IV.B AIR QUALITY

1. INTRODUCTION

This section of the Draft Environmental Impact Report (DEIR) evaluates potential air quality impacts associated with construction and operation of the proposed project. Air pollutants of concern include volatile organic compounds (VOC), oxides of nitrogen (NOx), carbon monoxide (CO), respirable particulate matter (PM\textsubscript{10}), and fine particulate matter (PM\textsubscript{2.5}).

As analyzed and discussed below, implementation of the proposed project would result in significant air quality impacts for construction emissions of VOC, NOx, PM\textsubscript{10}, and PM\textsubscript{2.5}. In addition, NOx emissions during construction could cause exceedances of the California ambient air quality standard for nitrogen dioxide. Implementation of the project-related mitigation measures would not reduce potentially significant impacts to less than significant levels. Operational emissions were found to be less than significant.

To determine cumulative impacts, the proposed project average daily trip (ADT) rate was determined using data presented in the traffic report. This value was divided by the expected ADT rate of Los Angeles County at the time of project build out to obtain a ratio of project ADT to regional ADT. Similarly, the proposed project population was compared to the expected population of Los Angeles County at the time of project build out to obtain a ratio of project population to regional population. The ADT ratio was compared to the population ratio to determine cumulative impacts. Since the ADT ratio is less than the population ratio at project build out, the cumulative impacts are less than significant based on this criterion. However, as the Basin is already designated as nonattainment for ozone (VOC and NOx are ozone precursors), PM\textsubscript{10}, and PM\textsubscript{2.5}, any increases in these emissions by the project are considered significant and unavoidable cumulative air quality impacts.

2. METHODOLOGY

The methodology used to evaluate the air quality impacts associated with construction and operation of the proposed project is based on the South Coast Air Quality Management District’s (SCAQMD) California Environmental Quality Act (CEQA) Air Quality Handbook, the URBEMIS2002 emissions estimation model for land use development projects, and information provided in the Software Users’ Guide [for] URBEMIS2002 for Windows with Enhanced Construction Module (May 2002).\textsuperscript{1} Emission factors from the

SCAQMD were used to generate emissions from construction worker vehicles,\(^2\) heavy-duty haul trucks,\(^3\) and heavy-duty off-road construction equipment.\(^4\) Estimates of PM\(_{2.5}\) emissions were based on the PM\(_{2.5}\) fractions of PM\(_{10}\) from the SCAQMD's *Methodology to Calculate Particulate Matter (PM) 2.5 and PM 2.5 Significance Thresholds*.\(^5\) The emissions are also estimated based on information and estimated activity levels provided by the applicant. Some elements of this analysis are based on data provided in other sections of this DEIR; for example, trip generation rates and a CO hotspots analysis are based on the traffic impact analysis prepared for this project and included in Appendix IV.B of the EIR.

3. **EXISTING CONDITIONS**

a. **Regional Climate**

Air quality is affected by both the rate and location of pollutant emissions. It is also heavily influenced by meteorological conditions that affect the movement and dispersal of pollutants. Atmospheric conditions such as wind speed, wind direction, and air temperature gradients, along with local topography, strongly affect the relationship between pollutant emissions and air quality.

The proposed project lies within the South Coast Air Basin (Basin). The Basin consists of all or portions of four counties, including all of Orange County, most of Los Angeles County, and the western portions of San Bernardino and Riverside Counties. The region is dominated by the nearly permanent subtropical high pressure system of the North Pacific Ocean, which, when coupled with the influx of relatively cool ocean air, leads to frequent temperature inversion layers. An inversion layer exists when atmospheric temperatures increase with height in the troposphere, near the surface of the earth, hindering vertical mixing of the lower atmosphere.

The regional climate significantly influences the air quality in the Basin. The atmospheric pollution potential of the area is largely dependent on temperature, winds, humidity, precipitation, atmospheric stability, solar radiation, and topography. The combination of low wind speeds and the presence of an

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5 South Coast Air Quality Management District. *Final Methodology to Calculate Particulate Matter (PM) 2.5 and PM 2.5 Significance Thresholds*. October 2006.
inversion layer produce the greatest concentration of air pollutants. Smog potential is greatly reduced on days without inversion layers or on days with winds averaging over 15 miles per hour (mph). The Basin is frequently subjected to an inversion layer that traps air pollutants. Additionally, temperature has an important influence on Basin wind flow, pollutant dispersion, vertical mixing, and photochemistry (i.e., ozone formation).

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

Although the climate of the Basin can be characterized as semi-arid, the air near the land surface is quite moist on most days because of the presence of a marine layer. This shallow layer of sea air is an important modifier of Basin climate. Humidity restricts visibility in the Basin, and the conversion of sulfur dioxide (SO₂) to sulfates is heightened in air with high relative humidity. The marine layer is an excellent environment for that conversion process, especially during the spring and summer months. The annual average relative humidity is 71 percent along the coast and 59 percent inland. Because the ocean effect is dominant, periods of heavy early morning fog are frequent and low stratus clouds are a characteristic feature. These effects decrease with distance from the coast.

More than 90 percent of the Basin’s rainfall occurs from November through April. Annual average rainfall varies from approximately 9 inches in Riverside to 14 inches in downtown Los Angeles. Monthly and yearly rainfall totals are extremely variable. Summer rainfall usually consists of widely scattered thundershowers near the coast and slightly heavier shower activity in the eastern portion of the region and near the mountains.

b. Existing Air Quality

Regional Air Quality

The determination of whether a region’s air quality is healthful or unhealthful is determined by comparing contaminant levels in ambient air samples to national and state standards. Health-based air quality standards have been established by California and the federal government for the following criteria air pollutants: ozone (O₃), CO, nitrogen dioxide (NO₂), SO₂, PM₁₀, PM₂.₅, and lead. These

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standards were established to protect sensitive receptors with a margin of safety from adverse health impacts due to exposure to air pollution. The California standards are more stringent than the federal standards and in the case of PM\textsubscript{10} and SO\textsubscript{2}, much more stringent. California has also established standards for sulfates, visibility reducing particles, hydrogen sulfide, and vinyl chloride. The state and national ambient air quality standards for each of the monitored pollutants and their effects on health are summarized in **Table IV.B-1, Ambient Air Quality Standards.**

Air quality of a region is considered to be in attainment of the state standards if the measured ambient air pollutant levels for O\textsubscript{3}, CO, SO\textsubscript{2} (one- and 24-hour), NO\textsubscript{2}, PM\textsubscript{10}, PM\textsubscript{2.5}, and visibility reducing particles are not exceeded, and all other standards are not equaled or exceeded at any time in any consecutive three-year period. The National Ambient Air Quality Standards (NAAQS) (other than O\textsubscript{3}, PM\textsubscript{10}, PM\textsubscript{2.5} and those based on annual averages or arithmetic mean) are not to be exceeded more than once per year. The NAAQS for O\textsubscript{3}, PM\textsubscript{10}, and PM\textsubscript{2.5} are based on statistical calculations over 1- to 3-year periods, depending on the pollutant.

<table>
<thead>
<tr>
<th>Air Pollutant</th>
<th>State Standard</th>
<th>Federal Primary Standard</th>
<th>Most Relevant Health Effects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ozone</td>
<td>0.070 ppm, 8-hr. avg. 0.09 ppm, 1-hr. avg.</td>
<td>0.08 ppm, 8-hr avg. (3-year average of annual 4th-highest daily maximum)</td>
<td>(a) Short-term exposures: (1) Pulmonary function decrements and localized lung edema in humans and animals; and (2) Risk to public health implied by alterations in pulmonary morphology and host defense in animals; (b) Long-term exposures: Risk to public health implied by altered connective tissue metabolism and altered pulmonary morphology in animals after long-term exposures and pulmonary function decrements in chronically exposed humans; (c) Vegetation damage; and (d) Property damage</td>
</tr>
<tr>
<td>Carbon Monoxide</td>
<td>9.0 ppm, 8-hr avg. 20 ppm, 1-hr avg.</td>
<td>9 ppm, 8-hr avg. 35 ppm, 1-hr avg.</td>
<td>(a) Aggravation of angina pectoris and other aspects of coronary heart disease; (b) Decreased exercise tolerance in persons with peripheral vascular disease and lung disease; (c) Impairment of central nervous system functions; and (d) Possible increased risk to fetuses</td>
</tr>
<tr>
<td>Nitrogen Dioxide</td>
<td>0.25 ppm, 1-hr avg.</td>
<td>0.053 ppm, annual arithmetic mean</td>
<td>(a) Potential to aggravate chronic respiratory disease and respiratory symptoms in sensitive groups; (b) Risk to public health implied by pulmonary and extra-pulmonary biochemical and cellular changes and pulmonary structural changes; and (c) Contribution to atmospheric discoloration</td>
</tr>
<tr>
<td>Air Pollutant</td>
<td>State Standard</td>
<td>Federal Primary Standard</td>
<td>Most Relevant Health Effects</td>
</tr>
<tr>
<td>---------------------</td>
<td>---------------------</td>
<td>--------------------------</td>
<td>---------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Sulfur Dioxide</td>
<td>0.04 ppm, 24-hr avg.</td>
<td>0.030 ppm, annual</td>
<td>(a) Bronchoconstriction accompanied by symptoms which may include wheezing, shortness of breath and chest tightness, during exercise or physical activity in person with asthma</td>
</tr>
<tr>
<td></td>
<td>0.25 ppm, 1-hr avg.</td>
<td>arithmetic mean</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.14 ppm, 24-hr avg.</td>
<td></td>
</tr>
<tr>
<td>Respirable Particulate Matter (PM₁₀)</td>
<td>20 µg/m³, annual</td>
<td>50 µg/m³, annual</td>
<td>(a) Excess deaths from short-term exposures and exacerbation of symptoms in sensitive patients with respiratory disease; and (b) Excess seasonal declines in pulmonary function, especially in children</td>
</tr>
<tr>
<td>Fine Particulate Matter (PM₂.₅)</td>
<td>12 µg/m³, annual</td>
<td>15 µg/m³, annual</td>
<td>(a) Increased hospital admissions and emergency room visits for heart and lung disease; (b) Increased respiratory symptoms and disease; and (c) Decrease lung functions and premature death</td>
</tr>
<tr>
<td></td>
<td>arithmetic mean</td>
<td>arithmetic mean</td>
<td>(3-year average)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>35 µg/m³, 24-hr avg.</td>
<td>(3-year average of 98th percentile)</td>
</tr>
<tr>
<td>Sulfates</td>
<td>25 µg/m³, 24-hr avg.</td>
<td>None</td>
<td>(a) Decrease in ventilatory function; (b) Aggravation of asthmatic symptoms; (c) Aggravation of cardiopulmonary disease; (d) Vegetation damage; (e) Degradation of visibility; and (f) Property damage</td>
</tr>
<tr>
<td>Lead¹</td>
<td>1.5 µg/m³, 30-day avg</td>
<td>1.5 µg/m³, calendar quarterly average</td>
<td>(a) Increased body burden; and (b) Impairment of blood formation and nerve conduction Visibility impairment on days when relative humidity is less than 70 percent</td>
</tr>
<tr>
<td>Visibility-Reducing Particles</td>
<td>Reduction of visual range to less than 10 miles at relative humidity less than 70%, 8-hour avg. (10 AM – 6 PM)</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>Hydrogen Sulfide</td>
<td>0.03 ppm, 1-hr avg.</td>
<td>None</td>
<td>Odor annoyance</td>
</tr>
<tr>
<td>Vinyl Chloride</td>
<td>0.01 ppm, 24-hr avg.</td>
<td>None</td>
<td>Known carcinogen</td>
</tr>
</tbody>
</table>


µg/m³ = microgram per cubic meter.

ppm = parts per million by volume.

¹ The ARB has identified lead and vinyl chloride as “toxic air contaminants” with no threshold level of exposure for adverse health effects determined. These actions allow for the implementation of control measures at levels below the ambient concentrations specified for these pollutants.

The project site is located within the South Coast Air Basin (Basin), which includes all of Orange County and the non-desert portions of Los Angeles, San Bernardino, and Riverside Counties. The region is named as such because its geographical formation is that of a basin in which the surrounding mountains trap the air and its pollutants in the valleys and basins below. The Basin is affected by the pollutants generated by dense population centers, heavy vehicular traffic, and industry.
The air pollutants within the Basin are primarily generated by two categories of sources: stationary and mobile. Stationary sources are known as “point sources” which have one or more emission sources at a single facility, or “area sources” which are widely distributed and produce many small emissions. Point sources are usually associated with manufacturing and industrial uses and include sources such as refinery boilers or combustion equipment that produce electricity or process heat. Examples of area sources include residential water heaters, painting operations, lawn mowers, agricultural fields, landfills, and consumer products, such as barbecue lighter fluid or hair spray. “Mobile sources” refer to operational and evaporative emissions from motor vehicles. Mobile sources account for over 90 percent of the CO emissions, approximately 50 percent of the oxides of sulfur (SO\textsubscript{x}) emissions, over 90 percent of the NO\textsubscript{x} emissions, and over 50 percent of the VOC found within the Basin.\(^7\) Smog is formed when VOC and NO\textsubscript{x} undergo photochemical reactions in sunlight to form ozone (O\textsubscript{3}).

**Local Air Quality**

The Southern California area has been divided into a number of geographical air basins for the purpose of air quality planning. To monitor the concentrations of the criteria pollutants, the SCAQMD has divided the Basin into source receptor areas (SRAs) in which 32 air quality-monitoring stations are operated. The project site is located in the Northwest San Fernando Valley, which is designated as SRA 6 by the SCAQMD. The station that monitors SRA 6 is located in Reseda approximately 7.5 miles to the southeast of the proposed project site.\(^8\) Pollutants monitored at this station include O\textsubscript{3}, CO, NO\textsubscript{x}, and PM\textsubscript{2.5}.\(^9\) The monitored ambient concentrations of pollutants are listed in **Table IV.B-2, Ambient Air Pollutant Concentrations Registered in SRA 6**. The data are primarily taken from the Reseda monitoring station at 18330 Gault Street, which is the closest monitoring station to the project site. Data for pollutants not monitored at Reseda were substituted with the next closest monitoring station.

The monitoring data indicates that the area exceeded the state 1-hour O\textsubscript{3} standard in 2001 through 2005 and the federal 8-hour O\textsubscript{3} standard in 2001 through 2005. The area also exceeded the state PM\textsubscript{10} 24-hour standard in 2001 to 2005, but not the federal standard. Hydrogen sulfide, vinyl chloride, and visibility reducing particles were not monitored by the ARB or the SCAQMD in Los Angeles County during the period of 2001 to 2005.


