4.10 AIR QUALITY

This section includes a description of existing air quality conditions, a summary of applicable regulations, and analyses of potential short-term and long-term air quality impacts of the proposed project. The methods of analysis for short-term construction, long-term operational, local mobile-source, odor, and toxic air contaminant (TAC) emissions are consistent with the recommendations of the Placer County Air Pollution Control District (PCAPCD). Mitigation measures are recommended, as necessary, to reduce significant air quality impacts.

This project DEIR has been prepared to meet the requirements of a project-level EIR. The City's intention in preparing this project EIR is that no further environmental review under CEQA would be required for subsequent projects which are consistent with the Specific Plan to provide for the streamlined approval of projects proposed within the Plan area that are consistent with land use designations, adhere to design guidelines (specifically prototype development), or fall within the scope of the Specific Plan and EIR.

4.10.1 EXISTING CONDITIONS

The Plan area is located in the western portion of Placer County, California (western Placer County), which is located within the Sacramento Valley Air Basin (SVAB). The SVAB also comprises all of Butte, Colusa, Glenn, Sacramento, Shasta, Sutter, Tehama, Yolo and Yuba counties along with the eastern portion of Solano County. Western Placer County is also part of the Sacramento Federal Ozone Nonattainment Area which comprises of Sacramento and Yolo Counties and parts of El Dorado, Solano, and Sutter Counties all of which affect each other's air quality. PCAPCD works in conjunction with Air Pollution Control Districts and Air Quality Management Districts of these contiguous jurisdictions to develop plans to bring the entire ozone nonattainment area into compliance. Ambient concentrations of air pollutants are determined by the amount of emissions released by pollutant sources and the atmosphere's ability to transport and dilute such emissions. Natural factors which affect transport and dilution include terrain, wind, atmospheric stability, and the presence of sunlight. Therefore, existing air quality conditions in the area are determined by such natural factors as topography, meteorology, and climate in addition to the amount of emissions released by existing air pollutant sources, each of which are discussed separately below.

TOPOGRAPHY, CLIMATE, AND METEOROLOGY

The SVAB is relatively flat and bordered by the North Coast Ranges to the west and the Northern Sierra Nevada Mountains to the east. Air flows into the SVAB through the Carquinez Strait, the only breach in the western mountain barrier, and moves across the Sacramento–San Joaquin River Delta from the San Francisco Bay Area Air Basin.

The Mediterranean climate type of the SVAB is characterized by hot, dry summers and cool, rainy winters. During the summer, daily temperatures range from 50°F to more than 100°F. The inland location and surrounding mountains shelter the area from much of the ocean breezes that keep the coastal regions moderate in temperature.

Most precipitation in the SVAB results from air masses that move in from the Pacific Ocean, usually from the west or northwest during the winter months. More than half the total annual precipitation falls during the winter rainy season (November through February) and the average winter temperature is a moderate 49°F. Characteristic of SVAB winters also include periods of dense and persistent low-level fog which are most prevalent between storms. The prevailing winds are moderate in speed and vary from moisture laden breezes from the south to dry land flows from the north.

The mountains surrounding the SVAB create a barrier to airflow which leads to the entrapment of air pollutants when meteorological conditions are unfavorable for transport and dilution. The highest frequency of poor air movement occurs in the fall and winter when high-pressure cells are present over the SVAB. The lack of surface wind during these periods combined with the reduced vertical flow because of less surface heating reduces the

influx of air and leads to the concentration of air pollutants under stable metrological conditions. Surface concentrations of air pollutant emissions are highest when these conditions occur in combination with agricultural burning activities or temperature inversions which hamper dispersion by creating a ceiling over the area and trapping air pollutants near the ground.

May through October is ozone season in the SVAB which is characterized by poor air movement in the mornings with the arrival of the delta sea breeze from the southwest in the afternoons. In addition, longer daylight hours provide a plentiful amount of sunlight to fuel photochemical reactions between reactive organic gases (ROG) and oxides of nitrogen (NO_X) which result in ozone formation. Typically, the delta breeze transports air pollutants northward out of the SVAB; however, a phenomenon known as the Schultz Eddy prevents this from occurring during approximately half of the time from July to September. The Schultz Eddy phenomenon causes the wind pattern to shift southward resulting in air pollutants being blown back into the SVAB. This phenomenon exacerbates the concentration of air pollutant emissions in the SVAB and contributes to violations of the ambient air quality standards.

The winds and unstable atmospheric conditions associated with the passage of winter storms result in periods of low air pollution and excellent visibility. Precipitation and fog tend to reduce or limit some pollutant concentrations. For instance, clouds and fog block sunlight, which is required to fuel photochemical reactions that form ozone. Because carbon monoxide (CO) is partially water-soluble, precipitation and fog also tend to reduce concentrations in the atmosphere. In addition, respirable particulate matter with an aerodynamic diameter of 10 micrometers or less (PM_{10}) can be washed from the atmosphere through wet deposition processes (e.g., rain). However, between winter storms, high pressure and light winds lead to the creation of low-level temperature inversions and stable atmospheric conditions resulting in the concentration of air pollutants (e.g., CO, PM_{10}).

Local meteorology of the proposed Plan area is represented by measurements recorded at the Sacramento station. The normal annual precipitation, which occurs primarily from November through February, is approximately 18 inches. January temperatures range from a normal minimum of 38°F to a normal maximum of 53°F. July temperatures range from a normal minimum of 58°F to a normal maximum of 93°F (National Oceanic and Atmospheric Administration 1992). The predominant wind direction and speed is from the south-southwest at 10 mph (California Air Resources Board 1994).

CRITERIA AIR POLLUTANTS

Concentrations of the following air pollutants: ozone, CO, nitrogen dioxide (NO_2), sulfur dioxide (SO_2), PM_{10}, and fine particulate matter with an aerodynamic resistance diameter of 2.5 micrometers or less ($PM_{2.5}$), and lead are used as indicators of ambient air quality conditions. Because these are the most prevalent air pollutants known to be deleterious to human health, and because there is extensive documentation available on health-effects criteria for these pollutants, they are commonly referred to as "criteria air pollutants."

A brief description of each criteria air pollutant, including source types, health effects, and future trends, is provided below along with the most current attainment area designations and monitoring data for the Plan area and vicinity.

Ozone

Ozone is a photochemical oxidant, a substance whose oxygen combines chemically with another substance in the presence of sunlight, and the primary component of smog. Ozone is not directly emitted into the air but forms through complex chemical reactions between precursor emissions of ROG and NO_x in the presence of sunlight. ROG are volatile organic compounds that are photochemically reactive. ROG emissions result primarily from incomplete combustion and the evaporation of chemical solvents and fuels. NO_x are a group of gaseous compounds of nitrogen and oxygen that results from the combustion of fuels. As a highly reactive molecule, ozone readily combines with many different components of the atmosphere. Consequently, high levels of ozone

tend to exist only while high ROG and NO_x levels are present to sustain the ozone formation process. Once the precursors have been depleted, ozone levels rapidly decline. Because these reactions occur on a regional scale, ozone is a regional pollutant.

Ozone located in the upper atmosphere (stratosphere) acts in a beneficial manner by shielding the earth from harmful ultraviolet radiation that is emitted by the sun. However, ozone located in the lower atmosphere (troposphere) is a major health and environmental concern. Meteorology and terrain play a major role in ozone formation. Generally, low wind speeds or stagnant air coupled with warm temperatures and clear skies provide the optimum conditions for formation. As a result, summer is generally the peak ozone season. Because of the reaction time involved, peak ozone concentrations often occur far downwind of the precursor emissions. In general, ozone concentrations over or near urban and rural areas reflect an interplay of emissions of ozone precursors, transport, meteorology, and atmospheric chemistry (Godish 2004).

The adverse health effects associated with exposure to ozone pertain primarily to the respiratory system. Scientific evidence indicates that ambient levels of ozone affect not only sensitive receptors (e.g., asthmatics, children) but healthy adults as well. Exposure to ambient levels of ozone ranging from 0.10 to 0.40 part per million (ppm) for 1 to 2 hours has been found to significantly alter lung functions by increasing respiratory rates and pulmonary resistance, decreasing tidal volumes (the amount of air inhaled and exhaled), and impairing respiratory mechanics. Ambient levels of ozone above 0.12 ppm are linked to symptomatic responses that include such symptoms as throat dryness, chest tightness, headache, and nausea. In addition to the above adverse health effects, evidence also exists relating ozone exposure to an increase in permeability of respiratory epithelia; such increased permeability leads to an increased response of the respiratory system to challenges, and a decrease in the immune system's ability to defend against infection (Godish 2004).

Ozone precursor emissions of ROG and NO_x have decreased over the past several years because of more stringent motor vehicle standards and cleaner burning fuels. The ozone problem in the SVAB ranks among the most severe in the state. Peak levels have not declined as much as the number of days that standards are exceeded has declined. From 1990 to 2006, the maximum peak 8-hour indicator decreased by 12%. The number of State and national 8-hour exceedance days has declined by 43% and 40%, respectively. Most of this progress has occurred since 2003. However, the number of exceedance days in 2005 and 2006 were among the lowest in this 17-year period (ARB 2007a). Data from 2005 showing the trend in 3-year averages of 8-hour ozone data indicates that only the northern portion of the SVAB now attains the national 8-hour ozone standard (ARB 2007a).

Carbon Monoxide

CO is a colorless, odorless, and poisonous gas produced by incomplete burning of carbon in fuels, primarily from mobile (transportation) sources. In fact, 77% of the nationwide CO emissions are from mobile sources. The other 23% consists of CO emissions from wood-burning stoves, incinerators, and industrial sources.

CO enters the bloodstream through the lungs by combining with hemoglobin, which normally supplies oxygen to the cells. However, CO combines with hemoglobin much more readily than oxygen does and results in a drastic reduction in the amount of oxygen available to the cells. Adverse health effects associated with exposure to CO concentrations include such symptoms as dizziness, headaches, and fatigue. CO exposure is especially harmful to individuals who suffer from cardiovascular and respiratory diseases (EPA 2008a).

The highest concentrations are generally associated with cold, stagnant weather conditions that occur during the winter. In contrast to problems caused by ozone, which tends to be a regional pollutant, CO problems tend to be localized.

Nitrogen Dioxide

NO_2 is a brownish, highly reactive gas that is present in all urban environments. The major human-made sources of NO_2 are combustion devices, such as boilers, gas turbines, and mobile and stationary reciprocating internal

combustion engines. Combustion devices emit primarily nitric oxide (NO), which reacts through oxidation in the atmosphere to form NO_2 (EPA 2008a). The combined emissions of NO and NO_2 are referred to as NO_x and reported as equivalent NO_2. Because NO_2 is formed and depleted by reactions associated with photochemical smog (ozone), the NO_2concentration in a particular geographical area may not be representative of the local NO_x emission sources.

Inhalation is the most common route of exposure to NO_2. Because NO_2 has relatively low solubility in water, the principal site of toxicity is in the lower respiratory tract. The severity of the adverse health effects depends primarily on the concentration inhaled rather than the duration of exposure. An individual may experience a variety of acute symptoms including coughing, difficulty with breathing, vomiting, headache, and eye irritation during or shortly after exposure. After a period of approximately 4 to 12 hours, an exposed individual may experience chemical pneumonitis or pulmonary edema with breathing abnormalities, cough, cyanosis, chest pain, and rapid heartbeat. Severe, symptomatic NO_2 intoxication after acute exposure has been linked on occasion with prolonged respiratory impairment with such symptoms as chronic bronchitis and decreased lung functions (EPA 2008a).

Sulfur Dioxide

SO_2 is produced by such stationary sources as coal and oil combustion, steel mills, refineries, and pulp and paper mills. The major adverse health effects associated with SO_2 exposure pertain to the upper respiratory tract. SO_2 is a respiratory irritant with constriction of the bronchioles occurring with inhalation of SO_2 at 5 ppm or more. On contact with the moist, mucous membranes, SO_2 produces sulfurous acid which is a direct irritant. Concentration rather than duration of the exposure is an important determinant of respiratory effects. Exposure to high SO_2 concentrations may result in edema of the lungs or glottis and respiratory paralysis.

Particulate Matter

Respirable particulate matter with an aerodynamic diameter of 10 micrometers or less is referred to as PM_{10}. PM_{10} consists of particulate matter emitted directly into the air such as fugitive dust, soot, and smoke from mobile and stationary sources, construction operations, fires and natural windblown dust, and particulate matter formed in the atmosphere by condensation and/or transformation of SO_2 and ROG (EPA 2008a). Fine particulate matter ($PM_{2.5}$) is a subgroup of PM_{10} consisting of smaller particles that have an aerodynamic diameter of 2.5 micrometers or less (ARB 2007a).

The adverse health effects associated with PM_{10} depend on the specific composition of the particulate matter. For example, health effects may be associated with metals, polycyclic aromatic hydrocarbons, and other toxic substances adsorbed onto fine particulate matter (referred to as the "piggybacking effect") or with fine dust particles of silica or asbestos. Generally, adverse health effects associated with PM_{10} may result from both short-term and long-term exposure to elevated concentrations and may include breathing and respiratory symptoms, aggravation of existing respiratory and cardiovascular diseases, alterations to the immune system, carcinogenesis, and premature death (EPA 2008a). $PM_{2.5}$ poses an increased health risk because the particles can deposit deep in the lungs and may contain substances that are particularly harmful to human health. Based on reviews of the latest scientific literature, ARB has concluded that $PM_{2.5}$ is more dangerous than previously estimated. New research suggests that even small increases (10 $\mu g/m^3$) in exposure increase the potential for increased cancer risk. State ambient air quality standards are periodically reviewed to assess their adequacy in protecting public health, and this new information will be considered when the PM standards are next reviewed. Nonetheless, the new information indicates the importance of efforts to reduce public exposures to $PM_{2.5}$ (ARB 2008i).

Direct emissions of PM_{10} increased in the SVAB from 1975 and 2005 and are projected to increase through 2020. PM_{10} emissions in the SVAB are dominated by emissions from area-wide sources, primarily fugitive dust from vehicle travel on unpaved and paved roads, dust from farming operations, fugitive dust from construction and demolition, and residential fuel combustion. Annual average $PM_{2.5}$ concentrations in the SVAB have remained

relatively steady from 1975 through 2005 and are projected to increase slightly through 2020. The State annual average concentrations decreased slightly from 1999 through 2005, with more significant drops in 2001 and 2003. The differences in trends are due to differences in State and national monitoring methods. $PM_{2.5}$ emissions in the SVAB are dominated by emissions from the same area-wide sources as PM_{10} (ARB 2007a).

