# H. AIR QUALITY

This section has been prepared using methods and assumptions recommended in the air quality impact assessment guidelines of the Bay Area Air Quality Management District (BAAQMD).[1] In keeping with these guidelines, this chapter describes existing air quality, impacts of future traffic on local carbon monoxide levels, and impacts of land use-related vehicular emissions that have regional effects. Mitigation measures to reduce or eliminate potentially significant air quality impacts are identified, where appropriate.

## 1. Setting

The following discussion provides an overview of existing air quality conditions in the region and the project site. Air quality standards and the regulatory framework relating to air quality are summarized. Climate, air quality conditions, and typical air pollutant types and sources are described.

**a. Air Quality Standards, Regulatory Framework and Attainment Status.** Air quality standards, the regulatory framework, and State and federal attainment status are discussed below.

**(1) Air Quality Standards.** Both the State and federal governments have established health-based Ambient Air Quality Standards for six air pollutants: carbon monoxide (CO), ozone ($O_3$), nitrogen dioxide ($NO_2$), sulfur dioxide ($SO_2$), lead (Pb), and suspended particulate matter (PM). In addition, the State has set standards for sulfates, hydrogen sulfide, vinyl chloride and visibility reducing particles. These standards are designed to protect the health and welfare of the populace with a reasonable margin of safety.

In addition to primary and secondary Ambient Air Quality Standards, the State of California has established a set of episode criteria for $O_3$, CO, $NO_2$, $SO_2$, and PM. These criteria refer to episode levels representing periods of short-term exposure to air pollutants that actually threaten public health. Health effects are progressively more severe as pollutant levels increase from Stage One to Stage Three.

California Ambient Air Quality Standards and National Ambient Air Quality Standards for the criteria air pollutants are listed in Table IV.H-1. Health effects of these criteria pollutants are described in Table IV.H-2.

**Table IV.H-1: Federal and State Ambient Air Quality Standards**

| Pollutant | Averaging Time | Federal Primary Standard | State Standard |
|---|---|---|---|
| Ozone | 1-Hour<br>8-Hour | –<br>0.08 ppm | 0.09 ppm<br>0.07 ppm |
| Carbon Monoxide | 8-Hour<br>1-Hour | 9.0 ppm<br>35.0 ppm | 9.0 ppm<br>20.0 ppm |
| Nitrogen Dioxide | Annual<br>1-Hour | 0.05 ppm<br>– | –<br>0.25 ppm |
| Sulfur Dioxide | Annual<br>24-Hour | 0.03 ppm<br>0.14 ppm | –<br>0.04 ppm |
| $PM_{10}$ | Annual<br>24-Hour | 50 µg/m3<br>150 µg/m3 | 20 µg/m3<br>50 µg/m3 |
| $PM_{2.5}$ | Annual<br>24-Hour | 15 µg/m3<br>65 µg/m3 | 12 µg/m3<br>– |

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

Source: California Air Resources Board, 2005. *Ambient Air Quality Standards*.

[1] Bay Area Air Quality Management District, 1999. *BAAQMD CEQA Guidelines: Assessing the Air quality Impacts of Projects and Plans*. December.

**Table IV.H-2: Health Effects of Major Criteria Pollutants**

| Pollutant | Health Effects | Examples of Sources |
|---|---|---|
| Particulate Matter ($PM_{10}$: less than or equal to 10 microns and $PM_{2.5}$) | • Increased respiratory disease<br>• Lung damage<br>• Premature death<br>• Decreased lung function in children<br>• Increased respiratory and cardiovascular hospitalizations | • Cars and trucks, especially diesels<br>• Fireplaces, wood stoves<br>• Windblown dust from roadways, agriculture, and construction |
| Ozone ($O_3$) | • Breathing difficulties<br>• Lung damage | • Formed by chemical reactions of air pollutants in the presence of sunlight; common sources are motor vehicles, industries, and consumer products |
| Carbon Monoxide (CO) | • Chest pain in heart patients<br>• Headaches, nausea<br>• Reduced mental alertness<br>• Death at very high levels | • Any source that burns fuel such as cars, trucks, construction and farming equipment, and residential heaters and stoves |
| Nitrogen Dioxide ($NO_2$) | • Lung damage | • See carbon monoxide sources |
| Toxic Air Contaminants | • Cancer<br>• Chronic eye, lung, or skin irritation<br>• Neurological and reproductive disorders | • Cars and trucks, especially diesels<br>• Industrial sources such as chrome platers<br>• Neighborhood businesses such as dry cleaners and service stations<br>• Building materials and products |

Source: ARB, 2005.

**(2) Regulatory Framework.** The BAAQMD is primarily responsible for regulating air pollution emissions from stationary sources (e.g., factories) and indirect sources (e.g., traffic associated with new development), as well as for monitoring ambient pollutant concentrations. The District's jurisdiction encompasses seven counties—Alameda, Contra Costa, Marin, San Francisco, San Mateo, Santa Clara and Napa—and portions of Solano and Sonoma counties. The California Air Resources Board (ARB) and the U.S. Environmental Protection Agency (EPA) regulate direct emissions from motor vehicles.

**Federal Clean Air Act.** The Federal 1970 Clean Air Act authorized the establishment of national health-based air quality standards and also set deadlines for their attainment. The Federal Clean Air Act Amendments of 1990 changed deadlines for attaining National Ambient Air Quality Standards as well as the remedial actions required of areas of the nation that exceed the standards. Under the Clean Air Act, State and local agencies in areas that exceed the National Ambient Air Quality Standards are required to develop State Implementation Plans to show how they will achieve the National Ambient Air Quality Standards for $O_3$ by specific dates.

The Clean Air Act requires that projects receiving federal funds demonstrate conformity to the approved State Implementation Plan and local air quality attainment plan for the region. Conformity with the State Implementation Plan requirements would satisfy the Clean Air Act requirements.

**California Clean Air Act.** In 1988, the California Clean Air Act required that all air districts in the State endeavor to achieve and maintain California Ambient Air Quality Standards for $O_3$, CO, $SO_2$ and $NO_2$ by the earliest practical date. Plans for attaining California Ambient Air Quality Stand-

ards were submitted to the California Air Resource Board by June 30 of the following years: 1991, 1994, 1997, 2000, and 2004. The California Clean Air Act provides districts with new authority to regulate indirect sources and mandates that air quality districts focus particular attention on reducing emissions from transportation and area-wide emission sources. Each district plan is to achieve a 5 percent annual reduction, averaged over consecutive 3-year periods, in district-wide emissions of each nonattainment pollutant or its precursors. Additional physical or economic development within the region would tend to impede the emissions reduction goals of the California Clean Air Act.

The most recent BAAQMD plan for attaining California Ambient Air Quality Standards, the Bay Area 2005 Ozone Strategy, was adopted by the District's Board of Directors on January 4, 2006. The 2005 Ozone Strategy demonstrates how the San Francisco Bay Area will achieve compliance with the State 1-hour air quality standard for ozone and how the region will reduce transport of ozone and ozone precursors to neighboring air basins. The Ozone Strategy also includes stationary source control measures, mobile source control measures and transportation control measures.