\(^9\) Ibid.
### Table IV.B-2
Ambient Air Pollutant Concentrations Registered in SRA 6

<table>
<thead>
<tr>
<th>Pollutant</th>
<th>Standards</th>
<th>2001</th>
<th>2002</th>
<th>2003</th>
<th>2004</th>
<th>2005</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>WEST SAN FERNANDO VALLEY MONITORING STATION</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>OZONE (O₃)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maximum 1-hour concentration monitored (ppm)</td>
<td>0.140</td>
<td>0.152</td>
<td>0.179</td>
<td>0.131</td>
<td>0.138</td>
<td></td>
</tr>
<tr>
<td>Number of days exceeding state 1-hour standard</td>
<td>0.09 ppm</td>
<td>25</td>
<td>42</td>
<td>68</td>
<td>65</td>
<td>29</td>
</tr>
<tr>
<td>Maximum 8-hour concentration monitored (ppm)</td>
<td>0.117</td>
<td>0.122</td>
<td>0.129</td>
<td>0.116</td>
<td>0.113</td>
<td></td>
</tr>
<tr>
<td>Number of days exceeding federal 8-hour standard</td>
<td>0.08 ppm</td>
<td>7</td>
<td>27</td>
<td>49</td>
<td>29</td>
<td>12</td>
</tr>
<tr>
<td>Number of days exceeding Health Advisory</td>
<td>0.15 ppm</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td><strong>CARBON MONOXIDE (CO)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maximum 1-hour concentration monitored (ppm)</td>
<td>7</td>
<td>6</td>
<td>6</td>
<td>5</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Maximum 8-hour concentration monitored (ppm)</td>
<td>6.0</td>
<td>4.8</td>
<td>4.1</td>
<td>3.5</td>
<td>3.5</td>
<td></td>
</tr>
<tr>
<td>Number of days exceeding federal 8-hour standard</td>
<td>9 ppm</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Number of days exceeding state 8-hour standard</td>
<td>9.0 ppm</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td><strong>NITROGEN DIOXIDE (NO₂)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maximum 1-hour concentration monitored (ppm)</td>
<td>0.10</td>
<td>0.09</td>
<td>0.13</td>
<td>0.08</td>
<td>0.09</td>
<td></td>
</tr>
<tr>
<td>Number of days exceeding state standard</td>
<td>0.25 ppm</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td><strong>PARTICULATE MATTER (PM₁₀)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maximum 24-hour concentration (µg/m³)</td>
<td>62</td>
<td>61</td>
<td>72</td>
<td>54</td>
<td>55</td>
<td></td>
</tr>
<tr>
<td>Number of samples</td>
<td>61</td>
<td>60</td>
<td>61</td>
<td>60</td>
<td>60</td>
<td></td>
</tr>
<tr>
<td>Number of samples exceeding federal standard</td>
<td>150 µg/m³</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Number of samples exceeding state standard</td>
<td>50 µg/m³</td>
<td>4</td>
<td>7</td>
<td>10</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td><strong>PARTICULATE MATTER (PM₂.₅)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maximum 24-hour concentration (µg/m³)</td>
<td>71.1</td>
<td>48.8</td>
<td>47.5</td>
<td>56.2</td>
<td>39.6</td>
<td></td>
</tr>
<tr>
<td>Annual arithmetic mean (µg/m³)</td>
<td>15 µg/m³</td>
<td>18.5</td>
<td>18.9</td>
<td>16.4</td>
<td>15.6</td>
<td>13.9</td>
</tr>
<tr>
<td>Number of samples exceeding federal standard</td>
<td>65 µg/m³</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td><strong>SULFUR DIOXIDE (SO₂)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maximum 1-hr concentration (ppm)</td>
<td>0.01</td>
<td>0.01</td>
<td>0.01</td>
<td>0.02</td>
<td>0.01</td>
<td></td>
</tr>
<tr>
<td>Maximum 24-hr concentration (ppm)</td>
<td>0.004</td>
<td>0.007</td>
<td>0.005</td>
<td>0.010</td>
<td>0.006</td>
<td></td>
</tr>
<tr>
<td>Number of days exceeding state 1-hour standard</td>
<td>0.25 ppm</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Number of days exceeding state 24-hour standard</td>
<td>0.04 ppm</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Number of days exceeding federal 24-hour standard</td>
<td>0.14 ppm</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>


1. Parts by volume per million of air (ppm), micrograms per cubic meter of air (µg/m³), or annual arithmetic mean (aam).
2. Federal and state standards are for the same time period as the maximum concentration measurement unless otherwise indicated.
3. PM₁₀ is not monitored in SRA 6. Values shown are from the monitoring station in SRA 13 (Santa Clarita Valley).
4. The federal PM₂.₅ standard was revised from 65 to 35 µg/m³ in September 2006. Statistics shown are based on the 65 µg/m³ standard.
5. SO₂ is monitored not monitored in SRA 6. Values shown are from the monitoring station in SRA 7 (Burbank – West Palm Avenue).
c. Global Climate Change

**Greenhouse Effect**

*Description of the Greenhouse Effect*

Heat retention within our atmosphere is an essential process to sustain life on Earth. The natural process through which heat is retained in the troposphere is called the “greenhouse effect”. The greenhouse effect traps heat in the troposphere through a three-fold process as follows: Short-wave radiation emitted by the Sun is absorbed by the Earth; the Earth emits a portion of this energy in the form of long-wave radiation; and greenhouse gases (GHGs) in the upper atmosphere absorb this long-wave radiation and emit this long-wave radiation into space and toward the Earth. This “trapping” of the long-wave (thermal) radiation emitted back toward the Earth is the underlying process of the greenhouse effect. Without the greenhouse effect, the Earth’s average temperature would be approximately -18 degrees Celsius (°C) (0° Fahrenheit [°F]) instead of its present 14°C (57°F). The most abundant GHGs are water vapor and carbon dioxide. Many other trace gases have greater ability to absorb and re-radiate long-wave radiation; however, these gases are not as plentiful. For this reason, and to gauge the potency of GHGs, scientists have established a Global Warming Potential (GWP) for each GHG based on its ability to absorb and re-radiate long-wave radiation. The GWP of a gas is determined using carbon dioxide as the reference gas with a GWP of 1.

**Greenhouse Gases**

*Primary Greenhouse Gases*

Greenhouse gases include, but are not limited to, the following:

- Water vapor (H₂O). Although water vapor has not received the scrutiny of other GHGs, it is the primary contributor to the greenhouse effect. Water vapor and clouds contribute 66 to 85 percent of the greenhouse effect (water vapor alone contributes 36 to 66 percent). Natural processes such as evaporation from oceans and rivers and transpiration from plants contribute 90 percent and 10

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10 The troposphere is the bottom layer of the atmosphere, which varies in height from the Earth’s surface to 10 to 12 kilometers).


12 All Global Warming Potentials (GWPs) are given as 100-year GWP. Unless noted otherwise, all GWPs were obtained from the Intergovernmental Panel on Climate Change. Climate Change 1995: The Science of Climate Change – Contribution of Working Group I to the Second Assessment Report of the IPCC. Cambridge (UK): Cambridge University Press. 1996.

percent of the water vapor in our atmosphere, respectively.\textsuperscript{14} The primary human-related source of water vapor comes from fuel combustion in motor vehicles; however, this is not believed to contribute a significant amount (less than one percent) to atmospheric concentrations of water vapor.\textsuperscript{15} Therefore, the control and reduction of water vapor emissions is not within reach of human actions. The Intergovernmental Panel on Climate Change (IPCC) has not determined a GWP for water vapor.

- **Carbon dioxide (CO\textsubscript{2}).** Carbon dioxide is primarily generated by fossil fuel combustion in stationary and mobile sources. Due to the emergence of industrial facilities and mobile sources in the past 250 years, the concentration of carbon dioxide in the atmosphere has increased 35 percent.\textsuperscript{16} Carbon dioxide is the most widely emitted GHG and is the reference gas (GWP of 1) for determining GWPs for other GHGs. In 2004, 83.8 percent of California’s GHG emissions were carbon dioxide.\textsuperscript{17}

- **Methane (CH\textsubscript{4}).** Methane is emitted from biogenic sources, incomplete combustion in forest fires, landfills, manure management, and leaks in natural gas pipelines. In the United States, the top three sources of methane come from landfills, natural gas systems, and enteric fermentation.\textsuperscript{18} Methane is the primary component of natural gas, which is used for space and water heating, steam production, and power generation. The GWP of methane is 21.

- **Nitrous oxide (N\textsubscript{2}O).** Nitrous oxide is produced by both natural and human-related sources. Primary human-related sources include agricultural soil management, animal manure management, sewage treatment, mobile and stationary combustion of fossil fuel, adipic acid production, and nitric acid production. The GWP of nitrous oxide is 310.

- **Hydrofluorocarbons (HFCs).** HFCs are typically used as refrigerants for both stationary refrigeration and mobile air conditioning. The use of HFCs for cooling and foam blowing is growing as the continued phase-out of chlorofluorocarbons (CFCs) and hydrochlorofluorocarbons (HCFCs) gains momentum. The GWP of HFCs range from 140 for HFC-152a to 6,300 for HFC-236fa.

- **Perfluorocarbons (PFCs).** Perfluorocarbons are compounds consisting of carbon and fluorine. They are primarily created as a byproduct of aluminum production and semi-conductor manufacturing. Perfluorocarbons are potent GHGs with a GWP several thousand times that of carbon dioxide.

IV.B Air Quality

depending on the specific PFC. Another area of concern regarding PFCs is their long atmospheric lifetime (up to 50,000 years).\(^{19}\) The GWP of PFCs range from 5,700 to 11,900.

- Sulfur hexafluoride. Sulfur hexafluoride is a colorless, odorless, nontoxic, nonflammable gas. It is most commonly used as an electrical insulator in high voltage equipment that transmits and distributes electricity. Sulfur hexafluoride is the most potent GHG that has been evaluated by the IPCC with a GWP of 23,900. However, its global warming contribution is not as high as the GWP would indicate due to its low mixing ratio compared to carbon dioxide (4 parts per trillion [ppt] in 1990 versus 365 parts per million [ppm]).\(^ {20}\)

**Other Greenhouse Gases**

In addition to the six major GHGs discussed above (excluding water vapor), many other compounds have the potential to contribute to the greenhouse effect. Some of these substances were previously identified as stratospheric ozone depleters; therefore, their gradual phase-out is currently in effect. A few of these compounds are discussed below:

- Hydrochlorofluorocarbons (HCFCs). HCFCs are solvents, similar in use and chemical composition to CFCs. The main uses of HCFCs are for refrigerant products and air conditioning systems. As part of the Montreal Protocol, all developed countries that adhere to the Protocol are subject to a consumption cap and gradual phase-out of HCFCs. The United States is scheduled to achieve a 100 percent reduction to the cap by 2030. The GWPs of HCFCs range from 93 for HCFC-123 to 2,000 for HCFC-142b.\(^ {21}\)

- 1,1,1-trichloroethane. 1,1,1-trichloroethane or methyl chloroform is a solvent and degreasing agent commonly used by manufacturers. In 1992, the U.S. EPA issued Final Rule 57 FR 33754 scheduling the phase out of methyl chloroform by 2002.\(^ {22}\) Therefore, the threat posed by methyl chloroform as a GHG will diminish. Nevertheless, the GWP of methyl chloroform is 110 times that of carbon dioxide.\(^ {23}\)

- Chlorofluorocarbons (CFCs). CFCs are used as refrigerants, cleaning solvents, and aerosol spray propellants. CFCs were also part of the U.S. EPA’s Final Rule 57 FR 3374 for the phase out of ozone depleting substances. Currently, CFCs have been replaced by HFCs in cooling systems and a variety


of alternatives for cleaning solvents. Nevertheless, CFCs remain suspended in the atmosphere contributing to the greenhouse effect. CFCs are potent GHGs with GWPs ranging from 4,600 for CFC-11 to 14,000 for CFC-13.\textsuperscript{24}

- **Ozone.** Ozone occurs naturally in the stratosphere where it is largely responsible for filtering harmful ultraviolet (UV) radiation. In the troposphere, ozone acts as a GHG by absorbing and re-radiating the infrared energy emitted by the Earth. As a result of the industrial revolution and rising emissions of oxides of nitrogen (NO\textsubscript{x}) and volatile organic compounds (VOCs) (ozone precursors), the concentrations of ozone in the troposphere have increased.\textsuperscript{25} Due to the short life span of ozone in the troposphere, its concentration and contribution as a GHG is not well established. However, the greenhouse effect of tropospheric ozone is considered small, as the radiative forcing of ozone is 25 percent of that of carbon dioxide.\textsuperscript{26,27}

**Contributions to Greenhouse Gas Emissions**

**Global**

Anthropogenically-generated GHG emissions worldwide as of 2004 (the last year for which data are available) total approximately 25,400 CO\textsubscript{2} equivalent million metric tons (MMTCO\textsubscript{2}E)\textsuperscript{28} with six countries and the European Community accounting for 81 percent of the total (See Table IV.B-3, Six Top GHG Producer Countries and the European Community).

\begin{itemize}
  \item \textsuperscript{26} Radiative forcing, measured in Watts/m\textsuperscript{2}, is an externally imposed perturbation (e.g., stimulated by greenhouse gases) in the radiative energy budget of the Earth’s climate system (i.e., energy and heat retained in the troposphere minus energy passed to the stratosphere).
  \item \textsuperscript{28} The CO\textsubscript{2} equivalent emissions are commonly expressed as “million metric tons of carbon dioxide equivalent (MMTCO\textsubscript{2}E)” The carbon dioxide equivalent for a gas is derived by multiplying the tons of the gas by the associated GWP, such that MMTCO\textsubscript{2}E = (million metric tons of a GHG) x (GWP of the GHG). For example, the GWP for methane is 21. This means that emissions of one million metric tons of methane are equivalent to emissions of 21 million metric tons of CO\textsubscript{2}.
\end{itemize}
Table IV.B-3
Six Top GHG Producer Countries and the European Community

<table>
<thead>
<tr>
<th>Emitting Countries</th>
<th>2004 GHG Emissions (MMTCO\textsubscript{2}E)*</th>
</tr>
</thead>
<tbody>
<tr>
<td>United States</td>
<td>7,074.4\textsuperscript{1}</td>
</tr>
<tr>
<td>European Community</td>
<td>4,228.0\textsuperscript{1}</td>
</tr>
<tr>
<td>China</td>
<td>3,650.0\textsuperscript{1}</td>
</tr>
<tr>
<td>Russian Federation</td>
<td>2,024.2\textsuperscript{1}</td>
</tr>
<tr>
<td>India</td>
<td>1,718.4\textsuperscript{1}</td>
</tr>
<tr>
<td>Japan</td>
<td>1,355.2\textsuperscript{1}</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>665.3\textsuperscript{1}</td>
</tr>
<tr>
<td><strong>Total:</strong></td>
<td><strong>20,715.5</strong></td>
</tr>
</tbody>
</table>

Sources:
\textsuperscript{2} 2004 GHG emissions for China and India were obtained from Carbon Planet Pty Ltd. <http://www.carbonplanet.com/home/country_emissions.php>
\textsuperscript{*} Excludes emissions/removals from land use, land-use change and forestry (LULUCF)

**United States**

As noted in Table IV.B-3, the United States is the top producer of greenhouse gas emissions. Six of the states—Texas, California, Pennsylvania, Ohio, Illinois, and Florida—would rank among the top 30 GHG emitters internationally.\textsuperscript{29} Comparatively speaking, the GHG emissions from the lower 48 states are approximately equivalent to those emitted by China, Brazil, and the United Kingdom combined or by the United Kingdom, Brazil, Russian Federation, India, South Korea, and Canada combined.