Lead

Lead is a metal found naturally in the environment as well as in manufactured products. The major sources of lead emissions have historically been mobile and industrial sources. As a result of the phase-out of leaded gasoline, as discussed in detail below, metal processing is currently the primary source of lead emissions. The highest levels of lead in air are generally found near lead smelters. Other stationary sources are waste incinerators, utilities, and lead-acid battery manufacturers.

Twenty years ago, mobile sources were the main contributor to ambient lead concentrations in the air. In the early 1970s, the U.S. Environmental Protection Agency (EPA) set national regulations to gradually reduce the lead content in gasoline. In 1975, unleaded gasoline was introduced for motor vehicles equipped with catalytic converters. EPA banned the use of leaded gasoline in highway vehicles in December 1995 (EPA 2008a).

As a result of EPA's regulatory efforts to remove lead from gasoline, emissions of lead from the transportation sector have declined dramatically (95% between 1980 and 1999) and levels of lead in the air decreased by 94% between 1980 and 1999. Transportation sources, primarily airplanes, now contribute only 13% of lead emissions. A National Health and Nutrition Examination Survey reported a 78% decrease in the levels of lead in people's blood between 1976 and 1991. This dramatic decline can be attributed to the move from leaded to unleaded gasoline (EPA 2008a).

The decrease in lead emissions and ambient lead concentrations over the past 25 years is California's most dramatic success story with regard to air quality management. The rapid decrease in lead concentrations can be attributed primarily to phasing out the lead in gasoline. This phase-out began during the 1970s, and subsequent California Air Resources Board (ARB) regulations have virtually eliminated all lead from gasoline now sold in California. All areas of the state are currently designated as attainment for the state lead standard (EPA does not designate areas for the national lead standard). Although the ambient lead standards are no longer violated, lead emissions from stationary sources still pose "hot spot" problems in some areas. As a result, ARB identified lead as a TAC.

Monitoring Station Data and Attainment Area Designations

Criteria air pollutant concentrations are measured at several monitoring stations in the SVAB. The Roseville-N Sunrise Blvd station is the closest in proximity to the proposed Plan area with recent data for ozone, CO, PM_{10} and $PM_{2.5}$. In general, the ambient air quality measurements from these stations are representative of the air quality in the vicinity of the proposed Plan area. Table 4.10-1 summarizes the air quality data from the most recent 3 years.

Both ARB and the EPA use this type of monitoring data to designate areas according to their attainment status for criteria air pollutants. The purpose of these designations is to identify those areas with air quality problems and thereby initiate planning efforts for improvement. The three basic designation categories are nonattainment, attainment, and unclassified. Unclassified is used in an area that cannot be classified on the basis of available information as meeting or not meeting the standards. In addition, the California designations include a subcategory of the nonattainment designation, called nonattainment-transitional. The nonattainment-transitional designation is given to nonattainment areas that are progressing and nearing attainment. The most recent attainment designations with respect to the Plan area are shown in Table 4.10-2 for each criteria air pollutant.

Table 4.10-1
Summary of Annual Ambient Air Quality Data (2004–2006)[1]

	2004	2005	2006
OZONE			
Maximum concentration (1-hr/8-hr, ppm)	0.106/ 0.085	0.118/ 0.106	0.121/ 0.097
Number of days state standard exceeded (1-hr)	5	13	16
Number of days national standard exceeded (1-hr/8-hr)	0/1	0/9	0/9
CARBON MONOXIDE			
Maximum concentration (1-hr/8-hr, ppm)	2.6/1.93	2.0/1.27	–
Number of days state standard exceeded (8-hr)	0	0	–
Number of days national standard exceeded (1-hr/8-hr)	0	0	–
FINE PARTICULATE MATTER ($PM_{2.5}$)			
Maximum concentration (µg/m^3) National/California[2]	47.8	59.2	54.10
Number of days national standard exceeded (measured[3])	0	0	0
RESPIRABLE PARTICULATE MATTER (PM_{10})			
Maximum concentration (µg/m^3, National/California[2])	43.0	58.0	55.0
Number of days state standard exceeded (Measured/Calculated[3])	0	1	1
Number of days national standard exceeded (Measured/Calculated[3])	0	0	0

Where, ppm = parts per million; µg/m3 = micrograms per cubic meter; - = data not available

1 Measurements from the Roseville – N Sunrise Blvd station.

2 State and national statistics may differ for the following reasons: State statistics are based on California approved samplers, whereas national statistics are based on samplers using federal reference or equivalent methods. State and national statistics may therefore be based on different samplers. State statistics are based on local conditions National statistics are based on standard conditions. State criteria for ensuring that data are sufficiently complete for calculating valid annual averages are more stringent than the national criteria.

3 Measured days are those days that an actual measurement was greater than the level of the state daily standard or the national daily standard. Measurements are typically collected every 6 days. Calculated days are the estimated number of days that a measurement would have been greater than the level of the standard had measurements been collected every day. The number of days above the standard is not necessarily the number of violations of the standard for the year.

Sources: ARB 2008a, EPA 2008b

Table 4.10-2
Summary of Ambient Air Quality Standards and Western Placer County Designations

Pollutant	Averaging Time	California		National Standards[1]		
		Standards[2,3]	Attainment Status[4]	Primary[3,5]	Secondary[3,6]	Attainment Status[7]
Ozone	1-hour	0.09 ppm (180 µg/m^3)	N (Serious)	–	–	–
	8-hour	0.07 ppm (137 µg/m^3)	–	0.08 ppm (157 µg/m^3)	Same as Primary Standard	N (Serious)
Carbon Monoxide (CO)	1-hour	20 ppm (23 mg/m^3)	A	35 ppm (40 mg/m^3)	–	U/A
	8-hour	9 ppm (10 mg/m^3)		9 ppm (10 mg/m^3)		
Nitrogen Dioxide (NO_2)[8]	Annual Arithmetic Mean	0.030 ppm (56 µg/m^3)	–	0.053 ppm (100 µg/m^3)	Same as Primary Standard	U/A
	1-hour	0.18 ppm (338 µg/m^3)	A	–		–
Sulfur Dioxide (SO_2)	Annual Arithmetic Mean	–	–	0.030 ppm (80 µg/m^3)	–	U
	24-hour	0.04 ppm (105 µg/m^3)	A	0.14 ppm (365 µg/m^3)	–	
	3-hour	–	–	–	0.5 ppm (1300 µg/m^3)	
	1-hour	0.25 ppm (655 µg/m^3)	A	–	–	–
Respirable Particulate Matter (PM_{10})	Annual Arithmetic Mean	20 µg/m^3	N	-	Same as Primary Standard	A
	24-hour	50 µg/m^3		150 µg/m^3		
Fine Particulate Matter ($PM_{2.5}$)	Annual Arithmetic Mean	12 µg/m^3	N	15 µg/m^3	Same as Primary Standard	U
	24-hour	–	–	35 µg/m^3		
Lead[9]	30-day Average	1.5 µg/m^3	A	–	–	–
	Calendar Quarter	–	–	1.5 µg/m^3	Same as Primary Standard	
Sulfates	24-hour	25 µg/m^3	A	**No National Standards**		
Hydrogen Sulfide	1-hour	0.03 ppm (42 µg/m^3)	U			
Vinyl Chloride[9]	24-hour	0.01 ppm (26 µg/m^3)	U/A			

Table 4.10-2
Summary of Ambient Air Quality Standards and Western Placer County Designations

Pollutant	Averaging Time	California		National Standards [1]		
		Standards [2,3]	Attainment Status [4]	Primary [3,5]	Secondary [3,6]	Attainment Status [7]
Visibility-Reducing Particle Matter	8-hour	Extinction coefficient of 0.23 per kilometer—visibility of 10 miles or more (0.07—30 miles or more for Lake Tahoe) because of particles when the relative humidity is less than 70%.	U	**No National Standards**		

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

[1] National standards (other than ozone, PM, and those based on annual averages or annual arithmetic means) are not to be exceeded more than once a year. The ozone standard is attained when the fourth highest 8-hour concentration in a year, averaged over 3 years, is equal to or less than the standard. The PM_{10} 24-hour standard is attained when 99% of the daily concentrations, averaged over 3 years, are equal to or less than the standard. The $PM_{2.5}$ 24-hour standard is attained when 98% of the daily concentrations, averaged over 3 years, are equal to or less than the standard. Contact U.S. Environmental Protection Agency (EPA) for further clarification and current federal policies.

[2] California standards for ozone, CO (except Lake Tahoe), SO_2 (1- and 24-hour), NO_2, PM, and visibility-reducing particles are values that are not to be exceeded. All others are not to be equaled or exceeded. California ambient air quality standards (CAAQS) are listed in the Table of Standards in Section 70200 of Title 17 of the California Code of Regulations.

[3] Concentration expressed first in units in which it was issued (i.e., parts per million [ppm] or micrograms per cubic meter [$\mu g/m^3$]). Equivalent units given in parentheses are based on a reference temperature of 25°C and a reference pressure of 760 torr. Most measurements of air quality are to be corrected to a reference temperature of 25°C and a reference pressure of 760 torr; ppm in this table refers to ppm by volume, or micromoles of pollutant per mole of gas.

[4] Unclassified (U): a pollutant is designated unclassified if the data are incomplete and do not support a designation of attainment or nonattainment.
Attainment (A): a pollutant is designated attainment if the state standard for that pollutant was not violated at any site in the area during a 3-year period.
Nonattainment (N): a pollutant is designated nonattainment if there was a least one violation of a state standard for that pollutant in the area.
Nonattainment/Transitional (NT): a subcategory of the nonattainment designation. An area is designated nonattainment/transitional to signify that the area is close to attaining the standard for that pollutant.

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

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

[7] Nonattainment (N): any area that does not meet (or that contributes to ambient air quality in a nearby area that does not meet) the national primary or secondary ambient air quality standard for the pollutant.
Attainment (A): any area that meets the national primary or secondary ambient air quality standard for the pollutant.
Unclassifiable (U): any area that cannot be classified on the basis of available information as meeting or not meeting the national primary or secondary ambient air quality standard for the pollutant.

[8] On February 19, 2008, the Office of Administrative Law approved a new NO_2 ambient air quality standard, which lowers the 1-hr standard to 0.19 ppm and establishes a new annual standard of 0.030 ppm. These changes will become effective March 20, 2008.

[9] ARB has identified lead and vinyl chloride as toxic air contaminants with no threshold 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.

Sources: ARB 2008b, 2008c; EPA 2008c

Emissions Inventory

With respect to Placer County, mobile sources are the largest contributor to the estimated annual average air pollutant levels of ROG, CO, and NO_x accounting for approximately 58%, 69%, and 87%, respectively, of the total emissions. Area-wide sources account for approximately 87%, and 76% of the County's PM_{10} and $PM_{2.5}$ emissions, respectively. Stationary and mobile sources account for approximately 15%, and 61%, respectively, of the County's SO_X emissions (ARB 2008d).

TOXIC AIR CONTAMINANTS

Concentrations of TACs, or in federal parlance, hazardous air pollutants (HAPs), are also used as indicators of ambient-air-quality conditions. A TAC is defined as an air pollutant that may cause or contribute to an increase in mortality or in serious illness, or that may pose a hazard to human health. TACs are usually present in minute quantities in the ambient air; however, their high toxicity or health risk may pose a threat to public health even at low concentrations.

According to the *California Almanac of Emissions and Air Quality* (ARB 2007a), the majority of the estimated health risk from TACs can be attributed to relatively few compounds, the most important being particulate matter exhaust emissions from diesel-fueled engines (diesel PM). Diesel PM differs from other TACs in that it is not a single substance but rather a complex mixture of hundreds of substances. Although diesel PM is emitted by diesel-fueled internal combustion engines, the composition of the emissions varies depending on engine type, operating conditions, fuel composition, lubricating oil, and whether an emission control system is present.

Unlike the other TACs, no ambient monitoring data are available for diesel PM because no routine measurement method currently exists. However, ARB has made preliminary concentration estimates based on a PM exposure method. This method uses the ARB emissions inventory's PM_{10} database, ambient PM_{10} monitoring data, and the results from several studies to estimate concentrations of diesel PM. In addition to diesel PM, the TACs for which data are available that pose the greatest existing ambient risk in California are benzene, 1,3-butadiene, acetaldehyde, carbon tetrachloride, hexavalent chromium, *para*-dichlorobenzene, formaldehyde, methylene chloride, and perchloroethylene.

Diesel PM poses the greatest health risk among these 10 TACs. Based on receptor modeling techniques, ARB estimated the diesel PM health risk in the SVAB in 2000 to be 360 excess cancer cases per million people. Since 1990, the health risk of diesel PM in the SVAB has been reduced by 52%. Overall, levels of most TACs have gone down since 1990 except for para-dichlorobenzene, acetaldehyde and formaldehyde (ARB 2007a). As stated earlier, new research suggests that diesel PM, which is a component of $PM_{2.5}$, is more toxic than previously estimated (ARB 2008i). Thus, ARB's diesel PM reduction efforts and reductions in public exposure to diesel PM are of increased importance.

Emission Sources

Stationary

According to ARB Community Health Air Pollution Information System, there are no major existing stationary sources of TACs within two miles of the Plan area (ARB 2008e, 2008f). The closest stationary source of TACs to the Plan area is H.B. Fuller Co., which is approximately 3.5 miles to the northwest.

Mobile

Rail Traffic

The Union Pacific Railroad J.R. Davis Roseville Rail Yard (UPRR Yard) is situated within the Plan area. The Yard encompasses approximately 950 acres and is the largest service and maintenance rail yard in the West with

over 30,000 locomotives passing through annually (ARB 2004). For the majority of the arriving locomotives, approximately 75% are processed through the service area where they undergo routine service or maintenance. The other 25% are refueled at the subway for rapid turn-around and eventual departure from the Yard.

