



COLORADO AT LAKE PROJECT AIR QUALITY AND NOISE IMPACT REPORT

Prepared for ENVIRONMENTAL PLANNING ASSOCIATES

Prepared by

TERRY A. HAYES ASSOCIATES LLC

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1.0 SUMMARY OF FINDINGS

Terry A. Hayes Associates LLC has completed an air quality and noise impact analysis for the proposed Colorado at Lake Project. Key findings are listed below.

1.1 AIR QUALITY

- Regional Construction Emissions:
 - Phase 1 regional construction emissions would not exceed the South Coast Air Quality Management District's (SCAQMD) regional significance thresholds for nitrogen oxides (NO_X), carbon monoxide (CO), sulfur oxides (SO_X), particulate matter 2.5 microns or less in diameter (PM_{2.5}), and particulate matter ten microns or less in diameter (PM₁₀). Unmitigated volatile organic compounds (VOC) would exceed the threshold but mitigation measures would reduce the impact to less than significant.
 - Phase 2 regional construction emissions would not exceed the SCAQMD regional significance thresholds, and would result in a less-than-significant impact.
 - Phase 3 regional construction emissions would not exceed the SCAQMD regional significance thresholds for NO_X, CO, SO_X, PM_{2.5}, and PM₁₀. Unmitigated volatile organic compounds (VOC) would exceed the threshold but mitigation measures would reduce the impact to less than significant.
- Localized construction concentrations under Phases 1, 2, and 3 would not exceed the significance thresholds for nitrogen dioxide or CO. Localized $PM_{2.5}$ and PM_{10} concentrations would exceed the standards under all phases, and would result in a significant impact.
- Regional operational emissions would not exceed the SCAQMD significance thresholds under all phases, and would result in a less-than-significant impact.
- Mobile source CO concentrations would not exceed the SCAQMD significance thresholds under all phases, and would result in a less-than-significant impact.
- The proposed project would not expose sensitive receptors to significant toxic air contaminants (TAC) emissions, and TAC emissions would result in a less-thansignificant impact.
- The proposed project would not expose people to objectionable odors, and odors would result in a less-than-significant impact.
- The proposed project would be consistent with the SCAQMD 2007 Air Quality Management Plan and, would result in a less-than-significant impact.
- The proposed project would result in approximately 9,087 metric tons per year of greenhouse gas emissions. These emissions would not exceed the 10,000-metric-ton significance threshold, and greenhouse gas emissions would result in a less-thansignificant impact.

1.2 NOISE AND VIBRATION

- General construction activity would result in a less-than-significant noise impact. Pile
 driving noise would exceed the significance thresholds but mitigation measures would
 reduce the impact to less than significant.
- Operational Noise Levels
 - Mobile source noise would result in a less-than-significant impact under all phases.
 - Outdoor activity (e.g., pool) noise would result in a less-than-significant impact under all phases.
 - Parking noise would result in a less-than-significant impact under all phases.
 - Loading dock noise would result in a less-than-significant impact under all phases.
- Vibration generated by construction activity would exceed the significance thresholds but mitigation measures would reduce the impact to less than significant.

2.0 INTRODUCTION

2.1 PURPOSE OF REPORT

The purpose of this report is to evaluate the potential air quality and noise impacts of the proposed Colorado at Lake Project. Potential air quality and noise impacts are analyzed for construction and operation of the proposed project. Mitigation measures for potentially significant impacts are recommended when appropriate to reduce air quality emissions and noise and vibration levels.

2.2 PROJECT DESCRIPTION

The project site is approximately 1.95 acres (85,136 square feet), and is located at multiple addresses on the south side of East Colorado Boulevard between Mentor and Lake Avenues. Specific addresses encompassed by the proposed project, include the following:

- 940-942 E. Colorado Boulevard
- 908-938 E. Colorado Boulevard
- 880 E. Colorado Boulevard
- 19-25 South Mentor Avenue

The proposed project involves the renovation of the 65,750-square-foot existing former hotel (originally constructed as the Constance Hotel in 1926 and formerly occupied as the Pasadena Manor retirement home), including 3,700 square feet of basement, demolition of existing commercial uses and new development of additional hotel rooms, restaurant, office, retail and limited (five units) residential uses. The three-phased development would renovate the existing structure to provide 136 hotel rooms in the initial phase and add 20 new hotel rooms and five residential units as an addition to the existing structure. The project includes an office component (103,410 square feet) and retail/commercial and restaurant space (60,271 square feet). New buildings would be of Type 1 and Type II B construction (existing hotel is Type II B construction) and vary in height up to seven stories and 90 feet. The former Constance Hotel building will be renovated and retained within the project. All other existing structures will be removed to accommodate the project. The bank use, and possibly some of the existing retail/restaurant tenants, will also be included within the project. Total development would be approximately 261,305 gross square feet (including the 65,750 square feet renovated former hotel), resulting in a total Floor Area Ratio (FAR) OF 2.97:1, consistent with allowable FAR of 3:1 for seven of the eight site lots, and 2.75:1 for the remaining lot.

The project would provide a total of 650 parking spaces upon completion to meet peak shared parking demand and accounting for Transit Oriented Development reductions. Specifically, 550 spaces would be provided on-site at buildout and 100 spaces would be provided off-site in the parking structure located at 2 North Lake Avenue, directly across Colorado Boulevard from the project. Vehicular access to the project would be provided from both Lake Avenue and Mentor Avenue. No vehicular access will be allowed from Colorado Boulevard at total build-out of Phase 3. A maximum of approximately 145,200 cubic yards of soil is anticipated to be excavated for up to six subterranean parking, all of which would be exported off-site.

3.0 AIR QUALITY

This section examines the degree to which the proposed project may cause significant adverse changes to air quality. Both short-term construction emissions occurring from activities, such as site grading and haul truck trips, and long-term effects related to the ongoing operation of the proposed project are discussed in this section. This analysis focuses on air pollution from two perspectives: daily emissions and pollutant concentrations. "Emissions" refer to the quantity of pollutants released into the air, measured in pounds per day (ppd). "Concentrations" refer to the amount of pollutant material per volumetric unit of air, measured in parts per million (ppm) or micrograms per cubic meter (μ g/m³).

3.1 POLLUTANTS AND EFFECTS

Criteria air pollutants are defined as pollutants for which the federal and State governments have established ambient air quality standards for outdoor concentrations to protect public health. The federal and State standards have been set at levels above which concentrations could be harmful to human health and welfare. These standards are designed to protect the most sensitive persons from illness or discomfort. Pollutants of concern include carbon dioxide (CO), ozone (O_3) , nitrogen dioxide (NO_2) , sulfur dioxide (SO_2) , particulate matter 2.5 microns or less in diameter $(PM_{2.5})$, particulate matter ten microns or less in diameter (PM_{10}) , and lead (Pb). These pollutants are discussed below.

Carbon Monoxide. CO is a colorless and odorless gas formed by the incomplete combustion of fossil fuels. CO is emitted almost exclusively from motor vehicles, power plants, refineries, industrial boilers, ships, aircraft, and trains. In urban areas such as the project location, automobile exhaust accounts for the majority of CO emissions. CO is a non-reactive air pollutant that dissipates relatively quickly, so ambient CO concentrations generally follow the spacial and temporal distributions of vehicular traffic. CO concentrations are influenced by local meteorological conditions, primarily wind speed, topography, and atmospheric stability. CO from motor vehicle exhaust can become locally concentrated when surface-based temperature inversions are combined with calm atmospheric conditions, a typical situation at dusk in urban areas between November and February. The highest levels of CO typically occur during the colder months of the year when inversion conditions are more frequent. In terms of health, CO competes with oxygen, often replacing it in the blood, thus reducing the blood's ability to transport oxygen to vital organs. The results of excess CO exposure can be dizziness, fatigue, and impairment of central nervous system functions.

Ozone. O_3 is a colorless gas that is formed in the atmosphere when reactive organic gases (ROG), which includes volatile organic compounds (VOC), and nitrogen oxides (NO_X) react in the presence of ultraviolet sunlight. O_3 is not a primary pollutant; it is a secondary pollutant formed by complex interactions of two pollutants directly emitted into the atmosphere. The primary sources of ROG and NO_X , the components of O_3 , are automobile exhaust and industrial sources. Meteorology and terrain play major roles in O_3 formation. Ideal conditions occur during summer and early autumn, on days with low wind speeds or stagnant air, warm temperatures, and cloudless skies. The greatest source of smog-producing gases is the automobile. Short-term exposure (lasting for a few hours) to O_3 at levels typically observed in Southern California can result in breathing pattern changes, reduction of breathing capacity,

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¹Inversion is an atmospheric condition in which a layer of warm air traps cooler air near the surface of the earth, preventing the normal rising of surface air.

increased susceptibility to infections, inflammation of the lung tissue, and some immunological changes.

Nitrogen Dioxide. NO_2 , like O_3 , is not directly emitted into the atmosphere but is formed by an atmospheric chemical reaction between nitric oxide (NO) and atmospheric oxygen. NO and NO_2 are collectively referred to as NO_X and are major contributors to O_3 formation. NO_2 also contributes to the formation of PM_{10} . High concentrations of NO_2 can cause breathing difficulties and result in a brownish-red cast to the atmosphere with reduced visibility. There is some indication of a relationship between NO_2 and chronic pulmonary fibrosis. Some increase of bronchitis in children (two and three years old) has also been observed at concentrations below 0.3 ppm.

Sulfur Dioxide. SO_2 is a colorless, pungent gas formed primarily by the combustion of sulfur-containing fossil fuels. Main sources of SO_2 are coal and oil used in power plants and industries. Generally, the highest levels of SO_2 are found near large industrial complexes. In recent years, SO_2 concentrations have been reduced by the increasingly stringent controls placed on stationary source emissions of SO_2 and limits on the sulfur content of fuels. SO_2 is an irritant gas that attacks the throat and lungs. It can cause acute respiratory symptoms and diminished ventilator function in children. SO_2 can also yellow plant leaves and erode iron and steel.

Particulate Matter. Particulate matter pollution consists of very small liquid and solid particles floating in the air, which can include smoke, soot, dust, salts, acids, and metals. Particulate matter also forms when gases emitted from industries and motor vehicles undergo chemical reactions in the atmosphere. $PM_{2.5}$ and PM_{10} represent fractions of particulate matter. Fine particulate matter, or $PM_{2.5}$, is roughly 1/28 the diameter of a human hair. $PM_{2.5}$ results from fuel combustion (e.g. motor vehicles, power generation, and industrial facilities), residential fireplaces, and wood stoves. In addition, $PM_{2.5}$ can be formed in the atmosphere from gases such as SO_2 , NO_X , and VOC. Inhalable particulate matter, or PM_{10} , is about 1/7 the thickness of a human hair. Major sources of PM_{10} include crushing or grinding operations; dust stirred up by vehicles traveling on roads; wood burning stoves and fireplaces; dust from construction, landfills, and agriculture; wildfires and brush/waste burning; industrial sources; windblown dust from open lands; and atmospheric chemical and photochemical reactions.

 $PM_{2.5}$ and PM_{10} pose a greater health risk than larger-size particles. When inhaled, these tiny particles can penetrate the human respiratory system's natural defenses and damage the respiratory tract. $PM_{2.5}$ and PM_{10} can increase the number and severity of asthma attacks, cause or aggravate bronchitis and other lung diseases, and reduce the body's ability to fight infections. Very small particles of substances, such as lead, sulfates, and nitrates can cause lung damage directly. These substances can be absorbed into the blood stream and cause damage elsewhere in the body. These substances can transport absorbed gases, such as chlorides or ammonium, into the lungs and cause injury. Whereas PM_{10} tends to collect in the upper portion of the respiratory system, $PM_{2.5}$ is so tiny that it can penetrate deeper into the lungs and damage lung tissues. Suspended particulates also damage and discolor surfaces on which they settle, as well as produce haze and reduce regional visibility.

Lead. Pb in the atmosphere occurs as particulate matter. Sources of lead include leaded gasoline; the manufacturers of batteries, paint, ink, ceramics, and ammunition; and secondary lead smelters. Prior to 1978, mobile emissions were the primary source of atmospheric lead. Between 1978 and 1987, the phase-out of leaded gasoline reduced the overall inventory of airborne lead by nearly 95 percent. With the phase-out of leaded gasoline, secondary lead

smelters, battery recycling, and manufacturing facilities have become lead-emission sources of greater concern.

Prolonged exposure to atmospheric lead poses a serious threat to human health. Health effects associated with exposure to lead include gastrointestinal disturbances, anemia, kidney disease, and in severe cases, neuromuscular and neurological dysfunction. Of particular concern are low-level lead exposures during infancy and childhood. Such exposures are associated with decrements in neurobehavioral performance, including intelligence quotient performance, psychomotor performance, reaction time, and growth.

Toxic Air Contaminants. A substance is considered toxic if it has the potential to cause adverse health effects in humans. A toxic substance released into the air is considered a toxic air contaminant (TAC). TACs are identified by State and federal agencies based on a review of available scientific evidence. In the State of California, TACs are identified through a two-step process that was established in 1983 under the Toxic Air Contaminant Identification and Control Act. This two-step process of risk identification and risk management was designed to protect residents from the health effects of toxic substances in the air.

Greenhouse Gases. Greenhouse gas (GHG) emissions refer to a group of emissions that are generally believed to affect global climate conditions. The greenhouse effect compares the Earth and the atmosphere surrounding it to a greenhouse with glass panes. The glass panes in a greenhouse let heat from sunlight in and reduce the amount of heat that escapes. GHGs, such as carbon dioxide (CO₂), methane (CH₄), and nitrous oxide (N₂O), keep the average surface temperature of the Earth close to 60 degrees Fahrenheit (°F). Without the greenhouse effect, the Earth would be a frozen globe with an average surface temperature of about 5°F.

In addition to CO_2 , CH_4 , and N_2O , GHGs include hydrofluorocarbons, perfluorocarbons, sulfur hexafluoride, and water vapor. Of all the GHGs, CO_2 is the most abundant pollutant that contributes to climate change through fossil fuel combustion. CO_2 comprised 83.3 percent of the total GHG emissions in California in $2002.^2$ The other GHGs are less abundant but have higher global warming potential than CO_2 . To account for this higher potential, emissions of other GHGs are frequently expressed in the equivalent mass of CO_2 , denoted as CO_2e . The CO_2e of CH_4 and N_2O represented 6.4 and 6.8 percent, respectively, of the 2002 California GHG emissions. Other high global warming potential gases represented 3.5 percent of these emissions.³ In addition, there are a number of human-made pollutants, such as CO_2 , non-methane VOC_2 , and SO_2 , that have indirect effects on terrestrial or solar radiation absorption by influencing the formation or destruction of other climate change emissions.

3.2 REGULATORY SETTING

Federal

United States Environmental Protection Agency. The Federal Clean Air Act (CAA) governs air quality in the United States. The United States Environmental Protection Agency (USEPA) is responsible for enforcing the CAA. USEPA is also responsible for establishing the National Ambient Air Quality Standards (NAAQS). NAAQS are required under the 1977 CAA and

²California Environmental Protection Agency, *Climate Action Team Report to Governor Schwarzenegger* and the Legislature, March 2006, p. 11.

³Ibid.

subsequent amendments. USEPA regulates emission sources that are under the exclusive authority of the federal government, such as aircraft, ships, and certain types of locomotives. USEPA has jurisdiction over emission sources outside State waters (e.g., beyond the outer continental shelf) and establishes various emission standards, including those for vehicles sold in States other than California. Automobiles sold in California must meet stricter emission standards established by CARB.

As required by the CAA, NAAQS have been established for seven major air pollutants: CO, NO_2 , O_3 , $PM_{2.5}$, PM_{10} , SO_2 , and Pb. The CAA requires USEPA to designate areas as attainment, nonattainment, or maintenance (previously nonattainment and currently attainment) for each criteria pollutant based on whether the NAAQS have been achieved. The federal standards are summarized in **Table 3-1**. The USEPA has classified the Basin as maintenance for CO and nonattainment for O_3 , $PM_{2.5}$, and PM_{10} .

State

California Air Resources Board. In addition to being subject to the requirements of CAA, air quality in California is also governed by more stringent regulations under the California Clean Air Act (CCAA). In California, the CCAA is administered by the California Air Resources Board (CARB) at the State level and by the air quality management districts and air pollution control districts at the regional and local levels. The CARB, which became part of the California Environmental Protection Agency in 1991, is responsible for meeting the State requirements of the CAA, administering the CCAA, and establishing the California Ambient Air Quality Standards (CAAQS). The CCAA, as amended in 1992, requires all air districts in the State to endeavor to achieve and maintain the CAAQS. CAAQS are generally more stringent than the corresponding federal standards and incorporate additional standards for sulfates, hydrogen sulfide, vinyl chloride, and visibility reducing particles. CARB regulates mobile air pollution sources, such as motor vehicles. CARB is responsible for setting emission standards for vehicles sold in California and for other emission sources, such as consumer products and certain off-road equipment. CARB established passenger vehicle fuel specifications, which became effective in March 1996. CARB oversees the functions of local air pollution control districts and air quality management districts, which, in turn, administer air quality activities at the regional and county levels. The State standards are summarized in Table 3-1.

The CCAA requires CARB to designate areas within California as either attainment or non-attainment for each criteria pollutant based on whether the CAAQS have been achieved. Under the CCAA, areas are designated as non-attainment for a pollutant if air quality data shows that a State standard for the pollutant was violated at least once during the previous three calendar years. Exceedances that are affected by highly irregular or infrequent events are not considered violations of a State standard and are not used as a basis for designating areas as nonattainment. Under the CCAA, the Los Angeles County portion of the Basin is designated as a nonattainment area for O₃, PM_{2.5}, and PM₁₀.⁴

⁴CARB, Area Designation Maps, available at http://www.arb.ca.gov/desig/adm/adm.htm, accessed June 1, 2010.

		Califo	ornia	Federal		
Pollutant	Averaging Period	Standards	Attainment Status	Standards	Attainment Status	
0 (0)	1-hour	0.09 ppm (180 μg/m³)	Nonattainment			
Ozone (O ₃)	8-hour	0.070 ppm (137 μg/m³)	n/a	0.075 ppm (147 μg/m³)	Nonattainment	
Daanisahla	24-hour	50 μg/m ³	Nonattainment	150 μg/m ³	Nonattainmen	
Respirable Particulate Matter (PM ₁₀)	Annual Arithmetic Mean	20 μg/m³	Nonattainment			
Fine	24-hour			35 μg/m ³	Nonattainmen	
Particulate Matter (PM _{2.5})	Annual Arithmetic Mean	12 μg/m³	Nonattainment	15.0 μg/m ³	Nonattainment	
Carbon	8-hour	9.0 ppm (10 mg/m ³)	Attainment	9 ppm (10 mg/m ³)	Maintenance	
Monoxide (CO)	1-hour	20 ppm (23 mg/m ³)	Attainment	35 ppm (40 mg/m ³)	Maintenance	
Nitrogen	Annual Arithmetic Mean	0.030 ppm (57 μg/m³)	Attainment	0.053 ppm (100 µg/m³)	Attainment	
Dioxide (NO ₂)	1-hour	0.18 ppm (338 μg/m ³)	Attainment			
	Annual Arithmetic Mean			0.030 ppm (80 µg/m³)	Attainment	
Sulfur Dioxide (SO ₂)	24-hour	0.04 ppm (105 μg/m³)	Attainment	0.14 ppm (365 μg/m ³)	Attainment	
	3-hour					
	1-hour	0.25 ppm (655 μg/m³)	Attainment			
Lead (Pb)	30-day average	1.5 μg/m ³	Attainment			
Leau (PD)	Calendar Quarter			0.15 μg/m ³	Attainment	

Local

South Coast Air Quality Management District. The 1977 Lewis Air Quality Management Act created the SCAQMD to coordinate air quality planning efforts throughout Southern California. This Act merged four county air pollution control agencies into one regional district to better address the issue of improving air quality in Southern California. Under the Act, renamed the Lewis-Presley Air Quality Management Act in 1988, the SCAQMD is the agency principally responsible for comprehensive air pollution control in the region. Specifically, the SCAQMD is responsible for monitoring air quality, as well as planning, implementing, and enforcing

programs designed to attain and maintain State and federal ambient air quality standards in the district. Programs that were developed include air quality rules and regulations that regulate stationary sources, area sources, point sources, and certain mobile source emissions. The SCAQMD is also responsible for establishing stationary source permitting requirements and for ensuring that new, modified, or relocated stationary sources do not create net emission increases.

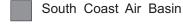
The SCAQMD monitors air quality within the project area. The SCAQMD has jurisdiction over an area of 10,743 square miles, consisting of Orange County; the non-desert portions of Los Angeles, Riverside, and San Bernardino counties; and the Riverside County portion of the Salton Sea Air Basin and Mojave Desert Air Basin. The Basin is a subregion of the SCAQMD and covers an area of 6,745 square miles. The Basin includes all of Orange County and the non-desert portions of Los Angeles, Riverside, and San Bernardino counties. The Basin is bounded by the Pacific Ocean to the west; the San Gabriel, San Bernardino and San Jacinto mountains to the north and east; and the San Diego County line to the south (**Figure 3-1**).

Air Quality Management Plan. All areas designated as nonattainment under the CCAA are required to prepare plans showing how the area would meet the State air quality standards by its attainment dates. The AQMP is the region's plan for improving air quality in the region. It addresses CAA and CCAA requirements and demonstrates attainment with State and federal ambient air quality standards. The AQMP is prepared by SCAQMD and the Southern California Association of Governments (SCAG). The AQMP provides policies and control measures that reduce emissions to attain both State and federal ambient air quality standards by their applicable deadlines. Environmental review of individual projects within the Basin must demonstrate that daily construction and operational emissions thresholds, as established by the SCAQMD, would not be exceeded. The environmental review must also demonstrate that individual projects would not increase the number or severity of existing air quality violations.

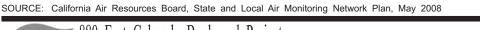
The 2007 AQMP was adopted by the SCAQMD on June 1, 2007. The 2007 AQMP proposes attainment demonstration of the federal $PM_{2.5}$ standards through a more focused control of SO_X , directly-emitted $PM_{2.5}$, and NO_X supplemented with VOC by 2015. The eight-hour ozone control strategy builds upon the $PM_{2.5}$ strategy, augmented with additional NO_X and VOC reductions to meet the standard by 2024. The 2007 AQMP also addresses several 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. The 2007 AQMP is consistent with and builds upon the approaches taken in the 2003 AQMP. However, the 2007 AQMP highlights the significant amount of reductions needed and the urgent need to identify additional strategies, especially in the area of mobile sources, to meet all federal criteria pollutant standards within the time frames allowed under the CAA.

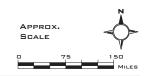


LEGEND:



State of California







Toxic Air Contaminants. The SCAQMD has a long and successful history of reducing air toxics and criteria emissions in the South Coast Air Basin (Basin). SCAQMD has an extensive control program, including traditional and innovative rules and policies. These policies can be viewed in the SCAQMD's *Air Toxics Control Plan for the Next Ten Years* (March 2000). To date, the most comprehensive study on air toxics in the Basin is the Multiple Air Toxics Exposure Study (MATES-III), conducted by the SCAQMD. The monitoring program measured more than 30 air pollutants, including both gases and particulates. The monitoring study was accompanied by a computer modeling study in which SCAQMD estimated the risk of cancer from breathing toxic air pollution throughout the region based on emissions and weather data. MATES-III found that the cancer risk in the region from carcinogenic air pollutants ranges from about 870 in a million to 1,400 in a million, with an average regional risk of about 1,200 in a million.

Global Climate Change

In response to growing scientific and political concern with global climate change, California has recently adopted a series of laws to reduce emissions of GHGs into the atmosphere. In September 2002, Assembly Bill (AB) 1493 was enacted, requiring the development and adoption of regulations to achieve "the maximum feasible reduction of greenhouse gases" emitted by noncommercial passenger vehicles, light-duty trucks, and other vehicles used primarily for personal transportation in the State. California Governor Arnold Schwarzenegger announced, on June 1, 2005, through Executive Order S-3-05, the following GHG emission reduction targets: by 2010, reduce GHG emissions to 2000 levels; by 2020, reduce GHG emissions to 1990 levels; and by 2050, reduce GHG emissions to 80 percent below 1990 levels.

In response to the Executive Order, the Secretary of the California Environmental Protection Agency created the Climate Action Team (CAT), which, in March 2006, published the *Climate Action Team Report to Governor Schwarzenegger and the Legislature* (2006 CAT Report). The 2006 CAT Report identifies a recommended list of strategies that the State could pursue to reduce climate change GHG emissions. These are strategies that could be implemented by various State agencies to ensure that the Governor's targets are met and can be met with existing authority of the State agencies.

Assembly Bill 32. In September 2006, Governor Arnold Schwarzenegger signed the California Global Warming Solutions Act of 2006, also known as AB 32, into law. AB 32 focuses on reducing GHG emissions in California, and requires the CARB to adopt rules and regulations that would achieve greenhouse gas emissions equivalent to statewide levels in 1990 by 2020. To achieve this goal, AB 32 mandates that the CARB establish a quantified emissions cap, institute a schedule to meet the cap, implement regulations to reduce statewide GHG emissions from stationary sources, and develop tracking, reporting, and enforcement mechanisms to ensure that reductions are achieved. Because the intent of AB 32 is to limit 2020 emissions to the equivalent of 1990, and the present year (2009) is near the midpoint of this timeframe, it is expected that the regulations would affect many existing sources of GHG emissions and not just new general development projects. Senate Bill (SB) 1368, a companion bill to AB 32, requires the California Public Utilities Commission and the California Energy Commission to establish GHG emission performance standards for the generation of electricity. These standards will also apply to power that is generated outside of California and imported into the State.

AB 32 charges the CARB with the responsibility to monitor and regulate sources of GHG emissions in order to reduce those emissions. On June 1, 2007, the CARB adopted three discrete early action measures to reduce GHG emissions. These measures involved complying

with a low carbon fuel standard, reducing refrigerant loss from motor vehicle air conditioning maintenance, and increasing methane capture from landfills. On October 25, 2007, the CARB tripled the set of previously approved early action measures. The approved measures include improving truck efficiency (i.e., reducing aerodynamic drag), electrifying port equipment, reducing perfluorocarbons from the semiconductor industry, reducing propellants in consumer products, promoting proper tire inflation in vehicles, and reducing sulfur hexaflouride emission from the non-electricity sector. The CARB has determined that the total statewide aggregated greenhouse gas 1990 emissions level and 2020 emissions limit is 427 million metric tons of CO_2e . The 2020 target reductions are currently estimated to be 174 million metric tons of CO_2e .