**State of California**

Based upon the 2004 GHG inventory data (the latest year available) compiled by the California Energy Commission (CEC) for California, and GHG inventories for countries contributing to the worldwide GHG emissions inventory compiled by UNFCCC for 2004, California’s GHG emissions rank second in the United States (Texas is number one) with emissions of 431 MMTCO\textsubscript{2}E (excluding emissions related to imported power), and internationally between Spain (427.9 MMTCO\textsubscript{2}E) and Australia (529.2 MMTCO\textsubscript{2}E).

\textsuperscript{29} World Resources Institute < http://earthtrends.wri.org/updates/node/106 >
The CEC report placed CO₂ produced by fossil fuel combustion in California as the largest source of GHG emissions, accounting for 81 percent of the total GHG emissions. CO₂ emissions from other sources contributed 2.8 percent, methane emissions comprised 5.7 percent of the total GHG emissions, nitrous oxide emissions accounted for 6.8 percent of the total, and the remaining 2.9 percent was composed of emissions of high GWP gases. These high GWP gases are largely composed of refrigerants and a small contribution of sulfur hexafluoride (SF₆) used as insulating materials in electricity transmission and distribution.

The primary contributors to GHG emissions in California are transportation, electric power production from both in-state and out-of-state sources; industry; agriculture and forestry; and other sources, which include commercial and residential activities. These primary contributors to California’s GHG emissions and their relative contributions are presented in Table IV.B-4, GHG Sources in California.

<table>
<thead>
<tr>
<th>Source Category</th>
<th>Annual GHG Emissions (MMTCO₂E)</th>
<th>Percent of Total</th>
<th>Annual GHG Emissions (MMTCO₂E)</th>
<th>Percent of Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transportation</td>
<td>200.1</td>
<td>40.7%</td>
<td>200.1</td>
<td>46.4%</td>
</tr>
<tr>
<td>Electric Power Production</td>
<td>109.2</td>
<td>22.2%</td>
<td>48.4</td>
<td>11.2%</td>
</tr>
<tr>
<td>Industry</td>
<td>100.9</td>
<td>20.5%</td>
<td>100.9</td>
<td>23.4%</td>
</tr>
<tr>
<td>Agriculture &amp; Forestry</td>
<td>40.9</td>
<td>8.3%</td>
<td>40.9</td>
<td>9.5%</td>
</tr>
<tr>
<td>Other</td>
<td>40.9</td>
<td>8.3%</td>
<td>40.9</td>
<td>9.5%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>492.0</strong></td>
<td><strong>100.0%</strong></td>
<td><strong>431.2</strong></td>
<td><strong>100.0%</strong></td>
</tr>
</tbody>
</table>

Sources:
2. Includes emissions associated with imported electricity, which account for 60.8 MMTCO₂E annually.
3. Excludes emissions associated with imported electricity.

It should be noted that emissions from each of these economic sectors are not confined to emissions from a single process, since there is cross-over with other sectors. For example, the GHG emissions from cement production places clinker manufacturing in its own category and the fuel used to heat the cement production process within the industrial fuel category. In the case of landfills, methane emissions and CO₂ emissions and sinks are reported in their respective portions of the inventory. Taken together, the
CO₂ sinks approximately offset the landfill methane emissions. Additionally, fuel-related GHG emissions from transporting wastes to landfills are included in transportation fuels.

**Global Climate Change**

Climate change refers to any significant change in measures of climate (such as temperature, precipitation, or wind) lasting for an extended period (decades or longer). Climate change may result from:

- Natural factors, such as changes in the sun’s intensity or slow changes in the Earth’s orbit around the sun;
- Natural processes within the climate system (e.g., changes in ocean circulation, reduction in sunlight from the addition of GHG and other gases to the atmosphere from volcanic eruptions); and
- Human activities that change the atmosphere’s composition (e.g., through burning fossil fuels) and the land surface (e.g., deforestation, reforestation, urbanization, desertification).

**Indications of Anthropogenic Influences**

The impact of anthropogenic activities on global climate change is readily apparent in the observational record. For example, surface temperature data shows that 11 of the 12 years from 1995 to 2006 rank among the 12 warmest since 1850, the beginning of the instrumental record for global surface temperature. In addition, the atmospheric water vapor content has increased since at least the 1980s over land, sea, and in the upper atmosphere, consistent with the capacity of warmer air to hold more water vapor; ocean temperatures are warmer to depths of 3,000 feet; and a marked decline has occurred in mountain glaciers and snow pack in both hemispheres, polar ice and ice sheets in both the artic and Antarctic regions.

**Influence of Industrialization**

Air trapped by ice has been extracted from core samples taken from polar ice sheets to determine the global atmospheric variation of carbon dioxide, methane, and nitrous oxide from before the start of the industrialization, around 1750, to over 650,000 years ago. For that period, it was found that carbon dioxide concentrations ranged from 180 ppm to 300 ppm. For the period from around 1750 to the

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33 Ibid.
present, global carbon dioxide concentrations increased from a pre-industrialization period concentration of 280 ppm to 379 ppm in 2005, with the 2005 value far exceeding the upper end of the pre-industrial period range.\textsuperscript{34} Global methane and nitrous oxide concentrations show similar increases for the same period (see Table IV.B-5, Comparison of Global Pre-Industrial and Current GHG Concentrations).

### Table IV.B-5
Comparison of Global Pre-Industrial and Current GHG Concentrations\textsuperscript{i}

<table>
<thead>
<tr>
<th>Greenhouse Gas</th>
<th>Early Industrial Period Concentrations (ppm)</th>
<th>Natural Range for Last 650,000 Years (ppm)</th>
<th>2005 Concentrations (ppm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carbon Monoxide</td>
<td>280</td>
<td>180 to 300</td>
<td>379</td>
</tr>
<tr>
<td>Methane</td>
<td>715</td>
<td>320 to 790</td>
<td>1774</td>
</tr>
<tr>
<td>Nitrous Oxide</td>
<td>270</td>
<td>NA</td>
<td>319</td>
</tr>
</tbody>
</table>


Effects of Global Climate Change

The primary effect of global climate change has been a rise in average global tropospheric temperature of 0.2\textdegree Celsius per decade, determined from meteorological measurements world-wide between 1990 and 2005.\textsuperscript{35} Climate change modeling using 2000 emission rates shows that further warming would occur, which would induce further changes in the global climate system during the current century.\textsuperscript{36} Changes to the global climate system and ecosystems and to California would include, but would not be limited to:

- The loss of sea ice and mountain snow pack resulting in higher sea levels and higher sea surface evaporation rates with a corresponding increase in tropospheric water vapor due to the atmosphere’s ability to hold more water vapor at higher temperatures;\textsuperscript{37}
- Rise in global average sea level primarily due to thermal expansion and melting of glaciers and ice caps, the Greenland and Antarctic ice sheets;\textsuperscript{38}

\textsuperscript{34} Ibid.  
\textsuperscript{35} Ibid.  
\textsuperscript{36} Ibid.  
\textsuperscript{37} Ibid.  
\textsuperscript{38} Ibid.
Changes in weather that includes widespread changes in precipitation, ocean salinity, and wind patterns, and more energetic aspects of extreme weather including droughts, heavy precipitation, heat waves, extreme cold, and the intensity of tropical cyclones;\textsuperscript{39}

Decline of Sierra snowpack, which accounts for approximately half of the surface water storage in California, by 70 percent to as much as 90 percent over the next 100 years;\textsuperscript{40}

Increase in the number of days conducive to ozone formation by 25 to 85 percent (depending on the future temperature scenario) in high ozone areas of Los Angeles and the San Joaquin Valley by the end of the 21st century;\textsuperscript{41} and

High potential for erosion of California’s coastlines and sea water intrusion into the Delta and levee systems due to the rise in sea level.\textsuperscript{42}

d. Sensitive Receptors

Some land uses are considered more sensitive to air pollution than others due to the types of population groups or activities involved. Sensitive population groups include children, the elderly, the acutely ill, and the chronically ill, especially those with cardio-respiratory diseases. Any facilities that house these sensitive receptors are considered to be sensitive land uses and require developers to plan around them if emitting significant amounts of pollutants.

Residential areas are considered to be sensitive to air pollution because residents (including children and the elderly) tend to be at home for extended periods of time. It is, therefore, a primary goal to avoid subjecting these populations to sustained exposure of any pollutants. Recreational land uses are considered moderately sensitive to air pollution. Although exposure periods are generally short, exercise places a high demand on respiratory functions that can magnify the damage caused by air pollution. Industrial and commercial workers are considered the least sensitive to air pollution. Exposure periods are relatively short and intermittent due to a majority of the workers staying indoors. In addition, the working population is generally the healthiest segment of the public.

Sensitive receptors in the immediate vicinity include residences located to the east of the project area. These residences are composed primarily of single-family housing. The existing housing lies to the east of Mason Avenue. Browns Creek Park lies approximately one kilometer to the south of the proposed project site. The immediate vicinity also includes proposed streets to the east and southeast that will

\textsuperscript{39} Ibid.
\textsuperscript{40} California Environmental Protection Agency, Climate Action Team, Climate Action Team Report to Governor Schwarzenegger and the Legislature (Executive Summary). March 2006.
\textsuperscript{41} Ibid.
\textsuperscript{42} Ibid.
include additional housing units and two parks at some future date. These additional residences and parks are not considered part of this proposed project. Also, there are no schools or hospitals located near the proposed project within two kilometers.

4. REGULATORY FRAMEWORK

Air quality within the Basin is addressed through the efforts of various federal, state, regional, and local government agencies. These agencies work jointly, as well as individually, to improve air quality through legislation, regulations, planning, policy-making, education, and a variety of programs. The agencies primarily responsible for improving the air quality within the Basin include:

- U.S. Environmental Protection Agency;
- California Air Resources Board;
- South Coast Air Quality Management District; and
- Southern California Association of Governments.

a. U.S. Environmental Protection Agency

The U.S. EPA is responsible for enforcing the federal Clean Air Act (CAA) and the NAAQS that it establishes. These standards identify levels of air quality for seven “criteria” pollutants: O\textsubscript{3}, CO, NO\textsubscript{2}, SO\textsubscript{2}, PM\textsubscript{10}, PM\textsubscript{2.5}, and lead. The threshold levels are considered to be the maximum concentration of ambient (background) air pollutants determined safe (within an adequate margin of safety) to protect the public health and welfare. The state and federal ambient air quality standards are listed in Table IV.B-1.

As indicated, the averaging times for the various pollutants (the duration over which they are measured) range from one hour to an annual basis. The standards are reported as a concentration, in parts per million (ppm) by volume, or as a weighted mass of material per a volume of air, in micrograms of pollutant per cubic meter of air (µg/m\textsuperscript{3}).

The U.S. EPA designates air basins as being in “attainment” or “nonattainment” for each of the seven “criteria” pollutants. Nonattainment air basins are ranked (marginal, moderate, serious, severe, or extreme) according to the degree of the threshold violation. The stringency of emission control measures in a given SIP depends on the severity of the air quality within the specific air basin. The status of the Basin with respect to attainment with the NAAQS is summarized in Table IV.B-6, National Ambient Air Quality Standards and Status – South Coast Air Basin. Severe-17 nonattainment areas have an attainment date of June 15, 2021, to comply with the 8-hour ozone standard. For PM\textsubscript{10}, the Basin was required to meet the national standard by 2006, which it has achieved and is expected to continue to
The Basin is required to meet attainment for the federal PM$_{2.5}$ standard by 2010; however, the SCAQMD will be filing for a five-year extension to 2015. Those criteria pollutants currently in attainment within the Basin are expected to continue to decrease as emission control measures and strategies are developed and implemented to improve air quality.

<table>
<thead>
<tr>
<th>Pollutant</th>
<th>Averaging Time</th>
<th>Designation/Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ozone (O$_3$)</td>
<td>8 Hour</td>
<td>Nonattainment/Severe-I7</td>
</tr>
<tr>
<td>Carbon Monoxide (CO)</td>
<td>1 Hour, 8 Hour</td>
<td>Attainment</td>
</tr>
<tr>
<td>Nitrogen Dioxide (NO$_2$)</td>
<td>Annual Arithmetic Mean</td>
<td>Attainment/Unclassifiable</td>
</tr>
<tr>
<td>Sulfur Dioxide (SO$_2$)</td>
<td>24 Hour, Annual Arithmetic Mean</td>
<td>Attainment/Unclassifiable</td>
</tr>
<tr>
<td>Respirable Particulate Matter (PM$_{10}$)</td>
<td>24 Hour</td>
<td>Nonattainment/Serious</td>
</tr>
<tr>
<td>Fine Particulate Matter (PM$_{2.5}$)</td>
<td>24 Hour, Annual Arithmetic Mean</td>
<td>Nonattainment</td>
</tr>
<tr>
<td>Lead (Pb)</td>
<td>Calendar Quarter</td>
<td>Attainment</td>
</tr>
</tbody>
</table>


The 1990 CAA Amendments were enacted in order to better protect the public’s health and create more efficient methods of lowering pollutant emissions. The major areas of improvement from the amendments include: air basin designations, automobile/heavy duty engine emissions, and toxic air pollutants. In response to the rapid population growth and its subsequent rise in automobile operations, the 1990 CAA Amendments address tailpipe emissions from automobiles, heavy-duty engines, and diesel fuel engines. The 1990 Amendments established more stringent standards for hydrocarbons, nitrogen oxides NO$_x$, and CO emissions in order to reduce ozone and carbon monoxide levels in heavily populated areas. Fuels became more strictly regulated by requiring new fuels to be less volatile, contain less sulfur (regarding diesel fuels), and have higher levels of oxygenates (oxygen-containing substances to improve fuel combustion). The U.S. EPA also has regulatory and enforcement jurisdiction over emission sources beyond state waters (outer continental shelf), and those that are under the exclusive authority of the federal government, such as aircraft, locomotives, and interstate trucking.