In October 2004, ARB released the *Roseville Rail Yard Study* (Study) that provided a health risk assessment (HRA) of diesel PM from locomotives at the Yard (ARB 2004). To summarize, the key findings of the Study were:

- The diesel PM emissions in 2000 from locomotive operations at the UPRR Yard were estimated to be approximately 25 tons per year (tpy).
- Moving, idling, and testing of locomotives were estimated to account for approximately 50%, 45%, and 5%, respectively, of the total diesel PM at the UPRR Yard.
- The HRA predicted potential cancer risks greater than 500 in a million (based on 70 years of exposure) northwest of the service track area, and the hump and trim area.
- The HRA showed elevated concentrations of diesel PM and associated cancer risk impacting a large area. These elevated concentrations of diesel PM, which are above the regional background level, contribute to an increased risk of cancer and premature deaths due to cardiovascular disease and non cancer health effects such as asthma and chronic obstructive pulmonary disease.

Exhibit 4.10-1 shows the estimated cancer risk contours in excess cases per one million for 2003 conditions as presented in the Study for the Roseville meteorological data set (ARB 2004). It is important to note that these risk levels represent the predicted risk due to diesel PM above the existing background risk levels. In addition, these risks assume a continuous exposure period of 70 years and an 80th percentile breathing rate. The risk levels displayed in this figure were calculated prior to the availability of the latest research on toxicity of $PM_{2.5}$ (ARB 2008i). Current efforts to reduce diesel PM emissions from locomotive and rail yard sources include state and local agreements with the rail industry to implement cleaner emissions technology.

On-Road Vehicle Traffic

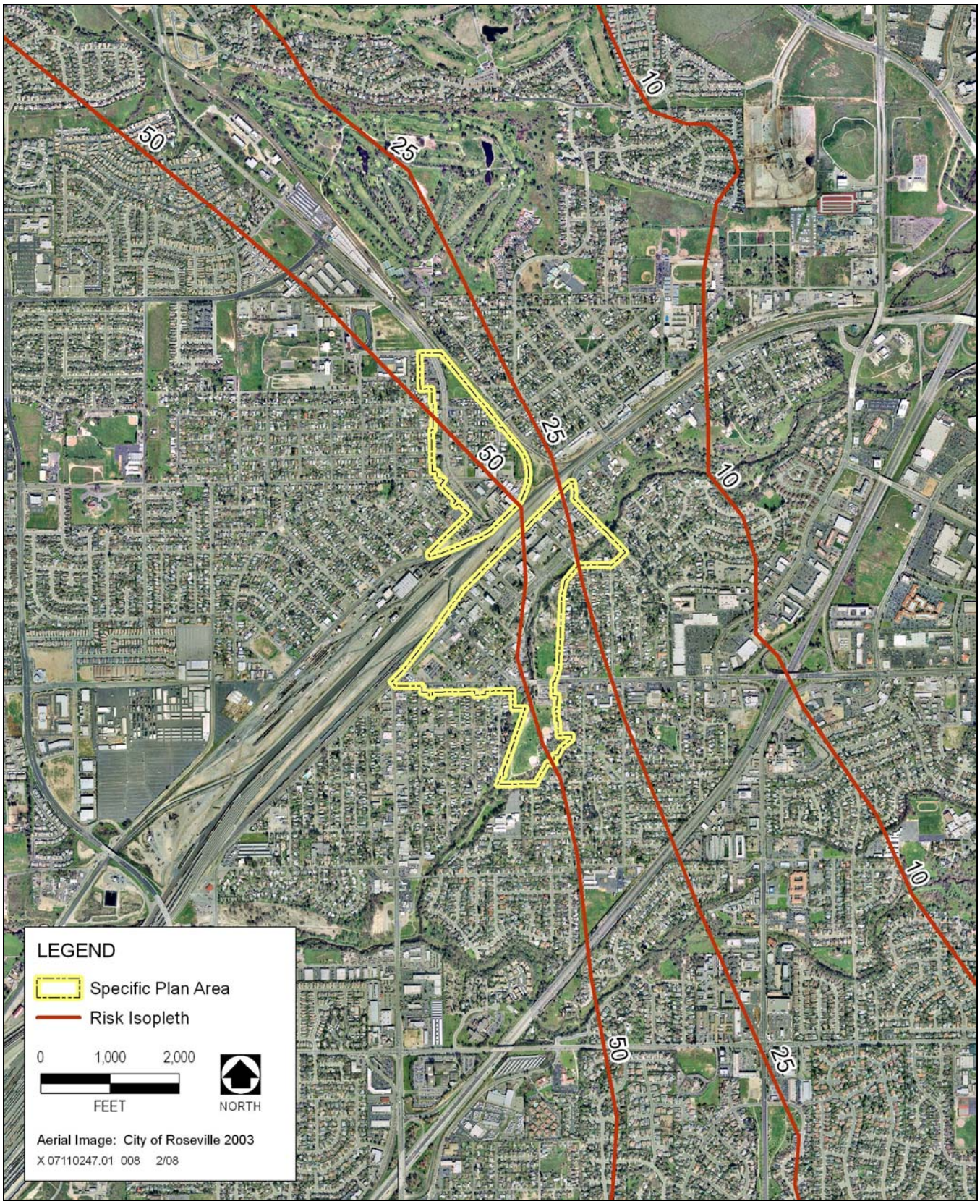
Vehicles on Plan area roadways, specifically Washington Boulevard, Douglas Boulevard and Vernon Street, are sources of diesel PM and other TACs associated with vehicle exhaust.

Naturally Occurring Asbestos

Naturally occurring asbestos (NOA) may be found in at least 44 of California's 58 counties. Asbestos is the name for a group of naturally occurring silicate minerals. Exposure to asbestos may result in inhalation or ingestion of asbestos fibers, which over time may result in damage to the lungs or membranes that cover the lungs, leading to illness or even death.

Naturally occurring asbestos, often found in serpentine rock formations, is present in several foothill areas of Placer County. When material containing naturally occurring asbestos is disturbed, asbestos fibers may be released and become airborne, thereby creating a potential health hazard.

The California Geological Survey has recently developed an enhanced 1:1,000,000 scale map that has improved the overall identification of locations in Placer County. The map denotes areas of Placer County that are more or less likely to contain naturally occurring asbestos based on available soil and geologic studies and some field verification. Where an area is characterized as having a lower overall probability of presence of naturally occurring asbestos, the likelihood of presence is slight, but in some instances naturally occurring asbestos might be found within such an area. Similarly, a location in the area identified as being most likely to have naturally occurring asbestos may not contain it.



2003 Estimated Cancer Risk Contours (excess cases per one million people) **Exhibit 4.10-1**

The California Geological Survey's map shows areas of higher probability for asbestos-containing rock within the broad zone of faults that follow the low foothills and lie in a southeast-to-northwest band. The Placer County communities of Auburn, Colfax, Meadow Vista, and Foresthill are among those that are within this fault band. Generally, there are no areas of high probability of occurrence of naturally occurring asbestos in areas of Placer County west of Folsom Lake or south of Wise Road. The communities of Roseville, Granite Bay, Rocklin, Lincoln, Loomis, Penryn, and Newcastle lie within geologic areas that have a lower probability for the presence of naturally occurring asbestos. There are some isolated areas of higher probability of presence of naturally occurring asbestos within the Tahoe National Forest.

Deposits of naturally occurring asbestos have been found in rock other than ultramafic and serpentine rock; for example, deposits have been found in metavolcanic rocks such as the Copper Hill Volcanics in the Folsom vicinity. Metavolcanic rock formations are prevalent to the northeast, north, and west of Auburn. Finally, in areas of sedimentary or alluvial rock deposits like those in western Placer County, it is possible that analytically detectible naturally occurring asbestos may be found.

According to *Relative Likelihood for the Presence of Naturally Occurring Asbestos in Placer County, California* (Higgins and Clinkenbeard 2006) and *A General Location Guide for Ultramafic Rocks in California—Areas More Likely to Contain Naturally Occurring Asbestos* (Churchill and Hill 2000), the Plan area is located in an area that is least likely to contain NOA.

ODORS

Odors are generally regarded as an annoyance rather than a health hazard. However, manifestations of a person's reaction to foul odors can range from psychological (e.g., irritation, anger, anxiety) to physiological (e.g., circulatory and respiratory effects, nausea, vomiting, headache).

With respect to odors, the human nose is the sole sensing device. The ability to detect odors varies considerably among the population and overall is quite subjective. Some individuals have the ability to smell very minute quantities of specific substances; others may not have the same sensitivity but may have sensitivities to odors of other substances. In addition, people may have different reactions to the same odor; an odor that is offensive to one person may be perfectly acceptable to another (e.g., fast food restaurant). It is important to also note that an unfamiliar odor is more easily detected and is more likely to cause complaints than a familiar one. This is because of the phenomenon known as odor fatigue in which a person can become desensitized to almost any odor and recognition only occurs with an alteration in the intensity.

Quality and intensity are two properties present in any odor. The quality of an odor indicates the nature of the smell experience. For instance, if a person describes an odor as flowery or sweet then the person is describing the quality of the odor. Intensity refers to the strength of the odor. For example, a person may use the word strong to describe the intensity of an odor. Odor intensity depends on the odorant concentration in the air. When an odorous sample is progressively diluted, the odorant concentration decreases. As this occurs, the odor intensity weakens and eventually becomes so low that the detection or recognition of the odor is quite difficult. At some point during dilution, the concentration of the odorant reaches a detection threshold. An odorant concentration below the detection threshold means that the concentration in the air is not detectable by the average human.

Potential existing sources of odor in the vicinity of Downtown Roseville include commercial and industrial land uses (e.g., UPRR Yard, Aggregate Group, Inc.), which are located approximately two to three miles of the Plan area.

GREENHOUSE GASES

The Greenhouse Effect

Certain gases in the earth's atmosphere, classified as GHGs, play a critical role in determining the earth's surface temperature. Prominent GHGs contributing to the greenhouse effect are CO_2, methane (CH_4), nitrous oxide (N_2O), and fluorinated compounds. Solar radiation enters the earth's atmosphere from space. A portion of the radiation is absorbed by the earth's surface, and a smaller portion of this radiation is reflected back toward space. The absorbed radiation is then emitted from the earth, not as high-frequency solar radiation, but lower frequency infrared radiation. Most solar radiation passes through GHGs; however, infrared radiation is selectively absorbed by GHGs. As a result, infrared radiation released from the earth that otherwise would have escaped back into space is instead "trapped," resulting in a warming of the atmosphere. This phenomenon, known as the "greenhouse effect," is responsible for maintaining a habitable climate on Earth. Without the greenhouse effect, Earth would not be able to support life as we know it.

Individual GHGs have different atmospheric lifetimes, and varying degrees of global warming potential (GWP), which defines the potential of a GHG to retain infrared radiation in the atmosphere and contribute to the greenhouse effect. The GWP of a GHG is measured in units of CO_2e (carbon dioxide equivalent), which identifies the lifetime, or persistence, of the gas molecule in the atmosphere. Expressing emissions in CO_2e takes the contributions of all GHG emissions to the greenhouse effect and converts them to a single unit equivalent to the effect that would occur if only CO_2 were being emitted. For example, as described in Appendix C, "Calculation References," of the General Reporting Protocol of the California Climate Action Registry (CCAR) (CCAR 2007), 1 ton of CH_4 has the same contribution to the greenhouse effect as approximately 23 tons of CO_2. Therefore, CH_4 is a much more potent GHG than CO_2.

Sources of Greenhouse Gases

Sources of GHGs include both natural and anthropogenic (human-caused) processes. Anthropogenic emissions of these GHGs in excess of natural ambient concentrations are responsible for intensifying the greenhouse effect and have led to a trend of unnatural warming of the earth's climate, known as global climate change or global warming. It is extremely unlikely that global climate change over the past 50 years can be explained without the contribution from human activities (IPCC 2007).

Emissions of GHGs contributing to global climate change are attributable in large part to human activities associated with the industrial/manufacturing, utility, transportation, residential, and agricultural sectors (ARB 2008h). In California, the transportation sector is the largest emitter of GHGs, followed by electricity generation (California Energy Commission [CEC] 2006a). Emissions of CO_2 are by-products of fossil fuel combustion. CH_4, a highly potent GHG, results from off-gassing (the release of chemicals from nonmetallic substances under ambient or greater pressure conditions) largely associated with agricultural practices and landfills. CO_2 sinks, or reservoirs, include vegetation and the ocean, which absorb CO_2 through photosynthesis and dissolution, respectively, two of the most common processes of CO_2 sequestration.

California is the 12th to 16th largest emitter of CO_2 in the world (CEC 2006a). California produced 484 million gross metric tons of CO_2 equivalent (CO_2e) in 2004 (ARB 2008f).

Combustion of fossil fuel in the transportation sector was the single largest source of California's GHG emissions in 2004, accounting for 41% of total GHG emissions in the state (CEC 2006a). This sector was followed by the electric power sector (including both in-state and out-of-state sources) (22%) and the industrial sector (21%) (CEC 2006a).

Impacts of Global Climate Change

Climate change has the potential to affect a variety of resource areas and environmental conditions in California including:

- Human Health.
  - Exposure to air pollution (i.e., increased emissions associated with energy demands in response to an increase in the number of days requiring air conditioning).
  - Exposure to vector borne diseases due to changing ecosystems and climate.
  - Weather-related mortality (e.g., flooding from altered precipitation patterns, heat-related death; global average temperature is expected to increase by 3–7°F by the end of the next century (IPCC 2007)).
- Water Resources.
  - Sea level rise. Sea level rose approximately 7 inches during the last century (CEC 2006b) and it is predicted to rise an additional 7 to 22 inches by 2100 depending on the future levels of GHG emissions (IPCC 2007) and up to 16 inches of sea level rise by 2050, and 55 inches by 2100 (California Resources Agency 2008). If this occurs, resultant effects could include increased coastal flooding, saltwater intrusion (especially a concern in the low-lying Sacramento–San Joaquin River Delta, where pumps delivering potable water could be threatened), and disruption of wetlands (CEC 2006b).
  - Changing rainfall and snow pack. Reduction in the Sierra Nevada snowpack and a faster melting (runoff) period would lead to less overall water storage in the mountains (the largest "reservoir" in the state). According to the CEC (2006b), the snowpack portion of the water supply could potentially decline by 30–90% by the end of the 21st century. A study cited in a report by the California Department of Water Resources (DWR) projects that approximately 50% of the statewide snowpack will be lost by the end of the century (Knowles and Cayan 2002).
- Ecosystem/Habitat Impacts.
  - Changing habitat and species distribution.
  - Increased risk of wildfires due to changes in rainfall patterns and plant community make-up.

