential of Greenhouse Gases 13
Table D: Attainment Status of Criteria Pollutants in the South Coast Air Basin 18
Table E: Ambient Air Quality Data Monitored at the Fontana Kaiser Monitoring Station 20
Table F: SCAQMD Significance Thresholds 29
Table G: Diesel Construction Equipment Utilized by Construction Phase 37
Table H: Short-Term Regional Construction Emissions 37
Table I: Equipment-Specific Grading Rates 39
Table J: Construction LST Impacts 39
Table K: Long-Term Regional Operational Emissions 40
Table L: Long-Term Operational LST Numbers 41
Table M: Diesel Truck Idling Exhaust Emissions Rates 43
Table N: Diesel Truck Running Exhaust Emissions Rates 44
Table O: Health Risk Assessment Results at the Nearest Residences to the Project Site 45
Table P: Long-Term Operational Greenhouse Gas Emissions 48
Table Q: Project Compliance with Greenhouse Gas Emission Reduction Strategies 50
Table R: Existing (2013) CO Concentrations Without and With Project Traffic 54
Table S: 2014 CO Concentrations Without and With Project Traffic 55

1.0 EXECUTIVE SUMMARY

LSA Associates, Inc. (LSA) was retained by Pacific Industrial to prepare an air quality study for the proposed Bloomington Truck Terminal project located in the community of Bloomington in unincorporated San Bernardino County (County), California.

The air quality study provides a discussion of the proposed project, the physical setting of the project area, and the regulatory framework for air quality. The report provides data on existing air quality, evaluates potential air quality impacts associated with the proposed project, and identifies mitigation measures recommended for potentially significant impacts. Modeled air quality levels are based upon vehicle data and project trip generation prepared for this project in the Bloomington Truck Terminal Project Traffic Impact Study (LSA, May 2013).

Emissions during project construction would not exceed any of the criteria pollutant thresholds established by the South Coast Air Quality Management District (SCAQMD). Compliance with SCAQMD Rules and Regulations during construction will reduce construction-related air quality impacts from fugitive dust emissions and construction equipment emissions. Standard dust suppression measures have been identified for short-term construction to meet the SCAQMD emissions thresholds. The proposed project would also not exceed any of the localized significance thresholds (LSTs) during construction periods. The project construction emissions would be less than significant with mitigation.

Pollutant emissions from project operation, calculated with the CalEEMod model (version 2011.1.1), would not exceed the SCAQMD thresholds for criteria air pollutants. Long-term emissions from operation of the project would also not exceed any of the LSTs. A screening-level health risk assessment shows no significant health risk to anyone from toxic air contaminants included in the project operational emissions. Historical air quality data show that existing carbon monoxide (CO) levels for the project area and the general vicinity do not exceed either State or federal ambient air quality standards. The CO hot-spot analysis was conducted with the CALINE4 model and peak-hour intersection vehicle turn volumes from the project Traffic Impact Study at the intersections most affected by project traffic. The results showed that project-related traffic would not significantly affect local CO levels, and the CO concentrations would all be below the State and federal standards. No significant impact on local CO levels would occur.

The proposed project is consistent with the County's General Plan and Zoning Designations, which are consistent with the Southern California Association of Governments (SCAG) Regional Comprehensive Plan (RCP) Guidelines and the SCAQMD Air Quality Management Plan (AQMP). Therefore, the proposed project is consistent with the General Plan and the regional AQMP.

The potential of the project to affect global climate change (GCC) is also included. Short-term construction and long-term operational emissions of the principal greenhouse gases (GHGs), including carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (N_2O) are quantified, and significance relative to Assembly Bill (AB) 32 is discussed.

The evaluation was prepared in conformance with appropriate standards, utilizing procedures and methodologies in the SCAQMD California Environmental Quality Act (CEQA) Air Quality Handbook (SCAQMD 1993). Air quality data posted on the California Air Resources Board (ARB) and United States Environmental Protection Agency (EPA) websites are included to document the local air quality environment.

2.0 PROJECT DESCRIPTION

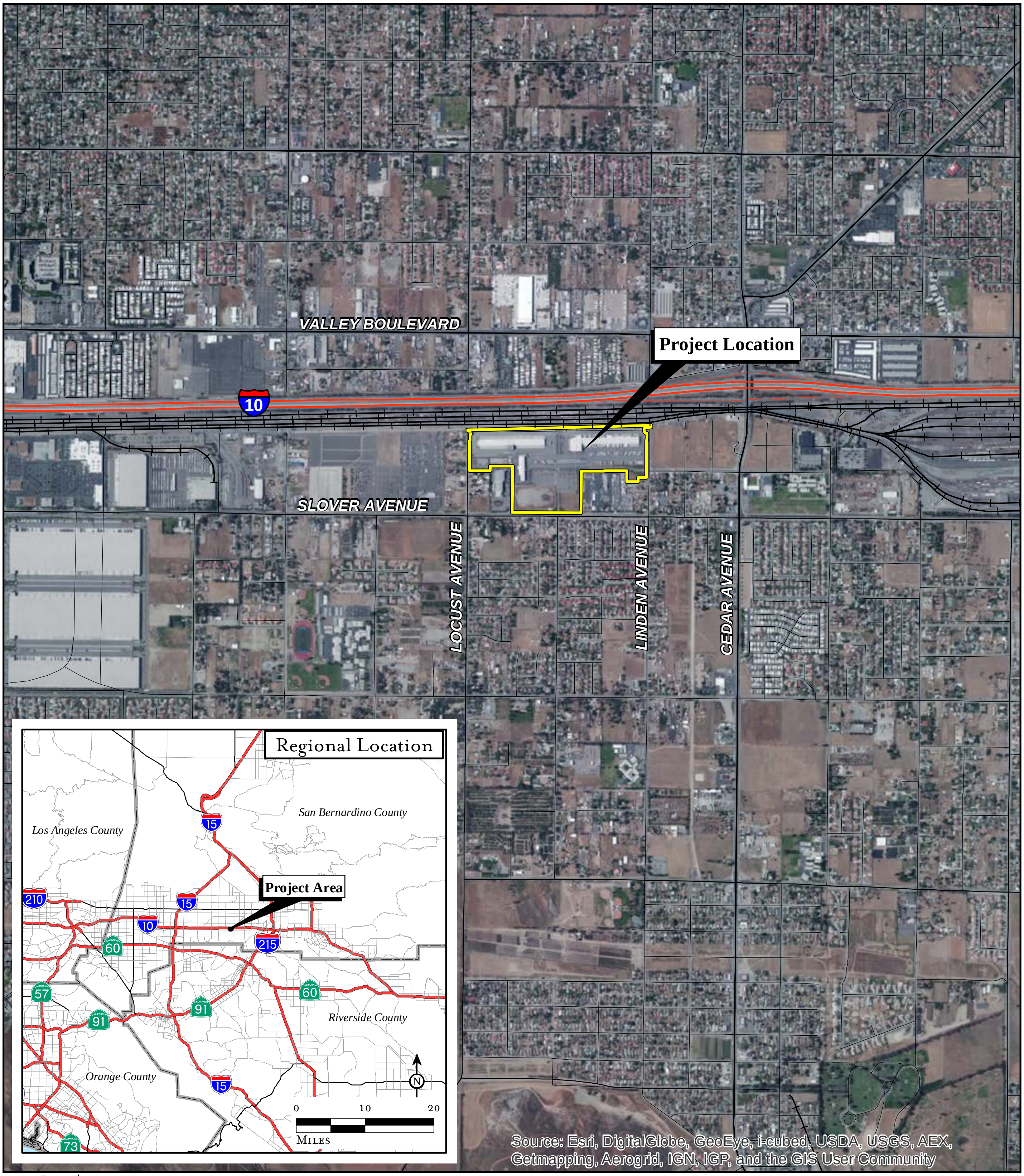
2.1 PROJECT LOCATION

The site is located north of Slover Avenue, south of the Union Pacific Railroad (UPRR), east of Locust Avenue, and west of Linden Avenue. The project site is bounded to the north by several rail lines and the Interstate 10 (I-10) Freeway; to the east by existing industrial uses, vacant land, and Linden Avenue; to the west by existing industrial uses, with nonconforming residential uses farther to the west across Locust Avenue; and to the south by Slover Avenue and residences to the south across Slover Avenue. The closest residences to the west are approximately 100 feet (ft) from the project's western boundary and are approximately 500 ft from the center of the dock doors on the west side of the building. There are also residences to the east of the proposed dock doors, approximately 1,150 ft from the center of the dock doors on the east side of the building. To the south of Slover Avenue, there is a mix of residential homes approximately 800 ft from the center of the dock doors proposed on the east side of the building. Figure 1 illustrates the location of the project.

2.2 PROJECT DESCRIPTION

Pacific Industrial proposes to construct a 708,240-square-foot (sf) high-cube distribution warehouse facility on a T-shaped, 36.7 acre (ac) site. The facility will include the construction of a single building containing a total of 20,000 sf of ancillary office space located in two corners of the building. The building length will run north–south and measures approximately 1,092 ft, and the width of the building will run east–west and measures 740 ft. The building will include 104 truck bays/doors. The truck bays/doors will be located on the east and west sides of the building. Access to the site will be provided via three locations. Two full-access driveways will be located on Slover Avenue on the south end of the site, and a single driveway will be located on Locust Avenue on the north end of the site. Truck trailer parking will be located along the east and west sides of the building across from a truck court in front of the building dock doors and in a trailer parking yard located at the Locust Avenue driveway in the north end of the site. Passenger vehicle parking for employees will also be located within the Locust Avenue lot, as well as wrapped around the south end of the building near the Slover Avenue driveways and near the north corners of the building. Figure 2 depicts the project's proposed site plan.

The project site is currently occupied by a fully functioning trucking facility operated by YRC Freight. The facility includes a total of approximately 197,771 sf of building area within three buildings and associated truck bays, truck and passenger vehicle parking lots, and truck courts. Development of the project will result in the demolition of approximately 138,171 sf of building area consisting of complete removal of the two west buildings and partial removal of the east building. Upon completion of the proposed project, the east building will be reduced to approximately 59,600 sf of building area and will be retained and reconfigured for ongoing operations by YRC Freight or another suitable tenant. A connecting driveway is proposed in the northeast corner of the proposed project site to allow consolidated operations between the proposed 708,240 sf building and the reconfigured building in the event both buildings are feasible for lease to a single user.



LSA

FIGURE 1

0 1,000 2,000
Feet

Slover Truck Terminal
Air Quality Study

SOURCE: ESRI World Imagery, 2010; Thomas Bros., 2009

Regional and Project Location

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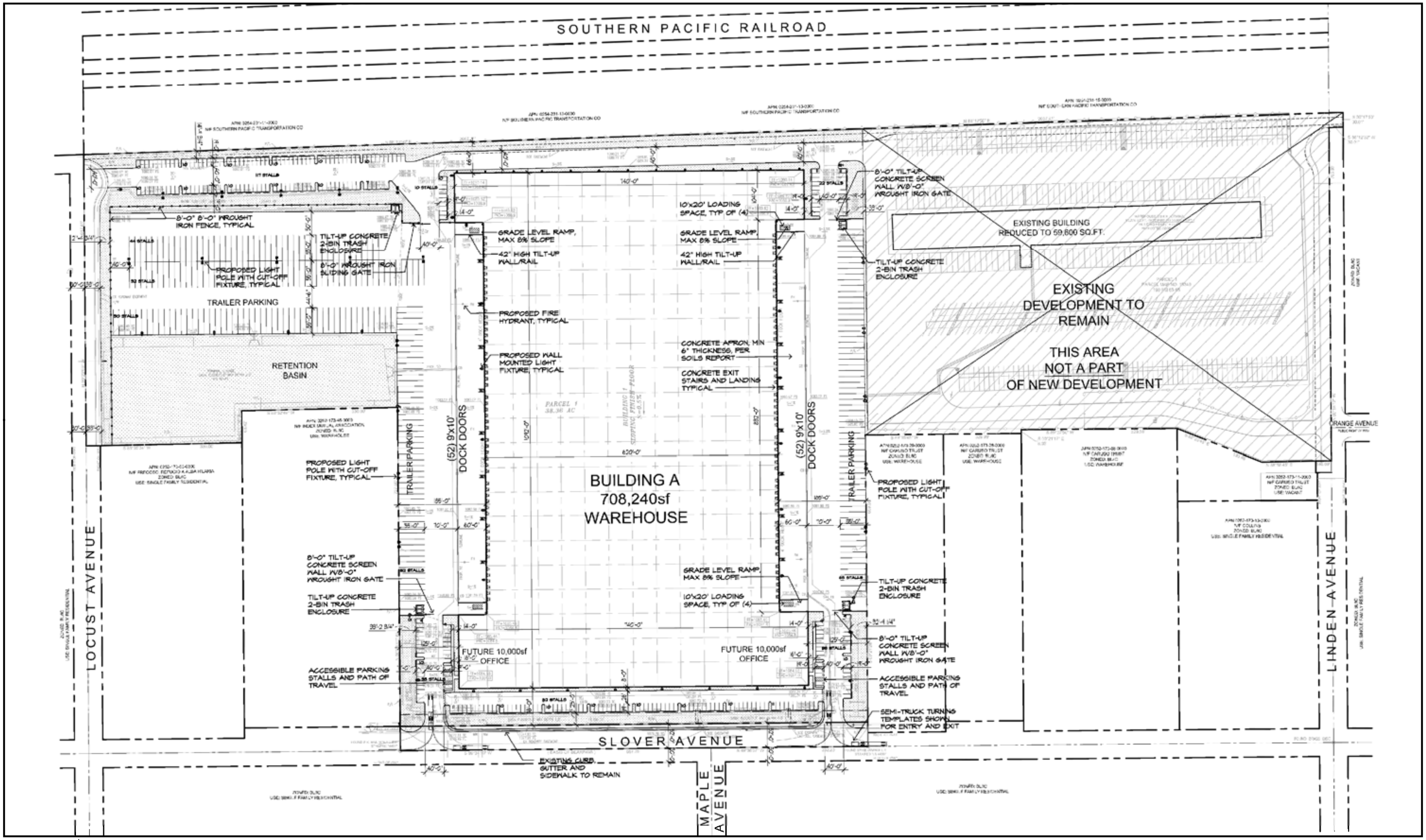

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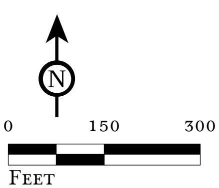
FIGURE 2



SloverTruck Terminal
Air Quality Study

Tentative Tract Map

SOURCE: Douglas Franz Architects, Inc. 25 Feb, 2013.

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The project site is located within the Bloomington Community Plan and is located in a Community Industrial (IC) Zoning District, as shown in the County of San Bernardino General Plan (County of San Bernardino 2007 General Plan, County of San Bernardino, Map FH29A, adopted March 13, 2007). Land use entitlements required for the project include a Conditional Use Permit (CUP) and a Tentative Parcel Map (TPM). A CUP is required because the proposed new building exceeds the 80,000 sf threshold for the IC District. A TPM is required to subdivide the site into two legal parcels, one property for the warehouse building and the second property for the existing building to be reconfigured.

It is anticipated that all of the construction work associated with the proposed project on the project site would take approximately 45–60 days to complete. This work will require an average of 10 on-site workers per day, with a peak of 14 workers per day. Worker commute vehicles will account for the majority of construction traffic trips to and from the site. It is estimated that there will be approximately 10 pieces of construction equipment on site each work day. Construction equipment would include the following:

- Scrapers
- Water trucks
- Pickup and flatbed trucks
- Compactor
- Dozers
- Material delivery trucks
- Dump trucks

Because mass grading of the site was conducted as part of the YRC Freight facility construction, further mass grading would not be required over the majority of the project site; rather, excavation, soil placement, and recompaction would be required.

2.3 SENSITIVE LAND USES IN THE PROJECT VICINITY

The closest residences to the west are approximately 100 feet (ft) from the project's western boundary and are approximately 500 ft from the center of the dock doors on the west side of the building. There are also residences to the east of the proposed dock doors, approximately 1,150 ft from the center of the dock doors on the east side of the building. To the south of Slover Avenue, there is a mix of residential homes approximately 800 ft from the center of the dock doors proposed on the east side of the building.

3.0 SETTING

3.1 REGIONAL AIR QUALITY

The project site is located near the unincorporated community of Bloomington in the non-desert portion of San Bernardino County, California, which is part of the South Coast Air Basin (Basin) and is under the jurisdiction of the SCAQMD. The air quality assessment for the proposed project includes estimating emissions associated with short-term construction and long-term operation of the proposed project.

A number of air quality modeling tools are available to assess the air quality impacts of projects. In addition, certain air districts, such as the SCAQMD, have created guidelines and requirements to conduct air quality analyses. The SCAQMD's current guidelines, included in its *CEQA Air Quality Handbook* (April 1993) and associated updates, were adhered to in the assessment of air quality impacts for the proposed project.

3.1.1 Regional Air Quality

Both the State of California (State) and the federal government have established health-based ambient air quality standards (AAQS) for seven air pollutants. As shown in Table A, these pollutants include ozone (O_3), CO, nitrogen dioxide (NO_2), sulfur dioxide (SO_2), particulate matter less than 10 microns in diameter (PM_{10}), particulate matter less than 2.5 microns in diameter ($PM_{2.5}$), and lead. In addition, the State has set standards for sulfates, hydrogen sulfide, vinyl chloride, and visibility-reducing particles. These standards are designed to protect the health and welfare of the populace with a reasonable margin of safety.

In addition to setting out primary and secondary AAQS, the State has established a set of episode criteria for O_3, CO, NO_2, SO_2, and PM_{10}. These criteria refer to episode levels representing periods of short-term exposure to air pollutants that actually threaten public health. Health effects are progressively more severe as pollutant levels increase from Stage One to Stage Three. An alert level is that concentration of pollutants at which initial stage control actions are to begin. For this project area, SCAQMD Rule 701 applies. An alert will be declared when any one of the pollutant alert levels is reached at any monitoring site and meteorological conditions are such that the pollutant concentrations can be expected to remain at these levels for 12 or more hours or to increase, or in the case of oxidants, the situation is likely to recur within the next 24 hours unless control actions are taken.

Pollutant alert levels:[1]

- **O_3:** 392 micrograms per cubic meter ($\mu g/m^3$) (0.20 parts per million [ppm]), 1-hour average
- **CO:** 17 milligrams per cubic meter (mg/m^3) (15 ppm), 8-hour average

[1] SCAQMD Rule 701, Attachment 2.