**(3) Attainment Status Designations.** The California Air Resources Board is required to designate areas of the State as attainment, nonattainment or unclassified for all State standards. An "attainment" designation for an area signifies that pollutant concentrations did not violate the standard for a pollutant in that area. A "nonattainment" designation indicates that a pollutant concentration violated the standard at least once, excluding those occasions when a violation was caused by an exceptional event, as defined in the criteria. An "unclassified" designation signifies that data does not support either an attainment or nonattainment status. The California Clean Air Act divides districts into moderate, serious, and severe air pollution categories, with increasingly stringent control requirements mandated for each category.

The U.S. EPA designates areas for $O_3$, CO, and $NO_2$ as either "does not meet the primary standards," or "cannot be classified," or "better than national standards." For $SO_2$, areas are designated as "does not meet the primary standards," "does not meet the secondary standards," "cannot be classified" or "better than national standards." In 1991, new nonattainment designations were assigned to areas that had previously been classified as Group I, II, or III for $PM_{10}$ based on the likelihood that they would violate national $PM_{10}$ standards. All other areas are designated "unclassified."

Table IV.H-3 provides a summary of the attainment status for the San Francisco Bay Area with respect to national and State ambient air quality standards.

**b. Existing Climate and Air Quality.** Regional air quality, local climate and air quality in the San Francisco Bay Area, and air pollution climatology are described next.

**(1) Regional Air Quality.** The project area is in the City of Benicia on the north side of Carquinez Strait, which is located in the San Francisco Bay Area, a large, shallow air basin ringed by hills which taper into a number of sheltered valleys around the perimeter. Two primary atmospheric outlets exist. One is through the strait known as the Golden Gate, which is a direct outlet to the ocean. The second extends to the northeast, along the west delta region of the Sacramento and San Joaquin Rivers.

**Table IV.H-3: Bay Area Attainment Status**

| Pollutant | Averaging Time | California Standards[a] | | National Standards[b] | |
|---|---|---|---|---|---|
| | | Concentration | Attainment Status | Concentration | Attainment Status |
| Carbon Monoxide (CO) | 8-Hour | 9.0 ppm (10 mg/$m^3$) | Attainment | 9 ppm (10 mg/$m^3$) | Attainment[c] |
| | 1-Hour | 20 ppm (23 mg/$m^3$) | Attainment | 35 ppm (40 mg/$m^3$) | Attainment |
| Nitrogen Dioxide ($NO_2$) | Annual Mean | Not Applicable | Not Applicable | 0.053 ppm (100 µg/$m^3$) | Attainment |
| | 1-Hour | 0.25 ppm (470 µg/$m^3$) | Attainment | Not Applicable | Not Applicable |
| Ozone ($O_3$) | 8-Hour | 0.07 ppm (137 µg/$m^3$) | Not Established | 0.08 ppm | Marginal |
| | 1-Hour | 0.09 ppm (180 µg/$m^3$) | Nonattainment | Not Applicable | Not Applicable[d] |
| Suspended Particulate Matter ($PM_{10}$) | Annual Mean | 30 µg/$m^3$ | Not Applicable | 50 µg/$m^3$ | Attainment |
| | 24-Hour | 50 µg/$m^3$ | Nonattainment | 150 µg/$m^3$ | Unclassified |
| Suspended Particulate Matter ($PM_{2.5}$) | Annual Mean | 12 µg/$m^3$ | Nonattainment | 15 µg/$m^3$ | Unclassified |
| | 24-Hour | Not Applicable | Not Applicable | 65 µg/$m^3$ | Unclassified |
| Sulfur Dioxide ($SO_2$) | Annual Mean | Not Applicable | Not Applicable | 80 µg/$m^3$ (0.03 ppm) | Attainment |
| | 24-Hour | 0.04 ppm (105 µg/$m^3$) | Attainment | 365 µg/$m^3$ (0.14 ppm) | Attainment |
| | 1-Hour | 0.25 ppm (655 µg/$m^3$) | Attainment | Not Applicable | Not Applicable |

[a] California standards for $0_3$, CO (except Lake Tahoe), $SO_2$ (1-hour and 24-hour), $NO_2$ and $PM_{10}$ are values that are not to be exceeded. If the standard is for a 1-hour, 8-hour, or 24-hour average, then some measurements may be excluded. In particular, measurements are excluded that ARB determines would occur less than once per year on average.

[b] National standards other than for $0_3$ and those based on annual averages or annual arithmetic means are not to be exceeded more than once a year. For example, the $0_3$ standard is attained if, during the most recent 3- year period, the average number of days per year with maximum hourly concentrations above the standard is equal to or less than 1.

[c] In April 1998, the Bay Area was redesignated to Attainment for the national 8-hour CO standard.

[d] The National 1-hour ozone standard was revoked by U.S. EPA on June 15, 2005.

Lead (Pb) is not listed in the above table because it has been in attainment since the 1980s.

ppm = parts per million
mg/$m^3$ = milligrams per cubic meter
µg/$m^3$ = micrograms per cubic meter

Source: Bay Area Air Quality Management District, 2005. Bay Area Attainment Status.

Air quality conditions in the San Francisco Bay Area have improved significantly since the BAAQMD was created in 1955. Ambient concentrations of air pollutants and the number of days on which the region exceeds air quality standards have fallen dramatically. Public health benefits, improved visibility, and reduced damage to plants and materials are among the benefits of cleaner air.

BAAQMD's Bay Area Clean Air Plans (CAPs) contain district-wide control measures to reduce carbon monoxide and ozone precursor emissions. The State standards for these pollutants are more stringent than the national standards.

**(2) Local Climate and Air Quality.** Air quality is a function of both local climate and local sources of air pollution. Air quality is the balance of the natural dispersal capacity of the atmosphere and emissions of air pollutants from human uses of the environment.

The City of Benicia lies on the north side of the Carquinez Strait. The Carquinez Strait is the only sea-level gap in the central and northern California coastal mountains, which results in relatively strong and persistent winds. Winds are generally greatest during spring and summer and lowest in fall and winter. A strong daily variation in wind occurs in spring and summer, with peak winds occurring in the late afternoon hours and winds gradually decreasing at night. During fall and winter, winds are generally more variable both in speed and direction as the area is influenced by storms from the Pacific Ocean.

The occurrence of episodes of high atmospheric stability, known as inversion conditions, severely limits the ability of the atmosphere to disperse pollutants vertically. Inversions are experienced during all seasons in the Bay Area, but are particularly prevalent in the summer months when they are present about 90 percent of the time in both morning and afternoon.

Topography also affects air quality. Benicia is located between the expansive Sacramento and San Joaquin Valleys to the east and the San Francisco Bay to the west, and the large summertime temperature differences between these two areas result in a strong flow of generally westerly winds that dilute and transport air pollutants.

The amount of a given air pollutant in the atmosphere is determined by the amount of pollutant released and the atmosphere's ability to transport and/or dilute that pollutant. The major determinants of transport and dilution are wind, atmospheric stability, terrain and, for photochemical pollutants, sunshine. Benicia has a relatively low natural atmospheric potential for pollution given the persistent and strong winds typical of the area. These winds dilute pollutants and influence air quality in the Sacramento and San Joaquin valleys. Benicia's location downwind of the greater Bay Area, however, also means that pollutants from other areas are transported to Benicia.