The CARB AB 32 Scoping Plan contains the main strategies to achieve the 2020 emissions cap. The Scoping Plan was developed by the CARB with input from the Climate Action Team and proposes a comprehensive set of actions designed to reduce overall carbon emissions in California, improve the environment, reduce oil dependency, diversify energy sources, and enhance public health while creating new jobs and improving the State economy. The GHG reduction strategies contained in the Scoping Plan 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 measures in the Scoping Plan adopted by the Board will be developed and put in place by 2012.

The CARB has also developed the greenhouse gas mandatory reporting regulation, which required reporting beginning on January 1, 2008 pursuant to requirements of AB 32. The regulations require reporting for certain types of facilities that make up the bulk of the stationary source emissions in California. The regulation language identifies major facilities as those that generate more than 25,000 metric tons of CO_2 per year. Cement plants, oil refineries, electric generating facilities/providers, co-generation facilities, and hydrogen plants and other stationary combustion sources that emit more than 25,000 metric tons of CO_2 per year, make up 94 percent of the point source CO_2 emissions in California.

CEQA Guideline Amendments. California Senate Bill (SB) 97 required the Governor's Office of Planning and Research (OPR) to develop CEQA guidelines "for the mitigation of greenhouse gas emissions or the effects of greenhouse gas emissions." The CEQA Guideline amendments provide guidance to public agencies regarding the analysis and mitigation of the effects of GHG emissions in CEQA documents. Noteworthy revisions to the CEQA Guidelines include:

- Lead agencies should quantify all relevant GHG emissions and consider the full range of project features that may increase or decrease GHG emissions as compared to the existing setting;
- Consistency with the CARB Scoping Plan is not a sufficient basis to determine that a project's GHG emissions would not be cumulatively considerable;
- A lead agency may appropriately look to thresholds developed by other public agencies, including the CARB's recommended CEQA thresholds;
- To qualify as mitigation, specific measures from an existing plan must be identified and incorporated into the project. General compliance with a plan, by itself, is not mitigation;
- The effects of GHG emissions are cumulative and should be analyzed in the context of CEQA's requirements for cumulative impact analysis; and

⁵California Air Resources Board, *Proposed Early Action Measures to Mitigate Climate Change in California*, April 20, 2007.

Given that impacts resulting from GHG emissions are cumulative, significant advantages
may result from analyzing such impacts on a programmatic level. If analyzed properly,
later projects may tier, incorporate by reference, or otherwise rely on the programmatic
analysis.

Senate Bill 375. California Senate Bill (SB) 375, passed September 30, 2008, provides a means for achieving AB 32 goals through regulation of cars and light trucks. SB 375 aligns three critical policy areas of importance to local government: (1) regional long-range transportation plans and investments; (2) regional allocation of the obligation for cities and counties to zone for housing; and (3) a process to achieve greenhouse gas emissions reductions targets for the transportation sector. SB 375 establishes a process for CARB to develop the GHG emissions reductions targets for each region (as opposed to individual local governments or households). CARB must take certain factors into account before setting the targets, such as considering the likely reductions that will result from actions to improve the fuel efficiency of the Statewide fleet and regulations related to the carbon content of fuels (low carbon fuels). CARB must also convene a Regional Targets Advisory Committee, which includes representation from the League of California Cities, California State Association of Counties, metropolitan planning organizations, developers, planning organizations and other stakeholder groups. Furthermore, before setting the targets for each region, CARB is required to exchange technical information with the Metropolitan Planning Organizations (MPOs) for that region and with the affected air district. SB 375 provides that the MPOs may recommend a target for its region.

SB 375 relies upon regional planning processes already underway in the 17 MPOs in the State to accomplish its objectives. The provisions related to GHG emissions only apply to the MPOs in the State, which includes 37 of the 58 counties. Most notably, the measure requires the MPO to prepare a Sustainable Communities Strategy (SCS) within the Regional Transportation Plan (RTP), which sets forth a vision for growth for the region taking into account the transportation, housing, environmental, and economic needs of the region. The SCS is the blueprint by which the region will meet its GHG emissions reductions target if there is a feasible way to do so.

SB 375 indirectly addresses another longstanding issue: single purpose State agencies. The new law will require the cooperation of CARB, the California Transportation Commission (CTC), the California Department of Transportation (Caltrans) and the State Department of Housing and Community Development (HCD). For example, SB 375 takes a first step to counter this problem by connecting the Regional Housing Needs Allocation (RHNA) to the transportation planning process. While these State agencies will be involved in setting the targets and adopting new guidelines, local governments and the MPOs will not only provide input into setting the targets, but will serve as the lead on implementation. Member cities and counties working through their MPOs are tasked with development of the new integrated regional planning and transportation strategies designed to meet the GHG targets.

SB 375 also includes a provision that applies to all regional transportation planning agencies in the State that recognizes the rural contribution towards reducing GHGs. More specifically, the bill requires regional transportation agencies to consider financial incentives for cities and counties that have resource areas or farmland, for the purposes of, for example, transportation investments for the preservation and safety of the city street or county road system, farm to market, and interconnectivity transportation needs. An MPO or county transportation agency shall also consider financial assistance for counties to address countywide service responsibilities in counties that contribute towards the GHG emissions reductions targets by implementing policies for growth to occur within their cities.

SB 375 uses California Environmental Quality Act (CEQA) streamlining as an incentive to encourage residential projects, which help achieve AB 32 goals to reduce GHG emissions. Cities and counties that find the CEQA streamlining provisions attractive have the opportunity (but not the obligation) to align their planning decisions with the decisions of the region.

SB 375 provides more certainty for local governments and developers by framing how AB 32's reduction goal from transportation for cars and light trucks will be established. It should be noted, however, that SB 375 does not prevent CARB from adopting additional regulations under its AB 32 authority. However, based on the degree of consensus around SB 375 and early indications from CARB, such actions are not anticipated in the foreseeable future.⁶

CARB Guidance. The CARB has published draft guidance for setting interim GHG significance thresholds (October 24, 2008). The guidance is the first step toward developing the recommended Statewide interim thresholds of significance for GHG emissions that may be adopted by local agencies for their own use. The guidance does not attempt to address every type of project that may be subject to CEQA, but instead focuses on common project types that are responsible for substantial GHG emissions (i.e., industrial, residential, and commercial projects). The CARB believes that thresholds in these important sectors will advance climate objectives, streamline project review, and encourage consistency and uniformity in the CEQA analysis of GHG emissions throughout the State.

California Air Pollution Control Officers Association (CAPCOA) Guidance. CAPCOA published a white paper to provide a common platform of information and tools to address climate change in CEQA analyses, including the evaluation and mitigation of GHG emissions from proposed projects and identifying significance thresholds options. The white paper addresses issues inherent in establishing CEQA thresholds, evaluates tools, catalogues mitigation measures, and provides air districts and lead agencies with options for incorporating climate change into their programs.

SCAQMD Guidance. The SCAQMD has convened a GHG CEQA Significance Threshold Working Group to provide guidance to local lead agencies on determining significance for GHG emissions in their CEQA documents. Members of the working group include government agencies implementing CEQA and representatives from various stakeholder groups that will provide input to the SCAQMD staff on developing GHG CEQA significance thresholds. On December 5, 2008, the SCAQMD Governing Board adopted the staff proposal for an interim GHG significance threshold for projects where the SCAQMD is lead agency. The SCAQMD has not adopted guidance for CEQA projects under other lead agencies.

Green Building Program. Early in the design process the entire life-cycle of the building and its components are considered, as well as the economic and environmental impact and performance. The City of Pasadena recognizes that building construction, maintenance and operations consume resources which have a direct impact on the public welfare and the natural environment. It is with that recognition that the City of Pasadena approved the Green Building Practices Ordinance on April 15, 2006, in order to: ⁷

⁶American Planning Association, California Chapter, *Analysis of SB 375*, http://www.calapa.org/en/cms/?2841, accessed June 1, 2010.

⁷City of Pasadena, *Pasadena Municipal Code, Chapter 14.90 – Green Building Practices*, April 15, 2006.

- Enhance public welfare and assure that civic and private sector development is consistent with the city's desire to create a more sustainable community by incorporating green building measures into the design, construction, and maintenance of buildings;
- Improve the health of residents, visitors, and workers by counteracting negative environmental impacts associated with building construction and occupation; and
- Promote development that fosters sustainable sites, improves energy and resource efficiency, decreases waste and pollution generation, and improves the health and productivity of a building's occupants over the life of the building.

The Program identifies objectives and actions designed to make the City a leader in confronting global climate change. The measures would reduce emissions directly from municipal facilities and operations, and create a framework to address City-wide GHG emissions. The Program lists various focus areas in which to implement GHG reduction strategies.

The City adopted an ordinance to establish a green building program in April 2008. The ordinance establishes green building requirements for buildings that meet the following criteria:

- New municipal buildings must achieve Leadership in Energy and Environmental Design (LEED) Silver at a minimum.
- Municipal renovations of 15,000 square feet or more must achieve LEED Silver at a minimum.
- Commercial type buildings of over 50,000 square feet or more must meet the intent of LEED Silver at a minimum.
- All projects subject to the ordinance must achieve LEED credit 3.1 Water Efficiency (exceed the baseline water projection by 20 percent).

In order for a project to comply with the Program, these specific actions must be taken:

- 1. All applicable projects are required to retain the services of a Leadership in Energy and Environmental Design (LEED) accredited professional and complete LEED project registration prior to issuance of a building permit.
- 2. All applicable projects shall submit a LEED checklist and supporting documentation indicating points meeting at a minimum LEED "Certified" level incorporated into documentation for a building permit. Projects as described in Section 14.90.040(A)(2) of 50,000 square feet or more of new gross square footage shall meet LEED "Silver" level. These projects would include typical office, retail, medical, and academic buildings with occupied and conditioned spaces. The LEED checklist shall be prepared, signed, and dated by the project LEED accredited professional. All building documents shall indicate in the general notes and/or individual detail drawings, where feasible, the green building measures employed to attain the applicable LEED rating.
- 3. Applicable city buildings are required to attain LEED certification and meet, at a minimum, LEED "Silver" rating.
- 4. Building commissioning, although specified as a prerequisite for LEED certification, is not required for applicable projects under this chapter except for city buildings. Applicants are encouraged to verify that fundamental building systems are designed, installed, and calibrated to operate as intended.

All applicable projects shall meet the applicable LEED water use reduction credit that
requires applicants to employ strategies that, in aggregate, use 20% less water than a
standard building using the Energy Policy Act of 1992 fixture performance requirements
for interior water usage.

Greenhouse Gas Inventory and Reduction Plan. The City has developed a Greenhouse Gas Inventory and Reduction Plan in response to recent state legislation and to inform the General Plan update process that is currently underway. The goals of this report are to:

- Provide a list of specific actions that will aggressively reduce GHG emissions, giving the highest priority to actions that provide the greatest reduction in GHG emissions and benefits to the community at least cost;
- Reduce emissions attributable to the City of Pasadena to levels at or below 1990 GHG
 emissions by year 2020 consistent with the target reductions of AB 32 and to begin to
 further reduce GHG emissions toward the ultimate goal of 80 percent below 1990 GHG
 emissions by year 2050 consistent with the Kyoto Protocol and Executive Order S-3-05;
- Provide estimated GHG reductions associated with the City's sustainability efforts;
- Integrate the City's sustainability efforts into the specific actions of this plan; and
- Establish thresholds of significance for GHG emissions within CEQA thereby creating a legally defensible foundation to use with the environmental analysis of future development projects subject to City review.

The City had not adopted the Greenhouse Gas Inventory and Reduction Plan when this analysis was completed. In addition, the Plan does not establish a significance threshold for assessing projects under CEQA.

3.3 EXISTING AIR QUALITY

3.3.1 Air Pollution Climatology

The project site is located within the Los Angeles County portion of the Basin. Ambient pollution concentrations recorded in Los Angeles County are among the highest in the four counties comprising the Basin.

The Basin is in an area of high air pollution potential due to its climate and topography. The general region lies in the semi-permanent high pressure zone of the eastern Pacific, resulting in a mild climate tempered by cool sea breezes with light average wind speeds. The Basin experiences warm summers, mild winters, infrequent rainfalls, light winds, and moderate humidity. This usually mild climatological pattern is interrupted infrequently by periods of extremely hot weather, winter storms, or Santa Ana winds. The Basin is a coastal plain with connecting broad valleys and low hills, bounded by the Pacific Ocean to the west and high mountains around the rest of its perimeter. The mountains and hills within the area contribute to the variation of rainfall, temperature, and winds throughout the region.

The Basin experiences frequent temperature inversions. Temperature typically decreases with height. However, under inversion conditions, temperature increases as altitude increases, thereby preventing air close to the ground from mixing with the air above it. As a result, air pollutants are trapped near the ground. During the summer, air quality problems are created due to the interaction between the ocean surface and the lower layer of the atmosphere. This interaction creates a moist marine layer. An upper layer of warm air mass forms over the cool

marine layer, preventing air pollutants from dispersing upward. Additionally, hydrocarbons and NO_2 react under strong sunlight, creating smog. Light, daytime winds, predominantly from the west, further aggravate the condition by driving air pollutants inland, toward the mountains. During the fall and winter, air quality problems are created due to CO and NO_2 emissions. CO concentrations are generally worse in the morning and late evening (around 10:00 p.m.). In the morning, CO levels are relatively high due to cold temperatures and the large number of cars traveling. High CO levels during the late evenings are a result of stagnant atmospheric conditions trapping CO in the area. Since CO emissions are produced almost entirely from automobiles, the highest CO concentrations in the Basin are associated with heavy traffic. NO_2 concentrations are also generally higher during fall and winter days.

3.3.2 Local Climate

The mountains and hills within the Basin contribute to the variation of rainfall, temperature, and winds throughout the region. Within the project site and its vicinity, the average wind speed, as recorded at the Azusa Wind Monitoring Station, is 4.5 miles per hour, with calm winds occurring less than 0.01 percent of the time. Wind in the vicinity of the project site predominately blows from the southwest.⁸

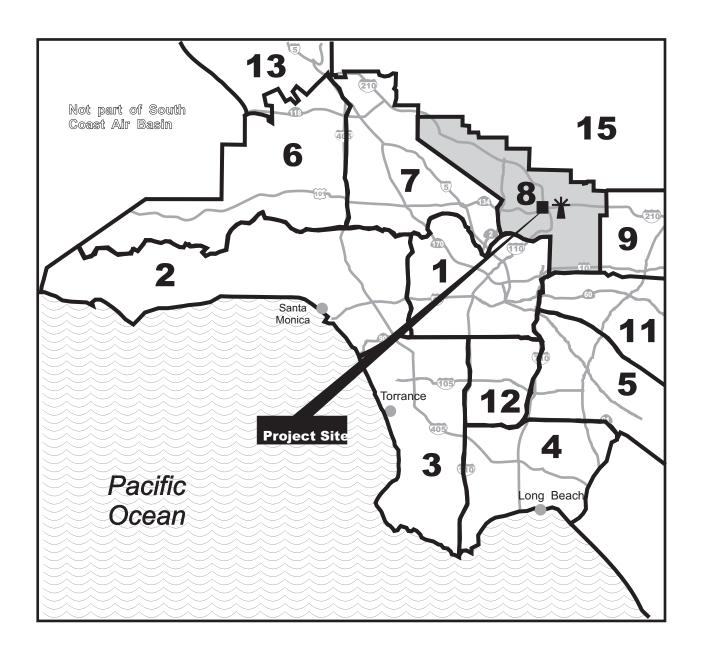
The annual average temperature in the project area is 63.8°F. The project area experiences an average winter temperature of approximately 55.1°F and an average summer temperature of approximately 72.5°F. Total precipitation in the project area averages approximately 20 inches annually. Precipitation occurs mostly during the winter and relatively infrequently during the summer. Precipitation averages approximately 12 inches during the winter, approximately five inches during the spring, approximately three inches during the fall, and less than one inch during the summer.⁹

3.3.3 Air Monitoring Data

The SCAQMD monitors air quality conditions at 38 locations throughout the Basin. The project site is located in SCAQMD's West San Gabriel Valley Air Monitoring Subregion, which is served by the Pasadena Monitoring Station, is located approximately one miles northwest of the project site in the City of Pasadena (**Figure 3-2**). Historical data from the Pasadena Monitoring Station were used to characterize existing conditions in the vicinity of the project area. Criteria pollutants monitored at the Pasadena Monitoring Station include O₃, CO, NO₂, and PM_{2.5}. Historical data from the Downtown Los Angeles Station was used to characterize existing SO₂ levels, and historical data from the Azusa Monitoring Station was used to characterize existing PM₁₀ levels. The SCAQMD has only provided information through 2008.

⁸SCAQMD, Meteorological Data, available at http://www.aqmd.gov/smog/metdata/MeteorologicalData.html, accessed August 6, 2009.

⁹Western Regional Climate Center, Historical Climate Information, available at http://www.wrcc.dri.edu, accessed June 1, 2010.



LEGEND: * Pasadena Monitoring Station

Air Monitoring Areas in Los Angeles County:

- 1. Central Los Angeles
- 2. Northwest Coastal
- 3. Southwest Coastal
- 4. South Coastal
- 5. Southeast Los Angeles County
- 6. West San Fernando Valley
- 7. East San Fernando Valley
- 8. West San Gabriel Valley
- 9. East San Gabriel Valley
- 10. Pomona/Walnut Valley (not shown)
- 11. South San Gabriel Valley
- 12. South Central Los Angeles
- 13. Santa Clarita Valley
- 15. San Gabriel Mountains



SOURCE: South Coast Air Quality Management District Air Monitoring Areas Map, 1999



880 East Colorado Boulevard Project Air Quality and Noise Impact Report ENVIRONMENTAL PLANNING ASSOCIATES INC.

FIGURE 3-2

TABLE 3-2: 2006-2008 AMBIENT AIR QUALITY DATA IN PROJECT VICINITY									
			oject Vicin toring Sta	-	San Gabriel Valley General Forecast Area /a,b/				
	Pollutant Concentration &	Number of Days Above State Standard							
Pollutant	Standards	2006	2007	2008	2006	2007	2008		
Ozone	Maximum 1-hr Concentration (ppm)	0.15	0.15	0.12	0.15	0.15	0.15		
	Days > 0.09 ppm (State 1-hr standard)	25	13	16	22	15	15		
	Maximum 8-hr Concentration (ppm)	0.12	0.10	0.10	0.12	0.11	0.11		
	Days > 0.07 ppm (State 8-hr standard)	24	21	26	20	21	21		
Carbon Monoxide	Maximum 1-hr concentration (ppm)	4	3	n/a	3	4	4		
	Days > 20 ppm (State1-hr standard)	0	0	n/a	0	0	0		
	Maximum 8-hr concentration (ppm)	2.8	2.4	2.3	2.3	2.4	2.4		
	Days > 9.0 ppm (State 8-hr standard)	0	0	0	0	0	0		
Nitrogen Dioxide	Maximum 1-hr Concentration (ppm)	0.06	0.09	0.09	0.11	0.11	0.11		
J	Days > 0.18 ppm (State 1-hr standard)	0	0	0	0	0	0		
PM ₁₀	Maximum 24-hr concentration (µg/m³)	81	83	96	81	83	83		
	Estimated Days > 50 µg/m ³	7	11	12	7	11	11		
	(State 24-hr standard)								
PM _{2.5}	Annual Arithmetic Mean (µg/m³)	13	. 14	n/a	15	16	16		
	Exceed State Standard (12 µg/m³)?	Yes	Yes		Yes	Yes	Yes		
Sulfur Dioxide /c/	Maximum 24-hr Concentration (ppm)	0.01	<0.01	<0.01	n/a	n/a	n/a		
	Days > 0.04 ppm (State 24-hr standard)	0	0 0		11/4				

[/]a/ The San Gabriel Valley General Forecast Area includes the West San Gabriel Valley, East San Gabriel Valley, Pomona/Walnut Valley and South San Gabriel Valley air monitoring areas of the SCAQMD.

Note: n/a means not available.

SOURCE: SCAQMD, Historical Data by Year, available at http://www.agmd.gov/smog/historicaldata.htm, accessed June 1, 2010.

Table 3-2 shows pollutant levels, the State and federal standards, and the number of exceedances recorded at the Pasadena Monitoring Station compared to the San Gabriel Valley General Forecast Area (Forecast Area) from 2006 to 2008.

The CAAQS for the criteria pollutants are also shown in the table. As **Table 3-2** indicates, criteria pollutants CO, NO_2 , and SO_2 did not exceed the CAAQS during the 2006 to 2008 period. The one-hour State standard for O_3 was exceeded 13 to 25 times during this period, and the eight-hour State standard for O_3 was exceeded 12 to 26 times. Additionally, the 24-hour State standard for PM_{10} was exceeded seven to 12 times and the annual State standard for $PM_{2.5}$ was exceeded in during year 2006 to 2008 period. When compared to the Forecast area the Project Vicinity Monitoring Stations recorded concentrations of averages of the CO were higher than the Forecast Area concentrations. NO_2 concentrations were higher than the Forecast Area concentrations during 2005, and but lower than the average in 2006 and 2007. O_3 concentrations were higher than the Forecast Area's average during 2005, and equivalent to the Forecast Area's average during 2006 and 2007. PM_{10} concentrations were equivalent to the Forecast Area concentrations during the 2006 to 2008 period, and $PM_{2.5}$ concentrations were lower than the Forecast Area concentrations during the 2006 to 2008 period.

3.3.4 Existing Carbon Monoxide Concentrations at Project Area Intersections

There is a direct relationship between traffic/circulation congestion and CO impacts since exhaust fumes from vehicular traffic are the primary source of CO. CO is a localized gas that dissipates very quickly under normal meteorological conditions. Therefore, CO concentrations

[/]b/ An average of the maximum concentration of each criteria pollutant of the air monitoring areas of the San Gabriel Valley General Forecast Area was used to represent maximum concentrations in the San Gabriel Valley General Forecast Area.

[/]c/ Sulfur Dioxide is not measured within the San Gabriel Valley General Forecast Area. The values listed for Sulfur Dioxide in the Pasadena, Azusa, and Downtown Los Angeles Monitoring Stations columns are from the Downtown Los Angeles Monitoring Station.

decrease substantially as distance from the source (intersection) increases. The highest CO concentrations are typically found in areas directly adjacent to congested roadway intersections.

SCAQMD defines the ambient CO level as the highest reading over the past three years. A review of data from the Pasadena Monitoring Station for the 2005 to 2007 period indicates that the one- and eight-hour background concentrations are approximately 4 and 2.8 ppm, respectively. Accordingly, the existing background concentrations do not exceed the State one- and eight-hour CO standards of 20 and 9.0 ppm, respectively.

3.3.5 Sensitive Receptors

Some land uses are considered more sensitive to changes in air quality than others, depending on the population groups and the activities involved. CARB has identified the following typical groups who are most likely to be affected by air pollution: children under 14, the elderly over 65 years of age, athletes, and people with cardiovascular and chronic respiratory diseases. According to the SCAQMD, sensitive receptors include residences, schools, playgrounds, child care centers, athletic facilities, long-term health care facilities, rehabilitation centers, convalescent centers, and retirement homes.

As shown in **Figure 3-3**, sensitive receptors within one-quarter mile (1,320 feet) of the project site include the following:

- A multi-family residential building approximately 65 feet east of the project site
- Multi-family residences approximately 580 feet south of the project site
- Multi-family residences approximately 675 feet northeast of the project site
- Multi-family residences approximately 750 feet southeast of the project site
- Multi-family residences approximately 1,150 feet southwest of the project site

The above sensitive receptors represent the nearest sensitive receptors with the potential to be impacted by the proposed project. Additional sensitive receptors are located in the surrounding community within one-quarter mile of the project site and may be impacted by the proposed project.

3.4 METHODOLOGY AND SIGNIFICANCE CRITERIA

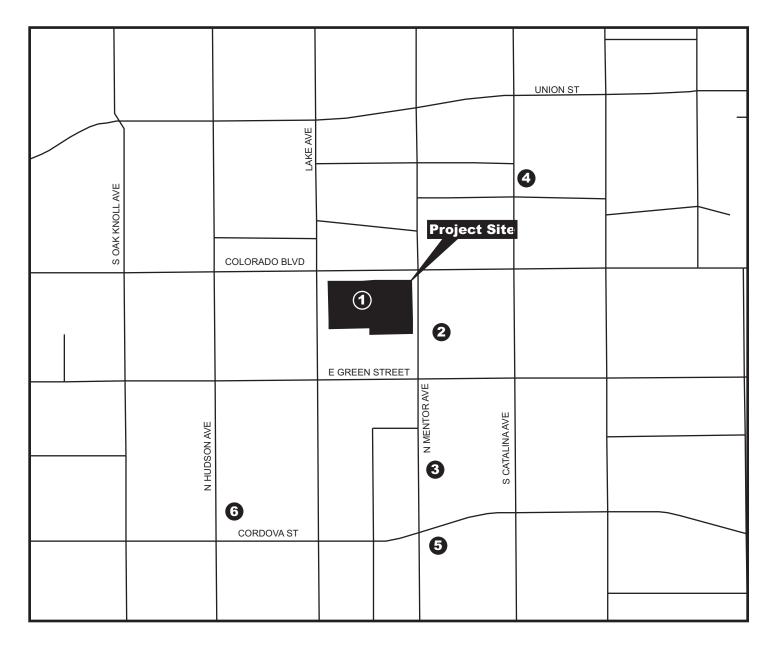
3.4.1 Methodology

This air quality analysis is consistent with the methods described in the SCAQMD *CEQA Air Quality Handbook* (1993 edition), as well as the updates to the *CEQA Air Quality Handbook*, as provided on the SCAQMD website.¹⁰

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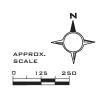
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¹⁰SCAQMD, http://www.aqmd.gov/ceqa/hdbk.html, accessed June 1, 2010.



