4.5 AIR QUALITY

4.5.1 ENVIRONMENTAL SETTING

METEOROLOGY

The project site is located in Santa Clara County, which lies within the San Francisco Bay Area Air Basin (SFBAAB). Temperatures at nearby San Jose Airport average 59^0F annually, ranging from the low-40s on winter mornings to near 80^0F on summer afternoons.

Daily and seasonal fluctuations in temperature are relatively minor because of the moderating effects of the nearby ocean. In contrast to the steady temperature regime, rainfall is highly variable and confined almost exclusively to the "rainy" period from early November to mid-April. San Jose averages 14 inches of precipitation annually, but because much of the area's rainfall is derived from the fringes of mid-latitude storms, a shift in the annual storm track of a few hundred miles can mean the difference between a very wet year and near-drought conditions. Santa Clara County is shielded from strong daytime sea breezes by the intervening hills to the west. Daytime airflow across the project site is mainly air that has moved southward from San Mateo County along the western shores of San Francisco Bay. Winds in the project area are typically out of the northwest, north-northwest, and north (about 40% of the time). All other wind directions occur no more than 10% of the time. Decreasing wind speeds and the origin of the incoming air over populated areas creates elevated air pollution levels in Santa Clara County. Annual average wind speeds are approximately seven miles per hour (CARB, 1984). However, light daytime winds, especially until mid-afternoon, and near-calm nocturnal conditions limit the dispersion potential of the local atmosphere. Santa Clara County typically experiences higher air pollution levels than do better-ventilated portions of the SFBAAB.

AMBIENT AIR QUALITY

The Bay Area Air Quality Management District (BAAQMD) operates a regional monitoring network which measures the ambient concentrations of six criteria air pollutants: ozone (O_3), carbon monoxide (CO), inhalable particulate matter (PM10), lead (Pb), nitrogen dioxide (NO_2), and sulfur dioxide (SO_2). Existing and probable future levels of air quality in the project area can be generally inferred from ambient air quality measurements conducted by the BAAQMD at its Santa Clara County air monitoring stations. **Table 4.5-1** is a six-year summary of monitoring data (2002-2007) from the BAAQMD's monitoring stations in San Jose (4^{th} Street) and Los Gatos. Table 4.5-1 compares measured pollutant concentrations with state ambient air quality standards, which are more stringent than the corresponding federal or national standards. These data indicate that the South Bay continues to experience air pollution problems with both atmospheric pollution potential and emissions continuing to be high in this area.

TABLE 4.5-1

PROJECT AREA AMBIENT AIR QUALITY MONITORING SUMMARY,

2002 – 2007

Pollutant	2002	2003	2004	2005	2006	2007
Ozone						
1-hour > 0.09 ppm*	4	7	0	3	7	0
1-hour > 0.12 ppm**	0	0	0	0	0	0
8-hour > 0.08 ppm**	2	2	0	1	4	0
Max. 1-hour Conc. (ppm)	0.113	0.124	0.093	0.110	0.116	0.084
Carbon Monoxide						
1-hour > 20 ppm*, > 35 ppm**	0	0	0	0	0	0
8-hour > 9 ppm*,**	0	0	0	0	0	0
Max. 8-hour Conc. (ppm)	4.5	4.0	3.0	3.1	2.9	2.7
Nitrogen Dioxide						
1-hour > 0.25 ppm*	0	0	0	0	0	0
Max. 1-hour Conc. (ppm)	0.069	0.090	0.073	0.074	0.074	0.065
Respirable Particulates (PM_{10})						
24-hour > 50 $\mu g/m^3$*	0	3	0	0	0	0
24-hour > 150 $\mu g/m^3$**	0	0	0	0	0	0
Max. 24-hourConc. ($\mu g/m^3$)	48.1	59.5	58.0	53.5	73.2	69.1
Fine Particulates ($PM_{2.5}$)						
24-hour > 65 $\mu g/m^3$**	0	0	0	0	0	0
Max. 24-hour Conc. ($\mu g/m^3$)	44.1	56.1	51.5	54.6	64.4	57.5

Notes:
* Number of Days Above California Ambient Air Quality Standards
** Number of Days Above National Ambient Air Quality Standards

Source: BAAQMD (2002-2004), San Jose Air Monitoring Station (4th Street) (http://www.baaqmd.gov/pio/aq_summaries/index.asp) for CO (1-hour); California Air Resources Board (2002-2007), Los Gatos Air Monitoring Station for ozone and San Jose (4th Street) for 2002 and Jackson Street for (2003-2007) Station for all other pollutants (http://www.arb.ca.gov/adam/welcome.html; Top 4 Summary)

Monitored values for ozone, PM_{10} have exceeded the more stringent state air quality standards during the last six years of published data. Since 1999, all other pollutants have remained within allowable levels.

Ozone (O_3)

O_3 is not emitted directly into the atmosphere but is a secondary air pollutant produced in the atmosphere through a complex series of photochemical reactions involving hydrocarbons (HC) and nitrogen oxides (NO_X). O_3 is a regional pollutant because its precursors are transported and diffused by wind concurrently with O_3 production by the photochemical reaction process. O_3 causes eye and respiratory irritation,

reduces resistance to lung infection, and may aggravate pulmonary conditions in persons with lung disease. Table 4.5-1 shows that exceedance of the state standard occurred on 21 days in the project area between 2002 and 2007. The less stringent federal standard of 0.12 ppm for one hour has not been exceeded, while the eight-hour standard of 0.08 ppm has been exceeded on nine days, according to published data.

Carbon Monoxide (CO)

CO is an odorless, invisible gas usually formed as the result of incomplete combustion of organic substances. Approximately 80 percent of the CO emitted in the SFBAAB comes from on-road motor vehicles (CARB, 1999). High levels of CO can impair the transport of oxygen in the bloodstream and thereby aggravate cardiovascular disease and cause fatigue, headaches, and dizziness. Table 4.5-1 shows that no exceedances of state CO standards were recorded between 2002 and 2007. Measurements of carbon monoxide (CO) show that eight-hour CO levels are approximately 30 to 50 percent of the eight-hour state and federal standard. CO concentrations in Santa Clara are expected to be similar to those measured in San Jose.

Suspended and Inhalable Particulate Matter (PM_{10} and $PM_{2.5}$)

Particulate matter is a class of air pollutants that consists of solid and liquid airborne particles in an extremely small size range. Particulate matter is measured in two size ranges: PM_{10} for particles less than 10 microns in diameter and $PM_{2.5}$, for even smaller particles which are less than 2.5 microns in diameter. Motor vehicles generate about half of Bay Area particulates, through tailpipe emissions as well as brake pad and tire wear. Wood burning in fireplaces and stoves, industrial facilities, and ground-disturbing activities such as construction are other sources of fine particulates. Fine particulates are small enough to be inhaled into the deepest parts of the human lung can cause adverse health effects. Among the criteria pollutants that the BAAQMD regulates, particulates appear to represent the most serious overall health hazard. Studies have shown that elevated particulate levels contribute to the death of approximately 200 to 500 people per year in the Bay area. High levels of particulates have also been known to exacerbate chronic respiratory ailments, such as bronchitis and asthma, and have been associated with increased emergency room visits and hospital admissions (BAAQMD, 1996).

