5.0 AIR QUALITY

The project site is located within the City of Santa Barbara, which is part of the South Central Coast Air Basin (Basin) (see Figure 5.1) and is under the jurisdiction of the Santa Barbara County Air Pollution Control District (SBCAPCD). The air quality assessment for the proposed project includes estimating emissions associated with long-term operation and construction phases of the proposed project. Appendix B includes detailed information on all these analyses. This section summarizes pertinent information and findings.

5.1 AIR QUALITY - IMPACT SIGNIFICANCE GUIDELINES

➢ Impact Evaluation Guidelines

A project would result in a significant air quality impact from the following:

- Exceeding federal or State Ambient Air Quality Standard (AAQS) or SBCAPCD/City emission thresholds;
- Inconsistency with SBCAPCD regulations, including the SBCAPCD health risks public notification thresholds adopted by the SBCAPCD Board;
- Exceeding population forecasts in the adopted SBCAPCD Clean Air Plan (CAP);
- Exposing sensitive receptors, such as children, the elderly, or sick people to substantial pollutant concentrations;
- Substantial unmitigated nuisance dust during earthwork or construction operations;
- Creating nuisance odors inconsistent with SBCAPCD regulations.

➢ Thresholds of Impact Significance

A project would normally be considered to have a significant effect on air quality if it would violate any AAQS, contribute substantially to an existing air quality violation, expose sensitive receptors to substantial pollutants concentrations, or conflict with adopted environmental plans and goals of the community in which it is located.

In addition to the federal and State AAQS, there are emissions thresholds for operation of a proposed project in the Basin. The City of Santa Barbara uses the SBCAPCD thresholds of significance as described in the SBCAPCD *Guidelines for the Implementation of the California Environmental Quality Act of 1970* (SBCAPCD, November 2000) and are used in this analysis.

Operational Emissions Thresholds. The SBCAPCD and City guidelines identify the following amounts of air pollutant emissions to be significant:

- 240 pounds per day of Reactive Organic Compounds (ROC) from all project sources (both stationary and mobile)
- 25 pounds per day of ROC from motor vehicle trips only
- 240 pounds per day of Nitrogen Oxides (NO_X) from all project sources (both stationary and mobile)

- 25 pounds per day of NO_X from motor vehicle trips only
- 80 pounds per day of Particulate Matter ($PM_{10)}$ from all project sources (both stationary and mobile)
- California State one-hour Carbon Monoxide (CO) standard of 20.0 parts per million (ppm), and/or California State eight-hour CO standard of 9.0 ppm, if local ambient levels are below federal or state standards. The significance threshold may be triggered if a project contributes more than 800 peak hour trips to an individual intersection, in which case local CO hot spot analysis is conducted to determine if an impact would occur.

Construction Emissions Thresholds. The Santa Barbara County Air Pollution Control District (SBCAPCD) and City do not have impact significance thresholds for construction-related air emissions because the total emissions associated with all construction within the air basin is considered less than significant. The SBCAPCD and City have policies to reduce dust and particulate matter emissions and construction equipment emissions to the extent feasible to minimize the incremental contribution of construction emissions to cumulative air pollution.

SBCAPCD Rule 202.F.3 specifies that if the combined emissions from all construction equipment used have the potential to emit more than 25 tons per year of ROC, NO_X, SO_X, or PM_{10}, offsets shall be provided under the provisions of Rule 804.

SBCAPCD Rule 302 requires that fugitive dust be controlled so that the presence of such dust is not darker than No. 1 on the Ringelmann Chart (as published by the United States Bureau of Mines). In addition, SBCAPCD Rule 303 requires implementation of techniques to prevent fugitive dust from creating a nuisance.

5.2 AIR QUALITY - METHODOLOGY

The SBCAPCD has established guidelines and requirements to conduct air quality analyses. The SBCAPCD *Guidelines for the Implementation of the California Environmental Quality Act of 1970* (revised December 2003) were followed in the assessment of air quality impacts for the proposed project.

Air quality impacts are predicted by first characterizing all project-related emission sources, including those involved in relatively short-term activities such as construction and demolition and those related to the long-term operation of the proposed project, including vehicular trips and stationary sources used on site. To characterize emission sources, project-specific information was used wherever available. When project-specific data were not available, representative data supplied by local, State and federal agencies were used. These emission rates are compared with thresholds and district clean air plans to determine if there will be a significant impact on air quality.

A number of modeling tools are used to translate these emission rates into pollutant concentrations at specific sensitive locations, i.e. locations where people live, work, attend school, etc. These concentrations are compared to standards and thresholds to determine the potential for impacts on the health of individuals at those sensitive locations. Appendix B contains detailed information on these analyses.