Table A: Ambient Air Quality Standards

Pollutant	Averaging Time	California Standards[1]		Federal Standards[2]		
		Concentration[3]	Method[4]	Primary[3,5]	Secondary[3,6]	Method[7]
Ozone (O_3)	1-Hour	0.09 ppm (180 µg/m^3)	Ultraviolet Photometry	--	Same as Primary Standard	Ultraviolet Photometry
	8-Hour	0.070 ppm (137 µg/m^3)		0.075 ppm (147 µg/m^3)		
Respirable Particulate Matter (PM_{10})	24-Hour	50 µg/m^3	Gravimetric or Beta Attenuation	150 µg/m^3	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	20 µg/m^3		--		
Fine Particulate Matter ($PM_{2.5}$)	24-Hour	No Separate State Standard		35 µg/m^3	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	12 µg/m^3	Gravimetric or Beta Attenuation	15.0 µg/m^3		
Carbon Monoxide (CO)	8-Hour	9.0 ppm (10 mg/m^3)	Non-Dispersive Infrared Photometry (NDIR)	9 ppm (10 mg/m^3)	None	Non-Dispersive Infrared Photometry (NDIR)
	1-Hour	20 ppm (23 mg/m^3)		35 ppm(40 mg/m^3)		
	8-Hour (Lake Tahoe)	6 ppm (7 mg/m^3)		—	—	—
Nitrogen Dioxide (NO_2)[8]	Annual Arithmetic Mean	0.030 ppm (57 µg/m^3)	Gas Phase Chemiluminescence	0.053 ppm (100 µg/m^3)	Same as Primary Standard	Gas Phase Chemiluminescence
	1-Hour	0.18 ppm (339 µg/m^3)		100 ppb (188 µg/m^3)	—	
Sulfur Dioxide (SO_2)[9]	Annual Arithmetic Mean	—	Ultraviolet Fluorescence	0.030 ppm (for certain areas)[9]	—	Ultraviolet Fluorescence; Spectrophotometry (Pararosaniline Method)
	24-Hour	0.04 ppm (105 µg/m^3)		0.14 ppm (for certain areas)[9]	—	
	3-Hour	—		—	0.5 ppm (1300 µg/m^3)	
	1-Hour	0.25 ppm (655 µg/m^3)		75 ppb (196 µg/m^3)	—	
Lead[10,11]	30-Day Average	1.5 µg/m^3	Atomic Absorption	—	—	High-Volume Sampler and Atomic Absorption
	Calendar Quarter	—		1.5 µg/m^3	Same as Primary Standard	
	Rolling 3-Month Average[11]	—		0.15 µg/m^3		
Visibility-Reducing Particles[12]	8-Hour	See footnote 12	Beta Attenuation and Transmittance through Filter Tape	No Federal Standards		
Sulfates	24-Hour	25 µg/m^3	Ion Chromatography			
Hydrogen Sulfide	1-Hour	0.03 ppm (42 µg/m^3)	Ultraviolet Fluorescence			
Vinyl Chloride[10]	24-Hour	0.01 ppm (26 µg/m^3)	Gas Chromatography			

Source: California Air Resources Board (June 7, 2012).

Footnotes:

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

2 National standards (other than ozone, particulate matter, and those based on annual averages or annual arithmetic mean) are not to be exceeded more than once per year. The ozone standard is attained when the fourth-highest 8-hour concentration in a year, averaged over 3 years, is equal to or less than the standard. For PM_{10}, the 24-hour standard is attained when the expected number of days per calendar year with a 24-hour average concentration above 150 µg/m^3 is equal to or less than 1. For $PM_{2.5}$, the 24-hour standard is attained when 98 percent of the daily concentrations,

averaged over 3 years, are equal to or less than the standard. Contact the EPA for further clarification and current federal policies.

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

4 Any equivalent procedure which can be shown to the satisfaction of ARB to give equivalent results at or near the level of the air quality standard may be used.

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

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

7 Reference method as described by the EPA. An "equivalent method" of measurement may be used but must have a "consistent relationship to the reference method" and must be approved by the EPA.

8 To attain the 1-hour standard, the 3-year average of the annual 98^{th} percentile of the 1-hour daily maximum 1-hour average at each monitor within an area must not exceed 100 ppb. Note that the national 1-hour standard is in units of parts per billion (ppb). California standards are in units of parts per million (ppm). To directly compare the national 1-hour standard to the California standards, the units can be converted from ppb to ppm. In this case, the national standard of 100 ppb is identical to 0.100 ppm.

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

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

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

11 The national standard for lead was revised on October 15, 2008, to a rolling 3-month average. The 1978 lead standard (1.5 $\mu g/m^3$ as a quarterly average) remains in effect until 1 year after an area is designated for the 2008 standard, except that in areas designated nonattainment for the 1978 standard, the 1978 standard remains in effect until implementation plans to attain or maintain the 2008 standards are approved.

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

°C = degrees Celsius
ARB = California Air Resources Board
EPA = United States Environmental Protection Agency
$\mu g/m^3$ = micrograms per cubic meter
mg/m^3 = milligrams per cubic meter
ppm = parts per million
ppb = parts per billion

- **NO_2:** 1,130 µg/m^3 (0.6 ppm) 1-hour average; 282 µg/m^3 (0.15 ppm) 24-hour average
- **SO_2:** 525 µg/m^3 (0.2 ppm), 24-hour average
- **Particulates, measured as PM_{10}:** 350 µg/m^3, 24-hour average

Table B lists the primary health effects and sources of common air pollutants. Because the concentration standards were set at a level that protects public health with an adequate margin of safety (EPA), these health effects will not occur unless the standards are exceeded by a large margin or for a prolonged period of time. State AAQS are more stringent than federal AAQS. Among the pollutants, O_3 and particulate matter ($PM_{2.5}$ and PM_{10}) are considered regional pollutants, while the others have more localized effects.

Table B: Summary of Health Effects of the Major Criteria Air Pollutants

Pollutant	Health Effects	Examples of Sources
Particulate matter (PM_{10}: less than or equal to 10 microns)	• Increased respiratory disease • Lung damage • Premature death	• Cars and trucks, especially diesels • Fireplaces, wood stoves • Windblown dust from roadways, agriculture, and construction
Ozone (O_3)	• Breathing difficulties • Lung damage	• Formed by chemical reactions of air pollutants in the presence of sunlight; common sources are motor vehicles, industries, and consumer products
Carbon monoxide (CO)	• Chest pain in heart patients • Headaches, nausea • Reduced mental alertness • Death at very high levels	• Any source that burns fuel such as cars, trucks, construction and farming equipment, and residential heaters and stoves
Nitrogen dioxide (NO_2)	• Lung damage	• See CO sources
Toxic air contaminants	• Cancer • Chronic eye, lung, or skin irritation • Neurological and reproductive disorders	• Cars and trucks, especially diesels • Industrial sources such as chrome platers • Neighborhood businesses such as dry cleaners and service stations • Building materials and products

Source: ARB 2009 (http://www.arb.ca.gov/research/health/fs/fs1/fs1.htm).

The California Clean Air Act (CCAA) provides the SCAQMD and other air districts with the authority to manage transportation activities at indirect sources. Indirect sources of pollution are generated when minor sources collectively emit a substantial amount of pollution. Examples of this would be the motor vehicles at an intersection, a mall, and on highways. The SCAQMD also regulates stationary sources of pollution throughout its jurisdictional area. Direct emissions from motor vehicles are regulated by ARB.

Climate/Meteorology. Air quality in the planning area is not only affected by various emission sources (mobile, industry, etc.), but also by atmospheric conditions such as wind speed, wind direction, temperature, rainfall, etc. The combination of topography, low mixing height, abundant sunshine, and emissions from the second largest urban area in the United States gives the Basin the worst air pollution problem in the nation.

Climate in the Basin is determined by its terrain and geographical location. The Basin is a coastal plain with connecting broad valleys and low hills. The Pacific Ocean forms the southwestern border, and high mountains surround the rest of the Basin. The Basin lies in the semi-permanent high-pressure zone of the eastern Pacific; the resulting climate is mild and tempered by cool ocean breezes. This climatological pattern is rarely interrupted. However, periods of extremely hot weather, winter storms, and Santa Ana wind conditions do occur.

The annual average temperature varies little throughout the Basin, ranging from the low to middle 60s, measured in degrees Fahrenheit. With a more pronounced oceanic influence, coastal areas show less variability in annual minimum and maximum temperatures than inland areas. The climatological station closest to the site with sufficient data is the Fontana Kaiser Station.[1] The monthly average maximum temperature recorded at this station in the past ranged from 66.8 degrees Fahrenheit (°F) in January to 95.0°F in July, with an annual average maximum of 79.4°F. The monthly average minimum temperature recorded at this station ranged from 44.0°F in January to 62.9°F in August, with an annual average minimum of 52.3°F. January is typically the coldest month, and July and August are typically the warmest months in this area of the Basin.

The majority of annual rainfall in the Basin occurs between November and April. Summer rainfall is minimal and is generally limited to scattered thundershowers in coastal regions and slightly heavier showers in the eastern portion of the Basin and along the coastal side of the mountains. Fontana Kaiser Station also monitors precipitation. Average monthly rainfall measured during that period varied from 3.65 inches in January to 0.34 inch or less between May and October, with an annual total of 15.32 inches. Patterns in monthly and yearly rainfall totals are unpredictable due to fluctuations in the weather.

The Basin experiences a persistent temperature inversion (increasing temperature with increasing altitude) as a result of the Pacific high. This inversion limits the vertical dispersion of air contaminants, holding them relatively near the ground. As the sun warms the ground and the lower air layer, the temperature of the lower air layer approaches the temperature of the base of the inversion (upper) layer until the inversion layer finally breaks, allowing vertical mixing with the lower layer. This phenomenon is observed in midafternoon to late afternoon on hot summer days, when the smog appears to clear up suddenly. Winter inversions frequently break by midmorning.

Wind speeds in the project area average about 4 miles per hour (mph). Summer wind speeds average slightly higher than winter wind speeds. Low average wind speeds, together with a persistent temperature inversion limit the vertical dispersion of air pollutants throughout the Basin. Strong, dry, north or northeasterly winds, known as Santa Ana winds, occur during the fall and winter months, dispersing air contaminants. The Santa Ana conditions tend to last for several days at a time.

The combination of stagnant wind conditions and low inversions produces the greatest pollutant concentrations. On days of no inversion or high wind speeds, ambient air pollutant concentrations are the lowest. During periods of low inversions and low wind speeds, air pollutants generated in

[1] Western Regional Climate Center, www.wrcc.dri.edu.

urbanized areas are transported predominantly on shore into Riverside and San Bernardino Counties. In the winter, the greatest pollution problems are CO and NO_X because of extremely low inversions and air stagnation during the night and early morning hours. In the summer, the longer daylight hours and the brighter sunshine combine to cause a reaction between hydrocarbons and NO_X to form photochemical smog.

Description of Global Climate Change and Its Sources. GCC is the observed increase in the average temperature of the Earth's atmosphere and oceans along with other significant changes in climate (such as precipitation or wind) that last for an extended period of time. The term "global climate change" is often used interchangeably with the term "global warming," but "global climate change" is preferred to "global warming" because it helps convey that there are other changes in addition to rising temperatures.

Climate change refers to any change in measures of weather (such as temperature, precipitation, or wind) lasting for an extended period (decades or longer). Climate change may result from natural factors, such as changes in the sun's intensity; natural processes within the climate system, such as changes in ocean circulation; or human activities, such as the burning of fossil fuels, land clearing, or agriculture. The primary observed effect of GCC has been a rise in the average global tropospheric[1] temperature of 0.36°F per decade, determined from meteorological measurements worldwide between 1990 and 2005. Climate change modeling shows that further warming could occur, which would induce additional changes in the global climate system during the current century. Changes to the global climate system, ecosystems, and the environment of California could include higher sea levels, drier or wetter weather, changes in ocean salinity, changes in wind patterns or more energetic aspects of extreme weather, including droughts, heavy precipitation, heat waves, extreme cold and increased intensity of tropical cyclones. Specific effects in California might include a decline in the Sierra Nevada snowpack, erosion of California's coastline, and seawater intrusion in the Delta.

Global surface temperatures have risen by 1.33°F ± 0.32°F over the last 100 years (1906 to 2005). The rate of warming over the last 50 years is almost double that over the last 100 years.[2] The latest projections, based on state-of-the art climate models, indicate that temperatures in California are expected to rise 3 to 10.5°F by the end of the century.[3] The prevailing scientific opinion on climate change is that "most of the warming observed over the last 50 years is attributable to human activities."[4] Increased amounts of CO_2 and other GHGs are the primary causes of the human-induced component of warming. The observed warming effect associated with the presence of GHGs in the atmosphere (from either natural or human sources) is often referred to as the greenhouse effect.[5]

1 The troposphere is the zone of the atmosphere characterized by water vapor, weather, winds, and decreasing temperature with increasing altitude.

2 Intergovernmental Panel on Climate Change (IPCC), 2007. *Climate Change 2007: The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the IPCC.*

3 California Climate Change Center, 2006. *Our Changing Climate. Assessing the Risks to California.* July.

4 IPCC, *Climate Change 2007: The Physical Science Basis*, http://www.ipcc.ch.

5 The temperature on Earth is regulated by a system commonly known as the "greenhouse effect." Just as the glass in a greenhouse lets heat from sunlight in and reduces the amount of heat that escapes, greenhouse gases like carbon dioxide, methane, and nitrous oxide in the atmosphere keep the Earth at a relatively even temperature. Without the greenhouse effect, the Earth would be a frozen globe; thus, although an excess of

GHGs are present in the atmosphere naturally, are released by natural sources, or are formed from secondary reactions taking place in the atmosphere. The gases that are widely seen as the principal contributors to human-induced GCC are:[1]

- Carbon dioxide (CO_2)
- Methane (CH_4)
- Nitrous oxide (N_2O)
- Hydrofluorocarbons (HFCs)
- Perfluorocarbons (PFCs)
- Sulfur Hexafluoride (SF_6)

Over the last 200 years, human activities have caused substantial quantities of GHGs to be released into the atmosphere. These extra emissions are increasing GHG concentrations in the atmosphere, and enhancing the natural greenhouse effect, which is believed to be causing global warming. While GHGs produced by human activities include naturally-occurring GHGs such as CO_2, CH_4, and N_2O, some gases, like HFCs, PFCs, and SF_6 are completely new to the atmosphere. Certain other gases, such as water vapor, are short-lived in the atmosphere as compared to these GHGs that remain in the atmosphere for significant periods of time, contributing to climate change in the long term. Water vapor is generally excluded from the list of GHGs because it is short-lived in the atmosphere and its atmospheric concentrations are largely determined by natural processes, such as oceanic evaporation. For the purposes of this report, the term "GHGs" will refer collectively to the six gases identified in the bulleted list provided above.

These gases vary considerably in terms of Global Warming Potential (GWP), which is a concept developed to compare the ability of each GHG to trap heat in the atmosphere relative to another gas. The global warming potential is based on several factors, including the relative effectiveness of a gas to absorb infrared radiation and length of time that the gas remains in the atmosphere ("atmospheric lifetime"). The GWP of each gas is measured relative to CO_2, the most abundant GHG. The definition of GWP for a particular GHG is the ratio of heat trapped by one unit mass of the GHG to the ratio of heat trapped by one unit mass of CO_2 over a specified time period. GHG emissions are typically measured in terms of pounds or tons of "CO_2 equivalents" (CO_2e). Table C shows the GWPs for each type of GHG. For example, sulfur hexafluoride is 22,800 times more potent at contributing to global warming than carbon dioxide.

Table C: Global Warming Potential of Greenhouse Gases

Gas	Atmospheric Lifetime (Years)	Global Warming Potential (100-year Time Horizon)
Carbon Dioxide	50-200	1

greenhouse gas results in global warming, the *naturally occurring* greenhouse effect is necessary to keep our planet at a comfortable temperature.

[1] The greenhouse gases listed are consistent with the definition in AB 32 (Government Code 38505), as discussed later in this section.

Table C: Global Warming Potential of Greenhouse Gases

Gas	Atmospheric Lifetime (Years)	Global Warming Potential (100-year Time Horizon)
Methane	12	25
Nitrous Oxide	114	298
HFC-23	270	14,800
HFC-134a	14	1,430
HFC-152a	1.4	124
PFC: Tetrafluoromethane (CF_4)	50,000	7,390
PFC: Hexafluoromethane (C_2F_6)	10,000	12,200
Sulfur Hexafluoride (SF_6)	3,200	22,800

Source: IPCC, 2007. *Climate Change 2007: The Physical Science Basis*. Contribution of Working Group I to the Fourth Assessment Report of the IPCC.

The following discussion summarizes the characteristics of the six primary GHGs.

Carbon Dioxide (CO_2). In the atmosphere, carbon generally exists in its oxidized form, as CO_2. Natural sources of CO_2 include the respiration (breathing) of humans, animals and plants, volcanic outgassing, decomposition of organic matter and evaporation from the oceans. Human-caused sources of CO_2 include the combustion of fossil fuels and wood, waste incineration, mineral production, and deforestation. The Earth maintains a natural carbon balance and when concentrations of CO_2 are upset, the system gradually returns to its natural state through natural processes. Natural changes to the carbon cycle work slowly, especially compared to the rapid rate at which humans are adding CO_2 to the atmosphere. Natural removal processes, such as photosynthesis by land- and ocean-dwelling plant species, cannot keep pace with this extra input of man-made CO_2, and consequently, the gas is building up in the atmosphere. The concentration of CO_2 in the atmosphere has risen about 30 percent since the late 1800s.[1]

In 2002, CO_2 emissions from fossil fuel combustion accounted for approximately 98 percent of man-made CO_2 emissions and approximately 84 percent of California's overall GHG emissions (CO_2e). The transportation sector accounted for California's largest portion of CO_2 emissions, with gasoline consumption making up the greatest portion of these emissions. Electricity generation was California's second largest category of GHG emissions.

Methane (CH_4). Methane is produced when organic matter decomposes in environments lacking sufficient oxygen. Natural sources include wetlands, termites, and oceans. Anthropogenic sources include rice cultivation, livestock, landfills and waste treatment, biomass burning, and fossil fuel combustion (burning of coal, oil, natural gas, etc.). Decomposition occurring in landfills accounts for the majority of human-generated CH_4 emissions in California, followed by enteric

[1] California EPA. 2006. *Climate Action Team Report to Governor Schwarzenegger and the Legislature*. March.

fermentation (emissions from the digestive processes of livestock).[1] Agricultural processes such as manure management and rice cultivation are also significant sources of manmade CH_4 in California. Methane accounted for approximately 7 percent of gross climate change emissions (CO_2e) in California in 2009.[2] It is estimated that over 60 percent of global methane emissions are related to human-related activities.[3] As with CO_2, the major removal process of atmospheric CH_4—a chemical breakdown in the atmosphere—cannot keep pace with source emissions, and CH_4 concentrations in the atmosphere are increasing.

Nitrous Oxide (N_2O). Nitrous oxide is produced naturally by a wide variety of biological sources, particularly microbial action in soils and water. Tropical soils and oceans account for the majority of natural source emissions. Nitrous oxide is a product of the reaction that occurs between nitrogen and oxygen during fuel combustion. Both mobile and stationary combustion emit N_2O, and the quantity emitted varies according to the type of fuel, technology, and pollution control device used, as well as maintenance and operating practices. Agricultural soil management and fossil fuel combustion are the primary sources of human-generated N_2O emissions in California. Nitrous oxide emissions accounted for nearly 7 percent of man-made GHG emissions (CO_2e) in California in 2002.

Hydrofluorocarbons (HFCs), Perfluorocarbons (PFCs), and Sulfur Hexafluoride (SF_6). HFCs are primarily used as substitutes for ozone-depleting substances regulated under the Montreal Protocol.[4] PFCs and SF_6 are emitted from various industrial processes, including aluminum smelting, semiconductor manufacturing, electric power transmission and distribution, and magnesium casting. There is no aluminum or magnesium production in California; however, the rapid growth in the semiconductor industry, which is active in California, leads to greater use of PFCs. HFCs, PFCs, and SF_6 accounted for about 3.5 percent of man-made GHG emissions (CO_2e) in California in 2002.[5]

Halons. These compounds are used in fire extinguishers and behave as both O_3-depleting and GHGs. Halon production ended in the United States in 1993. SCAQMD Rule 1418, *Halon Emissions from Fire Extinguishing Equipment,* requires the recovery and recycling of halons used in fire extinguishing systems and prohibits the sale of halon in small fire extinguishers.