LEGEND:

- # Sensitive Receptor Locations
- 1. Project Site
- 2. Multi-Family Residences
- 3. Multi-Family Residences
- 4. Multi-Family Residences
- 5. Multi-Family Residences
- 6. Multi-Family Residences



SOURCE: TAHA, 2010



Construction

Construction emissions (i.e., demolition, site preparation, and building construction) were calculated using the URBEMIS2007 model. URBEMIS (Urban Emissions Model) is a computer program used to estimate construction and operational emissions associated with land development projects in California. Regional emissions were compared to the SCAQMD regional thresholds to determine project impact significance. The localized construction analysis followed guidelines published by the SCAQMD in the Localized Significance Methodology for CEQA Evaluations (SCAQMD Localized Significance Threshold (LST) Guidance Document). In January 2005, the SCAQMD supplemented the SCAQMD LST Guidance Document with Sample Construction Scenarios for Projects Less than Five Acres in Size. 12

The proposed project would be built in three nonoverlapping construction phases. During Phase 1, the vacant, former hotel building would undergo interior renovation and exterior restoration. The hotel would be converted into 136 hotel rooms and 2,681 square feet of bar/restaurant space, and 200 square feet of retail space. Conversion of existing hotel rooms on the uppermost floors into five condominium units is also proposed during Phase 1. Phase 2 development would include demolition of 11,011 square feet of retail space and the existing parking structure, surface parking and circulation area. New construction would include a 22,810-square-foot building south of the hotel with 20 additional hotel rooms, 8,010 square feet of retail space and 2,920 square feet of outdoor restaurant space. A rooftop pool would also be built with the hotel addition. An additional 20,290 square feet of open space would be provided, most of which would be in a second level courtyard extending into the site from Colorado Boulevard, adjacent to the hotel. The ground and second levels of the courtyard would provide approximately 14,830 square feet of outdoor area and feature public amenities such as terraces and gardens. The remaining 5,460 square feet of open space would be provided by the rooftop pool. Phase 3 would include construction of the remainder of the subterranean parking, ground floor retail and the office building. Specifically, new construction would include a 153,435square-foot office building. New indoor and outdoor restaurant space would total 32,260 square feet and would largely be located on a second (terrace) level that would link with the courtyard constructed in Phase 2. Ground floor and second level retail space would total 14,200 square feet. Open space with terraces and balconies for the new building would total 15,470 square feet. Specific construction assumptions for each phase include:

Phase 1

Demolition

Duration: 2 weeks

Haul Trucks: 10 trips per dayEquipment: 5 pieces of equipment

Grading/Excavation

Duration: 1 month

Excavation Amount: 200 cubic yards export and 200 cubic yards import

Grading Amount: 2,000 square feet graded per day

Haul Trucks: 5 trips per day

¹¹SCAQMD, Localized Significance Methodology, June 2003, revised July 2008.

¹²SCAQMD, Sample Construction Scenarios for Projects Less than Five Acres in Size, February 2005.

Equipment: 4 pieces of equipment

Building/Finishing (includes Building Construction, Paving and Architectural Coating phases)

- Duration: 10 months
- Area to be Paved: 2,000 square feet
- Equipment: 12 pieces of equipment

Phase 2

Demolition

- Duration: 2 weeks
- Haul Trucks: 20 trips per day
- Equipment: 8 pieces of equipment

Grading/Excavation

- Duration: 1.5 months
- Excavation Amount: 40,000 cubic yards export and 2,000 cubic yards import
- Grading Amount: 30,593 square feet graded per day
- Haul Trucks: 70 trips per day
- Equipment: 8 pieces of equipment

Building/Finishing (includes Building Construction, Paving and Architectural Coating phases)

- Duration: 10 months
- Area to be Paved: 16,000 square feet
- Equipment: 12 pieces of equipment

Phase 3

Demolition

- Duration: 4 weeks
- Haul Trucks: 20 trips per day
- Equipment: 10 pieces of equipment

Grading/Excavation

- Duration: 2 months
- Excavation Amount: 105,000 cubic yards export and 3,000 cubic yards import
- Grading Amount: 43,000 square feet graded per day
- Haul Trucks: 126 trips per day
- Equipment: 9 pieces of equipment

Building/Finishing (includes Building Construction, Paving and Architectural Coating phases)

- Duration: 13 months
- Area to be Paved: 7,000 square feet
- Equipment: 22 pieces of equipment

Operations

URBEMIS2007 was also used to calculate operational emissions (i.e., mobile and area sources). Localized CO emissions were calculated utilizing USEPA's CAL3QHC dispersion model and CARB's EMFAC2007 model. EMFAC2007 is the latest emission inventory model for motor vehicles operating on roads in California. This model reflects the CARB's current understanding of how vehicles travel and how much they pollute. The EMFAC2007 model can be used to show how California motor vehicle emissions have changed over time and are projected to change in the future. CAL3QHC is a model developed by USEPA to predict CO and other pollutant concentrations from motor vehicle emissions at roadway intersections. The model uses a traffic algorithm for estimating vehicular queue lengths at signalized intersections.

Greenhouse Gas Emissions

Greenhouse gas emissions were calculated for on-road mobile vehicle operations, general electricity consumption, electricity consumption associated with the use and transport of water, natural gas consumption, and solid waste decomposition. Mobile source emissions were based on trip volumes identified in the traffic study and obtained from URBEMIS2007. Phase 1 would generate 1,273 daily vehicle trips and 1,294 off-site valet parking daily trips, 81 additional daily vehicle trips after Phase 2, and 3,560 additional daily vehicle trips after Phase 3.¹³

Natural gas emissions were obtained from two sources. CO2 emissions were obtained from URBEMIS2007. URBEMIS does not estimate CH4 and N2O emissions associated with natural gas consumption. The California Climate Action Registry (CCAR) published version 3.1 of its General Reporting Protocol (Protocol) in January 2009 as a means for businesses, government agencies, and non-profit organizations to calculate GHG emissions from a number of general and industry-specific activities and participate in the CCAR. This Protocol is not intended for CEQA purposes, but it does provide methods that can be used to quantify the GHG emissions. Natural gas demand factors derived from the SCAQMD's CEQA Air Quality Handbook were used to project fuel consumption rates. The GHG emission factors from the CCAR Protocol for natural gas were then applied to the respective consumption rates, to calculate annual GHG emissions in metric tons.

The consumption of fossil fuels to generate electricity and to provide heating and hot water for the proposed project has the potential to create GHG emissions. The future fuel consumption rates for the proposed project by these sources are estimated based on the amount of proposed development. Electricity demand factors derived from the SCAQMD's *CEQA Air Quality Handbook* were used to project fuel consumption rates. The GHG emission factors from the CCAR Protocol for electricity were then applied to the respective consumption rates, to calculate annual GHG emissions in metric tons.

California's water infrastructure uses energy to collect, move, and treat water; dispose of wastewater; and power the large pumps that move water throughout the State. California consumers also use energy to heat, cool, and pressurize the water they use in their homes and businesses. Together these water-related energy uses annually account for roughly 20 percent of the State's electricity consumption, one-third of non-power plant natural gas consumption, and about 88 million gallons of diesel fuel consumption. The California Energy Commission has reported that the energy intensity of the water use cycle in Southern California is 12,700

¹³RAJU Associates, Transportation Study for the Lake at Colorado Project DEIR, May 24, 2010.

kilowatt-hours per million gallons.¹⁴ Water use was obtained from Section IV.F.1 and IV.F.2 of the Environmental Impact Report.

Solid waste was estimated using generation rates provided by the California Department of Resources Recycling and Recovery. USEPA has stated that solid waste decomposition generates 3.1 metric tons of CO₂e per ton of waste.¹⁵

The proposed project does not contain lead emissions sources. Therefore, emissions and concentrations related to this pollutant are not analyzed in this report.¹⁶

3.4.2 Significance Criteria

The following are the significance criteria SCAQMD has established to determine project impacts.

Construction Phase Significance Criteria

The proposed project would have a significant impact if:

- Daily regional and localized construction emissions were to exceed SCAQMD construction emissions thresholds for VOC, NO_X, CO, SO_X, PM_{2.5}, or PM₁₀, as presented in **Table 3-3**;
- The proposed project would generate significant emissions of TACs; and/or
- The proposed project would create an odor nuisance.

TABLE 3-3: SCAQMD DAILY CONSTRUCTION EMISSIONS THRESHOLDS							
Criteria Pollutant	Regional Emissions (Pounds Per Day)	Localized Emissions (Pounds Per Day)/a/					
Volatile Organic Compounds (VOC)	75						
Nitrogen Oxides (NO _X)	100	69					
Carbon Monoxide (CO)	550	535					
Sulfur Oxides (SO _X)	150						
Fine Particulates (PM _{2.5})	55	3					
Particulates (PM ₁₀)	150	4					

/a/ The project site is 1.95 acres in size but the applicant has stated that they would not disturb more than 43,000 square feet in one day. Therefore, the localized significance thresholds were developed using a one-acre project site and a 25-meter (82-foot) receptor distance. **SOURCE:** SCAQMD, 2010.

¹⁴California Energy Commission, 2005 Integrated Energy Policy Report, November 2005.

¹⁵USEPA, Waste Reduction Model (WARM), (Step 5: View Emission/Energy Factors), 2009.

¹⁶Prior to 1978, mobile emissions were the primary source of lead resulting in air concentrations. Between 1978 and 1987, the phase-out of leaded gasoline reduced the overall inventory of airborne lead by nearly 95 percent. Currently, industrial sources are the primary source of lead resulting in air concentrations. Since the proposed project does not contain an industrial component, lead emissions are not analyzed in this report.

Operations Phase Significance Criteria

The proposed project would have a significant impact if:

• Daily operational emissions were to exceed SCAQMD operational emissions thresholds for VOC, NO_X, CO, SO_X, PM_{2.5}, or PM₁₀, as presented in **Table 3-4**;

TABLE 3-4: SCAQMD DAILY OPERATIONAL EMISSIONS THRESHOLDS						
Criteria Pollutant	Pounds Per Day					
Volatile Organic Compounds (VOC)	55					
Nitrogen Oxides (NO _X)	55					
Carbon Monoxide (CO)	550					
Sulfur Oxides (SO _X)	150					
Fine Particulates (PM _{2.5})	55					
Particulates (PM ₁₀)	150					
SOURCE: SCAQMD, 2010.						

- Project-related traffic causes CO concentrations at study intersections to violate the CAAQS for either the one- or eight-hour period. The CAAQS for the one- and eight-hour periods are 20 ppm and 9.0 ppm, respectively;
- The proposed project would generate significant emissions of TACs;
- The proposed project would create an odor nuisance; and/or
- The proposed project would not be consistent with the AQMP.

Greenhouse Gas Significance Criteria

The significance threshold is based on the methodologies recommended by the CAPCOA January 2008 *CEQA and Climate Change* white paper. CAPCOA conducted an analysis of various approaches and significance thresholds, ranging from a zero threshold (all projects are cumulatively considerable) to a high of 40,000 to 50,000 metric tons of CO₂e per year. For example, an approach assuming a zero threshold and compliance with AB 32 2020 targets would require all discretionary projects to achieve a 33 percent reduction from projected "business-as-usual" emissions to be considered less than significant. A zero threshold approach could be considered on the basis that climate change is a global phenomenon, and not controlling small source emissions would potentially neglect a major portion of the GHG inventory. However, the CEQA Guidelines also recognize that there may be a point where a project's contribution, although above zero, would not be a considerable contribution to the cumulative impact (CEQA Guidelines, Section 15130 (a)). Therefore, a threshold of greater than zero is considered more appropriate for the analysis of GHG emissions under CEQA.

Another method would use a quantitative threshold of greater than 900 metric tons CO_2e per year based on a market capture approach that requires mitigation for greater than 90 percent of likely future discretionary development. This threshold would generally correspond to office projects of approximately 35,000 square feet, retail projects of approximately 11,000 square feet, or supermarket space of approximately 6,300 square feet. Another potential threshold would be the 10,000 metric tons standard used by the Market Advisory Committee for inclusion in a GHG Cap and Trade System in California. A 10,000 metric ton significance threshold would correspond to the GHG emissions of approximately 550 residential units, 400,000 square feet of office space, 120,000 square feet of retail, and 70,000 square feet of supermarket space.

This threshold would capture roughly half of new residential or commercial development. The basic concepts for the various approaches suggested by CAPCOA are used herein to determine whether or not the proposed project's GHG emissions are "cumulatively considerable."

The City of Pasadena is in the process of adopting a Greenhouse Gas Inventory and Reduction Plan that would include a CEQA significance threshold. However, no City threshold has been proposed at this time. The SCAQMQ has adopted GHG significance thresholds for projects where the SCAQMD is lead agency but not for general development. The Bay Area Air Quality Management District (BAAQMD) has adopted a threshold of 1,100 metric tons of CO₂e per year or 4.6 metric tons of CO₂e per service population (residents and employees) per year. These thresholds were specifically developed based on the meteorological and transit characteristics of the BAAQMD region (e.g., higher transit than the SCAQMD region). The BAAQMD thresholds are not considered representative of the SCAQMD region.

CAPCOA's suggested quantitative thresholds are generally more applicable to development on sites at the periphery of metropolitan areas, also known as "greenfield" sites, where there would be an increase in vehicle miles traveled (VMT) and associated GHG emissions than to infill development, which would generally reduce regional VMT and associated emissions. As the City of Pasadena is generally built out, most commercial development within the City is infill or redevelopment and would be expected to generally reduce VMT and reliance on the drive-alone automobile use as compared to further suburban growth at the periphery of the region. A reduction in vehicle use and vehicle miles traveled can result in a reduction in fuel consumption and in air pollutant emissions, including GHG emissions. Recent research indicates that infill development reduces VMT and associated air pollutant emissions, as compared to greenfield sites. For example, a 1999 simulation study conducted for the USEPA, comparing infill development to greenfield development, found that infill development results in substantially fewer VMT per capita (39 percent to 52 percent) and generates fewer emissions of most air pollutants and greenhouse gases.

For this reason, the most conservative (i.e., lowest) thresholds, suggested by CAPCOA, would not be appropriate for the proposed project given that it is located in a community that is highly urbanized. Similarly, the 900-ton threshold was also determined to be too conservative for general development in the South Coast Air Basin. Consequently, the threshold of 10,000 metric tons CO_2e is used as a quantitative benchmark for significance. A project's contribution to cumulative impacts to global climate change is considered cumulatively considerable if the project would generate 10,000 metric tons CO_2e per year. In addition, the impact would be considered cumulatively considerable if the project would be inconsistent with one or more of the CAT reduction strategies, Attorney General's GHG reduction strategies, or the City's 2009 Green City Action Plan.

3.5 ENVIRONMENTAL IMPACTS

3.5.1 Construction Phase

Regional Impacts

Construction of the proposed project has the potential to create air quality impacts through the use of heavy-duty construction equipment and through vehicle trips generated by construction workers traveling to and from the project site. Fugitive dust emissions would primarily result from demolition and site preparation (e.g., excavation) activities. NO_X emissions would primarily result from the use of construction equipment. During the finishing phase, paving operations

and the application of architectural coatings (e.g., paints) and other building materials would release VOC. The assessment of construction air quality impacts considers each of these potential sources. Construction emissions can vary substantially from day to day, depending on the level of activity, the specific type of operation and, for dust, the prevailing weather conditions.

It is mandatory for all construction projects in the Basin to comply with SCAQMD Rule 403 for Fugitive Dust. Specific Rule 403 control requirements include, but are not limited to, applying water in sufficient quantities to prevent the generation of visible dust plumes, applying soil binders to uncovered areas, reestablishing ground cover as quickly as possible, utilizing a wheel washing system to remove bulk material from tires and vehicle undercarriages before vehicles exit the project site, and maintaining effective cover over exposed areas. Compliance with Rule 403 would reduce $PM_{2.5}$ and PM_{10} emissions associated with construction activities by approximately 61 percent.

URBEMIS2007 was used to calculate daily construction emissions. **Tables 3-5**, **3-6**, and **3-7** shows the estimated daily emissions associated with each Phase I, Phase II, and Phase III of construction.

Phase I Unmitigated Regional Construction Emissions

As shown in **Table 3-5**, Phase 1 daily construction emissions for NO_X , CO, SO_2 , $PM_{2.5}$ and PM_{10} would not exceed the SCAQMD regional thresholds. However, daily construction emissions for VOC would exceed the SCAQMD regional thresholds, and Phase 1 regional construction emissions would result in a significant impact without mitigation.

Phase II Unmitigated Regional Construction Emissions

As shown in **Table 3-6**, daily construction emissions would not exceed the SCAQMD regional thresholds. Phase 2 regional construction emissions would result in a less-than-significant impact without mitigation.

Phase III Unmitigated Regional Construction Emissions

As shown in **Table 3-7**, Phase 3 daily construction emissions for NO_X , CO, SO_2 , $PM_{2.5}$ and PM_{10} would not exceed the SCAQMD regional thresholds. However, daily construction emissions for VOC would exceed the SCAQMD regional thresholds, and Phase 3 regional construction emissions would result in a significant impact without mitigation.

Demolition	TABLE 3-5: ESTIMATE	D DAILY CO	ONSTRUCT	ION EMISSIO	NS FOR PH	ASE I - UNM	ITIGATED	
Demolition On-Site Emissions 2 15 9 <1		Pounds Per Day						
On-Site Emissions 2 15 9 <1	Construction Phase	VOC	NO _X	СО	SO _X	PM _{2.5} /a/	PM ₁₀ /a/	
Off-Site Emissions 1 10 6 <1 <1 1 Total Emissions 3 25 15 <1 2 3 Grading On-Site Emissions 2 13 8 <1	Demolition	,		L	1			
Total Emissions 3 25 15 <1 2 3	On-Site Emissions	2	15	9	<1	2	2	
On-Site Emissions 2	Off-Site Emissions	1	10	6	<1	<1	1	
On-Site Emissions 2 13 8 <1	Total Emissions	3	25	15	<1	2	3	
Off-Site Emissions 1 4 3 <1	Grading							
Total Emissions 3	On-Site Emissions	2	13	8	<1	1	2	
Buildings Construction	Off-Site Emissions	1	4	3	<1	<1	<1	
On-Site Emissions 5 33 18 <1	Total Emissions	3	17	11	<1	1	2	
Off-Site Emissions 1 1 5 <1	Buildings Construction							
Total Emissions 6 34 23 <1 3 3 3	On-Site Emissions	5	33	18	<1	3	3	
Paving	Off-Site Emissions	1	1	5	<1	<1	<1	
On-Site Emissions 2 16 6 <1 1 1 Off-Site Emissions <1	Total Emissions	6	34	23	<1	3	3	
Off-Site Emissions <1	Paving							
Total Emissions 2 16 8 <1 1 1	On-Site Emissions	2	16	6	<1	1	1	
Architectural Coating On-Site Emissions 88 <1	Off-Site Emissions	<1	<1	2	<1	<1	<1	
On-Site Emissions 88 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1	Total Emissions	2	16	8	<1	1	1	
Off-Site Emissions <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1	Architectural Coating							
Total Emissions 88 <1 1 <1 <1 <1 <1 <1	On-Site Emissions	88	<1	<1	<1	<1	<1	
Maximum Regional Total/b/ 96 50 32 <1 4 4 Regional Significance Threshold 75 100 550 150 55 150 Exceed Threshold? Yes No No No No No No No Maximum On-Site Total 95 49 24 <1	Off-Site Emissions	<1	<1	1	<1	<1	<1	
Total/b/ 96 50 32 <1 4 4 4	Total Emissions	88	<1	1	<1	<1	<1	
Total/b/ 96 50 32 <1 4 4 4								
Threshold 75 100 550 150 55 150 Exceed Threshold? Yes No <		96	50	32	<1	4	4	
Maximum On-Site Total 95 49 24 <1 4 4 Localized Significance Threshold /b,c/ /d/ 69 535 /d/ 3 4	Regional Significance Threshold	75	100	550	150	55	150	
Localized Significance Threshold /b,c/ /d/ 69 535 /d/ 3 4	Exceed Threshold?	Yes	No	No	No	No	No	
Localized Significance Threshold /b,c/ /d/ 69 535 /d/ 3 4								
Threshold /b,c/ /d/ 69 535 /d/ 3 4	Maximum On-Site Total	95	49	24	<1	4	4	
Exceed Threshold? /d/ No No /d/ Yes Yes	Localized Significance Threshold /b,c/	/d/	69	535	/d/	3	4	
	Exceed Threshold?	/d/	No	No	/d/	Yes	Yes	

[/]a/ URBEMIS2007 emissions for fugitive dust were adjusted to account for a 61 percent control efficiency associated with SCAQMD Rule 403. /b/ Maximum regional and localized emissions would occur when emissions from the Building Construction, Paving and Architectural Coating phases overlap.

[/]c/ The Applicant indicted that Phase 1 construction activity would disturb 0.05 acres in one day. The localized thresholds were based in the smallest project site used in the SCAQMD guidelines (one-acre) and a 25-meter (82-foot) receptor distance.

[/]d/ SCAQMD has not developed localized significance methodology for VOC or SO_X at this time.

SOURCE: TAHA, 2010.

	Pounds Per Day							
Construction Phase	VOC	NO _X	СО	SO _X	PM _{2.5} /a/	PM ₁₀ /a/		
Demolition					1			
On-Site Emissions	4	26	14	<1	2	4		
Off-Site Emissions	1	17	9	<1	1	1		
Total Emissions	5	43	23	<1	3	5		
Grading								
On-Site Emissions	6	47	23	<1	4	10		
Off-Site Emissions	4	51	23	<1	1	2		
Total Emissions	10	98	46	<1	5	12		
Buildings Construction								
On-Site Emissions	5	32	17	<1	2	2		
Off-Site Emissions	<1	1	3	<1	<1	<1		
Total Emissions	5	33	20	<1	2	2		
Paving								
On-Site Emissions	2	15	6	<1	1	1		
Off-Site Emissions	<1	1	1	<1	<1	<1		
Total Emissions	2	16	7	<1	1	1		
Architectural Coating								
On-Site Emissions	46	<1	<1	<1	<1	<1		
Off-Site Emissions	<1	<1	1	<1	<1	<1		
Total Emissions	46	<1	1	<1	<1	<1		
Maximum Regional Total/b/	53	98	46	<1	5	12		
Regional Significance Threshold	75	100	550	150	55	150		
Exceed Threshold?	No	No	No	No	No	No		
Maximum On-Site Total	53	47	23	<1	4	10		
Localized Significance Threshold /b,c/	/d/	69	535	/d/	3	4		
Exceed Threshold?	/d/	No	No	/d/	Yes	Yes		

/a/ URBEMIS2007 emissions for fugitive dust were adjusted to account for a 61 percent control efficiency associated with SCAQMD Rule 403. /b/ Maximum regional and localized emissions for VOC would occur when the Building Construction, Paving and Architectural Coating phases overlap. Maximum regional and localized emissions for NO_X, CO, SO_X, PM_{2.5}, and PM₁₀ occurred during the Grading phase.

[/]c/ The Applicant indicted that Phase 2 construction activity would disturb 0.7 acres in one day. The localized thresholds were based in the smallest project site used in the SCAQMD guidelines (one-acre) project site and a 25-meter (82-foot) receptor distance.

[/]d/ SCAQMD has not developed localized significance methodology for VOC or SO_{X} at this time.

SOURCE: TAHA, 2010.

TABLE 3-7: ESTIMATEI UNMITIGAT			ON EMISSIO					
Pounds Per Day								
Construction Phase	VOC	NO _X	CO	SO _X	PM _{2.5} /a/	PM ₁₀ /a/		
Demolition								
On-Site Emissions	4	28	16	<1	2	4		
Off-Site Emissions	1	14	6	<1	<1	•		
Total Emissions	5	42	24	<1	2	;		
Grading					·			
On-Site Emissions	5	40	22	<1	4	12		
Off-Site Emissions	3	36	16	<1	1	2		
Total Emissions	8	76	38	<1	5	1.		
Buildings Construction				<u> </u>				
On-Site Emissions	7	49	30	<1	3	4		
Off-Site Emissions	1	1	9	<1	<1	<		
Total Emissions	8	50	39	<1	3	,		
Paving	1	<u> </u>		II.	<u>"</u>			
On-Site Emissions	2	12	5	<1	1			
Off-Site Emissions	<1	1	2	<1	<1	<		
Total Emissions	2	13	7	<1	1			
Architectural Coating				<u> </u>	·			
On-Site Emissions	214	<1	<1	<1	<1	<		
Off-Site Emissions	<1	<1	2	<1	<1	<		
Total Emissions	214	<1	2	<1	<1	<		
				<u> </u>				
Maximum Regional								
Total/b/	224	76	48	<1	5	14		
Regional Significance Threshold	75	100	550	150	55	150		
Exceed Threshold?	Yes	No	No	No	No	N		
Maximum On-Site Total	223	61	35	<1	4	1:		
Localized Significance Threshold /c/	/d/	69	535	/d/	3			
Exceed Threshold?	/d/	No	No	/d/	Yes	Ye		

/a/ URBEMIS2007 emissions for fugitive dust were adjusted to account for a 61 percent control efficiency associated with SCAQMD Rule 403. /b/ Maximum regional emissions for VOC would occur when the Building Construction, Paving and Architectural Coating phases overlap. Maximum regional emissions for NO_x, CO, SO_x, PM_{2.5}, and PM₁₀ would occur during the Grading phase.

SOURCE: TAHA, 2010.

Localized Impacts

Emissions for the localized construction air quality analysis of $PM_{2.5}$, PM_{10} , CO, and NO_2 were compiled using LST methodology required by the SCAQMD. Localized on-site emissions were calculated using similar methodology to the regional emission calculations. LSTs were developed based upon the size or total area of the emissions source, the ambient air quality in

[/]c/ The Applicant indicted that Phase 3 construction activities would disturb 1.0 acres per day. The localized thresholds were based in the smallest project site used in the SCAQMD guidelines (one-acre) project site and a 25-meter (82-foot) receptor distance.

[/]d/ SCAQMD has not developed localized significance methodology for VOC or SO_X at this time.

each source receptor area, and the distance to the sensitive receptor. LSTs for CO and NO_2 were derived by using an air quality dispersion model to back-calculate the emissions per day that would cause or contribute to a violation of any ambient air quality standard for a particular source receptor area. Construction $PM_{2.5}$ and PM_{10} LST was derived using a dispersion model to back-calculate the emissions necessary to exceed a concentration equivalent to $50 \ \mu g/m^3$ over five hours, which is the SCAQMD Rule 403 control requirement.

Tables 3-5, **3-6**, and **3-7** show the estimated daily localized emissions associated with each construction phase.

Phase I Unmitigated Localized Construction Emissions

As shown in **Table 3-5**, Phase 1 localized construction emissions for NO_X and CO would not exceed the SCAQMD regional thresholds. However, daily construction emissions for $PM_{2.5}$ and PM_{10} would exceed the SCAQMD localized thresholds (primarily from construction equipment emissions), and Phase 1 would result in a significant impact without mitigation.