Due to the lack of toxic emissions reduction by the 1977 CAA, the 1990 Amendments listed 189 hazardous air pollutants (HAPs) that are carcinogenic, mutagenic, and/or reproductive toxins to be reduced. This

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program involves locating all major (greater than 10 tons/year) and area emission sources in order to implement Maximum Achievable Control Technology (MACT) to reduce health impacts.

b. California Air Resource Board

The ARB, a branch of the California Environmental Protection Agency (CalEPA), oversees air quality planning and control throughout California. It is primarily responsible for ensuring the implementation of the California Clean Air Act (CCAA), responding to the federal CAA requirements, and for regulating emissions from motor vehicles and consumer products within the state. The ARB also sets health-based air quality standards and control measures for toxic air contaminants (TACs). The focus of most of its research goes toward automobile emissions since it is the largest concern regarding air pollution in California. The ARB establishes new standards for vehicles sold in California and for various types of equipment available commercially. It also sets fuel specifications to further reduce vehicular emissions.

Enacted in 1988, the CCAA established a legal mandate for air basins to achieve the California ambient air quality standards by the earliest practical date. These standards apply to the same seven criteria pollutants as the federal ambient air quality standards and also include sulfates, visibility reducing particles, hydrogen sulfide, and vinyl chloride. State standards are more stringent than the federal standards, and in the case PM$_{10}$ and SO$_2$, far more stringent.

The ARB supervises and supports the regulatory activities of local air quality districts as well as monitors air quality itself. Health and Safety Code Section 39607(e) requires the ARB to establish and periodically review area designation criteria. These designation criteria provide the basis for the ARB to designate areas of the state as “attainment,” “nonattainment,” or “unclassified” according to state standards. The ARB will designate an area as nonattainment for a pollutant if monitoring data shows that a California Ambient Air Quality Standard (CAAQS) for a particular pollutant was violated at least once during the previous three years. In addition, Health and Safety Code §39608 requires the ARB to use the designation criteria to designate areas of California and to annually review those area designations. The ARB makes area designations for ten criteria pollutants: O$_3$, CO, NO$_2$, SO$_2$, PM$_{10}$, PM$_{2.5}$, sulfates, lead, hydrogen sulfide, and visibility-reducing particles. The status of the Basin with respect to attainment for the CAAQS is summarized in Table IV.B-7, California Ambient Air Quality Standards and Status – South Coast Air Basin.
Table IV.B-7
California Ambient Air Quality Standards and Status – South Coast Air Basin

<table>
<thead>
<tr>
<th>Pollutant</th>
<th>Averaging Time</th>
<th>Designation/Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ozone (O₃)</td>
<td>1 Hour, 8 hour</td>
<td>Nonattainment/Extreme¹</td>
</tr>
<tr>
<td>Carbon Monoxide (CO)</td>
<td>1 Hour, 8 Hour</td>
<td>Attainment</td>
</tr>
<tr>
<td>Nitrogen Dioxide (NO₂)</td>
<td>1 Hour</td>
<td>Attainment</td>
</tr>
<tr>
<td>Sulfur Dioxide (SO₂)</td>
<td>1 Hour, 24 Hour</td>
<td>Attainment</td>
</tr>
<tr>
<td>Respirable Particulate Matter (PM₁₀)</td>
<td>24 Hour, Annual Arithmetic Mean</td>
<td>Nonattainment</td>
</tr>
<tr>
<td>Fine Particulate Matter (PM₂.₅)</td>
<td>Annual Arithmetic Mean</td>
<td>Nonattainment</td>
</tr>
<tr>
<td>Lead (Pb)</td>
<td>30 Day Average</td>
<td>Attainment</td>
</tr>
<tr>
<td>Sulfates (SO₄)</td>
<td>24 Hour</td>
<td>Attainment</td>
</tr>
<tr>
<td>Hydrogen Sulfide (H₂S)</td>
<td>1 Hour</td>
<td>Unclassified</td>
</tr>
<tr>
<td>Vinyl Chloride²</td>
<td>24 Hour</td>
<td>Unclassified</td>
</tr>
<tr>
<td>Visibility Reducing Particles</td>
<td>8 Hour (10 AM–6 PM)</td>
<td>Unclassified</td>
</tr>
</tbody>
</table>


¹ The ARB has not yet assigned area classifications for the new 8-hour ozone standard. New 8-hour classifications are expected to be equal to or worse than those for the previous 1-hour standard.

² The ARB has identified lead and vinyl chloride as “toxic air contaminants” with no threshold level of exposure for adverse health effects determined.

c. Global Climate Change Regulatory Programs

Kyoto Protocol

The original Kyoto Protocol was negotiated in December 1997 and came into force on February 16, 2005. As of December 2006, 169 countries have ratified the agreement; however, notably, the U.S. and Australia have not ratified the Protocol. Participating nations are separated into Annex 1 (i.e., industrialized countries) and Non-Annex 1 (i.e., developing countries) countries that have different requirements for GHG reductions. The goal of the Protocol is to achieve overall emissions reduction targets for six GHGs by the period 2008-2012. The six GHGs regulated under the Protocol are carbon dioxide, methane, nitrous oxide, sulfur hexafluoride, HFCs, and PFCs. Each nation has an emissions reduction target for which they must reduce GHG emissions a certain percentage below 1990 levels (e.g., eight percent reduction for the European Union, six percent reduction for Japan). The average reduction target for nations participating in the Kyoto Protocol is approximately five percent below 1990 levels. Although the United States has not ratified the Protocol, it has established an 18 percent reduction in GHG emissions.

emissions intensity by 2012.\textsuperscript{45} Greenhouse gas intensity is the ratio of GHG emissions to economic output (i.e., gross domestic product).

**AB 1493**

In a response to the transportation sector accounting for more than half of California’s CO\textsubscript{2} emissions, Assembly Bill 1493 (AB 1493, Pavley) was enacted on July 22, 2002. AB 1493 required the California Air Resources Board (CARB) to set GHG emission standards for passenger vehicles, light-duty trucks, and other vehicles determined by the state board to be vehicles whose primary use is noncommercial personal transportation in the state. The bill required that CARB set the GHG emission standards for motor vehicles manufactured in 2009 and all subsequent model years. In setting these standards, CARB must consider cost-effectiveness, technological feasibility, economic impacts, and provide maximum flexibility to manufacturers. CARB adopted the standards in September 2004. These standards are intended to reduce emissions of carbon dioxide and other greenhouse gases (e.g., nitrous oxide, methane). The new standards would phase in during the 2009 through 2016 model years. When fully phased in, the near-term (2009-2012) standards will result in about a 22 percent reduction in greenhouse gas emissions compared to the emissions from the 2002 fleet, while the mid-term (2013-2016) standards will result in a reduction of about 30 percent. Some currently used technologies that achieve GHG reductions include small engines with superchargers, continuously variable transmissions, and hybrid electric drive.

**Executive Order S-3-05**

In June 2005, Governor Schwarzenegger established California’s GHG emissions reduction targets in Executive Order S-3-05. The Executive Order established the following goals: GHG emissions should be reduced to 2000 levels by 2010; GHG emissions should be reduced to 1990 levels by 2020; and GHG emissions should be reduced to 80 percent below 1990 levels by 2050. The Secretary of the CalEPA (the Secretary) is required to coordinate efforts of various agencies in order to collectively and efficiently reduce GHGs. Some of the agencies involved in the GHG reduction plan include Secretary of Business, Transportation and Housing Agency, Secretary of Department of Food and Agriculture, Secretary of Resources Agency, Chairperson of CARB, Chairperson of the Energy Commission, and the President of the Public Utilities Commission. The Secretary is required to submit a biannual progress report to the Governor and State Legislature disclosing the progress made toward GHG emission reduction targets. In addition, another biannual report must be submitted illustrating the impacts of global warming on California’s water supply, public health, agriculture, the coastline, and forestry and report possible mitigation and adaptation plans to combat these impacts.

AB 32

In furtherance of the goals established in Executive Order S-3-05, the Legislature enacted Assembly Bill 32 (AB 32, Nunez), the California Global Warming Solutions Act of 2006, which Governor Schwarzenegger signed on September 27, 2006. AB 32 represents the first enforceable statewide program to limit GHG emissions from all major industries with penalties for noncompliance. CARB has been assigned to carry out and develop the programs and requirements necessary to achieve the goals of AB 32. The foremost objective of CARB is to adopt regulations that require the reporting and verification of statewide GHG emissions. This program will be used to monitor and enforce compliance with the established standards. The first GHG emissions limit is equivalent to the 1990 levels, which are to be achieved by 2020. CARB is also required to adopt rules and regulations to achieve the maximum technologically feasible and cost-effective GHG emission reductions. AB 32 allows CARB to adopt market-based compliance mechanisms to meet the specified requirements. Finally, CARB is ultimately responsible for monitoring compliance and enforcing any rule, regulation, order, emission limitation, emission reduction measure, or market-based compliance mechanism adopted. In order to advise CARB, it must convene an Environmental Justice Advisory Committee and an Economic and Technology Advancement Advisory Committee. By January 2008, the first deadline for AB 32, a state-wide cap for 2020 emissions based on 1990 levels must be adopted. The following year (January 2009), CARB must adopt mandatory reporting rules for significant sources of GHGs and also a plan indicating how reductions in significant GHG sources will be achieved through regulations, market mechanisms, and other actions.

Executive Order S-1-07

On January 18, 2007, California further solidified its dedication to reducing GHGs by setting a new Low Carbon Fuel Standard (LCFS) for transportation fuels sold within the state. Executive Order S-1-07 sets a declining standard for GHG emissions measured in CO₂-equivalent gram per unit of fuel energy sold in California. The target of the LCFS is to reduce the carbon intensity of California passenger vehicle fuels by at least 10 percent by 2020. The LCFS will apply to refiners, blenders, producers, and importers of transportation fuels and will use market-based mechanisms to allow these providers to choose how they reduce emissions during the “fuel cycle” using the most economically feasible methods. The Executive Order requires the Secretary of the CalEPA to coordinate with actions of the California Energy Commission (CEC), CARB, the University of California, and other agencies to develop a protocol to measure the “life-cycle carbon intensity” of transportation fuels. The University of California produced a final report for the State in response to Executive Order S-1-07 on May 29, 2007. CARB is anticipated to

complete its review of the LCFS protocols no later than June 2007 and implement the regulatory process for the new standard by December 2008.

d. South Coast Air Quality Management District

The Basin is home to nearly 16 million people. The SCAQMD is responsible for regional air quality to be in attainment with both federal and state ambient air quality standards. The SCAQMD primarily regulates emissions from stationary sources such as manufacturing and power generation. Mobile sources such as buses, automotive vehicles, trains, and airplanes are largely out of the SCAQMD’s jurisdiction and are up to the ARB and U.S. EPA to regulate. In order to achieve air quality standards, the SCAQMD adopts an Air Quality Management Plan (AQMP) that serves as a guideline to bring pollutant concentrations into attainment with federal and state standards. The District determines if certain rules and control measures are appropriate for their specific region according to technical feasibility, cost effectiveness, and the severity of nonattainment. Once the District has adopted the proper rules, control measures, and permit programs, it is their responsibility to implement and enforce compliance to the programs.

e. Southern California Association of Governments (SCAG)

SCAG is a council of governments for the Counties of Imperial, Los Angeles, Orange, Riverside, San Bernardino, and Ventura. As a regional planning agency, SCAG serves as a forum for regional issues relating to transportation, economy, community development, and the environment. SCAG also serves as the regional clearinghouse for projects requiring environmental documentation under federal and state law. In this role, SCAG reviews projects to analyze their impacts on SCAG’s regional planning efforts.

Although SCAG is not an air quality management agency, it is responsible for several air quality planning issues. As the designated Metropolitan Planning Organization (MPO) for the Southern California region, it is responsible, pursuant to §176(c) of the 1990 amendments to the CAA, for providing current population, employment, travel, and congestion projections for regional air quality planning efforts.

f. Local Rules and Regulations

Emissions that would result from stationary and areas sources during construction and operation of the proposed project are subject to the rules and regulations of the SCAQMD.\(^{47}\) Rules and regulations of this agency are designed to achieve state and national ambient air quality standards. To that purpose, they limit the emissions and the permissible impacts of emissions from projects, and specify emission control

technologies for various types of emitting sources. The following sections discuss applicable air quality plans, guidance documents, rules, and regulations that relate to the proposed project.

**Air Quality Plans**

For this project, the SCAQMD and SCAG have the responsibility of preparing the AQMP that addresses both federal and state CAA requirements. The AQMP specifies goals, policies, and programs for improving air quality and establishes thresholds for daily operation emissions. Environmental review of individual projects within the region must demonstrate whether daily construction and operational emissions exceed thresholds established by the SCAQMD.

**2007 Air Quality Management Plan (AQMP)**

The SCAQMD is the agency responsible for preparing the AQMP for the Basin. Since 1979, a number of AQMPs have been prepared. The SCAQMD has published the Draft Final 2007 AQMP, which was adopted by the SCAQMD Governing Board on June 1, 2007. The purpose of the 2007 AQMP for the Basin (and those portions of the Salton Sea Air Basin under the SCAQMD’s jurisdiction) is to set forth a comprehensive program that will lead these areas into compliance with federal and state air quality planning requirements for ozone and PM$_{2.5}$. In addition, as part of the 2007 AQMP, the SCAQMD is requesting U.S. EPA’s approval of a “bump-up” to the “extreme” nonattainment classification for the Basin, which would extend the attainment date to 2024 and allow for the attainment demonstration to rely on emission reductions from measures that anticipate the development of new technologies or improvement of existing control technologies. Although PM$_{2.5}$ plans for nonattainment areas are due in April 2008, the 2007 AQMP also focuses on attainment strategies for the PM$_{2.5}$ standard through stricter control of sulfur oxides, directly-emitted PM$_{2.5}$, NO$_x$, and VOCs. The need to commence PM$_{2.5}$ control strategies before April 2008 is due to the attainment date for PM$_{2.5}$ (2015) being much earlier than that for ozone (2021 for the current designation of severe-17 or 2024 for the extreme designation). Control measures and strategies for PM$_{2.5}$ will also help control ozone generation in the region because PM$_{2.5}$ and ozone share similar precursors (e.g., NO$_x$). The District has integrated PM$_{2.5}$ and ozone reduction control measures and strategies in the 2007 AQMP. In addition, the AQMP focuses on reducing VOC emissions, which have not been reduced at the same rate as NO$_x$ emissions in the past. Hence, the Basin has not achieved the reductions in ozone as were expected in previous plans. The AQMP was based on assumptions provided by both CARB and SCAG in the new EMFAC2007 model for the most recent motor vehicle and demographics information, respectively.