Diesel exhaust is a growing concern in the Bay Area and throughout California. The California Air Resources Board (CARB) identified diesel engine particulate matter as a toxic air contaminant. The exhaust from diesel engines includes hundreds of different gaseous and particulate components, many of which are toxic. Many of these toxic compounds adhere to the particles, and because diesel particles are very small, they penetrate deeply into the lungs. Diesel engine particulate matter has been identified as a human carcinogen. Mobile sources such as trucks, buses, and automobiles are some of the primary sources of diesel emissions. Studies show that diesel particulate matter concentrations are much higher near heavily traveled highways and intersections. District analysis shows that the cancer risk from

exposure to diesel exhaust is much higher than the risk associated with any other toxic air pollutant routinely measured in the region (BAAQMD, 1999).

Table 4.5-1 shows that exceedances of the state PM10 standard occur relatively infrequently in San Jose. State PM10 standards were exceeded on 3 measurement days in the last six years (PM10 is not monitored everyday). Federal PM10 standards have never been exceeded at the San Jose monitoring station.

In 1997, the U. S. Environmental Protection Agency adopted a new standard for PM2.5, which represents the fine fraction of particulate matter; this standard was subject to legal challenge but was upheld by the U.S. Supreme Court in February 2001. California has adopted an annual state standard for PM2.5 that is more stringent than the federal standard. The new state standard is an annual average standard of 12 $\mu g/m^3$, not to be exceeded. This standard went into effect in July 2003. The BAAQMD began monitoring PM2.5 concentrations in 1999 in Fremont, Livermore, Concord, San Francisco, Redwood City, San Jose, Vallejo and Santa Rosa. PM2.5 data collected at the San Jose station indicate that PM2.5 concentrations have not exceeded the federal PM2.5 standard since 1999.

Other Criteria Air Pollutants

The standards for NO_2, SO_2, and lead are being met in the Bay Area, and the latest pollutant trends information suggests that these standards will not be exceeded in the foreseeable future (ABAG and BAAQMD, 1994).

Toxic Air Contaminants

Toxic air contaminants (TACs) are air pollutants that may lead to serious illness or increased mortality, even when present in relatively low concentrations. Potential human health effects of TACs include birth defects, neurological damage, cancer, and death. There are hundreds of different types of TACs with varying degrees of toxicity. Individual TACs vary greatly in the health risk they present; at a given level of exposure, one TAC may pose a hazard that is many times greater than another.

TACs do not have ambient air quality standards, but are regulated by the BAAQMD using a risk-based approach. This approach uses a health risk assessment to determine what sources and pollutants to control as well as the degree of control. A health risk assessment is an analysis where human health exposure to toxic substances is estimated, and considered together with information regarding the toxic potency of the substances, to provide quantitative estimates of health risks.

In addition to criteria pollutants, both the BAAQMD and the California Air Resources Board (CARB) operate TAC monitoring networks in the San Francisco Bay Area. These stations measure 10 to 15 TACs, depending on the specific station. The TACs selected for monitoring are those that have traditionally been found in the highest concentrations in ambient air, and therefore tend to produce the most significant risk. The BAAQMD operates two ambient TAC monitoring stations in San Jose at 1020-B North 4th Street and 158-B East Jackson Street, both located approximately six miles southeast of the

Mission College campus. Using data from these two monitoring stations as well as data from the Fremont and San Francisco stations, it is estimated that estimated average lifetime cancer risk in the Bay Area was 143 in one million in 2003 for all Bay Area TACs (BAAQMD, 2007). Since this estimate is based, in part, on data from the San Jose stations, this cancer risk would be indicative of the current risks in the project area. These levels can be compared to the much higher background cancer incidence rate in the United States from all causes, which is 42%, or 400,000 in one million (National Cancer Institute, 2005).[1]

Greenhouse Gases

Gases that trap heat in the atmosphere are often called greenhouse gases (GHGs). Both natural processes and human activities emit GHGs. The accumulation of GHGs in the atmosphere regulates the earth's temperature; however, emissions from human activities such as electricity production and vehicle use have elevated the concentration of these gases in the atmosphere. This accumulation of GHGs has contributed to an increase in the temperature of the earth's atmosphere and contributed to climate change. The six principal greenhouse gases are carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (CCAR, 2007). Carbon dioxide is the reference gas for climate change. See more discussion under Section 4.10, Climate Change.

MISSION COLLEGE TOXIC AIR CONTAMINANT EMISSION SOURCES

There are various hazardous materials stored and used on the Mission College campus. According to the college's inventory of hazardous materials (April 2008), hazardous materials include: gasoline, diesel fuel, oil, and various maintenance-related chemicals in the Central Plant's Warehouse, Chiller Room, and Maintenance Shop. Various chemicals are also stored in the Science Building's storage room on campus. A listing of these hazardous materials is included in Appendix D. Of these materials, 15 are identified by the CARB in the Toxic Hot Spots Program as toxic air contaminants (TACs):

- Diesel Particulate Matter: Diesel fuel is stored in the Central Plant.
- Solid Reagents Stored in Science Labs: acetamide, biphenyl, catechol, cobalt compounds, dichlorobenzene p-, lead compounds, maleic anhydride, mercury compounds, methyl methacrylate, nickel compounds, p-nitrobenzene, and phenol.

Mission College is not included on the BAAQMD's TAC Emissions Inventory for 2003 (BAAQMD, 2007), and the BAAQMD indicates that facilities whose emissions are below the BAAQMD TAC thresholds are not included in the inventory.

[1]It is generally believed that a large portion of the total background cancer risk in the United States comes from smoking and other personal habits, genetic susceptibilities, diet, natural radiation including radon, and other lifestyle factors.

ODORS

There are no odor complaints on file with the BAAQMD for the Mission College over the past five years.[2] BAAQMD Regulation 7 places general limitations on odorous substances and specific emission limitations on certain odorous compounds. The limitations of this regulation limit the "discharge of any odorous substance which causes the ambient air at or beyond the property line…to be odorous and to remain odorous after dilution with four parts of odor-free air." The BAAQMD must receive odor complaints from ten or more complainants within a 90-day period in order for the limitations of this regulation to go into effect. If this criterion has been met, an odor violation can be issued by the BAAQMD if a test panel of people can detect an odor in samples collected periodically from the facility.

SENSITIVE RECEPTORS

Land uses such as schools, children's day care centers, hospitals, and convalescent homes are considered to be more sensitive than the general public to poor air quality because the population groups associated with these uses have increased susceptibility to respiratory distress. Persons engaged in strenuous work or exercise also have increased sensitivity to poor air quality. Residential areas are considered more sensitive to air quality conditions than commercial and industrial areas, because people generally spend longer periods of time at their residences, resulting in greater exposure to ambient air quality conditions. Recreational uses are also considered sensitive, due to the greater exposure to ambient air quality conditions, and because the presence of pollution detracts from the recreational experience. Residential uses are located to the west of Mission College, across Calabazas Creek. Fairwood Elementary School is also located across Calabazas Creek, approximately 1,000 feet northwest of the campus. Recreational uses are located on the Mission College campus, with sports facilities located on the western and northern portions of the campus. Land uses are described in more detail in Section 4.1, Land Use.

4.5.2 REGULATORY OVERVIEW

AMBIENT AIR QUALITY STANDARDS

The federal Clean Air Act Amendments of 1970 established national ambient air quality standards, and individual states retained the option to adopt more stringent standards and to include other pollution sources. California had already established its own air quality standards when federal standards were established, and because of the unique meteorological problems in the state, there is considerable diversity between state (SAAQS) and federal or national (NAAQS) standards currently in effect in California, as shown in **Table 4.5-2**.

[2] Email communication dated October 28, 2008 from Rochelle Henderson, Public Records Coordinator, Bay Area Air Quality Management District, to Valerie Geier regarding odor complaint record search for Mission College.