Phase II Unmitigated Localized Construction Emissions

As shown in **Table 3-6**, Phase 2 localized construction emissions for NO_X and CO would not exceed the SCAQMD regional thresholds. However, daily construction emissions for $PM_{2.5}$ and PM_{10} would exceed the SCAQMD localized thresholds (from both construction equipment emissions and grading), and Phase 2 would result in a significant impact without mitigation.

Phase III Unmitigated Localized Construction Emissions

As shown in **Table 3-7**, Phase 3 localized construction emissions for NO_X and CO would not exceed the SCAQMD regional thresholds. However, daily construction emissions for $PM_{2.5}$ and PM_{10} would exceed the SCAQMD localized thresholds (from both construction equipment emissions and grading), and Phase 3 would result in a significant impact without mitigation.

Toxic Air Contaminant Impacts

The greatest potential for TAC emissions during construction would be diesel particulate emissions associated with heavy equipment operations. According to SCAQMD methodology, health effects from carcinogenic air toxics are usually described in terms of individual cancer risk. "Individual Cancer Risk" is the likelihood that a person continuously exposed to concentrations of TACs over a 70-year lifetime will contract cancer based on the use of standard risk assessment methodology. Given the short-term construction schedule of approximately 38 months, the proposed project would not result in a long-term (i.e., 70 years) source of TAC emissions. No residual emissions and corresponding individual cancer risk are anticipated after construction. Because there is such a short-term exposure period (38 out of 840 months), project-related construction TAC emission would result in a less-than-significant impact.

Odor Impacts

Potential sources that may emit odors during construction activities include equipment exhaust and architectural coatings. Odors from these sources would be localized and generally confined to the immediate area surrounding the project site. The proposed project would utilize typical construction techniques, and the odors would be typical of most construction sites and

temporary in nature. Proposed project construction would not cause an odor nuisance. Construction odors would result in a less-than-significant impact.

Construction Phase Mitigation Measures

Mitigation Measures AQ1 through AQ7 would ensure compliance with SCAQMD Rule 403. These mitigation measures shall be implemented for all areas (both on-site and off-site) of construction activity.

- AQ1 The construction area and all accessible areas (public streets, sidewalks, etc.) within 100 feet of the project site shall be swept (preferably with water sweepers) and watered at least twice daily.
- AQ2 The construction contractor shall utilize at least one of the following measures at each vehicle egress from the project site to a paved public road:
 - Install a pad consisting of washed gravel maintained in clean condition to a depth of at least six inches and extending at least 30 feet wide and at least 50 feet long;
 - Pave the surface extending at least 100 feet and at least 20 feet wide:
 - Utilize a wheel shaker/wheel spreading device consisting of raised dividers at least 24 feet long and 10 feet wide to remove bulk material from tires and vehicle undercarriages; or
 - Install a wheel washing system to remove bulk material from tires and vehicle undercarriages.
- AQ3 Site access points shall be swept/washed within thirty minutes of visible dirt deposition. Street sweepers that comply with SCAQMD Rule 1186 and 1186.1 shall be used to sweep site access points or reclaimed water shall be used to wash site access points.
- AQ4 All haul trucks hauling soil, sand, and other loose materials shall be covered (e.g., with tarps or other enclosures that would reduce fugitive dust emissions).
- AQ5 Construction activity on unpaved surfaces shall be suspended when winds exceed 25 miles per hour.
- AQ6 Heavy-duty equipment operations shall be suspended during first and second stage smog alerts.
- **AQ7** Ground cover in disturbed areas shall be replaced as quickly as possible.
- AQ8 The construction contractor shall utilize super-compliant architectural coatings as defined by the SCAQMD (VOC standard of less than ten grams per liter¹⁷).
- AQ9 The construction contractor shall utilize materials that do not require painting, as feasible.
- **AQ10** The construction contractor shall use pre-painted construction materials, as feasible.

¹⁷SCAQMD, Super-Compliant Architectural Coatings Manufacturers and Industrial Maintenance Coatings List, http://www.aqmd.gov/prdas/Coatings/super-compliantlist.htm.

- AQ11 All diesel-powered construction equipment in use shall require control equipment that meets Tier III emissions requirements. In the event Tier III equipment is not available, diesel powered construction equipment in use shall require emissions control equipment with a minimum of Tier II diesel standards.
- **AQ12** The construction contractor shall utilize electricity from power poles rather than temporary gasoline or diesel power generators.

Impacts After Mitigation

Implementation of Mitigation Measures AQ1 through AQ7 would ensure that fugitive dust emissions would be reduced by approximately 61 percent (already included in **Tables 3-5**, **3-6**, and **3-7**).

Phase 1 Mitigated Emissions

Unmitigated Phase 1 emissions would result in a regional VOC impact and localized PM_{2.5} and PM₁₀ impacts. The SCAQMD has identified super-compliant architectural coatings that have a VOC standard of less than ten grams per liter.¹⁸ Mitigation Measure **AQ8** would reduce project-related architectural coating emissions by 96 percent.¹⁹ Phase 1 architectural coating emissions would be reduced to 12 pounds per day, which would be less than the 75 pounds per day significance threshold. Mitigation Measures **AQ9** and **AQ10** would also reduce VOC emissions. Mitigation Measures **AQ11** and **AQ12** would reduce localized particulate matter emissions from fuel combustion.²⁰ However, particulate matter emissions would remain above the significance thresholds. Mitigated Phase 1 emissions would result in a less-than-significant regional VOC impact but significant and unavoidable localized PM_{2.5} and PM₁₀ impacts.

Phase 2 Mitigated Emissions

Unmitigated Phase 2 emissions would result in localized $PM_{2.5}$ and PM_{10} impacts. Mitigation Measures **AQ11** and **AQ12** would reduce localized particulate matter emissions from fuel combustion. However, particulate matter emissions would remain above the significance thresholds. Mitigated Phase 2 emissions would result in a less-than-significant regional VOC impact but significant and unavoidable localized $PM_{2.5}$ and PM_{10} impacts.

Phase 3 Mitigated Emissions

Unmitigated Phase 3 emissions would result in a regional VOC impact and localized $PM_{2.5}$ and PM_{10} impacts. Mitigation Measure **AQ8** would reduce Phase 3 architectural coating emissions to 19 pounds per day, which would be less than the 75 pounds per day significance threshold. Mitigation Measures **AQ9** and **AQ10** would also reduce VOC emissions. Mitigation Measures **AQ11** and **AQ12** would reduce localized particulate matter emissions from fuel combustion.

¹⁸SCAQMD, Super-Compliant Architectural Coatings Manufacturers and Industrial Maintenance Coatings List, http://www.aqmd.gov/prdas/Coatings/super-compliantlist.htm.

¹⁹The URBEMIS2007 model assumes a VOC content of 250 grams per liter.

 $^{^{20}}$ In 1998, the USEPA adopted emission standards ("Tier 2" and "Tier 3") for NO_X, hydrocarbons (HC), and PM from new nonroad diesel engines. This program included the first set of standards for nonroad diesel engines less than 37 kilowatts (phasing in between 1999 and 2000). It also phases in more stringent "Tier 2" emission standards from 2001 to 2006 for all engine sizes and adds more stringent "Tier 3" standards for engines between 37 and 560 kW (50 and 750 hp) from 2006 to 2008.

However, particulate matter emissions would remain above the significance thresholds. Mitigated Phase 3 emissions would result in a less-than-significant regional VOC impact but significant and unavoidable localized $PM_{2.5}$ and PM_{10} impacts.

3.5.2 Operational Phase

Regional Impacts

Operational emissions were estimated for each of the three phases and each phase was compared to the SCAQMD significance thresholds for informational purposes. The final conclusion of significance is based on total development of all three phases.

Long-term project emissions would be generated by mobile sources and area sources, such as natural gas combustion. Motor vehicles that access the project site would be the predominate source of long-term project emissions. Phase 1 would generate 1,273 daily vehicle trips and 1,294 off-site valet parking daily trips, 81 additional daily vehicle trips after Phase 2, and 3,560 additional daily vehicle trips after Phase 3.²¹ The three phases would combine to generate 4,914 daily vehicle trips after build-out. As shown in **Table 3-8**, regional operational emissions associated with total development would not exceed the significance thresholds, and would result in a less-than-significant impact.

TABLE 3-8: ESTIMATED DAILY OPERATIONS EMISSIONS						
	Pounds per Day /a/					
Emission Source	VOC	NO _X	СО	SO _X	PM _{2.5}	PM ₁₀
Phase 1 (2012) /b/	9	15	108	<1	20	20
SCAQMD Threshold	55	55	550	150	55	150
Exceed Threshold?	No	No	No	No	No	No
			<u> </u>			
Phase 2 (2014)	1	<1	9	<1	<1	1
SCAQMD Threshold	55	55	550	150	55	150
Exceed Threshold?	No	No	No	No	No	No
Phase 3 (2015)	19	31	230	<1	11	57
SCAQMD Threshold	55	55	550	150	55	150
Exceed Threshold?	No	No	No	No	No	No
Total Project Emissions (2015) /c/	28	44	319	<1	16	80
SCAQMD Threshold	55	55	550	150	55	150
Exceed Threshold?	No	No	No	No	No	No

[/]a/ Emissions were obtained from URBEMIS2007 and include mobile and area sources (e.g., natural gas combustion and consumer products). /b/ Phase 1 emissions include 1,294 off-site valet parking daily trips estimated using EMFAC2007.

[/]c/ Total project emissions were not estimated by summing Phase 1, 2, and 3 emissions. A separate model run was completed for total development in 2015 because emission factors change by year. For example, the same number of vehicles would result in different emissions in 2012 and 2015. **SOURCE:** TAHA, 2010.

²¹RAJU Associates, *Transportation Study for the Lake at Colorado Project DEIR*, May 24, 2010.

Localized Impacts

CO concentrations in future years are expected to be lower than existing conditions due to stringent State and federal mandates for lowering vehicle emissions. Although traffic volumes would be higher in the future both without and with the implementation of the proposed project, CO emissions from mobile sources are expected to be much lower due to technological advances in vehicle emissions systems, as well as from normal turnover in the vehicle fleet. Accordingly, increases in traffic volumes are expected to be offset by increases in cleaner-running cars as a percentage of the entire vehicle fleet on the road.²²

The State one- and eight-hour CO standards may potentially be exceeded at congested intersections with high traffic volumes. An exceedance of the State CO standards at an intersection is referred to as a CO hotspot. The SCAQMD recommends a CO hotspot evaluation of potential localized CO impacts when V/C ratios are increased by two percent at intersections with a LOS of D or worse. SCAQMD also recommends a CO hotspot evaluation when an intersection decreases in LOS by one level beginning when LOS changes from C to D.

The traffic study displays the LOS and V/C ratio for Cumulative without Project Conditions and Cumulative Plus Project Conditions for Phases 1, 2, and 3. All Phase 1 and 2 intersections would operate at an acceptable level of service according to the SCAQMD screening guidance, and further analysis is not necessary. The Lake Avenue/Walnut Street intersection would degrade from LOS E to LOS F in Phase 3 and a detailed CO hotspot analysis is required.

The USEPA CAL3QHC micro-scale dispersion model was used to calculate the CO concentrations. The one-hour CO concentration at the Lake Avenue/Walnut Street intersection would be 5 ppm at worst-case sidewalk receptors. The eight-hour CO concentration would be 3.7 ppm. The State one- and eight-hour standards of 20 and 9.0 ppm, respectively, would not be exceeded at the analyzed intersections. Localized CO concentrations would result in a less-than-significant impact.

Toxic Air Contaminant Impacts

The SCAQMD recommends that health risk assessments be conducted for substantial sources of diesel particulate emissions (e.g., truck stops and warehouse distribution facilities) and has provided guidance for analyzing mobile source diesel emissions. The proposed project would develop a mix of land uses including residential, retail, and commercial space. These typical urban land uses are not anticipated to generate a substantial number of daily truck trips. The primary source of potential TACs associated with project operations is diesel particulate from delivery trucks (e.g., truck traffic on local streets and on-site truck idling). Generally, less than five heavy-duty trucks (e.g., delivery trucks) would access the project site on a daily basis, and the trucks that do visit the site would not idle on-site for extended periods of time. Based on the limited activity of these TAC sources, the proposed project would not warrant the need for a health risk assessment associated with on-site activities, and potential TAC impacts are expected to be less than significant.

²²Consistent with CARB's vehicle emissions inventory.

²³SCAQMD, Health Risk Assessment Guidance for Analyzing Cancer Risks from Mobile Source Diesel Emissions, December 2002.

Typical sources of acutely and chronically hazardous TACs include industrial manufacturing processes and automotive repair facilities. The proposed project would not include any of these potential sources, although minimal emissions may result from the use of consumer products (e.g., aerosol sprays). It was expected that the proposed project would not release substantial amounts of TACs, and no significant impact on human health would occur.

Odor Impacts

According to the SCAQMD *CEQA Air Quality Handbook*, land uses and industrial operations that are associated with odor complaints include agricultural uses, wastewater treatment plants, food processing plants, chemical plants, composting, refineries, landfills, dairies and fiberglass molding. The project site would not be developed with land uses that are typically associated with odor complaints. On-site trash receptacles would have the potential to create adverse odors. Trash receptacles would be located and maintained in a manner that promotes odor control and no adverse odor impacts are anticipated from these types of land uses. Therefore, the proposed project would not result in activities that create objectionable odors. No significant impacts would occur.

The proposed project would include restaurant space. Most restaurants generally do not produce adverse odors, as this would not be conducive to having a successful business. Notwithstanding, restaurants do have the potential for the generation of odors from the operation of char-broilers and deep fat fryers. While there is a potential for odors to occur, compliance with industry standard odor control practices, SCAQMD Rule 402 (Nuisance), and SCAQMD Best Available Control Technology Guidelines would limit potential restaurant objectionable odor impacts to a less-than-significant level.

Operational Phase Mitigation Measures

Operational air quality impacts would be less than significant, and no mitigation measures are required.

Impacts After Mitigation

Not applicable. The project-related operational emissions would result in a less-than-significant impact without mitigation.

3.5.3 Consistency with the Air Quality Management Plan

The SCAQMD has indicated that a project is consistent with the 2007 AQMP if the proposed project is consistent with the applicable General Plan's land use zoning. The Central District Specific Plan, approved by the City Council on November 8, 2004, contains the recommended heights, setbacks, floor area ratios and residential densities for projects in the Central District. These development standards are implemented by the Zoning Code. The purpose of the Specific Plan is to encourage a diverse mix of land uses designed to create the primary business, financial, retailing and government center of the City. The proposed project is well within the permitted densities and allowable uses for the site under Zoning Code, and would not require a general plan amendment. Consistency with the AQMP would result in a less-than-significant impact.

3.6 CUMULATIVE IMPACTS

3.6.1 SCAQMD Methodology

Construction

The related projects include the development of hundreds of thousands of square feet of commercial and residential uses, a number that is many times greater than the proposed project. As the proposed project results in a localized significant impact during construction relative to $PM_{2.5}$ and PM_{10} , it is anticipated that related project development would also result in significant regional impacts. While SCAQMD-required mitigation measures would reduce air quality impacts, construction emissions would contribute to a significant short-term cumulative impact.

Operations

The SCAQMD's approach for assessing cumulative air quality impacts is based on the AQMP forecasts of attainment of ambient air quality standards in accordance with the requirements of the federal and State CAAs. The SCQAMD has set forth regional significance thresholds designed to assist in the attainment of ambient air quality standards. The proposed project would not result in significant VOC, PM_{2.5}, PM₁₀, NO_X, CO or SO_X emissions. Therefore, the proposed project would not contribute to a cumulatively considerable impact.

3.6.2 Global Climate Change

Greenhouse gas emissions were calculated for on-road mobile vehicle operations, general electricity consumption, electricity consumption associated with the use and transport of water, natural gas consumption, and solid waste decomposition. Based on SCAQMD guidance, the emissions summary also includes construction emissions amortized over a 30-year span. As shown in **Table 3-9**, the proposed project would result in 9,087 metric tons of CO_2 e per year. Estimated GHG emissions would be less than the 10,000 metric tons of CO_2 e per year quantitative significance threshold.

The proposed project must also show compliance with the applicable greenhouse gas reduction plans. **Table 3-10** shows compliance with the CAT Greenhouse Gas Reduction Strategies, **Table 3-11** shows compliance with the Attorney General Greenhouse Gas Reduction Measures, and **Table 3-12** shows compliance with the City's 2009 Green City Action Plan.

The proposed project would be required to comply with LEED standards that exceed standard building and construction practices. The estimation of GHG emissions was based on standard electricity consumption, natural gas consumption, and average daily trips did not account for reductions that would be associated with a LEED design. It would be speculative to assign additional reductions without a method of quantifying reductions for the project; however it is plausible that the project's estimated GHG emissions would be further reduced due to LEED design enhancements.

TABLE 3-9: ESTIMATED ANNUAL GREENHOUSE GAS EMISSIONS /a/					
Scenario	Carbon Dioxide Equivalent (Metric Tons per Year)				
Phase 1 Development	2,527				
Phase 2 Development	1,366				
Phase 2 Existing Removed	1,098				
Net Phase 2	268				
Phase 3 Development	7,972				
Phase 3 Existing Removed	1,757				
Net Phase 3	6,215				
Total Operational Emissions /b/	9,010				
Construction Emissions Amortized /c/	77				
Total Project Emissions	9,087				

[/]a/ Greenhouse gas emissions were calculated for on-road mobile vehicle operations, general electricity consumption, electricity consumption associated with the use and transport of water, natural gas consumption, and solid waste decomposition.
/b/ Total operational emissions are based on Phase I, II, and III emissions.

TABLE 3-10: PROJECT CONSISTENCY WITH CLIMATE ACTION TEAM GREENHOUSE GAS EMISSION REDUCTION STRATEGIES						
Strategy	Project Consistency					
California Air Resources Board						
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 climate change emissions emitted by passenger vehicles and light duty trucks. Regulations were adopted by the CARB in September 2004.	Consistent: The vehicles that travel to and from the project site on public roadways would be in compliance with CARB vehicle standards that are in effect at the time of vehicle purchase.					
Diesel Anti-Idling : The CARB adopted a measure to limit diesel-fueled commercial motor vehicle idling in July 2004.	Consistent : Current State law restricts diesel truck idling to five minutes or less. Diesel trucks making deliveries to the project site are subject to this Statewide law. Construction vehicles are also subject to this regulation.					
 Hydrofluorocarbon Reduction Ban retail sale of HFC in small cans. Require that only low GWP refrigerants be used in new vehicular systems. Adopt specifications for new commercial refrigeration. Add refrigerant leak-tightness to the pass criteria for vehicular inspection and maintenance programs. Enforce federal ban on releasing HFCs. 	Consistent: This strategy applies to consumer products. All applicable products would comply with the regulations that are in effect at the time of manufacture.					
Alternative Fuels: Biodiesel Blends: CARB would develop regulations to require the use of 1 to 4 percent biodiesel displacement of California diesel fuel.	Consistent : The diesel vehicles that travel to and from the project site on public roadways could utilize this fuel once it is commercially available.					

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[/]c/ The SCAQMD recommends accounting for construction emissions by averaging them over a 30-year project lifetime. **SOURCE**: TAHA, 2010.

Alternative Fuels: Ethanol: Increased use of E-85 fuel

Heavy-Duty Vehicle Emission Reduction Measures: Increased efficiency in the design of heavy duty vehicles and an education program for the heavy duty vehicle sector.

Achieve 50 Percent Statewide Recycling Goal: Achieving the State's 50 percent waste diversion mandate as established by the Integrated Waste Management Act of 1989, (AB 939, Sher, Chapter 1095, Statutes of 1989), will reduce climate change emissions associated with energy intensive material extraction and production as well as methane emission from landfills. A diversion rate of 48 percent has been achieved on a statewide basis. Therefore, a 2 percent additional reduction is needed.

Zero Waste – High Recycling: Efforts to exceed the 50 percent goal would allow for additional reductions in climate change emissions.

Consistent: Employees/patrons of the project site could choose to purchase flex-fuel vehicles and utilize this fuel once it is commercially available in the region and local vicinity.

Consistent: The heavy-duty vehicles that travel to and from the project site on public roadways would be subject to all applicable CARB efficiency standards that are in effect at the time of vehicle manufacture.

Consistent: The City of Pasadena exceeds the 50 percent diversion rate. The City has implemented several programs including a construction demolition recycling program and a pay as you go residential collection program. These programs in association with other efforts have resulted in waste diversion of 54 to 62 percent between the years of 2003 and 2006. The 2006 data indicates that the City diverted 58 percent of the City's total waste stream. It is anticipated that the project would similarly divert at least 50 percent of its solid waste.

Consistent: The City of Pasadena solid waste diversion rate was 58 percent in 2006. It is anticipated that the project would similarly divert at least 50% of its solid waste. The project would also be subject to all applicable State and City requirements for solid waste reduction as they change in the future.

Department of Forestry

Urban Forestry: A new statewide goal of planting 5 million trees in urban areas by 2020 would be achieved through the expansion of local urban forestry programs.

Consistent: The project would include terraces and gardens. The City also has an urban forestry program, a tree protection ordinance, a master street tree plan, all of which promote conservation and enhancement of urban forestry resources.

Department of Water Resources

Water Use Efficiency: 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 greenhouse gas emissions.

Consistent: The City of Pasadena has water conservation programs in place, including rebate programs for commercial customers. Rebates are available for low-flow fixtures, irrigation controllers, synthetic turf, HVAC equipment, landscape equipment, cleaning equipment, medical/dental equipment and food service equipment. In addition, the City has implemented mandatory water conservation measures that prohibit water waste and restrict exterior watering to select days. The project would also be required to conserve an additional 20 percent beyond baseline water usage pursuant to the PMC.

Energy Commission (CEC)

Building Energy Efficiency Standards in Place and in Progress: Public Resources Code 25402 authorizes the CEC to adopt and periodically update its building energy efficiency standards (that apply to newly constructed buildings and additions to and alterations to existing buildings).

Appliance Energy Efficiency Standards in Place and in Progress: Public Resources Code 25402 authorizes the Energy Commission to adopt and periodically update its appliance energy efficiency standards (that apply to devices and equipment using energy that are sold or offered for sale in California).

Fuel-Efficient Replacement Tires & Inflation
Programs: State legislation established a statewide

Consistent: The project will comply with Title 24 standards that are in effect at the time of development. In addition, the project will be designed consistent with LEED standards pursuant to the requirements of Municipal Code 14.90.040. The project would be designed to maximize energy efficiency and the site specific microclimate has been accounted for in the environmental systems of the building.

Consistent: Under State law, appliances that are purchased for the project - both pre- and post-development – would be consistent with energy efficiency standards that are in effect at the time of manufacture.

Consistent: Employees/patrons of the project site could purchase tires for their vehicles that comply with

program to encourage the production and use of more efficient tires.	State programs for increased fuel efficiency.
Municipal Utility Energy Efficiency Programs/Demand Response: Includes energy efficiency programs, renewable portfolio standard, combined heat and power, and transitioning away from carbon-intensive generation.	Consistent: Pasadena Water and Power (PWP) has a number of energy efficiency programs including an Energy Efficiency Rebate Program, a Pasadena Solar Initiative Program, a Green Power Program, a High Performance Building Program, and a Pasadena LEED Certification Program. These programs serve to increase the efficiency of structures and to increase the amount of power derived from renewable sources. The project would be designed in accordance with LEED requirements.
Municipal Utility Renewable Portfolio Standard: California's Renewable Portfolio Standard (RPS), established in 2002, requires that all load serving entities achieve a goal of 20 percent of retail electricity sales from renewable energy sources by 2017, within certain cost constraints.	Consistent: The PWP has purchased a six megawatt share in wind power from the High Winds Generation Facility in Solano County. In addition, the City has also instituted the Pasadena Solar Initiative, which waives permitting fees for solar installations and offers guidance to PWP customers that are interested in owning solar arrays. PWP has a goal of helping its customers install a total of 14,000 kilowatts by 2017. These programs are helping the PWP to meet California's Renewable Portfolio Standards.
Municipal Utility Combined Heat and Power: Cost effective reduction from fossil fuel consumption in the commercial and industrial sector through the application of on-site power production to meet both heat and electricity loads.	Consistent: The project will be designed in accordance with LEED standards and will adhere to the City's requirements for energy efficient development.
Alternative Fuels: Non-Petroleum Fuels: Increasing the use of non-petroleum fuels in California's transportation sector, as recommended as recommended in the CEC's 2003 and 2005 Integrated Energy Policy Reports.	Consistent: Employees/patrons of the project site could purchase alternative fuel vehicles and utilize these fuels once they are commercially available in the region and local vicinity.
Business, Transportation, and Housing	
Measures to Improve Transportation Energy Efficiency: Builds on current efforts to provide a framework for expanded and new initiatives including incentives, tools and information that advance cleaner transportation and reduce climate change emissions.	Consistent: The proposed project is an urban infill development; the proposed land uses would have readily available access to public transportation, which could incrementally reduce the number of regional vehicle trips.
Smart Land Use and Intelligent Transportation Systems (ITS): Smart land use strategies encourage jobs/housing proximity, promote transit-oriented development, and encourage high-density residential/commercial development along transit corridors. ITS is the application of advanced technology systems and management strategies to improve operational efficiency of transportation systems and movement of people, goods and services. The Governor is finalizing a comprehensive 10-year strategic growth plan with the intent of developing ways to promote, through state investments, incentives and technical assistance, land use, and technology strategies that provide for a prosperous economy, social equity and a quality environment.	Consistent: The project traffic study provides a list of the 26 bus stops and existing amenities that are within approximately 1,300 feet of the project site. In addition to these bus lines, the Metro Gold Line is located approximately ½ miles from the project site and the project is in close proximity to residential, shopping, civic and employment opportunities.
Smart land use, demand management, ITS, and value pricing are critical elements in this plan for improving mobility and transportation efficiency. Specific strategies include: promoting jobs/housing proximity and transit-oriented development; encouraging high	

density residential/commercial development along transit/rail corridor; valuing and congestion pricing; implementing intelligent transportation systems, traveler information/traffic control, incident management; accelerating the development of broadband infrastructure; and comprehensive, integrated, multimodal/intermodal transportation planning.

State and Consumer Service Agency (Department of General Services)

Green Buildings Initiative: Green Building Executive Order, S-20-04 (CA 2004), sets a goal of reducing energy use in public and private buildings by 20 percent by the year 2015, as compared with 2003 levels. The Executive Order and related action plan spell out specific actions state agencies are to take with state-owned and -leased buildings. The order and plan also discuss various strategies and incentives to encourage private building owners and operators to achieve the 20 percent target.