Long-term impacts are discussed in Section 5.6. These include a local carbon monoxide (CO) hot spot analysis conducted for intersections in the project vicinity, a regional analysis of both

stationary and mobile project-related emissions, and a diesel toxics analysis to predict impacts from exhaust of diesel-powered equipment used in the project's operation.

Short-term impacts are discussed in Section 5.7. A regional analysis similar to the long-term regional analysis includes construction-related emissions both from vehicular exhaust and activities that generate fugitive dust. This section also includes a diesel toxics analysis similar to the long-term analysis. The net increase in pollutant emissions determines the significance and impact on regional air quality as a result of the proposed project. The results also allow the local government to determine whether the proposed project is consistent with the local Clean Air Plan and would not deter the region from achieving the goal of reducing pollutants to comply with federal and State AAQS.

➢ Carbon Monoxide Modeling

An assessment of project-related impacts on localized ambient air quality requires that future ambient air quality levels be projected. Existing ambient CO levels monitored at the Santa Barbara station, the closest station with monitored CO data at 1.8 miles east of the project, showed a highest recorded one-hour concentration of 5.9 ppm (State standard is 20 ppm) and a highest eight-hour concentration of 2.3 ppm (State standard is 9 ppm) during the past three years (see Table 5.C).

The highest CO concentrations would occur during peak traffic hours; hence, CO impacts calculated under peak traffic conditions represent a worst-case analysis. Based on the project traffic study (LSA, July 2004), CO hot spot analyses were conducted for existing and future cumulative conditions. The impact on local carbon monoxide levels was assessed with the ARB-approved CALINE4 air quality model, which allows microscale CO concentrations to be estimated along roadway corridors or near intersections. This model is designed to identify localized concentrations of carbon monoxide, often termed "hot spots." A brief discussion of input to the CALINE4 model follows. The analysis was performed for the worst-case wind angle and wind speed condition and is based upon the following assumptions:

- Selected modeling locations represent the intersections closest to the project site, with the highest project-related vehicle turning movements and the worst level of service deterioration;
- Twenty receptor locations with the possibility of extended outdoor exposure from 8–14 meters (approximately 24–46 feet) of the roadway centerline near intersections were modeled to determine carbon monoxide concentrations;
- The following model input parameters were used as specified in the SBCAPCD *Scope and Content of Air Quality Sections in Environmental Documents* (June 2004): run type of "Worst Case," wind speed of 0.5 meter/second, Class of G, Mixing Height of 1,000 meters, Surface Roughness of 0 (a suburban topographical condition between the source and receptor), and Temperature of 10^{o} C, representing a worst-case scenario for CO concentrations;
- CO concentrations are calculated for the one-hour averaging period and then compared to the one-hour standards. CO eight-hour averages are extrapolated using techniques outlined in the SBCAPCD *Scope and Content of Air Quality Sections in Environmental Documents* (June 2004), and compared to the eight-hour standards; a persistence factor of 0.7 was used;
- Concentrations are given in ppm at each of the receptor locations;

- The "at-grade" link option with speed adjusted based on average cruise speed and number of vehicles per lane per hour was used rather than the "intersection" link selection in the CALINE4 model. (Caltrans has suggested that the "intersection" link should not be used due to an inappropriate algorithm based on outdated vehicle distribution.) Emission factors from the EMFAC2002 model for all vehicles based on the adjusted speed for the years 2004 and 2013 were used for the vehicle fleet; and
- The highest one-hour and eight-hour CO concentrations monitored at the Santa Barbara station in the past three years were used as background concentrations: 5.9 ppm for the one-hour CO and 2.3 ppm for the eight-hour CO. The "background" concentrations are then added to the model results for future with and without the proposed project conditions.

A future year scenario was evaluated for traffic impacts from the proposed project at the project completion year (estimated in 2013). For this scenario, traffic volumes with and without the project projected for year 2013 were used, and vehicle emission factors for CO for the year 2013 were used in CALINE4 modeling. The current year (2004) background CO concentrations were added to the predicted CO concentrations.

➢ Stationary Source and Mobile Source Emissions Modeling

Long-term operational emissions associated with the hospital, including both stationary sources and vehicle emissions were calculated with the URBEMIS 2002 model. are summarized in Table 5.G. Appendix B has the detailed URBEMIS 2002 output files listing all the input parameters and assumptions.