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49 Ibid.
CEQA Guidelines

In 1993, the SCAQMD prepared its *CEQA Air Quality Handbook* to assist local government agencies and consultants in preparing environmental documents for projects subject to CEQA. There has been one full update to the document in November 1993, and it is currently undergoing an update process. The document describes the criteria that SCAQMD uses when reviewing and commenting on the adequacy of environmental documents. The handbook recommends thresholds of significance in order to determine if a project will have a significant adverse environmental impact. Other important contents are methodologies for predicting project emissions and mitigation measures that can be taken to avoid or reduce air quality impacts. Although the Governing Board of the SCAQMD has adopted the *CEQA Air Quality Handbook*, it does not, nor does it intend to, supersede a local jurisdiction’s CEQA procedures.

The *CEQA Air Quality Handbook* is currently undergoing revision. As of October 6, 2006 (the last revision to the district’s website [http://www.aqmd.gov/ceqa/hdbk.html] that addresses the *CEQA Air Quality Handbook* revisions at the time of this writing), only three chapters have been revised: Chapter 2 (Improving Air Quality and the AQMD’s Role), Chapter 3 (Basic Air Quality Information), and Chapter 4 (Early Consultation and Sensitive Receptor Siting Criteria). In addition, the air quality significance thresholds have been revised, and a new procedure referred to as localized significance thresholds, has been added. The *CEQA Air Quality Handbook* and the revised chapters were used in preparing the air quality analysis in this EIR section.

City of Los Angeles CEQA Thresholds Guide

The City of Los Angeles has developed a guidance document that incorporates information for use in the environmental review of projects within the City. With regards to air quality, the guidance document incorporates the significance thresholds and analysis methodologies for air quality contained in the SCAQMD’s *CEQA Air Quality Handbook* due to that agency’s regulatory role within the Basin.

SCAQMD Rules and Regulations

The SCAQMD is responsible for limiting the amount of emissions that can be generated throughout the Basin by various stationary, area, and mobile sources. Specific rules and regulations have been adopted by the SCAQMD Governing Board that limit the emissions that can be generated by various uses and/or activities, and that identify specific pollution reduction measures which must be implemented in association with various uses and activities. The rules are subject to on-going refinement by SCAQMD.

In particular, stationary emissions sources subject to these rules are regulated through SCAQMD’s permitting process. Through this permitting process, SCAQMD also monitors the amount of stationary emissions.
emissions being generated and uses this information in developing the AQMP. The proposed project would be subject to SCAQMD rules and regulations to reduce specific emissions and to mitigate potential air quality impacts. The following rules are applicable to this project.

- **Rule 403 (Fugitive Dust)** – This rule requires fugitive dust sources to implement Best Available Control Measures for all sources and all forms of visible particulate matter are prohibited from crossing any property line. SCAQMD Rule 403 is intended to reduce PM$_{10}$ emissions from any transportation, handling, construction, or storage activity that has the potential to generate fugitive dust (see also Rule 1186).

- **Rule 1113 (Architectural Coatings)** – This rule requires manufacturers, distributors, and end-users of architectural and industrial maintenance coatings to reduce VOC emissions from the use of these coatings, primarily by placing limits on the VOC content of various coating categories.

- **Rule 1121 (Control of Nitrogen Oxides from Residential Type, Natural Gas-Fired Water Heaters)** - This rule prescribes NO$_x$ emission limits for natural gas-fired water heaters with heat input rates less than 75,000 Btu per hour. It applies to manufacturers, distributors, retailers, and installers of natural gas-fired water heaters. In lieu of meeting these NO$_x$ limits, this rule allows emission mitigation fees to be collected from water heater manufacturers to fund stationary and mobile source emission reduction projects targeted at offsetting NO$_x$ emissions from water heaters that do not meet Rule 1121 emission standards.

- **Rule 1146.2 (Emissions of Oxides of Nitrogen from Large Water Heaters and Small Boilers and Process Heaters)** – This rule requires manufacturers, distributors, retailers, refurbishers, installers and operators of new and existing units to reduce NO$_x$ emissions from natural gas-fired water heaters, boilers, and process heaters as defined in this rule.

- **Rule 1186 (PM$_{10}$ Emissions from Paved and Unpaved Roads, and Livestock Operations)** – This rule applies to owners and operators of paved and unpaved roads and livestock operations. The rule is intended to reduce PM$_{10}$ emissions by requiring the clean-up of material deposited onto paved roads, use of certified street sweeping equipment, and treatment of high-use unpaved roads (see also Rule 403).

5. **ENVIRONMENTAL IMPACT ANALYSIS**

The potential local and regional air quality impacts associated with construction and operation of the proposed project is assessed with respect to established significance criteria applicable to such impacts. The significance criteria established for air quality is presented below.

a. **Significance Criteria**

The following thresholds for determining the significance of impacts related to air quality are contained in the *L.A. CEQA Thresholds Guide: Your Resource for Preparing CEQA Analysis in Los Angeles (Thresholds*
The *Thresholds Guide* is a citywide guidance for CEQA impact analyses in Los Angeles. The *Thresholds Guide* incorporates the significance thresholds and analysis methodologies for air quality contained in the SCAQMD’s *CEQA Air Quality Handbook* due to that agency’s regulatory role within the Basin. Based on the *Thresholds Guide*, impacts related to air quality are considered significant if the proposed project would:

**AQ-1** Conflict with or obstruct implementation of the applicable air quality plan?

**AQ-2** Violate any air quality standard or contribute substantially to an existing or projected air quality violation?

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

**AQ-4** Expose sensitive receptors to substantial pollutant concentrations?

**AQ-5** Create objectionable odors affecting a substantial number of people?

The *California Environmental Quality Act (CEQA) Guidelines* (Section 15064.7) provide that, when available, the significance criteria established by the applicable air quality management district or air pollution control district may be relied upon to make determinations of significance.

### Construction Emissions

The SCAQMD’s *CEQA Air Quality Handbook* contains emissions thresholds during the construction phases of a project. The following significance thresholds for air quality have been established by the SCAQMD on a daily basis for construction emissions:

- 75 pounds per day for VOC (an ozone precursor);
- 100 pounds per day for NOx (an ozone precursor);
- 550 pounds per day for CO;
- 150 pounds per day for PM_{10};
- 55 pounds per day for PM_{2.5}; and
- 150 pounds per day of SOx.

During construction, if any of the identified daily air pollutant thresholds are exceeded by the proposed project, then the proposed project’s air quality impacts would be considered significant.

In addition to the above listed emission-based thresholds, the SCAQMD also recommends that the potential impacts on ambient air concentrations due to construction emissions from project-specific level proposed projects be evaluated. For project-specific level proposed projects, anticipated ambient air concentrations from projects larger than 5 acres in size is determined using a computer-based air quality dispersion model are compared to Localized Significance Thresholds (LSTs) for PM$_{10}$, PM$_{2.5}$, NO$_2$, and CO.$^{51}$ The SCAQMD’s concentration-based PM$_{10}$ threshold from its Localized Significance Threshold Methodology (LST Methodology)$^{52}$ is a 24-hour average concentration of 10.4 micrograms per cubic meter ($\mu$g/m$^3$) based on compliance with Rule 403 (Fugitive Dust). The threshold for PM$_{2.5}$, which is also 10.4 $\mu$g/m$^3$, is intended to constrain emissions so as to aid in progress toward attainment of the ambient air quality standards.$^{53}$ The thresholds for NO$_2$ and CO are based on the maximum concentrations that occurred during the last three years and represent the allowable increase in NO$_2$ and CO concentrations above background levels in the vicinity of the project that would not cause or contribute to an exceedance of the CAAQS.

In order to establish the site-specific thresholds for NO$_2$ and CO, Table IV.B-8, Peak Background Concentrations for SRA 6 for the Period of 2003 to 2005, shows the peak background concentrations of NO$_2$ and CO in SRA 6 (West San Fernando Valley) in which the proposed project is located. These are the values on which LST criteria for NO$_2$ and CO are based.

<table>
<thead>
<tr>
<th>Pollutant</th>
<th>Averaging Period</th>
<th>Unit</th>
<th>2003</th>
<th>2004</th>
<th>2005</th>
<th>Peak Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nitrogen Dioxide (NO$_2$)</td>
<td>1 hour ppm</td>
<td>0.13</td>
<td>0.08</td>
<td>0.09</td>
<td>0.13</td>
<td></td>
</tr>
<tr>
<td>Carbon Monoxide (CO)</td>
<td>1 hour ppm</td>
<td>6</td>
<td>5</td>
<td>5</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td></td>
<td>8 hours ppm</td>
<td>4.1</td>
<td>3.5</td>
<td>3.5</td>
<td>4.1</td>
<td></td>
</tr>
</tbody>
</table>


51 South Coast Air Quality Management District. Final Localized Significance Threshold Methodology, June 2003.
52 Ibid.
53 South Coast Air Quality Management District. Final Methodology to Calculate Particulate Matter (PM) 2.5 and PM 2.5 Significance Thresholds, October 2006.
The localized significance thresholds for SRA 6 (West San Fernando Valley), along with the relevant ambient air quality standards (AAQS), are shown in Table IV.B-9, Localized Significance Criteria for SRA 6. These thresholds represent the allowable increase in NO$_2$ and CO ambient concentrations above current levels that could occur in SRA 6 without causing or contributing to exceedances of the CAAQS.

Table IV.B-9
Localized Significance Criteria for SRA 6

<table>
<thead>
<tr>
<th>Pollutant</th>
<th>Averaging Period</th>
<th>CAAQS/NAAQS$^1$</th>
<th>Peak Conc.</th>
<th>LST Criteria$^2$</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>µg/m$^3$</td>
<td>ppm</td>
<td>µg/m$^3$</td>
</tr>
<tr>
<td>Respirable Particulate Matter (PM$_{10}$)</td>
<td>24 hours</td>
<td>50</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>Fine Particulate Matter (PM$_{2.5}$)</td>
<td>24 hours</td>
<td>35</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>Nitrogen Dioxide (NO$_2$)</td>
<td>1 hour</td>
<td>470</td>
<td>0.25</td>
<td>0.13</td>
</tr>
<tr>
<td>Carbon Monoxide (CO)</td>
<td>1 hour</td>
<td>23,000</td>
<td>20</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>8 hours</td>
<td>10,000</td>
<td>9.0</td>
<td>4.1</td>
</tr>
</tbody>
</table>

Source: South Coast Air Quality Management District. Final Localized Significance Threshold Methodology, June 2003, and Final Methodology to Calculate Particulate Matter (PM) 2.5 and PM 2.5 Significance Thresholds, October 2006.

$^1$ California has not adopted a 24-hour AAQS for PM$_{2.5}$; the 24-hour PM$_{2.5}$ AAQS shown is the national standard. All other standards are the California standards.

$^2$ LST Criteria for NO$_2$ and CO are the differences between CAAQS and the Peak Concentration.

Operational Emissions

Specific criteria air pollutants have been identified by the SCAQMD as pollutants of special regional concern. Based upon this categorization, the following significance thresholds for operational emissions have been established by the SCAQMD for all types of project operations:

- 55 pounds per day of VOC;
- 55 pounds per day of NO$_x$;
- 550 pounds per day of CO;
- 150 pounds per day of PM$_{10}$;
- 55 pounds per day of PM$_{2.5}$;
- 150 pounds per day of SO$_2$; and
- California state 1-hour or 8-hour CO standards.
In addition, the SCAQMD recommends that projects meeting any of the following criteria also be considered to have significant air quality impacts:\(^{54}\)

- Project could interfere with the attainment of the federal or state ambient air quality standards by either violating or contributing to an existing or projected air quality violation;

- Project could result in population increases within an area which would be in excess of that projected by SCAG in the AQMP, or increase the population in an area where SCAG has not projected that growth for the project’s build-out year;

- Project could generate vehicle trips that cause a CO hotspot or project could be occupied by sensitive receptors that are exposed to a CO hotspot;

- Project will have the potential to create, or be subjected to, an objectionable odor that could impact sensitive receptors;

- Project will have hazardous materials on site and could result in an accidental release of toxic air emissions or acutely hazardous materials posing a threat to public health and safety;

- Project could emit a TAC regulated by SCAQMD rules or that is on a federal or state air toxic list;

- Project could be occupied by sensitive receptors within 0.25 mile of an existing facility that emits air toxics identified in SCAQMD Rule 1401; or

- Project could emit carcinogenic or TACs that individually or cumulatively exceed the maximum individual cancer risk of 10 in 1 million.

Projects within the Basin with daily operation-related emissions that exceed any of the above emission thresholds may be considered significant.

An evolving air quality issue is the impact of a project’s greenhouse gas emissions on global climate. To date, no state or local air quality agencies have established numerical or qualitative thresholds for assessing this issue. Although the issue does not currently represent a significance threshold, the project’s contribution of greenhouse gases will be discussed qualitatively.

**Cumulative Emissions**

In large part, the SCAQMD 2003 AQMP was prepared to accommodate growth, to meet state and federal air quality standards, and to minimize the fiscal impact that pollution control measures have on the local economy. According to the SCAQMD CEQA Air Quality Handbook, projects that are within the emission thresholds identified above should be considered less than significant unless there is other pertinent information to the contrary.\(^{55}\)

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\(^{54}\) South Coast Air Quality Management District. *CEQA Air Quality Handbook*, November 1993, pp. 6-2 and 6-3.