[1] California ARB, Greenhouse Gas Inventory Data - 2000 to 2009. http://www.arb.ca.gov/cc/inventory/data/data.htm. Accessed August 2012.
[2] Ibid.
[3] IPCC, 2007. Climate Change 2007: The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the IPCC.
[4] The Montreal Protocol is an international treaty that was approved on January 1, 1989, and was designated to protect the ozone layer by phasing out the production of several groups of halogenated hydrocarbons believed to be responsible for ozone depletion.
[5] California EPA. 2006. *Climate Action Team Report to Governor Schwarzenegger and the Legislature*. March.

Emissions Sources and Inventories. An emissions inventory that identifies and quantifies the primary human-generated sources and sinks of GHGs is a well-recognized and useful tool for addressing climate change. This section summarizes the latest information on global, United States, California, and local GHG emission inventories. However, because GHGs persist for a long time in the atmosphere (see Table C), accumulate over time, and are generally well-mixed, their impact on the atmosphere and climate cannot be tied to a specific point of emission.

Global Emissions. Worldwide emissions of CO_2 in 2008 were 30.1 billion metric tons[1] per year.[2] Global estimates are based on country inventories developed as part of programs of the United Nations Framework Convention on Climate Change (UNFCCC).

U.S. Emissions. In 2010, the United States emitted approximately 6.8 billion metric tons of CO_2e. Of the six major sectors nationwide— electric power industry, transportation, industry, agriculture, commercial, residential— the electric power industry and transportation sectors combined account for approximately 62 percent of the GHG emissions; the majority of the electrical power industry and all of the transportation emissions are generated from direct fossil fuel combustion. Overall, from 1990 to 2010, total emissions of CO_2 increased by 605.9 Tg[3] CO_2e (11.9 percent), while total emissions of CH_4 and N_2O decreased by 1.7 Tg CO_2e (0.3 percent), and 10.0 Tg CO_2e (3.2 percent), respectively. During the same period, aggregate weighted emissions of HFCs, PFCs, and SF_6 rose by 52.5 Tg CO_2e (58.2 percent). From 1990 to 2010, HFCs increased by 86.1 Tg CO_2e (233.1 percent), PFCs decreased by 15.0 Tg CO_2e (72.7 percent), and SF_6 decreased by 18.6 Tg CO_2e (57.0 percent).[4]

State of California Emissions. According to ARB emission inventory estimates, California emitted approximately 453 million metric tons (MMT) of CO_2e emissions in 2009.[5] Emissions in 2009 decreased by 5.8 percent from 2008, which already saw a small decrease in statewide GHG emissions. The year 2009 reflected the full effect of the economic recession and higher fuel prices, with marked declines in on-road transportation, cement production and electricity consumption. Nevertheless, this large amount of CO_2e emissions is due primarily to the sheer size of California compared to other states. By contrast, California has the fourth lowest per-capita carbon dioxide emission rate from fossil fuel combustion in the country, due to the success of its energy efficiency

1 A metric ton is equivalent to approximately 1.1 tons.

2 Combined total of Annex I and Non-Annex I Country CO2eq emissions. UNFCCC, 2007. *Greenhouse Gas Inventory Data*. Information available at http://unfccc.int/ghg_data/ghg_data_unfccc/time_series_annex_i/items/3814.php and http://maindb.unfccc.int/library/view_pdf.pl?url=http://unfccc.int/resource/docs/2005/sbi/eng/18a02.pdf.

3 Tg = teragram, equivalent to a million metric tons

4 U.S. EPA. 2012. *Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990–2010*. http://www.epa.gov/climatechange/emissions/usinventoryreport.html. Accessed August 2012.

5 California ARB, Greenhouse Gas Inventory Data - 1990 to 2009. http://www.arb.ca.gov/cc/inventory/data/data.htm. Accessed August 2012.

and renewable energy programs and commitments that have lowered the State's GHG emissions rate of growth by more than half of what it would have been otherwise.[1]

The California Environmental Protection Agency (Cal/EPA) Climate Action Team stated in its March 2006 report that the composition of gross climate change pollutant emissions in California in 2002 (expressed in terms of CO_2e) was as follows:

- CO_2 accounted for 83.3 percent;
- CH_4 accounted for 6.4 percent;
- N_2O accounted for 6.8 percent; and
- HFCs, PFC, and SF_6 accounted for 3.5 percent.[2]

The California ARB estimates that transportation is the source of approximately 38 percent of the State's GHG emissions in 2004, followed by electricity generation (both in-State and out-of-State) at 23 percent, and industrial sources at 20 percent. The remaining sources of GHG emissions are residential and commercial activities at 9 percent, agriculture at 6 percent, high global warming potential gases at 3 percent, and recycling and waste at 1 percent.[3]

The California ARB is responsible for developing the California Greenhouse Gas Emission Inventory. This inventory estimates the amount of GHGs emitted to and removed from the atmosphere by human activities within the State of California and supports the AB 32 Climate Change Program. The California ARB's current GHG emission inventory covers the years 1990-2004 and is based on fuel use, equipment activity, industrial processes, and other relevant data (e.g., housing, landfill activity, agricultural lands). The emission inventory estimates are based on the actual amount of all fuels combusted in the State, which accounts for over 85 percent of the GHG emissions within California.

The California ARB staff has projected statewide unregulated GHG emissions for the year 2020, which represent the emissions that would be expected to occur in the absence of any GHG reduction actions, will be 596 $MMTCO_2e$. GHG emissions from the transportation and electricity sectors as a whole are expected to increase, but remain at approximately 38 percent and 23 percent of total CO_2e emissions, respectively. The industrial sector consists of large stationary sources of GHG emissions and the percentage of the total 2020 emissions is projected to be 17 percent of total CO_2e emissions. The remaining sources of GHG emissions in 2020 are high global warming potential gases at 8 percent, residential and commercial activities at 8 percent, agriculture at 5 percent, and recycling and waste at 1 percent.[4]

Air Pollution Constituents and Attainment Status. The ARB coordinates and oversees both State and federal air pollution control programs in California. The ARB oversees activities of local air

[1] California Energy Commission (CEC), 2007. Inventory of California Greenhouse Gas Emissions and Sinks: 1990 to 2004 - Final Staff Report, publication # CEC-600-2006-013-SF, Sacramento, CA, December 22, 2006; and January 23, 2007 update to that report.

[2] California EPA. 2006. *Climate Action Team Report to Governor Schwarzenegger and the Legislature*. March.

[3] California ARB, 2008. http://www.climatechange.ca.gov/inventory/index.html. September.

[4] California ARB, 2008. http://www.arb.ca.gov/cc/inventory/data/forecast.htm. September.

quality management agencies and maintains air quality monitoring stations throughout the State in conjunction with the EPA and local air districts. The ARB has divided the State into 15 air basins based on meteorological and topographical factors of air pollution. Data collected at these stations are used by ARB and EPA to classify air basins as attainment, nonattainment, nonattainment-transitional, or unclassified, based on air quality data for the most recent 3 calendar years compared with the AAQS. Nonattainment areas are imposed with additional restrictions as required by the EPA. The air quality data are also used to monitor progress in attaining air quality standards. Table D lists the attainment status for the criteria pollutants in the Basin.

Table D: Attainment Status of Criteria Pollutants in the South Coast Air Basin

Pollutant	State	Federal
O_3 1-hour	Nonattainment	N/A
O_3 8-hour	Nonattainment	Extreme Nonattainment
PM_{10}	Nonattainment	Serious Nonattainment
$PM_{2.5}$	Nonattainment	Nonattainment
CO	Attainment	Attainment/Maintenance
NO_2	Nonattainment	Attainment/Maintenance
SO_2	Attainment	Attainment
Lead	Attainment	Attainment
All others	Attainment/Unclassified	Attainment/Unclassified

Source: ARB 2012 (http://www.arb.ca.gov/desig/desig.htm).
CO = carbon monoxide
NO_2 = nitrogen dioxide
PM_{10} = particulate matter less than 10 microns in diameter
SO_2 = sulfur dioxide
N/A = not applicable
O_3 = ozone
$PM_{2.5}$ = particulate matter less than 2.5 microns in diameter

Ozone. O_3 (smog) is formed by photochemical reactions between oxides of nitrogen and reactive organic gases (ROGs) rather than being directly emitted. O_3 is a pungent, colorless gas typical of Southern California smog. Elevated O_3 concentrations result in reduced lung function, particularly during vigorous physical activity. This health problem is particularly acute in sensitive receptors such as the sick, the elderly, and young children. O_3 levels peak during summer and early fall. The entire Basin is designated as a nonattainment area for the State 1-hour and 8-hour O_3 standards. The EPA has officially designated the status for most of the Basin regarding the 8-hour O_3 standard as “Extreme,” which means the Basin has until 2024 to attain the federal 8-hour O_3 standard.

Carbon Monoxide. CO is formed by the incomplete combustion of fossil fuels, almost entirely from automobiles. It is a colorless, odorless gas that can cause dizziness, fatigue, and impairments to central nervous system functions. The entire Basin is in attainment for the State standards for CO. The Basin is designated as an “Attainment/Maintenance” area under the federal CO standards.

Nitrogen Oxides. NO_2, a reddish brown gas, and nitric oxide (NO), a colorless, odorless gas, are formed from fuel combustion under high temperature or pressure. These compounds are referred to as nitrogen oxides, or NO_X. NO_X is a primary component of the photochemical smog reaction. It also contributes to other pollution problems, including a high concentration of fine particulate matter, poor visibility, and acid deposition (i.e., acid rain). NO_2 decreases lung function and may reduce resistance to infection. The entire Basin is designated as nonattainment for the State NO_2 standard and as an "Attainment/Maintenance" area under the federal NO_2 standard.

Sulfur Dioxide. SO_2 is a colorless irritating gas formed primarily from incomplete combustion of fuels containing sulfur. Industrial facilities also contribute to gaseous SO_2 levels. SO_2 irritates the respiratory tract, can injure lung tissue when combined with fine particulate matter, and reduces visibility and the level of sunlight. The entire Basin is in attainment with both federal and State SO_2 standards.

Lead. Lead is found in old paints and coatings, plumbing, and a variety of other materials. Once in the blood stream, lead can cause damage to the brain, nervous system, and other body systems. Children are highly susceptible to the effects of lead. The Los Angeles County portion of the Basin was redesignated as nonattainment for the State and federal standards for lead in 2010.

Particulate Matter. Particulate matter is the term used for a mixture of solid particles and liquid droplets found in the air. Coarse particles (all particles less than or equal to 10 micrometers in diameter, or PM_{10}) derive from a variety of sources, including windblown dust and grinding operations. Fuel combustion and resultant exhaust from power plants and diesel buses and trucks are primarily responsible for fine particulate matter ($PM_{2.5}$) levels. Fine particles can also be formed in the atmosphere through chemical reactions. PM_{10} can accumulate in the respiratory system and aggravate health problems such as asthma. The EPA's scientific review concluded that $PM_{2.5}$, which penetrate deeply into the lungs, are more likely than coarse particles to contribute to the health effects listed in a number of recently published community epidemiological studies at concentrations that extend well below those allowed by the current PM_{10} standards. These health effects include premature death and increased hospital admissions and emergency room visits (primarily the elderly and individuals with cardiopulmonary disease); increased respiratory symptoms and disease (children and individuals with cardiopulmonary disease such as asthma); decreased lung functions (particularly in children and individuals with asthma); and alterations in lung tissue and structure and in respiratory tract defense mechanisms. Most of the Basin is designated nonattainment for the federal and State PM_{10} and $PM_{2.5}$ standards.

Reactive Organic Compounds. Reactive organic compounds (ROCs; also known as ROGs and volatile organic compounds [VOCs]) are formed from the combustion of fuels and the evaporation of organic solvents. ROCs are not defined as criteria pollutants, but are a prime component of the photochemical smog reaction. Consequently, ROC accumulates in the atmosphere more quickly during the winter when sunlight is limited and photochemical reactions are slower.

Sulfates. Sulfates occur in combination with metal and/or hydrogen ions. In California, emissions of sulfur compounds occur primarily from the combustion of petroleum-derived fuels (e.g., gasoline and diesel fuel) that contain sulfur. This sulfur is oxidized to SO_2 during the combustion process and subsequently converted to sulfate compounds in the atmosphere. The conversion of SO_2 to sulfates takes place comparatively rapidly and completely in urban areas of California due to regional meteorological features. The entire Basin is in attainment for the State standard for sulfates.

Hydrogen Sulfide. Hydrogen sulfide (H_2S) is a colorless gas with the odor of rotten eggs. It is formed during bacterial decomposition of sulfur-containing organic substances. Also, it can be present in sewer gas and some natural gas and can be emitted as the result of geothermal energy exploitation. In 1984, an ARB committee concluded that the ambient standard for H_2S is adequate to protect public health and to significantly reduce odor annoyance. The entire Basin is unclassified for the State standard for hydrogen sulfide.

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

3.1.2 Local Air Quality

The SCAQMD, together with the ARB, maintains ambient air quality monitoring stations in the Basin. The air quality monitoring station closest to the site is the Fontana-Arrow Highway station, and its air quality trends are representative of the ambient air quality in the project area. The pollutants monitored are O_3, PM_{10}, $PM_{2.5}$, SO_2, CO, and NO_2. However, data monitored for CO at this station is not complete. The closest station in the Basin that monitors CO is the San Bernardino-4th Street station.[1]

The ambient air quality data in Table E show that NO_2, SO_2, and CO levels are below the relevant State and federal standards in the project vicinity, while O_3, $PM_{2.5}$, and PM_{10} often exceed State and/or federal standards.

Table E: Ambient Air Quality Data Monitored at the Fontana Kaiser Monitoring Station

Pollutant	Standard	2009	2010	2011
Carbon Monoxide (CO)				
Maximum 1-hr concentration (ppm)		2.4	2.7	1.6

[1] Air quality data, 2007–2009; United States Environmental Protection Agency and California Air Resources Board websites.

Table E: Ambient Air Quality Data Monitored at the Fontana Kaiser Monitoring Station

Pollutant	Standard	2009	2010	2011
Number of days exceeded:	State: > 20 ppm	0	0	0
	Federal: > 35 ppm	0	0	0
Maximum 8-hr concentration (ppm)		1.45	1.44	1.15
Number of days exceeded:	State: ≥ 9.0 ppm	0	0	0
	Federal:≥ 9 ppm	0	0	0
Ozone (O_3)				
Maximum 1-hr concentration (ppm)		0.142	0.143	0.144
Number of days exceeded:	State: > 0.09 ppm	45	28	39
Maximum 8-hr concentration (ppm)		0.128	0.1	0.124
Number of days exceeded:	State: > 0.07 ppm	65	52	53
	Federal: > 0.075 ppm	48	33	39
Coarse Particulates (PM_{10})				
Maximum 24-hr concentration (μg/m^3)		75	62	84
Number of days exceeded:	State: > 50 μg/m^3	11	6	4
	Federal: > 150 μg/m^3	0	0	0
Annual arithmetic average concentration (μg/m^3)		38.1	N/A	30.5
Exceeded for the year:	State: > 20 μg/m^3	Yes	N/A	Yes
Fine Particulates ($PM_{2.5}$)				
Maximum 24-hr concentration (μg/m^3)		46.4	42.6	60.1
Number of days exceeded:	Federal: > 35 μg/m^3	2	2	2
Annual arithmetic average concentration (μg/m^3)		14.2	N/A	N/A
Exceeded for the year:	State: > 12 μg/m^3	Yes	N/A	N/A
	Federal: > 15 μg/m^3	No	N/A	N/A
Nitrogen Dioxide (NO_2)				
Maximum 1-hr concentration (ppm)		0.106	0.072	0.076
Number of days exceeded:	State: > 0.18 ppm	0	0	0
Annual arithmetic average concentration (ppm)		0.024	0.023	0.021
Exceeded for the year:	State: > 0.030 ppm	No	No	No
	Federal: > 0.053 ppm	No	No	No
Sulfur Dioxide (SO_2)				
Maximum 24-hr concentration (ppm)		0.002	0.002	0.003
Number of days exceeded:	State: > 0.04 ppm	0	0	0
	Federal: > 0.14 ppm	0	0	0
Annual arithmetic average concentration (ppm)		0	N/A	0
Exceeded for the year:	Federal: > 0.030 ppm	No	N/A	No

Sources: EPA (www.epa.gov/air/data/index.html), ARB (www.arb.ca.gov/adam/welcome.html), and SCAQMD (http://www.aqmd.gov/smog/historicaldata.htm).

hr = hour/hours
ppm = parts per million
μg/m^3 = microgram of pollutant per cubic meter of air
NA = Data not available

3.1.3 Regulatory Settings

Federal Regulations/Standards. Pursuant to the federal Clean Air Act (CAA) of 1970, the EPA established national ambient air quality standards (NAAQS). The NAAQS were established for six major pollutants, termed "criteria" pollutants. Criteria pollutants are defined as those pollutants for which the federal and State governments have established AAQS, or criteria, for outdoor concentrations in order to protect public health.

Data collected at permanent monitoring stations are used by the EPA to classify regions as "attainment" or "nonattainment," depending on whether the regions met the requirements stated in the primary NAAQS. Nonattainment areas are imposed with additional restrictions as required by the EPA.

The EPA has designated the SCAG as the Metropolitan Planning Organization (MPO) responsible for ensuring compliance with the requirements of the CAA for the Basin.

The EPA established new national air quality standards for ground-level O_3 and fine particulate matter in 1997. On May 14, 1999, the Court of Appeals for the District of Columbia Circuit issued a decision ruling that the CAA, as applied in setting the new public health standards for O_3 and particulate matter, was unconstitutional as an improper delegation of legislative authority to the EPA. On February 27, 2001, the U.S. Supreme Court upheld the way the government sets air quality standards under the CAA. The court unanimously rejected industry arguments that the EPA must consider financial cost as well as health benefits in writing standards. The justices also rejected arguments that the EPA took too much lawmaking power from Congress when it set tougher standards for O_3 and soot in 1997.

Nevertheless, the court threw out the EPA's policy for implementing new O_3 rules, saying that the agency ignored a section of the law that restricts its authority to enforce such rules.

In April 2003, the EPA was cleared by the White House Office of Management and Budget (OMB) to implement the 8-hour ground-level O_3 standard. The EPA issued the proposed rule implementing the 8-hour O_3 standard in April 2003. The EPA completed final 8-hour nonattainment status on April 15, 2004. The EPA revoked the 1-hour O_3 standard on June 15, 2005, and lowered the 8-hour O_3 standard from 0.08 ppm to 0.075 ppm on April 1, 2008.

The EPA issued the final $PM_{2.5}$ implementation rule in fall 2004. The EPA lowered the 24-hour $PM_{2.5}$ standard from 65 to 35 $\mu g/m^3$ and revoked the annual PM_{10} standard on December 17, 2006. The EPA issued final designations for the 2006 24-hour $PM_{2.5}$ standard on December 12, 2008.