TABLE 4.5-2

STATE AND FEDERAL AMBIENT AIR QUALITY STANDARDS AND ATTAINMENT STATUS

Pollutant	Averaging Time	(State) SAAQS[a] Standard	(State) SAAQS[a] Attainment Status	(Federal) NAAQS[b] Standard	(Federal) NAAQS[b] Attainment Status
Ozone	1-hour	0.09 ppm	**N/Severe**	NA	NA
	8-hour	0.07 ppm	**N**	0.075 ppm	**N/Marginal**
Carbon Monoxide	1 hour	20 ppm	A	35 ppm	A
	8 hour	9 ppm	A	9 ppm	A
Nitrogen Dioxide	1 hour	0.18 ppm	A	NA	NA
	Annual	0.030 ppm	NA	0.053 ppm	A
Sulfur Dioxide	1 hour	0.25 ppm	A	NA	NA
	24 hour	0.04 ppm	A	0.14 ppm	A
	Annual	NA	NA	0.03 ppm	A
Particulate Matter (PM_{10})	24 hour	50 $\mu g/m^3$	**N**	150 $\mu g/m^3$	U
	Annual	20 $\mu g/m^3$	**N**	NA	A
Fine Particulate Matter ($PM_{2.5}$)	24 hour	NA	NA	65 $\mu g/m^3$	U
	Annual	12 $\mu g/m^3$ (c)	**N**	15 $\mu g/m^3$	A
Sulfates	24 hour	25 $\mu g/m^3$	A	NA	NA
Lead	30 day	1.5 $\mu g/m^3$	A	NA	NA
	Cal. Quarter	NA	NA	1.5 $\mu g/m^3$	A
Hydrogen Sulfide	1 hour	0.03 ppm	U	NA	NA
Visibility Reducing Particles	8 hour	see Note d	A	NA	NA

Notes: A = Attainment; **N** = Non-Attainment; U = Unclassified; NA = Not Applicable; ppm = parts per million; $\mu g/m^3$ = micrograms per cubic meter.

a SAAQS = State Ambient Air Quality Standards (California). SAAQS for ozone, carbon monoxide (except Lake Tahoe), sulfur dioxide (1-hour and 24-hour), nitrogen dioxide, particulate matter, and visibility reducing particles are values that are not to be exceeded. All other state standards shown are values not to be equaled or exceeded.

b NAAQS = National Ambient Air Quality Standards. NAAQS, other than ozone and particulates, and those based on annual averages or annual arithmetic means, are not to be exceeded more than once a year. The 1-hour ozone standard is attained if, during the most recent three-year period, the average number of days per year with maximum hourly concentrations above the standard is equal to or less than one. The 8-hour ozone standard is attained when the 3-year average of the 4th highest daily concentration is 0.08 ppm or less. The 24-hour PM10 standard is attained when the 3-year average of the 99th percentile of monitored concentrations is less than the standard. The 24-hour PM2.5 standard is attained when the 3-year average of 98th percentiles is less than the standard.

c This State 8-hour ozone standard was approved in April 2005 and became effective in May 2006. Attainment status in both districts is Unclassified.

d Statewide VRP Standard (except Lake Tahoe Air Basin): Particles in sufficient amount to produce an extinction coefficient of 0.23 per kilometer when the relative humidity is less than 70%. This standard is intended to limit the frequency and severity of visibility impairment due to regional haze and is equivalent to a 10-mile nominal visual range.

Source: Bay Area Air Quality Management District (2008)

The ambient air quality standards are intended to protect the public health and welfare, and they incorporate an adequate margin of safety. They are designed to protect those segments of the public most susceptible to respiratory distress, known as sensitive receptors, including asthmatics, the very young, the elderly, people weak from other illness or disease, or persons engaged in strenuous work or exercise. Healthy adults can tolerate occasional exposure to air pollution levels somewhat above the ambient air quality standards before adverse health effects are observed.

Federal Standards

The 1977 Clean Air Act required that regional planning and air pollution control agencies prepare a regional Air Quality Plan to outline the measures by which both stationary and mobile sources of pollutants can be controlled in order to achieve all standards within the deadlines specified in the Clean Air Act. For the Bay Area air basin, the Association of Bay Area Governments (ABAG), the Metropolitan Transportation Commission (MTC), and the BAAQMD jointly prepared a *Bay Area Air Quality Plan* in 1982 which predicted attainment of all Federal Clean Air standards within the air basin by 1987. This forecast was somewhat optimistic in that attainment of federal Clean Air standards did not occur throughout the entire air basin until 1991. The plan, which is referred to as the State Implementation Plan (SIP), must contain control strategies that demonstrate attainment with national ambient air quality standards by deadlines established in the federal CAA.

The Bay Area Air Basin attainment status with respect to federal standards is summarized in Table 4.5-2. In general, the Bay Area experiences low concentrations of most pollutants when compared to federal standards, except for O3, for which the standard is exceeded periodically. In 1995, after several years of minimal violations of the Federal one-hour ozone standard, the EPA revised the designation of the Bay Area air basin from "non-attainment" to "attainment" for this standard. However, with less favorable meteorology in subsequent years, violations of the federal one-hour ozone standard were again observed in the basin. Effective August 1998, the EPA downgraded the Bay Area's classification for this standard from a "maintenance" area to an "unclassified non-attainment" area. In 1998, after many years without violations of any carbon monoxide (CO) standards, the attainment status for CO was upgraded to "attainment."

In response to the EPA's redesignation of the basin for the one-hour federal ozone standard, the BAAQMD, ABAG, and MTC were required to develop an ozone attainment plan to meet this standard. The *1999 Ozone Attainment Plan* was prepared and adopted by these agencies in June 1999. However, in March 2001, the EPA proposed and took final action to approve portions of the 1999 OAP and disapprove other portions, while also making the finding that the Bay Area had not attained the national one-hour ozone standard. As a result, a revised OAP was prepared and adopted in October 2001. The 2001 OAP amends and supplements the 1999 OAP. The 2001 OAP contains control strategies for stationary and mobile sources. The adopted mobile-source control program was estimated to significantly reduce volatile organic compound and NO_X emissions between 2000 and 2006, reducing emissions from on- and off-road diesel engines (including construction equipment). In addition to emission reduction requirements for engines and fuels, the OAP identified 28 transportation control measures to reduce automobile emissions, including improved transit service and transit coordination, new carpool lanes, signal timing, freeway incident management, and increased state gas tax and bridge tolls. The BAAQMD is currently in the process of preparing the *2009 Bay Area Clean Air Plan,* which will:

- Update the Bay Area 2005 Ozone Strategy in accordance with the requirements of the California Clean Air Act to implement "all feasible measures" to reduce ozone
- Consider the impacts of ozone control measures on PM_{10} and $PM_{2.5}$, TACs, and GHGs in a single, integrated plan
- Review progress in improving air quality in recent years
- Establish emission control measures to be adopted or implemented in the 2009-2012 timeframe

State Standards

The CARB is the state agency responsible for regulating air quality. The CARB's responsibilities include establishing state ambient air quality standards, emissions standards, and regulations for mobile emissions sources (e.g., autos, trucks, etc.), as well as overseeing the efforts of countywide and multi-county air pollution control districts, which have primary responsibility over stationary sources. The emission standards most relevant to the proposed Master Plan are those related to automobiles and on- and off-road heavy-duty diesel engines. The CARB also regulates vehicle fuels with the intent to reduce emissions; it has set emission reduction performance requirements for gasoline (California reformulated gasoline) and limited the sulfur and aromatic content of diesel fuel to make it burn cleaner. The CARB also sets the standards used to pass or fail vehicles in smog check and heavy-duty truck inspection programs.