Consistent: PWP has a number of energy efficiency programs including an Energy Efficiency Rebate Program, a Pasadena Solar Initiative Program, a Green Power Program, a High Performance Building Program, and a Pasadena LEED Certification Program. These programs serve to increase the efficiency of structures and to increase the amount of power derived from renewable sources. The Project would be designed to comply with LEED standards as required by the City's Green Building Program.

Public Utilities Commission (PUC)

Accelerated Renewable Portfolio Standard: The Governor has set a goal of achieving 33 percent renewable in the State's resource mix by 2020. The joint PUC/Energy Commission September 2005 Energy Action Plan II (EAP II) adopts the 33 percent goal.

Consistent: The PWP has purchased a six megawatt share in wind power from the High Winds Generation Facility in Solano County. In addition, the City has also instituted the Pasadena Solar Initiative, which waives permitting fees for solar installations and offers guidance to PWP customers that are interested in owning solar arrays. PWP has a goal of helping its customers install a total of 14,000 kilowatts by 2017. These programs are helping the PWP to meet California's Renewable Portfolio Standards. The project would be designed in accordance with LEED standards, though it has not yet been determined which credits will be incorporated into the design of the structures.

California Solar Initiative: The solar initiative includes installation of 1 million solar roofs or an equivalent 3,000 megawatt by 2017 on homes and businesses, increased use of solar thermal systems to offset the increasing demand for natural gas, use of advanced metering in solar applications, and creation of a funding source that can provide rebates over 10 years through a declining incentive schedule.

Consistent: Although solar roofs are not as of yet proposed as part of the project, the project would not preclude the implementation of this strategy by building operators or energy providers. In addition, as noted above, the City has its own Pasadena Solar Initiative Program.

the 26 bus stops and existing amenities that are within

SOURCE: TAHA, 2010.

Transportation Set specific limits on idling time for commercial vehicles, including delivery vehicles. Transportation Emissions Reduction: The project Transportation Emission Emi

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applicant shall promote ride sharing program by

designating a certain percentage of parking spaces for high-occupancy vehicles, providing larger parking spaces to accommodate vans used for ride-sharing, and designating adequate passenger loading and unloading waiting areas.	approximately 1,300 feet of the project site. In addition to these bus lines, the Metro Gold Line is located approximately ½ miles from the project site. In addition, the project is in close proximity to residential, shopping, civic and employment opportunities.
Transportation Emissions Reduction : Contribute transportation impact fees per residential and commercial unit to the City, to facilitate and increase public transit service.	Consistent: The project applicant would be required to pay applicable fees. The City has a Trip Reduction ordinance, which requires submittal of a Transportation System Management (TSM) Program for review and approval, along with fee payments. In addition, the City's Traffic Reduction and Transportation Improvement Fee (TR-TIF) program funds improvements to manage traffic on designated multimodal corridors and funds public transit improvements to encourage non-automobile travel in the City.
Transportation Emissions Reduction : Provide shuttle service to public transportation.	Consistent: Shuttle service to public transportation would be unnecessary as the proposed project is within 1,300 feet of 26 bus stops. In addition to these bus lines, the Metro Gold Line is located approximately ½ miles from the project site.
Transportation Emissions Reduction : Incorporate bike lanes into the project circulation system.	Not applicable: The proposed project would use the existing City of Pasadena circulation system. However, the project would not preclude the addition of bike lanes to City streets.
Transportation Emissions Reduction : Provide onsite bicycle and pedestrian facilities (showers, bicycle parking, etc.) for commercial uses, to encourage employees to bicycle or walk to work.	Consistent: The project is required to provide bicycle parking racks. Moreover, as discussed above, the project is in close proximity to several mass transit options as well as being centrally located to residential development.
Solid Waste and Energy Emissions	
Solid Waste Reduction Strategy: Project construction shall require reuse and recycling of construction and demolition waste.	Consistent: Chapter 8.62 of the Pasadena Municipal Code requires a minimum of 50 percent diversion for demolition and construction waste.
Water Use Efficiency: Require measures that reduce the amount of water sent to the sewer system. (Reduction in water volume sent to the sewer system means less water has to be treated and pumped to the end user, thereby saving energy.	Consistent: The project would be required to conserve an additional 20 percent beyond baseline water. Thus the project would be required to reduce water sent to the sewer system.
Land Use Measures, Smart Growth Strategies and Ca	arbon Offsets
Smart Land Use and Intelligent Transportation Systems: Encourage mixed-use and high density development to reduce vehicle trips, promote alternatives to vehicle travel and promote efficient delivery of services and goods.	Consistent: The proposed project is an urban infill development located in a high densely developed area. Additionally, the proposed project is located along a public transit corridor.
Smart Land Use and Intelligent Transportation Systems: Require pedestrian-only streets and plazas within the project site and destinations that may be reached conveniently by public transportation, walking or bicycling.	Consistent: The project includes terraces and gardens. The site is privately owned, but will be accessible to the public as patrons of the church. The proposed project is within 1,300 feet of 26 bus stops. In addition to these bus lines, the Metro Gold Line is located approximately ½ miles from the project site.
SOURCE: TAHA, 2010.	

TABLE 3-12: PROJECT CONSISTENCY WITH APPLICABLE GREEN CITY ACTION PLAN MEASURES					
Strategy	Project Consistency				
UEA 1 Climate Change : Reduce greenhouse gas emissions by 25 percent by 2030.	Consistent: As discussed above, the proposed project includes a number of measures that would reduce greenhouse gas emissions. The project would be designed to meet LEED standards and is located near transit options.				
UEA 4 Zero Waste : Achieve zero waste to landfills and incinerators by 2040.	Consistent: Chapter 8.62 of the Pasadena Municipal Code requires a minimum of 50 percent diversion for demolition and construction waste.				
UEA 8 Urban Planning : Advance higher density, mixed use, walkable, bikeable and disabled-accessible neighborhoods which coordinate land use and transportation with open space systems for recreation and ecological restoration.	Consistent: The project includes terraces and gardens. The proposed project is within 1,300 feet of 26 bus stops. In addition to these bus lines, the Metro Gold Line is located approximately ½ miles from the project site.				
UEA 10 Green Space Access : Ensure that there is an accessible public park or recreational open space within ½ kilometer of all residents by 2015.	Consistent : The project includes terraces and gardens.				
UEA 15 Traffic Congestion : Implement a policy to reduce the percentage of commute trips by single occupancy vehicles by 10 percent by 2012.	Consistent: The proposed project is within 1,300 feet of 26 bus stops. In addition to these bus lines, the Metro Gold Line is located approximately ½ miles from the project site.				
UEA 18 Air Quality : Establish an Air Quality Index (AQI) to measure the level of air pollution and set the goal of reducing by 10 percent by 2012 the number of days categorized in the AQI range as "unhealthy" or "hazardous."	Consistent : Estimates of project emissions are shown in Table 3-8 . As indicated, overall emissions would not exceed SCAQMD thresholds for VOC, NO _X , CO, PM ₁₀ or PM _{2.5} .				
UEA 19 Potable Water Conservation : Reduce per capita water consumption by 10 percent by 2015.	Consistent : The project would be required to conserve an additional 20 percent beyond baseline water usage.				
SOURCE: TAHA, 2010.					

It should also be noted that the global climate change would not be expected to have a substantial impact on the project. The project location would not be affected by minor changes in sea level and the project would not require a substantial volume of water resources so any changes in available water resources (resulting from climate change) would not have a substantial effect on the viability of the project.

The proposed project would not exceed 10,000 metric tons of CO₂e per year and would be consistent with applicable greenhouse gas reduction plans. The proposed project would not contribute to a cumulative considerable greenhouse gas and climate change impact.

3.7 ALTERNATIVES TO THE PROPOSED PROJECT

3.7.1 Alternative 1 – No Project/Retain Existing Conditions

This alternative is required by Section 15126.6(e) of the CEQA Guidelines and assumes that the proposed project is not developed on the project site and that the site, including the existing bank, existing retail/commercial uses, and the vacant hotel structure are retained for ongoing/future use and occupancy. However, rehabilitation/re-occupancy of the former hotel is considered a possible, if not likely scenario that could occur under No Project conditions as well. Future longer-term development opportunities would also remain open for the entire property.

Construction

Regional Emissions and Localized Concentrations. Construction activities would not occur on the project site, or would be largely limited to interior renovations. Thus, associated VOC, NO_X , CO, SO_X , $PM_{2.5}$, and PM_{10} emissions resulting from construction activity that would occur with the proposed project would not be generated by this alternative if the former hotel structure continued to remain vacant. In the event that the former hotel structure is re-occupied similar to the uses proposed for the project, then impacts would be comparable to those identified for Phase 1 in **Table 3-5**, including particulate matter emissions that would remain above significance thresholds, even with mitigation. As with Phase 1 of the project, emissions would result in a less-than-significant regional impacts but significant and unavoidable localized $PM_{2.5}$ and PM_{10} impacts. Nevertheless, overall emissions would be substantially less than total emissions that would occur with development of the three-phased proposed project.

Toxic Air Contaminants. According to SCAQMD methodology, health effects from carcinogenic air toxics are usually described in terms of individual cancer risk. "Individual Cancer Risk" is the likelihood that a person continuously exposed to concentrations of TACs over a 70-year lifetime will contract cancer based on the use of standard risk assessment methodology. Similar to the proposed project, Alternative 1 would not result in a long-term (i.e., 70 years) source of TAC emissions given the construction schedule of approximately ten months.

Odors. Potential sources that may emit odors during construction activities include equipment exhaust and architectural coatings. Odors from these sources would be localized and generally confined to the immediate area surrounding the project site. Alternative 1 would utilize typical construction techniques, and the odors would be typical of most construction sites and temporary in nature. Similar to the proposed project, Alternative 1 would not result in a construction odor impact.

Operations

Regional emissions. Operational activities would not occur on the project site. Thus, associated VOC, NO_X , CO, SO_X , $PM_{2.5}$, and PM_{10} emissions resulting from operational activity that would occur with the proposed project would not be generated by this alternative if the former hotel structure continued to remain vacant. In the event that the former hotel structure is re-occupied similar to the uses proposed for the project, then impacts would be comparable to those identified for Phase 1 of the proposed project. As shown in **Table 3-8**, Phase 1 regional operational emissions associated would not exceed the significance thresholds, and would result in a less-than-significant impact. In addition, regional emissions generated by Alternative 1 would be less than those generated by the proposed project.

Localized Concentrations. The SCAQMD recommends a CO hotspot evaluation of potential localized CO impacts when V/C ratios are increased by two percent at intersections with a LOS of D or worse. SCAQMD also recommends a CO hotspot evaluation when an intersection decreases in LOS by one level beginning when LOS changes from C to D. All Phase 1 intersections would operate at an acceptable level of service according to the SCAQMD screening guidance, and further analysis is not necessary. In addition, Alternative 1 would generate fewer vehicle trips than the proposed project and, as result, mobile source localized concentrations would be less than under the proposed project.

Toxic Air Contaminants. Alternative 1 is not anticipated to generate a substantial number of daily truck trips and would not warrant the need for a health risk assessment associated with onsite activities. In addition, Alternative 1 would not include hazardous TACs typically associated with industrial manufacturing processes. Similar to the proposed project, Alternative 1 would result in a less-than-significant TAC impact.

Odors. According to the SCAQMD *CEQA Air Quality Handbook*, land uses and industrial operations that are associated with odor complaints include agricultural uses, wastewater treatment plants, food processing plants, chemical plants, composting, refineries, landfills, dairies and fiberglass molding. Alternative 1 would not be developed with land uses that are typically associated with odor complaints. Similar to the proposed project, Alternative 1 would result in a less-than-significant odor impact.

Global Climate Change. Operational activities would not occur on the project site. Thus, associated GHG emissions resulting from operational activity that would occur with the proposed project would not be generated by this alternative if the former hotel structure continued to remain vacant. In the event that the former hotel structure is re-occupied similar to the uses proposed for the project, then impacts would be comparable to those identified for Phase 1 of the proposed project. As shown in **Table 3-9**, Phase 1 would generate 2,527 metric tons of GHG emissions per year. These emissions would be less than the proposed project, and would not exceed the 10,000-metric-ton GHG significance threshold. In addition, Alternative 1 would be consistent with the GHG reduction measures described in **Tables 3-10** through **3-12**. Alternative 1 would not contribute to a cumulatively considerable GHG and climate change impact.

Cumulative Impacts. The related projects include the development of hundreds of thousands of square feet of commercial and residential uses, a number that is many times greater than the proposed project. As Alternative 1 results in a localized significant impact during construction relative to $PM_{2.5}$ and PM_{10} , it is anticipated that related project development would also result in significant and unavoidable regional impacts. Alternative 1 would contribute to a significant and unavoidable short-term cumulative impact.

The SCAQMD's approach for assessing cumulative air quality impacts is based on the AQMP forecasts of attainment of ambient air quality standards in accordance with the requirements of the federal and State CAAs. The SCQAMD has set forth regional significance thresholds designed to assist in the attainment of ambient air quality standards. As shown in **Table 3-8**, Phase 1 would not result in significant VOC, PM_{2.5}, PM₁₀, NO_x, CO or SO_x emissions. Therefore, Alternative 1 would not contribute to a cumulatively considerable impact.

3.7.2 Alternative 2 – Proposed Project Without Height Averaging

While the proposed project conforms to the existing CD-5-Central District Zone, and all requested uses and density are similarly permitted, approval of Height Averaging for the new office building as part of the City of Pasadena Design Commission Concept and Final Design is required for the current design. This alternative evaluates how the current design could differ if Height Averaging was not applied. The alternative assumes the same project program as proposed, but would shift massing of the office building to conform to a maximum 75-foot height, without using averaging across the site to attain an average 75-foot height. Proposed phasing would not change with this alternative.

Construction

Regional Emissions and Localized Concentrations. Construction activities would be comparable to the proposed project as no changes to overall program (and construction needs) would occur. Consequently, peak day construction activities and overall construction are expected to be comparable to the proposed project. Thus, associated VOC, NO_X , CO, SO_X , $PM_{2.5}$, and PM_{10} emissions resulting from construction activity that would occur with the proposed project would also be generated by this alternative, regardless of which option is pursued.

Toxic Air Contaminants. In According to SCAQMD methodology, health effects from carcinogenic air toxics are usually described in terms of individual cancer risk. "Individual Cancer Risk" is the likelihood that a person continuously exposed to concentrations of TACs over a 70-year lifetime will contract cancer based on the use of standard risk assessment methodology. Similar to the proposed project, Alternative 2 would not result in a long-term (i.e., 70 years) source of TAC emissions given the construction schedule of approximately 38 months.

Odors. Potential sources that may emit odors during construction activities include equipment exhaust and architectural coatings. Odors from these sources would be localized and generally confined to the immediate area surrounding the project site. Alternative 2 would utilize typical construction techniques, and the odors would be typical of most construction sites and temporary in nature. Similar to the proposed project, Alternative 2 would not result in a construction odor impact.

Operations

Regional emissions. Alternative 2 would include the same amount of development and associated average daily traffic as the proposed project. Mobile and area source emissions would be identical to the proposed project emissions shown in **Table 3-7**. Similar to the proposed project, regional operational emissions associated with total development would not exceed the significance thresholds, and Alternative 2 would result in a less-than-significant impact.

Localized Concentrations. Alternative 2 would include the same amount of development and associated average daily traffic as the proposed project. A detailed CO hotspot analysis was required for the Lake Avenue/Walnut Street intersection. The one-hour CO concentration at the Lake Avenue/Walnut Street intersection would be 5 ppm at worst-case sidewalk receptors. The eight-hour CO concentration would be 3.7 ppm. The State one- and eight-hour standards of 20 and 9.0 ppm, respectively, would not be exceeded at the analyzed intersections. Similar to the proposed project, localized CO concentrations under Alternative 2 would result in a less-than-significant impact.

Toxic Air Contaminants. Alternative 2 is not anticipated to generate a substantial number of daily truck trips and would not warrant the need for a health risk assessment associated with onsite activities. In addition, Alternative 2 would not include hazardous TACs typically associated with industrial manufacturing processes. Similar to the proposed project, Alternative 2 would result in a less-than-significant TAC impact.

Odors. According to the SCAQMD *CEQA Air Quality Handbook*, land uses and industrial operations that are associated with odor complaints include agricultural uses, wastewater treatment plants, food processing plants, chemical plants, composting, refineries, landfills, dairies and fiberglass molding. Alternative 2 would not be developed with land uses that are

typically associated with odor complaints. Similar to the proposed project, Alternative 2 would result in a less-than-significant odor impact.

Global Climate Change. Alternative 2 would include the same amount of development and associated average daily traffic as the proposed project. GHG emissions would be identical to the proposed project emissions shown in **Table 3-9**. Similar to the proposed project, GHG emissions would not exceed the 10,000-metric-ton GHG significance threshold. In addition, Alternative 2 would be consistent with the GHG reduction measures described in **Tables 3-10** through **3-12**. Alternative 2 would not contribute to a cumulatively considerable GHG and climate change impact.

Cumulative Impacts. The related projects include the development of hundreds of thousands of square feet of commercial and residential uses, a number that is many times greater than the proposed project. As Alternative 2 results in a localized significant impact during construction relative to $PM_{2.5}$ and PM_{10} , it is anticipated that related project development would also result in significant and unavoidable regional impacts. Alternative 2 would contribute to a significant and unavoidable short-term cumulative impact.

The SCAQMD's approach for assessing cumulative air quality impacts is based on the AQMP forecasts of attainment of ambient air quality standards in accordance with the requirements of the federal and State CAAs. The SCQAMD has set forth regional significance thresholds designed to assist in the attainment of ambient air quality standards. As shown in **Table 3-8**, Alternative 2 would not result in significant VOC, PM_{2.5}, PM₁₀, NO_x, CO or SO_x emissions. Therefore, Alternative 2 would not contribute to a cumulatively considerable impact.

3.7.3 Alternative 3 – Reduce New Development – Hotel and Residential Options

This alternative would reduce total development (converted and new) to approximately 90 percent of that proposed by the project while still converting the former Constance Hotel structure to the proposed hotel use (156 rooms converted and new) or with 81 multi-family residential units (converted and new). Existing retail space along Colorado Boulevard would also be retained and renovated, with ground floor retail also provided in the former Constance Hotel if converted to residential uses. The proposed office building and associated Phase 2 and 3 restaurant and retail space of approximately 196,000 square feet would be reduced to approximately 154,000 square feet. Total site development and reuse of approximately 261,000 square feet would be reduced to approximately 235,000 square feet. A new parking structure would be built, but unlike the proposed project, it would include above grade parking in addition to on grade and subterranean parking, as well as provision of limited shared parking with 2 North Lake across Colorado Boulevard. A secondary option to reduce project density could be accomplished by converting the former Constance Hotel structure to 136 hotel rooms as proposed by Phase 1 of the current project program, but similarly reducing other uses within the site as proposed by the alternative. Both options would achieve programs that are approximately 90 percent the density of the currently proposed project.

Construction

Regional Emissions and Localized Concentrations. Construction activities associated with Alternative 3 would take place in two phases as opposed to three phases with the proposed project. Unmitigated regional emissions for Alternative 3 and the proposed project are shown in **Table 3-13**. Maximum NO_X , CO, SO_X , $PM_{2.5}$, and PM_{10} emissions would be similar for Alternative 3 and the proposed project. Regional VOC emissions are typically correlated with

architectural coatings associated with square feet of development. Alternative 3 would include less development than the proposed project and less associated VOC emissions. Unmitigated VOC emissions would result in a significant impact under both scenarios. Similar to the proposed project, Mitigation Measures **AQ8** through **AQ10** would reduce Alternative 3 regional VOC emissions to a less-than-significant impact.

TABLE 3-13: UNMITIGATED REGIONAL CONSTRUCTION EMISSIONS – ALTERNATIVE 3						
	Pounds Per Day					
Construction Phase	VOC	NO _X	СО	SO _X	PM _{2.5}	PM ₁₀
Hotel Alternative	<u>.</u>		<u>.</u>			
Phase I	101	96	46	<1	6	13
Phase II	25	67	37	<1	5	14
Regional Significance Threshold	75	100	550	150	55	150
Exceed Threshold?	Yes	No	No	No	No	No
Proposed Project						
Phase I	140	35	24	<1	3	3
Phase II	53	98	46	<1	5	12
Phase III	224	76	48	<1	5	14
Regional Significance Threshold	75	100	550	150	55	150
Exceed Threshold?	Yes	No	No	No	No	No
SOURCE: TAHA, 2010.					<u> </u>	

Unmitigated localized emissions for Alternative 3 and the proposed project are shown in **Table 3-14**. Maximum NO_X and CO emissions are lower under Alternative 3, but $PM_{2.5}$ and PM_{10} emissions would be similar. This is because localized particulate matter emissions are largely dependent on the amount of land disturbed per day and the two scenarios would disturb the same amount per day during site preparation activity. Similar to the proposed project, Alternative 3 localized $PM_{2.5}$ and PM_{10} emissions would result in a significant and unavoidable impact.

Toxic Air Contaminants. In According to SCAQMD methodology, health effects from carcinogenic air toxics are usually described in terms of individual cancer risk. "Individual Cancer Risk" is the likelihood that a person continuously exposed to concentrations of TACs over a 70-year lifetime will contract cancer based on the use of standard risk assessment methodology. Similar to the proposed project, Alternative 3 would not result in a long-term (i.e., 70 years) source of TAC emissions given the construction schedule of approximately 30 months.

Odors. Potential sources that may emit odors during construction activities include equipment exhaust and architectural coatings. Odors from these sources would be localized and generally confined to the immediate area surrounding the project site. Alternative 3 would utilize typical construction techniques, and the odors would be typical of most construction sites and temporary in nature. Similar to the proposed project, Alternative 3 would not result in a construction odor impact.

	Pounds Per Day							
Construction Phase	VOC	NO _X	СО	SO _X	PM _{2.5}	PM ₁₀		
Hotel Alternative								
Phase I	97	44	24	<1	4	10		
Phase II	25	45	29	<1	4	12		
Localized Significance Threshold		69	535		3	4		
Exceed Threshold?		No	No		Yes	Yes		
Proposed Project								
Phase I	140	33	18	<1	3	3		
Phase II	53	47	23	<1	4	10		
Phase III	223	61	35	<1	4	12		
Localized Significance Threshold		69	535		3	4		
Exceed Threshold?		No	No		Yes	Yes		
SOURCE: TAHA, 2010.		'						

Operations

Regional emissions. The Alternative 3 hotel option would generate 1,583 less trips than the proposed project and the Alternative 3 residential option 2,623 less trips than the proposed project. The hotel option would generate more trips and associated emissions than the residential option, and is presented here as the worst-case Alternative 3 analysis. As shown in **Table 3-15**, Alternative 3 would generate fewer regional emissions than the proposed project and would result in a less-than-significant impact.

Localized Concentrations. All Phase 1 and 2 intersections under Alternative 3 would operate at an acceptable level of service according to the SCAQMD screening guidance, and further analysis is not necessary. Similar to the proposed project, localized CO concentrations would result in a less-than-significant impact.

Toxic Air Contaminants. Alternative 3 is not anticipated to generate a substantial number of daily truck trips and would not warrant the need for a health risk assessment associated with onsite activities. In addition, Alternative 3 would not include hazardous TACs typically associated with industrial manufacturing processes. Similar to the proposed project, Alternative 3 would result in a less-than-significant TAC impact.

Odors. According to the SCAQMD *CEQA Air Quality Handbook*, land uses and industrial operations that are associated with odor complaints include agricultural uses, wastewater treatment plants, food processing plants, chemical plants, composting, refineries, landfills, dairies and fiberglass molding. Alternative 3 would not be developed with land uses that are typically associated with odor complaints. Similar to the proposed project, Alternative 3 would result in a less-than-significant odor impact.

TABLE 3-15: ESTIMATED DAILY OPERATIONS EMISSIONS – ALTERNATIVE 3							
			Poun	ds per Day /a/	1		
Emission Source	voc	NO _X	СО	SO _x	PM _{2.5}	PM ₁₀	
Phase 1 (2012)	7	11	86	<1	3	17	
SCAQMD Threshold	55	55	550	150	55	150	
Exceed Threshold?	No	No	No	No	No	No	
Phase 2 (2014)	13	21	161	<1	7	36	
SCAQMD Threshold	55	55	550	150	55	150	
Exceed Threshold?	No	No	No	No	No	No	
Total Alternative 3 Emissions (2014) /b/	20	30	236	<1	10	53	
SCAQMD Threshold	55	55	550	150	55	150	
Exceed Threshold?	No	No	No	No	No	No	
Total Project Emissions (2014) /b/	28	44	319	<1	16	80	
SCAQMD Threshold	55	55	550	150	55	150	
Exceed Threshold?	No	No	No	No	No	No	

/a/ Emissions were obtained from URBEMIS2007 and include mobile and area sources (e.g., natural gas combustion and consumer products). /b/ Total project emissions were not summed for Phase 1 and 2 emissions. A separate model run was completed for total development in 2015 because emission factors change by year. For example, the same number of vehicles would result in different emissions in 2012 and 2014. **SOURCE:** TAHA, 2010.

Global Climate Change. The Alternative 3 hotel option would generate 1,583 less trips than the proposed project and the Alternative 3 residential option 2,623 less trips than the proposed project. The hotel option would generate more trips and associated emissions than the residential option, and is presented here as the worst-case Alternative 3 analysis. As shown in **Table 3-16**, Alternative 3 would generate 4,655 metric tons of CO_2e , which is less than 10,000 metric tons per year of CO_2e , and less GHG emissions than the proposed project. In addition, Alternative 3 would be consistent with the GHG reduction measures described in **Tables 3-10** through **3-12**. Alternative 3 would not contribute to a cumulatively considerable GHG and climate change impact.

Cumulative Impacts. The related projects include the development of hundreds of thousands of square feet of commercial and residential uses, a number that is many times greater than the proposed project. As Alternative 3 results in a localized significant impact during construction relative to $PM_{2.5}$ and PM_{10} , it is anticipated that related project development would also result in significant and unavoidable regional impacts. Alternative 3 would contribute to a significant and unavoidable short-term cumulative impact.

The SCAQMD's approach for assessing cumulative air quality impacts is based on the AQMP forecasts of attainment of ambient air quality standards in accordance with the requirements of the federal and State CAAs. The SCQAMD has set forth regional significance thresholds designed to assist in the attainment of ambient air quality standards. As shown in **Table 3-15**, Alternative 3 would not result in significant VOC, $PM_{2.5}$, PM_{10} , NO_X , CO or SO_X emissions. Therefore, Alternative 3 would not contribute to a cumulatively considerable impact.