\(^{55}\) South Coast Air Quality Management District. *CEQA Air Quality Handbook*, November 1993, pp. 9–12.
If a project is not within the emission thresholds above, the current SCAQMD CEQA Air Quality Handbook identifies three possible methods to determine the cumulative significance of land use projects.\footnote{Ibid. Written communication with Steve Smith, South Coast Air Quality Management District, November 20, 2003.} The SCAQMD’s methods are based on performance standards and emission reduction targets necessary to attain the federal and state air quality standards identified in the 2003 AQMP. However, one of these methods is no longer recommended by the SCAQMD and a second method is no longer applicable as the SCAQMD repealed the underlying regulation (Regulation XV). Therefore, the only viable method in the SCAQMD handbook that is currently applicable is based on whether the rate of growth in average daily trips exceeds the rate of growth in population. To use this method, it is necessary to determine the proposed project average daily trip (ADT) rate and the regional ADT rate at the time of project build out. The project ADT is divided by the regional ADT to obtain a ratio of project ADT to regional ADT. Similarly, the proposed project population is compared to the expected regional population at the time of project build out to obtain a ratio of project population to regional population. The two ratios are then compared to determine cumulative significance of the proposed project.

\begin{itemize}
\item[b.] \textbf{Project Impacts}
\end{itemize}

\textit{Construction}

Development of the proposed project would involve several phases of construction including the site grading and construction of the residential units. Construction activities would be completed in a 74-month period with site clearing occurring over 3 months, site grading occurring over 12 months, underground construction occurring over 8 months, and asphalt paving occurring over 3 months.

Construction emissions were estimated according to the SCAQMD’s CEQA Air Quality Handbook and construction emission factors and parameters contained in the URBEMIS2002 Air Quality Impact Model, which provides alternative methodologies for calculating emissions generated by all types of vehicles and equipment associated with construction activities. The SCAQMD recommends the use of URBEMIS2002, and this model is commonly used throughout California to assess the air quality impacts generated by land development projects. The construction emissions were estimated for the proposed project using spreadsheets based on emission factors and other parameters provided in the Software Users’ Guide: \textit{URBEMIS2002 for Windows with Enhanced Construction Module, Version 8.7 (April 2005)}\footnote{URBEMIS2002 is a land use and transportation based air quality model developed in cooperation with the Air Resources Board (ARB) and designed to estimate air emissions from new development projects, including construction emissions.}, except as noted below. This approach was employed due to the limitations of URBEMIS2002 to analyze projects with specific emission sources during one or more of the construction phases. For instance, URBEMIS2002 does not include emissions of on-road trucks (e.g., light duty trucks) during the site grading subphase of the project; therefore, spreadsheets were used to estimate the equipment emissions associated with these
activities. The emissions during the other phases (i.e., grading, asphalt paving, and application of architectural coatings) were generally estimated using the same methods as those used in the URBEMIS2002 model. Emission factors for off-road equipment are available through calendar year 2020 and were obtained from the SCAQMD website. The emissions were also estimated based on information and activity levels provided by the applicant.

Table IV.B-10, Construction Emissions – Hidden Creeks Estates, identifies estimated daily emissions associated with site grading and building construction activities during each year of project construction. These estimates are based on the expected location, size, and development of the project. The analysis assumes that all of the construction equipment and activities would occur continuously over the day and that activities would overlap. In reality, this would not occur, as most equipment would operate only a fraction of each workday and many of the activities would not overlap on a daily basis. Therefore, Table IV.B-10 represents a worst-case scenario for construction activities at the project site. These calculations also assume that appropriate dust control measures would be implemented during each construction activity of the project as required by SCAQMD Rule 403-Fugitive Dust.

<table>
<thead>
<tr>
<th>PHASE/Emissions Source</th>
<th>VOC</th>
<th>NOx</th>
<th>CO</th>
<th>SOx</th>
<th>PM_{10}</th>
<th>PM_{2.5}</th>
</tr>
</thead>
<tbody>
<tr>
<td>SITE CLEARING – 2008</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fugitive Dust</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>318.96</td>
<td>66.34</td>
</tr>
<tr>
<td>Off-Road Diesel</td>
<td>20.67</td>
<td>188.60</td>
<td>65.81</td>
<td>0.18</td>
<td>8.17</td>
<td>7.52</td>
</tr>
<tr>
<td>On-Road Diesel</td>
<td>2.33</td>
<td>3.40</td>
<td>0.36</td>
<td>0.00</td>
<td>0.06</td>
<td>0.06</td>
</tr>
<tr>
<td>Worker Trips</td>
<td>0.25</td>
<td>1.06</td>
<td>2.03</td>
<td>0.00</td>
<td>0.03</td>
<td>0.03</td>
</tr>
<tr>
<td>Maximum pounds per day-Unmitigated:</td>
<td>23.25</td>
<td>193.06</td>
<td>68.20</td>
<td>0.18</td>
<td>327.22</td>
<td>73.95</td>
</tr>
<tr>
<td>Maximum pounds per day-Mitigated:</td>
<td>23.25</td>
<td>193.06</td>
<td>68.20</td>
<td>0.18</td>
<td>110.33^1</td>
<td>28.83^1</td>
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<tr>
<td>SCAQMD Threshold:</td>
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<td>100</td>
<td>550</td>
<td>150</td>
<td>150</td>
<td>55</td>
</tr>
<tr>
<td>Exceeds Threshold?:</td>
<td>NO</td>
<td>YES</td>
<td>NO</td>
<td>NO</td>
<td>NO</td>
<td>NO</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>PHASE/Emissions Source</th>
<th>VOC</th>
<th>NOx</th>
<th>CO</th>
<th>SOx</th>
<th>PM_{10}</th>
<th>PM_{2.5}</th>
</tr>
</thead>
<tbody>
<tr>
<td>SITE GRADING – 2009</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fugitive Dust</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>783.66</td>
<td>163.00</td>
</tr>
<tr>
<td>Off-Road Diesel</td>
<td>95.66</td>
<td>796.66</td>
<td>349.09</td>
<td>0.73</td>
<td>39.64</td>
<td>36.47</td>
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<tr>
<td>On-Road Diesel</td>
<td>0.55</td>
<td>15.62</td>
<td>2.51</td>
<td>0.02</td>
<td>0.30</td>
<td>0.27</td>
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<tr>
<td>Light Duty Trucks (On-Site)</td>
<td>0.18</td>
<td>1.17</td>
<td>1.31</td>
<td>0.00</td>
<td>0.02</td>
<td>0.02</td>
</tr>
<tr>
<td>Worker Trips</td>
<td>1.06</td>
<td>4.51</td>
<td>8.53</td>
<td>0.01</td>
<td>0.12</td>
<td>0.11</td>
</tr>
<tr>
<td>Maximum pounds per day-Unmitigated:</td>
<td>97.45</td>
<td>817.96</td>
<td>361.44</td>
<td>0.76</td>
<td>823.74</td>
<td>199.87</td>
</tr>
<tr>
<td>Maximum pounds per day-Mitigated:</td>
<td>97.45</td>
<td>817.96</td>
<td>361.44</td>
<td>0.77</td>
<td>290.84^1</td>
<td>89.03^1</td>
</tr>
<tr>
<td>SCAQMD Threshold:</td>
<td>75</td>
<td>100</td>
<td>550</td>
<td>150</td>
<td>150</td>
<td>55</td>
</tr>
<tr>
<td>Exceeds Threshold?:</td>
<td>YES</td>
<td>YES</td>
<td>NO</td>
<td>NO</td>
<td>YES</td>
<td>YES</td>
</tr>
</tbody>
</table>

### IV.B Air Quality

**Emissions in Pounds per Day**

<table>
<thead>
<tr>
<th>PHASE/Emissions Source</th>
<th>VOC</th>
<th>NOx</th>
<th>CO</th>
<th>SOx</th>
<th>PM10</th>
<th>PM2.5</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>UNDERGROUND CONSTRUCTION – 2010</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Off-Road Diesel</td>
<td>27.14</td>
<td>223.66</td>
<td>90.10</td>
<td>0.24</td>
<td>11.17</td>
<td>10.27</td>
</tr>
<tr>
<td>Light Duty Trucks (On-Site)</td>
<td>0.11</td>
<td>0.70</td>
<td>0.80</td>
<td>0.00</td>
<td>0.02</td>
<td>0.02</td>
</tr>
<tr>
<td>Worker Trips</td>
<td>0.35</td>
<td>1.43</td>
<td>2.84</td>
<td>0.00</td>
<td>0.04</td>
<td>0.04</td>
</tr>
<tr>
<td>Maximum pounds per day-Unmitigated:</td>
<td>27.60</td>
<td>225.79</td>
<td>93.74</td>
<td>0.24</td>
<td>11.23</td>
<td>10.33</td>
</tr>
<tr>
<td><strong>Maximum pounds per day-Mitigated:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SCAQMD Threshold:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Exceeds Threshold?:</td>
<td>NO</td>
<td>YES</td>
<td>NO</td>
<td>NO</td>
<td>NO</td>
<td>NO</td>
</tr>
<tr>
<td><strong>ACCESS AND CIRCULATION PAVING – 2010</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Asphalt Off-Gas</td>
<td>0.74</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Off-Road Diesel</td>
<td>38.09</td>
<td>338.37</td>
<td>124.21</td>
<td>0.36</td>
<td>14.71</td>
<td>13.54</td>
</tr>
<tr>
<td>On-Road Diesel</td>
<td>0.11</td>
<td>2.95</td>
<td>0.50</td>
<td>0.01</td>
<td>0.06</td>
<td>0.05</td>
</tr>
<tr>
<td>Light Duty Trucks (On-Site)</td>
<td>0.06</td>
<td>0.35</td>
<td>0.40</td>
<td>0.00</td>
<td>0.01</td>
<td>0.01</td>
</tr>
<tr>
<td>Worker Trips</td>
<td>0.45</td>
<td>1.82</td>
<td>3.58</td>
<td>0.00</td>
<td>0.05</td>
<td>0.05</td>
</tr>
<tr>
<td>Maximum pounds per day-Unmitigated:</td>
<td>39.45</td>
<td>343.49</td>
<td>128.69</td>
<td>0.37</td>
<td>14.83</td>
<td>13.65</td>
</tr>
<tr>
<td><strong>Maximum pounds per day-Mitigated:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SCAQMD Threshold:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Exceeds Threshold?:</td>
<td>NO</td>
<td>YES</td>
<td>NO</td>
<td>NO</td>
<td>NO</td>
<td>NO</td>
</tr>
<tr>
<td><strong>BUILDING CONSTRUCTION – 2011–2014</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Arch. Coatings Off-Gas</td>
<td>3.14</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Arch. Coatings Worker Trips</td>
<td>1.04</td>
<td>0.97</td>
<td>9.49</td>
<td>0.01</td>
<td>0.08</td>
<td>0.08</td>
</tr>
<tr>
<td>Bldg. Const. Off-Road Diesel</td>
<td>26.91</td>
<td>199.72</td>
<td>104.61</td>
<td>0.25</td>
<td>12.29</td>
<td>11.31</td>
</tr>
<tr>
<td>Bldg. Const. Worker Trips</td>
<td>0.79</td>
<td>0.74</td>
<td>7.25</td>
<td>0.01</td>
<td>0.06</td>
<td>0.06</td>
</tr>
<tr>
<td>Maximum pounds per day-Unmitigated:</td>
<td>31.88</td>
<td>201.43</td>
<td>121.35</td>
<td>0.27</td>
<td>12.43</td>
<td>11.45</td>
</tr>
<tr>
<td><strong>Maximum pounds per day-Mitigated:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SCAQMD Threshold:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Exceeds Threshold?:</td>
<td>NO</td>
<td>YES</td>
<td>NO</td>
<td>NO</td>
<td>NO</td>
<td>NO</td>
</tr>
</tbody>
</table>

Source: Impact Sciences, Inc. Emissions calculations are provided in Appendix IV.B.

Totals in the table may not appear to add exactly due to rounding in the computer model calculations.

1 Mitigated PM10 and PM2.5 emissions reflect SCAQMD Rule 403 compliance.

As shown in Table IV.B-10 above, air pollutant emissions generated during all phases of project construction is expected to exceed the SCAQMD threshold for emissions of NOx. In addition, the project is expected to exceed the VOC, PM10, and PM2.5 SCAQMD thresholds during the site grading phase. Emissions estimates presented above are based on information provided by the applicant, including the number of pieces and type of equipment expected to be utilized during site grading. Since construction emissions for NOx, PM10, and PM2.5 exceed the SCAQMD thresholds, construction impacts are considered significant.

**Localized Significance Threshold Analysis**

Per the recommendation of the SCAQMD, ambient PM10, PM2.5, NOx, and CO concentrations due to the construction of the proposed project were analyzed using methods described in its *Final LST Methodology*.
IV.B Air Quality

and *Final Methodology to Calculate Particulate Matter (PM) 2.5 and PM2.5 Significance Thresholds*.\textsuperscript{59} The SCAQMD-approved dispersion model, Industrial Source Complex – Short Term (ISCST3)\textsuperscript{60} was used for the analysis to model the dispersion of the pollutants of concern.

**Table IV.B-11, Modeling Results – Maximum Impacts at Residential Receptors**, show the maximum PM\textsubscript{10}, PM\textsubscript{2.5}, NO\textsubscript{2}, and CO concentrations associated with the proposed project at the nearest residential receptor. Receptors in the immediate vicinity include residences located to the east of the project area. These residences are composed primarily of single-family housing. The existing housing lies to the east of Mason Avenue. Browns Creek Park lies approximately one kilometer to the south of the proposed project site. The immediate vicinity also includes proposed streets to the east and southeast that will include additional housing units and two parks at some future date. These additional residences and parks are not considered to be part of this proposed project but instead are related to the build-out of the approved Porter Ranch Specific Plan. There are no schools or hospitals located near the proposed project within two kilometers.

<table>
<thead>
<tr>
<th>Pollutant</th>
<th>Averaging Period</th>
<th>Modeling Results</th>
<th>LST Criteria</th>
<th>Exceeds Threshold?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Respirable Particulate Matter (PM\textsubscript{10})</td>
<td>24 hours</td>
<td>7.77</td>
<td>NA</td>
<td>10.4</td>
</tr>
<tr>
<td>Fine Particulate Matter (PM\textsubscript{2.5})</td>
<td>24 hours</td>
<td>2.97</td>
<td>NA</td>
<td>10.4</td>
</tr>
<tr>
<td>Nitrogen Dioxide (NO\textsubscript{2})</td>
<td>1 hour</td>
<td>297</td>
<td>0.16</td>
<td>226</td>
</tr>
<tr>
<td>Carbon Monoxide (CO)</td>
<td>1 hour</td>
<td>281</td>
<td>0.25</td>
<td>16,021</td>
</tr>
<tr>
<td></td>
<td>8 hours</td>
<td>35.8</td>
<td>0.03</td>
<td>5,607</td>
</tr>
</tbody>
</table>

*Source: Impact Sciences, Inc.*

\textsuperscript{1} *South Coast Air Quality Management District, Final Localized Significance Threshold Methodology, June 2003, and Final Methodology to Calculate Particulate Matter (PM) 2.5 and PM2.5 Significance Thresholds, October 2006.*

The maximum impacts were observed at the residential area east of the project site (east of Mason Avenue).