The United States has historically had a voluntary approach to reducing GHG emissions. However, on April 2, 2007, the United States Supreme Court ruled that the EPA has the authority to regulate CO_2 emissions under the federal CAA. While there currently are no adopted federal regulations for the control or reduction of GHG emissions, the EPA commenced several actions in 2009 that are required to implement a regulatory approach to GCC.

On September 30, 2009, the EPA announced a proposal that focuses on large facilities emitting over 25,000 tons of GHG emissions per year. These facilities would be required to obtain permits that would demonstrate they are using the best practices and technologies to minimize GHG emissions.

On December 7, 2009, the EPA Administrator signed a final action under the CAA, finding that six greenhouse gases (CO_2, CH_4, N_2O, HFCs, PFCs, SF_6) constitute a threat to public health and welfare, and that the combined emissions from motor vehicles cause and contribute to GCC. This EPA action does not impose any requirements on industry or other entities. However, the findings are a prerequisite to finalizing the GHG emission standards for light-duty vehicles mentioned below.

On April 1, 2010, the EPA and the Department of Transportation's National Highway Traffic Safety Administration (NHTSA) announced a final joint rule to establish a national program consisting of new standards for model year 2012 through 2016 light-duty vehicles that will reduce GHG emissions and improve fuel economy. EPA is finalizing the first-ever national GHG emissions standards under the CAA, and NHTSA is finalizing Corporate Average Fuel Economy (CAFE) standards under the Energy Policy and Conservation Act. The EPA GHG standards require these vehicles to meet an estimated combined average emissions level of 250 grams of CO_2 per mile in model year 2016, equivalent to 35.5 miles per gallon (mpg).

State Regulations/Standards. In 1967, the California Legislature passed the Mulford-Carrell Act, which combined two Department of Health bureaus, the Bureau of Air Sanitation and the Motor Vehicle Pollution Control Board, to establish ARB. Since its formation, ARB has worked with the public, the business sector, and local governments to find solutions to California's air pollution problems.

The ARB identified particulate emissions from diesel-fueled engines (diesel particulate matter [DPM]) as toxic air contaminants (TACs) in August 1998. Following the identification process, ARB was required by law to determine whether there is a need for further control. In September 2000, the ARB adopted the Diesel Risk Reduction Plan (Diesel RRP), which recommends many control measures to reduce the risks associated with DPM and to achieve goals of 75 percent DPM reduction by 2010 and 85 percent by 2020.

In a response to the transportation sector's significant contribution to California's CO_2 emissions, AB 1493 (Pavley) was enacted on July 22, 2002. AB 1493 requires ARB to set GHG emission standards for passenger vehicles and light-duty trucks (and other vehicles whose primary use is noncommercial personal transportation in the State) manufactured in 2009 and all subsequent model years. To set its own GHG emissions limits on motor vehicles, California must receive a waiver from the EPA. On June 30, 2009, the EPA granted the waiver of CAA preemption to California for its GHG emission standards for motor vehicles beginning with the 2009 model year. Notice of the decision was published in the Federal Register on July 8, 2009.

In June 2005, Governor Schwarzenegger established California's GHG emissions reduction targets in Executive Order (EO) S-3-05. This EO established the following goals for the State of California: GHG emissions should be reduced to 2000 levels by 2010; GHG emissions should be reduced to 1990 levels by 2020; and GHG emissions should be reduced to 80 percent below 1990 levels by 2050.

California's major initiative for reducing GHG emissions is outlined in AB 32, the "Global Warming Solutions Act," passed by the California State legislature on August 31, 2006. This effort aims at reducing GHG emissions to 1990 levels by 2020. The ARB has established the level of GHG emissions in 1990 at 427 $MMTCO_2e$. The emissions target of 427 MMT requires the reduction of 169 MMT from the State's projected business-as-usual 2020 emissions of 596 MMT. AB 32 requires ARB to prepare a Scoping Plan that outlines the main State strategies for meeting the 2020 deadline and to reduce GHGs that contribute to GCC. The Scoping Plan was approved by ARB on December 11, 2008, and includes measures to address GHG emission reduction strategies related to energy efficiency, water use, and recycling and solid waste, among other measures.[1] Emission reductions that are projected to result from the recommended measures in the Scoping Plan are expected to total 174 $MMTCO_2e$, which would allow California to attain the emissions goal of 427 $MMTCO_2e$ by 2020. The Scoping Plan includes a range of GHG reduction actions that may include direct regulations, alternative compliance mechanisms, monetary and non-monetary incentives, voluntary actions, and market-based mechanisms such as a cap-and-trade system. The Scoping Plan, even after Board approval, remains a recommendation. The measures in the Scoping Plan will not be binding until after they are adopted through the normal rulemaking process. The ARB rule-making process includes preparation and release of each of the draft measures, public input through workshops and a public comment period, followed by an ARB Board hearing and rule adoption.

In addition to reducing GHG emissions to 1990 levels by 2020, AB 32 directed ARB and the newly created Climate Action Team (CAT)[2] to identify a list of "discrete early action GHG reduction measures" that can be adopted and made enforceable by January 1, 2010. On January 18, 2007, Governor Schwarzenegger signed EO S-1-07, further solidifying California's dedication to reducing GHGs by setting a new Low Carbon Fuel Standard. This EO sets a target to reduce the carbon intensity of California transportation fuels by at least 10 percent by 2020 and directs ARB to consider the Low Carbon Fuel Standard as a discrete early action measure.

In June 2007, ARB approved a list of 37 early action measures, including three discrete early action measures (Low Carbon Fuel Standard, Restrictions on High Global Warming Potential Refrigerants, and Landfill Methane Capture). Discrete early action measures are measures that were required to be adopted as regulations and made effective no later than January 1, 2010, the date established by Health and Safety Code (HSC) Section 38560.5. The ARB adopted additional early action measures in October 2007[3] that tripled the number of discrete early action measures. These measures relate to truck efficiency, port electrification, reduction of perfluorocarbons from the semiconductor industry, reduction of propellants in consumer products, proper tire inflation, and sulfur hexafluoride (SF_6) reductions from the non-electricity sector. The combination of early action measures is estimated to reduce State-wide GHG emissions by nearly 16 MMT.[4]

To assist public agencies in analyzing the effects of GHGs under CEQA, Senate Bill (SB) 97 (Chapter 185, 2007) required the Governor's Office of Planning and Research (OPR) to develop CEQA guidelines on how to minimize and mitigate a project's GHG emissions. On December 30, 2009, the Natural Resources Agency adopted CEQA Guidelines Amendments related to climate change. These amendments became effective on March 18, 2010.

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1 ARB. 2008. *Climate Change Proposed Scoping Plan: a Framework for Change*. October.

2 CAT is a consortium of representatives from State agencies who have been charged with coordinating and implementing GHG emission reduction programs that fall outside of ARB's jurisdiction.

3 ARB. 2007. *Expanded List of Early Action Measures to Reduce Greenhouse Gas Emissions in California Recommended for Board Consideration*. October.

4 ARB. 2007. "ARB approves tripling of early action measures required under AB 32." News Release 07-46. http://www.arb.ca.gov/newsrel/nr102507.htm. October 25.

SB 375, signed into law on October 1, 2008, is intended to enhance ARB's ability to reach AB 32 goals by directing ARB to develop regional GHG emissions reduction targets to be achieved within the automobile and light truck sectors for 2020 and 2035. ARB will work with California's 18 metropolitan planning organizations to align their regional transportation, housing, and land use plans and prepare a "Sustainable Communities Strategy" to reduce the number of vehicle miles traveled in their respective regions and demonstrate the region's ability to attain its GHG reduction targets.

California Green Buildings Standards Code (Cal Green Code) (California Code of Regulations [CCR], Title 24, Part 11) was adopted by the California Building Standards Commission in 2010 and became effective in January 2011. The Cal Green Code applies to all newly constructed residential, nonresidential, commercial, mixed-use, and state-owned facilities, as well as schools and hospitals. Cal Green Code consists of Mandatory Residential and Non-residential Measures and more stringent Voluntary Measures (TIERs 1 and 2).

Mandatory measures are required to be implemented on all new construction projects and consist of a wide array of green measures concerning project site design, water use reduction, improvement of indoor air quality, and conservation of materials and resources. The Cal Green Building Code refers to Title 24, Part 6 compliance, with respect to energy efficiency; however, it encourages 15 percent energy use reduction over that required in Part 6. Voluntary measures are optional, more stringent measures to be used by jurisdictions that strive to enhance their commitment to green and sustainable design and achievement of AB 32 goals. Under TIERs 1 and 2, all new construction projects are required to reduce energy consumption by 15 percent and 30 percent, respectively, below the baseline required under the California Energy Commission (CEC), as well as implement more stringent green measures than those required by mandatory code.

Regional Air Quality Planning Framework. The 1976 Lewis Air Quality Management Act established the SCAQMD and other air districts throughout the State. The federal CAA Amendments of 1977 required that each state adopt an implementation plan outlining pollution control measures to attain the federal standards in nonattainment areas of the state.

The ARB is responsible for incorporating air quality management plans for local air basins into a State Implementation Plan (SIP) for EPA approval. Significant authority for air quality control within them has been given to local air districts that regulate stationary source emissions and develop local nonattainment plans.

Regional Air Quality Management Plan. The SCAQMD and the SCAG are responsible for formulating and implementing the AQMP for the Basin. Every 3 years, the SCAQMD prepares a new AQMP, updating the previous plan and having a 20-year horizon. The SCAQMD adopted the 2003 AQMP in August 2003 and forwarded it to ARB for review and approval. The ARB approved a modified version of the 2003 AQMP and forwarded it to the EPA in October 2003 for review and approval.

The 2003 AQMP updates the attainment demonstration for the federal standards for O_3 and PM_{10}, replaces the 1997 attainment demonstration for the federal CO standard and provides a basis for a maintenance plan for CO for the future, and updates the maintenance plan for the federal NO_2 standard that the Basin has met since 1992.

The 2003 AQMP proposes policies and measures to achieve federal and state standards for healthful air quality in the Basin and those portions of the Salton Sea Air Basin (formerly named the Southeast Desert Air Basin) that are under District jurisdiction (namely, Coachella Valley). The Coachella Valley PM_{10} Plan was revised in June 2002 and forwarded to ARB and the EPA for approval. The EPA approved the 2002 Coachella Valley SIP on April 18, 2003.

This revision to the AQMP also addresses several state and federal planning requirements and incorporates significant new scientific data, primarily in the form of updated emissions inventories, ambient measurements, new meteorological episodes and new air quality modeling tools. This AQMP is consistent with and builds upon the approaches taken in the 1997 AQMP and the 1999 Amendments to the O_3 SIP for the South Coast Air Basin for the attainment of the federal O_3 air quality standard. However, this revision points to the urgent need for additional emission reductions (beyond those incorporated in the 1997/99 Plan) to offset increased emission estimates from mobile sources and meet all federal criteria pollutant standards within the timeframes allowed under the federal CAA.

The SCAQMD adopted the 2007 AQMP on June 1, 2007, which it describes as a regional and multiagency effort (the SCAQMD Governing Board, ARB, SCAG, and EPA). An inventory of existing emissions from industrial facilities is included in the baseline inventory in the 2007 AQMP. The 2007 AQMP also identifies emission reductions from existing sources and air pollution control measures that are necessary in order to comply with applicable state and federal ambient air quality standards. State and federal planning requirements will include developing control strategies, attainment demonstration, reasonable further progress, and maintenance plans. The 2007 AQMP also incorporates significant new scientific data, primarily in the form of updated emission inventories, ambient measurements, new meteorological episodes, and new air quality modeling tools. The ARB has adopted the SCAQMD 2007 AQMP as part of the 2007 SIP and forwarded it to the EPA for review and approval. On November 22, 2010, the EPA published its notice of proposed partial approval and partial disapproval of the 2007 AQMP $PM_{2.5}$ Plan primarily because the attainment demonstration relies heavily on emissions reductions from several State rules that have not been finalized or submitted to the EPA for approval. The proposed revision to the $PM_{2.5}$ and ozone SIP addresses the critical issues of the proposed disapproval. It updates the implementation status of the AQMP control measures to meet the 2015 $PM_{2.5}$ attainment, retains the SCAQMD's proposal for contingency measures, and also references and relies on ARB's proposed contingency measures. In addition, the SIP revision will reinitiate its request that the EPA voluntarily accept reduction responsibility for 10 TPD NO_X emissions in 2014 but will propose that SCAQMD and ARB jointly provide a "fair-share" backstop emissions reduction proposal, if necessary. As of March 4, 2011, SCAQMD is proposing to submit a revision to the $PM_{2.5}$ and ozone SIP to update the implementation status of the SCAQMD control measures to meet the 2015 $PM_{2.5}$ attainment, revisions to the control measure adoption schedule, and modifications to the emissions reduction commitment to reflect changes made to the inventory resulting from ARB's December 2010 revisions to the on-road truck and off-road equipment rules. The SIP revision retains the SCAQMD's proposal for contingency measures and also references and relies on ARB's proposed contingency measures that rely on reductions achieved through adopted rules that go beyond the RFP requirement.

The 2012 Draft AQMP is available to the public for review and comment. The Draft AQMP describes the control strategies necessary to achieve federal clean air standards by specified deadlines. Public workshops and hearings will be held during the review period. The draft plan is scheduled to be considered by the SCAQMD's Governing Board in the fall of 2012, after which it will be submitted to the ARB for approval, and then submitted to the EPA by December 2012.

4.0 THRESHOLDS AND METHODOLOGY

A number of modeling tools are available to assess air quality impacts of projects. In addition, certain air districts, such as the SCAQMD, have created guidelines and requirements to conduct air quality analysis. SCAQMD's current guidelines, *CEQA Air Quality Handbook* (April 1993), were adhered to in the assessment of air quality impacts for the proposed project. The air quality models identified in the document (including an older version of the URBEMIS model) are outdated; therefore, the current model, CalEEMod, Version 2011.1.1, was used to estimate project-related mobile and stationary sources emissions in this Air Quality Analysis.

The Air Quality Analysis includes estimated emissions associated with short-term construction and long-term operation of the proposed project. Criteria pollutants with regional impacts would be emitted by project-related vehicular trips, as well as by emissions associated with stationary sources used on site. Localized air quality impacts, i.e., higher CO concentrations (CO hot spots) near intersections or roadway segments in the project vicinity, would be small and less than significant due to the generally low ambient CO concentrations (2.7 ppm for the 1-hour period and 1.45 ppm for the 8-hour period) in the project area. A local CO hot-spot analysis was conducted. Project-specific information was used in the modeling. Default values representative of the proposed project were used when project-specific data were not available.

The net increase in pollutant emissions determines the significance and impact on regional air quality as a result of the proposed project. The results also allow the local government to determine whether the proposed project will deter the region from achieving the goal of reducing pollutants in accordance with the AQMP in order to comply with federal and State AAQS.

4.1 THRESHOLDS OF SIGNIFICANCE

Based on *Guidelines for the Implementation of California Environmental Quality Act*, Appendix G, Public Resource Code (PRC) Sections 15000–15387, a project would normally be considered to have a significant effect on air quality if the project would violate any ambient air quality standards, contribute substantially to an existing air quality violation, expose sensitive receptors to substantial pollutant concentrations, or conflict with adopted environmental plans and goals of the community in which it is located.

In addition to the federal and State AAQS, there are daily emissions thresholds for construction and operation of a proposed project in the Basin. The Basin is administered by the SCAQMD, and guidelines and emissions thresholds established by the SCAQMD in its *CEQA Air Quality Handbook* (April 1993) are used in this analysis. It should be noted that the emission thresholds were established based on the attainment status of the air basin in regard to air quality standards for specific criteria pollutants. Because the concentration standards were set at a level that protects public health with an adequate margin of safety (EPA), these emission thresholds are regarded as conservative and would overstate an individual project's contribution to health risks.

4.1.1 Regional Thresholds for Construction and Operational Emissions

Table F shows the CEQA significance thresholds that have been established for the Basin.

Table F: SCAQMD Significance Thresholds

Air Pollutant	Construction Phase	Operational Phase
ROCs	75 lbs/day	55 lbs/day
CO	550 lbs/day	550 lbs/day
NO_X	100 lbs/day	55 lbs/day
SO_X	150 lbs/day	150 lbs/day
PM_{10}	150 lbs/day	150 lbs/day
$PM_{2.5}$	55 lbs/day	55 lbs/day

Source: SCAQMD 2012.

CO = carbon monoxide
lbs = pounds
NO_X = nitrogen oxides
$PM_{2.5}$ = particular matter less than 2.5 microns in size
PM_{10} = particular matter less than 10 microns in size
ROCs = reactive organic compounds
SCAQMD = South Coast Air Quality Management District
SO_X = sulfur oxides

Projects in the Basin with construction- or operation-related emissions that exceed any of the emission thresholds should be considered to be significant under CEQA.

Local Microscale Concentration Standards. The significance of localized project impacts under CEQA depends on whether ambient CO levels in the vicinity of the project are above or below State and federal CO standards. 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, project emissions are considered significant if they increase 1-hour CO concentrations by 1.0 ppm or more or 8-hour CO concentrations by 0.45 ppm or more. The following are applicable local emission concentration standards for CO:

- California State 1-hour CO standard of 20.0 ppm
- California State 8-hour CO standard of 9.0 ppm

4.1.2 Thresholds for Localized Significance

The SCAQMD published its *Final Localized Significance Threshold Methodology* in June 2003, recommending that all air quality analyses include an assessment of both construction and operational impacts on the air quality of nearby sensitive receptors. LSTs represent the maximum emissions from a project site that are not expected to result in an exceedance of the national or State AAQS, as previously shown in Table A. LSTs are based on the ambient concentrations of that pollutant within the project Source Receptor Area (SRA) and the distance to the nearest sensitive receptor. For this project, the appropriate SRA for the LST is the Central San Bernardino Valley area (Area 34).

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 nonattainment pollutants. For these two, the significance criteria are the pollutant concentration thresholds presented in SCAQMD Rules 403 and 1301. The Rule 403 threshold of 10.4 $\mu g/m^3$ applies to construction emissions (and may apply to operational emissions at aggregate handling facilities). The Rule 1301 threshold of 2.5 $\mu g/m^3$ applies to nonaggregate handling operational activities.

To avoid the need for every air quality analysis to perform air dispersion modeling, the SCAQMD performed air dispersion modeling for a range of construction sites less than or equal to 5 acres (ac) in size and created look-up tables that correlate pollutant emissions rates with project size to screen out projects that are unlikely to generate enough emissions to result in a locally significant concentration of any criteria pollutant. These look-up tables can also be used as screening criteria for larger projects to determine whether or not dispersion modeling may be required.

Actual LST construction thresholds depend on the details of the construction operations. Thus, the actual thresholds are described in the construction impacts section.

For operational emissions, the localized significance for a project larger than 5 ac can be determined by performing the screening-level analysis before using the dispersion modeling because the screening-level analysis is more conservative, and if no exceedance of the screening-level thresholds is identified, then the chance of operational LST exceeding concentration standards is small. Therefore, for a conservative approach, the LST screening thresholds for 5 ac are used in this analysis for operational emissions. Since the project is not an aggregate handling facility, operational LSTs are assessed with the SCAQMD screening thresholds.