➢ Diesel Toxics Modeling

The Office of Environmental Health Hazard Assessment (OEHHA) method was used for estimating potential health risks associated with diesel equipment particulates emissions, as described in Appendix I of the Air Toxics Hot Spots Program Risk Assessment Guidelines (OEHHA, August 2003) and detailed in Appendix B of this EIR, "Diesel Exhaust Particulate Screening Health Risk Assessment".

5.3 AIR QUALITY - REGULATORY FRAMEWORK

Pursuant to the federal Clean Air Act (CAA) of 1970, the federal Environmental Protection Agency (EPA) established national ambient air quality standards (NAAQS). The NAAQS were established for six major pollutants, termed "criteria" pollutants. The State began to set California ambient air quality standards (CAAQS) in 1969 under the mandate of the Mulford-Carrell Act. The CAAQS are generally more stringent than the NAAQS. In addition to the six criteria pollutants covered by the NAAQS, there are CAAQS for sulfates, hydrogen sulfide, vinyl chloride, and visibility-reducing particles. The EPA has designated the Santa Barbara County Association of Governments (SBCAG) as the Metropolitan Planning Organization (MPO) responsible for ensuring compliance with the requirements of the CAA for the Basin.

Both the State of California (State) and the federal government use these six "criteria pollutants" as indicators of air quality and have established for each of them a maximum concentration above which adverse effects on human health may occur. These threshold concentrations are called Ambient Air Quality Standards (AAQS). As shown in Table 5.A, these pollutants include ozone (O_3); carbon monoxide (CO); nitrogen dioxide (NO_2); sulfur

dioxide (SO_2); two categories of particulate matter: coarse particulate matter with a diameter of 10 microns or less (PM_{10}) and fine particulate matter less than 2.5 microns in diameter ($PM_{2.5}$); and lead (Pb). 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 setting out primary and secondary AAQS (see footnote Nos. 5 and 6 on Table 5.A), the State has established a set of episode criteria for O_3, CO, NO_2, SO_2, and PM_{10}. These criteria refer to episode levels representing periods of short-term exposure to air pollutants that threaten public health. Health effects are progressively more severe as pollutant levels increase from Stage One to Stage Three. Table 5.B lists the health effects of these criteria pollutants and their potential sources. These health effects will not occur unless the standards are exceeded by a large margin or for a prolonged period of time. The State AAQS are more stringent than the federal AAQS.

The California Clean Air Act (CCAA) provides the air districts, such as SBCAPCD, with the authority to manage transportation activities at indirect sources. Indirect sources of pollution are generated when minor sources collectively emit a substantial amount of pollution. Examples of this would be the motor vehicles at an intersection, a mall, and on highways. The SBCAPCD also regulates stationary sources of pollution throughout its jurisdictional area. Direct emissions from motor vehicles are regulated by the California Air Resources Board (CARB).

➢ Regional Air Quality Planning Framework

The 1976 Lewis Air Quality Management Act established the Santa Barbara Air Pollution Control District (SBCAPCD) and other air districts throughout the State. The federal CAA Amendments of 1977 required that each state adopt an implementation plan outlining pollution control measures to attain the federal standards in nonattainment areas of the state. The California Clean Air Act (CCAA), adopted in 1988, requires that all Air Pollution Control Districts (APCDs) and Air Quality Management Districts (AQMDs) adopt and enforce regulations to achieve and maintain the State ambient air quality standards for the area under its jurisdiction. The CCAA requires nonattainment districts to develop and adopt an Air Quality Management Plan (AQMP) or Clean Air Plan (CAP). The AQMP/CAP must include emission reduction strategies and control measures sufficient to demonstrate that California air quality standards will be attained by the "earliest practicable date." As a demonstration of progress toward attainment, the CCAA requires that emissions of nonattainment pollutants be reduced by at least five percent per year (compared to 1987 emission levels) until the standards are achieved. The Act identifies transportation control measures as an essential element of the attainment plan.

➢ Regional Clean Air Plan

The SBCAPCD and the Santa Barbara County Association of Governments (SBCAG) are responsible for formulating and implementing the Clean Air Plan (CAP) for the Basin, which includes the City of Santa Barbara. Every three years the SBCAPCD prepares a new CAP, updating the previous plan and having a twenty-year horizon. Compliance with the provisions of the CAA and the CCAA is the primary focus of the CAP developed by the SBCAPCD and the SBCAG.