Today, virtually all of California is classified as "nonattainment" for the State PM_{10} Standard. In 2003 the California Legislature enacted Senate Bill 656 (SB 656) to reduce public exposure to PM_{10} and $PM_{2.5}$. In response to SB 656, CARB compiled a list of existing PM rules, regulations, and programs existing in California as of January 1, 2004 and also approved various regulatory measures to reduce emissions from new, modified, and existing stationary, area, and mobile sources. The measures relevant to the proposed Master Plan are discussed below.

Diesel Idling Limits. In 2005, the CARB approved a regulatory measure to reduce emissions of toxic and criteria pollutants by limiting the idling of new heavy-duty diesel vehicles, which altered five sections of Title 13 of the California Code of Regulations. The changes relevant to Master Plan are Sections 2480 and 2485. The pertinent requirements of Section 2480, Airborne Toxic Control Measure to Limit School Bus Idling and Idling at Schools, include the following:

1. (c)(2) A driver of a commercial motor vehicle:

(A) must turn off the bus or vehicle engine upon stopping at a school and must not turn the bus or vehicle engine on more than 30 seconds before beginning to depart from a school; and

(B) must not cause or allow a bus or vehicle to idle at any location within 100 feet of, but not at, a school for:

(i) more than five consecutive minutes; or
(ii) a period or periods aggregating more than five minutes in any one hour.

2. (c)(4) A motor carrier of a commercial motor vehicle must ensure that:

(A) the bus or vehicle driver, upon employment and at least once per year thereafter, is informed of the requirements in (c)(2), and of the consequences, under this section and the motor carrier's terms of employment, of not complying with those requirements;

(B) all complaints of non-compliance with, and enforcement actions related to, the requirements of (c)(2) are reviewed and remedial action is taken as necessary; and

(C) records of (4) (A) and (B) are kept for at least three years and made available or accessible to enforcement personnel as defined in subsection (g) within three business days of their request.

Pertinent requirements of Section 2485, Airborne Toxic Control Measure to Limit Diesel-Fueled Commercial Motor Vehicle Idling, include the following:

3. (c) The driver of any vehicle subject to this section:

(1) shall not idle the vehicle's primary diesel engine for greater than five minutes at any location, except as noted in subsection (d); and

(2) shall not operate a diesel-fueled auxiliary power system (APS) to power a heater, air conditioner, or any ancillary equipment on that vehicle during sleeping or resting in a sleeper berth for greater than five minutes at any location when within 100 feet of a restricted area, except as noted in subsection (d).

"Restricted area" means any real property zoned for individual or multifamily housing units that has one or more such units. There are 12 exceptions to this requirement (e.g., emergency situations, military, adverse weather conditions, etc.), including: when a vehicle's power takeoff is being used to run pumps, blowers, or other equipment; when a vehicle is stuck in traffic, stopped at a light, or under direction of a police officer; when a vehicle is queuing beyond 100 feet from any restricted area; or when an engine is being tested, serviced, or repaired.

San Francisco Bay Area Air Basin

The Bay Area Air Quality Management District (BAAQMD) is the regional agency responsible for air quality regulation within the San Francisco Bay Area Air Basin. The BAAQMD regulates air quality through its planning and review activities. The BAAQMD has permit authority over most types of stationary emission sources and can require stationary sources to obtain permits, and can impose emission limits, set fuel or material specifications, or establish operational limits to reduce air emissions. The BAAQMD regulates new or expanding stationary sources of toxic air contaminants.

In September 2005, the BAAQMD, in cooperation with the MTC and ABAG, prepared the draft *Bay Area 2005 Ozone Strategy*. The Ozone Strategy is a roadmap showing how the San Francisco Bay Area will achieve compliance with the state 1-hour ozone standard as expeditiously as practicable, and how the region will reduce transport of ozone and ozone precursors to neighboring air basins. The control strategy includes stationary-source control measures to be implemented through BAAQMD regulations; mobile-source control measures to be implemented through incentive programs and other activities; and

transportation control measures to be implemented through transportation programs in cooperation with the MTC, local governments, transit agencies, and others. The BAAQMD is currently in the process of preparing the *2009 Bay Area Clean Air Plan,* as discussed above.

In response to SB 636, the BAAQMD completed the *Particulate Matter Implementation Schedule* in November 2005. This Schedule evaluates applicability of the 103 PM control measures on ARB's list and discusses how applicable measures are implemented by the District. The BAAQMD implements a number of regulations and programs to reduce PM emissions, such as controlling dust from earthmoving and construction/demolition operations, limiting emissions from various combustion sources such as cement kilns and furnaces, and reducing PM from composting and chipping activities. In addition to limiting stationary sources, the BAAQMD implements a variety mobile source incentive programs to encourage fleet operators and the public to purchase low-emission vehicles, re-power old polluting heavy duty diesel engines, and install after market emissions control devices to reduce particulates and NO_X emissions.

Table 4.5-2 presents a summary of the BAAQMD's attainment status with respect to state standards. As indicated in the table, the SFBAAB is designated as "nonattainment" for state ozone, PM_{10}, and $PM_{2.5}$ standards. The SFBAAB is designated as "attainment" for all other criteria pollutants listed in the table.

4.8.3 POTENTIAL IMPACTS AND MITIGATION MEASURES

SIGNIFICANCE CRITERIA

Based upon the criteria presented in Appendix G of the *CEQA Guidelines*, a project would have a significant effect on the environment if it would:

- conflict with or obstruct implementation of the applicable air quality plan
- violate any ambient 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 non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions, which exceed quantitative thresholds for ozone precursors)
- expose sensitive receptors to substantial pollutant concentrations
- create objectionable odors affecting a substantial number of people

For construction-related impacts, BAAQMD recommends that significance should be based on a consideration of the control measures to be implemented (BAAQMD, 1999). If appropriate mitigation measures are implemented to control PM_{10} emissions, the impact would be less than significant.

For operational impacts, the BAAQMD provides the guidelines to determine whether total emissions from project operations could exceed one of the following thresholds of significance:

- 80 pounds of NO_x, ROG, and PM10 per day
- 550 pounds of CO per day (a trigger level for which a "hot spot" analysis should be performed)

Projects approaching or exceeding these guidelines should undergo a more detailed analysis. The BAAQMD generally does not recommend a detailed air quality analysis for projects generating less than 2,000 vehicle trips per day, unless warranted by the specific nature of the project or project setting.

CONSTRUCTION IMPACTS

Impact 4.5-1: Construction and demolition activities associated with Plan implementation would generate short-term emissions of criteria pollutants, including suspended and inhalable particulate matter and equipment exhaust emissions. (Temporarily Significant)

The 85-acre campus is currently developed with college-related educational facilities. Plan implementation would result in demolition and construction projects that occur between 2009 and 2025. The extent of construction-related air pollutant emissions at any given time over this 16-year period would vary, depending on which combination of planned projects is being implemented. The potential for surface disturbance and resulting dust and equipment exhaust emissions would be greatest when demolition and new building construction occurs. Building expansions would also result in some surface disturbance, while interior remodeling and maintenance projects would have the lowest potential for surface disturbance.

To evaluate worst-case conditions, maximum area of surface disturbance was estimated assuming all projects within each sequence would occur over a four-year period (the assumed total area of disturbance was roughly twice the estimated building sizes for each sequence and this area was averaged over four years). Based on these assumptions, the total area of surface disturbance for each sequence would range from four to ten acres (averaging 0.6 to 2.5 acres per year), depending on the sequence. Emissions factors for 2009, 2013, 2017, and 2021 were respectively applied to Sequences 1 through 4.