Sensitive receptors include residences, schools, hospitals, and similar uses that are sensitive to adverse air quality. There are existing sensitive receptors near the project site that include single-family residences adjacent to the western property line of the proposed site along Locust Avenue, single-family residences adjacent to the southern property line of the proposed site along Slover Avenue, and single-family residences east of the proposed site across Linden Avenue on the opposite side of the street. The nearest residences to the southeast are 600 ft from the proposed project's eastern property line. The residences to the south are approximately 160 ft from the proposed project's southern property line along Slover Avenue. Other land uses around the project site include a mix of industrial and commercial uses. The closest existing residences are located 100 ft (30 meters) from the project construction areas. Using the LST thresholds for receptors at 100 ft from a 5 ac site for this project would result in a conservative analysis because project operational emissions would be emitted over an area much larger than a 5 ac site.

The following emissions thresholds apply during project construction:

- 276 pounds per day (lbs/day) of NO_X
- 1,876 lbs/day of CO
- 19.6 lbs/day of PM_{10}
- 8.4 lbs/day of $PM_{2.5}$

The following emissions thresholds apply during project operations:

- 276 pounds per day (lbs/day) of NO_X
- 1,876 lbs/day of CO
- 5.4 lbs/day of PM_{10}
- 2.2 lbs/day of $PM_{2.5}$

4.1.3 Health Risk Assessment Thresholds

For pollutants without defined significance standards or air contaminants not covered by the standard criteria cited above, the definition of substantial pollutant concentrations varies. For TACs, “substantial” is taken to mean that the individual cancer risk exceeds a threshold considered to be a prudent risk management level. If best available control technology for toxics (T-BACT) has been applied, the individual cancer risk to the maximum exposed individual (MEI) must not exceed 10 in 1 million in order for an impact to be determined not to be significant.

Airborne impacts are also derived from materials considered to be a nuisance for which there may not be associated standards. Odors or the deposition of large diameter dust particles outside the PM_{10} size range would be included in this category. It is considered a significant impact for odors and large diameter dust particles if the SCAQMD nuisance (Rule 402) would be potentially violated.

The following limits for maximum individual cancer risk (MICR), cancer burden, and noncancer acute and chronic hazard index (HI) from project emissions of TACs have been established for the Basin:

- **MICR:** MICR is the estimated probability of an MEI contracting cancer as a result of exposure to TACs over a period of 70 years for residential and 40 years for worker receptor locations. The MICR calculations include multipathway consideration, when applicable.

  The cumulative increase in MICR that is the sum of the calculated MICR values for all TACs emitted from the project would be considered significant if it would result in an increased MICR greater than 10 in 1 million (1.0×10^{-5}) at any receptor location.
- **Chronic HI:** Chronic HI is the ratio of the estimated long-term level of exposure to a TAC for a potential MEI to its chronic reference exposure level. The chronic HI calculations include multipathway consideration, when applicable.

  The project would be considered significant if the cumulative increase in total chronic HI for any target organ system due to total emissions from the project would exceed 1.0 at any receptor location.
- **Acute HI:** Acute HI is the ratio of the estimated maximum 1-hour concentration of a TAC for a potential MEI to its acute reference exposure level.

  The project would be considered significant if the cumulative increase in total acute HI for any target organ system due to total emissions from the project would exceed 1.0 at any receptor location.

4.1.4 Global Climate Change

As the SCAQMD has recognized, the analysis of GHGs is a much different analysis than the analysis of criteria pollutants for the following reasons. For criteria pollutants, significance thresholds are based on daily emissions because attainment or nonattainment is based on daily exceedances of applicable AAQS. Further, several ambient AAQS are based on relatively short-term exposure effects on human health (e.g., 1-hour and 8-hour). Since the half-life of CO_2 is approximately 100 years, for example, the effects of GHGs are longer-term, affecting global climate over a relatively long time frame. As a result, the SCAQMD's current position is to evaluate GHG effects over a longer time frame than a single day.

The recommended approach for GHG analysis included in OPR's June 2008 release is to: (1) identify and quantify GHG emissions, (2) assess the significance of the impact on climate change, and (3) if significant, identify alternatives and/or mitigation measures to reduce the impact below a level of significance.[1] The June 2008 OPR guidance provides some additional direction regarding planning documents as follows: "CEQA can be a more effective tool for GHG emissions analysis and mitigation if it is supported and supplemented by sound development policies and practices that will reduce GHG emissions on a broad planning scale and that can provide the basis for a programmatic approach to project-specific CEQA analysis and mitigation…. For local government lead agencies, adoption of general plan policies and certification of general plan EIRs that analyze broad jurisdiction-wide impacts of GHG emissions can be part of an effective strategy for addressing cumulative impacts and for streamlining later project-specific CEQA reviews."

Pursuant to SB 97, OPR submitted to the Secretary for Natural Resources its proposed amendments to the State CEQA Guidelines for GHG emissions on April 13, 2009. These proposed CEQA Guideline amendments would provide guidance to public agencies regarding the analysis and mitigation of the effects of GHG emissions in draft CEQA documents. The Natural Resources Agency conducted formal rulemaking in 2009, prior to certifying and adopting the amendments, as required by SB 97. The Natural Resources Agency certified and adopted the guidelines on December 30, 2009.

The CEQA Guidelines amendments released by OPR include the following direction regarding determination of significant impacts from GHG emissions (Section 15064.4):

> (a) The determination of the significance of greenhouse gas emissions calls for a careful judgment by the Lead Agency consistent with the provisions in section 15064. A lead agency should make a good-faith effort, based on available information, to describe, calculate or estimate the amount of greenhouse gas emissions resulting from a project. A lead agency shall have discretion to determine, in the context of a particular project, whether to:
>
> > (1) Use a model or methodology to quantify greenhouse gas emissions resulting from a project, and which model or methodology to use. The lead agency has discretion to select the model it considers most appropriate provided it supports its decision with substantial evidence. The lead agency should explain the limitations of the particular model or methodology selected for use; or

[1] State of California, 2008. Governor's Office of Planning and Research. *CEQA and Climate Change: Addressing Climate Change Through California Environmental Quality Act Review*. June 19.

(2) Rely on a qualitative analysis or performance based standards.

(b) A lead agency may consider the following when assessing the significance of impacts from greenhouse gas emissions on the environment:

(1) The extent to which the project may increase or reduce greenhouse gas emissions as compared to the existing environmental setting.

(2) Whether the project emissions exceed a threshold of significance that the lead agency determines applies to the project.

(3) The extent to which the project complies with regulations or requirements adopted to implement a statewide, regional, or local plan for the reduction or mitigation of greenhouse gas emissions. Such regulations or requirements must be adopted by the relevant public agency through a public review process and must include specific requirements that reduce or mitigate the project's incremental contribution of greenhouse gas emissions. If there is substantial evidence that the possible effects of a particular project are still cumulatively considerable notwithstanding compliance with the adopted regulations or requirements, an EIR must be prepared for the project.

CEQA Guidelines Section 15064(b) provides that the "determination of whether a project may have a significant effect on the environment calls for careful judgment on the part of the public agency involved, based to the extent possible on scientific and factual data," and further, states that an "ironclad definition of significant effect is not always possible because the significance of an activity may vary with the setting."

Individual projects incrementally contribute toward the potential for GCC on a cumulative basis in concert with all other past, present, and probable future projects. While individual projects are unlikely to measurably affect GCC, each project incrementally contributes toward the potential for GCC on a cumulative basis, in concert with all other past, present, and probable future projects.

Revisions to Appendix G of the *CEQA Guidelines* suggest that the project be evaluated for the following impacts:

- Would the project generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?
- Would the project conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?

However, despite this, currently neither the CEQA statutes, OPR guidelines, nor the draft proposed changes to the CEQA Guidelines prescribe thresholds of significance or a particular methodology for performing an impact analysis; as with most environmental topics, significance criteria are left to the judgment and discretion of the Lead Agency.

On September 28, 2010, the SCAQMD proposed the following draft tiered interim GHG significance threshold for development projects:

- **Tier 1** consists of evaluating whether or not the project qualifies for any applicable exemption under CEQA. If the project qualifies for an exemption, no further action is required. If the project does not qualify for an exemption, then it would move to the next tier.
- **Tier 2** consists of determining whether or not the project is consistent with a GHG reduction plan that may be part of a local general plan, for example. The concept embodied in this tier is equivalent to the existing consistency determination requirements in CEQA Guidelines Sections 15064(h)(3), 15125(d), or 15152(a). The GHG reduction plan must, at a minimum, comply with AB 32 GHG reduction goals; include an emissions inventory agreed upon by either ARB or the SCAQMD, have been analyzed under CEQA and have a certified Final CEQA document, and have monitoring and enforcement components. If the proposed project is consistent with the qualifying local GHG reduction plan, it is not significant for GHG emissions. If the project is not consistent with a local GHG reduction plan, there is no approved plan, or the GHG reduction plan does not include all of the components described above, the project would move to Tier 3.
- **Tier 3** establishes a screening significance threshold level to determine significance using a 90 percent GHG emission capture rate. The 90 percent capture rate GHG significance screening level in Tier 3 for stationary sources was derived using the following methodology. Using the SCAQMD's Annual Emission Reporting (AER) Program, the reported annual natural gas consumption for 1,297 permitted facilities for 2006 through 2007 was compiled and the facilities were rank-ordered to estimate the 90th percentile of the cumulative natural gas usage for all permitted facilities. Approximately 10 percent of facilities evaluated comprise more than 90 percent of the total natural gas consumption, which corresponds to 10,000 metric tons per year (mty) CO_2e (the majority of combustion emissions comprise CO_2). SCAQMD suggested the following GHG screening thresholds: Industrial (when SCAQMD is the Lead Agency): 10,000 tons per year (tpy) CO_2e; Residential: 3,500 tpy CO_2e; Commercial: 1,400 tpy CO_2e; Mixed-use: 3,000 tpy CO_2e. If a project's GHG emissions exceed the GHG screening threshold, the project would move to Tier 4.
- **Tier 4** establishes a decision tree approach that includes compliance options for projects that have incorporated design features into the project and/or implement GHG mitigation measures.
  - Efficiency Target (2020 Targets)
    - 4.8 metric tons of CO_2e per service population (SP) for project level threshold (land use emissions only) and total residual emissions not to exceed 25,000 mty CO_2e
    - 6.6 metric tons of CO_2e per SP for plan level threshold (all sectors)
  - Efficiency Target (2035 Targets)
    - 3.0 metric tons of CO_2e per SP for project level threshold
    - 4.1 metric tons of CO_2e per SP for plan level threshold

  If a project fails to meet any of these emissions efficiency targets, the project would move to Tier 5.
- **Tier 5** would require projects that implement off-site GHG mitigation that includes purchasing offsets to reduce GHG emission impacts to purchase sufficient offsets for the life of the project (30 years) to reduce GHG emissions to less than the applicable GHG screening threshold level.

This air quality analysis analyzes whether the project's GHG emissions should be considered cumulatively significant based on the following:

- Hinder attainment of the State's goals of reducing GHG emissions to 1990 levels by 2020, as stated in the Global Warming Solutions Act of 2006. A project may be considered to help attainment of the State's goals by being consistent with an adopted Statewide 2020 GHG emissions limit or the plans, programs, and regulations adopted to implement the Global Warming Solutions Act of 2006.
- Fail to achieve increased energy efficiency or reduce overall GHG emissions from an existing facility.
- Significantly increase the consumption of fuels or other energy resources, especially fossil fuels that contribute to GHG emissions when consumed.

The analysis uses compliance with AB 32, considered a "previously approved mitigation program," as set forth in the CEQA Guidelines §15064(h)(3), to determine if the project's incremental contribution of GHGs is a cumulatively considerable contribution to GCC. The Office of Planning and Research (OPR)'s proposed draft amendment to Section 15064.7 of the CEQA Guidelines reinforces the use of this approach. CEQA Guideline Section 15064(h)(3) states three main conditions that a plan must meet to be sufficient for use as a basis for determining significance of GHG emissions. The plan must:

1. Be "a previously approved plan or mitigation program;"
2. Provide "specific requirements that will avoid or substantially lessen the cumulative problem;" and
3. "Be specified in law or adopted by the public agency with jurisdiction over the affected resources through a public review process to implement, interpret, or make specific the law enforced or administered by the public agency."

AB 32 meets conditions one and three provided above. Accordingly, in addition to determining whether the project's GHG emissions exceed the SCAQMD's interim industrial section stationary source threshold, to determine the significance of the project GHG emission impact on climate change, consistency or inconsistency with the reduction targets in AB 32 is also evaluated. To do so, project features that implement specific reduction measures identified in the rules and regulations that implement AB 32 were evaluated.

5.0 IMPACTS AND MITIGATION

Air pollutant emissions associated with the project would occur over the short term from construction activities, such as fugitive dust from site preparation and grading, and emissions from equipment exhaust. There would be long-term regional emissions associated with project-related vehicular trips. Long-term stationary source emissions would occur due to energy consumption such as electricity usage by the proposed land uses.

5.1 CONSTRUCTION IMPACTS

5.1.1 Equipment Exhausts and Related Construction Activities

Construction activities produce combustion emissions from various sources such as demolition, site grading, utility engines, on-site heavy-duty construction vehicles, equipment hauling materials to and from the site, asphalt paving, and motor vehicles transporting the construction crew. Exhaust emissions from construction activities envisioned on site would vary daily as construction activity levels change. The use of construction equipment on site would result in localized exhaust emissions.

The project is planned to be built in one phase. After demolition, site preparation (fine grading) will be completed before other construction activities would occur. Table G lists the anticipated equipment to be used on any one day for each phase. Table H lists the emissions during project construction. The emissions rates shown in Table H are from the CalEEMod output tables listed as "Mitigated Construction," even though the only mitigation measures that have been applied to the analysis are the construction emissions control measures required by SCAQMD Rule 403. They are also the combination of the on- and off-site emissions.

It is expected that demolition, site preparation, grading, and paving phases will not overlap with any other phase. Building Construction and Architectural Coating phases could overlap without any exceedances. Thus, no exceedances of any criteria pollutants are expected. Standard construction emissions control measures are discussed in Section 5.6. Details of the emission factors and other assumptions are included in Appendix A.

5.1.2 Fugitive Dust

Fugitive dust emissions are generally associated with land clearing, exposure of soils to the air and wind, and cut-and-fill grading operations. Dust generated during construction varies substantially on a project-by-project basis, depending on the level of activity, the specific operations, and weather conditions at the time of construction. It is assumed that soil will be balanced on site to minimize the need for import or export of soil during project construction.

Table G: Diesel Construction Equipment Utilized by Construction Phase

Construction Phase	Off-Road Equipment Type	Off-Road Equipment Unit Amount	Hours Used per Day	Horsepower	Load Factor
Demolition	Concrete/Industrial Saws	1	8	81	0.73
	Excavators	3	8	157	0.57
	Rubber-Tired Dozers	2	8	358	0.59
Site Preparation	Rubber-Tired Dozers	3	8	358	0.59
	Tractors/Loaders/Backhoes	4	8	75	0.55
Grading	Excavators	2	8	157	0.57
	Graders	1	8	162	0.61
	Rubber-Tired Dozers	1	8	358	0.59
	Scrapers	2	8	356	0.72
	Tractors/Loaders/Backhoes	2	8	75	0.55
Building Construction	Cranes	1	7	208	0.43
	Forklifts	3	8	149	0.3
	Generator Sets	1	8	84	0.74
	Tractors/Loaders/Backhoes	3	7	75	0.55
	Welders	1	8	46	0.45
Architectural Coating	Air Compressors	1	6	78	0.48
Paving	Pavers	2	8	89	0.62
	Paving Equipment	2	8	82	0.53
	Rollers	2	8	84	0.56

Source: Project Plans and CalEEMod Defaults, June 2013.

Table H: Short-Term Regional Construction Emissions

Construction Phase	Total Regional Pollutant Emissions (lbs/day)								
	ROG	NO_X	CO	SO_X	Fugitive PM_{10}	Exhaust PM_{10}	Fugitive $PM_{2.5}$	Exhaust $PM_{2.5}$	CO_2e
Demolition	8.8	70	44	0.08	9.2	3.4	0.03	3.4	8,400
Site Preparation	9.4	75	43	0.07	7.1	3.6	3.9	3.6	8,000
Grading	11	91	51	0.10	3.4	4.2	1.3	4.2	10,900
Building Construction	8.0	52	52	0.11	5.6	2.7	0.25	2.7	10,800
Architectural Coating	64	3.2	5.9	0.01	0.91	0.27	0.03	0.27	1,000
Paving	6.3	32	22	0.03	0.23	2.8	0.01	2.8	200
Peak Day	**72**	**91**	**58**	**0.12**	**13**		**7.5**		**11,800**
SCAQMD Thresholds	**75**	**100**	**550**	**150**	**150**		**55**		**No Threshold**
Significant Emissions?	**No**	**No**	**No**	**No**	**No**		**No**		

Source: LSA Associates, Inc., June 2013.

CO = carbon monoxide
CO_2 = carbon dioxide
CO_2e = carbon dioxide equivalent
lbs/day = pounds per day
NO_x = nitrogen oxides
$PM_{2.5}$ = particulate matter less than 2.5 microns in size
PM_{10} = particulate matter less than 10 microns in size
ROG = reactive organic compounds
SCAQMD = South Coast Air Quality Management District
SO_x = sulfur oxides

Construction emissions can vary greatly depending on the level of activity, the specific operations taking place, the equipment being operated, local soils, weather conditions, and other factors. The proposed project will be required to comply with SCAQMD Rules 402 and 403 to control fugitive dust. Table H lists total construction emissions (i.e., fugitive-dust emissions and construction-equipment exhausts) that have incorporated all required control measures to reduce PM_{10} emissions from construction. Table H shows that daily total construction emissions with standard control measures would be below the daily thresholds established by the SCAQMD.

5.1.3 Architectural Coatings

Architectural coatings contain VOCs that are similar to ROCs and are part of the O_3 precursors. The ROG threshold would not be exceeded during the application of architectural coatings. Based on project plans, it is estimated that the application of architectural coatings on the proposed buildings will result in emissions of VOC that would be less than the SCAQMD ROG threshold of 75 lbs/day.

Emissions associated with architectural coatings are anticipated to be less than the ROG threshold due to use of precoated/natural-colored building materials using water-based or low-VOC coating and coating transfer or spray equipment with high transfer efficiency. For example, a high-volume, low-pressure (HVLP) spray method is a coating application system operated at air pressure between 0.1 and 10 pounds per square inch gauge (psig), with 65 percent transfer efficiency. Manual applications such as paintbrushes, hand rollers, trowels, spatulas, daubers, rags, or sponges have 100 percent transfer efficiency. The use of an HVLP spray method would increase the transfer efficiency from 25 to 65 percent. In order to ensure that ROG emissions during application of architectural coatings are less than the SCAQMD ROG threshold, Mitigation Measure 5.8.1 has been proposed and requires compliance with SCAQMD Rule 1113 and any other SCAQMD rules and regulations on the use of architectural coatings, use of HVLP spray equipment, and use of water-based or low-VOC coatings. With application of the measures contained in Mitigation Measure 5.8.1, impacts associated with application of architectural coatings will be reduced to less than significant.

5.1.4 Odors

Heavy-duty equipment in the project area during construction would emit odors. However, the construction activity would be short-term and would cease to occur after construction is completed. No other sources of objectionable odors have been identified for the proposed project. No mitigation measures are recommended.