TABLE 5.A: AMBIENT AIR QUALITY STANDARDS

Pollutant	Averaging Time	California Standards[1]		Federal Standards[2]		
		Concentration[3]	Method[4]	Primary[3,5]	Secondary[3,6]	Method[7]
Ozone (O_3)	1-Hour	0.09 ppm (180 µg/m^3)	Ultraviolet Photometry	0.12 ppm (235 µg/m^3)[8]	Same as Primary Standard	Ultraviolet Photometry
	8-Hour	–		0.08 ppm (157 µg/m^3)[8]		
Respirable Particulate Matter (PM_{10})	24-Hour	50 µg/m^3	Gravimetric or Beta Attenuation	150 µg/m^3	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	20 µg/m^3		50 µg/m^3		
Fine Particulate Matter ($PM_{2.5}$)	24-Hour	No Separate State Standard		65 µg/m^3	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	12 µg/m^3	Gravimetric or Beta Attenuation	15 µg/m^3		
Carbon Monoxide (CO)	8-Hour	9.0 ppm (10 mg/m^3)	Non-Dispersive Infrared Photometry (NDIR)	9 ppm (10 mg/m^3)	None	Non-Dispersive Infrared Photometry (NDIR)
	1-Hour	20 ppm (23 mg/m^3)		35 ppm (40 mg/m^3)		
	8-Hour (Lake Tahoe)	6 ppm (7 mg/m^3)		–	–	–
Nitrogen Dioxide (NO_2)	Annual Arithmetic Mean	–	Gas Phase Chemiluminescence	0.053 ppm (100 µg/m^3)	Same as Primary Standard	Gas Phase Chemiluminescence
	1-Hour	0.25 ppm (470 µg/m^3)		–		
Sulfur Dioxide (SO_2)	Annual Arithmetic Mean	–	Ultraviolet Fluorescence	0.030 ppm (80 µg/m^3)	–	Spectrophotometry (Pararosaniline Method)
	24-Hour	0.04 ppm (105 µg/m^3)		0.14 ppm (365 µg/m^3)	–	
	3-Hour	–		–	0.5 ppm (1300 µg/m^3)	
	1-Hour	0.25 ppm (655 µg/m^3)		–	–	
Lead[9] (Pb)	30 Day Average	1.5 µg/m^3	Atomic Absorption	–	–	High Volume Sampler and Atomic Absorption
	Calendar Quarter	–		1.5 µg/m^3	Same as Primary Standard	
Visibility-Reducing Particles	8-Hour	Extinction coefficient of 0.23 per kilometer - visibility of ten miles or more (0.07-30 miles or more for Lake Tahoe) due to particles when relative humidity is less than 70 percent. Method: Beta Attenuation and Transmittance through Filter Tape.		**No Federal Standards**		
Sulfates	24-Hour	25 µg/m^3	Ion Chromatography			
Hydrogen Sulfide	1-Hour	0.03 ppm (42 µg/m^3)	Ultraviolet Fluorescence			
Vinyl Cloride[9]	24-Hour	0.01 ppm (26 µg/m^3)	Gas Chromatography			

Source: California Air Resources Board (ARB) (July 2003).

Footnotes:

[1] California standards for ozone; carbon monoxide (except Lake Tahoe); sulfur dioxide (1 and 24 hour); nitrogen dioxide; suspended particulate matter, PM_{10}; and visibility reducing particles are values that are not to be exceeded. All others are not to be equaled or exceeded. California ambient air quality standards are listed in the Table of Standards in Section 70200 of Title 17 of the California Code of Regulations.

[2] National standards (other than ozone, particulate matter, and those based on annual averages or annual arithmetic mean) are not to be exceeded more than once a year. The ozone standard is attained when the fourth highest eight-hour concentration in a year, averaged over three years, is equal to or less than the standard. For PM_{10}, the 24 hour standard is attained when the expected number of days per calendar year with a 24-hour average concentration above 150 $\mu g/m^3$ is equal to or less than one. For $PM_{2.5}$, the 24-hour standard is attained when 98 percent of the daily concentrations, averaged over three years, are equal to or less than the standard. Contact U.S. EPA for further clarification and current federal policies.

[3] Concentration expressed first in units in which it was promulgated. Equivalent units given in parentheses are based upon a reference temperature of 25˚C and a reference pressure of 760 torr. Most measurements of air quality are to be corrected to a reference temperature of 25˚C and a reference pressure of 760 torr; ppm in this table refers to ppm by volume, or micromoles of pollutant per mole of gas.

[4] Any equivalent procedure that can be shown to the satisfaction of the ARB to give equivalent results at or near the level of the air quality standard may be used.

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

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

[7] Reference method as described by the EPA. An “equivalent method” of measurement may be used but must have a “consistent relationship to the reference method” and must be approved by the EPA.