Estimated air pollutant emissions associated with surface disturbance and equipment operations for each sequence are presented in **Table 4.5-3**. When compared to the BAAQMD significance thresholds for PM10 of 80 pounds per day, Plan-related construction would be regionally less than significant without dust control measures. However, given the variable number of different demolition, remodeling, renovation, and construction projects that could occur in any given year as well as the Bay Area's current non-attainment status for PM10, Plan-related emissions are considered to be *temporarily significant,* and implementation of dust control measures will be required to reduce potential Plan-related construction emissions to a less-than-significant level.

TABLE 4.5-3

PLAN-RELATED CONSTRUCTION ACTIVITY EMISSIONS

Construction Phasing	Estimated Average Daily Emissions (Pounds per Day)[1]						
	ROG	NO_X	CO	SO_2	PM_{10}	$PM_{2.5}$	CO_2-E[2]
Sequence 1 (2009-2012) – 213,200 s.f. of New Building Space							
Grading							
Unmitigated	3.2	26.5	14.2	0.0	25.7	6.3	2,490.2
With Mitigation	3.2	22.6	14.2	0.0	2.5	0.7	2,490.2
Construction							
Unmitigated	4.3	19.2	28.4	0.0	1.4	1.2	3,555.6
With Mitigation	4.3	17.1	28.4	0.0	0.6	0.5	3,555.6
Paving and Coating							
Unmitigated	43.5	15.4	11.3	0.0	1.4	1.2	1,588.1
With Mitigation	39.1	13.1	11.3	0.0	0.2	0.2	1,588.1
Sequence 2 (2013-2016) – 267,880 s.f. of Demolition and 53,000 s.f. of New Building Space							
Demolition							
Unmitigated	3.3	41.0	16.9	0.1	54.3	1.5	8,247.6
With Mitigation	3.3	40.0	16.9	0.1	54.0	1.2	8,247.6
Grading							
Unmitigated	2.4	19.1	11.6	0.0	7.0	2.1	2,490.5
With Mitigation	2.4	19.1	11.6	0.0	7.0	2.1	2,490.5
Construction							
Unmitigated	0.9	6.4	7.2	0.0	0.4	0.3	1,405.1
With Mitigation	0.9	5.5	7.2	0.0	0.1	0.1	1,405.1
Paving and Coating							
Unmitigated	8.7	8.4	7.9	0.0	0.6	0.6	1,233.5
With Mitigation	7.9	7.2	7.9	0.0	0.1	0.1	1,233.5
Sequence 3 (2017-2020) – 114,000 s.f. of New Building Space							
Grading							
Unmitigated	2.0	14.7	10.5	0.0	13.8	3.4	2,490.6
With Mitigation	2.0	12.5	10.5	0.0	1.3	0.4	2,490.6
Construction							
Unmitigated	1.9	10.3	13.9	0.0	0.6	0.5	2,704.5
With Mitigation	1.9	9.1	13.9	0.0	0.3	0.2	2,704.5
Paving and Coating							
Unmitigated	18.9	9.4	9.7	0.0	0.7	0.6	1,577.7
With Mitigation	17.0	8.2	9.7	0.0	0.2	0.2	1,577.7
Sequence 4 (2021-2024) – 90,000 s.f. of New Building Space							
Grading							
Unmitigated	1.7	11.2	9.5	0.0	10.8	2.6	2,490.7
With Mitigation	1.7	9.5	9.5	0.0	1.0	0.3	2,490.7
Construction							
Unmitigated	1.5	8.6	11.0	0.0	0.4	0.4	2,497.6
With Mitigation	1.5	7.7	11.0	0.0	0.2	0.2	2,497.6
Paving and Coating							
Unmitigated	14.7	8.8	9.3	0.0	0.6	0.6	1,575.3

TABLE 4.5-3

PLAN-RELATED CONSTRUCTION ACTIVITY EMISSIONS

Construction Phasing	Estimated Average Daily Emissions (Pounds per Day)[1]						
	ROG	NO_X	CO	SO_2	PM_{10}	$PM_{2.5}$	CO_2-E[2]
With Mitigation	13.2	7.6	9.3	0.0	0.2	0.2	1,575.3
BAAQMD Threshold	80	80	550	-	80	-	-

NOTES: ROG: Reactive Organic Gases; NOx: Nitrogen Oxides; CO: Carbon Monoxide; PM_{10}: Inhalable Particulates; $PM_{2.5}$: Fine Inhalable Particulates; SO_2: Sulfur Dioxide; CO_2-E: CO_2 Equivalents

[1] Assumes each sequence is averaged over four years. Exhaust emissions will result from on and off-site heavy equipment. The types and numbers of equipment will vary among contractors such that such emissions cannot be quantified with certainty. The URBEMIS2007 computer model was used to calculate emissions from the following prototype construction equipment fleet:

Phases 1, 3, 4: Grading – 1 grader, 1 dozer, 1 tractor/loader/backhoe, 1 water truck; Construction – 1 crane, 2 forklifts, 1 generator set, 3 welders, 1 tractor/loader/backhoe; Paving – 4 cement mixers, 1 paver, 1 roller, 1 paving equipment, 1 tractor/loader/backhoe.

Phase 2: Demolition – 1 concrete saw, 1 dozer, 2 tractors/loaders/backhoes; Grading – 1 grader, 1 dozer, 1 tractor/loader/backhoe, 1 water truck; Construction – 1 small crane, 2 forklifts, 1 tractor/loader/backhoe; Paving – 4 cement mixers, 1 paver, 1 roller, 1 tractor/loader/backhoe.

[2] CO_2-Equivalents include CO_2, CH_4, and N_2O. See Section 4.10, Climate Change, for more discussion of these emissions.

SOURCE: URBEMIS 2007 Model (See Appendix E for model output)

The BAAQMD's *CEQA Guidelines* (1999) acknowledges that construction activity emissions vary markedly from project to project, from day to day, and from one contractor to another. Rather than focus on a quantification of project-related emissions, the BAAQMD has developed a menu of mitigation options to control construction activity dust emissions. The BAAQMD (1999) considers implementation of all applicable dust control measures (which vary according to project magnitude) as reducing Plan-related particulate (PM_{10}) emissions to less-than-significant levels. These measures are grouped into three categories as follows:

- "Basic Control Measures" apply to all construction sites.
- "Enhanced Control Measures" apply to sites greater than four acres.
- "Optional Control Measures" apply to larger sites near sensitive receptors.

Based on the average size of surface disturbance during any given year, implementation of the Basic and Enhanced Control Measures listed below would maintain the Plan's construction-related impacts at a less-than-significant level. Due to the proximity of existing residential uses to the west, applicable optional control measures are also recommended to maintain impacts at a less-than-significant level when construction occurs when construction occurs in the western part of the campus.

Construction equipment emits ozone precursors and carbon monoxide during combustion of diesel fuel. The BAAQMD's determination, however, is that these emissions have been included in the emissions inventory, which was the basis for the '97 CAP and subsequent air quality plans. Since the BAAQMD

does not consider construction-related exhaust emissions to be "new" emissions, they would not impede attainment or maintenance of ozone or CO standards in the air basin (BAAQMD 1999). Therefore, impacts associated with increased criteria pollutants are considered *less than significant*. However, since diesel emissions have been identified by the CARB as a toxic air contaminant (TAC) and outdoor sports facilities are located in proximity to some construction sites, efforts should be made to reduce construction-related diesel emissions to the extent feasible, particularly since these emissions would occur over the next 16 years.