SCAQMD Rule 402 regarding nuisances states: "A person shall not discharge from any source whatsoever such quantities of air contaminants or other material which cause injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public, or which cause, or have a natural tendency to cause, injury or damage to business or property." The proposed uses are not anticipated to emit any objectionable odors. Therefore, objectionable odors posing a health risk to potential on-site and existing off-site uses would not occur as a result of the proposed project.

5.1.5 Localized Significance Analysis

The SCAQMD has issued guidance on applying CalEEMod modeling results to LST analyses.[1] 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, standard equipment

[1] From the SCAQMD website - www.aqmd.gov/ceqa/handbook/lst/CalEEModguidance.pdf.

area coverage amounts have been provided by SCAQMD to determine the maximum daily disturbed acreage for comparison to LSTs. Table I lists the equipment expected to be used during construction of this project, the SCAQMD usage rates and the anticipated disturbed area amounts.

Table I: Equipment-Specific Grading Rates

Equipment Type	Acres per 8-hour day	Site Preparation		Grading	
		Pieces of Equipment	Acres Disturbed	Pieces of Equipment	Acres Disturbed
Crawler Tractor	0.5	0	0	2	1
Graders	0.5	0	0	1	0.5
Rubber-Tired Dozers	0.5	3	1.5	1	0.5
Scrapers	1	0	0	2	2
Tractors/Loaders/Backhoes	0	4	0	2	0
Total Acres Disturbed		**1.5**		**4.0**	

Source: CalEEMod User Guide Appendix A and project plans.

As shown in Table I, the construction phase with the greatest daily emissions is the grading phase, during which Table G shows that two excavators (crawler tractor), one grader, one rubber-tired dozer, and two scrapers could be used simultaneously on 1 peak day (the equipment described as "tractor/loader/backhoe" in Table G is not the same as the "Crawler Tractor" listed in Table I). Based on Table I, the proposed project will result in a maximum of 4.0 ac disturbed on any one day during the grading phase. Thus, LSTs for a 4 ac site are applicable for the project.

Table J shows that the emissions of these pollutants on the peak day of construction will result in concentrations of pollutants at nearby residences or other sensitive receptors that are below the SCAQMD thresholds of significance resulting in a less than significant impact.

Table J: Construction LST Impacts

Emissions Sources	NO_X	CO	PM_{10}	$PM_{2.5}$
On-Site Emissions (lbs./day)	91	51	11	7.5
LST Thresholds	**276**	**1,876**	**19.6**	**8.4**
Significant Emissions?	**No**	**No**	**No**	**No**

Source: LSA Associates, Inc., June 2013.

Source Receptor Area: Central San Bernardino Valley, 5 acres, 30 meters (100 feet) distance

CO = carbon monoxide
lbs./day = pounds per day
LST = local significance threshold
NO_X = nitrogen oxides
$PM_{2.5}$ = particulate matter less than 2.5 microns in size
PM_{10} = particulate matter less than 10 microns in size

5.1.6 Naturally Occurring Asbestos

The proposed project is located in San Bernardino County, which is not among the counties that are found to have serpentine and ultramafic rock in their soils. Therefore, the potential risk for naturally occurring asbestos during project construction is small and less than significant.

5.2 LONG-TERM AIR QUALITY IMPACTS

5.2.1 Regional Project Operational Emissions

Long-term air pollutant emission impacts are those associated with stationary sources and mobile sources involving any project-related changes, and are shown in Table K. Area sources include architectural coatings, consumer products, and landscaping. Energy sources include electricity for lighting. Based on trip generation factors, included in the traffic study that are obtained from the Institute of Transportation Engineers' (ITE) *Trip Generation Manual, Eighth Edition*, long-term operational emissions associated with the proposed project, calculated with the CalEEMod model, are also shown in Table K. Because the project is a truck terminal, it is expected that the haul trucks operating from it will travel an average distance of 40 miles (mi). Table K shows that the increase of all criteria pollutants as a result of the proposed project would be less than the corresponding SCAQMD daily emission thresholds. Therefore, project-related long-term regional air quality impacts would be less than significant.

Table K: Long-Term Regional Operational Emissions

Source	Pollutant Emissions, lbs/day					
	ROG	NO_X	CO	SO_X	PM_{10}	$PM_{2.5}$
Existing Land Use						
Area Sources	3.6	0	0	0	0	0
Energy Sources	0.01	0.08	0.07	0	0.01	0.01
Mobile Sources	3.6	10	35	0.05	6.2	0.58
Total Existing Emissions	7.2	10	35	0.05	6.2	0.59
Proposed Project						
Area Sources	19	0	0	0	0	0
Energy Sources	0.04	0.41	0.34	0	0.03	0.03
Mobile Sources	9.4	26	88	0.16	18	1.6
Total Project Emissions	**28**	**26**	**88**	**0.16**	**18**	**1.6**
Net Increase from Project	**20.8**	**16**	**53**	**0.11**	**11.8**	**1.01**
SCAQMD Thresholds	**55**	**55**	**550**	**150**	**150**	**55**
Significant?	**No**	**No**	**No**	**No**	**No**	**No**

Source: LSA Associates, Inc., June 2013.

CO = carbon monoxide
CO_2 = carbon dioxide
lbs/day = pounds per day
NO_x = nitrogen oxides
$PM_{2.5}$ = particulate matter less than 2.5 microns in size
PM_{10} = particulate matter less than 10 microns in size
ROGs = reactive organic gases
SCAQMD = South Coast Air Quality Management District
SO_x = sulfur oxides

5.2.2 Localized Significance Analysis

Table L shows the calculated emissions for the proposed operational activities compared with the appropriate LSTs for a 5 ac site. The LST analysis only includes on-site sources; however, it is unknown exactly what percentage of mobile sources will be on site. For a worst-case scenario assessment, the emissions shown in Table L include all on-site stationary sources and 5 percent of the mobile sources, which is an estimate of the amount of project-related vehicle traffic that will occur on site. Considering the average trip length of the majority of the project vehicles is assumed to be 40 mi, and a typical on-site travel distance of less than 1,000 ft, the 5 percent assumption is conservative.

Table L: Long-Term Operational LST Numbers

Emissions Sources	NO_X	CO	PM_{10}	$PM_{2.5}$
On-Site Emissions	1.3	4.4	0.9	0.08
LST Thresholds	**276**	**1,876**	**5.4**	**2.2**
Significant Emissions?	**No**	**No**	**No**	**No**

Source: LSA Associates, Inc., June 2013.

SRA: Central San Bernardino Valley, 5 acres, 30 meters (100 feet) distance, on-site traffic 5 percent of total

CO = carbon monoxide
lbs/day = pounds per day
LST = local significance threshold
NO_X = nitrogen oxides
$PM_{2.5}$ = particulate matter less than 2.5 microns in size
PM_{10} = particulate matter less than 10 microns in size

Table L shows that none of the operational emission rates of criteria pollutants result in concentrations that exceed the LST thresholds at the nearest residential uses. Therefore, the proposed operational activity would not result in a localized significant air quality impact.

5.2.3 Health Risk Assessment

A health risk assessment (HRA) is included due to the close proximity of current residents to the project site that will be exposed to diesel-powered delivery trucks, potentially resulting in a significant exposure. An HRA is a process used to estimate the increased risk of health problems in people who are exposed to toxic substances. An HRA combines results of studies on the health effects of various animal and human exposures to TAC with results of studies that estimate the level of people’s exposures at different distances from the sources of the pollutants. This section examines the short-term and long-term potential health effects from project-related emissions of TAC on existing surrounding sensitive receptors.

Determining how hazardous a substance is depends on many factors, including the amount of the substance in the air, how it enters the body, how long the exposure lasts, and what organs in the body are affected. One major way hazardous substances might enter the body is through inhalation of either gases or particulates. Many gases and very small particles that penetrate deeply into the lungs are potentially harmful and can contribute to a variety of health problems. Exhaust from diesel engines is a major source of harmful airborne particles. The inhalation of diesel exhaust particulates is associated with both cancer and noncancer health effects.

TAC emissions associated with the project would occur from a variety of activities related to the project operations. The only significant amount of TAC known to be released is contained in the exhaust of project-related vehicles. While there may be other toxic substances in use on site, compliance with State and federal handling regulations will keep emissions below a level of significance. For the purposes of an HRA, short-term emissions are of concern for analyzing acute health impacts, and long-term emissions are of concern for analyzing chronic and carcinogenic health impacts. This assessment focuses on the risks from diesel exhaust particulate.

California's Office of Environmental Health Hazard Assessment (OEHHA) has determined that long-term exposure to diesel exhaust particulates poses the highest cancer risk of any TAC it has evaluated. Exposure to diesel exhaust can also have immediate health effects. Diesel exhaust can irritate the eyes, nose, throat, and lungs, and it can cause coughs, headaches, lightheadedness, and nausea. In studies with human volunteers, diesel exhaust particles made people with allergies more susceptible to the materials to which they are allergic, such as dust and pollen. Exposure to diesel exhaust also causes inflammation in the lungs, which may aggravate chronic respiratory symptoms and increase the frequency or intensity of asthma attacks.

Fortunately, improvements to diesel fuel and diesel engines have already reduced emissions of some of the contaminants. These improvements have already resulted in a 75 percent reduction in particle emissions from diesel-powered trucks and other equipment (as compared to 2000 levels), and by 2020, when fully implemented, they will result in an 85 percent reduction.[1] These improvements are anticipated to continue into the foreseeable future. However, to be conservative, other than what is built into the EMFAC2011 model, none of these anticipated improvements are included in this HRA.

A screening-level single pathway analysis has been conducted, analyzing the inhalation pathway. This technique was chosen as recommended in the OEHHA Air Toxic Hot Spots Program Risk Assessment Guidelines (August 2003), Appendix D, "Risk Assessment Procedures to Evaluate Particulate Emissions from Diesel-Fueled Vehicles." The first step is to characterize the project-related vehicle emissions.

The Traffic Impact Study (LSA, May 2013) shows a daily trip rate of 41 two-axle trucks, 55 three-axle trucks, and 147 four-plus axle trucks. These trucks operate in two modes: stationary idling and moving on and off the site. The emissions from the trucks while idling result in much higher concentrations of TAC at nearby sensitive receptors than the emissions from the trucks while moving, because while moving, the distance the truck is from the receptors is changing and the motion of the truck tends to disperse the exhaust. However, for this screening level assessment, the moving emissions were modeled, as well as the idling locations. The idling times of the trucks were conservatively assumed to be double the State and federal regulations of no more than 5 minutes per stop.

Trucks are assumed to operate 24 hours per day and 7 days per week. Based on the site plan, idling locations were modeled adjacent to each of the buildings. Toxic pollutants from roadways are modeled as a series of volume sources. An approximate representation of the roadway was obtained by placing a number of volume sources at equal intervals along the roads on site and far enough off site to characterize the emissions at the sensitive receptors near the project site. For other sensitive

1 Cal EPA OEHHA and American Lung Association of California, 2002. *Health Effects of Diesel Exhaust*. April.

receptors further from the project site but near the roads the trucks will travel, it is assumed that the health risk levels from the project traffic will be low compared to the total from all existing sources.

Since building wake effects (building downwash) influences can significantly increase concentrations for receptors located close to the emissions source, the proposed new building was modeled with a designed height of 32 feet.

The ARB model, EMFAC2011, was used for emission factors for diesel trucks both idling and operating to determine the total emissions of PM_{10} from the trucks operating on site. See Appendix C for the details of this emissions factor derivation. Tables M and N show the development of the exhaust emission rates for the trucks idling at the project buildings and driving.

Table M: Diesel Truck Idling Exhaust Emissions Rates

Total Project ADT[1]	Vehicle Type	Fleet Percentage Breakdown[1]	Total Trips per Day	Percent of Trucks That Are Diesel[2]	Diesel Trucks per Day	Diesel Idle Exhaust gm/min (on site)[3]	Idle Time (min/trip)[4]	Idle Exhaust Diesel PM_{10} (gm/day)
1,190	Passenger	79.57%	947	0.0%	0	0	0	0
	2 Axle[5]	3.46%	41	20.0%	8	0.002	10	0.18
	3 Axle[6]	4.64%	55	70.0%	39	0.002	10	0.86
	4+ Axle[7]	12.33%	147	100%	147	0.0019	10	2.9
Total Project Site Emissions:								**3.9**

Source: LSA Associates, Inc., June 2013.
1 Project Traffic Impact Study (LSA, May 2013).
2 CalEEMod fleet diesel percentages.
3 EMFAC2011 emission factors.
4 It is assumed that each truck idles for 10 minutes per trip to account for stopping at the entry gate, dumping, and miscellaneous tasks.
5 2-axle trucks are assumed to be Medium-Duty Trucks (MDV) (5,751-8,500 lb GVW).
6 3-axle trucks are assumed to be Light-Heavy-Duty Trucks (LHD2) (10,001-14,000 lb GVW).
7 4+-axle trucks are assumed to be Heavy-Heavy-Duty Diesel Public Fleet Trucks (T7-Public).

ADT = average daily traffic
gm/day = grams per day
gm/min = grams per minute
HHD = heavy heavy-duty
LHD1 = light heavy-duty
MHD = medium heavy-duty
min/trip = minutes per trip
mph = miles per hour
PM_{10} = particulate matter less than 10 microns in diameter

Table N: Diesel Truck Running Exhaust Emissions Rates

Total Project ADT	AADT by Vehicle Category			
	LDA	**LDT**	**MDT**	**HDT**
909	947	41	55	149
	Percent of Vehicles That Are Diesel-Powered			
	0%	20.0%	70.0%	100%
	Diesel Exhaust PM_{10} Emissions at 30 mph (g/s)			
	0	5.00E-08	1.19E-07	2.11E-06

Source: LSA Associates, Inc., June 2013.

AADT = annual average daily traffic
ADT = average daily traffic
gm/s = grams per second
HDT = heavy-duty trucks
LDA = light-duty autos
LDT = light-duty trucks
MDT = medium-duty trucks
mph = miles per hour
PM_{10} = particulate matter less than 10 microns in diameter

Receptors were placed at locations of all residences along Locust Avenue, Linden Avenue, and Slover Avenue. Three years of meteorological data for the Fontana area from the SCAQMD[1] were used to represent the atmospheric conditions at the project site. All of these emissions sources, building parameters, and receptor data were modeled using the AERMOD air dispersion model to produce concentrations at receptors of interest. These concentrations were then incorporated into the HARP model with the emissions rates shown in Tables M and N to determine individual health risk levels. Appendix C includes the worksheets for this HRA.

Acute Project-Related Emission Impacts. Exposure to diesel exhaust can result in immediate health effects. Diesel exhaust can irritate the eyes, nose, throat, and lungs, and it can cause coughs, headaches, lightheadedness, and nausea. In studies with human volunteers, diesel exhaust particles made people with allergies more susceptible to the materials to which they are allergic, such as dust and pollen. Exposure to diesel exhaust also causes inflammation in the lungs, which may aggravate chronic respiratory symptoms and increase the frequency or intensity of asthma attacks. However, according to the rulemaking on *Identifying Particulate Emissions from Diesel-Fueled Engines as a Toxic Air Contaminant* (ARB 1998), the available data from studies of humans exposed to diesel exhaust are not sufficient for deriving an acute noncancer health risk guidance value. While the lung is a major target organ for diesel exhaust, studies of the gross respiratory effects of diesel exhaust in exposed workers have not provided sufficient exposure information to establish a short-term noncancer health risk guidance value for respiratory effects. Since there are no significant emissions of toxic air pollutants that cause short-term acute health effects in the project vicinity, the potential for short-term acute exposure will be less than significant.

Carcinogenic and Chronic Project-Related Emission Impacts. The results of the long-term health assessment are shown in Table O. The receptors representing residences along Locust Avenue to the west of the project, residences along Linden Avenue to the east, and along Slover Avenue south of the

[1] http://www.aqmd.gov/smog/metdata/MeteorologicalData.html.

project were examined for residential risk levels. Table O lists the greatest health risks at any of these nearby residences.

Table O: Health Risk Assessment Results at the Nearest Residences to the Project Site

	Cancer Risk (number in 1 million)	Chronic Hazard Index
MICR – 30-year exposure	2.2	0.0035
MICR – 70-year exposure	5.6	
Child – 9-year exposure	1.1	
Threshold	**10.0**	**1.0**

Source: LSA Associates, Inc., June 2013.
MICR = maximum individual cancer risk

Individuals who stay in one of the nearby residences for 30 years would be exposed to an inhalation cancer risk of 2.2 in 1 million. The inhalation cancer risk level for a full 70-year exposure would be 5.6 in 1 million. Children spending 9 years at one of the nearby residences would be exposed to an inhalation cancer risk of 1.1 in 1 million. Thus, all the sensitive receptors near the proposed project would be exposed to a cancer health risk from project emissions that is less than the 10 in 1 million threshold. The maximum chronic hazard index for any resident, child or adult, is 0.0035, which is less than the threshold of 1.0.

The SCAQMD website "AQMD MATES III Model Estimated Risk Map"[1] shows a carcinogenic risk of over 886 in a million for the Bloomington area. This HRA shows that the project's incremental increase is only a very small fraction of the ambient condition. No significant health risk would occur from project-related truck traffic, and no mitigation is necessary.

5.2.4 Greenhouse Gas Emissions

This section evaluates potential significant impacts to GCC that could result from implementation of the proposed project. Because it is not possible to tie specific GHG emissions to actual changes in climate, this evaluation focuses on the project's emission of GHGs. Mitigation measures are identified as appropriate.

GHG Emissions Background. Emissions estimates for the proposed project are discussed below. GHG emissions estimates are provided herein for informational purposes only, as there is no established quantified GHG emissions threshold. Bearing in mind that CEQA does not require "perfection" but instead "adequacy, completeness, and a good faith effort at full disclosure," the analysis below is based on methodologies and information available to the County and the applicant at the time this analysis was prepared. Estimation of GHG emissions in the future does not account for all changes in technology that may reduce such emissions; therefore, the estimates are based on past performance and represent a scenario that is worse than that which is likely to be encountered

[1] http://www2.aqmd.gov/webappl/matesiii/, accessed August, 2012.

(after energy-efficient technologies have been implemented). While information is presented below to assist the public and the County's decision-makers in understanding the project's potential contribution to GCC impacts, the information available to the County is not sufficiently detailed to allow a direct comparison between particular project characteristics and particular climate change impacts, or between any particular proposed mitigation measure and any reduction in climate change impacts.

Construction and operation of project development would generate GHG emissions, with the majority of energy consumption (and associated generation of GHG emissions) occurring during the project's operation (as opposed to its construction). Typically, more than 80 percent of the total energy consumption takes place during the use of buildings, and less than 20 percent is consumed during construction.[1] As of yet, there is no study that quantitatively assesses all of the GHG emissions associated with each phase of the construction and use of an individual development.