Impacts of GHGs are borne globally, as opposed to localized air quality effects of criteria air pollutants and TACs. The quantity of GHGs that it takes to ultimately result in climate change is not precisely known; suffice to say, the quantity is enormous, and no single project alone would be expected to measurably contribute to a noticeable incremental change in the global average temperature, or to global, local, or micro climate. Nevertheless this analysis will quantify the anticipated GHG emissions of the project, and evaluate the cumulative contribution of the project relative to global climate change.

4.10.2 REGULATORY BACKGROUND

Air quality within the SVAB is regulated by EPA, ARB, and PCAPCD. Each of these agencies develops rules, regulations, policies, and/or goals to comply with applicable legislation. Although EPA regulations may not be superseded, both state and local regulations may be more stringent.

CRITERIA AIR POLLUTANTS

Federal Plans, Policies, Regulations, and Laws

At the federal level, EPA has been charged with implementing national air quality programs. EPA's air quality mandates are drawn primarily from the CAA, which was enacted in 1970. The most recent major amendments made by Congress were in 1990.

The CAA required EPA to establish NAAQS. As shown in Table 4.10-2, EPA has established primary and secondary NAAQS for the following criteria air pollutants: ozone, CO, NO_2, SO_2, PM_{10}, $PM_{2.5}$, and lead. The primary standards protect the public health and the secondary standards protect public welfare. The CAA also required each state to prepare an air quality control plan referred to as a State Implementation Plan (SIP). The federal Clean Air Act Amendments of 1990 (CAAA) added requirements for states with nonattainment areas to revise their SIPs to incorporate additional control measures to reduce air pollution. The SIP is modified periodically to reflect the latest emissions inventories, planning documents, and rules and regulations of the air basins as reported by their jurisdictional agencies. EPA must review all state SIPs to determine whether they conform to the mandates of the CAA and the amendments thereof, and to determine whether implementing them will achieve air quality goals. If EPA determines a SIP to be inadequate, a Federal Implementation Plan (FIP) that imposes additional control measures may be prepared for the nonattainment area. Failure to submit an approvable SIP or to implement the plan within the mandated time frame may cause sanctions to be applied to transportation funding and stationary air pollution sources in the air basin.

State Plans, Policies, Regulations, and Laws

ARB is the agency responsible for coordination and oversight of state and local air pollution control programs in California and for implementing the California Clean Air Act (CCAA). The CCAA, which was adopted in 1988, required ARB to establish CAAQS (Table 4.10-2). ARB has established CAAQS for sulfates, hydrogen sulfide, vinyl chloride, visibility-reducing particulate matter, and the above-mentioned criteria air pollutants. In most cases the CAAQS are more stringent than the NAAQS. Differences in the standards are generally explained by the health effects studies considered during the standard-setting process and the interpretation of the studies. In addition, the CAAQS incorporate a margin of safety to protect sensitive individuals.

The CCAA requires that all local air districts in the state endeavor to achieve and maintain the CAAQS by the earliest practical date. The act specifies that local air districts should focus particular attention on reducing the emissions from transportation and areawide emission sources, and provides districts with the authority to regulate indirect sources.

Among ARB's other responsibilities are overseeing local air district compliance with California and federal laws, approving local air quality plans, submitting SIPs to EPA, monitoring air quality, determining and updating area designations and maps, and setting emissions standards for new mobile sources, consumer products, small utility engines, off-road vehicles, and fuels. There are 15 nonattainment areas for the national ozone standard and two nonattainment areas for the $PM_{2.5}$ standard. The Ozone SIP and $PM_{2.5}$ SIP must be adopted and sent to EPA by June 2007 and April 2008, respectively. The SIP must show how each area will attain the federal standards. To do this, the SIP will identify the amount of pollution emissions that must be reduced in each area to meet the standard and the emission controls needed to reduce the necessary emissions.

ARB and local air pollution control districts are currently developing plans for meeting new national air quality standards for ozone and $PM_{2.5}$. The Draft Statewide Air Quality Plan was released in April 2007 (ARB 2008g).

Local Plans, Policies, Regulations, and Laws

Placer County Air Pollution Control District

The PCAPCD attains and maintains air quality conditions in Placer County through a comprehensive program of planning, regulation, enforcement, technical innovation, and promotion of the understanding of air quality issues. The clean air strategy of the PCAPCD includes the preparation of plans for the attainment of ambient air quality standards, adoption, and enforcement of rules and regulations concerning sources of air pollution, and issuance of permits for stationary sources of air pollution. The PCAPCD also inspects stationary sources of air pollution and responds to citizen complaints, monitors ambient air quality and meteorological conditions, and implements programs and regulations required by the CAA, CAAA, and the CCAA. Air quality plans applicable to the proposed project are discussed below.

The PCAPCD in coordination with the air quality management districts and air pollution control districts of El Dorado, Sacramento, Solano, Sutter, and Yolo counties prepared and submitted the 1991 Air Quality Attainment Plan (AQAP) in compliance with the requirements set forth in the CCAA, which specifically addressed the nonattainment status for ozone and to a lesser extent, CO and PM_{10}. The CCAA also requires a triennial assessment of the extent of air quality improvements and emission reductions achieved through the use of control measures. As part of the assessment, the attainment plan must be reviewed and, if necessary, revised to correct for deficiencies in progress and to incorporate new data or projections. The requirement of the CCAA for a first triennial progress report and revision of the 1991 AQAP was fulfilled with the preparation and adoption of the 1994 Ozone Attainment Plan (OAP). The OAP stresses attainment of ozone standards and focuses on strategies for reducing ROG and NO_X. It promotes active public involvement, enforcement of compliance with PCAPCD rules and regulations, public education in both the public and private sectors, development and promotion of transportation and land use programs designed to reduce vehicle miles traveled (VMT) within the region, and implementation of stationary and mobile-source control measures. The OAP became part of the SIP in accordance with the requirements of the CAAA and amended the 1991 AQAP. However, at that time the region could not show that the national ozone (1-hour) standard would be met by 1999. In exchange for moving the deadline to 2005, the region accepted a designation of "severe nonattainment" coupled with additional emission requirements on stationary sources. Additional triennial reports were also prepared in 1997, 2000, and 2003 in compliance with the CCAA that act as incremental updates.

As a nonattainment area, the region is also required to submit rate-of-progress milestone evaluations in accordance with the CAAA. Milestone reports were prepared for 1996, 1999, and 2002. These milestone reports include compliance demonstrations that the requirements have been met for the Sacramento nonattainment area. The air quality attainment plans and reports present comprehensive strategies to reduce ROG, NO_X, and PM_{10} emissions from stationary, area, mobile, and indirect sources. Such strategies include the adoption of rules and regulations; enhancement of CEQA participation; implementation of a new and modified indirect source review program; adoption of local air quality plans; and stationary-, mobile-, and indirect-source control measures.

In July of 1997, the EPA promulgated a new 8-hour ozone standard. This change lowered the standard for ambient ozone from 0.12 ppm averaged over one hour to 0.08 ppm averaged over eight hours. In general, the 8-hour standard is more protective of public health and more stringent than the 1-hour standard. The promulgation of this standard prompted new designations and nonattainment classifications in June 2004, and resulted in the revocation of the 1-hour standard in June 2005. The region has been designated as a nonattainment (serious) area for the national (8-hour) ozone standard with an attainment deadline of June 2013.

Although the region has made significant progress in reducing ozone, a problem has arisen with regard to another issue. The region's transportation plan must conform and show that implementation will not harm the region's chances of attaining the ozone standard. The SIP is tied to a "motor vehicle emissions budget" and thus, transportation planners must ensure that emissions anticipated from plans and improvement programs remain

within this budget. The region is not required to update the SIP before the ozone (8-hour) plans are due in 2006. However, since a conformity lapse began October 4, 2004, an expedited process to prepare a plan is underway.

In the March 14, 2006 Federal Register, EPA found that the motor vehicle emissions budgets for 2008 were determined to be adequate for transportation conformity purposes by the United States Environmental Protection Agency. SACOG was able to demonstrate that the 2006 Metropolitan Transportation Plan and the 2006/08 Metropolitan Transportation Improvement Program for the Sacramento region were below the 2008 budgets.

The Sacramento Regional Nonattainment Area 8-Hour Attainment Demonstration Plan currently being developed will update the allowable motor vehicle emissions budgets for ROG and NOx for 2008 using the new EMFAC model (EMFAC2007) and population and travel activity figures. In addition, it will establish new budgets for several other years up to and including the attainment deadline year. After EPA finds these new budgets adequate, then SACOG must demonstrate that emissions from subsequent transportation plans will be below the emission budget levels established in this new air quality plan (SMAQMD 2008).

As mentioned above, the PCAPCD adopts rules and regulations. All projects are subject to PCAPCD rules and regulations in effect at the time of construction. Specific rules applicable to the construction of the proposed project may include, but are not limited to:

- ***Rule 202-Visible Emissions.*** A person shall not discharge into the atmosphere from any single source of emission whatsoever any air contaminant for a period or periods aggregating more that three minutes in any one hour which is as dark or darker in shade as that designated as number 1 on the Ringelmann Chart, as published by the United States Bureau of Mines.

- ***Rule 205-Nuisance.*** A person shall not discharge from any source whatsoever such quantities of air contaminants or other material which cause injury, detriment, nuisance or annoyance to any considerable number of persons or to the public, or which endanger the comfort, repose, health or safety of any such persons or the public, or which cause to have a natural tendency to cause injury or damage to business or property. The provisions of Rule 205 do not apply to odors emanating from agriculture operations necessary for the growing of crops or raising of fowl or animals.

- ***Rule 217-Cutback and Emulsified Asphalt Paving Materials.*** A person shall not manufacture for sale nor use for paving, road construction or road maintenance any: rapid cure cutback asphalt; slow cure cutback asphalt containing organic compounds which evaporate at 500°F or lower as determined by current American Society for Testing and Materials (ASTM) Method D402; medium cure cutback asphalt except as provided in Section 1.2.; or emulsified asphalt containing organic compounds which evaporate at 500°F or lower as determined by current ASTM Method D244, in excess of 3% by volume.

- ***Rule 218-Application of Architectural Coatings.*** No person shall manufacture, blend, or repackage for sale within PCAPCD; supply, sell, or offer for sale within PCAPCD; or solicit for application or apply within the PCAPCD, any architectural coating with a volatile organic carbon (VOC) content in excess of the corresponding specified manufacturer's maximum recommendation.

- ***Rule 228-Fugitive Dust.***

    - ***Visible Emissions Not Allowed Beyond the Boundary Line:*** A person shall not cause or allow the emissions of fugitive dust from any active operation, open storage pile, or disturbed surface area (including disturbance as a result of the raising and/or keeping of animals or by vehicle use), such that the presence of such dust remains visible in the atmosphere beyond the boundary line of the emission source.

    - ***Visible Emissions from Active Operations:*** In addition to the requirements of Rule 202, Visible Emissions, a person shall not cause or allow fugitive dust generated by active operations, an open storage pile, or a disturbed surface area, such that the fugitive dust is of such opacity as to obscure an observer's

view to a degree equal to or greater than does smoke as dark or darker in shade as that designated as number 2 on the Ringelmann Chart, as published by the United States Bureau of Mines.

- ***Concentration Limit:*** A person shall not cause or allow PM_{10} levels to exceed 50 micrograms per cubic meter ($\mu g/m^3$) (24-hour average) when determined, by simultaneous sampling, as the difference between upwind and downwind samples collected on high-volume particulate matter samplers or other EPA-approved equivalent method for PM_{10} monitoring.

- ***Track-Out onto Paved Public Roadways:*** Visible roadway dust as a result of active operations, spillage from transport trucks, and the track-out of bulk material onto public paved roadways shall be minimized and removed.

  - The track-out of bulk material onto public paved roadways as a result of operations, or erosion, shall be minimized by the use of track-out and erosion control, minimization, and preventative measures, and removed within one hour from adjacent streets such material anytime track-out extends for a cumulative distance of greater than 50 feet onto any paved public road during active operations.

  - All visible roadway dust tracked-out upon public paved roadways as a result of active operations shall be removed at the conclusion of each work day when active operations cease, or every 24 hours for continuous operations. Wet sweeping or a High Efficiency Particulate Air (HEPA) filter equipped vacuum device shall be used for roadway dust removal.

  - Any material tracked-out, or carried by erosion, and clean-up water, shall be prevented from entering waterways or storm water inlets as required to comply water quality control requirements.

- ***Minimum Dust Control Requirements:*** The following dust mitigation measures are to be initiated at the start and maintained throughout the duration of the construction or grading activity, including any construction or grading for road construction or maintenance.

  - Unpaved areas subject to vehicle traffic must be stabilized by being kept wet, treated with a chemical dust suppressant, or covered.

  - The speed of any vehicles and equipment traveling across unpaved areas must be no more than 15 miles per hour unless the road surface and surrounding area is sufficiently stabilized to prevent vehicles and equipment traveling more than 15 miles per hour from emitting dust exceeding Ringelmann 2 or visible emissions from crossing the project boundary line.

  - Storage piles and disturbed areas not subject to vehicular traffic must be stabilized by being kept wet, treated with a chemical dust suppressant, or covered when material is not being added to or removed from the pile.

  - Prior to any ground disturbance, including grading, excavating, and land clearing, sufficient water must be applied to the area to be disturbed to prevent emitting dust exceeding Ringelmann 2 and to minimize visible emissions from crossing the boundary line.

  - Construction vehicles leaving the site shall be cleaned to prevent dust, silt, mud, and dirt, from being released or tracked offsite.

  - When wind speeds are high enough to result in dust emissions crossing the boundary line, despite the application of dust mitigation measures, grading and earthmoving operations shall be suspended.

- No trucks are allowed to transport excavated material off-site unless the trucks are maintained such that no spillage can occur from holes or other openings in cargo compartments, and loads are either covered with tarps; or wetted and loaded such that the material does not touch the front, back, or sides of the cargo compartment at any point less than six inches from the top and that no point of the load extends above the top of the cargo compartment.

- ***Wind-Driven Fugitive Dust Control:*** A person shall take action(s), such as surface stabilization, establishment of a vegetative cover, or paving, to minimize wind-driven dust from inactive disturbed surface areas.

- ***Rule 501-General Permit Requirement:*** Any person operating an article, machine, equipment or other contrivance, the use of which may cause, eliminate, reduce, or control the issuance of air contaminants, shall first obtain a written permit from the Air Pollution Control Officer (APCO). Stationary sources subject to the requirements of Rule 507, Federal Operating Permit Program, must also obtain a Title V permit pursuant to the requirements and procedures of that rule.