•	0.10'
Scenario	Carbon Dioxide Equivalent (Metric Tons per Year)
Phase 1 Development	2,762
Phase 1 Existing Removed	2,564
Net Phase 1	198
Phase 2 Development	6,800
Phase 2 Existing Removed	2,019
Net Phase 2	4,781
Total Operational Emissions /b/	4,583
Construction Emissions Amortized /c/	72
Total Alternative 3 Emissions	4,655
Total Project Emissions	9,087

associated with the use and transport of water, natural gas consumption, and solid waste decomposition.

SOURCE: TAHA, 2010.

3.7.4 Alternative 4 – Eliminate Traffic Impacts/Reduced Project

This alternative would reduce trip generation to a level where significantly impacted street segments would be eliminated (1,712 daily trips or less). As with Alternative 3, this alternative would have residential and hotel options for re-use of the former Constance Hotel structure in an initial project phase, but would reduce new development in subsequent phasing. Existing historical storefronts on Colorado Boulevard could also be retained with this alternative. New office, restaurant and retail space would be substantially reduced compared to the proposed project to achieve trip reductions sufficient to eliminate traffic impacts to intersections and street segments. As with the proposed project, it is presumed that some portion of parking for the alternative could be provided at 2 North Lake and, that as with Alternative 3, on-site parking could be provided by a parking structure with some subterranean levels. Trip generation reductions would be achieved by adjusting project uses across the board. Total site development and reuse of approximately 255,000 square feet would be reduced to approximately 154,000 square feet with the hotel option and 174,000 square feet with the residential option.

Construction

Regional Emissions and Localized Concentrations. Construction activities associated with Alternative 4 would take place in two phases as opposed to three phases with the proposed project. Unmitigated regional emissions for Alternative 4 and the proposed project are shown in Table 3-17. Maximum VOC, NO_X, and CO emissions would be less under Alternative 4 then the proposed project. Regional VOC emissions are typically correlated with architectural coatings associated with square feet of development. Alternative 4 would include less development than the proposed project and less associated VOC emissions. Unmitigated VOC emissions would result in a significant impact under both scenarios. Similar to the proposed

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[/]b/ Total operational emissions are based on Phase I and II emissions.

[/]c/ The SCAQMD recommends accounting for construction emissions by averaging them over a 30-year project lifetime.

project, Mitigation Measures **AQ8** through **AQ10** would reduce Alternative 4 regional VOC emissions to a less-than-significant impact. Regional $PM_{2.5}$ and PM_{10} emissions would be similar for the two scenarios because they would disturb the same amount of land during the site preparation phase. Similar to the proposed project, Alternative 4 regional emissions would result in a less-than-significant impact.

TABLE 3-17: UNMITIGATED R	EGIONAL	CONSTRU	CTION EN	/IISSIONS –	ALTERNATI	VE 4
	Pounds Per Day					
Construction Phase	VOC	NO _X	СО	SO _X	PM _{2.5}	PM ₁₀
Hotel Alternative						
Phase I	97	56	35	<1	4	8
Phase II	39	73	38	<1	5	12
Regional Significance Threshold	75	100	550	150	55	150
Exceed Threshold?	Yes	No	No	No	No	No
Proposed Project						
Phase I	140	35	24	<1	3	3
Phase II	53	98	46	<1	5	12
Phase III	224	76	48	<1	5	14
Regional Significance Threshold	75	100	550	150	55	150
Exceed Threshold?	Yes	Yes	No	No	No	No
SOURCE: TAHA, 2010.					<u> </u>	

Unmitigated localized emissions for Alternative 4 and the proposed project are shown in **Table 3-18**. Maximum NO_X and CO emissions are lower under Alternative 4, but $PM_{2.5}$ and PM_{10} emissions would be similar. This is because localized particulate matter emissions are largely dependent on the amount of land disturbed per day and the two scenarios would disturb the same amount per day during site preparation activity. Similar to the proposed project, Alternative 4 localized $PM_{2.5}$ and PM_{10} emissions would result in a significant and unavoidable impact.

Toxic Air Contaminants. In According to SCAQMD methodology, health effects from carcinogenic air toxics are usually described in terms of individual cancer risk. "Individual Cancer Risk" is the likelihood that a person continuously exposed to concentrations of TACs over a 70-year lifetime will contract cancer based on the use of standard risk assessment methodology. Similar to the proposed project, Alternative 4 would not result in a long-term (i.e., 70 years) source of TAC emissions given the construction schedule of approximately 26 months.

Odors. Potential sources that may emit odors during construction activities include equipment exhaust and architectural coatings. Odors from these sources would be localized and generally confined to the immediate area surrounding the project site. Alternative 4 would utilize typical construction techniques, and the odors would be typical of most construction sites and temporary in nature. Similar to the proposed project, Alternative 4 would not result in a construction odor impact.

	Pounds Per Day							
Construction Phase	VOC	NO _x	СО	SO _x	PM _{2.5}	PM ₁₀		
Hotel Alternative								
Phase I	97	55	29	<1	4	6		
Phase II	39	49	30	<1	4	11		
Localized Significance Threshold		69	535		3	4		
Exceed Threshold?		No	No		Yes	Yes		
			·	·				
Proposed Project								
Phase I	140	33	18	<1	3	3		
Phase II	53	47	23	<1	4	10		
Phase III	223	61	35	<1	4	12		
Localized Significance Threshold		69	535		3	4		
Exceed Threshold?		No	No		Yes	Yes		
SOURCE: TAHA, 2010.	'		•	•				

Operations

Regional emissions. Both the hotel and residential options under Alternative 4 would generate 3,202 less trips than the proposed project. As shown in **Table 3-19**, Alternative 4 would generate fewer regional emissions than the proposed project and would result in a less-than-significant impact.

		Pounds per Day /a/				
Emission Source	VOC	NOx	СО	SO _X	PM _{2.5}	PM ₁₀
Alternative 4	15	18	133	<1	6	29
SCAQMD Threshold	55	55	550	150	55	150
Exceed Threshold?	No	No	No	No	No	No
				<u> </u>		
Total Project Emissions (2014)	28	44	319	<1	16	80
SCAQMD Threshold	55	55	550	150	55	150
Exceed Threshold?	No	No	No	No	No	No

Localized Concentrations. All of the intersections studies under Alternative 4 would operate at an acceptable level of service according to the SCAQMD screening guidance, and further analysis is not necessary. Similar to the proposed project, Alternative 4 would result in a less-than-significant impact.

Toxic Air Contaminants. Alternative 4 is not anticipated to generate a substantial number of daily truck trips and would not warrant the need for a health risk assessment associated with onsite activities. In addition, Alternative 4 would not include hazardous TACs typically associated

with industrial manufacturing processes. Similar to the proposed project, Alternative 4 would result in a less-than-significant TAC impact.

Odors. According to the SCAQMD *CEQA Air Quality Handbook*, land uses and industrial operations that are associated with odor complaints include agricultural uses, wastewater treatment plants, food processing plants, chemical plants, composting, refineries, landfills, dairies and fiberglass molding. Alternative 4 would not be developed with land uses that are typically associated with odor complaints. Similar to the proposed project, Alternative 4 would result in a less-than-significant odor impact.

Global Climate Change. Both the hotel and residential options under Alternative 4 would generate 3,202 less trips than the proposed project. As shown in **Table 3-20**, Alternative 4 would generate 3,536 metric tons of CO_2e , which is less than 10,000 metric tons per year of CO_2e , and less GHG emissions than the proposed project. In addition, Alternative 4 would be consistent with the GHG reduction measures described in **Tables 3-10** through **3-12**. Alternative 4 would not contribute to a cumulatively considerable GHG and climate change impact.

TABLE 3-20: ESTIMATED ANNUAL GREENHOUSE GAS EMISSIONS – ALTERNATIVE 4 /a/			
Scenario Carbon Dioxide Equivalent (Metric Tons p			
Alternative 3 Development	6,641		
Existing Removed	3,167		
Construction Emissions Amortized /b/	62		
Alternative 4	3,536		
Total Project Emissions	9,087		
<u>'</u>			

/a/ Greenhouse gas emissions were calculated for on-road mobile vehicle operations, general electricity consumption, electricity consumption associated with the use and transport of water, natural gas consumption, and solid waste decomposition.

/b/ The SCAQMD recommends accounting for construction emissions by averaging them over a 30-year project lifetime.

SOURCE: TAHA. 2010.

Cumulative Impacts. The related projects include the development of hundreds of thousands of square feet of commercial and residential uses, a number that is many times greater than the proposed project. As Alternative 4 results in a localized significant impact during construction relative to $PM_{2.5}$ and PM_{10} , it is anticipated that related project development would also result in significant and unavoidable regional impacts. Alternative 4 would contribute to a significant and unavoidable short-term cumulative impact.

The SCAQMD's approach for assessing cumulative air quality impacts is based on the AQMP forecasts of attainment of ambient air quality standards in accordance with the requirements of the federal and State CAAs. The SCQAMD has set forth regional significance thresholds designed to assist in the attainment of ambient air quality standards. As shown in **Table 3-19**, Alternative 4 would not result in significant VOC, $PM_{2.5}$, PM_{10} , NO_X , CO or SO_X emissions. Therefore, Alternative 4 would not contribute to a cumulatively considerable impact.

4.0 NOISE AND VIBRATION

This section evaluates noise and vibration impacts associated with the implementation of the proposed project. The noise and vibration analysis in this section assesses: existing noise and vibration conditions at the project site and its vicinity, as well as short-term construction and long-term operational noise and vibration impacts associated with the proposed project. Mitigation measures for potentially significant impacts are recommended when appropriate to reduce noise and vibration levels.

4.1 NOISE AND VIBRATION CHARACTERISTICS AND EFFECTS

4.1.1 Noise

Characteristics of Sound

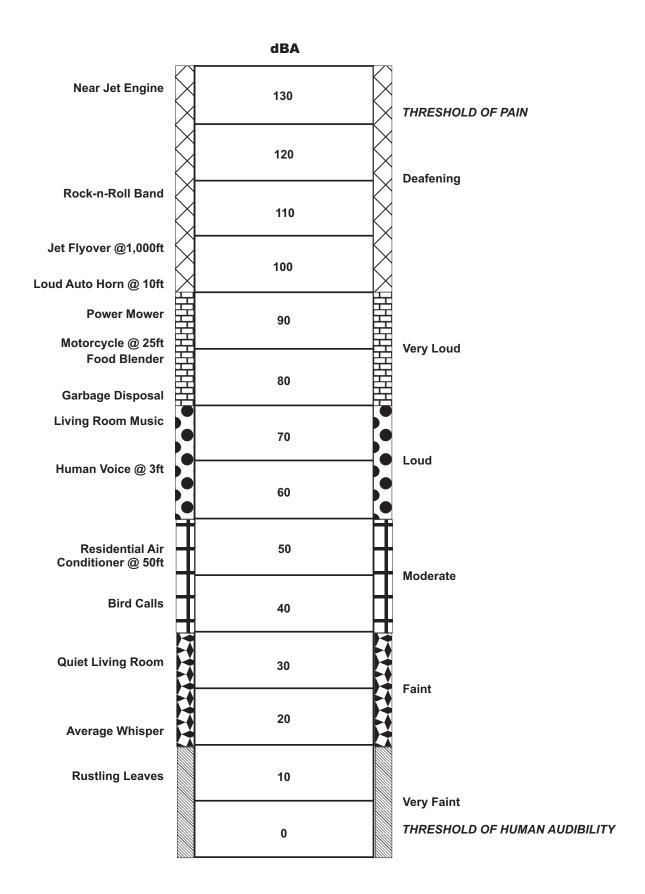
Sound is technically described in terms of the loudness (amplitude) and frequency (pitch) of the sound. The standard unit of measurement for sound is the decibel (dB). The human ear is not equally sensitive to sound at all frequencies. The "A-weighted scale," abbreviated dBA, reflects the normal hearing sensitivity range of the human ear. On this scale, the range of human hearing extends from approximately 3 to 140 dBA. **Figure 4-1** provides examples of A-weighted noise levels from common sounds.

Noise Definitions

This noise analysis discusses sound levels in terms of Community Noise Equivalent Level (CNEL) and Equivalent Noise Level (L_{eq}).

Community Noise Equivalent Level. CNEL is an average sound level during a 24-hour period. CNEL is a noise measurement scale, which accounts for noise source, distance, single event duration, single event occurrence, frequency, and time of day. Human reaction to sound between 7:00 p.m. and 10:00 p.m. is as if the sound were actually 5 dBA higher than if it occurred from 7:00 a.m. to 7:00 p.m. From 10:00 p.m. to 7:00 a.m., humans perceive sound as if it were 10 dBA higher due to the lower background level. Hence, the CNEL is obtained by adding an additional 5 dBA to sound levels in the evening from 7:00 p.m. to 10:00 p.m. and 10 dBA to sound levels in the night from 10:00 p.m to 7:00 a.m. Because CNEL accounts for human sensitivity to sound, the CNEL 24-hour figure is always a higher number than the actual 24-hour average.

Equivalent Noise Level. L_{eq} is the average noise level on an energy basis for any specific time period. The L_{eq} for one hour is the energy average noise level during the hour. The average noise level is based on the energy content (acoustic energy) of the sound. L_{eq} can be thought of as the level of a continuous noise which has the same energy content as the fluctuating noise level. The equivalent noise level is expressed in units of dBA.



SOURCE: Cowan, James P., Handbook of Environmental Acoustics



Effects of Noise

Noise is generally defined as unwanted sound. The degree to which noise can impact the human environment range from levels that interfere with speech and sleep (annoyance and nuisance) to levels that cause adverse health effects (hearing loss and psychological effects). Human response to noise is subjective and can vary greatly from person to person. Factors that influence individual response include the intensity, frequency, and pattern of noise, the amount of background noise present before the intruding noise, and the nature of work or human activity that is exposed to the noise source.

Audible Noise Changes

Studies have shown that the smallest perceptible change in sound level for a person with normal hearing sensitivity is approximately 3 dBA. A change of at least 5 dBA would be noticeable and would likely evoke a community reaction. A 10-dBA increase is subjectively heard as a doubling in loudness and would cause a community response.

Noise levels decrease as the distance from the noise source to the receiver increases. Noise generated by a stationary noise source, or "point source," will decrease by approximately 6 dBA over hard surfaces (e.g., reflective surfaces such as parking lots or smooth bodies of water) and 7.5 dBA over soft surfaces (e.g., absorptive surfaces such as soft dirt, grass, or scattered bushes and trees) for each doubling of the distance. For example, if a noise source produces a noise level of 89 dBA at a reference distance of 50 feet, then the noise level would be 83 dBA at a distance of 100 feet from the noise source, 77 dBA at a distance of 200 feet, and so on. Noise generated by a mobile source will decrease by approximately 3 dBA over hard surfaces and 4.5 dBA over soft surfaces for each doubling of the distance.

Generally, noise is most audible when traveling by direct line-of-sight.²⁴ Barriers, such as walls, berms, or buildings, that break the line-of-sight between the source and the receiver greatly reduce noise levels from the source since sound can only reach the receiver by bending over the top of the barrier (diffraction). Sound barriers can reduce sound levels by up to 20 dBA. However, if a barrier is not high or long enough to break the line-of-sight from the source to the receiver, its effectiveness is greatly reduced.

Applicable Regulations

Construction Noise

The City of Pasadena has established policies and regulations concerning the generation and control of noise that could adversely affect its citizens and noise sensitive land uses. Regarding construction, the Pasadena Municipal Code (PMC) limits construction or repair work to between the hours of 7:00 a.m. to 7:00 p.m. Monday through Friday and between 8:00 a.m. to 5:00 p.m. on Saturdays, and prohibits such activity at any time on Sunday. In addition to the time constraints on construction activity, the PMC regulates construction equipment noise. Any powered equipment or hand tool that produces a maximum noise level exceeding 85 dBA at a distance of 100 feet is prohibited. Between the control of the construction activity at any time on Sunday.

²⁴Line-of-sight is an unobstructed visual path between the noise source and the noise receptor.

²⁵City of Pasadena Municipal Code website, Chapter 9.36.070, accessed August 11, 2009.

²⁶City of Pasadena Municipal Code website, Chapter 9.36.080, accessed August 11, 2009.

Operational Noise

The PMC specifies that "[i]t is unlawful for any person to create, cause, make or continue to make or permit to be made or continued any noise or sound which exceeds the ambient noise level at the property line of any property by more than 5 decibels." This 5-dBA increase includes operation of any machinery, equipment, pumps, fans, air conditioning apparatus or similar mechanical device. The PMC also specifies the maximum interior noise standards for multi-family residential properties when measured within the dwelling unit or within 20 feet outside of the dwelling unit. Between the hours of 7:00 a.m. to 10:00 p.m. the maximum interior noise levels cannot exceed 60 dBA, and between the hours of 10:00 p.m. to 7:00 a.m. the next day the maximum interior noise levels cannot exceed 50 dBA.

4.1.2 Vibration

Characteristics of Vibration

Vibration is an oscillatory motion through a solid medium in which the motion's amplitude can be described in terms of displacement, velocity, or acceleration. Vibration can be a serious concern, causing buildings to shake and rumbling sounds to be heard. In contrast to noise, vibration is not a common environmental problem. It is unusual for vibration from sources such as buses and trucks to be perceptible, even in locations close to major roads. Some common sources of vibration are trains, buses on rough roads, and construction activities, such as blasting, pile driving, and heavy earth-moving equipment.

Vibration Definitions

There are several different methods that are used to quantify vibration. The peak particle velocity (PPV) is defined as the maximum instantaneous peak of the vibration signal. The PPV is most frequently used to describe vibration impacts to buildings and is usually measured in inches per second. The root mean square (RMS) amplitude is most frequently used to describe the effect of vibration on the human body. The RMS amplitude is defined as the average of the squared amplitude of the signal. Decibel notation (Vdb) is commonly used to measure RMS. The decibel notation acts to compress the range of numbers required to describe vibration.²⁹

Effects of Vibration

High levels of vibration may cause physical personal injury or damage to buildings. However, ground-borne vibration levels rarely affect human health. Instead, most people consider ground-borne vibration to be an annoyance that may affect concentration or disturb sleep. In addition, high levels of ground-borne vibration may damage fragile buildings or interfere with equipment that is highly sensitive to ground-borne vibration (e.g., electron microscopes).

To counter the effects of ground-borne vibration, the Federal Transit Administration (FTA) has published guidance relative to vibration impacts. According to the FTA, standard reinforced-concrete buildings can be exposed to ground-borne vibration levels of 0.5 inches per second

²⁷City of Pasadena Municipal Code website, Chapter 9.36.050 and 9.36.090, accessed August 11, 2009.

²⁸City of Pasadena Municipal Code website, Chapter 9.36.060, accessed August 11, 2009.

²⁹Federal Transit Administration, *Transit Noise and Vibration Impact Assessment*, May 2006.

without experiencing structural damage.³⁰ Buildings extremely susceptible to vibration damage can be exposed to ground-borne vibration levels of 0.12 inches per second without experiencing structural damage.

Perceptible Vibration Changes

In contrast to noise, ground-borne vibration is not a phenomenon that most people experience every day. The background vibration velocity level in residential areas is usually 50 RMS or lower, well below the threshold of perception for humans which is around 65 RMS.³¹ Most perceptible indoor vibration is caused by sources within buildings, such as operation of mechanical equipment, movement of people, or slamming of doors. Typical outdoor sources of perceptible ground-borne vibration are construction equipment, steel-wheeled trains, and traffic on rough roads. If the roadway is smooth, the vibration from traffic is rarely perceptible.

Applicable Regulations

There are no adopted City standards for ground-borne vibration.

4.2 EXISTING ENVIRONMENTAL SETTING

4.2.1 Existing Noise Environment

The existing noise environment of the project area is characterized by vehicular traffic and noises typical to a dense urban area (e.g., sirens, horns, helicopters, etc.). Vehicular traffic is the primary source of noise in the project vicinity.

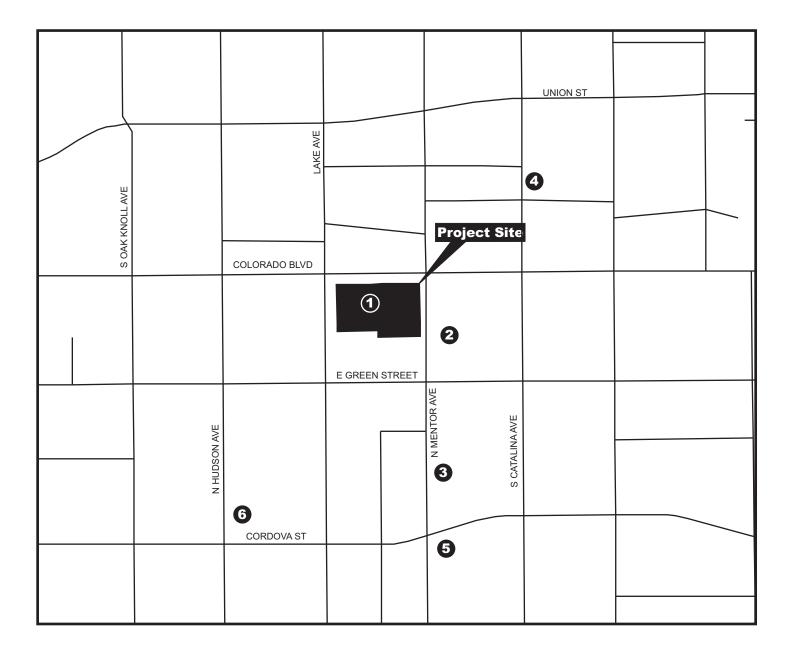
Sound measurements were taken using a SoundPro DL Sound Level Meter between 7:00 a.m. and 12:30 p.m. on August 12, 2009 to determine existing ambient daytime noise levels in the project vicinity. These readings were used to establish existing ambient noise conditions and to provide a baseline for evaluating construction and operational noise impacts. Noise monitoring locations are shown in **Figure 4-2**. As shown in **Table 4-1**, existing ambient sound levels range from 54.3 to 64.7 dBA L_{eq} for peak hour, and from 54.0 to 62.2 dBA L_{eq} for off-peak hour measurements.

4.2.2 Existing Vibration Environment

There are not any stationary sources of vibration located near the project site. Heavy-duty trucks can generate ground-borne vibrations that vary depending on vehicle type, weight, and pavement conditions. However, vibration levels from adjacent roadways are not typically perceptible at the project site.

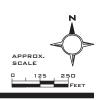
³⁰Ibid.

³¹Ibid.



LEGEND:

- # Sensitive Receptor Locations
- 1. Project Site
- 2. Multi-Family Residences
- 3. Multi-Family Residences
- 4. Multi-Family Residences
- 5. Multi-Family Residences
- 6. Multi-Family Residences



SOURCE: TAHA, 2010



TABLE	4-1: EXISTING NOISE LEVELS – AM PEAK HOUR AND A	M MID-MORNING		
Key to Figure 4-2	Noise Monitoring Location	Distant from Project Site (feet)	Sound Level (dBA, L _{eq})	
PEAK H	OUR MEASUREMENTS			
1	Boston Court Performing Arts Center north of project site	425	58.7	
2	Multi-family residences northeast of the project site	1,320	54.3	
3	Multi-family residence east of the project site	65	61.1	
4	North side of project site along Colorado Boulevard	10	64.7	
5	West side of project site along Lake Avenue	10	63.5	
6	Multi-family residences south of project site along Mentor Avenue	580	57.4	
7	Multi-family residences southeast of the project site	1,320	55.1	
8	Multi-family residences southwest of the project site	1,320	54.3	
OFF-PEAK HOUR MEASUREMENTS				
1	Boston Court Performing Arts Center north of project site	425	56.3	
2	Multi-family residences northeast of the project site	1,320	54.0	
3	Multi-family residence east of the project site	65	59.4	
4	North side of project site along Colorado Boulevard	10	62.2	
5	West side of project site along Lake Avenue	10	61.4	
6	Multi-family residences south of project site along Mentor Avenue	580	56.5	
7	Multi-family residences southeast of the project site	1,320	54.6	
8	Multi-family residences southwest of the project site	1,320	54.2	
SOURCE:	TAHA, 2010.			

4.2.3 Sensitive Receptors

Noise- and vibration-sensitive land uses are locations where people reside or where the presence of unwanted sound could adversely affect the use of the land. Residences, schools, hospitals, guest lodging, libraries, and some passive recreation areas would each be considered noise- and vibration-sensitive and may warrant unique measures for protection from intruding noise. As shown in **Figure 3-3**, sensitive receptors near the project site include the following:

- A multi-family residential building approximately 65 feet east of the project site
- A Boston Court Performing Arts Center located approximately 425 feet north of the project site
- Multi-family residences approximately 580 feet south of the project site
- Multi-family residences approximately 675 feet northeast of the project site
- Multi-family residences approximately 750 feet southeast of the project site
- Multi-family residences approximately 1,150 feet southwest of the project site

The former Hotel Constance on the east side of the project site at the corner of Colorado Boulevard and Mentor Avenue is an historical structure constructed in 1926. The hotel will be renovated as part of the proposed project and is sensitive to damaging vibration levels.

The above sensitive receptors represent the nearest sensitive receptors with the potential to be impacted by the proposed project. Additional sensitive receptors are located in the surrounding community within one-quarter mile of the project site and may be impacted by the proposed project.

4.2.4 Vehicular Traffic

Vehicular traffic is the predominant noise source in the project vicinity. Using existing traffic volumes provided by the project traffic consultant and the Federal Highway Administration (FHWA) RD-77-108 noise calculation formulas, the CNEL was calculated for various roadway segments near the project site. Existing weekday and weekend mobile noise levels are shown in **Table 4-2**. As shown in **Table 4-2**, mobile noise levels in the project area range from 61.2 to 70.2 dBA CNEL. Modeled vehicle noise levels are typically lower than the noise measurements along similar roadway segments as modeled noise levels do not take into account additional noise sources (e.g., sirens, horns, helicopters, etc.).

TABLE 4-2: EXISTING ESTIMATED COMMUNITY NOISE EQUIVALENT LEVEL			
Roadway Segment	Estimated CNEL (dBA)		
Colorado Boulevard between Lake Avenue and North Mentor Avenue	67.8		
Mentor Avenue Between Colorado Boulevard and Walnut Street	62.0		
Colorado Boulevard between North Mentor Avenue and North Catalina Avenue	67.9		
Mentor Avenue Between Colorado Boulevard and East Green Street	61.2		
Lake Avenue Between Colorado Boulevard and East Green Street	70.2		
SOURCE: TAHA, 2010.			