Exceedances of air quality standards occur primarily during meteorological conditions conducive to high pollution levels, such as cold, windless winter nights or hot, sunny summer afternoons. The major pollutants of concern in the San Francisco Bay Area, ozone, carbon monoxide, and particulate matter are monitored at a number of locations. The BAAQMD maintains a monitoring site in Benicia, but it monitors only one pollutant; sulfur dioxide, which is primarily released by industrial sources. The closest other monitoring station is located in Vallejo.

Pollutant monitoring results for the years 2003 to 2005 (see Tables IV.H-4 and IV.H-5) at the Vallejo ambient air quality monitoring station indicate that air quality in the project area has generally been good. Although $PM_{10}$ California standards were violated in 2004 and 2005, as indicated in the monitoring results, no violations of the federal $PM_{10}$ standard were recorded during the period of 2003 to 2005. The federal $PM_{2.5}$ standard was not exceeded during the 3-year period. The State 1-hour $O_3$ standard has been exceeded in 2003 and 2004 at this monitoring station. The federal 8-hour ozone standard was not exceeded within the past 3 years at this monitoring station. CO, $SO_2$, and $NO_2$ standards were not exceeded in this area during the 3-year period.

**Table IV.H-4: Results from the Tuolumne Street, Vallejo Air Quality Monitoring Station Exceeded Standards, 2003 to 2005**

| | Ozone | | | Carbon Monoxide | | Nitrogen Dioxide | | $PM_{10}$ | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Year | Max. 1-Hour (ppm) | National D-O-S | California D-O-S | Max. 1-Hour (ppm) | California D-O-S | Max. 1-Hour (ppm) | California D-O-S | Max. 24-Hour ($mg/m^3$) | National D-O-S | California D-O-S |
| 2003 | 0.101 | 0 | 2 | 4.0 | 0 | 0.067 | 0 | 39.0 | 0 | 0 |
| 2004 | 0.104 | 0 | 1 | 4.0 | 0 | 0.049 | 0 | 51.4 | 0 | 1 |
| 2005 | 0.087 | 0 | 0 | 3.9 | 0 | 0.070 | 0 | 52.3 | 0 | 1 |

D-O-S = Days Over Standard ppm = parts per million
ppb = parts per billion $mg/m^3$ = milligrams per cubic meter

Source: U.S. EPA and ARB, 2003 to 2006.

**Table IV.H-5: Results from the Tuolumne Street, Vallejo Air Quality Monitoring Station Exceeded Standards, 2003 to 2005**

| | Ozone | | Carbon Monoxide | | Sulfur Dioxide* | | $PM_{2.5}$ | | |
|---|---|---|---|---|---|---|---|---|---|
| Year | Max. 8-Hour (ppm) | National D-O-S | Max. 8-Hour (ppm) | California D-O-S | Max. 24-Hour (ppm) | California D-O-S | Max. 24-Hour ($mg/m^3$) | National D-O-S | California D-O-S |
| 2003 | 0.073 | 0 | 2.89 | 0 | 0.003 | 0 | 30.8 | 0 | -- |
| 2004 | 0.069 | 0 | 3.39 | 0 | 0.005 | 0 | 39.7 | 0 | -- |
| 2005 | 0.070 | 0 | 3.09 | 0 | 0.005 | 0 | 43.8 | 0 | -- |

D-O-S = Days Over Standard ppm = parts per million $mg/m^3$ = milligrams per cubic meter

*Closest monitoring station located at Fremont School in Fresno.

Source: U.S. EPA and ARB, 2003 to 2006.

**c. Air Quality Issues.** Five key air quality issues – CO hotspots, vehicle emissions, fugitive dust, odors, and construction equipment exhaust – are described below.

**(1) Local Carbon Monoxide Hotspots.** Local air quality is most affected by CO emissions from motor vehicles. CO is typically the pollutant of greatest concern because it is created in abundance by motor vehicles and it does not readily disperse into the air. Because CO does not readily disperse, areas of vehicle congestion can create "pockets" of high CO concentration called "hot spots." These pockets have the potential to exceed the State 1-hour standard of 20 ppm and/or the 8-hour standard of 9.0 ppm.

While CO transport is limited, it does disperse over time and with distance from the source under normal meteorological conditions. However, under certain extreme meteorological conditions, CO concentrations near congested roadways or intersections may reach unhealthful levels affecting local sensitive receptors (e.g., residents, schoolchildren, the elderly, and hospital patients). Typically, high CO concentrations are associated with roadways or intersections operating at unacceptable levels of service or with extremely high traffic volumes. In areas with high ambient background CO concentration, modeling is recommended to determine a project's effect on local CO levels.

**(2) Vehicle Emissions.** Long-term air emission impacts are those associated with changes in automobile travel within the City. Mobile source emissions would result from vehicle trips associated with increased vehicular travel. As is true throughout much of the U.S., motor vehicle use is projected

to increase substantially in the region. The BAAQMD, local jurisdictions, and other parties responsible for protecting public health and welfare are continually seeking ways of minimizing the air quality impacts of growth and development in order to avoid further exceedances of the standards.

**(3) Fugitive Dust.** Fugitive dust emissions are generally associated with agriculture operations, demolition, land clearing, exposure of soils to the air, and cut and fill operations. Dust generated during construction varies substantially on a project-by-project basis, depending on the level of activity, the specific operations and weather conditions.

The U.S. EPA has developed an approximate emission factor for construction-related emissions of total suspended particulate of 1.2 tons per acre per month of activity. This factor assumes a moderate activity level, moderate silt content in soils being disturbed and a semi-arid climate. The California Air Resources Board estimates that 64 percent of construction-related total suspended particulate emissions occur in the form of $PM_{10}$. Therefore, the emission factors for uncontrolled construction-related $PM_{10}$ emissions are:

- 0.77 tons per acre per month of $PM_{10}$; or
- 51 pounds per acre per day of $PM_{10}$.

However, construction emissions can vary greatly depending on the level of activity, the specific operations taking place, the equipment being operated, local soils, weather conditions, and other factors. There are a number of feasible control measures that can be reasonably implemented to significantly reduce $PM_{10}$ emissions from construction. Rather than attempting to provide detailed quantification of anticipated construction emissions from projects, the BAAQMD suggests the following:

The determination of significance with respect to construction emissions should be based on a consideration of the control measures to be implemented. From the BAAQMD's perspective, quantification of emissions is not necessary, although a Lead Agency may elect to do so. If all of the control measures indicated as appropriate, depending on the size of the project, are implemented, then air pollution from emissions from construction activities would be considered a less-than-significant impact.[2]

**(4) Odors**. Odors are also an important element of local air quality conditions. Specific activities allowed within each of the major general plan land use categories can raise concerns on the part of nearby neighbors. Major sources of odors include restaurants, manufacturing plants, and agricultural operations. Other odor producers include the industrial facilities within the Carquinez Strait region. While sources that generate objectionable odors must comply with air quality regulations, the public's sensitivity to locally produced odors often exceeds regulatory thresholds.

**(5) Construction Equipment Exhaust.** Construction activities cause combustion emissions from utility engines, heavy-duty construction vehicles, equipment hauling materials to and from construction sites and motor vehicles transporting construction crews. Exhaust emissions from construction activities vary daily as construction activity levels change. The use of construction equipment results in localized exhaust emissions.