Mitigation Measure 4.5-1: Construction activities must comply with the "Basic Control Measures" and "Enhanced Control Measures" and applicable "Optional Control Measures" for dust emissions and recommendations for exhaust emissions as outlined in the BAAQMD *CEQA Guidelines*. The appropriate level of mitigation shall be determined based on the total area of disturbance resulting from all planned projects occurring simultaneously. These requirements include:

Basic Dust Control Measures *(apply to all construction sites)*

a. Water all active construction areas at least twice daily.
b. Cover all trucks hauling soil, sand, and other loose debris *or* require all trucks to maintain at least two feet of freeboard.
c. Pave, apply water three times daily, or apply (non-toxic) soil stabilizers on all unpaved access roads, parking areas, and staging areas at construction sites.
d. Sweep daily (with water sweepers) all paved access roads, parking areas, and staging areas at construction sites.
e. Sweep streets daily (with water sweepers) if visible soil material is carried onto adjacent public streets.

Enhanced Dust Control Measures *(apply to construction sites greater than four acres)*

f. Hydroseed or apply (non-toxic) soil stabilizers to inactive construction areas (previously graded areas inactive for ten days or more).
g. Enclose, cover, water twice daily or apply (non-toxic) soil binders to exposed stockpiles (dirt, sand, etc.).
h. Limit traffic speeds on unpaved roads to 15 mph.
i. Install sandbags or other erosion control measures to prevent silt runoff to public roadways.
j. Replant vegetation in disturbed areas as quickly as possible.

Optional Dust Control Measure *(apply to construction sites that are large in area, located near sensitive receptors, or which for any other reason may warrant additional emissions reductions)*

k. Suspend excavation and grading activity when winds (instantaneous gusts) exceed 25 mph.

Equipment Exhaust Control Measures *(apply to all construction projects to the extent feasible)*

l. Use alternative-fueled construction equipment.

m. Minimize idling time of construction equipment. [3]
n. Maintain properly tuned equipment.
o. Limit the hours of operation of heavy-duty equipment and/or the amount of equipment in use.

Impact Significance After Mitigation: Less than significant.

OPERATIONAL IMPACTS

Impact 4.5-2: Mobile emissions generated by Plan-related traffic and area source emissions generated by the Plan's additional building space would increase local and regional vehicular emissions. (Less than Significant)

Regional Mobile Source Emissions. Regional emissions associated with Plan implementation were calculated using the CARB's URBEMIS 2007 computer model. The results are presented in **Table 4.5-4**. This table indicates that pollutant emissions associated with Plan-related traffic increases would not exceed BAAQMD thresholds of significance in 2025. The BAAQMD thresholds address the impacts of mobile source emissions on local and regional air quality. Therefore, the Master Plan's contribution to the total pollution burden in the region would have a *less-than-significant impact* on regional air quality.

TABLE 4.5-4

PLAN-RELATED DAILY REGIONAL EMISSIONS (2025)

	Project-Related Mobile Source Emissions (Pounds per Day)						
Project Buildout Year	**ROG**	**NO_X**	**CO**	**SO_2**	**PM_{10}**	**$PM_{2.5}$**	**CO_2-E**
Year 2025	12.1	9.9	117.4	0.3	48.8	9.2	27,939.9
	Project-Related Area Source Emissions (Pounds per Day)						
Year 2025	3.2	4.6	5.3	0.0	0.0	0.0	5,387.5
Total Emissions	**15.3**	**14.5**	**122.7**	**0.3**	**48.58**	**9.2**	**32,781.5[2]**
BAAQMD Threshold	80	80	550[1]	-	80	-	-

NOTES:
ROG: Reactive Organic Gases NO_x: Nitrogen Oxides CO: Carbon Monoxide PM_{10}: Inhalable Particulates
$PM_{2.5}$: Fine Particulates SO_2: Sulfur Dioxide CO_2-E: Carbon Dioxide Equivalents

[1] Requires a microscale impact analysis, if exceeded.

[2] This estimate represents peak day emissions. See Section 4.10, Climate Change, for more discussion of these emissions.

SOURCE: URBEMIS 2007 Model (See Appendix E for model output)

[3] Although this measure is specified by the BAAQMD (1999), it is already required by more recent amendments to Title 13 of the California Code of Regulations, Sections 2480 (Airborne Toxic Control Measure to Limit School Bus Idling and Idling at Schools) and 2485.

Regional Area Source Emissions. Additional floor space resulting from implementation of the Master Plan would cause an increase in non-vehicular emissions from a variety of miscellaneous sources (area sources). Emissions-generating activities could include increased use of electricity and natural gas (for space heating, hot water or cooking), evaporative cleaning products used in maintenance, or paints and solvents used in periodic building maintenance. As shown in Table 4.5-4, addition of these area source emissions to the Plan's mobile source emissions burden for 2025 would not exceed the BAAQMD CEQA significance thresholds. Therefore, the Master Plan's combined mobile and area source emissions would be *less than significant*.

These less-than-significant increases in area source emissions associated with the added space are also expected to be offset by emissions reductions associated with equipment and infrastructure upgrades as part of planned improvement projects (See Section 4-9, Energy, for more discussion). Implementation of the proposed Master Plan would result in remodeling or replacement of many campus buildings, which would include upgrading of mechanical equipment. Since all building remodeling would be subject to Title 24 energy conservation requirements and would be required to implement supplemental energy conservation requirements to address GHG emissions (see Impact 4.3-5, for more discussion on climate change impacts), the more energy-efficient, upgraded equipment is expected to generate lower area source emissions.

Plan implementation would increase use of paints (including ethylene glycol, a TAC, which is contained in latex paint) as part of planned maintenance activities. However, emissions associated with maintenance of existing buildings would occur whether or not the proposed Master Plan is implemented. The Plan's 46% incremental increase in space due to new construction or expansion projects would not significantly increase daily emissions of this TAC as painting occurs over the next 16 years. New construction would likely require less on-going maintenance painting after initial construction than existing buildings since older materials generally require more frequent re-painting.

Local Mobile Source Emissions. In addition to the regional contribution to the total pollution burden, traffic generated by Plan implementation could result in localized "hot spots," or areas with high concentrations of carbon monoxide (CO) emissions around stagnation points such as major intersections and heavily traveled and congested roadways. Traffic associated with Plan implementation could add more cars as well as cause existing non-project traffic to travel at slower travel speeds, which could cause increased emissions and more localized hot spots.

A microscale air quality analysis of CO is warranted if daily Plan-related CO emissions exceed 550 pounds per day. Although emissions would not exceed this criterion, as shown in Table 4.5-4, a microscale screening analysis was completed for the proposed Plan. The results of the analysis are shown in **Table 4.5-5**. This table indicates that the Master Plan would result in a *less-than-significant impact* on all study intersections under existing and future conditions. The state one-hour CO standard (more stringent than the federal standard) is 20 ppm. Any change in CO of less than 1 ppm is considered a non-