4.3 METHODLOGY AND SIGNIFICANCE CRITERIA

4.3.1 Methodology

The noise analysis considers construction, operational, and vibration sources. Construction noise levels are based on information obtained from the USEPA's *Noise from Construction Equipment and Operations, Building Equipment and Home Appliances.*³² The noise level during the construction period at each receptor location was calculated by (1) making a distance adjustment to the construction source sound level and (2) logarithmically adding the adjusted construction noise source level to the ambient noise level. Operational noise levels were calculated based on information provided in the traffic study and stationary noise sources located on the project site (e.g., mechanical equipment). Vibration levels were estimated based on information provided by the FTA.³³

4.3.2 Significance Criteria

Construction Phase Significance Criteria

Based on the PMC, the proposed project would result in significant noise impacts if:

Construction equipment noise levels exceed 85 dBA at 100 feet; and/or

³²USEPA, Noise from Construction Equipment and Operations, Building Equipment and Home Appliances, PB 206717, 1971.

³³Federal Transit Authority, *Transit Noise and Vibration Impact Assessment*, May 2006.

• Construction activities would commence outside the hours of listed in the PMC (7:00 a.m. to 7:00 p.m. Monday through Friday, 8:00 a.m. to 5:00 p.m. on Saturday, or anytime on Sunday).

Operational Phase Significance Criteria

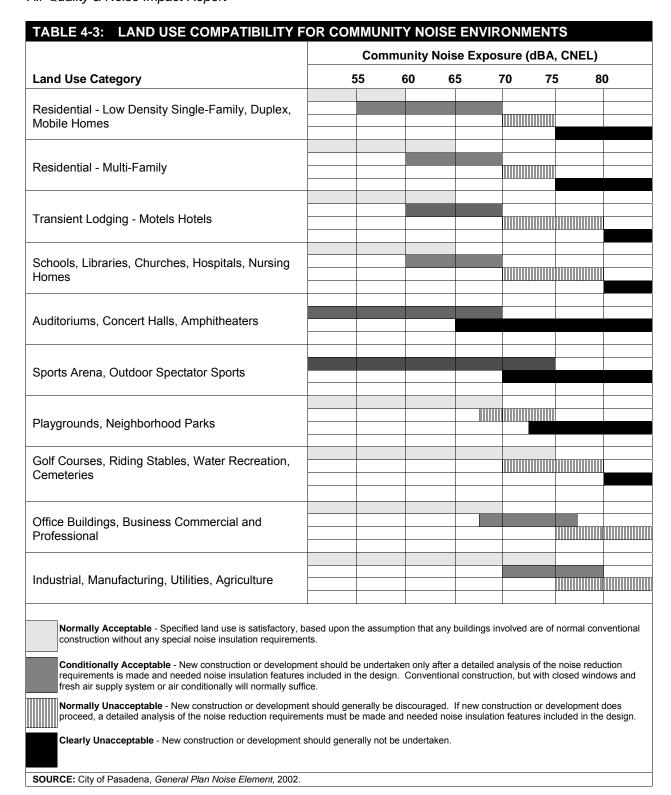
A significant operational noise impact would result if:

 The proposed project causes the ambient noise level measured at the property line of the affected uses to increase by 3 dBA CNEL to or within the "normally unacceptable" or "clearly unacceptable" categories, as show in **Table 4-3**, or any 5-dBA or more increase in noise level.

4.3.3 Ground-borne Vibration Significance Criteria

There are no adopted State or City of Pasadena ground-borne vibration standards. Based on federal guidelines, the proposed project would result in a significant construction or operational vibration impact if:

• The proposed project would expose buildings to vibration levels of 0.5 inches per second, or would expose historic buildings to vibration levels of 0.12 inches per second.



4.4 ENVIRONMENTAL IMPACTS

4.4.1 Noise Impacts

Construction Phase Noise Impacts

Construction of the proposed project would result in temporary increases in ambient noise levels in the project area on an intermittent basis. The increase in noise would occur during the approximate 38-month construction schedule. Noise levels would fluctuate depending on the construction phase, equipment type and duration of use, distance between the noise source and receptor, and presence or absence of noise attenuation barriers. Construction activities typically require the use of numerous noise-generating equipment. Typical noise levels from various types of equipment that may be used during construction are listed in **Table 4-4**. The table shows noise levels at distances of 50 and 100 feet from the construction noise source.

TABLE 4-4: MAXIMUM NOISE LEVELS OF COMMON CONSTRUCTION MACHINES				
	Noise Level (vel (dBA)		
Noise Source	50 Feet /a/	100 Feet /a/		
Front Loader	80	74		
Trucks	89	83		
Cranes (derrick)	88	82		
Jackhammers	90	84		
Generators	77	71		
Back Hoe	84	78		
Tractor	88	82		
Scraper/Grader	87	81		
Paver	87	81		
Impact Pile Driving	101	95		
Auger Drilling	77	71		

/a/ Assumes a 6-dBA drop-off rate for noise generated by a "point source" and traveling over hard surfaces. Actual measured noise levels of the equipment listed in this table were taken at distances of ten and 30 feet from the noise source.

SOURCE: USEPA, Noise from Construction Equipment and Operations, Building Equipment and Home Appliances, PB 206717, 1971.

The noise levels shown in **Table 4-5** take into account the likelihood that more than one piece of construction equipment would be in operation at the same time and lists the typical overall noise levels that would be expected for each phase of construction. The highest noise levels are expected to occur during the grading/excavation and finishing phases of construction. A typical piece of noisy equipment is assumed to be active for 40 percent of the eight-hour workday (consistent with the USEPA studies of construction noise), generating a noise level of 89 dBA L_{eq} at a reference distance of 50 feet.

TABLE 4-5: OUTDOOR CONSTRUCTION NOISE LEVELS			
Construction Phase	Noise Level At 50 Feet (dBA)		
Ground Clearing	84		
Grading/Excavation	89		
Foundations	78		
Structural	85		
Finishing	89		
SOURCE: USEPA, Noise from Construction Equipment and Operations, Building Equipment and Home Appliances, PB 206717, 1971.			

General Construction Noise

Table 4-6 presents the estimated noise levels at sensitive receptors during construction activity. As shown in **Table 4-6**, ambient noise levels during construction would range from 56.2 to 86.7 dBA L_{eq}. The highest construction-related noise increase would occur at the multi-family residences directly east of the project site, across Mentor Avenue. However, as shown in **Table 4-4**, general construction equipment noise levels would not exceed the 85-dBA at 100 feet significance threshold. Construction activity would result in a less-than-significant noise impact.

TABLE 4-6: CONSTRUCTION NOISE LEVELS					
Sensitive Receptor	Distance (feet) /a/	Maximum Construction Noise Level (dBA) /b/	Existing Ambient (dBA, L _{eq}) /c/	New Ambient (dBA, L _{eq}) /d/	
Multi-family residences east of project site	65	86.7	59.4	86.7	
Boston Court Performing Arts Center	425	70.4	56.3	70.6	
Multi-family residences south of project site	850	64.4	56.5	65.0	
Multi-family residences northeast of project site	675	56.4	54.0	58.4	
Multi-family residences southeast of project site	750	55.5	54.6	58.1	
Multi-family residences southwest of project site	1,150	51.8	54.2	56.2	

[/]a/ Distance of noise source from receptor.

Pile Driving Noise

Pile driving activity would potentially occur during the construction process. Impact pile driving typically generates noise levels of 101 dBA $L_{\rm eq}$ at 50 feet. As shown in **Table 4-7**, the ambient noise levels during pile driving activity would range from 64.2 and 98.7 dBA $L_{\rm eq}$ at sensitive receptors in the project vicinity. Although temporary and intermittent, pile driving noise levels would exceed the 85-dBA at 100 feet significance threshold. Pile driving noise would result in a significant noise impact without mitigation.

[/]b/ Construction noise source's sound level at receptor location with distance and building adjustment.

[/]c/ Pre-construction activity ambient sound level at receptor location.

[/]d/ New sound level at receptor location during the construction period, including noise from construction activity.

SOURCE: TAHA, 2010.

TABLE 4-7: PILE DRIVING NOISE IMPACT - UNMITIGATED					
Sensitive Receptor	Distance (feet) /a/	Maximum Construction Noise Level (dBA) /b/	Existing Ambient (dBA, L _{eq}) /c/	New Ambient (dBA, L _{eq}) /d/	
Multi-family residences east of project site	65	98.7	59.4	98.7	
Boston Court Performing Arts Center	425	82.4	56.3	82.4	
Multi-family residences south of project site	850	76.4	56.5	76.4	
Multi-family residences northeast of project site	675	68.4	54.0	68.5	
Multi-family residences southeast of project site	750	67.5	54.6	67.7	
Multi-family residences southwest of project site	1,150	63.8	54.2	64.2	

[/]a/ Distance of noise source from receptor.

Construction Phase Noise Mitigation Measures

- All residential units located within one-quarter mile of the construction site shall be sent a notice regarding the construction schedule of the proposed project. A sign, legible at a distance of 50 feet shall also be posted at the construction site. All notices and the signs shall indicate the dates and duration of construction activities, as well as provide a telephone number where residents can inquire about the construction process and register complaints.
- A "noise disturbance coordinator" shall be established. The disturbance coordinator shall be responsible for responding to any local complaints about construction noise. The disturbance coordinator shall determine the cause of the noise complaint (e.g., starting too early, bad muffler, etc.) and shall be required to implement reasonable measures such that the complaint is resolved. All notices that are sent to residential units within one-quarter mile of the construction site and all signs posted at the construction site shall list the telephone number for the disturbance coordinator.
- N3 The construction contractor shall utilize caisson drilling instead of pile driving on the project site.

Impacts After Mitigation

Pile driving noises levels would exceed the 85-dBA at 100 feet significance threshold by approximately 10 dBA. Mitigation Measures **N1** and **N2** would assist in controlling construction noise. Mitigation Measure **N3** would eliminate pile driving activity in favor of caisson drilling. Caisson drilling generates a noise level of 71 dBA at 100 feet, which would be less than the 85 dBA significance threshold. Therefore, construction noise would result in a less-than-significant impact with mitigation.

Operational Phase Noise Impacts

Vehicular Noise. Off-site mobile noise impacts were modeled utilizing FHWA RD-77-108 noise calculation formulas. **Table 4-8** shows mobile noise levels after each phase of development. The greatest project-related noise increase after the completion of Phase 1 would be 0.6 dBA CNEL, after the completion of Phase 2 would be 0.5 dBA CNEL, and after the completion of

[/]b/ Construction noise source's sound level at receptor location with distance and building adjustment.

[/]c/ Pre-construction activity ambient sound level at receptor location.

[/]d/ New sound level at receptor location during the construction period, including noise from construction activity.

SOURCE: TAHA, 2010.

Phase 3 would be 1.1 dBA CNEL. All three noise levels for each of the three project phases would occur along Mentor Avenue between Colorado Boulevard and East Green Street.

Mobile noise generated by the proposed project would not cause the ambient noise level measured at the property line of the affected uses to increase by 3 dBA CNEL to or within the "normally unacceptable" or "clearly unacceptable" category (**Table 4-3**) or any 5-dBA or more increase in noise level. The proposed project would result in a less-than-significant mobile noise impact.

TABLE 4-8: ESTIMATED MOBILE SOURCE NOISE LEVELS			
	Estimated dBA, CNEL		
	No		Project
Roadway Segment	Project	Project	Impact
Phase 1			
Colorado Boulevard between Lake Avenue and North Mentor Avenue	72.0	72.1	0.1
Mentor Avenue Between Colorado Boulevard and Walnut Street	62.3	62.7	0.4
Colorado Boulevard between North Mentor Avenue and North Catalina Avenue	69.9	69.9	0.0
Mentor Avenue Between Colorado Boulevard and East Green Street	64.4	64.3	0.6
Lake Avenue Between Colorado Boulevard and East Green Street	70.7	70.8	0.1
Phase 2			
Colorado Boulevard between Lake Avenue and North Mentor Avenue	72.1	72.2	0.1
Mentor Avenue Between Colorado Boulevard and Walnut Street	62.4	62.6	0.2
Colorado Boulevard between North Mentor Avenue and North Catalina Avenue	70.0	70.1	0.1
Mentor Avenue Between Colorado Boulevard and East Green Street	63.8	64.3	0.5
Lake Avenue Between Colorado Boulevard and East Green Street	70.8	70.8	0.0
Phase 3			
Colorado Boulevard between Lake Avenue and North Mentor Avenue	72.2	72.4	0.2
Mentor Avenue Between Colorado Boulevard and Walnut Street	62.7	63.1	0.6
Colorado Boulevard between North Mentor Avenue and North Catalina Avenue	69.9	70.2	0.1
Mentor Avenue Between Colorado Boulevard and East Green Street	64.3	65.0	1.1
Lake Avenue Between Colorado Boulevard and East Green Street source: TAHA, 2010.	70.8	71.1	0.3

Stationary Noise. The proposed project would include various pieces of equipment (e.g., air handlers, exhaust fans, kitchen grease exhaust systems, and pool equipment) located in the mechanical areas of the project site. The majority of these noise sources would be located within equipment enclosures and screened from view to comply with Section 9.36.090 of the PMC. Cooling towers would be located on the southern portion of the project site. The cooling towers would be enclosed on all sides and covered with a screen. Based on this design, it was estimated that the cooling towers would create a noise level of approximately 70 dBA at 15 feet. The nearest land use would be a multi-family residences located approximately 217 feet east of the cooling tower. This residential use would experience a 0.6-dBA increase in ambient noise from noise generated by the cooling tower. This incremental increase would not be audible, and the cooling tower would result in a less-than-significant impact.

The specific location of other stationary noise sources was not known at the time of this analysis. The sources would generally be located central to the project site and away from sensitive receptors. Proposed development would typically shield mechanical equipment from off-site land uses and all mechanical equipment would comply with the regulations set forth in the Municipal Code. Based on the above analysis, stationary noise would result in a less-than-significant impact.

Outdoor Activity Noise. The proposed project would include a rooftop pool on the southeastern portion of the project site. The pool area would be located approximately 75 feet from the multi-family residences on Mentor Avenue. The crowd noise levels were modeled at 75 dBA at a reference distance of ten feet, which is typical for outdoor entertainment areas of this type. The pool area would include a glass safety wall that would attenuate noise levels by at least five dBA. The pool area would generate an exterior noise level of 54.5 dBA at the multifamily residences. This would increase the lower of the two monitored ambient noise levels by approximately 1.2 dBA. This incremental increase would not be audible, and the pool area noise would result in a less-than-significant impact.

Outdoor restaurant space would largely be located on the second (terrace) level. The seating area would be central to the project site and generally shielded from existing noise-sensitive land uses by proposed buildings. The restaurant seating would generate a similar noise level as the pool area. Based on location, the restaurant seating noise levels would be less than the pool area noise levels presented above at sensitive receptors, and would result in a less-than-significant impact.

Parking Noise. Phase 1 would need to find temporary alternative sites to accommodate its parking needs during construction of the Phase 2 parking structure. Parking for Phase 1 would be provided by a valet service utilizing a structure at 2 North Lake Avenue. The traffic study has estimated that there would 1,294 trips to off-site valet parking. Valet services would access the structure by traveling north on Lake Avenue, East on Union Street, and South on Mentor Avenue. As shown in **Table 4-8**, mobile noise would result in a maximum mobile noise increase of 1.1 dBA along these roadway segments. This increase would result in a less-than-significant impact.

Phase 2 would include 225 parking spaces in a subterranean parking garage and 12 at-grade spaces along the southwestern portion of the project site. Both parking lots would be accessed via driveways along Lake Avenue and Mentor Avenue. Parking access would be located approximately 65 feet from the multi-family residences to the east of the project site. Automobile parking activity typically generates a noise level of approximately 58.1 dBA L_{eq} at 50 feet (e.g., tire noise, engine runups and door slams). 34

The highest ambient noise increase due to parking activity noise would occur at the multi-family residences along Mentor Avenue, located approximately 65 feet east of the project boundary. The nearest parking activity noise would occur at the surface level of the parking structure, approximately 65 feet from this residential use. This residential use would experience a 1.6-dBA increase in ambient noise from noise generated at the parking structure. This would not exceed the 5-dBA threshold for operational noise. All other nearby sensitive uses would experience ambient noise level increases below the 5-dBA threshold from parking activity noise. Parking activity noise would result in a significant and unavoidable impact without mitigation.

³⁴The reference parking noise level is based on a series of noise measurements completed 50 feet from vehicles accessing a multi-level parking structure.

Phase 3 construction would complete the subterranean parking garage. Subterranean parking noise would be inaudible at sensitive receptors.

Loading Activity and Delivery Truck Noise. The proposed project would include one loading dock for delivery trucks located in the rear of the buildings near the south side of the project site. Noise levels from medium-duty trucks accessing the project site would range from 71 to 79 dBA L_{eq} at 50 feet. Back-up safety alarms would generate a single event noise level of approximately 79 dBA at 50 feet. Back-up safety alarms would generate a single event noise level of approximately 79 dBA at 50 feet. Back-up safety alarms would generate a single event noise level of approximately 79 dBA at 50 feet. Back-up safety alarms would generate a single event noise level of approximately 79 dBA at 50 feet. Back-up safety alarms would generate a single event noise level of approximately 79 dBA at 50 feet.

Delivery trucks would enter the project site along Lake Avenue, and would park in a loading dock at the back of the new building directly west of the hotel. The loading dock would be enclosed on three sides by the walls of surrounding buildings (to the west, north, and east), and would be completely screened from the nearest sensitive receptor – the multi-family residences to the east along Mentor Avenue. Trucks would back into the loading area such that unloading/loading would occur to the behind the hotel, or would be otherwise obscured or screened from sensitive receptors by intervening buildings and perimeter walls. Loading activity would not increase ambient noise level by more than 5 dBA at sensitive receptors, and would result in a less-than-significant impact.

Operational Phase Noise Mitigation Measures

Operational noise impacts would be less than significant, and no mitigation measures are required.

Impacts After Mitigation

Not applicable. The project-related operational noise would result in a less-than-significant impact without mitigation.

4.4.2 Ground-borne Vibration Impacts

Construction Phase Ground-borne Vibration Impacts

General Construction Activity. As shown in **Table 4-9**, use of heavy equipment (e.g., a large bulldozer) generates vibration levels of 0.089 inches per second at a distance of 25 feet. Construction activity would occur adjacent to two commercial buildings located south of the project site. Construction equipment would typically generate a vibration level of 1.0 inches per second at these land uses. The 1.0 inches per second vibration level would exceed the 0.5 inches per second significance threshold, and off-site vibration would result in a significant impact without mitigation.

The former Hotel Constance on the east side of the project site at the corner of Colorado Boulevard and Mentor Avenue is an historical structure constructed in 1926. General construction equipment would generate a vibration level of 1.0 inches per second at a distance of five feet. This would exceed the 0.12 inches per second significance threshold, and vibration levels at the former Hotel Constance would result in a significant impact without mitigation.

³⁵California Department of Transportation, *Technical Noise Supplement*, October 1998.

³⁶The back-up safety alarm noise level was based on regulations set forth b the Occupational Safety and Health Administration.

TABLE 4-9: VIBRATION VELOCITIES FOR CONSTRUCTION EQUIPMENT			
Equipment	PPV at 25 feet (Inches /Second) /a		
Pile Driving (Impact)	0.644		
Pile Driving (Sonic)	0.170		
Caisson Drilling	0.089		
Large Bulldozer	0.089		
Loaded Trucks	0.076		
SOURCE: Federal Transit Authority, Transit Noise and Vibration Impact Assessment, Ma	ay 2006.		

Pile Driving Activity. The proposed project may require drilled or driven piles. Impact pile driving would generate a vibration level of 7.2 inches per second at both off-site sensitive receptors and the former Hotel Constance, which would exceed the potential fragile building damage thresholds of 0.5 and 0.12 inches per second, respectively. Vibration levels associated with pile driving equipment would result in a significant and unavoidable impact without mitigation.

Construction Phase Ground-borne Vibration Mitigation Measures

- N4 Prior to commencement of construction activity, a qualified structural engineer shall survey the existing foundation and other structural aspects of the former Hotel Constance and the buildings located adjacent and to the south of the project site. The survey shall provide a shoring design to protect the identified land uses from potential damage. Pot holing or other destructive testing of the below grade conditions may be necessary to establish baseline conditions and prepare the shoring design. The qualified structural engineer shall hold a valid license to practice structural engineering in the State of California and have a minimum of ten years specific experience rehabilitating historic buildings and applying the Secretary's Standards to such projects.
- N5 The qualified structural engineer shall submit a pre-construction survey letter establishing baseline conditions at the former Hotel Constance and the buildings located adjacent and to the south of the project site. These baseline conditions shall be forwarded to the lead agency and to the mitigation monitor prior to issuance of any foundation only or building permit for the proposed project.
- At the conclusion of vibration causing activities, the qualified structural engineer shall issue a follow-on letter describing damage, if any, to the former Hotel Constance and the buildings located adjacent and to the south of the project site. The letter shall include recommendations for any repair, as may be necessary, in conformance with the Secretary of the Interior Standards. Repairs to the former Hotel Constance shall be undertaken and completed in conformance with all applicable codes including the California Historical Building Code (Part 8 of Title 24) prior to issuance of any temporary or permanent certificate of occupancy for the new building.

Impacts After Mitigation

Mitigation Measure N3 would require caisson drilling instead of impact pile driving. Caisson drilling would generate a vibration level of 1.0 inches per second at the former Hotel Constance and the buildings located adjacent and to the south of the project site instead of the 7.2 inches per second pile driving vibration level. Mitigation Measures N4 through N6 would ensure that

vibration-induced building damage is recorded and repaired. As such, construction vibration would result in a less-than-significant impact with mitigation.

Operational Phase Ground-borne Vibration Impacts

The proposed project would not include significant stationary sources of ground-borne vibration, such as heavy equipment operations. Operational ground-borne vibration in the project vicinity would be generated by vehicular travel on the local roadways. However, similar to existing conditions, project-related traffic vibration levels would not be perceptible by sensitive receptors. Thus, operational vibration would result in a less-than-significant impact.

Operational Phase Ground-borne Vibration Mitigation Measures

Operational ground-borne vibration impacts would be less than significant, and no mitigation measures are required.

Impacts After Mitigation

The project-related operational ground-borne vibration would result in a less-than-significant impact.

4.5 CUMULATIVE IMPACTS

When calculating future traffic impacts, the traffic consultant took all related projects into consideration. Thus, the future traffic results without and with the proposed project already account for the cumulative impacts from these other projects. Since the noise impacts are generated directly from the traffic analysis results, the future without project and future with project noise impacts described in this report already reflect cumulative impacts.

Table 4-10 present the cumulative increase in future traffic noise levels at intersections. The maximum cumulative roadway noise increase would be 1.7 dBA CNEL and would occur along Mentor Avenue between Colorado Boulevard and East Green Street. Mobile noise generated by the proposed project would not cause the ambient noise level measured at the property line of the affected uses to increase by 3 dBA CNEL to or within the "normally unacceptable" or "clearly unacceptable" category (**Table 4-3**) or any 5-dBA or more increase in noise level. The proposed project would not contribute to a cumulative considerable impact.

TABLE 4-10: ESTIMATED CUMULATIVE MOBILE SOURCE NOISE LEVELS				
	Estim	Estimated dBA, CNEL /b/		
Roadway Segment	Existing	Project	Cumulative Impact	
Colorado Boulevard between Lake Avenue and North Mentor Avenue	67.8	69.0	1.2	
Mentor Avenue Between Colorado Boulevard and Walnut Street	61.1	62.3	1.2	
Colorado Boulevard between North Mentor Avenue and North Catalina Avenue	67.9	68.9	1.0	
Mentor Avenue Between Colorado Boulevard and East Green Street	63.3	65.0	1.7	
Lake Avenue Between Colorado Boulevard and East Green Street SOURCE: TAHA, 2010.	70.2	71.1	0.9	

The predominant vibration source near the project site is heavy trucks traveling on the local roadways. Neither the proposed project nor related projects would substantially increase heavy-duty vehicle traffic near the project site and would not cause a substantial increase in heavy-duty trucks on local roadways. The proposed project would not add to a cumulative vibration impact.

4.6 ALTERNATIVES TO THE PROPOSED PROJECT

4.6.1 Alternative 1 – No Project/Retain Existing Conditions

This alternative is required by Section 15126.6(e) of the CEQA Guidelines and assumes that the proposed project is not developed on the project site and that the site, including the existing bank, existing retail/commercial uses, and the vacant hotel structure are retained for ongoing/future use and occupancy. However, rehabilitation/re-occupancy of the former hotel is considered a possible, if not likely scenario that could occur under No Project conditions as well. Future longer-term development opportunities would also remain open for the entire property.

Construction

Noise. Increased noise levels associated with new construction would not occur under Alternative 1. In the event of rehabilitation of the former hotel, some noise from construction equipment would occur (associated with finishing, exterior improvements, renovations, etc.), but such noise would be substantially less than with new construction under the proposed project, especially with elimination of excavation and pile driving activities. In any instance, as with the proposed project, general construction equipment noise levels would not exceed the 85-dBA at 100 feet significance threshold, however, the less-than-significant noise impact of the project would be substantially reduced or eliminated with the No Project/Retain Existing Conditions Alternative.

Vibration. Increased vibration levels associated with new construction would not occur under Alternative 1. Interior and exterior façade improvements to the former Constance Hotel would not generate perceptible vibration levels, especially with elimination of excavation and pile driving activities. The less-than-significant noise impact of the project would be eliminated with the No Project/Retain Existing Conditions Alternative.

Operations

Vehicular Noise. In the event that the former hotel structure is re-occupied similar to the uses proposed for the project, then impacts would be comparable to those identified for Phase 1 of the proposed project. As shown in **Table 4-8**, the greatest project-related noise increase after the completion of Phase 1 would be 0.6 dBA CNEL. Mobile noise generated by the proposed project would not cause the ambient noise level measured at the property line of the affected uses to increase by 3 dBA CNEL to or within the "normally unacceptable" or "clearly unacceptable" category (**Table 4-3**) or any 5-dBA or more increase in noise level. Similar to the proposed project, Alternative 1 would result in a less-than-significant mobile noise impact.