[2] Bay Area Air Quality Management District, 1996. *BAAQMD CEQA Guidelines Assessing the Air Quality Impacts of Projects and Plans*. April. (Amended in December 1999.)

## 2. Impacts and Mitigation Measures

This section evaluates potential impacts to air quality resulting from implementation of the proposed project. The evaluation of environmental effects presented in this section focuses on consistency with air quality management plans and potential air quality impacts associated with construction emissions, odors, and development-related traffic emissions. Mitigation measures are proposed as appropriate.

**a. Criteria of Significance.** A significant impact would occur with implementation of the proposed project if it would:

- Conflict with or obstruct implementation of the applicable air quality plan;
- Violate any air quality standard;
- Contribute substantially to an existing or projected air quality violation;
- Result in a cumulatively considerable net increase of any criteria pollutant for which the region is nonattainment;
- Expose sensitive receptors to substantial pollutant concentrations; or
- Create objectionable odors affecting a substantial number of people.

The BAAQMD provides various quantitative thresholds that can be used to better define the above criteria. For ROG, NOx and $PM_{10}$, a net increase of 80 pounds per day is considered significant, while for CO, an increase of 550 pounds per day would be considered significant if it leads to or contributes to CO concentrations exceeding the State Ambient Air Quality Standard of 9 ppm averaged over 8 hours and 20 ppm for 1 hour (i.e., if it creates a "hot spot"). Generally, if a project results in an increase in ROG, NOx, or $PM_{10}$ of more than 80 pounds per day, then it would also be considered to contribute considerably to a significant cumulative effect. For projects that would not lead to a significant increase of ROG, NOx, or $PM_{10}$ emissions, the cumulative effect is evaluated based on a determination of the consistency of the project with the regional Clean Air Plan.

Impacts from $PM_{2.5}$ emissions have not been analyzed quantitatively as there are no recommended significance thresholds from the BAAQMD. Also, the air quality models that are used to estimate emissions of ROG, NOx, CO and $PM_{10}$ currently do not have the capability to estimate $PM_{2.5}$ separately. Therefore, impacts from $PM_{2.5}$ emissions associated with the implementation of the proposed project (particularly diesel particulate matter) have been analyzed qualitatively.

It should be noted that the emission thresholds were established based on the attainment status of the air basin in regard to air quality standards for specific criteria pollutants. Because the concentration standards were set at a level that protects public health with adequate margin of safety (EPA), these emission thresholds are regarded as conservative and would tend to overstate an individual project's contribution to health risks.

**b. Less-than-Significant Impacts.** A discussion of several less-than-significant impacts of the proposed project follows.

**(1) Clean Air Plan (CAP) Consistency**. The proposed project would locate commercial development at the eastern end of the project site and industrial development in the central and western portions of the project site. The project also includes an open space buffer area consisting of

primarily undeveloped land along the south side of Lake Herman Road, and open space extending around a major drainage. The site is designated for limited industrial and commercial uses in the City of Benicia General Plan. In this way, the proposed project is consistent with growth anticipated under the City's General Plan and falls within the population projections prepared by ABAG. As a result, the project would not conflict with the 2005 Bay Area Ozone Attainment Plan.

**(2) Odors Emissions.** No light industrial or commercial tenants have yet been identified for the proposed project. Based on the currently-proposed Master Plan it is anticipated that the project would not contain any major sources of odor, and would not be located in an area with existing odors. During construction, odors from diesel exhaust may be present, however this would be a short-term impact and no sensitive receptors nearby would be impacted. The project therefore would not have the potential to frequently expose members of the public to objectionable odors and would be deemed to have a less-than-significant impact.

**(3) Toxic Air Contaminants.** The implementation of the proposed project would not result in any new sources of Toxic Air Contaminants, and the project land uses would not be located near any existing major sources of Toxic Air Contaminants. The project would not have the potential to expose sensitive receptors or the general public to substantial levels of Toxic Air Contaminants and would be deemed to have a less-than-significant impact.

**(4) Operational Emissions – CO Analysis.** Vehicular traffic associated with the proposed project would emit carbon monoxide (CO) into the air along roadway segments and nearby intersections. Areas of vehicle congestion can create pockets of high CO concentrations, called "hot spots." Typically, high CO concentrations are associated with roadways or intersections operating at deficient levels of service (LOS) or with extremely high traffic volumes. Table IV.H-6 lists the 1-hour and 8-hour CO concentrations under the existing (2006) conditions at 11 intersections in the project area. Table IV.H-7 lists the CO concentrations under the Existing (2006) Plus Project conditions. Table IV.H-8 lists the CO concentrations under the cumulative (2030) conditions for the entire study area with and without the project.

Based on the methodology suggested by the U.S. EPA and California Department of Transportation, the higher of the second highest CO concentrations monitored at the nearest air monitoring station in the past 2 years (in this case, 3.1 ppm for the 1-hour period and 3.9 ppm for the 8-hour period), were used as the background CO concentrations.

Tables IV.H-6 and IV.H-7 show that all of the existing and existing plus project 1-hour and 8-hour CO concentrations are below the federal and State CO standards. The 1-hour CO level ranges from 4.3 ppm to 8.7 ppm, much lower than the State standard of 20 ppm and the federal standard of 35 ppm. The 8-hour CO level ranges from 3.6 ppm to 6.5 ppm, also much lower than the State and federal standards of 9 ppm.

Table IV.H-8 shows that all of the future (2025) 1-hour and 8-hour CO concentrations are below the federal and State CO standards. The 1-hour CO level ranges from 4.1 ppm to 5.0 ppm, much lower than the State standard of 20 ppm and the federal standard of 35 ppm. The 8-hour CO level ranges from 3.2 ppm to 3.9 ppm, which is lower than the State standard of 9 ppm.

Therefore, the proposed project would not lead to significant CO impacts, nor would the proposed project, in combination with other cumulative development, lead to CO concentrations that exceed federal or State standards.