Overall, the following activities associated with the proposed project could directly or indirectly contribute to the generation of GHG emissions:

- **Removal of Vegetation:** The net removal of vegetation for construction results in a loss of the carbon sequestration in plants. However, planting of additional vegetation would result in additional carbon sequestration and would lower the carbon footprint of the project.
- **Construction Activities:** During construction of the project, GHGs would be emitted through the operation of construction equipment and from worker and builder supply vendor vehicles, each of which typically uses fossil-based fuels to operate. The combustion of fossil-based fuels creates GHGs such as CO_2, CH_4, and N_2O.
- **Gas, Electricity, and Water Use:** Natural gas use results in the emissions of two GHGs: CH_4 (the major component of natural gas) and CO_2 (from the combustion of natural gas). Electricity use can result in GHG production if the electricity is generated by combusting fossil fuel. California's water conveyance system is energy-intensive. In 2005, the California Energy Commission estimated that water-related energy accounts for about 19.2 percent of the State's electricity requirements and 30 percent of non-power-plant-related natural gas consumption.[2]
- **Solid Waste Disposal:** Solid waste generated by the project could contribute to GHG emissions in a variety of ways. Landfilling and other methods of disposal use energy for transporting and managing the waste, and they produce additional GHGs to varying degrees. Landfilling, the most common waste management practice, results in the release of CH_4 from the anaerobic decomposition of organic materials. CH_4 is 25 times more potent a GHG than CO_2. However, landfill CH_4 can also be a source of energy. In addition, many materials in landfills do not decompose fully, and the carbon that remains is sequestered in the landfill and not released into the atmosphere.
- **Motor Vehicle Use:** Transportation associated with the proposed project would result in GHG emissions from the combustion of fossil fuels in daily automobile and truck trips.

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1 United Nations Environment Programme (UNEP), 2007. *Buildings and Climate Change: Status, Challenges and Opportunities*, Paris, France.

2 California Public Utilities Commission, 2010. *Embedded Energy in Water Studies Study 1: Statewide and Regional Water-Energy Relationship.* ftp://ftp.cpuc.ca.gov/gopher-data/energy%20efficiency/Water%20Studies%201/Study%201%20-%20FINAL.pdf. Accessed August 2010.

GHG emissions associated with the project would occur over the short term from construction activities, consisting primarily of emissions from equipment exhaust. There would also be long-term regional emissions associated with project-related vehicular trips and on- and off-site stationary source emissions, such as on-site landscape maintenance equipment and off-site natural gas used at water treatment facilities and electricity generation. Preliminary guidance from OPR and recent letters from the Attorney General critical of CEQA documents that have taken different approaches indicate that lead agencies should calculate, or estimate, emissions from vehicular traffic, energy consumption, water conveyance and treatment, waste generation, and construction activities. The calculation presented below includes construction emissions in terms of CO_2 and annual CO_2e GHG emissions from increased energy consumption, water usage, solid waste disposal, and estimated GHG emissions from vehicular traffic that would result from implementation of the project.

GHG emissions generated by the proposed project would predominantly consist of CO_2. In comparison to criteria air pollutants such as O_3 and PM_{10}, CO_2 emissions persist in the atmosphere for a substantially longer period of time. While emissions of other GHGs, such as CH_4, are important with respect to GCC, emission levels of other GHGs are less dependent on the land use and circulation patterns associated with the proposed land use development project than are levels of CO_2.

Construction activities produce combustion emissions from various sources such as site grading, utility engines, on-site heavy-duty construction vehicles, equipment hauling materials to and from the site, asphalt paving, and motor vehicles transporting the construction crew. Exhaust emissions from on-site construction activities would vary daily as construction activity levels change.

The actual details of the future construction schedule are not known. The CalEEMod modeling lists a peak daily construction emissions rate of CO_2 as shown in Table H of 11,800 bs./day, and an annual emissions rate of 990 tons of CO_2e (shown in Appendix A).

The project would be required to implement the construction exhaust control measures listed in Section 5.6, including minimization of construction equipment idling and implementation of proper engine tuning and exhaust controls. Both of these measures would reduce GHG emissions during the construction period.

Architectural coatings used in construction of the project may contain VOCs that are similar to ROGs and are part of O_3 precursors. However, there are no significant emissions of GHGs from architectural coatings.

Long-term operation of the proposed project would generate GHG emissions from area and mobile sources and indirect emissions from stationary sources associated with energy consumption. Mobile-source emissions of GHGs would include project-generated vehicle trips associated with on-site facilities and visitors/deliveries to the project site. Area-source emissions would be associated with activities such as landscaping and maintenance of proposed land uses, natural gas for heating, and other sources. Increases in stationary source emissions would also occur at off-site utility providers as a result of demand for electricity, natural gas, and water by the proposed uses. At present, there is a federal ban on chlorofluorocarbons (CFCs); therefore, it is assumed the project would not generate emissions of CFCs. The project may emit a small amount of HFC emissions from leakage and service of refrigeration and air conditioning equipment and from disposal at the end of the life of the equipment. However, the details regarding refrigerants to be used in the project site are unknown at this time. PFCs and SF_6 are typically used in industrial applications, none of which would be used on the project site.

The GHG emission estimates presented in Table P show the net increase in GHG emissions associated with the level of development envisioned by the proposed project. Appendix A includes the CalEEMod results showing the details of the GHG emissions.

Table P: Long-Term Operational Greenhouse Gas Emissions

Source	Pollutant Emissions (mty)					
	Bio-CO_2	**NBio-CO_2**	**Total CO_2**	**CH_4**	**N_2O**	**CO_2e**
Existing Land Use						
Area Sources	0	0	0	0	0	0
Energy Sources	0	137	137	0.01	0	138
Mobile Sources	0	870	870	0.04	0	871
Waste Sources	303	0	303	18	0	679
Water Usage	0	2,581	2,581	21	0.56	3,192
Total Existing Emissions	**303**	**3,588**	**3,891**	**39**	**0.56**	**4,879**
Proposed Project						
Construction emissions amortized over 30 years	0	43	43	0.003	0	43
Area Sources	0	0	0	0	0	0
Energy Sources	0	703	703	0.03	0.01	707
Mobile Sources	0	2,479	2,479	0.09	0	2,480
Waste Sources	1,553	0	1,553	92	0	3,480
Water Usage	0	110	110	0.68	0.02	130
Total Project Emissions	**1,553**	**3,400**	**5,000**	**93**	**0.03**	**6,900**
Total Net Emissions	**1,250**	**-188**	**1,100**	**54**	**-0.53**	**2,121**

Source: LSA Associates, Inc., June 2013.

Note: Numbers in table may not appear to add up correctly due to rounding of all numbers to two significant digits.

Bio-CO_2 = biologically generated CO_2
CH_4 = methane
CO_2 = carbon dioxide
CO_2e = carbon dioxide equivalent
mty = metric tons per year
N_2O = nitrous oxide
NBio-CO_2 = non-biologically generated CO_2

Due to the global nature of this phenomenon and the scale of the emissions, total emissions are expressed in units of metric tons and in teragrams (a trillion [10^{12}] grams or one million metric tons) per year (Tg/year). These are the standard metric units used worldwide. As shown in Table P, the project will produce a net increase of 2,121 metric tons per year (mty) of CO_2e, which is 0.00212 Tg/year of CO_2e. As a comparison, the existing emissions from the entire SCAG region are estimated to be approximately 176.79 Tg/year of CO_2e and approximately 496.95 Tg/year of CO_2e for the entire State.

As described above, project-related GHG emissions are not confined to a particular air basin but are dispersed worldwide. Consequently, it is difficult to determine how project-related GHG emissions would contribute to GCC and how GCC may impact California. Therefore, project-related GHG emissions are not project-specific impacts to global warming but are instead the project's contribution to this cumulative impact. Project-related GHG emissions and their contribution to GCC impacts in the State are less than significant and less than cumulatively considerable because the project's impacts alone would not cause or significantly contribute to GCC.

Energy Sources. Buildings represent 39 percent of the United States' primary energy usage and 70 percent of electricity consumption.[1] The project would indirectly result in increased GHG emissions from off-site electricity generation at power plants and electricity and natural gas used for water treatment (a portion of the 707 mty CO_2e). Beginning on January 1, 2011, several new Building Codes are enforced in California. All structures will be built under the new 2010 California Building Code (CBC) to improve public health, safety, and general welfare by enhancing the design and construction of buildings through the use of building concepts having a positive environmental impact and encouraging sustainable construction practices.

Mobile Sources. Mobile sources (vehicle trips and associated miles traveled) are one of the largest sources of GHG emissions in California and represent approximately 38 percent of annual CO_2 emissions generated in the State. Like most land use development projects, vehicle miles traveled (VMT) is the most direct indicator of CO_2 emissions from the proposed project, and associated CO_2 emissions function as the best indicator of total GHG emissions. The project would directly result in increased GHG emissions from the mobile sources (2,480 mty CO_2e). The emissions from vehicle exhaust are controlled by the State and federal governments and are outside the control of the County.

Waste Sources. The proposed project would also generate solid waste during the operation phase of the project. Average waste generation rates from a variety of sources are available from the California Integrated Waste Management Board.[2] This analysis uses an average waste generation rate of 0.0024 dry tons per square foot per year for commercial uses. The project would indirectly result in increased GHG emissions from solid waste treatment at treatment plants (approximately 3,480 mty CO_2e).

Water Usage. Water-related energy use consumes 19 percent of the State's electricity every year.[3] Energy use and related GHG emissions are based on electricity used for water supply and conveyance, water treatment, water distribution, and wastewater treatment. The project would indirectly result in increased GHG emissions from the use of water (130 mty CO_2e).

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1 United States Department of Energy. 2003. *Buildings Energy Data Book.*

2 California Integrated Waste Management Board, 2009. Estimated Solid Waste Generation Rates for Residential Developments. Available at http://www.ciwmb.ca.gov/wastechar/wastegenrates/Residential.htm.

3 California, State of, 2005. California Energy Commission. California's Water-Energy Relationship. November.

Summary. As shown in Table P, the net increase of GHG emissions of 2,121 tpy of CO_2e from the proposed project would be less than the SCAQMD interim tiered GHG emissions threshold for industrial projects of 10,000 tpy of CO_2e. This emissions level is unlikely to result in GHG emission levels that would substantially conflict with implementation of the GHG reduction goals under AB 32 or other State regulations. The CAT and ARB have developed several reports to achieve the Governor's GHG targets that rely on voluntary actions of California businesses, local government and community groups, and State incentive and regulatory programs. These include the CAT's 2006 "*Report to Governor Schwarzenegger and the Legislature*," ARB's 2007 "*Expanded List of Early Action Measures to Reduce Greenhouse Gas Emissions in California,*" and ARB's "*Climate Change Proposed Scoping Plan: a Framework for Change.*"

The reports identify strategies to reduce California's emissions to the levels proposed in EO S-3-05 and AB 32 that are applicable to proposed project. The Proposed Scoping Plan is the most recent document, and the strategies included in the Scoping Plan that apply to the project are contained in Table Q, which also summarizes the extent to which the project would comply with the strategies to help California reach the emission reduction targets. The strategies listed in Table Q are either part of the project or requirements under local or State ordinances. Even without implementation of these strategies/measures, the project's contribution to cumulative GHG emissions would be at a less than significant level; however, any of these would reduce the project's GHG emissions.

Table Q: Project Compliance with Greenhouse Gas Emission Reduction Strategies

Strategy	Project Compliance
Energy Efficiency Measures	
Energy Efficiency. Maximize energy efficiency building and appliance standards, and pursue additional efficiency efforts including new technologies, and new policy and implementation mechanisms. Pursue comparable investment in energy efficiency from all retail providers of electricity in California (including both investor-owned and publicly owned utilities). **Renewables Portfolio Standard.** Achieve a 33 percent renewable energy mix statewide. **Green Building Strategy.** Expand the use of green building practices to reduce the carbon footprint of California's new and existing inventory of buildings.	**Compliant with Mitigation Incorporated.** The proposed project will comply with Title 24 standards for building construction. In addition, the project would be required to comply with the requirements of Emissions Control Measure GCC-1, identified below, including measures to incorporate energy efficient building design features.
Water Conservation and Efficiency Measures	
Water Use Efficiency. Continue efficiency programs and use cleaner energy sources to move and treat water. Approximately 19 percent of all electricity, 30 percent of all natural gas, and 88 million gallons of diesel are used to convey, treat, distribute and use water and wastewater. Increasing the efficiency of water transport and reducing water use would reduce GHG emissions.	**Compliant with Mitigation Incorporated.** The project would be required to comply with the requirements of Emissions Control Measure GCC-1, identified below, including measures to increase water use efficiency.
Solid Waste Reduction Measures	
Increase Waste Diversion, Composting, and Commercial Recycling, and Move Toward Zero-Waste. Increase waste diversion from landfills beyond the 50 percent mandate to provide for additional recovery of recyclable	**Compliant with Mitigation Incorporated.** Data available from the California Integrated Waste Management Board (CIWMB) indicates that County of San Bernardino has not achieved the 50 percent

Table Q: Project Compliance with Greenhouse Gas Emission Reduction Strategies

Strategy	Project Compliance
materials. Composting and commercial recycling could have substantial GHG reduction benefits. In the long term, zero-waste policies that would require manufacturers to design products to be fully recyclable may be necessary.	diversion rate. The proposed project would be required to comply with Emissions Control Measure GCC-1, identified below, including measures to increase solid waste diversion, composting, and recycling.
Transportation and Motor Vehicle Measures	
Vehicle Climate Change Standards. AB 1493 (Pavley) required the State to develop and adopt regulations that achieve the maximum feasible and cost-effective reduction of GHG emissions from passenger vehicles and light duty trucks. Regulations were adopted by ARB in September 2004. **Light-Duty Vehicle Efficiency Measures.** Implement additional measures that could reduce light-duty GHG emissions. For example, measures to ensure that tires are properly inflated can both reduce GHG emissions and improve fuel efficiency. **Adopt Heavy- and Medium-Duty Fuel and Engine Efficiency Measures.** Regulations to require retrofits to improve the fuel efficiency of heavy-duty trucks that could include devices that reduce aerodynamic drag and rolling resistance. This measure could also include hybridization of and increased engine efficiency of vehicles. **Low Carbon Fuel Standard.** ARB identified this measure as a Discrete Early Action Measure. This measure would reduce the carbon intensity of California's transportation fuels by at least 10 percent by 2020.	**Compliant.** The project does not involve the manufacture, sale, or purchase of vehicles. However, vehicles that operate within and access the project site would comply with any vehicle and fuel standards that ARB adopts.
Regional Transportation-Related Greenhouse Gas Targets. Develop regional GHG emissions reduction targets for passenger vehicles. Local governments will play a significant role in the regional planning process to reach passenger vehicle GHG emissions reduction targets. Local governments have the ability to directly influence both the siting and design of new residential and commercial developments in a way that reduces GHGs associated with vehicle travel.	**Compliant.** Specific regional emission targets for transportation emissions do not directly apply to this project; regional GHG reduction target development is outside the scope of this project. The project will comply with any plans developed by the County.
Measures to Reduce High Global Warming Potential (GWP) Gases. ARB has identified Discrete Early Action measures to reduce GHG emissions from the refrigerants used in car air conditioners, semiconductor manufacturing, and consumer products. ARB has also identified potential reduction opportunities for future commercial and industrial refrigeration, changing the refrigerants used in auto air conditioning systems, and ensuring that existing car air conditioning systems do not leak.	**Compliant.** New products used or serviced on the project site (after implementation of the reduction of GHG gases) would comply with future ARB rules and regulations.

Source: LSA Associates, Inc., June 2013.
ARB = California Air Resources Board
GHG = greenhouse gas

5.3 LONG-TERM MICROSCALE (CO HOT-SPOT) ANALYSIS

Vehicular trips associated with the proposed project would contribute to congestion at intersections and along roadway segments in the project vicinity. Localized air quality impacts would occur when emissions from vehicular traffic increase in local areas as a result of the proposed project. The primary mobile source pollutant of local concern is CO, which is a direct function of vehicle idling time and, thus, traffic flow conditions. CO transport is extremely limited; it disperses rapidly with distance from the source under normal meteorological conditions. However, under certain extreme meteorological conditions, CO concentrations proximate to a congested roadway or intersection may reach unhealthful levels affecting local sensitive receptors (residents, school children, the elderly, hospital patients, etc.).

Typically, high CO concentrations are associated with roadways or intersections operating at unacceptable levels of service or with extremely high traffic volumes. In areas with high ambient background CO concentrations, modeling is recommended to determine a project's effect on local CO levels.

An assessment of project-related impacts on localized ambient air quality requires that future ambient air quality levels be projected. Existing CO concentrations in the immediate project vicinity are not available. Ambient CO levels monitored at the Fontana Kaiser Station, the closest station with sufficient monitored CO data, showed a highest-recorded 1-hour concentration of 2.7 ppm (State standard is 20 ppm) and a highest 8-hour concentration of 1.45 ppm (State standard is 9 ppm) during the past 3 years (see Table E).

The highest CO concentrations would normally occur during peak traffic hours; hence, CO impacts calculated under peak traffic conditions represent a worst-case analysis. The project-related traffic impact analysis was provided in the Traffic Impact Study (LSA, May 2013). The impact on local CO levels was assessed with the ARB-approved CALINE4 air quality model, which allows microscale CO concentrations to be estimated along roadway corridors or near intersections (see Appendix B for the model output). This model is designed to identify localized concentrations of CO, often termed "hot spots." A brief discussion of input to the CALINE4 model follows. The analysis was performed for the worst-case wind angle and wind speed condition and is based upon the following assumptions:

- Selected modeling locations represent the intersections closest to the project site, with the highest project-related vehicle turning movements and the worst level of service deterioration.
- Twenty receptor locations with the possibility of extended outdoor exposure from 7 to 12 m (approximately 23 to 39 ft) of the roadway centerline near intersections were modeled to determine CO concentrations, following the California Department of Transportation (Caltrans) CO modeling protocol.
- The calculations assume a meteorological condition of almost no wind (0.5 m/second), a suburban topographical condition between the source and receptor, and a mixing height of 1,000 m, representing a worst-case scenario for CO concentrations.
- CO concentrations are calculated for the 1-hour averaging period and then compared to the 1-hour standards. CO 8-hour averages are extrapolated using techniques outlined in the SCAQMD *CEQA Air Quality Handbook* (updated April 1993) and compared to the 8-hour standards; a persistence factor of 0.7 was used to predict the 8-hour concentration.

- Concentrations are given in parts per million at each of the receptor locations.
- The "at-grade" link option with speed adjusted based on average cruise speed and number of vehicles per lane per hour was used rather than the "intersection" link selection in the CALINE4 model (Caltrans has suggested that the "intersection" link should not be used due to an inappropriate algorithm based on outdated vehicle distribution.) Emission factors from the EMFAC2007 model were used for the vehicle fleet.
- The highest levels of the second highest 1-hour and 8-hour CO concentrations monitored at the Fontana Kaiser Station in the past 3 years were used as background concentrations (2.2 ppm for the 1-hour CO and 1.4 ppm for the 8-hour CO), as specified in Appendix B of the Caltrans CO Protocol. The "background" concentrations are then added to the model results for future with and without the proposed project conditions.

Table R lists the CO concentrations at the six existing signalized intersections analyzed in the Traffic Impact Study for the existing and existing-plus project scenarios. As shown in Table R, under the existing conditions, the intersections analyzed for the daily peak hour would experience 1-hour and 8-hour CO concentrations below the federal and State standards. The existing CO concentrations are from current traffic in the vicinity of these intersections.

Table S lists the CO concentrations at the six existing signalized intersections analyzed in the Traffic Impact Study for the 2014 baseline and 2014-plus project scenarios. As shown in Table S, under the 2014 conditions, the intersections analyzed for the daily peak hour would experience 1-hour and 8-hour CO concentrations below the federal and State standards. The 2014 CO concentrations are based on the projected 2014 traffic in the vicinity of these intersections.