City of Roseville

The following goals, objectives, and policies are included in the *City of Roseville General Plan Air Quality Element* (City of Roseville 2004).

Goals:

Air Quality Goal 1: Improve Roseville's air quality by: a) Achieving and maintaining ambient air quality standards established by EPA and the ARB; and b) Minimizing public exposure to toxic or hazardous air pollutants and any pollutants that create a public nuisance though irritation to the senses (such as unpleasant odors).

Air Quality Goal 2: Integrate air quality planning with the land use and transportation planning process.

Air Quality Goal 3: Encourage the coordination and integration of all forms of public transport while reducing motor vehicle emissions through a decrease in the average daily trips and vehicle miles traveled and by increasing the commute vehicle occupancy rate by 50% to 1.5 or more persons per vehicle.

Air Quality Goal 4: Increase the capacity of the transportation system, including the roadway system and alternate modes of transportation.

Air Quality Goal 5: Provide adequate pedestrian and bikeway facilities for present and future transportation needs.

Air Quality Goal 6: Promote a well-designed and efficient light rail and transit system.

Air Quality Goal 7: While recognizing that the automobile is the primary form of transportation, the City of Roseville should make a commitment to shift from the automobile to other modes of transportation.

Policies:

- **Air Quality Policy 1:** Cooperate with other agencies to develop a consistent and effective approach to air pollution planning.

- **Air Quality Policy 2:** Work with PCAPCD to monitor all air pollutants of concern on a continuous basis.

- **Air Quality Policy 3:** Develop consistent and accurate procedures for evaluating the air quality impacts of new projects.
- **Air Quality Policy 4:** As part of the development review process, develop mitigation measures to minimize stationary and area source emissions.
- **Air Quality Policy 5:** Develop transportation systems that minimize vehicle delay and air pollution.
- **Air Quality Policy 6:** Develop consistent and accurate procedures for mitigating transportation emissions from new and existing projects.
- **Air Quality Policy 7:** Encourage alternative modes of transportation including pedestrian, bicycle, and transit.
- **Air Quality Policy 8:** Separate air pollution-sensitive land uses from sources of air pollution.
- **Air Quality Policy 9:** Encourage land use policies that maintain and improve air quality.
- **Air Quality Policy 10:** Conserve energy and reduce air emissions by encouraging energy efficient building designs and transportation systems.

TOXIC AIR CONTAMINANTS

Air quality regulations also focus on TACs or in federal parlance HAPs. In general, for those TACs that may cause cancer, there is no concentration that does not present some risk. In other words, there is no threshold level below which adverse health impacts may not be expected to occur. This contrasts with the criteria air pollutants for which acceptable levels of exposure can be determined and for which the ambient standards have been established (Table 4.10-2). Instead, EPA and ARB regulate HAPs and TACs, respectively, through statutes and regulations that generally require the use of the maximum or best available control technology for toxics (MACT and BACT) to limit emissions. These in conjunction with additional rules set forth by PCAPCD establish the regulatory framework for TACs.

Federal Hazardous Air Pollutant Programs

EPA has programs for identifying and regulating HAPs. Title III of the CAAA directed EPA to promulgate national emissions standards for HAPs (NESHAP). The NESHAP may differ for major sources than for area sources of HAPs. Major sources are defined as stationary sources with potential to emit more than 10 tons per year (TPY) of any HAP or more than 25 TPY of any combination of HAPs; all other sources are considered area sources. The CAAA called on EPA to promulgate emissions standards in two phases. In the first phase (1992–2000), EPA developed technology-based emission standards designed to produce the maximum emission reduction achievable. These standards are generally referred to as requiring MACT. For area sources, the standards may be different, based on generally available control technology. In the second phase (2001–2008), EPA is required to promulgate health risk–based emissions standards where deemed necessary to address risks remaining after implementation of the technology-based NESHAP standards.

The CAAA also required EPA to promulgate vehicle or fuel standards containing reasonable requirements that control toxic emissions, at a minimum to benzene and formaldehyde. Performance criteria were established to limit mobile-source emissions of toxics, including benzene, formaldehyde, and 1,3-butadiene. In addition, Section 219 of the CAAA required the use of reformulated gasoline in selected areas with the most severe ozone nonattainment conditions to further reduce mobile-source emissions.

State and Local Toxic Air Contaminant Programs

TACs in California are primarily regulated through the Tanner Air Toxics Act (Assembly Bill (AB) 1807) and the Air Toxics Hot Spots Information and Assessment Act of 1987 (AB 2588). AB 1807 sets forth a formal procedure for ARB to designate substances as TACs. Research, public participation, and scientific peer review must occur before ARB can designate a substance as a TAC. To date, ARB has identified more than 21 TACs and adopted EPA's list of HAPs as TACs. Most recently, diesel PM was added to the ARB list of TACs.

Once a TAC is identified, ARB then adopts an Airborne Toxics Control Measure for sources that emit that particular TAC. If there is a safe threshold for a substance at which there is no toxic effect, the control measure must reduce exposure below that threshold. If there is no safe threshold, the measure must incorporate BACT to minimize emissions (e.g., the Airborne Toxic Control Measure limits truck idling to 5 minutes (13 CCR Chapter 10 Section 2485)).

The Hot Spots Act requires that existing facilities that emit toxic substances above a specified level prepare a toxic-emission inventory, prepare a risk assessment if emissions are significant, notify the public of significant risk levels, and prepare and implement risk reduction measures.

ARB has adopted diesel-exhaust control measures and more stringent emission standards for various on-road mobile sources of emissions, including transit buses and off-road diesel equipment (e.g., tractors, generators). In February 2000, ARB adopted a new public-transit bus fleet rule and emission standards for new urban buses. These new rules and standards provide for 1) more stringent emission standards for some new urban bus engines, beginning with 2002 model year engines; 2) zero-emission bus demonstration and purchase requirements applicable to transit agencies; and 3) reporting requirements, under which transit agencies must demonstrate compliance with the public-transit bus fleet rule. Current and future milestones include the low-sulfur diesel fuel requirement and tighter emission standards for heavy-duty diesel trucks (2007) and off-road diesel equipment (2011) nationwide. Over time, the replacement of older vehicles will result in a vehicle fleet that produces substantially lower levels of TACs than under current conditions. Mobile-source emissions of TACs (e.g., benzene, 1,3-butadiene, diesel PM) have been reduced significantly over the last decade, and will be reduced further in California through a progression of regulatory measures (e.g., Low Emission Vehicle/Clean Fuels and Phase II reformulated gasoline regulations) and control technologies. With implementation of ARB's Risk Reduction Plan, it is expected that diesel PM concentrations will be reduced by 75% in 2010 and 85% in 2020 from the estimated year-2000 level. Adopted regulations are also expected to continue to reduce formaldehyde emissions from cars and light-duty trucks. As emissions are reduced, it is expected that risks associated with exposure to the emissions will also be reduced.

ARB published the *Air Quality and Land Use Handbook: A Community Health Perspective*, which provides guidance concerning land use compatibility with TAC sources (ARB 2005a). While not a law or adopted policy, the handbook offers advisory recommendations for the siting of sensitive receptors near uses associated with TACs, such as freeways and high-traffic roads, commercial distribution centers, rail yards, ports, refineries dry cleaners, gasoline stations, and industrial facilities, to reduce exposure of sensitive populations.

At the local level, air pollution control or management districts may adopt and enforce ARB control measures. Under PCAPCD Rule 501 (General Permit Requirements), Rule 502 (New Source Review), and Rule 507 (Federal Operating Permit), all sources that possess the potential to emit TACs are required to obtain permits from the district. Permits may be granted to these operations if they are constructed and operated in accordance with applicable regulations, including new source review standards and air toxics control measures. The PCAPCD limits emissions and public exposure to TACs through a number of programs. The PCAPCD prioritizes TAC-emitting stationary sources based on the quantity and toxicity of the TAC emissions and the proximity of the facilities to sensitive receptors.

Sources that require a permit are analyzed by the PCAPCD (e.g., HRA) based on their potential to emit toxics. A HRA is a tool used to determine the exposure of sensitive receptors to TAC emissions based on a 70-year exposure period. If it is determined that the project will emit toxics in excess of PCAPCD's threshold of significant for TACs, as identified below, sources have to implement the best available control technology for TACs (T-BACT) in order to reduce emissions. If a source cannot reduce the risk below the threshold of significance even after T-BACT has been implemented, the PCAPCD will deny the permit required by the source. This helps to prevent new problems and reduces emissions from existing older sources by requiring them to apply new technology when retrofitting with respect to TACs. It is important to note that the air quality permitting process applies to stationary sources; and properties, which may be exposed to elevated levels of non-stationary type sources of TACs, and the non-stationary type sources themselves (e.g., on-road mobile) are not subject to this process or any requirements of T-BACT implementation. Rather, emissions controls on such sources (e.g., vehicles) are subject to regulations implemented on the state and federal level.

ODORS

PCAPCD has identified some common types of facilities that have been known to produce odors: wastewater treatment facilities, chemical manufacturing plants, painting/coating operations, feed lots/dairies, composting facilities, landfills, and transfer stations. Because offensive odors rarely cause any physical harm and no requirements for their control are included in federal or state air quality regulations, neither PCAPCD has rules or standards related to odor emissions other than Rule 205 (Nuisance). Any actions related to odors are based on citizen complaints to local governments and PCAPCD.

Two situations increase the potential for odor problems. The first occurs when a new odor source is located near existing sensitive receptors. The second occurs when new sensitive receptors are developed near existing sources of odor. In the first situation, PCAPCD recommends operational changes, add-on controls, process changes, or buffer zones where feasible to address odor complaints. In the second situation, the potential conflict is considered significant if the Plan area is at least as close as any other site that has already experienced significant odor problems related to the odor source. For projects locating near a source of odors where there is no nearby development that may have filed complaints, and for odor sources locating near existing sensitive receptors, PCAPCD recommends that the determination of potential conflict be based on the distance and frequency at which odor complaints from the public have occurred in the vicinity of a similar facility.

PCAPCD Rule 205 (Nuisance) addresses odor exposure and states that no person shall discharge from any source whatsoever such quantities of air contaminants or other material that cause injury, detriment, nuisance, or annoyance to any considerable number of persons, or to the public; that endanger the comfort, repose, health, or safety of any such persons, or the public; or that cause or have a natural tendency to cause injury or damage to business or property.

GREENHOUSE GASES

Federal

The U.S. Supreme Court ruled on April 2, 2007 that CO_2 is an air pollutant as defined under the CAA, and that EPA has the authority to regulate emissions of GHGs. However, there are no federal regulations or policies regarding GHG emissions applicable to the proposed project at the time of writing.

Various statewide and local initiatives to reduce the state's contribution to GHG emissions have raised awareness that, even though the various contributors to and consequences of global climate change are not yet fully understood, global climate change is under way, and there is a real potential for severe adverse environmental, social, and economic effects in the long term. Because every nation emits GHGs and therefore makes an incremental cumulative contribution to global climate change, cooperation on a global scale will be required to

reduce the rate of GHG emissions to a level that can help to slow or stop the human-caused increase in average global temperatures and associated changes in climatic conditions.

State

Assembly Bill 1493

California Assembly Bill 1493 (Pavley), enacted July 2002, requires that ARB develop and adopt, by January 1, 2005, regulations that reduce GHG emissions from passenger vehicles and light duty trucks. California has not received the appropriate authorization from EPA to implement more stringent standards, which were requested in the form of a CAA section 209, subsection (b) waiver in 2005. EPA denied California's request for the waiver to implement AB 1493 in late December 2007. The state of California has filed suit against EPA for its decision to deny the CAA waiver.

Executive Order S-3-05

Executive Order S-3-05, which was signed by Governor Schwarzenegger in 2005, proclaims that California is vulnerable to the impacts of climate change. It declares that increased temperatures could reduce the Sierra's snowpack, further exacerbate California's air quality problems, and potentially cause a rise in sea levels. To combat those concerns, the Executive Order established total greenhouse gas emission targets. Specifically, emissions are to be reduced to the 2000 level by 2010, the 1990 level by 2020, and to 80% below the 1990 level by 2050.

To comply with the Executive Order, the California Climate Action Team (CCAT) made up of members from various state agencies and commissions will submit recommendations proposed to achieve the targets by building on voluntary actions of California businesses, local government and community actions, as well as through state incentive and regulatory programs.

Assembly Bill 32, California Global Warming Solutions Act of 2006

In September 2006, Governor Arnold Schwarzenegger signed AB 32, the California Global Warming Solutions Act of 2006 (See Stats. 2006, ch. 488, enacting Health & Safety Code, Sections 38500 – 38599.) AB 32 establishes regulatory, reporting, and market mechanisms to achieve quantifiable reductions in GHG emissions and a cap on statewide GHG emissions. AB 32 requires that statewide GHG emissions be reduced to 1990 levels by 2020. This reduction will be accomplished through an enforceable statewide cap on GHG emissions that will be phased in starting in 2012. To effectively implement the cap, AB 32 directs ARB to develop and implement regulations to reduce statewide GHG emissions from stationary sources. AB 32 specifies that regulations adopted in response to AB 1493 should be used to address GHG emissions from vehicles. However, AB 32 also includes language stating that if the AB 1493 regulations cannot be implemented, then ARB should develop new regulations to control vehicle GHG emissions under the authorization of AB 32.

AB 32 requires that ARB adopt a quantified cap on GHG emissions representing 1990 emissions levels and disclose how it arrives at the cap; institute a schedule to meet the emissions cap; and develop tracking, reporting, and enforcement mechanisms to ensure that the state achieves the reductions in GHG emissions necessary to meet the cap. AB 32 also includes guidance to institute emissions reductions in an economically efficient manner and conditions to ensure that businesses and consumers are not unfairly affected by the reductions.

Senate Bill 1368

Senate Bill (SB) 1368 is the companion bill of AB 32 and was signed by Governor Schwarzenegger in September 2006. SB 1368 requires the California Public Utilities Commission (PUC) to establish a GHG emission performance standard for baseload generation from investor owned utilities by February 1, 2007. The CEC must establish a similar standard for local publicly owned utilities by June 30, 2007. These standards cannot exceed the

GHG emission rate from a baseload combined-cycle natural gas fired plant. The legislation further requires that all electricity provided to California, including imported electricity, must be generated from plants that meet the standards set by the PUC and CEC.