**Table IV.H-6: Existing Peak Hour CO Concentrations[a]**

| Intersection | Receptor Distance to Road Centerline (Meters) | Existing 1-Hour CO Concentration (ppm) | Existing 8-Hour CO Concentration (ppm) | Exceeds State Standards | |
|---|---|---|---|---|---|
| | | | | 1-Hr | 8-Hr |
| Park Road & East 2nd Street | 12 | 4.6 | 3.6 | No | No |
| | 8 | 4.6 | 3.6 | No | No |
| | 8 | 4.6 | 3.6 | No | No |
| | 8 | 4.6 | 3.6 | No | No |
| Industrial Way & East 2nd Street | 14 | 4.7 | 3.7 | No | No |
| | 14 | 4.6 | 3.6 | No | No |
| | 14 | 4.6 | 3.6 | No | No |
| | 14 | 4.6 | 3.6 | No | No |
| East 2nd Street & Rose Drive | 14 | 5.4 | 4.2 | No | No |
| | 14 | 5.2 | 4.0 | No | No |
| | 12 | 5.1 | 3.9 | No | No |
| | 10 | 5.1 | 3.9 | No | No |
| East 2nd Street & Military Street | 14 | 5.9 | 4.5 | No | No |
| | 14 | 5.6 | 4.3 | No | No |
| | 12 | 5.4 | 4.2 | No | No |
| | 10 | 5.3 | 4.1 | No | No |
| Columbus Pkwy & Lake Herman Road | 14 | 4.7 | 3.7 | No | No |
| | 14 | 4.6 | 3.6 | No | No |
| | 14 | 4.6 | 3.6 | No | No |
| | 12 | 4.6 | 3.6 | No | No |
| Reservoir Road & Lake Herman Road | 12 | 4.4 | 3.5 | No | No |
| | 12 | 4.3 | 3.4 | No | No |
| | 8 | 4.3 | 3.4 | No | No |
| | 8 | 4.3 | 3.4 | No | No |
| East 2nd Street & Lake Herman Road | 10 | 4.8 | 3.7 | No | No |
| | 10 | 4.8 | 3.7 | No | No |
| | 10 | 4.6 | 3.6 | No | No |
| | 10 | 4.6 | 3.6 | No | No |
| Goodyear Road & Lake Herman Road | 10 | 4.8 | 3.7 | No | No |
| | 10 | 4.8 | 3.7 | No | No |
| | 10 | 4.7 | 3.7 | No | No |
| | 10 | 4.7 | 3.7 | No | No |
| Industrial Way & Lake Herman Road | 10 | 4.4 | 3.5 | No | No |
| | 10 | 4.3 | 3.4 | No | No |
| | 10 | 4.3 | 3.4 | No | No |
| | 10 | 4.3 | 3.4 | No | No |
| Park Road & Industrial Way | 14 | 4.8 | 3.7 | No | No |
| | 14 | 4.8 | 3.7 | No | No |
| | 12 | 4.8 | 3.7 | No | No |
| | 10 | 4.8 | 3.7 | No | No |
| Park Road & Bayshore Road | 12 | 4.9 | 3.8 | No | No |
| | 12 | 4.8 | 3.7 | No | No |
| | 12 | 4.7 | 3.7 | No | No |
| | 12 | 4.6 | 3.6 | No | No |

[a] Includes ambient 1-hour concentration of 3.9 ppm and ambient 8-hour concentration of 3.1 ppm. Measured at the Tuolumne Street, Vallejo, CA, AQ Station (Solano County).

Source: LSA Associates, Inc., 2006.

## Table IV.H-7: Existing Plus Project Peak Hour CO Concentrations[a]

| Intersection | Receptor Distance to Road Centerline (Meters) | Project Related Increase 1-hr/8-hr (ppm) | Without/With Project 1-Hour CO Concentration (ppm) | Without/With Project 8-Hour CO Concentration (ppm) | Exceeds State Standards | |
|---|---|---|---|---|---|---|
| | | | | | 1-Hr | 8-Hr |
| Park Road & East 2nd Street | 12 | 2.4 / 1.7 | 4.6 / 7.0 | 3.6 / 5.3 | No | No |
| | 8 | 2.4 / 1.7 | 4.6 / 7.0 | 3.6 / 5.3 | No | No |
| | 8 | 2.2 / 1.5 | 4.6 / 6.8 | 3.6 / 5.1 | No | No |
| | 8 | 2.1 / 1.5 | 4.6 / 6.7 | 3.6 / 5.1 | No | No |
| Industrial Way & East 2nd Street | 14 | 3.6 / 2.5 | 4.7 / 8.3 | 3.7 / 6.2 | No | No |
| | 14 | 3.2 / 2.2 | 4.6 / 7.8 | 3.6 / 5.8 | No | No |
| | 14 | 3.0 / 2.1 | 4.6 / 7.6 | 3.6 / 5.7 | No | No |
| | 14 | 2.9 / 2.0 | 4.6 / 7.5 | 3.6 / 5.6 | No | No |
| East 2nd Street & Rose Drive | 14 | 2.9 / 2.0 | 5.4 / 8.3 | 4.2 / 6.2 | No | No |
| | 14 | 2.5 / 1.8 | 5.2 / 7.7 | 4.0 / 5.8 | No | No |
| | 12 | 2.6 / 1.9 | 5.1 / 7.7 | 3.9 / 5.8 | No | No |
| | 10 | 2.5 / 1.8 | 5.1 / 7.6 | 3.9 / 5.7 | No | No |
| East 2nd Street & Military Street | 14 | 0.0 / 0.0 | 5.9 / 5.9 | 4.5 / 4.5 | No | No |
| | 14 | 0.0 / 0.0 | 5.6 / 5.6 | 4.3 / 4.3 | No | No |
| | 12 | 0.0 / 0.0 | 5.4 / 5.4 | 4.2 / 4.2 | No | No |
| | 10 | 0.0 / 0.0 | 5.3 / 5.3 | 4.1 / 4.1 | No | No |
| Columbus Pkwy & Lake Herman Road | 14 | 1.7 / 1.2 | 4.7 / 6.4 | 3.7 / 4.9 | No | No |
| | 14 | 1.8 / 1.3 | 4.6 / 6.4 | 3.6 / 4.9 | No | No |
| | 14 | 1.8 / 1.3 | 4.6 / 6.4 | 3.6 / 4.9 | No | No |
| | 12 | 1.5 / 1.0 | 4.6 / 6.1 | 3.6 / 4.6 | No | No |
| Reservoir Road & Lake Herman Road | 12 | 2.0 / 1.4 | 4.4 / 6.4 | 3.5 / 4.9 | No | No |
| | 12 | 1.6 / 1.1 | 4.3 / 5.9 | 3.4 / 4.5 | No | No |
| | 8 | 1.5 / 1.0 | 4.3 / 5.8 | 3.4 / 4.4 | No | No |
| | 8 | 1.3 / 0.9 | 4.3 / 5.6 | 3.4 / 4.3 | No | No |
| East 2nd Street & Lake Herman Road | 10 | 3.9 / 2.8 | 4.8 / 8.7 | 3.7 / 6.5 | No | No |
| | 10 | 3.1 / 2.2 | 4.8 / 7.9 | 3.7 / 5.9 | No | No |
| | 10 | 3.3 / 2.3 | 4.6 / 7.9 | 3.6 / 5.9 | No | No |
| | 10 | 3.3 / 2.3 | 4.6 / 7.9 | 3.6 / 5.9 | No | No |
| Goodyear Road & Lake Herman Road | 10 | 2.5 / 1.8 | 4.8 / 7.3 | 3.7 / 5.5 | No | No |
| | 10 | 2.4 / 1.7 | 4.8 / 7.2 | 3.7 / 5.4 | No | No |
| | 10 | 1.8 / 1.2 | 4.7 / 6.5 | 3.7 / 4.9 | No | No |
| | 10 | 1.8 / 1.2 | 4.7 / 6.5 | 3.7 / 4.9 | No | No |
| Industrial Way & Lake Herman Road | 10 | 0.0 / 0.0 | 4.4 / 4.4 | 3.5 / 3.5 | No | No |
| | 10 | 0.0 / 0.0 | 4.3 / 4.3 | 3.4 / 3.4 | No | No |
| | 10 | 0.0 / 0.0 | 4.3 / 4.3 | 3.4 / 3.4 | No | No |
| | 10 | 0.0 / 0.0 | 4.3 / 4.3 | 3.4 / 3.4 | No | No |
| Park Road & Industrial Way | 14 | 1.1 / 0.8 | 4.8 / 5.9 | 3.7 / 4.5 | No | No |
| | 14 | 0.8 / 0.6 | 4.8 / 5.6 | 3.7 / 4.3 | No | No |
| | 12 | 0.7 / 0.5 | 4.8 / 5.5 | 3.7 / 4.2 | No | No |
| | 10 | 0.7 / 0.5 | 4.8 / 5.5 | 3.7 / 4.2 | No | No |
| Park Road & Bayshore Road | 12 | 0.8 / 0.6 | 4.9 / 5.7 | 3.8 / 4.4 | No | No |
| | 12 | 0.8 / 0.6 | 4.8 / 5.6 | 3.7 / 4.3 | No | No |
| | 12 | 0.6 / 0.4 | 4.7 / 5.3 | 3.7 / 4.1 | No | No |
| | 12 | 0.6 / 0.4 | 4.6 / 5.2 | 3.6 / 4.0 | No | No |