The proposed project would contribute to increased CO concentrations at intersections in the project vicinity. As shown in Tables R and S, under the existing and 2014 conditions, respectively, all six intersections analyzed experience 1-hour and 8-hour CO concentrations below the federal and State standards. The proposed project would contribute at most a 0.1 ppm increase to the 1-hour and 8-hour CO concentrations at these intersections. Because no CO hot spots would occur, the proposed project would have a less than significant impact on local air quality for CO, and no mitigation measures would be required.

5.4 AIR QUALITY MANAGEMENT PLAN CONSISTENCY

An AQMP describes air pollution control strategies to be taken by a city, county, or region classified as a nonattainment area. The main purpose of an AQMP is to bring the area into compliance with federal and State air quality standards. CEQA requires that certain proposed projects be analyzed for consistency with the AQMP. For a project to be consistent with the AQMP adopted by the SCAQMD, the pollutants emitted from the project should not exceed the SCAQMD daily threshold or cause a significant impact on air quality, or the project must already have been included in the AQMP projection. However, if feasible mitigation measures are implemented and shown to reduce the impact level from significant to less than significant, a project may be deemed consistent with the AQMP. The AQMP uses the assumptions and projections of local planning agencies to determine control strategies for regional compliance status. Since the AQMP is based on the local General Plan, projects that are deemed consistent with the General Plan are found to be consistent with the AQMP.

Table R: Existing (2013) CO Concentrations Without and With Project Traffic

Intersection	Distance from Road Centerline to Maximum CO Concentration Without/With Project (Meters)	Without/With Project One-Hour CO Concentration (ppm)	Project Related One-Hour CO Concentration Increase (ppm)	Without/With Project Eight-Hour CO Concentration (ppm)	Project Related Eight-Hour CO Concentration Increase (ppm)	Exceeds State Standards	
						1-Hr (20 ppm)	8-Hr (9 ppm)
Locust Avenue and Drive Way 1	8 / 8	2.2 / 2.2	0.0	1.3 / 1.3	0.0	No	No
	7 / 7	2.2 / 2.2	0.0	1.3 / 1.3	0.0	No	No
	7 / 7	2.2 / 2.2	0.0	1.3 / 1.3	0.0	No	No
	8 / 8	2.2 / 2.2	0.0	1.3 / 1.3	0.0	No	No
Locust Avenue and Slover Avenue	8 / 8	2.7 / 2.8	0.1	1.7 / 1.7	0.0	No	No
	8 / 8	2.7 / 2.7	0.0	1.7 / 1.7	0.0	No	No
	8 / 8	2.7 / 2.7	0.0	1.7 / 1.7	0.0	No	No
	8 / 8	2.7 / 2.7	0.0	1.7 / 1.7	0.0	No	No
Driveway 2 and Slover Avenue	7 / 7	2.7 / 2.7	0.0	1.7 / 1.7	0.0	No	No
	8 / 8	2.7 / 2.7	0.0	1.7 / 1.7	0.0	No	No
	8 / 8	2.7 / 2.7	0.0	1.7 / 1.7	0.0	No	No
	8 / 8	2.6 / 2.7	0.1	1.6 / 1.7	0.1	No	No
Maple Avenue and Slover Avenue	8 / 8	2.7 / 2.7	0.0	1.7 / 1.7	0.0	No	No
	8 / 8	2.7 / 2.7	0.0	1.7 / 1.7	0.0	No	No
	8 / 8	2.7 / 2.7	0.0	1.7 / 1.7	0.0	No	No
	8 / 10	2.7 / 2.7	0.0	1.7 / 1.7	0.0	No	No
Driveway 3 and Slover Avenue	7 / 7	2.7 / 2.7	0.0	1.7 / 1.7	0.0	No	No
	8 / 8	2.7 / 2.7	0.0	1.7 / 1.7	0.0	No	No
	8 / 8	2.7 / 2.7	0.0	1.7 / 1.7	0.0	No	No
	8 / 8	2.6 / 2.7	0.1	1.6 / 1.7	0.1	No	No
Linden Avenue and Orange Avenue	8 / 8	2.5 / 2.5	0.0	1.5 / 1.5	0.0	No	No
	8 / 8	2.4 / 2.4	0.0	1.4 / 1.4	0.0	No	No
	8 / 8	2.4 / 2.4	0.0	1.4 / 1.4	0.0	No	No
	8 / 8	2.4 / 2.4	0.0	1.4 / 1.4	0.0	No	No

Source: LSA Associates, Inc., June 2013.
Includes ambient one-hour concentration of 2.2 ppm and ambient eight-hour concentration of 1.3 ppm. Measured at the 14360 Arrow Boulevard, Fontana, CA AQ Station in San Bernardino County.
CO = carbon monoxide
Hr = hour
ppm = parts per million

Table S: 2014 CO Concentrations Without and With Project Traffic

Intersection	Distance from Road Centerline to Maximum CO Concentration Without/With Project (Meters)	Without/With Project One-Hour CO Concentration (ppm)	Project Related One-Hour CO Concentration Increase (ppm)	Without/With Project Eight-Hour CO Concentration (ppm)	Project Related Eight-Hour CO Concentration Increase (ppm)	Exceeds State Standards	
						1-Hr (20 ppm)	8-Hr (9 ppm)
Locust Avenue and Drive Way 1	8 / 8	2.2 / 2.2	0.0	1.3 / 1.3	0.0	No	No
	7 / 7	2.2 / 2.2	0.0	1.3 / 1.3	0.0	No	No
	7 / 7	2.2 / 2.2	0.0	1.3 / 1.3	0.0	No	No
	8 / 8	2.2 / 2.2	0.0	1.3 / 1.3	0.0	No	No
Locust Avenue and Slover Avenue	8 / 8	2.7 / 2.7	0.0	1.7 / 1.7	0.0	No	No
	8 / 8	2.7 / 2.7	0.0	1.7 / 1.7	0.0	No	No
	8 / 8	2.7 / 2.7	0.0	1.7 / 1.7	0.0	No	No
	8 / 8	2.6 / 2.6	0.0	1.6 / 1.6	0.0	No	No
Driveway 2 and Slover Avenue	7 / 7	2.7 / 2.7	0.0	1.7 / 1.7	0.0	No	No
	8 / 8	2.7 / 2.7	0.0	1.7 / 1.7	0.0	No	No
	8 / 8	2.7 / 2.7	0.0	1.7 / 1.7	0.0	No	No
	8 / 8	2.6 / 2.6	0.0	1.6 / 1.6	0.0	No	No
Maple Avenue and Slover Avenue	8 / 8	2.7 / 2.7	0.0	1.7 / 1.7	0.0	No	No
	8 / 8	2.7 / 2.7	0.0	1.7 / 1.7	0.0	No	No
	8 / 8	2.7 / 2.7	0.0	1.7 / 1.7	0.0	No	No
	10 / 8	2.7 / 2.7	0.0	1.7 / 1.7	0.0	No	No
Driveway 3 and Slover Avenue	7 / 7	2.7 / 2.7	0.0	1.7 / 1.7	0.0	No	No
	8 / 8	2.7 / 2.7	0.0	1.7 / 1.7	0.0	No	No
	8 / 8	2.7 / 2.7	0.0	1.7 / 1.7	0.0	No	No
	8 / 8	2.6 / 2.6	0.0	1.6 / 1.6	0.0	No	No
Linden Avenue and Orange Avenue	8 / 8	2.5 / 2.5	0.0	1.5 / 1.5	0.0	No	No
	8 / 8	2.4 / 2.4	0.0	1.4 / 1.4	0.0	No	No
	8 / 8	2.4 / 2.4	0.0	1.4 / 1.4	0.0	No	No
	8 / 8	2.4 / 2.4	0.0	1.4 / 1.4	0.0	No	No

Source: LSA Associates, Inc., June 2013.
Includes ambient one-hour concentration of 2.2 ppm and ambient eight-hour concentration of 1.3 ppm. Measured at the 14360 Arrow Boulevard, Fontana, CA AQ Station in San Bernardino County.
CO = carbon monoxide
Hr = hour
ppm = parts per million

The proposed project consists of the construction of a truck terminal to accommodate the business growth in the project vicinity and is not a growth-inducing project. Since designations are consistent with the current General Plan, implementation of the project will not require any amendments to the County's zoning designations for the project site. Therefore, the proposed project would be within the County's General Plan projection. The proposed project is consistent with the adopted SCAQMD AQMP.

5.5 CUMULATIVE IMPACTS

The project would contribute criteria pollutants to the area during temporary project construction. A number of individual projects in the area may be under construction simultaneously with the proposed project. Depending on construction schedules and actual implementation of projects in the area, generation of fugitive dust and pollutant emissions during construction could result in substantial short-term increases in air pollutants. This would be a contribution to short-term cumulative air quality impacts. Because the project's short-term construction emissions are less than the construction thresholds, cumulative impacts from construction emissions are considered to be less than significant.

Currently, the Basin is in nonattainment for PM_{10}, $PM_{2.5}$, and O_3. Construction of the proposed project, in conjunction with other planned developments within the cumulative study area, would contribute to the existing nonattainment status. Therefore, the proposed project would exacerbate nonattainment of air quality standards within the Basin and contribute to adverse cumulative air quality impacts. Because the project's short-term construction emissions are less than the construction thresholds, cumulative impacts to air quality standards are considered to be less than significant..

The Traffic Impact Study included vehicular trips from all present and future projects in the project vicinity. Therefore, CO hot spot concentrations calculated at these intersections include the cumulative traffic effect. Based on Tables R and S, no significant cumulative CO impacts would occur. Because the project's long-term CO hot spot concentrations are less than the operational thresholds, cumulative impacts from CO hot spot concentrations are considered to be less than significant.

As described above, project-related GHG emissions are not confined to a particular air basin but are dispersed worldwide. Therefore, project-related GHG emissions are not project-specific impacts to global warming but the project's contribution to this cumulative impact. As stated previously, because the project's impacts alone would not cause or significantly contribute to GCC, project-related CO_2e emissions and their contribution to GCC impacts in the State of California are less than cumulatively considerable.

5.6 STANDARD CONDITIONS

5.6.1 Construction Impacts

The project is required to comply with regional rules that assist in reducing short-term air pollutant emissions. SCAQMD Rule 403 requires that fugitive dust be controlled with best-available control measures so that the presence of such dust does not remain visible in the atmosphere beyond the property line of the emission source. In addition, SCAQMD Rule 403 requires implementation of dust suppression techniques to prevent fugitive dust from creating a nuisance off site. Applicable dust suppression techniques from Rule 403 are summarized below. Implementation of these dust suppression techniques can reduce the fugitive dust generation (and thus the PM_{10} component). Compliance with these rules would reduce impacts on nearby sensitive receptors.[1] As shown in Table H, implementation of Rule 403 measures results in dust emissions below SCAQMD thresholds.

The applicable Rule 403 measures are as follows:

- Apply nontoxic chemical soil stabilizers according to manufacturers' specifications to all inactive construction areas (previously graded areas inactive for 10 days or more).
- Water active sites at least three times daily. (Locations where grading is to occur will be thoroughly watered prior to earthmoving.)
- Cover all trucks hauling dirt, sand, soil, or other loose materials, or maintain at least 0.6 m (2 ft) of freeboard (vertical space between the top of the load and top of the trailer) in accordance with the requirements of California Vehicle Code (CVC) Section 23114.
- Pave construction access roads at least 30 m (100 ft) onto the site from the main road.
- Reduce traffic speeds on all unpaved roads to 15 mph or less.

5.6.2 Project Operations

The project would not create total (vehicular and stationary) daily emissions that exceed the daily emissions thresholds established by the SCAQMD, other than ROC from architectural coatings. The proposed project is required to comply with Title 24 of the CCR established by the California Energy Commission regarding energy conservation standards. The project applicant shall incorporate the following in building plans:

- Low-emission water heaters shall be used. Solar water heaters are encouraged.
- Exterior windows shall utilize window treatments for efficient energy conservation.

5.7 ADDITIONAL RECOMMENDED MEASURES

5.7.1 Construction Impacts

A. The following additional dust suppression measures in the SCAQMD *CEQA Air Quality Handbook* are included to further reduce the project's emissions:
    - Revegetate disturbed areas as quickly as possible.
    - Suspend all excavating and grading operations when wind speeds (as instantaneous gusts) exceed 25 mph.
    - Sweep all streets once per day if visible soil materials are carried to adjacent streets (recommend water sweepers with reclaimed water).
    - Install wheel washers where vehicles enter and exit unpaved roads onto paved roads, or wash trucks and any equipment leaving the site.

[1] See http://www.aqmd.gov/rules/reg/reg04/r403.pdf for rule details.

- Pave, water, or chemically stabilize all on-site roads as soon as feasible.
- Minimize at all times the area disturbed by clearing, grading, earthmoving, or excavation operations.

B. The Construction Contractor should select the construction equipment used on site based on low-emission factors and high energy efficiency. The Construction Contractor should ensure that construction grading plans include a statement that all construction equipment will be tuned and maintained in accordance with the manufacturer's specifications. In addition, all trucks should not idle continuously for more than 5 minutes at any one time.

C. The Construction Contractor should utilize electric or alternative-fuel-powered equipment in lieu of gasoline- or diesel-powered engines where feasible.

D. The Construction Contractor should ensure that construction grading plans include a statement that work crews will shut off equipment not in use. During smog season (May through October), the overall length of the construction period will be extended, thereby decreasing the size of the area prepared each day, to minimize vehicles and equipment operating at the same time.

E. The Construction Contractor should time the construction activities so as to not interfere with peak-hour traffic and minimize obstruction of through traffic lanes adjacent to the site; if necessary, a flagperson should be retained to maintain safety adjacent to existing roadways.

F. The Construction Contractor should support and encourage ridesharing and transit incentives for the construction crew.

G. To the extent practicable use required coatings and solvents with a VOC content lower than required under Rule 1113, or no-VOC paints and architectural coatings should be employed. A list of low/no-VOC paints is provided at the following SCAQMD website: www.aqmd.gov/prdas/brochures/paintguide.html. All paints shall be applied using either high volume low-pressure (HVLP) spray equipment or by hand application. Correlating notations shall appear on the project construction plans and construction documents.

5.7.2 Operational Impacts

A. Prohibit all diesel trucks from idling in excess of 5 minutes, both on site and off site.

B. Design the warehouse/distribution center such that any check-in point for trucks is well inside the facility property to ensure that there are no trucks queuing outside of the facility.

C. Restrict overnight parking in residential areas.

D. Enforce truck parking restrictions

E. Require all warehouse/distribution centers to operate the cleanest vehicles available.

5.8 MITIGATION MEASURES

5.8.1 Application of Architectural Coatings

Prior to the issuance of any grading permits, the Director of the County of San Bernardino Public Works Department, or designee, shall verify that construction contracts include a statement specifying that the Construction Contractor shall comply with South Coast Air Quality Management

District (SCAQMD) Rule 1113 and any other SCAQMD rules and regulations regarding the use of architectural coatings and high-volume, low-pressure (HVLP) spray methods. Emissions associated with architectural coatings would be reduced by complying with these rules and regulations, which include using precoated/natural-colored building materials, using water-based or low-volatile organic compounds (VOC) coatings, and using coating transfer or spray equipment with high transfer efficiency (minimum of 65% transfer efficiency rate).

5.9 MINIMIZATION MEASURES

5.9.1 Emissions Control Measure GCC-1

To ensure reductions below the expected "Business As Usual" (BAU) scenario, the project will be subject to a variety of measures that will reduce the project's greenhouse gas (GHG) emissions. To the extent feasible and to the satisfaction of the County of San Bernardino (County), the following measures should be incorporated into the design and construction of the project (including specific building projects):

Construction and Building Materials.

- Use locally produced and/or manufactured building materials for at least 10 percent of the construction materials used for the project;
- Recycle/reuse at least 50 percent of the demolished and/or grubbed construction material (including, but not limited to, soil, mulch, vegetation, concrete, lumber, metal, and cardboard); and
- Use "Green Building Materials," such as those materials that are resource efficient, and recycled and manufactured in an environmentally friendly way for at least 10 percent of the project, as defined on the CalRecycle website.[1]

Energy Efficiency Measures.

- Design all project buildings to exceed California Building Code's Title 24 energy standard, including, but not limited to any combination of the following:
  - Increase insulation such that heat transfer and thermal bridging is minimized;
  - Limit air leakage through the structure or within the heating and cooling distribution system to minimize energy consumption; and
  - Incorporate ENERGY STAR or better rated windows, space heating and cooling equipment, light fixtures, appliances or other applicable electrical equipment.

1 http://www.calrecycle.ca.gov/greenbuilding/materials/.

- Provide a landscape and development plan for the project that takes advantage of shade, prevailing winds, and landscaping;
- Install efficient lighting and lighting control systems. Use daylight as an integral part of lighting systems in buildings;
- Install light colored "cool" roofs and cool pavements;
- Install energy efficient heating and cooling systems, appliances and equipment, and control systems; and
- Install solar or light-emitting diodes (LEDs) for outdoor lighting.

Water Conservation and Efficiency Measures.

- Devise a comprehensive water conservation strategy appropriate for the project and location. The strategy may include the following, plus other innovative measures that might be appropriate:
  - Create water-efficient landscapes within the development;
  - Install water-efficient irrigation systems and devices, such as soil moisture-based irrigation controls;
  - Use reclaimed water for landscape irrigation within the project. Install the infrastructure to deliver and use reclaimed water;
  - Design buildings to be water-efficient. Install water-efficient fixtures and appliances, including low-flow faucets, dual-flush toilets and waterless urinals; and
  - Restrict watering methods (e.g., prohibit systems that apply water to nonvegetated surfaces) and control runoff.

Solid Waste Measures.

- Provide interior and exterior storage areas for recyclables and green waste and adequate recycling containers located in public areas; and
- Provide employee education about reducing waste and available recycling services.

In addition, the project would also be subject to all applicable regulatory requirements, which would also reduce the GHG emissions of the project. After implementation of application of regulatory requirements, the project would implement appropriate GHG reduction strategies and would not conflict with or impede implementation of reduction goals identified in AB 32, the Governor's EO S-3-05, and other strategies to help reduce GHGs to the level proposed by the Governor. The control measures listed in Emissions Control Measure GCC-1 would further reduce the project's GHGs and, therefore, the project's contribution to cumulative GHG emissions.

5.10 IMPACTS TO THE PROPOSED PROJECT FROM GLOBAL CLIMATE CHANGE

Local temperatures could increase in time as a result of GCC, with or without development as envisioned by the project. This increase in temperature could lead to other climate effects including, but not limited to, increased flooding due to increased precipitation and runoff. At present, the extent of climate change impacts is uncertain, and more extensive monitoring of runoff is necessary for greater understanding of changes in hydrologic patterns. Studies indicate that increased temperatures could result in a greater portion of peak streamflows occurring earlier in the spring, with decreases in late spring and early summer. These changes could have implications for water supply, flood management, and ecosystem health. In addition, there is a potential for sea level rising due to global warming. However, based on the location of the project site, the proposed project is not expected to be significantly affected by GCC.

6.0 REFERENCES

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APPENDIX A

CALEEMOD MODEL PRINTOUTS

APPENDIX B

CALINE4 MODEL PRINTOUTS

APPENDIX C

HEALTH RISK ASSESSMENT WORKSHEETS