As indicated in the tables above, the LST analysis shows that maximum CO, PM\textsubscript{10}, and PM\textsubscript{2.5} concentrations are not anticipated to exceed the threshold of significance established by SCAQMD at the nearest residential receptor to the project site with respect to the LST methodology. The impacts demonstrate that PM\textsubscript{10} emissions would not exceed the limitations in SCAQMD Rule 403.

The maximum NO\textsubscript{2} concentration, however, would exceed the threshold of significance. While the maximum modeled NO\textsubscript{2} concentration is anticipated to exceed the LST threshold, the actual

\textsuperscript{59} South Coast Air Quality Management District. *Final Localized Significance Threshold Methodology, June 2003, and Final Methodology to Calculate Particulate Matter (PM) 2.5 and PM2.5 Significance Thresholds, October 2006.*

\textsuperscript{60} Lakes Environmental Software, ISC-AERMOD View (Version 5.6.0).
concentrations could differ from the results presented here if (1) the actual background concentrations differ from those on which the LST thresholds are based during the worst-case construction day, (2) the amount of construction activity (e.g., number and types of equipment, hours of operation) differed from the analysis assumptions, and (3) the meteorological conditions in the data set used in the dispersion modeling analysis occurred in the vicinity of the project site on the worst-case construction day. For detailed information regarding the LST Analysis, refer to Appendix IV.B.

**Operation**

Operational emissions at the project site would be generated by both stationary and mobile sources as a result of normal day-to-day activities on the project site after occupation. Stationary emissions would be generated by the consumption of natural gas for space and water heating devices, use of consumer products, and landscape maintenance, and periodic use of architectural coatings. Mobile emissions would be generated by the motor vehicles traveling to, from, and within the project site.

Daily operational emissions were calculated using the data and methodologies identified in the SCAQMD’s CEQA Air Quality Handbook and the URBEMIS2002 Air Quality Impact Model. Trip generation rates were obtained from data contained in Section IV.L, Transportation. The anticipated operational emissions are based upon build out of all land uses associated with the proposed project and are reflected in Table IV.B-12, Operational Emissions – Hidden Creeks Estates, below.

### Table IV.B-12
Operational Emissions – Hidden Creeks Estates

<table>
<thead>
<tr>
<th>Emissions Source</th>
<th>Emissions in Pounds per Day</th>
<th>Summertime Emissions&lt;sup&gt;1&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>VOC</td>
<td>NO&lt;sub&gt;x&lt;/sub&gt;</td>
</tr>
<tr>
<td>Mobile Sources</td>
<td>9.74</td>
<td>9.24</td>
</tr>
<tr>
<td>Area Sources</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Natural Gas</td>
<td>0.18</td>
<td>2.36</td>
</tr>
<tr>
<td>Landscape Maintenance</td>
<td>0.80</td>
<td>0.10</td>
</tr>
<tr>
<td>Consumer Products</td>
<td>9.20</td>
<td>—</td>
</tr>
<tr>
<td>Architectural Coatings</td>
<td>6.40</td>
<td>—</td>
</tr>
<tr>
<td>Area Source Subtotal</td>
<td>16.58</td>
<td>2.46</td>
</tr>
<tr>
<td>Summertime Net Emission Totals:</td>
<td>26.32</td>
<td>11.70</td>
</tr>
<tr>
<td><strong>Recommended Threshold:</strong></td>
<td>55</td>
<td>55</td>
</tr>
<tr>
<td><strong>Exceeds Threshold?</strong></td>
<td>NO</td>
<td>NO</td>
</tr>
</tbody>
</table>

<sup>1</sup> Summertime Emissions include the emissions from both operational and construction sources.
### IV.B Air Quality

#### Emissions in Pounds per Day

<table>
<thead>
<tr>
<th>Emissions Source</th>
<th>VOC</th>
<th>NOx</th>
<th>CO</th>
<th>SOx</th>
<th>PM10</th>
<th>PM2.5</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Wintertime Emissions</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mobile Sources</td>
<td>8.45</td>
<td>13.29</td>
<td>96.98</td>
<td>0.10</td>
<td>19.04</td>
<td>17.52</td>
</tr>
<tr>
<td>Area Sources</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Natural Gas</td>
<td>0.18</td>
<td>2.36</td>
<td>1.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>Hearth (Natural Gas Fireplaces)</td>
<td>0.09</td>
<td>1.56</td>
<td>0.66</td>
<td>0.01</td>
<td>0.13</td>
<td>0.13</td>
</tr>
<tr>
<td>Consumer Products</td>
<td>9.20</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Architectural Coatings</td>
<td>6.40</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Area Source Subtotal</strong></td>
<td>15.87</td>
<td>3.92</td>
<td>1.66</td>
<td>0.01</td>
<td>0.13</td>
<td>0.13</td>
</tr>
<tr>
<td><strong>Wintertime Net Emission Totals:</strong></td>
<td>24.32</td>
<td>17.21</td>
<td>98.64</td>
<td>0.11</td>
<td>19.17</td>
<td>17.65</td>
</tr>
<tr>
<td><strong>Recommended Threshold:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Exceeds Threshold?</strong></td>
<td>NO</td>
<td>NO</td>
<td>NO</td>
<td>NO</td>
<td>NO</td>
<td>NO</td>
</tr>
</tbody>
</table>

Source: Impact Sciences, Inc. Emissions calculations are provided in Appendix IV.B. Totals in table may not appear to add exactly due to rounding in the computer model calculations.

1 Summertime Emissions are representative of the conditions that may occur during the ozone season (May 1 to October 31).

2 Wintertime Emissions are representative of the conditions that may occur during the balance of the year (November 1 to April 30).

The project includes the operation of a rebuilt equestrian center. Since this is a replacement of an existing equestrian center, it was assumed the net operational impacts would be negligible. In addition, associated horse trails and other similar pathways used exclusively for purposes other than travel by motorized vehicles are exempt from SCAQMD Rule 403, Fugitive Dust and Rule 1186, PM10 Emissions from Paved and Unpaved Roads, and Livestock Operations. However, Rule 402, Nuisance, would still apply and would require the SCAQMD to investigate any valid nuisance complaints.

As shown in Table IV.B-12, the majority of emissions that would occur as a result of the proposed project are generated by the operation of vehicular sources, with the exception of consumer products for emissions of VOC. Emissions from on-site uses comprise only a small portion of the overall emissions inventory associated with the proposed development. As is presented in Table IV.B-12, operational emissions associated with the complete build out and operation of the project would not exceed SCAQMD thresholds. Therefore, operational emissions are considered less than significant.

As previously discussed, the SCAQMD lists additional criteria indicating when a project may create potential air quality impacts. These criteria are listed below along with an analysis of whether or not the project meets any of them. If a project meets any one of the criteria, project air quality impacts would be significant relative to that criterion.

- Project could interfere with the attainment of the federal or state ambient air quality standards by either violating or contributing to an existing or projected air quality violation.

---

61 South Coast Air Quality Management District, CEQA Air Quality Handbook, November 1993, pp. 6-2–6-3.
SCAQMD’s CEQA Air Quality Handbook suggests that an air quality modeling analysis (i.e., dispersion modeling) may be performed that identifies the project’s potential impact on regional ambient air quality. A project would not create potential significant adverse air quality impacts if the dispersion modeling demonstrates that the project’s incremental emissions would not increase the frequency or the severity of existing air quality violations, or contribute to a new violation. A project-specific CO “hotspots” analysis was conducted and it was demonstrated that the project’s CO emissions would not exceed the state or federal 1-hour or 8-hour standards. With respect to the other pollutants (i.e., NO$_x$, SO$_x$, VOC, PM$_{10}$, and PM$_{2.5}$), SCAQMD staff have stated that air quality dispersion models do not currently exist for general development projects that can determine if the project’s NO$_x$, SO$_x$, VOC, and PM$_{10}$ (and PM$_{2.5}$) emissions would increase the frequency or the severity of existing regional air quality violations, or contribute to a new violation. Therefore, no such air quality dispersion analysis can be completed.

Instead, SCAQMD staff state that a project’s consistency with the population number and location assumptions identified by SCAG and used in the preparation of the 2003 AQMP should be assessed as required by the next criterion:

- Project could result in population increases within an area that would be in excess of that projected by SCAG in the AQMP, or increase the population in an area where SCAG has not projected that growth for the project’s build-out year.

The 2003 AQMP is designed to accommodate planned growth, to reduce the high levels of pollutants within the areas under the jurisdiction of SCAQMD, to return clean air to the region by 2010, and to minimize the impact on the economy. Projects that are considered to be consistent with the AQMP do not interfere with attainment and do not contribute to the exceedance of an existing air quality violation because this growth is included in the projections utilized in the formulation of the AQMP. Therefore, projects, uses, and activities that are consistent with the applicable assumptions used in the development of the AQMP would not jeopardize the long-term attainment of the air quality levels identified in the AQMP, even if they exceed the SCAQMD’s recommended thresholds.

Future air emissions within the Basin are based on demographic projections developed by SCAG for its 2001 RTP. Projects that are consistent with the projections of population forecasts identified in the 2001 RTP are considered consistent with the AQMP growth projections.

---

63 Personal communication with Steve Smith, South Coast Air Quality Management District, Diamond Bar, California, February 23, 1996.
The Hidden Creeks Estates project site is currently located in an unincorporated portion of Los Angeles County. Implementation of the proposed project requires an amendment to the City of Los Angeles Sphere of Influence, as approved by the County of Los Angeles Local Agency Formation Commission (LAFCO), as well as the annexation of the property into the City of Los Angeles. The City is currently in the process of amending its Sphere of Influence to include unincorporated portions of the San Fernando Valley, including the project site (Sphere of Influence Amendment CF-00-2206). Upon annexation of the project site into the City of Los Angeles, the site would fall within the Chatsworth-Porter Ranch Community Plan Area. Therefore, accompanying the annexation of the site into the City of Los Angeles would be Citywide General Plan and Community Plan amendments to correspond with the proposed land use and zoning designations of the project. As discussed in Section IV.J, Population and Housing, the population growth associated with the annexation of the proposed project would still be within the SCAG growth projections for the City of Los Angeles in the near term and long term, and therefore the project is consistent with the 2003 AQMP. Thus, it would not jeopardize attainment of state and federal ambient air quality standards in the Chatsworth-Porter Ranch Community Plan area or the Basin.

- Project could generate vehicle trips that cause a CO hotspot or project could be occupied by sensitive receptors that are exposed to a CO hotspot.

Motor vehicles are a primary source of pollutants within the project vicinity. Traffic-congested roadways and intersections have the potential to generate localized high levels of CO. Localized areas where ambient concentrations exceed state and/or federal standards are termed CO “hotspots.” Such hot spots are defined as locations where the ambient CO concentrations exceed the state or federal ambient air quality standards. CO is produced in greatest quantities from vehicle combustion and is usually concentrated at or near ground level because it does not readily disperse into the atmosphere. As a result, potential air quality impacts to sensitive receptors are assessed through an analysis of localized CO concentrations.

The SCAQMD recommends the use of CALINE4, a dispersion model developed by the ARB for predicting CO concentrations near roadways, as the preferred method of estimating pollutant concentrations at various locations. CALINE4 adds roadway-specific CO emissions calculated from peak traffic volumes to ambient CO air concentrations. Maximum CO concentrations at project study intersections were estimated using a simplified screening version of CALINE4, a dispersion model for predicting CO concentrations near roadways. The simplified model was developed by the Bay Area Air Quality Management District (BAAQMD) and is used to identify a potential CO hotspot. If a hotspot is identified, the complete CALINE4 model is then utilized to determine precisely the CO concentrations predicted at the intersections in question. This methodology assumes worst-case conditions (i.e., wind direction is parallel to the primary roadway, 90 degrees to the secondary road; wind speed of less than
one meter per second; and extreme atmospheric stability) and provides a screening of maximum, worst-case, CO concentrations. The simplified approach is acceptable to the SCAQMD as long as it is used consistently with the BAAQMD Guidelines.\textsuperscript{65}

Maximum CO concentrations were calculated for peak hour traffic volumes at 11 intersections in the project vicinity that are in proximity to sensitive uses (e.g., residences, schools, parks, hospitals, etc.). Morning (AM) peak hour and afternoon (PM) peak hour traffic volume information were used in the CO modeling to determine the highest impacts. Since CO hotspots tend to occur at heavily congested intersections, using the highest peak hour volume represents the worst-case situation.

The volumes used to determine the CO concentrations are based on the traffic study prepared for the proposed project, as discussed in Section IV.L, Transportation, and included in Appendix IV.L of this EIR. The results of these CO concentration calculations are presented in Table IV.B-13, Predicted Future Local Carbon Monoxide Concentrations – With Project, for representative receptors located 0 and 25 feet from each roadway.

<table>
<thead>
<tr>
<th>Intersection</th>
<th>0 Feet</th>
<th>25 Feet</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1-Hour</td>
<td>8-Hour</td>
</tr>
<tr>
<td></td>
<td>1-Hour</td>
<td>8-Hour</td>
</tr>
<tr>
<td>1. Porter Ranch Drive and Sesnon Boulevard</td>
<td>7.2</td>
<td>6.9</td>
</tr>
<tr>
<td>2. Porter Ranch Drive and Corbin Avenue</td>
<td>7.4</td>
<td>7.1</td>
</tr>
<tr>
<td>3. Porter Ranch Drive and Rinaldi Street</td>
<td>8.9</td>
<td>8.0</td>
</tr>
<tr>
<td>4. Porter Ranch Drive and SR-118 Westbound On/Off-Ramps</td>
<td>8.6</td>
<td>6.6</td>
</tr>
<tr>
<td>5. Porter Ranch Drive and SR-118 Eastbound On/Off-Ramps</td>
<td>6.6</td>
<td>5.5</td>
</tr>
<tr>
<td>6. Mason Avenue and Rinaldi Street</td>
<td>8.3</td>
<td>7.6</td>
</tr>
<tr>
<td>7. Corbin Avenue and Rinaldi Street</td>
<td>8.6</td>
<td>7.8</td>
</tr>
<tr>
<td>8. De Soto Avenue and SR-118 Westbound On/Off-Ramps</td>
<td>7.8</td>
<td>6.0</td>
</tr>
<tr>
<td>9. De Soto Avenue and SR-118 Eastbound On/Off-Ramps</td>
<td>9.4</td>
<td>8.1</td>
</tr>
<tr>
<td>10. Mason Avenue and Sesnon Boulevard</td>
<td>6.9</td>
<td>6.8</td>
</tr>
<tr>
<td>11. Mason Avenue and Corbin Avenue</td>
<td>7.4</td>
<td>7.1</td>
</tr>
</tbody>
</table>

Exceeds state 1-hour standard of 20.0 ppm? NO
Exceeds federal 1-hour standard of 35.0 ppm? NO
Exceeds state 8-hour standard of 9.0 ppm? NO
Exceeds federal 8-hour standard of 9 ppm? NO

Source: Impact Sciences, Inc. Emissions calculations are provided in Appendix IV.B.