[a] Includes ambient one-hour concentration of 3.9 ppm and ambient eight-hour concentration of 3.1 ppm. Measured at the Tuolumne Street, Vallejo, CA, AQ Station (Solano County).

Source: LSA Associates, Inc., 2006.

**Table IV.H-8: Future (2025) Plus Project Peak Hour CO Concentrations[a]**

| Intersection | Receptor Distance to Road Centerline (Meters) | Project Related Increase 1-hr/8-hr (ppm) | Without/With Project 1-Hour CO Concentration (ppm) | Without/With Project 8-Hour CO Concentration (ppm) | Exceeds State Standards | |
|---|---|---|---|---|---|---|
| | | | | | 1-Hr | 8-Hr |
| Park Road & East 2nd Street | 12 | 0.4 / 0.3 | 4.1 / 4.5 | 3.2 / 3.5 | No | No |
| | 8 | 0.4 / 0.3 | 4.1 / 4.5 | 3.2 / 3.5 | No | No |
| | 8 | 0.4 / 0.3 | 4.1 / 4.5 | 3.2 / 3.5 | No | No |
| | 8 | 0.4 / 0.3 | 4.1 / 4.5 | 3.2 / 3.5 | No | No |
| Industrial Way & East 2nd Street | 14 | 0.7 / 0.5 | 4.1 / 4.8 | 3.2 / 3.7 | No | No |
| | 14 | 0.6 / 0.5 | 4.1 / 4.7 | 3.2 / 3.7 | No | No |
| | 14 | 0.5 / 0.4 | 4.1 / 4.6 | 3.2 / 3.6 | No | No |
| | 14 | 0.5 / 0.4 | 4.1 / 4.6 | 3.2 / 3.6 | No | No |
| East 2nd Street & Rose Drive | 14 | 0.4 / 0.3 | 4.3 / 4.7 | 3.4 / 3.7 | No | No |
| | 14 | 0.4 / 0.3 | 4.2 / 4.6 | 3.3 / 3.6 | No | No |
| | 12 | 0.4 / 0.3 | 4.2 / 4.6 | 3.3 / 3.6 | No | No |
| | 10 | 0.4 / 0.3 | 4.2 / 4.6 | 3.3 / 3.6 | No | No |
| East 2nd Street & Military Street | 14 | 0.0 / 0.0 | 4.4 / 4.4 | 3.5 / 3.5 | No | No |
| | 14 | 0.0 / 0.0 | 4.4 / 4.4 | 3.5 / 3.5 | No | No |
| | 12 | 0.0 / 0.0 | 4.3 / 4.3 | 3.4 / 3.4 | No | No |
| | 10 | 0.0 / 0.0 | 4.3 / 4.3 | 3.4 / 3.4 | No | No |
| Columbus Pkwy & Lake Herman Road | 14 | 0.3 / 0.3 | 4.1 / 4.4 | 3.2 / 3.5 | No | No |
| | 14 | 0.3 / 0.3 | 4.1 / 4.4 | 3.2 / 3.5 | No | No |
| | 14 | 0.3 / 0.3 | 4.1 / 4.4 | 3.2 / 3.5 | No | No |
| | 12 | 0.2 / 0.2 | 4.1 / 4.3 | 3.2 / 3.4 | No | No |
| Reservoir Road & Lake Herman Road | 12 | 0.4 / 0.3 | 4.0 / 4.4 | 3.2 / 3.5 | No | No |
| | 12 | 0.3 / 0.2 | 4.0 / 4.3 | 3.2 / 3.4 | No | No |
| | 8 | 0.3 / 0.2 | 4.0 / 4.3 | 3.2 / 3.4 | No | No |
| | 8 | 0.4 / 0.3 | 3.9 / 4.3 | 3.1 / 3.4 | No | No |
| East 2nd Street & Lake Herman Road | 10 | 0.6 / 0.4 | 4.2 / 4.8 | 3.3 / 3.7 | No | No |
| | 10 | 0.6 / 0.5 | 4.1 / 4.7 | 3.2 / 3.7 | No | No |
| | 10 | 0.6 / 0.5 | 4.1 / 4.7 | 3.2 / 3.7 | No | No |
| | 10 | 0.6 / 0.5 | 4.1 / 4.7 | 3.2 / 3.7 | No | No |
| Goodyear Road & Lake Herman Road | 10 | 0.5 / 0.4 | 4.1 / 4.6 | 3.2 / 3.6 | No | No |
| | 10 | 0.5 / 0.4 | 4.1 / 4.6 | 3.2 / 3.6 | No | No |
| | 10 | 0.3 / 0.3 | 4.1 / 4.4 | 3.2 / 3.5 | No | No |
| | 10 | 0.3 / 0.3 | 4.1 / 4.4 | 3.2 / 3.5 | No | No |
| Industrial Way & Lake Herman Road | 10 | 0.0 / 0.0 | 4.0 / 4.0 | 3.2 / 3.2 | No | No |
| | 10 | 0.0 / 0.0 | 4.0 / 4.0 | 3.2 / 3.2 | No | No |
| | 10 | 0.0 / 0.0 | 4.0 / 4.0 | 3.2 / 3.2 | No | No |
| | 10 | 0.0 / 0.0 | 4.0 / 4.0 | 3.2 / 3.2 | No | No |
| Park Road & Industrial Way | 14 | 0.1 / 0.1 | 4.2 / 4.3 | 3.3 / 3.4 | No | No |
| | 14 | 0.1 / 0.1 | 4.2 / 4.3 | 3.3 / 3.4 | No | No |
| | 12 | 0.1 / 0.1 | 4.1 / 4.2 | 3.2 / 3.3 | No | No |
| | 10 | 0.1 / 0.1 | 4.1 / 4.2 | 3.2 / 3.3 | No | No |
| Park Road & Bayshore Road | 12 | 0.1 / 0.1 | 4.2 / 4.3 | 3.3 / 3.4 | No | No |
| | 12 | 0.1 / 0.1 | 4.1 / 4.2 | 3.2 / 3.3 | No | No |
| | 12 | 0.1 / 0.1 | 4.1 / 4.2 | 3.2 / 3.3 | No | No |
| | 12 | 0.1 / 0.1 | 4.1 / 4.2 | 3.2 / 3.3 | No | No |

[a] Includes ambient one-hour concentration of 3.9 ppm and ambient eight-hour concentration of 3.1 ppm. Measured at the Tuolumne Street, Vallejo, CA, AQ Station (Solano County).