Executive Order S-1-07

Executive Order S-1-07, signed by Governor Schwarzenegger in 2007, proclaims that the transportation sector is the main source of GHG emissions in California, generating over 40% of statewide emissions. It establishes a goal that carbon intensity of transportation fuels sold in California should be reduced by a minimum of 10% by 2020. This order also directed ARB to determine if this Low Carbon Fuel Standard (LCFS) could be adopted as a discrete early action measure pursuant to meeting the mandates in AB 32.

Senate Bill 97

SB 97, signed August 2007, acknowledges that climate change is a prominent environmental issue that requires analysis under CEQA (Stats. 2007, ch. 185 (enacting Pub. Resources Code, Sections 21083.05 and 21097.) This bill directs the State Office of Planning and Research (OPR) to prepare, develop, and transmit to the Resources Agency guidelines for the feasible mitigation of GHG emissions or the effects of GHG emissions, as required by CEQA by July 1, 2009. The Resources Agency is required to certify and adopt those guidelines by January 1, 2010. This bill also removes, both retroactively and prospectively, as legitimate litigation causes of action any claim of inadequate CEQA analysis of effects of GHG emissions associated with environmental review for projects funded by the Highway Safety, Traffic Reduction, Air Quality and Port Security Bond Act of 2006, or the Disaster Preparedness and Flood Protection Bond Act of 2006 (Proposition 1B or 1E). This provision will be repealed by operation of law on January 1, 2010, at which time such projects, if any remain unapproved, will no longer enjoy the protection against litigation claims based on failure to adequately address climate change issues. This bill would only protect a handful of public agencies from CEQA challenges on certain types of projects for a few years time.

Greenhouse Gas Emissions and Land Use Linkage

Land use development projects generate GHG emissions from multiple sectors (e.g., transportation, electricity, waste, etc). both on- and off-site. For example, electricity demand generated by the proposed project would generate GHG emissions at an off-site source of electricity generation; and the project would generate GHG associated with vehicle trips.

Currently, there are no laws or regulations pertaining to GHG emissions and land use. However, the City of Roseville General Plan includes policies that reduce GHGs, some of which are oriented to land use planning, and that would be applied to the proposed project.

4.10.3 ENVIRONMENTAL IMPACTS

ANALYSIS METHODOLOGY

Short-term construction-related and long-term operation-related (regional and local) impacts, as well as impacts from TACs and odors, were assessed in accordance with PCAPCD-recommended methodologies. Project-generated, short-term construction-related emissions of criteria air pollutants (e.g., PM) and ozone precursors (e.g., ROG and NO_X) were assessed in accordance with PCAPCD-recommended methods. Where quantification was required, project-generated, construction-related emissions were modeled using the ARB-approved URBEMIS 2007 Version 9.2.4 (URBEMIS) computer program (Rimpo and Associates 2008) as recommended by the PCAPCD. URBEMIS is designed to model construction emissions for land use development projects and allows for the input of project-specific information. Exact project-specific data (e.g., construction equipment types and number requirements, and maximum daily acreage disturbed) were not available at the time of this analysis.

Project-generated emissions were modeled based on general information provided in the project description and default URBEMIS settings in order to estimate worst-case conditions.

Project-generated, regional area- and mobile-source emissions of criteria air pollutants and ozone precursors were also modeled using URBEMIS. URBEMIS allows land use selections that include project location specifics and trip generation rates. URBEMIS accounts for area emissions from the usage of natural gas, landscape maintenance equipment, and consumer products; and mobile sources emissions associated with vehicle trip generation. Project-generated emissions were modeled based on general information provided in the project description and trip generation from the transportation analysis prepared for this project (see Section 4.6, "Transportation and Circulation," of this DEIR).

Long-term operation-related local CO impacts were evaluated in accordance with PCAPCD guidance and a screening methodology developed by the Sacramento Metropolitan Air Quality Management District (SMAQMD).

At this time, PCAPCD has not adopted a methodology for analyzing short-term construction-related emissions of TACs and/or the exposure thereof. Therefore, project-generated, construction-related emissions of TACs were assessed in a qualitative manner. The exposure of proposed sensitive land uses to existing sources of TAC's was also discussed qualitatively based on information provided in the Study for the UPRR Yard and other ARB resources (ARB 2005b).

Determinations of significance for construction- and operation-related emissions were based on the comparison of project-generated emissions to applicable PCAPCD thresholds.

Other air quality impacts (e.g., odors) were assessed in accordance with methodologies recommended by ARB and/or PCAPCD.

Project-generated construction- and operation-related emissions of GHGs were calculated using URBEMIS and methodologies established by CCAR (CCAR 2007).

THRESHOLDS OF SIGNIFICANCE

For the purpose of this analysis, the following thresholds of significance, as identified by the State CEQA Guidelines (Appendix G) and PCAPCD, have been used to determine whether implementation of the proposed project would result in significant air quality impacts.

Based on Appendix G of the State CEQA Guidelines, an air quality impact is considered significant if implementation of the proposed project would do any of the following:

- conflict with or obstruct implementation of the applicable air quality plan,
- violate any air quality standard or contribute substantially to an existing or projected air quality violation,
- result in a cumulatively considerable net increase of any criteria pollutant for which the project region is nonattainment under an applicable NAAQS or CAAQS (including releasing emissions which exceed quantitative thresholds for ozone precursors),
- expose sensitive receptors to substantial pollutant concentrations, or
- create objectionable odors affecting a substantial number or people.

As stated in Appendix G, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the above determinations. Thus, implementation of the proposed project would result in significant air quality impacts if:

- Short-term construction-related emissions of ROG, NO_X or PM_{10} exceed the PCAPCD-recommended mass emissions threshold of 82 pounds per day (lb/day);
- Long-term operation-related (regional) emissions of ROG, NO_X or PM_{10} exceed the PCAPCD-recommended mass emissions threshold of 82 lb/day;
- Long-term operation-related emissions of ROG and NO_x exceed the PCAPCD-recommended cumulative mass emissions threshold of 10 lb/day (applicable during summer months only).
- exposure of sensitive receptors to a substantial incremental increase in TAC emissions (e.g., stationary or mobile-source) that result in excess cancer risk greater than 10 in one million for or a hazard Index (HI) greater than 1 for noncancer risk at the Maximally Exposed Individual (MEI).

No air district or other regulatory agency in California, including PCAPCD, has identified a significance threshold for GHG emissions generated by a proposed project, or a methodology for analyzing impacts related to GHG emissions or global climate change. By adoption of AB 32 and SB 97, however, the State of California has established GHG reduction targets and has determined that GHG emissions as they relate to global climate change are a source of adverse environmental impacts in California that should be addressed under CEQA. Although AB 32 did not amend CEQA, the legislation does include language identifying the various environmental problems in California caused by global warming (Health & Saf. Code, Section 38501(a).) SB 97, in contrast, did amend CEQA to require OPR to prepare CEQA Guidelines revisions addressing the mitigation of GHGs or their consequences. By only giving certain limited projects protection against CEQA claims based on the alleged failure to properly assess climate change impacts in the environmental documents used to approve them, the Legislature implied that the environmental review for other projects would have to address the issue of global warming when impacts are potentially significant (project or cumulative). In any event, the proper context for addressing the issue in an EIR is the discussion of cumulative impacts, since while the emissions of one single project will not cause global climate change, GHG emissions from multiple projects throughout the world could result in a cumulative impact with respect to global climate change.

To meet GHG emission targets of AB 32, California would need to generate in the future less GHG emissions than current levels. It is recognized, however, that for most projects there is no simple metric available to determine if a single project would substantially increase or decrease overall GHG emission levels or conflict with the goals of AB 32.

Although the text of AB 32 strongly suggests that, when ARB interprets and applies the definition of "Greenhouse gas emission source," the regulations promulgated pursuant to the legislation will apply primarily, if not exclusively, to stationary sources of GHG emissions (see Health & Safety Code, Section 38505(i)), this mandate demonstrates California's commitment to reducing the rate of GHG emissions and the state's associated contribution to climate change, without intent to limit population or economic growth within the state. Thus, to achieve the goals of AB 32, which are tied to GHG emission rates of specific benchmark years (i.e., 1990), California would have to achieve a lower rate of emissions per unit of population (per person) than it has now. Further, in order to accommodate future population and economic growth, the state would have to achieve an even lower rate of emissions per unit than was achieved in 1990. (The goal to achieve 1990 quantities of GHG emissions by 2020 means that this will need to be accomplished with 30 years of population and economic growth beyond 1990 in place.) Thus, future projects that would not encourage reductions in GHG emissions (or continue at "Business as Usual" emission rates) would conflict with the policy decisions contained in the spirit of AB 32, thus impeding California's ability to comply with the mandate. In addition, if a project would be affected by the

reasonably foreseeable effects of climate change, the project should be designed to adapt to altered future conditions.

While the text of AB 32 focuses on major stationary and area sources of GHG emissions, the primary objective of AB 32 is to reduce California's contribution to global warming by reducing California's total annual production of GHG emissions. The impact that GHG emissions have on global climate change is not dependent on whether they were generated by stationary, mobile, or area sources, or whether they were generated in one region or another. Thus, the consistency with the state's requirements for GHG emissions reductions is the best metric for determining whether the proposed project would contribute to global warming. In the case of the proposed project, if the project does not conform with the state mandate to reduce GHG emissions to 1990 levels by the year 2020 and the associated increase in the amount of mass emissions is considered to be substantial, then the impact of the project would be cumulatively considerable (significant). Because the nature of global climate change impacts of GHG emissions are cumulative, this impact is discussed further in Chapter 5, "Cumulative Impacts," of this DEIR. Specifically, please refer to Section 5.4 "Global Climate Change" for the cumulative impact analysis of GHG emissions associated with the proposed project.

IMPACT ANALYSIS

IMPACT 4.10-1 **Generation of Short-term Construction-Related Emissions of Criteria Air Pollutants and Precursors.** *Modeled short-term project-generated ozone precursor and fugitive dust emissions from construction activities in Plan area would exceed PCAPCD's significance threshold of 82 lbs/day. Thus, project-generated, construction- related emissions of ROG, NO_x and PM_{10} could violate or contribute substantially to an existing or projected air quality violation and/or expose sensitive receptors to substantial pollutant concentrations, especially considering the nonattainment status of Western Placer County. As a result, this impact is considered* ***significant.***

Construction-related emissions are described as "short-term" or temporary in duration and have the potential to represent a significant impact with respect to air quality. Construction-related activities associated with the proposed project would result in project-generated emissions of criteria air pollutants (PM_{10} and $PM_{2.5}$) and ozone precursors (ROG and NO_x) from site preparation (e.g., excavation, grading, and clearing); off-road equipment, material transport, and worker commute exhaust emissions; vehicle travel on unpaved roads; paving; application of architectural coatings; and other miscellaneous activities.

Emissions of fugitive PM dust (e.g., PM_{10} and $PM_{2.5}$) are associated primarily with ground disturbance activities during site preparation (e.g., grading) and vary as a function of such parameters as soil silt content, soil moisture, wind speed, acreage of disturbance area, and VMT on- and off-site. Exhaust emissions from diesel equipment and worker commute trips also contribute to short-term increases in total PM emissions, but to a much lesser extent. Emissions of ozone precursors are primarily associated with off-road (e.g., gas and diesel) construction equipment exhaust. Worker commute trips and other construction-related activities (e.g., application of architectural coatings) also contribute to short-term increases in such emissions.

Project-generated, construction-related emissions of criteria air pollutants and precursors were modeled in accordance with PCAPCD-recommended methodologies. Exact project-specific data (e.g., construction equipment types and number requirements, and maximum daily acreage disturbed) were not available at the time of this analysis. Project-generated emissions were modeled based on general information provided in the project description and default URBEMIS settings and parameters attributable to the construction period and site location. In order to estimate worst-case conditions, construction of the entire project was assumed to be completed in a single stage with potential overlap between construction phases.

Table 4.10-3 summarizes the modeled emissions for the construction phases. Construction-related air quality effects were determined by comparing these modeling results with applicable PCAPCD significance thresholds. Refer to Appendix F of this DEIR for detailed modeling input parameters and results.

As shown in Table 4.10-3, construction-related activities associated with buildout of the worst-case day would result in project-generated daily unmitigated emissions of approximately 420 lb/day of ROG, 137 lb/day of NO_x and 322 lb/day of PM_{10}.

Table 4.10-3
Summary of Modeled Project-Generated, Short-Term Construction-Related Daily Emissions of Criteria Air Pollutants and Precursors (Unmitigated and Mitigated)

Phase/Year	Emissions Pounds Per Day (lb/day)			
	ROG	NO_x	PM_{10}	$PM_{2.5}$[1]
Site Grading[2]	10.41	87.76	318.48	69.69
Paving[2]	12.86	49.64	3.06	2.74
Building Construction	11.80	65.92	4.41	3.46
Architectural Coating	408.25	0.27	0.04	0.02
Worst-Case Total Daily Emissions (Unmitigated)	420.3	137.4	322.4	75.9
Worst-Case Total Daily Emissions (Mitigated)[5]	399.3	109.9	83.7	20.8
PCAPCD Significance Threshold	*82*	*82*	*82*	-

[1] PCAPCD has not adopted a significance threshold for $PM_{2.5}$, however the emissions are included for disclosure purposes.
[2] Begins in December 2008 and continues into 2009. Emissions shown are for 2008, emissions in 2009 would be slightly lower.
[3] Worst case ROG emissions occur on the days when building construction and architectural coating activities would occur simultaneously.
[4] Worst case NO_x, PM_{10} and $PM_{2.5}$ emissions occur on the days when grading and paving operations would occur simultaneously.
[5] It was assumed that implementation of mitigation measure 4.10-1 would result in approximately 5%, 20%, and 45% reductions in mobile-exhaust emissions of ROG, NO_X and PM_{10}, respectively, and a 75% reduction from fugitive dust emissions of PM_{10}.
Note: Total daily emissions rounded to the nearest whole number.
Refer to Appendix F for detailed assumptions and modeling output files.
Source: Data modeled by EDAW 2008.

Based on the modeling conducted, construction-related activities would result in ROG, NO_X, and PM_{10} emissions that exceed PCAPCD's significance threshold of 82 lb/day. Thus, project-generated construction-related emissions of criteria air pollutants and precursor emissions could violate or contribute substantially to an existing or projected air quality violation, and/or expose sensitive receptors to substantial pollutant concentrations. As a result, this impact would be significant.