\textsuperscript{1} State 1-hour standard is 20 parts per million. Federal 1-hour standard is 35 parts per million.

\textsuperscript{2} State 8-hour standard is 9.0 parts per million. Federal 8-hour standard is 9 parts per million.

\textsuperscript{65} Personal communication with Steve Smith, Program Supervisor, South Coast Air Quality Management District, Diamond Bar, California, 12 May 2004.
As shown, the CALINE4 screening procedure predicts that, under worst-case conditions, future CO concentrations at each intersection would not exceed the state or federal 1-hour and 8-hour standards due to the emissions from the cumulative traffic, including that from the proposed project. No significant CO hotspot impacts would occur to sensitive receptors in the vicinity of these intersections. As a result, no significant project-related impacts, as a result of the implementation of the proposed project, would occur relative to projected CO concentrations.

- Project will have the potential to create, or be subjected to, an objectionable odor that could impact sensitive receptors.

The proposed residential uses on the site would not generate objectionable odors. Airborne odors associated with the equestrian facility and equestrian lots would result primarily from horses. The surrounding community currently possesses an equestrian-orientation and, therefore, horse-related odors would typically not be considered objectionable by most local individuals. Wastes would be disposed of in accordance with any applicable requirements. Consequently, no significant impacts from such odors are anticipated.

- Project will have hazardous materials on site and could result in an accidental release of toxic air emissions or acutely hazardous materials posing a threat to public health and safety;
- Project could emit a toxic air contaminant regulated by SCAQMD rules or that is on a federal or state air toxic list;
- Project could be occupied by sensitive receptors within 0.25 mile of an existing facility that emits air toxics identified in SCAQMD Rule 1401; or
- Project could emit carcinogenic or toxic air contaminants that individually or cumulatively exceed the maximum individual cancer risk of 10 in 1 million.

With respect to the above four criteria, the project will not have hazardous materials on site and will not be a source of toxic air contaminants regulated by the SCAQMD, state, or federal government, except as a result of normal use of household and consumer products, architectural coatings, and similar products. Therefore, no significant impacts are anticipated with respect to the above four criteria.

**Global Climate Change**

As previously discussed, the primary source of GHGs in California is fossil fuel combustion. The primary GHG associated with fuel combustion is carbon dioxide, with lesser amounts of methane and nitrous oxide. Accordingly, the project would result in emissions of these GHGs due to fuel combustion in motor vehicles and building heating systems associated with the project. Building and motor vehicle air conditioning systems may use HFCs (and HCFCs and CFCs to the extent that they have not been
IV.B Air Quality

While the project would result in emissions of GHGs, the significance of the impact of a single project on global climate cannot be determined at this time. First, no guidance exists to indicate what level of GHG emissions would be considered substantial enough to result in a significant adverse impact on global climate. Even though the GHG emissions associated with an individual development project could be estimated, there is no emissions threshold that can be used to evaluate the significance of these emissions. Second, global climate change models are not sensitive enough to be able to predict the effect of a single project on global temperatures and the resultant effect on climate; therefore, they cannot be used to evaluate the significance of a project’s impact. Thus, insufficient information and predictive tools exist to assess whether a single project would result in a significant impact on global climate. For these reasons, determining the significance of the impact of the project on global climate is speculative. Nonetheless, the emissions associated with a single development would be too small to influence global climate change on its own.

c. Cumulative Impacts

Regional Analysis

As discussed previously, the SCAQMD’s CEQA Air Quality Handbook identifies methodologies to determine the cumulative significance of land use projects where the construction and/or operation emission generation thresholds have been exceeded. The SCAQMD method employed for this project is that which determines whether the rate of growth in average daily trips exceeds the rate of growth in population. This method differs from the methodology used in other sections of this EIR in which all foreseeable future development within a given service boundary or geographical area is predicted and its impacts measured. The SCAQMD has not identified thresholds to which the total emissions of all cumulative development can be compared. Instead, the SCAQMD’s methods are based on performance standards and emission reduction targets necessary to attain the federal and state air quality standards identified in the AQMP.

Uses proposed on the project site would result in an on-site population of approximately 549 new residents. While the equestrian center would likely employ five full-time individuals per shift, with

two shifts per day, it is assumed that the overall employment growth would be negligible considering the existing equestrian facility. These figures, along with the project Average Daily Trip (ADT) volume included in the traffic study prepared for the project, SCAG population growth data, and traffic data for the portion of Los Angeles County located within the Basin obtained from the EMFAC2007 on-road motor vehicle emissions model developed by the ARB, were used to calculate and compare the ratio of project ADT to anticipated ADT in the area, and the ratios of the project population to the anticipated population in the area. As shown in Table IV.B-14, Comparison of ADT to Population Growth – Hidden Creeks Estates, the ADT ratio is less than the population ratio at project buildout in 2015. As such, cumulative impacts would be less than significant based on this criterion.

<table>
<thead>
<tr>
<th>Population Comparison</th>
<th>ADT</th>
<th>Population</th>
</tr>
</thead>
<tbody>
<tr>
<td>Residences at Hidden Creeks Estates(^{1,4})</td>
<td>1,859</td>
<td>549</td>
</tr>
<tr>
<td>Los Angeles County(^{2,3})</td>
<td>43,422,800</td>
<td>11,113,772</td>
</tr>
<tr>
<td>Ratio of Project to Los Angeles County</td>
<td>0.000043</td>
<td>0.000049</td>
</tr>
</tbody>
</table>

Source: Impact Sciences, Inc.

1 Based on a population generation rate of 2.92 persons per household. U.S. Census Bureau. Profile of General Demographic Characteristics, 2000.

2 Estimated ADT in Los Angeles County as determined by EMFAC2007.


4 Estimated ADT for project residents and employees as determined by URBEMIS2002.

In addition to the cumulative significance methodologies contained in SCAQMD’s CEQA Air Quality Handbook, the SCAQMD staff has suggested that the emissions-based thresholds be used to determine if a project’s contribution to regional cumulative emissions is cumulatively considerable.\(^{67}\) As shown in Table IV.B-10, the project’s construction emissions would exceed the project-level threshold of significance for VOC, NO\(_x\), PM\(_{10}\), and PM\(_{2.5}\). Accordingly, the project’s construction emissions, prior to mitigation, would be considered cumulatively considerable, and the cumulative air quality impact would be significant under this criterion.

67 Personal communication with Steve Smith, Program Supervisor, South Coast Air Quality Management District, Diamond Bar, California, with David Deckman, Impact Sciences, April 19, 2006.
Global Climate Change

In addition to the project-level impact on global climate, the project’s contribution to state, national, and global GHG emission inventories and the resultant effect on global climate must also be evaluated on a cumulative basis. The project would generate GHG emissions, which would contribute to potential cumulative impacts of GHG emissions on global climate.

Under Section 15130 of the CEQA Guidelines, an EIR must discuss cumulative impacts if a project would have a cumulatively considerable effect on a resource, where “cumulatively considerable” is defined as “…the incremental effects of an individual project are significant when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects.”

However, as Section 15064(h)(4) states, “The mere existence of significant cumulative impacts caused by other projects alone shall not constitute substantial evidence that the proposed project’s incremental effects are cumulatively considerable.” Therefore, the fact that the proposed project would result in emissions of GHGs (chiefly carbon dioxide), and that global GHGs emissions contribute to the greenhouse effect and the resultant impacts on global climate, does not mean that the proposed project would have a cumulatively considerable impact on global climate. Accordingly, the potential contribution of the project to this cumulative impact is evaluated under other criteria.

To date, no quantitative emission thresholds or similar criteria have been established to evaluate the cumulative impact of a single project on global climate. In the absence of quantitative emissions thresholds, consistency with adopted programs and policies is used by many jurisdictions to evaluate the significance of cumulative impacts. A project’s consistency with the implementing programs and regulations to achieve the statewide GHG emission reduction goals established under Executive Order S-3-05 and AB 32 cannot yet be evaluated because they are still under development. Nonetheless, the Climate Action Team, established by Executive Order S-3-05, has recommended strategies for implementation at the statewide level to meet the goals of the Executive Order. In the absence of an adopted plan or program, the Climate Action Team’s strategies serve as current statewide approaches to reducing the State’s GHG emissions. As no other plan or program for GHG emissions that would apply

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68 California Environmental Quality Act Guidelines, California Code of Regulations, Title 14, Division 6, Chapter 3, Section 15065(a)(3).
69 California Environmental Quality Act Guidelines, California Code of Regulations, Title 14, Division 6, Chapter 3, Section 15064(h)(4).
to the project has been adopted, consistency with these strategies is assessed to determine if the project’s contribution to cumulative GHG emissions would be considerable.

In its report to the Governor and the Legislature, the Climate Action Team recommended strategies that could be implemented by various state boards, departments, commissions, and other agencies to reduce GHG emissions.\textsuperscript{70} This EIR contains several project design features that would result in lower fuel combustion emissions, reduced energy usage, water conservation, and other collateral benefits with respect to GHG emissions.\textsuperscript{71} The Climate Action Team strategies that are relevant to the proposed project, the implementing agencies, and the project’s design features that would be consistent with these strategies are listed in Table IV.B-15, Project Features and Mitigation Measures to Achieve Climate Action Team Strategies. Based on the analysis in Table IV.B-15, the proposed project would substantially lessen its contribution to GHG emissions and global climate due to its consistency with these strategies. Accordingly, the contribution of the project to the cumulative GHG emissions is not considered cumulatively considerable.

\begin{table}[h]
\centering
\begin{tabular}{|l|l|l|}
\hline
\textbf{CAT Strategy} & \textbf{Implementing Agency} & \textbf{Project Feature/Mitigation} \\
\hline
Vehicle Climate Change Standards & Air Resources Board & The project would be consistent with this strategy to the extent that new passenger vehicle and light trucks are purchased by the project’s residents starting in the 2009 model year. \\
\hline
HFC Reduction Strategies & Air Resources Board & Project air conditioning systems would comply with the latest standards for new systems. Use of consumer products using HFCs would comply with CARB regulations, when adopted. \\
\hline
Building Energy Efficiency Standards in Place & Energy Commission & The project will meet or exceed California energy standards or energy efficient lighting requirements. \\
\hline
Appliance Energy Efficiency Standards in Place & Energy Commission & \\
\hline
Water Use Efficiency & Department of Water Resources & Use of landscape and ornamental water use will conform with the local water efficient landscape ordinance or the landscape and ornamental budget outlined by the Department of Water Resources. \\
\hline
\end{tabular}
\caption{Table IV.B-15 Project Features and Mitigation Measures to Achieve Climate Action Team Strategies}
\end{table}

Source: Impact Sciences, Inc.

\textsuperscript{70} California Environmental Protection Agency, Climate Action Team, Climate Action Team Report to Governor Schwarzenegger and the Legislature. March 2006.

\textsuperscript{71} Project design features and mitigation measures that are intended to reduce criteria pollutant emissions associated with fuel combustion (e.g., motor vehicle emissions) or energy conservation would also serve to reduce GHG emissions.
d. Mitigation Measures

The proposed project may result in potentially significant air quality impacts during construction of the proposed project with respect to emissions of VOC, NO\textsubscript{X}, PM\textsubscript{10}, and PM\textsubscript{2.5}. In addition, the project may result in potentially localized significant NO\textsubscript{2} impacts. Therefore, the following mitigation measures are required to be implemented as part of the project.

**MM-AQ-1** The construction contractor shall develop a Construction Traffic Emission Management Plan to minimize emissions from vehicles including, but not limited to, scheduling truck deliveries to avoid peak hour traffic conditions, consolidating truck deliveries, and prohibiting truck idling in excess of 5 minutes.

**MM-AQ-2** The construction contractor shall ensure that the use of all construction equipment is suspended during first-stage smog alerts.

**MM-AQ-3** The construction contractor shall enforce the use electricity or alternate fuels for on-site mobile equipment instead of diesel equipment to the extent feasible.

**MM-AQ-4** The construction contractor shall ensure that all construction equipment is maintained by conducting regular tune-ups according to the manufacturers’ recommendations.

**MM-AQ-5** The construction contractor shall ensure the use of electric welders to avoid emissions from gas or diesel welders, to the extent feasible.

**MM-AQ-6** The construction contractor shall ensure the use of on-site electricity or alternative fuels rather than diesel-powered or gasoline-powered generators to the extent feasible.

**MM-AQ-7** Prior to use in construction, the project applicant will evaluate the feasibility of retrofitting the large off-road construction equipment that will be operating for significant periods. Retrofit technologies such as particulate traps, selective catalytic reduction, oxidation catalysts, air enhancement technologies, etc., will be evaluated. These technologies will be required if they are verified by the ARB and/or the U.S. EPA and are commercially available and can feasibly be retrofitted onto construction equipment.

**MM-AQ-8** The construction contractor shall ensure that traffic speeds on all unpaved roads are reduced to 15 miles per hour or less.
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MM-AQ-9 The construction contractor shall ensure that active sites are watered at least three times daily during dry weather.

MM-AQ-10 The construction contractor shall schedule all construction activities that affect traffic flow during off-peak hours (e.g., between 7:00 PM and 6:00 PM and between 10:00 AM and 3:00 PM).

e. Adverse Effects

Project-Specific Impacts

Although the recommended mitigation measures, if feasible, would reduce the magnitude of construction emissions, no feasible mitigation exists that would reduce all of these emissions to below the SCAQMD’s recommended thresholds of significance. The project’s construction-related emissions of VOC, NO\(_x\), PM\(_{10}\), and PM\(_{2.5}\) are considered significant and unavoidable.

Cumulative Impacts

The proposed project ADT ratio is less than the population ratio at project build out; therefore; the cumulative impacts are less than significant based on this criterion. However, the mitigated construction-related VOC, NO\(_x\), PM\(_{10}\), and PM\(_{2.5}\) emissions exceed the SCAQMD’s recommended daily emission thresholds of significance for these pollutants. As the Basin is already designated as nonattainment for ozone (VOC and NO\(_x\) are ozone precursors), PM\(_{10}\), and PM\(_{2.5}\) any increases in these emissions by the project are considered significant and unavoidable cumulative air quality impacts.