Source: LSA Associates, Inc., 2006.

**(5) Global Warming.** Neither CEQA nor the CEQA Guidelines provide any methodology for analysis of "greenhouse gases," including $CO_2$, nor do they provide any significance thresholds. In the absence of standardized criteria for determining the significance of a project's contributions to global climate change, the analysis in this section determines the consistency of the proposed project with greenhouse gas emission reduction strategies identified by the California Environmental

Protection Agency Climate Action Team. These strategies were identified pursuant to State Executive Order S-3-05 (announced on June 1, 2005), which sets greenhouse gas emission targets in California through 2050.

On June 1, 2005, Governor Arnold Schwarzenegger signed Executive Order S-3-05, acknowledging the environmental impacts of greenhouse gas emissions on climate change. The Executive Order established the following climate change emission reduction targets for California:

- By 2010, reduce greenhouse gas emissions to 2000 levels
- By 2020, reduce greenhouse gas emissions to 1990 levels
- By 2050, reduce greenhouse gas emission to 80 percent below 1990 levels

It also directed the California Environmental Protection Agency (Cal/EPA) to coordinate efforts among State agencies to meet these targets. As part of this directive, in 2006 the California State Legislature adopted AB 32, the California Global Warming Solutions Act of 2006. AB 32 requires Cal/EPA to lead the evaluation of California's impacts on climate change and identify mitigation strategies to reduce emissions and adaptive measures to minimize adverse effects of climate change.

In response to the Executive Order, Cal/EPA established the Climate Action Team to develop strategies for reducing climate change emissions in the State. In March 2006, Cal/EPA released a document called the *Climate Action Team Report to Governor Schwarzenegger and Legislature*.[3] The Report provides suggested strategies for reducing climate change emissions that would be implemented by State agencies over the next 2 years. It is a guidance document to be used by the identified State agencies in developing Statewide programs for reducing climate change emissions. The strategies in the report are used in this air quality analysis to determine if the proposed project would result in a significant impact on global warming.

The consistency of the proposed business park with these reduction strategies is summarized in Table IV.H-9. As shown in the table, the project would be inconsistent with most of the various measures identified by Cal/EPA to reduce greenhouse gas emissions in residential and commercial/industrial development. However, in the absence of significance criteria established by either the City of Benicia or State of California, this inconsistency would not result in a significant environmental impact. The following recommended measure would bring the project closer to compliance with the Climate Action Team's greenhouse gas emission reduction strategies. However, full compliance would require a reconfiguration of land uses on the site to support the use of alternative transportation. The following recommended measure is not a mitigation measure and is not required to reduce the significant impacts of the project to a less-than-significant level. However, it could be incorporated into the project's conditions of approval.

Recommended Measure GREEN-1: The project should incorporate the following greenhouse gas emission reduction strategies:

- Develop a tree replacement program that exceeds the requirements of the City's tree ordinance (see Mitigation Measure BIO-1);
- Reconfigure land uses on the site so that open space is connected and encompasses existing drainages and wetlands (see three development alternatives in Chapter V, Alternatives);

[3] California Environmental Protection Agency, 2006. Op. Cit.

**Table IV.H-9: Consistency of the Proposed Project with State Greenhouse Gas Emission Reduction Strategies**

| State Strategy to Reduce Greenhouse Gas Emissions | Would Project Substantially Include Strategy? |
|---|---|
| Meet vehicle climate change standards (including standards for heavy-duty vehicles). | Yes. Vehicle climate change standards are enforced by the California Air Resources Board. All vehicles that enter the project site would be required to meet these standards. |
| Reduce use of hydrofluorocarbons. | Yes. When the California Air Resources Board adopts standards for hydrofluorocarbons, these standards will be applied to all consumer goods. |
| Achieve 50 percent State-wide recycling goal; recycle as much as possible. | No. The conceptual site plans submitted by the project sponsor make no provision for materials recycling. However, the project would be expected to comply with local and State recycling requirements. |
| Protect and plant trees in urban settings (urban forestry). | Partially. Implementation of the proposed project would result in the planting of street trees along roads within and around the project site. However, the project would also result in the removal of 3.2 acres of blue-gum eucalyptus and removal of a large stand of trees adjacent to Reach C. |
| Protect open space and forested areas. | Partially. The project would include 180 acres of open space, including a major drainage; however, this open space would exclude several on-site drainages and wetlands. |
| Increase water use efficiency as much as practicable. | No. No features of the project site would promote water conservation. The landscaped areas around the periphery of the site would be expected to require large amounts of irrigation. |
| Increase energy efficiency by 20 percent beyond Title 24 requirements. | No. The project would include little provision for alternative transportation and therefore would not be considered energy-efficient. |
| Use energy-efficient appliances. | Yes. Energy-efficient appliances would be required, per State regulations. |
| Encourage high-density mixed use projects. | No. The proposed project is nominally mixed-use, and would be built at a relatively low density (the proposed floor-area-ratio is lower than permitted in the General Plan for limited industrial and commercial areas). |
| Encourage green construction. | No. The project does not include provisions to encourage green construction. |
| Encourage the use of solar energy. | No. The project would not include photovoltaic cells or other features that would generate solar energy. |
| Impose anti-idling requirements on diesel vehicles. | Yes. Bay Area Air Quality Management District (BAAQMD) guidelines would prohibit unnecessary idling. |
| Implement measures to reduce emissions from Transportation Refrigerator Units (TRUs) | No. The project does not include provisions to reduce TRUs (although it is unclear, at the current conceptual level of development, whether the project would include TRUs). |

Source: State of California Environmental Protection Agency, 2006. Climate Action Team Report to Governor Schwarzenegger and the California Legislature. March.

- Prepare and implement a landscape plan that includes only native and/or drought-resistant plants; and
- Ensure that 20 percent of the energy needs of the business park are met with renewable sources, preferably on-site sources (e.g., photovoltaic cells).

**c. Significant Impacts.** The proposed project would result in the following significant impacts related to air quality as described below.

**Impact AIR-1: Demolition and construction period activities could generate significant dust, exhaust, and organic emissions. (S)**

The proposed Benicia Business Park would require excavation/removal of substantial amounts of soil and debris from the site. The project would result in approximately 9,000,000 cubic yards of cut and fill (all of which would be balanced on-site). The excavation of soil and installation of new infrastructure are construction activities with a high potential for creating air pollutants. In addition to the dust created during demolition and excavation, substantial dust emissions could be created as debris and soil is loaded into trucks for disposal. Based on emission factors provided by the BAAQMD, uncontrolled construction-related $PM_{10}$ emissions from demolition and excavation would average 3.85 pounds per day.[4]

After removal of existing structures, construction dust would also continue to affect local air quality during construction of the project. Construction activities would generate exhaust emissions from vehicles/equipment and fugitive particulate matter emissions that would affect local air quality.