IMPACT 4.10-2 Generation of Long-Term Operation-Related (Regional) Emissions of Criteria Air Pollutants and Ozone Precursors. *Operation-related activities would result in project-generated emissions of ROG, NO_x or PM_{10} that exceed PCAPCD's significance threshold of 82 lb/day. Project-generated operation-related emissions of ROG and NO_x would also exceed PCAPCD's recommended cumulative summertime threshold of 10 lb/day In addition, the proposed project would require a General Plan amendment to allow for development of desired land uses in downtown Roseville. Thus, project-generated, operation-related emissions of criteria air pollutants and precursors could violate or contribute substantially to an existing or projected air quality violation, expose sensitive receptors to substantial pollutant concentrations and/or conflict with air quality planning efforts. As a result, this impact is considered* ***significant.***

Area- and Mobile-Source Emissions

Project-generated, regional area- and mobile-source emissions of ROG, NO_X, and PM_{10} were modeled using URBEMIS. URBEMIS allows land use selections that include project location specifics and trip generation rates.

URBEMIS accounts for area-source emissions from the usage of natural gas, landscape maintenance equipment, and consumer products; and mobile-source emissions associated with vehicle trip generation. Regional area- and mobile-source emissions were modeled based on proposed land uses types and sizes as described in Chapter 3, "Project Description," and the trip generation data described in Section 4.6 "Transportation and Circulation." The trip generation data (50,852 average daily trips [ADT]) includes data for internal and pass-by trips. Therefore, the net trip generations were used in the model, and the model options for internal trips and pass-by were not selected.

Table 4.10-4 summarizes the modeled project-generated, operation-related emissions of criteria air pollutants and precursors under the worst-case (2009) buildout year. Operation-related air quality impacts were determined by comparing these modeling results with applicable PCAPCD significance thresholds. Refer to Appendix F of this DEIR for detailed modeling input parameters and results.

Table 4.10-4
Summary of Modeled Long- Term Project-Generated, Operation-Related Emissions

Source	Emissions- pounds per day (lb/day)			
	ROG	NO_X	PM_{10}	$PM_{2.5}$[1]
Project Operational[2] Emissions				
Area Sources	270.69	42.18	173.47	166.97
Mobile Sources	436.78	637.39	752.27	146.98
Total Unmitigated at 20-Year Buildout (Assuming 1990 Emission Levels)	707.5	679.6	925.7	314.0
PCAPCD Significance Threshold:	82	82	82	-

[1] PCAPCD has not adopted a significance threshold for $PM_{2.5}$, however the emissions are included for disclosure purposes.
Refer to Appendix F for detailed assumptions and modeling output files.
[2] For modeling purposes, emissions were estimated using 2009 as the first year of full project operation, even though the project would not become fully operational for over a period of twenty years. The earliest phases of the project were conservatively estimated to become operational in the year 2009. However, mobile-source emission factors at full project buildout would be lower due to more stringent vehicle emissions standards and assumed vehicle fleet turnover. Areas source emissions would also be lower, as the table does not reflect energy-efficient construction and appliances.
Source: Data modeled by EDAW 2008.

As shown in Table 4.10-4, operation-related activities would result in a net increase in project-generated daily unmitigated emissions of approximately 708 lb/day of ROG, 680 lb/day of NO_x and 926 lb/day of PM_{10} under buildout conditions. In the years subsequent to 2009, vehicle emissions would be less, as older vehicles with higher per-vehicle emissions are retired and new, cleaner vehicles come into service. This is a conservative approach to calculating emissions, since the project would not be fully operational for approximately 20 years. Under this approach, full project operational emissions were estimated during 2009, which is considered a worst-case.

Based on the modeling conducted, operation-related activities would result in project-generated emissions of ROG, NO_X and PM_{10} that exceed PCAPCD's applicable thresholds of 82 lb/day. Consequently, project-generated operation-related emissions of ROG and NO_x would also exceed PCAPCD's recommended summertime cumulative significance threshold of 10 lb/day. In addition, PCAPCD relies, to a certain degree; on land use designations contained in general plan documents applicable to its jurisdiction. PCAPCD refers to the contents of approved general plans in order to forecast, inventory, and allocate regional emissions from land use and development-related sources. These emissions budgets are used in statewide air quality attainment planning efforts. Because the proposed project would require a general plan amendment to allow for development of the desired land uses in downtown Roseville, emissions that would be associated with the new land use types would

not already be accounted for in regional air quality planning efforts. Thus, project-generated, operation-related emissions could violate or contribute substantially to an existing or projected air quality violation and result in a cumulatively considerable net increase of criteria pollutants, especially considering the nonattainment status of the Placer County portion of the SVAB, expose sensitive receptors to substantial pollutant concentrations, and/or conflict with air quality planning efforts. As a result, this would be a significant impact.

Stationary Source Emissions

The proposed project would likely include stationary sources of pollutants that would be required to obtain permits to operate under PCAPCD Rule 501-General Permit Requirements and Rule 507-Federal Operating Permit Program. These sources could include, but not be limited to, a diesel-engine generator for emergency power generation; central heating boilers; kitchen equipment at restaurants; and dry cleaning equipment. The permit process would assure that these sources would be equipped with the required emission controls, and that individually, these sources would not cause a significant environmental impact. Nonetheless, the emissions from these sources would be additive to the estimated area and mobile source emissions described above.

IMPACT 4.10-3 Exposure of Sensitive Receptors to Toxic Air Contaminant Emissions. *The proposed project would not expose sensitive receptors to substantial emissions of TACs during construction because construction emissions would be temporary and would rapidly dissipate with distance from the source. However, implementation of the Specific Plan could result in the exposure of sensitive receptors, especially those within close proximity to the Rail Yard and proposed commercial uses, to TAC emissions that exceed the significance threshold of 10 in one million for the cancer risk level. As a result, this impact would be considered* ***significant.***

The exposure of sensitive receptors from on-site, project-generated, construction-related and operation-related sources is discussed separately below.

On-Site Project-Generated Construction-Related Emissions

Construction-related activities would result in short-term project-generated emissions of diesel PM from the exhaust of off-road heavy-duty diesel equipment for site preparation (e.g., excavation, grading, and clearing); paving; application of architectural coatings; and other miscellaneous activities. Diesel PM was identified as a TAC by ARB in 1998. The potential cancer risk from the inhalation of diesel PM, as discussed below, outweighs the potential non-cancer health impacts (ARB 2003). At this time, PCAPCD has not adopted a methodology for analyzing such impacts.

The dose to which receptors are exposed is the primary factor used to determine health risk (i.e., potential exposure to TAC to be compared to applicable standards). Dose is a function of the concentration of a substance or substances in the environment and the duration of exposure to the substance. Dose is positively correlated with time, meaning that a longer exposure period would result in a higher exposure level for the MEI. Thus, the risks estimated for a MEI are higher if a fixed exposure occurs over a longer period of time. According to the Office of Environmental Health Hazard Assessment (OEHHA), health risk assessments, which determine the exposure of sensitive receptors to TAC emissions, should be based on a 70-year exposure period; however, such assessments should be limited to the period/duration of activities associated with the proposed project (Salinas, pers. comm., 2004). Thus, because the use of off-road heavy-duty diesel equipment would be temporary in combination with the highly dispersive properties of diesel PM (Zhu and Hinds 2002) and further reductions in exhaust emissions, project-generated, construction-related emissions of TACs would not expose sensitive receptors to substantial emissions of TACs.

Because the Plan area is located in an area that is least likely to contain NOA, ground disturbance activities during construction would not have the potential to expose construction workers and surrounding residents to dust from naturally-occurring asbestos rocks and soil.

On-Site Project-Generated Operation-Related Stationary-Source Emissions

Project implementation would provide development of commercial uses which may include stationary sources of TACs (e.g. dry cleaners and diesel generators). Pursuant to PCAPCD Rule 513, all stationary sources having the potential to emit TACs are required to obtain permits. Permits may be granted to these operations if they are constructed and operated in accordance with applicable regulations, including PCAPCD Rules 902-906. Given that compliance with applicable standards is required for the development and operation of commercial uses that emit TACs, emissions from such stationary sources both within and adjacent to the Plan area, would be anticipated to be within established standards.

On-Site Project-Generated Operation-Related Mobile- and Area-Source Emissions

Mobile sources of TACs could include proposed land uses that involve the long-term use of heavy-duty diesel trucks. Implementation of the proposed project would include development of commercial land uses which may include facilities that require the long-term use of heavy-duty diesel trucks (e.g., loading docks). The operation of such a source could result in the exposure of sensitive receptors, especially those within close proximity, to toxic air emissions that exceed the significance threshold.

Sources of TAC emissions include diesel-fueled engines and some food-service facility operations. Delivery truck travel, truck idling, and operation of the emergency back-up power generator are emission sources of particulate matter from diesel-fueled engines. Trucks entering and leaving the proposed project would include deliveries associated with the retail stores and possible food service establishments. Trucks idling would occur in the shipping and receiving delivery dock areas. Commercial trucks that weigh over 10,000 pounds are limited to an idle time not to exceed 5 minutes for entering or exiting the truck delivery well, in accordance with California State Legislation. The loading delivery docks are the only locations where routine truck idling associated with operation of the project would be expected.

Specific types of tenants that would occupy retail space in the Plan area are unknown. It is possible that restaurants serving the residential uses could be included as tenants. Restaurants emit organic gases from the cooking of animal fats and oils. Emissions would be controlled by an exhaust manifold (i.e., hood) to a roof-top vent. It is possible that operation of the restaurant would require use of trucks equipped with transportation refrigeration storage units (TRUs) to deliver cold-stored food items. Trucks equipped with TRUs typically result in higher TAC emissions, because they are equipped with diesel generator sets to keep perishable food cold, in addition to diesel engine exhaust from the truck. However, it is not anticipated that the scale of retail establishments would generate high truck volumes (i.e., greater than 100 commercial trucks per day or 40 TRU-equipped trucks per day as defined by ARB as the screening level) delivering materials on a frequent basis. Therefore, on- or off-site sensitive receptors would not be exposed to substantial TAC concentrations from these sources.

Off-Site Existing Rail Traffic

The Plan area is bisected by the UPPR Yard, with the Plan area on the north and south sides of the UPRR, connected by Washington Boulevard underpass that runs under the railroad tracks. The UPRR Yard encompasses approximately 950 acres and is the largest service and maintenance rail yard in western U. S., with over 30,000 locomotives visiting annually. Approximately 75% of the arriving locomotives are processed through the service area where they undergo routine service or maintenance. The other 25% percent are refueled for rapid turn-around and eventual departure from the UPRR Yard.

In October 2004, ARB released the Roseville Rail Yard Study (Study) which provided a health risk assessment (HRA) of the airborne diesel PM emissions from locomotives at the UPRR Yard (ARB 2004). Key findings of the study include:

- The diesel PM emissions in 2000 from locomotive operations at the UPRR Yard were estimated to be about 25 tons per year.

- Moving locomotives were estimated to account for about 50%, idling locomotives account for about 45%, and locomotive testing accounts for about 5% of the total diesel PM emissions at the UPRR Yard.

- Computer modeling predicted potential cancer risks greater than 500 in a million (based on 70 years of exposure) northwest of the service track area, and the hump and trim area.

- The HRA showed elevated concentrations of diesel PM and associated cancer risk impacting a large area around the UPRR Yard. These elevated concentrations of diesel PM, which are above the regional background level, contribute to an increased risk of cancer and premature deaths due to cardiovascular disease and non-cancer health effects such as asthma and chronic obstructive pulmonary disease.

As shown in Exhibit 4.10-1, the Study indicates that locomotive-related activities at the UPRR Yard would result in the exposure of sensitive receptors proposed as part of the project to a cancer risk level of 50 excess chances in one million. This predicted cancer risk level at the proposed Plan area would be in addition to the existing background conditions for which the Study showed a cancer risk level of 360 in a million. It should be noted that the study assumes a continuous exposure period of 70 years and an 80th percentile breathing rate.

On June 24, 2005, the Executive Officer of ARB entered into an agreement with UPRR to implement short-term measures for diesel PM emissions reductions (ARB 2005b). The agreement focused on reducing diesel PM on and around rail yards by approximately 20 percent. Actions included as part of the agreement are summarized below:

- Install idling reduction devices on 70% of unequipped intrastate locomotives by June 30, 2007.

- Ensure that at least 80% of the fuel supplied to locomotives fueled in California after December 31, 2006 meets the specifications for either ARB diesel fuel or EPA on-highway diesel fuel.

- Evaluate remote sensing to identify high-emitting locomotives.

- Evaluate the feasibility of developing diesel particulate filters or diesel oxidation catalysts for use on a typical switch locomotive representative of the current California switcher fleet.

The most recent semi-annual status report on the implementation of the agreement shows that the railroads and staff have met, or are on schedule to meet, the requirements specified for the implementation of the agreement. ARB staff estimates that these efforts have provided about a 15% reduction in rail yard diesel PM emissions between 2005 and 2007. Measures to be applied between 2007 and 2010 are expected to provide another 30 to 50 percent reduction in that period (ARB 2007b).

The Roseville Railyard Air Monitoring Project has focused on air quality monitoring at locations upwind and downwind of the UPRR Yard from 2005 through 2007 for black carbon, an indicator of diesel PM; NO_x; $PM_{2.5}$; and, wind speed and direction. There are four sites established for monitoring pollutants from the UPRR Yard as a part of this monitoring project including Denio, Church, Pool, and Vernon. The concentrations at both downwind sites (Denio and Church) are significantly higher than at their corresponding upwind sites (Pool and Vernon). Church and Vernon are in closest proximity to the Plan area. The predominant wind direction is verified to be from the southeast to the northwest, as a part of this monitoring study (PCAPCD 2006b).

The risk exposure of the proposed project from the UPRR Yard may be no greater than that associated with diesel PM exposure from adjacent high-volume freeways (Garvey & Cooper 2004). However, project implementation could result in the exposure of sensitive receptors to substantial emissions of TACs emissions that could cause both cancer and non-cancerous health effects. As a result, this impact is considered significant.