TABLE 4.5-5

LOCALIZED MICROSCALE CARBON MONOXIDE EMISSIONS

Intersection	Project's Net Change in One-Hour CO Concentrations, in Parts Per Million (ppm)							
	Existing		Existing with Project		Future (2025) Baseline		Future (2025) – With Project	
	1-Hour	8-Hour	1-Hour	8-Hour	1-Hour	8-Hour	1-Hour	8-Hour
Lawrence Expwy./Tasman Dr.	4.6	3.8	5.2	4.4	4.9	4.1	4.9	4.1
Lawrence Expwy./Lakehaven Dr.	4.6	3.8	4.9	4.1	4.6	3.8	4.6	3.8
Lawrence Expwy./U.S. 101 North	5.1	4.3	5.4	4.6	4.9	4.1	4.9	4.1
Lawrence Expwy./Arques Ave.	5.1	4.3	5.6	4.8	5.1	4.3	5.1	4.3
Great America Pkwy./Tasman Dr.	4.4	3.6	4.8	4.0	4.7	3.9	4.7	3.9
Great America Pkwy./Mission College Blvd.	4.9	4.1	5.3	4.5	5.3	4.5	5.3	4.5
Bowers Ave./Scott Blvd.	4.4	3.6	4.6	3.8	4.6	3.8	4.6	3.8
Bowers Ave./Central Expwy.	5.1	4.3	5.3	4.5	5.3	4.5	5.3	4.5
Mission College Blvd./Montague Expwy.	5.4	4.6	5.8	5	5.5	4.7	5.8	5.0
San Tomas Expressway/Scott Blvd.	5.2	4.4	5.5	4.7	5.5	4.7	5.5	4.7
San Tomas Expressway/Walsh Avenue	4.7	3.9	4.9	4.1	4.8	4.0	4.8	4.0
Background Level (Included)	3.5	2.7	3.5	2.7	3.5	2.7	3.5	2.7
Clean Air Standard	20.0	9.0	20.0	9.0	20.0	9.0	20.0	9.0

SOURCE: Geier & Geier Consulting, Inc. (2008)

reportable change. As indicated in Table 4.5-5, the Plan's maximum one- and eight-hour CO contributions would be 0.6 ppm, which would be a less-than-significant change. Therefore, implementation of the proposed Master Plan would not have a significant effect on local air quality with respect to CO emissions.

In addition to an increase in the number of passenger vehicles, the number of buses and delivery trucks serving the campus could also increase, thereby increasing exhaust pollutant emissions. Increased student enrollments could increase demand for bus service and supply deliveries. Buses and delivery vehicles are typically diesel-fueled, and diesel particulate matter emissions are listed by the CARB as a TAC. However, increased demand for bus service would increase ridership and would not necessarily increase the number of buses operating. In addition, increasing numbers of parcel delivery trucks are using alternative fuels such as compressed natural gas, and newer diesel engines for trucks and buses are required to meet increasingly stringent emission levels by the CARB and the U.S. EPA. Therefore, diesel particulate emissions from these types of vehicles are expected to continue to decrease in the future as bus and truck fleets are updated.

Mitigation Measure 4.5-2: None required.

Impact 4.5-3: Master Plan implementation could result in increased stationary source emissions, which includes various toxic air contaminants (TACs) and associated odors. (Potentially Significant)

Stationary or point source emissions on the Mission College campus currently include emergency generators as well as the science labs. There is currently one diesel-fueled emergency generator located at the Central Plant and this generator would be removed when the Central Plant is demolished.

With Plan implementation, the existing generator would be replaced with a new emergency generator to provide emergency backup power for the proposed IS Building. This generator would continue to be a source of diesel particulates, a TAC and carcinogen, but this generator would only operate during power failures and for brief (15-minute) monthly testing. Therefore, long-term exposure to diesel particulates from this source does not and would not occur. Since there would be no increase in the number of emergency generators with the proposed Master Plan, the potential for diesel emissions on campus from this source would remain unchanged. The emergency generator on campus would be subject to review by BAAQMD to determine if an Authority to Construct permit and a Permit to Operate are required. This permit review process (Mitigation Measure 4.5-3a) would ensure that diesel exhaust emissions associated with the replacement generator would comply with applicable BAAQMD standards, reducing this *potentially significant* impact to a less-than-significant level.

Since implementation of the proposed Master Plan would result in a 46% increase in space, it is possible that science lab facilities could be expanded. It is possible that expansion of labs could result in an increase in the amount of TACs used on campus. In addition, muriatic acid (also known as hydrochloric acid) is a TAC and would be stored and used at the indoor pool facility (3-F). Current and future use of TACs on campus will continue to be subject to requirements of the BAAQMD Air Toxics Program. As indicated in Mitigation Measure 4.5-3b, this program requires that a Health Risk Screening Analysis (HRSA) be completed when warranted (if BAAQMD trigger levels could be exceeded[4]) to determine each project's exemption status. Implementation of this measure would ensure that *potentially significant* public exposure impacts are reduced to a less-than-significant level. Plan implementation would increase the potential for nuisance odor impacts if science labs are expanded. The potential for impacts would be low because the Science Building is located in the center of campus, approximately 1,200 feet downwind of adjacent residential receptors, and there is at least a 1,000-foot buffer from the closest office buildings

[4] Table 2-5-1 from Regulation 2, Rule 5 lists Toxic Air Contaminants (TAC) and their trigger levels. Regulation 2, Rule 5 specifies that all permit applications for new and modified sources must be screened for emissions of TACs. If any project emits TACs in amounts that exceed the listed trigger levels, a site-specific HRSA will be completed by the BAAQMD. Estimates of public exposure, and cancer and non-cancer health risk, are made for the maximally exposed residential and off-site worker receptor locations and compared to risk standards (Regulation 2-5-301 and 302). If emissions from a project are less than the listed trigger levels, the project is considered to not pose a significant risk to the public and a HRSA is not performed.

(downwind). Appropriate design of the ventilation systems for the science labs would minimize the potential for nuisance odor problems.

To reduce the risk of exposure of College faculty, staff and students to unacceptable levels established by the regulatory agencies, Mission College implements health and safety plans and procedures, in conformance with federal, state and local requirements. Providing protection for employees and students on campus also serves to provide protection from exposure to chemicals or health hazards to persons living and working in the surrounding area. To minimize exposure to chemicals in the air, faculty and students are required to exercise standard procedural precautions, such as working under fume hoods when using volatile chemicals likely to present airborne exposure hazards. Most fume hoods use fans to exhaust volatile chemicals to the outside, rather than allowing the fumes to build up inside a building where chemicals are being used. Mitigation Measure 4.5-3b requires that the design of remodeled science labs not create odor nuisance problems or safety risks.

BAAQMD *CEQA Guidelines* (1999) indicate that in order for local plans to have a less-than-significant impact with respect to potential TACs and odors, buffer zones should be established around existing and proposed land uses that would emit these air pollutants. Under the proposed Master Plan, existing buffer zones from the Science Building would be maintained. The Science Building would remain at its current location in the center of campus (within the Inner Loop road). Therefore, the existing buffer zone between identified TACs in the Science Building and existing residential uses to the west (upwind of this building) would remain the unchanged.

Mitigation Measure 4.5-3: The following measures should be implemented as specified to minimize air quality impacts related to stationary sources:

a. Any proposed emergency generators shall be subject to review by the BAAQMD to determine if an Authority to Construct permit and a Permit to Operate are required. This permit review process shall ensure that diesel exhaust emissions associated with the proposed generator(s) would comply with applicable BAAQMD standards.

b. As part of the Plan implementation, the following measures shall be required:

- If storage or use of toxic air contaminants (TACs) is proposed as part of any project, potential TAC emissions should be estimated and compared to the BAAQMD trigger levels for TACs (as listed in Table 2-5-1 from Regulation 2, Rule 5). If estimated emissions of any TACs exceed these levels, a Health Risk Screening Analysis shall be completed.

- If science labs are renovated or expanded, the fans shall be designed to direct the exhaust to a minimum distance above the roof level to ensure effective dispersion of volatilized chemicals. In addition, ventilations fans shall be designed to dilute the volatilized chemicals with considerable volumes of air to meet OSHA standards and reduce any potential hazards and nuisance odor problems to ground-level and nearby receptors.