Stationary Noise. Alternative 1 would include various pieces of equipment (e.g., air handlers, exhaust fans, and kitchen grease exhaust systems) located in the mechanical areas of the project site. The majority of these noise sources would be located within equipment enclosures and screened from view to comply with Section 9.36.090 of the PMC. The precise location of stationary equipment was not known at the time this analysis was completed. It is presumed

that equipment would be located on the southern portion of the project site, similar to the proposed project. If included, the cooling towers are presumed to be enclosed on all sides and covered with a screen in the same location as for the proposed project. Based on such a design, it was estimated that the cooling towers would create a noise level of approximately 70 dBA at 15 feet. The nearest land use would be a multi-family residences located approximately 217 feet east of the cooling tower. This residential use would experience a 0.6-dBA increase in ambient noise from noise generated by the cooling tower. This incremental increase would result in a less-than-significant impact.

Parking Noise. As with Phase 1 of the proposed project, parking would be provided off-site location. The traffic study has estimated that there would 1,294 trips to off-site valet parking. Valet services would access the structure by traveling north on Lake Avenue, East on Union Street, and South on Mentor Avenue. As shown in **Table 4-8**, mobile noise would result in a maximum mobile noise increase of 1.1 dBA along these roadway segments. Similar to the proposed project, Alternative 1 would result in a less-than-significant parking noise impact.

Loading Activity and Delivery Truck Noise. Alternative 1 would include a loading dock on the Westside of the hotel. The loading dock would not be in the direct line-of-sight of sensitive receptors and loading activity would not increase ambient noise level by more than 5 dBA at sensitive receptors. Similar to the proposed project, Alternative 1 loading activity would result in a less-than-significant impact.

Vibration. Increased vibration levels associated with operational activity would not occur under Alternative 1. Operation of the former Constance Hotel would not generate perceptible vibration levels as there would not be substantial sources of mechanical vibration. Similar to the proposed project, operational vibration would result in a less-than-significant impact.

4.6.2 Alternative 2 – Proposed Project Without Height Averaging

While the proposed project conforms to the existing CD-5-Central District Zone, and all requested uses and density are similarly permitted, approval of Height Averaging for the new office building as part of the City of Pasadena Design Commission Concept and Final Design is required for the current design. This alternative evaluates how the current design could differ if Height Averaging was not applied. The alternative assumes the same project program as proposed, but would shift massing of the office building to conform to a maximum 75-foot height, without using averaging across the site to attain an average 75-foot height. Proposed phasing would not change with this alternative.

Construction

Noise. Increased noise levels associated with new construction would be comparable to the proposed project as there would be no overall change in program scope or general construction schedule/activities. Construction activities during demolition, ground clearing, excavation, and foundation, structural and finishing stages would not be expected to generate noise levels that exceed the 85-dBA at 100 feet significance threshold. While the highest construction noise levels that would be experienced with the proposed project would occur at the multi-family residences directly east of the project site, across Mentor Avenue, and Options B and C would extend massing (and new construction) slightly closer to the east, noise levels would still be expected to be substantially below the significance threshold of 85 dBA at 100 feet. Consequently, the impacts of the alternative from construction noise are considered to be greater than the proposed project, but still well below a level of significance. Any potential pile

driving effects from the proposed project would be similarly comparable with presumed application of caisson drilling, rather than pile driving, as an associated mitigation.

Vibration. Increased vibration levels associated with new construction would be comparable to the proposed project as there would be no overall change in program scope or general construction schedule/activities. Mitigation Measures **N4** through **N6** would ensure that vibration-induced building damage is recorded and repaired, and construction vibration would result in a less-than-significant impact.

Operations

Vehicular Noise. Alternative 2 would generate the same number of peak hour and daily trips as the proposed project (regardless of option). **Table 4-8** shows mobile noise levels after each phase of development. The greatest noise increase after the completion of Phase 1 would be 0.6 dBA CNEL, after the completion of Phase 2 would be 0.5 dBA CNEL, and after the completion of Phase 3 would be 1.1 dBA CNEL. All three noise levels for each of the three phases would occur along Mentor Avenue between Colorado Boulevard and East Green Street.

Mobile noise generated by Alternative 2 would not cause the ambient noise level measured at the property line of the affected uses to increase by 3 dBA CNEL to or within the "normally unacceptable" or "clearly unacceptable" category (**Table 4-3**) or any 5-dBA or more increase in noise level. Similar to the proposed project, Alternative 2 would result in a less-than-significant mobile noise impact.

Stationary Noise. Alternative 2 would include various pieces of equipment (e.g., air handlers, exhaust fans, kitchen grease exhaust systems, and pool equipment) located in the mechanical areas of the project site. Equipment would generally be located in similar locations as under the proposed project. The majority of these noise sources would be located within equipment enclosures and screened from view to comply with Section 9.36.090 of the PMC. The precise location of stationary equipment was not known at the time this analysis was completed. It is presumed that equipment would be located on the southern portion of the project site, similar to the proposed project. The cooling towers are presumed to be enclosed on all sides and covered with a screen in the same location as for the proposed project. Based on such a design, it was estimated that the cooling towers would create a noise level of approximately 70 dBA at 15 feet. The nearest land use would be a multi-family residences located approximately 217 feet east of the cooling tower. This residential use would experience a 0.6-dBA increase in ambient noise from noise generated by the cooling tower. This incremental increase would result in a less-than-significant impact.

The specific location of other stationary noise sources was not known at the time of this analysis. The sources would generally be located central to the project site and away from sensitive receptors. Proposed development would typically shield mechanical equipment from off-site land uses and all mechanical equipment would comply with the regulations set forth in the Municipal Code. Similar to the proposed project, Alternative 2 stationary noise would result in a less-than-significant impact.

Outdoor Activity Noise. Alternative 2 would include a rooftop pool on the southeastern portion of the project site. The pool area would be located approximately 75 feet from the multi-family residences on Mentor Avenue. The crowd noise levels were modeled at 75 dBA at a reference distance of ten feet, which is typical for outdoor entertainment areas of this type. The pool area would include a standard glass safety wall that would attenuate noise levels by at least five dBA.

The pool area would generate an exterior noise level of 54.5 dBA at the multi-family residences. This would increase the lower of the two monitored ambient noise levels by approximately 1.2 dBA. This incremental increase would not be audible, and the pool area would result in a less-than-significant impact.

Outdoor restaurant space would still be developed, but the terrace area would likely be reduced depending on which option is pursued. Regardless, a seating area would likely be central to the project site and generally shielded from existing noise-sensitive land uses by proposed buildings. The restaurant seating would generate a similar noise level as the pool area. Based on location, the restaurant seating noise levels would be less than the pool area noise levels presented above at sensitive receptors, and would result in a less-than-significant impact.

Similar to the proposed project, Alternative 2 outdoor activity noise would result in a less-thansignificant impact.

Parking Noise. Alternative 2 parking activity would be identical to proposed project parking activity. Phase 1 would need to find temporary alternative sites to accommodate its parking needs during construction of the Phase 2 parking structure. Parking for Phase 1 would be provided by a valet service utilizing a structure at 2 North Lake Avenue. The traffic study has estimated that there would 1,294 trips to off-site valet parking. Valet services would access the structure by traveling north on Lake Avenue, East on Union Street, and South on Mentor Avenue. As shown in **Table 4-8**, mobile noise would result in a maximum mobile noise increase of 1.1 dBA along these roadway segments. This increase would result in a less-than-significant impact.

Phase 2 would include 225 parking spaces in a subterranean parking garage and 12 at-grade spaces along the southwestern portion of the project site. Both parking lots would be accessed via driveways along Lake Avenue and Mentor Avenue. Parking access would be located approximately 65 feet from the multi-family residences to the east of the project site. Automobile parking activity typically generates a noise level of approximately 58.1 dBA L_{eq} at 50 feet (e.g., tire noise, engine runups and door slams).³⁷

The highest ambient noise increase due to parking activity noise would occur at the multi-family residences along Mentor Avenue, located approximately 65 feet east of the project boundary. The nearest parking activity noise would occur at the surface level of the parking structure, approximately 65 feet from this residential use. This residential use would experience a 1.6-dBA increase in ambient noise from noise generated at the parking structure. This would not exceed the 5-dBA threshold for operational noise. All other nearby sensitive uses would experience ambient noise level increases below the 5-dBA threshold from parking activity noise. Parking activity noise would result in a significant impact without mitigation.

Phase 3 construction would complete the subterranean parking garage. Subterranean parking noise would be inaudible at sensitive receptors.

Similar to the proposed project, Alternative 2 parking noise would result in a less-than-significant impact.

³⁷The reference parking noise level is based on a series of noise measurements completed 50 feet from vehicles accessing a multi-level parking structure.

Loading Activity and Delivery Truck Noise. Alternative 2 would include one loading dock for delivery trucks located in the rear of the buildings near the south side of the project site. Noise levels from medium-duty trucks accessing the project site would range from 71 to 79 dBA L_{eq} at 50 feet.³⁸ Back-up safety alarms would generate a single event noise level of approximately 79 dBA at 50 feet.³⁹

Delivery trucks would enter the project site along Lake Avenue, and would park in a loading dock at the back of the new building directly west of the hotel. The loading dock would be enclosed on three sides by the walls of surrounding buildings (to the west, north, and east), and would be completely screened from the nearest sensitive receptor – the multi-family residences to the east along Mentor Avenue. Trucks would back into the loading area such that unloading/loading would occur to the behind the hotel, or would be otherwise obscured or screened from sensitive receptors by intervening buildings and perimeter walls. Loading activity would not increase ambient noise level by more than 5 dBA at sensitive receptors, and would result in a less-than-significant impact.

Similar to the proposed project, Alternative 2 loading dock noise would result in a less-than-significant impact.

Vibration. Alternative 2 would not include significant stationary sources of ground-borne vibration, such as heavy equipment operations. Operational ground-borne vibration in the project vicinity would be generated by vehicular travel on the local roadways. However, similar to existing conditions, project-related traffic vibration levels would not be perceptible by sensitive receptors. Similar to the proposed project, operational vibration would result in a less-than-significant impact.

4.6.3 Alternative 3 – Reduce New Development – Hotel and Residential Options

This alternative would reduce total development (converted and new) to approximately 90 percent of that proposed by the project while still converting the former Constance Hotel structure to the proposed hotel use (156 rooms converted and new) or with 81 multi-family residential units (converted and new). Existing retail space along Colorado Boulevard would also be retained and renovated, with ground floor retail also provided in the former Constance Hotel if converted to residential uses. The proposed office building and associated Phase 2 and 3 restaurant and retail space of approximately 196,000 square feet would be reduced to approximately 154,000 square feet. Total site development and reuse of approximately 261,000 square feet would be reduced to approximately 235,000 square feet. A new parking structure would be built, but unlike the proposed project, it would include above grade parking in addition to on grade and subterranean parking, as well as provision of limited shared parking with 2 North Lake across Colorado Boulevard. A secondary option to reduce project density could be accomplished by converting the former Constance Hotel structure to 136 hotel rooms as proposed by Phase 1 of the current project program, but similarly reducing other uses within the site as proposed by the alternative. Both options would achieve programs that are approximately 90 percent the density of the currently proposed project.

³⁸California Department of Transportation, *Technical Noise Supplement*, October 1998.

³⁹The back-up safety alarm noise level was based on regulations set forth b the Occupational Safety and Health Administration.

Construction

Noise. Increased noise levels associated with new construction would be comparable to the proposed project on a peak day basis as general construction needs and sources would not change substantially. Construction activities during demolition, ground clearing, excavation, and foundation, structural and finishing stages would not be expected to generate noise levels that exceed the 85-dBA at 100 feet significance threshold. While the highest construction noise levels that would be experienced with the proposed project would occur at the multi-family residences directly east of the project site, across Mentor Avenue, noise sources from construction activities in the middle of the site along Colorado Boulevard would be fewer, given rehabilitation rather than new construction in this part of the site. As with the proposed project, noise levels would still be expected to be substantially below the significance threshold of 85 dBA at 100 feet. Nonetheless, overall construction schedule and peak day activities are expected to be less, with less new construction and excavation. Consequently, the impacts of the alternative from construction noise are considered to be reduced compared to the proposed Any potential pile driving effects from the proposed project would be similarly comparable with presumed application of caisson drilling, rather than pile driving, as an associated mitigation.

Vibration. Increased vibration levels associated with new construction would be comparable to the proposed project as the construction footprint would be similar. Mitigation Measures **N4** through **N6** would ensure that vibration-induced building damage is recorded and repaired, and construction vibration would result in a less-than-significant impact.

Operations

Vehicular Noise. Alternative 3 would generate 2,623 less trips than the proposed project. As shown in **Table 4-11**, the greatest noise increase after the completion of Phase 1 would be 0.3 dBA CNEL and would occur along Mentor Avenue between Colorado Boulevard and East Green Street. After the completion of Phase 2 the greatest noise increase would be 0.7 dBA CNEL along Mentor Avenue between Colorado Boulevard and Walnut Street. Mobile noise generated by Alternative 3 would not cause the ambient noise level measured at the property line of the affected uses to increase by 3 dBA CNEL to or within the "normally unacceptable" or "clearly unacceptable" category (**Table 4-3**) or any 5-dBA or more increase in noise level. Mobile source operational noise impacts from Alternative 3 are considered to be generally comparable to slightly reduced, and would remain less than significant.

Stationary Noise. Alternative 3 would include various pieces of equipment (e.g., air handlers, exhaust fans, kitchen grease exhaust systems, and pool equipment) located in the mechanical areas of the project site. Equipment would generally be located in similar locations as under the proposed project. The majority of these noise sources would be located within equipment enclosures and screened from view to comply with Section 9.36.090 of the PMC. The precise location of stationary equipment was not known at the time this analysis was completed. It is presumed that equipment would be located on the southern portion of the project site, similar to the proposed project. If included, the cooling towers are presumed to be enclosed on all sides and covered with a screen in the same location as for the proposed project. Based on such a design, it was estimated that the cooling towers would create a noise level of approximately 70 dBA at 15 feet. The nearest land use would be a multi-family residences located at least 217 feet east of the cooling tower. This residential use would experience a 0.6-dBA increase in ambient noise from noise generated by the cooling tower. This incremental increase would result in a less-than-significant impact.

TABLE 4-11: ESTIMATED MOBILE SOURCE NOISE LEVELS – ALTERNATIVE 3				
	Estimated dBA, CNEL			
	No		Project	
Roadway Segment	Project	Project	Impact	
Phase 1				
Colorado Boulevard between Lake Avenue and North Mentor Avenue	69.9	70.0	0.1	
Mentor Avenue Between Colorado Boulevard and Walnut Street	61.4	61.5	0.1	
Colorado Boulevard between North Mentor Avenue and North Catalina				
Avenue	69.9	70.0	0.1	
Mentor Avenue Between Colorado Boulevard and East Green Street	63.7	64.0	0.3	
Lake Avenue Between Colorado Boulevard and East Green Street	70.7	70.7	0.0	
Phase 2				
Colorado Boulevard between Lake Avenue and North Mentor Avenue	70.0	70.2	0.2	
Mentor Avenue Between Colorado Boulevard and Walnut Street	61.3	62.0	0.7	
Colorado Boulevard between North Mentor Avenue and North Catalina				
Avenue	70.0	70.0	0.0	
Mentor Avenue Between Colorado Boulevard and East Green Street	63.8	64.4	0.6	
Lake Avenue Between Colorado Boulevard and East Green Street	70.8	70.9	0.1	
SOURCE: TAHA, 2010.	·	1		

The specific location of other stationary noise sources was not known at the time of this analysis. The sources would generally be located central to the project site and away from sensitive receptors. Proposed development would typically shield mechanical equipment from off-site land uses and all mechanical equipment would comply with the regulations set forth in the Municipal Code. Similar to the proposed project, Alternative 3 stationary noise would result in a less-than-significant impact.

Outdoor Activity Noise. Alternative 3 would include a rooftop pool on the southeastern portion of the project site. The pool area would be located approximately 75 feet from the multi-family residences on Mentor Avenue. The crowd noise levels were modeled at 75 dBA at a reference distance of ten feet, which is typical for outdoor entertainment areas of this type. The pool area would include a standard glass safety wall that would attenuate noise levels by at least five dBA. The pool area would generate an exterior noise level of 54.5 dBA at the multi-family residences. This would increase the lower of the two monitored ambient noise levels by approximately 1.2 dBA. This incremental increase would not be audible, and the pool area would result in a less-than-significant impact.

Similar to the proposed project, Alternative 3 outdoor activity noise would result in a less-than-significant impact.

Parking Noise. Alternative 3 would include a new parking structure. Unlike the proposed project, the parking structure would include above grade parking in addition to on grade and subterranean parking (two subterranean levels and three structured levels). As with the proposed project, the alternative would provide limited shared parking with 2 North Lake across Colorado Boulevard (approximately 90 spaces).

The parking structure would be located near the center of the project site. The structure would be shorter than the adjacent hotel and proposed residential use, and the line-of-sight would be

completely blocked to sensitive receptors. As such, on-site parking noise would not be audible at the nearest sensitive receptor.

Parking for Phase 1 would be provided at a structure at 2 North Lake Avenue. The traffic study has estimated that there would 183 trips to self parking. This would be considerably less than the 1,294 valet trips estimated under the proposed project. Similar to the proposed project, Alternative 3 parking noise would result in a less-than-significant impact.

Loading Activity and Delivery Truck Noise. Alternative 3 would include one loading dock for delivery trucks located in the rear of the buildings near the south side of the project site. Noise levels from medium-duty trucks accessing the project site would range from 71 to 79 dBA L_{eq} at 50 feet. Back-up safety alarms would generate a single event noise level of approximately 79 dBA at 50 feet. At 10 feet.

Delivery trucks would enter the project site along Lake Avenue, and would park in a loading dock directly west of the hotel. The loading dock would be enclosed on three sides by the walls of surrounding buildings (to the west, north, and east), and would be completely screened from the nearest sensitive receptor – the multi-family residences to the east along Mentor Avenue. Trucks would back into the loading area such that unloading/loading would occur to the behind the hotel, or would be otherwise obscured or screened from sensitive receptors by intervening buildings and perimeter walls. Loading activity would not increase ambient noise level by more than 5 dBA at sensitive receptors, and would result in a less-than-significant impact.

Similar to the proposed project, Alternative 3 loading dock noise would result in a less-thansignificant impact.

Vibration. Alternative 3 would not include significant stationary sources of ground-borne vibration, such as heavy equipment operations. Operational ground-borne vibration in the project vicinity would be generated by vehicular travel on the local roadways. However, similar to existing conditions, project-related traffic vibration levels would not be perceptible by sensitive receptors. Similar to the proposed project, operational vibration would result in a less-than-significant impact.

4.6.4 Alternative 4 – Eliminate Traffic Impacts/Reduced Project

This alternative would reduce trip generation to a level where significantly impacted street segments would be eliminated (1,712 daily trips or less). As with Alternative 3, this alternative would have residential and hotel options for re-use of the former Constance Hotel structure in an initial project phase, but would reduce new development in subsequent phasing (two phases instead of three). Existing historical storefronts on Colorado Boulevard could also be retained with this alternative. New office, restaurant and retail space would be substantially reduced compared to the proposed project to achieve trip reductions sufficient to eliminate traffic impacts to intersections and street segments. As with the proposed project, it is presumed that some portion of parking for the alternative could be provided at 2 North Lake and that as with Alternative 3, on-site parking could be provided by a parking structure with some subterranean levels. Trip generation reductions would be achieved by adjusting project uses across the

⁴⁰California Department of Transportation, *Technical Noise Supplement*, October 1998.

⁴¹The back-up safety alarm noise level was based on regulations set forth b the Occupational Safety and Health Administration.

board. Total site development and reuse of approximately 255,000 square feet would be reduced to approximately 154,000 square feet with the hotel option and 174,000 square feet with the residential option.

Construction

Noise. Increased noise levels associated with new construction would be comparable to the proposed project on a peak day basis as general construction needs and sources would not change substantially. Construction activities during demolition, ground clearing, excavation, and foundation, structural and finishing stages would not be expected to generate noise levels that exceed the 85-dBA at 100 feet significance threshold. While the highest construction noise levels that would be experienced with the proposed project would occur at the multi-family residences directly east of the project site, across Mentor Avenue, noise sources from construction activities in the middle of the site along Colorado Boulevard would be fewer, given rehabilitation rather than new construction in this part of the site. As with the proposed project, noise levels would still be expected to be substantially below the significance threshold of 85 dBA at 100 feet. Nonetheless, overall construction schedule and peak day activities are expected to be less, with less new construction and excavation. Consequently, the impacts of the alternative from construction noise are considered to be reduced compared to the proposed Any potential pile driving effects from the proposed project would be similarly comparable with presumed application of caisson drilling, rather than pile driving, as an associated mitigation.

Vibration. Increased vibration levels associated with new construction would be comparable to the proposed project as the construction footprint would be similar. Mitigation Measures **N4** through **N6** would ensure that vibration-induced building damage is recorded and repaired, and construction vibration would result in a less-than-significant impact.

Operations

Vehicular Noise. Alternative 4 would generate 3,202 less trips than the proposed project. As shown in **Table 4-12**, the greatest noise increase would be 0.7 dBA CNEL along Mentor Avenue between Colorado Boulevard and East Green Street. Mobile noise generated by Alternative 4 would not cause the ambient noise level measured at the property line of the affected uses to increase by 3 dBA CNEL to or within the "normally unacceptable" or "clearly unacceptable" category (**Table 4-3**) or any 5-dBA or more increase in noise level. Mobile source operational noise impacts from Alternative 4 are considered to be generally comparable to slightly reduced, and would remain less than significant.

TABLE 4-12: ESTIMATED MOBILE SOURCE NOISE LEVELS – ALTERNATIVE 4				
	Estima	Estimated dBA, CNEL		
Roadway Segment	No Project	Project	Project Impact	
Colorado Boulevard between Lake Avenue and North Mentor Avenue	70.0	70.2	0.2	
Mentor Avenue Between Colorado Boulevard and Walnut Street	61.3	61.9	0.6	
Colorado Boulevard between North Mentor Avenue and North Catalina Avenue	70.0	70.1	0.1	
Mentor Avenue Between Colorado Boulevard and East Green Street	63.8	64.5	0.7	
Lake Avenue Between Colorado Boulevard and East Green Street source: TAHA, 2010.	70.8	70.9	0.1	

Stationary Noise. Alternative 4 would include various pieces of equipment (e.g., air handlers, exhaust fans, kitchen grease exhaust systems, and pool equipment) located in the mechanical areas of the project site. Equipment would generally be located in similar locations as under the proposed project. The majority of these noise sources would be located within equipment enclosures and screened from view to comply with Section 9.36.090 of the PMC. The precise location of stationary equipment was not known at the time this analysis was completed. It is presumed that equipment would be located on the southern portion of the project site, similar to the proposed project. If included, the cooling towers are presumed to be enclosed on all sides and covered with a screen in the same location as for the proposed project. Based on such a design, it was estimated that the cooling towers would create a noise level of approximately 70 dBA at 15 feet. The nearest land use would be a multi-family residences located at least 217 feet east of the cooling tower. This residential use would experience a 0.6-dBA increase in ambient noise from noise generated by the cooling tower. This incremental increase would result in a less-than-significant impact.

The specific location of other stationary noise sources was not known at the time of this analysis. The sources would generally be located central to the project site and away from sensitive receptors. Proposed development would typically shield mechanical equipment from off-site land uses and all mechanical equipment would comply with the regulations set forth in the Municipal Code. Similar to the proposed project, Alternative 4 stationary noise would result in a less-than-significant impact.

Outdoor Activity Noise. Alternative 4 would include a rooftop pool on the southeastern portion of the project site. The pool area would be located approximately 75 feet from the multi-family residences on Mentor Avenue. The crowd noise levels were modeled at 75 dBA at a reference distance of ten feet, which is typical for outdoor entertainment areas of this type. The pool area would include a standard glass safety wall that would attenuate noise levels by at least five dBA. The pool area would generate an exterior noise level of 54.5 dBA at the multi-family residences. This would increase the lower of the two monitored ambient noise levels by approximately 1.2 dBA. This incremental increase would not be audible, and the pool area noise would result in a less-than-significant impact.

Similar to the proposed project, Alternative 4 outdoor activity noise would result in a less-than-significant impact.

Parking Noise. Alternative 4 would include a new parking structure. Unlike the proposed project, the parking structure would include above grade parking in addition to on grade and subterranean parking (two subterranean levels and three structured levels). As with the proposed project, the alternative would provide limited shared parking with 2 North Lake across Colorado Boulevard.

The parking structure would be located near the center of the project site. The structure would be shorter than the adjacent hotel and proposed residential use, and the line-of-sight would be completely blocked to sensitive receptors. As such, on-site parking noise would not be audible at the nearest sensitive receptor.

Parking for Phase 1 would be provided at a structure at 2 North Lake Avenue. The total number of trips was not estimated. The trip rate would be less than the 1,294 valet trips estimated under the proposed project based on the amount of development. Similar to the proposed project, Alternative 4 parking noise would result in a less-than-significant impact.

Loading Activity and Delivery Truck Noise. Alternative 4 would include one loading dock for delivery trucks located in the rear of the buildings near the south side of the project site. Noise levels from medium-duty trucks accessing the project site would range from 71 to 79 dBA L_{eq} at 50 feet. Back-up safety alarms would generate a single event noise level of approximately 79 dBA at 50 feet. Back-up safety alarms would generate a single event noise level of approximately 79 dBA at 50 feet.

Delivery trucks would enter the project site along Lake Avenue, and would park in a loading dock directly west of the hotel. The loading dock would be enclosed on three sides by the walls of surrounding buildings (to the west, north, and east), and would be completely screened from the nearest sensitive receptor – the multi-family residences to the east along Mentor Avenue. Trucks would back into the loading area such that unloading/loading would occur to the behind the hotel, or would be otherwise obscured or screened from sensitive receptors by intervening buildings and perimeter walls. Loading activity would not increase ambient noise level by more than 5 dBA at sensitive receptors, and would result in a less-than-significant impact.

Similar to the proposed project, Alternative 4 loading dock noise would result in a less-thansignificant impact.

Vibration. Alternative 4 would not include significant stationary sources of ground-borne vibration, such as heavy equipment operations. Operational ground-borne vibration in the project vicinity would be generated by vehicular travel on the local roadways. However, similar to existing conditions, project-related traffic vibration levels would not be perceptible by sensitive receptors. Similar to the proposed project, operational vibration would result in a less-than-significant impact.

⁴²California Department of Transportation, *Technical Noise Supplement*, October 1998.

⁴³The back-up safety alarm noise level was based on regulations set forth b the Occupational Safety and Health Administration.