Construction activities are also a source of organic gas emissions. Solvents in adhesives, non-water-based paints, thinners, some insulating materials and caulking materials would evaporate into the atmosphere and would participate in the photochemical reaction that creates urban ozone. Asphalt used in paving is also a source of organic gases for a short time after its application. Construction exhaust (assuming a typical composite fleet of construction equipment in the Bay Area) would result in emission concentrations shown in Table IV.H-10.

**Table IV.H-10: Construction Emissions from Heavy and Light Duty Construction Equipment.**

| Pollutant | Concentration (lbs/day) |
|---|---|
| $PM_{10}$ | 6.24 |
| ROG | 26.08 |
| NOx | 120.21 |
| SOx | 13.04 |
| CO | 391.25 |

Source: LSA Associates, Inc., 2006

The effects of construction activities would be increased dustfall and locally elevated levels of $PM_{10}$ downwind of construction activity. Construction dust would be generated at levels that would create an annoyance to nearby properties. Implementation of the following mitigation measure would reduce this impact to a less-than-significant level:

> Mitigation Measure AIR-1: Consistent with guidance from the BAAQMD, the following actions shall be required of construction contracts and specifications for the project.
>
> The following controls shall be implemented at all construction sites:
>
> - Water all active construction areas at least twice daily and more often during windy periods; active areas adjacent to existing land uses shall be kept damp at all times, or shall be treated with non-toxic stabilizers to control dust;
> - Cover all trucks hauling soil, sand, and other loose materials or require all trucks to maintain at least 2 feet of freeboard;
> - 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;
> - Sweep daily (with water sweepers) all paved access roads, parking areas, and staging areas at construction sites; water sweepers shall vacuum up excess water to avoid runoff-related impacts to water quality;

[4] Assumes a 20-year construction period, construction 350 days per year, and 51 pounds per acre per day of $PM_{10}$.

- Sweep streets daily (with water sweepers) if visible soil material is carried onto adjacent public streets;
- Apply non-toxic soil stabilizers to inactive construction areas;
- Enclose, cover, water twice daily, or apply non-toxic soil binders to exposed stockpiles (dirt, sand, etc.);
- Limit traffic speeds on unpaved roads to 15 mph;
- Install sandbags or other erosion control measures to prevent silt runoff to public roadways;
- Replant vegetation in disturbed areas as quickly as possible;
- Install baserock at entryways for all exiting trucks, and wash off the tires or tracks of all trucks and equipment in designated areas before leaving the site; and
- Suspend excavation and grading activity when winds (instantaneous gusts) exceed 25 mph.

Implementation of this mitigation measure would reduce construction period air quality impacts to a less-than-significant level. (LTS)

**Impact AIR-2: Long-term project-related regional emissions would exceed the BAAQMD thresholds of significance for ozone precursors. (S)**

Long-term air emission impacts would be those associated with changes in permanent usage of the project site. Mobile source emissions would result from vehicle trips associated with the proposed project. The Urban Emission Model (URBEMIS 2002) computer program, which is the most current air quality model available in California for estimating emissions associated with land use development projects, was used to calculate long-term mobile source emissions associated with the proposed project. The URBEMIS analysis included trip generation rates from the associated Traffic Impact Analysis (Korve Engineering, October 2006). Increases in long-term stationary emissions from natural gas and electricity use within the project site are expected to be negligible when compared with mobile source emissions. Therefore, these emissions were not included in the calculation.

The daily emission increase associated with project operational trip generation is identified in Table IV.H-11 for reactive organic gases (ROG) and nitrogen oxides ($NO_x$) (two precursors of ozone) and coarse particle matter ($PM_{10}$). The BAAQMD has established thresholds of significance for ozone precursors and fugitive dust of 80 pounds per day. Proposed project emissions shown in Table IV.H-11 would exceed these thresholds of significance for ROG, $NO_x$, and $PM_{10}$, and therefore, the proposed project would have a significant effect on regional air quality. Implementation of the following mitigation measure would reduce this impact, but not to a less-than-significant level:

**Table IV.H-11: Project Regional Emissions in Pounds Per Day**

| | Reactive Organic Gases | Nitrogen Oxides | $PM_{10}$ |
|---|---|---|---|
| Regional Emissions | 635.58 | 846.80 | 518.02 |
| **BAAQMD Significance Threshold** | **80.0** | **80.0** | **80.0** |
| **Exceed?** | **Yes** | **Yes** | **Yes** |

Source: LSA Associates, Inc. 2006.

Mitigation Measure AIR-2: The *BAAQMD CEQA Guidelines* identifies potential mitigation measures for various types of projects. The following are considered to be feasible and

effective in further reducing vehicle trip generation and resulting emissions from the project. The project sponsor shall incorporate all of the following measures into the project:

- Provide transit facilities (e.g., bus bulbs/turnouts, benches, shelters).
- Provide bicycle lanes and/or paths, connected to a community-wide network.
- Provide sidewalks and/or paths, connected to adjacent land uses, transit stops, and/or community-wide network.
- Provide secure and conveniently located bicycle storage.
- Implement feasible Trip Demand Management (TDM) measures, including a ride-matching program, coordination with regional ridesharing organizations and provision of transit information.

The implementation of an aggressive trip reduction program with the appropriate incentives for non-auto travel can reduce project impacts by approximately 10 to 15 percent. A reduction of this magnitude would not reduce $PM_{10}$ or ozone precursor emissions to levels below the BAAQMD significance threshold. There is no mitigation available with currently feasible technology to reduce the project's regional air quality impact to a less-than-significant level. Therefore, the project's regional air quality impacts would remain significant and unavoidable. (SU)

Despite great progress in improving air quality, approximately 146 million people nationwide lived in counties with pollution levels above the National Ambient Air Quality Standards (NAAQS) in 2002. Out of the 230 nonattainment areas identified during the 1990 Clean Air Act Amendment designation process, 124 areas remain as nonattainment today. In these nonattainment areas, however, the severity of air pollution episodes has decreased. Air quality in the San Francisco Bay Area Air Basin in the past 20 years has improved steadily and dramatically, even with the tremendous increase in population and vehicles and other sources.

As shown in Table IV.H-2, long term exposure to elevated levels of criteria pollutants could result in potential health effects. However, as stated in the thresholds of significance, emission thresholds established by the air district are used to manage total regional emissions within an air basin, based on the air basin attainment status for criteria pollutants. These emission thresholds were established for individual projects that would contribute to regional emissions and pollutant concentrations that may affect or delay the projected attainment target year for certain criteria pollutants.

Because of the conservative nature of the thresholds and the basin-wide context of individual project emissions, there is no direct correlation of a single project to localized health effects. One individual project having emissions exceeding a threshold does not necessarily result in adverse health effects for residents in the project vicinity. This condition is especially true when the criteria pollutants exceeding thresholds are those with regional effects, such as ozone precursors like NOx and ROG.

Based on the above discussion, the potential for an individual project to significantly deteriorate regional air quality or contribute to significant health risk is small, even if the emission thresholds are exceeded by the project. Because of the overall improvement trend on air quality in the air basin, it is unlikely the regional air quality or health risk would worsen from the current condition due to emissions from an individual project. Nevertheless, pollutant emissions from a specific project above a certain level are considered significant.