Impact Significance After Mitigation: Less than significant.

CONSISTENCY WITH AIR QUALITY PLANS

Impact 4.5-4: Projected student enrollments at Mission College are projected to increase at a rate greater than population growth rates assumed in the Clean Air Plan. (Less than Significant)

BAAQMD *CEQA Guidelines* (1999) distinguish between development projects and plans, recommending that the air quality impact assessment for a land use plan (e.g., general plan amendments, redevelopment plans, specific area plans, and other similar planning activities) provide an analysis of the Plan's consistency with the Clean Air Plan (CAP). The proposed Master Plan is a land use plan for the development of the campus over the next 20+ years. Therefore, air quality impacts associated with Plan implementation are determined in part by evaluating the Plan's consistency with the CAP. Consistency with the CAP is determined by comparing the Plan's anticipated growth rates (defined by population growth and its associated increase in vehicle miles traveled [VMT]) with the growth rates used in the CAP. CAP growth rates are based on population projections by the Association of Bay Area Governments (ABAG).

The California Community College Chancellor's Office (CCCCO) forecasts a growth rate of up to 2.6% per year between 2007 and 2025. For the period between 2005 and 2025, ABAG (2007) estimates an average population growth rate of 1.2% per year for Santa Clara County and 1.6% for Santa Clara and surrounding communities served by Mission College (San Jose, Sunnyvale, and Milpitas). Since the Bay Area is currently non-attainment for ozone and PM_{10}, increases population in excess of the CAP could potentially hinder attainment efforts in the future. Although the project's anticipated growth rate could exceed the CAP growth rates and would not be consistent with the CAP, implementation of the proposed Master Plan would not constitute a significant air quality impact. Since Mission College, like other community colleges, provides educational facilities for local residents and does not provide on-campus housing, it does not generate new population but accommodates population increases in the surrounding area. Therefore, any future increase in student enrollments at the college would not necessarily cause the population in Santa Clara and surrounding communities served by Mission College to increase, but rather, Plan implementation would accommodate future growth that is anticipated by ABAG in these communities.

The rate of increase in VMT (vehicles miles traveled) for Mission College must be equal to or lower than the rate of increase in population in Santa Clara and Santa Clara County in order to be consistent with the Clean Air Plan. The project is estimated to increase the College's VMT by 3% per year over the next 20+ years, unless there is a substantial increase in transit use or carpools in the future. This would be roughly proportional to the projected student enrollment increases, and likewise would exceed projected average population growth rates of 1.2% per year for Santa Clara County and 1.6% for Santa Clara and surrounding communities served by Mission College. Although planned growth at the College could hinder planned attainment efforts under the CAP, the projected increase in VMT would not, by itself,

constitute a significant air quality impact. Since Mission College serves local communities, additional future increases in VMT could be minimized if the college is able to accommodate local student growth and needs. Without expanded or renovated facilities at Mission College, local students might have to travel farther to other community colleges to find required classes or available space. Nevertheless, transportation control measures (Mitigation Measure 4.5-5) for Mission College, recommended below to address the Master Plan's contribution to cumulative impacts, would also help to reduce future increases in VMT.

Mitigation Measure 4.5-4: None required.

CUMULATIVE IMPACTS

Impact 4.5-5: Mobile emissions generated by Plan-related traffic in addition to growth in the surrounding communities would cumulatively increase local and regional emissions. (Potentially Significant for Regional Emissions; Less than Significant for Local Emissions)

Between 2010 and 2020, the CARB (2005) estimates regional increases of 11% (1% annually) in population and vehicle miles traveled within the San Francisco Bay Area Air Basin. Even when these increases are considered, regional emissions are still projected to decrease by 15 to 30% for ROG, NO_x, and CO between 2010 and 2020 due to retirement of high-emission, older vehicles and improvement of emissions technologies. While PM_{10} and $PM_{2.5}$ emissions associated with diesel motor vehicles are also projected to decrease, they are projected to increase slightly (1 to 4%), due to projected increases in area-wide sources, primarily fugitive dust sources. Projected declines in certain regional emissions rates (ROG, NO_x, SO_x, PM_{10}, and $PM_{2.5}$) will more than offset regional emissions increases associated cumulative growth in surrounding communities and the Bay Area region. Therefore, cumulative increases in these regional emissions (even with the project increment included) would be *less than cumulatively considerable*. The one exception is PM_{10} and $PM_{2.5}$ increases associated with fugitive dust sources, where cumulative growth in surrounding communities and Plan implementation would exacerbate projected regional increases and the Bay Area is currently non-attainment for PM_{10}, which would be *considerably considerable*. However, implementation of BAAQMD dust and exhaust control measures (Mitigation Measure 4.5-1) in addition to transportation control measures (Mitigation Measure 4.5-5) would reduce the Master Plan's contribution to less than cumulatively considerable (i.e., less than significant). As demonstrated in Table 4.5-3, these mitigation measures can decrease PM_{10} emissions by up to 90% depending on the activity. Although demolition and grading-related emissions would not decrease substantially with these measures as indicated in this table, it should be noted that emissions estimates for these two activities generate PM_{10} levels that would still be well below the BAAQMD significance threshold.

Since the San Francisco Bay Area air basin is a non-attainment area for PM_{10}, the Master Plan's short-term construction-related emissions would contribute incrementally to cumulatively significant regional PM_{10} emissions. However, the Master Plan's incremental short-term contributions to regional PM_{10}

emissions would be mitigated to *less than cumulatively considerable* (i.e., less than significant) with implementation of dust and exhaust control measures required in Mitigation Measure 4.5-1). Table 4.5-3 demonstrates that substantial reductions in PM10 emissions can be achieved with implementation of these control measures.

Table 4.5-5 presents changes in local emissions (CO) associated with cumulative growth (Future 2025 Baseline Conditions). This table indicates that as vehicle emissions rates decline in the future due to retirement of high-emission, older vehicles, these declines will more than offset regional emissions increases associated with cumulative growth. Despite the projected net decline in CO of 32% between 2010 and 2020, Table 4.5-4 shows that CO levels will either increase or stay the same at most study intersections (when Existing conditions are compared to Future 2025 Baseline conditions). However, it should be noted that despite cumulative local emissions increases, BAAQMD threshold for potential significance would not be exceeded with or without Plan implementation. Therefore, cumulative increases in CO emissions would be *less than cumulatively considerable*.

> **Mitigation Measure 4.5-5:** In addition to the college's existing permit parking program and existing bicycle facilities, the District shall implement any of the following transportation control measures at Mission College to reduce the college's contributions (approximately 20% to 24% over existing enrollments by 2015) to cumulative regional increases in PM10 emissions by promoting alternatives to the single-occupant vehicle:
>
> - Increased permit parking fees in campus lots
> - Preferentially located and/or financially discounted High-Occupancy Vehicle (carpool) parking (e.g. reduced or waived fees for carpools or vanpools)
> - Transit subsidies such as the EcoPass Program for Mission College staff and employees
> - Transit passes for students
> - Guaranteed ride home program
> - Flexible work schedules
> - Financial incentives (such as parking cash-out) to use alternative transportation modes such as biking, walking, and transit

Impact Significance After Mitigation: Less than cumulatively considerable. According to the BAAQMD (1999), provision of transit facilities and transit subsidies (EcoPasses) can reduce all trips by 0.5% to 2%, and transit facilities are already provided on the campus. Implementation of parking fees (already required) in addition to transit subsidies and ridesharing programs could reduce work-related trips by 2% to 20%.

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