Off-Site Emissions from Mobile Sources

The Plan area is located close to Interstate 80 (I-80). Implementation of the proposed project would develop up to 1,020 new residential units, of which the nearest would be within approximately 3,000 feet of I-80. In April 2005, the ARB published a guidance document entitled *Air Quality and Land Use Handbook: A Community Health Perspective* which includes the recommendation to avoid the siting of new sensitive land uses (e.g., residences, schools) within 500 feet of freeways, urban roads with 100,000 vehicles/day, or rural roads with 50,000 vehicles/day (ARB 2005a). Therefore, the location of the proposed sensitive uses would be in concurrence with ARB recommendations. The ARB guidance document is advisory, not regulatory. However, in absence of guidelines from PCAPCD, ARB recommendations were used to assess compatibility of the proposed uses in proximity to mobile-source emissions.

Based on the findings in the ARB guidance document, it can be ascertained that the proposed project would have the potential to expose sensitive receptors to TACs from mobile sources to an extent that health risks could result (ARB 2005a).

In summary, the proposed project would not expose sensitive receptors to excessive TAC concentrations associated with on-site short-term construction-generated emissions, on-site long-term operational-generated emissions, or off-site mobile-source emissions. However, the project would have the potential to result in the exposure of sensitive receptors to excessive TAC concentrations associated with off-site locomotive emissions. This impact is considered significant.

IMPACT 4.10-4 **Generation of Long-Term Operation-Related (Local) Mobile-Source Emissions of Carbon Monoxide.** *Project-generated, long-term operation-related (local) mobile-source emissions of CO would not violate or contribute substantially to a violation of the CAAQS or NAAQS, or expose sensitive receptors to substantial pollutant concentrations. This impact would be* ***less than significant.***

CO concentration is a direct function of motor vehicle activity (e.g., idling time and traffic flow conditions), particularly during peak commute hours, and meteorological conditions. Under specific meteorological conditions (e.g., stable conditions that result in poor dispersion), CO concentrations may reach unhealthy levels with respect to local sensitive land-uses such as residential areas, schools, and hospitals. As a result, PCAPCD recommends analysis of CO emissions at a local rather than a regional level.

An appropriate qualitative screening procedure is provided in the procedures and guidelines contained in *Transportation Project-Level Carbon Monoxide Protocol* (the Protocol) to determine whether a project poses the potential for a CO hotspot (UCD ITS 1997). A CO hotspot is an area of localized CO pollution that is caused by severe vehicle congestion on major roadways, typically near intersections. According to the Protocol, projects may worsen air quality if they significantly increase the percentage of vehicles in cold start modes by 2 percent or more; significantly increase traffic volumes (by 5% or more) over existing volumes; or worsen traffic flow, defined for signalized intersections as increasing average delay at intersections operating at Level of Service (LOS) E or F or causing an intersection that would operate at LOS D or better without the project, to operate at LOS E or F.

The project's traffic analysis (see Section 4.6, "Transportation and Circulation") indicates that some of the signalized intersections that were analyzed would operate at LOS E or LOS F under cumulative conditions without and with the project. While mitigation measures have been proposed that would alleviate the congestion, the lack of adequate funding leads to the conclusion that the mitigation measures may not be in place prior to the completion of the proposed project. Therefore, further investigation of potential CO impacts is warranted.

The Protocol prescribes a quantitative screening analysis to determine a project's CO impacts. However, the screening analysis has become obsolete because it uses emission factors from an older version of ARB's EMFAC model. As a substitute, various air quality agencies in California have developed conservative screening methods.

The PCAPCD has not developed quantitative CO screening criteria; therefore, the methods of SMAQMD are used (SMAQMD 2004). The method is based on background CO concentrations and project trip generation and is not dependent on the traffic volumes or geometry for a specific intersection. The screening is based on the background concentration of CO and a conservative estimate of project related CO as a function of peak hour trip generation. The screening analysis for the proposed project's potential CO impacts at a generalized intersection is shown in Table 4.10-5.

As shown in Table 4.10-5, project-generated long-term operation-related local mobile-source emissions of CO would not violate or substantially contribute to a violation of the CAAQS or NAAQS, or expose sensitive receptors to substantial pollutant concentrations. As a result, this impact is considered less than significant.

Table 4.10-5
Summary of Carbon Monoxide Hot Spot Screening Level Analysis

Concentration (ppm)	1-Hour	8-Hour
Background[1]	0.35	N/A
Project-Related[2]	12.26	N/A
Anticipated Total[3]	12.61	8.83
NAAQS	35	9.0
CAAQS	20	9.0
Exceed standards?	No	No

[1] Rolled back to 2010
[2] Peak hour trip generation is 5,171 vehicles in the evening peak hour. CO contribution is interpolated from SMAQMD table as 12.26 ppm.
[3] Eight-hour concentration assumed to be 0.7 times 1-hour concentration.
Sources: Data compiled by EDAW 2008, SMAQMD 2004

IMPACT 4.10-5 Exposure of Sensitive Receptors to Odors. *The project would not involve the siting of any major sources of odors. However, the nature of the businesses that would occupy the commercial development is not known, and one or more of the businesses could be a minor source of objectionable odors, which could adversely affect nearby existing sensitive receptors. The proposed project would be located near the UPRR Yard, a major source of odors due to diesel PM. Therefore, this is considered a* ***significant*** *impact.*

The occurrence and severity of odor impacts depend on numerous factors, including the nature, frequency, and intensity of the source; wind speed and direction; and the presence of sensitive receptor. Although offensive odors rarely cause any physical harm, they still can be very unpleasant, leading to considerable distress and often generating citizen complaints to local governments and regulatory agencies.

The proposed project would result in diesel exhaust emissions from on-site construction equipment during project construction. The construction phase diesel exhaust emissions would be intermittent and temporary and would dissipate rapidly from the source with an increase in distance.

In addition the project would not include the long-term operation of any new sources of odor. However, implementation of the Specific Plan would include development of commercial land uses which may include minor odor sources (e.g. dry cleaners, diesel generators). Also, due to the project's proximity to the UPRR Yard, the project could expose sensitive receptors to odors from diesel exhaust emissions. However, overall odors in the project area would be typical of odors associated with urban uses. Because the proposed project involves siting of sensitive receptors near to a major odor source (i.e., the UPRR Yard) the proposed project could result in objectionable odors affecting a substantial number of people. This impact is considered significant.

4.10.4 MITIGATION MEASURES

Mitigation Measure 4.10-1

In accordance with the PCAPCD, the applicant shall comply with all applicable rules and regulations as listed above (e.g., Rule 202, 218 and 228). In addition, the following mitigation measures shall be implemented to reduce short-term construction-related air quality impacts. In addition, dust control measures are required to be implemented by all projects in accordance with the City of Roseville Grading Ordinance, and the PCAPCD Fugitive Dust Rule 228.

1. The applicant shall submit to PCAPCD a Construction Emission / Dust Control Plan within 30 days prior to groundbreaking. If the PCAPCD does not respond within 20 days, the plan shall be considered approved. The plan must address the minimum requirements found in section 300 and 400 of District Rule 228, Fugitive Dust (www.placer.ca.gov/airpollution/airpolut.htm). The applicant shall keep a hard or electronic copy of Rule 228, Fugitive Dust on-site for reference.

2. The Construction Emission/Dust Control Plan shall include a comprehensive inventory (i.e. make, model, year, emission rating) of all heavy-duty off-road equipment (50 horsepower (HP) of greater) that will be used an aggregate of 40 or more hours for the construction project. The project representative shall provide PCAPCD with the anticipated construction timeline including start date, and name and phone number of the project manager and on-site foreman. The plan shall demonstrate that the heavy-duty (> 50 HP) off-road vehicles to be used in the construction project, including owned, leased and subcontractor vehicles, will achieve a project wide fleet-average 20% NO_X reduction and 45% particulate reduction compared to the most recent ARB fleet average. PCAPCD shall be contacted for average fleet emission data. Acceptable options for reducing emissions may include use of late model engines, low-emission diesel products, alternative fuels, engine retrofit technology, after-treatment products, and/or other options as they become available. Contractors can access the Sacramento Metropolitan Air Quality Management District's web site to determine if their off-road fleet meets the requirements listed in this measure (http://www.airquality.org/ceqa/Construction_Mitigation_Calculator.xls).

3. Clean earth moving construction equipment with water or sweep clean, once per day, or as necessary (e.g., when moving onsite), consistent with National Pollutant Discharge Elimination System Best Management Practices, local ordinances, and municipal codes. Water shall be applied to control dust as needed to prevent dust impacts offsite. Operational water truck(s), shall be on-site, as required, to control fugitive dust. Construction vehicles leaving the site shall be cleaned, as needed, to prevent dust, silt, mud, and dirt from being released or tracked off-site.

4. Spread soil binders on unpaved roads and employee/equipment parking areas. Soil binders shall be non-toxic in accordance with state and local regulations. Apply approved chemical soil stabilizers, or vegetated mats, etc. according to manufacturers' specifications, to all-inactive construction areas (previously graded areas which remain inactive for 96 hours).

5. Minimize diesel idling time to a maximum of 10 minutes.

6. Utilize existing power sources (e.g., power poles) or clean fuel generators rather than temporary diesel power generators, if feasible.

7. Measures specific to 20+ acre project sites:

- A pre-construction meeting shall be held to review the construction emission/dust control plan for projects requiring grading of 20+ acres. PCAPCD shall be notified and may attend.

- The applicant shall comply with PCAPCD Fugitive Dust Rule 228; including suspending grading operations when conditions exceed designated wind speeds, and executing proper control of lime or other drying agents.

- An applicant representative, ARB-certified to perform Visible Emissions Evaluations (VEE), shall routinely (i.e., once per week) evaluate project related off-road and heavy-duty on-road equipment emissions for compliance with this requirement for projects grading more than 20 acres in size, regardless of how many acres are to be disturbed daily.

- Construction equipment exhaust emissions shall not exceed the PCAPCD Visible Emissions Rule 202. Fugitive dust is not to exceed 40% opacity and not go beyond property boundary at any time. Operators of vehicles and equipment found to exceed opacity limits are to be immediately notified and the equipment must be repaired within 72 hours.

Significance after Mitigation

Implementation of these Mitigation Measures 4.10-1 would reduce short-term ROG, NO_x and PM_{10} emissions from off-road mobile equipment by a minimum of approximately 5%, 20%, and 45% respectively. Emissions of PM_{10} from fugitive dust would be reduced by 75%. The fugitive dust measures would prevent dust beyond the project property lines, and daily emissions would be reduced to below the PCAPCD's threshold of 82 lb/day. However, the mitigated emissions of ROG and NO_x would still be anticipated to exceed the PCAPCD's threshold of 82 lb/day for these pollutants and would potentially contribute to concentrations that exceed the NAAQS or CAAQS. As a result, this impact is considered significant and unavoidable.

Mitigation Measure 4.10-2

The following is a list of mitigation measures developed by PCAPCD to reduce long-term operational impacts to local and regional air quality. Due to the severe nonattainment designation in western Placer County for federal standards, all projects should implement those measures that are logical and feasible.

1. Exceed California Title 24 energy requirements. Areas of Title 24 to be exceeded shall be determined by the applicant and the City.

2. All truck loading and unloading docks shall be equipped with one 110/208-volt power outlet for every two-dock door. Diesel trucks shall be prohibited from idling more than five minutes and must be required to connect to the 110/208-volt power to run any auxiliary equipment. Signage shall be provided.

3. Install a gas outlet in all outdoor recreational fire pits, and permanently installed cooking appliances.

4. Only natural gas fireplace appliances are permitted. Where propane or natural gas service is not available, only EPA Phase II certified wood-burning devices shall be allowed in single-family residences. The emission potential from each residence shall not exceed 7.5 grams per hour. Wood-burning or Pellet appliances shall not be permitted in multi-family developments.

5. Where feasible, install solar electric generation systems. Recommend participation in Roseville Electric incentive programs for energy-efficient development.

Significance after Mitigation

Implementation of Mitigation Measure 4.10-2 would further reduce operations emissions of ROG, NO_X and PM_{10}. However, the results of implementing these measures can not be reasonably quantified. Therefore, the impact is considered significant and unavoidable.

Mitigation Measure 4.10-3

The following mitigation measures shall be implemented to reduce the exposure of sensitive receptors to TACs:

- All proposed homes in the Plan area shall be equipped with filter systems with high Minimum Efficiency Reporting Value (MERV) for removal of small particles (such as 0.3 micron) at all air intake points to the home. All proposed dwelling units shall be constructed with mechanical ventilation systems which would allow occupants to keep windows and doors closed and allow for the introduction of fresh outside air, without the requirement of open windows.

- Proposed commercial uses that have the potential to emit TACs (e.g., diesel-fueled engines) shall be located as far away as possible from existing and proposed receptors.

- Proponents of projects with a residential component shall provide disclosure to future residents advising them of the proximity to the JR Davis Rail Yard and associated health risk impacts.

- When determining the exact type of facility that would occupy the proposed commercial space, the project shall take into consideration its toxic-producing potential.

- Proposed facilities that would require the long-term use of diesel equipment and heavy-duty trucks shall develop a plan to reduce emissions, which may include such measures as scheduling such activities when the residential uses are the least occupied, and requiring such equipment to be shut off when not in use and prohibiting heavy-trucks from idling.

- To the extent feasible, sensitive receptors shall be located as far away from the UPRR maintenance facility as possible.

- Implement Mitigation Measure 4.10-2-2, described above, with respect to electrification of commercial loading dock areas to reduce emissions associated with truck idling.

Significance after Mitigation

Implementation of Mitigation Measures 4.10-3 would reduce concentrations that sensitive receptors would be exposed to for time spent indoors and would disclose to those considering residing in the project the potential risks involved. In addition, the Plan identifies the Atlantic Street Promenade located between Atlantic Street and the UPRR railyard. Landscaping (e.g., trees, shrubs) would be planted as part the promenade which would also assist in reducing pollutant concentrations. However, the mitigation and landscaping would not reduce exposure of sensitive receptors to substantial pollutant concentrations for time spent outdoors. The impact cannot be shown to be reduced to a level considered less-than-significant level and, therefore, is considered significant and unavoidable.

Mitigation Measure 4.10-5

Implementation of Mitigation Measure 4.10-3 to reduce indoor exposure to TACs would also result in a reduction in the intensity of offensive odors from the surrounding odor sources. In addition, the applicant shall require all businesses that occupy the property to install odor-controls as necessary to prevent a substantial dispersion of odors to adjacent residential areas.

Significance after Mitigation

Implementation of Mitigation Measure 4.10-3 and 4.10-5 would provide adequate controls for minor odor sources. As a result, this impact would be reduced to less-than-significant level.