[8] New federal eight-hour ozone and fine particulate matter standards were promulgated by U.S. EPA on July 18, 1997. Contact U.S. EPA for further clarification and current federal policies.

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

TABLE 5.B: SUMMARY OF HEALTH EFFECTS OF THE MAJOR CRITERIA AIR POLLUTANTS

Pollutants	Sources	Primary Effects
Ozone (O_3)	Atmospheric reaction of organic gases with nitrogen oxides in the presence of sunlight.	Aggravation of respiratory and cardiovascular diseases. Irritation of eyes. Impairment of cardiopulmonary function. Plant leaf injury.
Nitrogen Dioxide (NO_2)	Motor vehicle exhaust. High temperature stationary combustion. Atmospheric reactions.	Aggravation of respiratory illness. Reduced visibility. Reduced plant growth. Formation of acid rain.
Carbon Monoxide (CO)	Byproducts from incomplete combustion of fuels and other carbon containing substances, such as motor exhaust. Natural events, such as decomposition of organic matter.	Reduced tolerance for exercise. Impairment of mental function. Impairment of fetal development. Death at high levels of exposure. Aggravation of some heart diseases (angina).
Suspended Particulate Matter ($PM_{2.5}$ and PM_{10})	Stationary combustion of solid fuels. Construction activities. Industrial processes. Atmospheric chemical reactions.	Reduced lung function. Aggravation of the effects of gaseous pollutants. Aggravation of respiratory and cardiorespiratory diseases. Increased cough and chest discomfort. Soiling. Reduced visibility.
Sulfur Dioxide (SO_2)	Combustion of sulfur-containing fossil fuels. Smelting of sulfur-bearing metal ores. Industrial processes.	Aggravation of respiratory diseases (asthma, emphysema). Reduced lung function. Irritation of eyes. Reduced visibility. Plant injury. Deterioration of metals, textiles, leather, finishes, coatings, etc.
Lead (Pb)	Contaminated soil (e.g., from leaded fuels and lead based paints).	Impairment of blood function and nerve construction. Behavioral and hearing problems in children.

Source: ARB 2001.

The 2001 Plan was prepared to formally request EPA to redesignate Santa Barbara County as an attainment area for the federal one-hour ozone standard. The Final 2001 Clean Air Plan was adopted by the Air Pollution Control District Board of Directors on November 15, 2001. As of August 8, 2003, the EPA approved this redesignation. The EPA also approved the one-hour maintenance plan and motor vehicle emissions budgets in the 2001 CAP as revisions to the Santa Barbara portion of the State Implementation Plan (SIP). The County continues to violate the state one-hour standard for ozone and the State standard for PM_{10}.

To coordinate all applicable State and federal planning requirements, the 2001 Plan integrates the technical and policy issues associated with both the State and federal 1-hour ozone standards. The 2001 Plan satisfies both State and federal planning requirements.

5.4 AIR QUALITY - EXISTING SETTING

5.4.1 PROJECT SITE AND SURROUNDING AIR QUALITY CONDITIONS

The project site currently has hospital operations that include both mobile (vehicles) and stationary (boilers, etc.) sources emitting criteria pollutants.

The SBCAPCD, together with the CARB, maintain ambient air quality monitoring stations in the Basin. The air quality sampling measured at air quality monitoring stations in the vicinity of the project are the best representation of the ambient air quality at the project.

No single station in the project vicinity monitors all pollutants. Data from the Santa Barbara-Canon Perdido station (1.8 miles from the project), the Goleta-Fairview station (8 miles from the project), the Los Flores Canyon #1 station (18 miles from the project), and the Santa Maria-Broadway station (55 miles from the project) were compiled to show representative levels of the criteria pollutants. Figure 5.1 shows these air quality monitoring station locations.

The ambient air quality data in Table 5.C show that for the past three years in the vicinity of the project all criteria pollutant levels are below (compliant with) relevant State and federal threshold standards.

➢ Regional Air Quality (Existing Conditions)

Air quality in Santa Barbara County has undergone a gradual improvement over many years, with 1999 being one of the cleanest years on record. Air quality has improved to the point that the air is clean enough to meet the federal 1-hour ozone standard for the first time since the standard was instituted. The number of days on which the air was declared unhealthful in Santa Barbara County has been reduced by over 80 percent from 1990 to 2000 despite substantial increases in population and vehicle miles traveled.

➢ Climate/Meteorology (Existing Conditions)

Air quality in the planning area is not only affected by various emission sources (mobile, industry, etc.) but is also affected by atmospheric conditions such as wind speed, wind direction, temperature, and rainfall. The climate of Santa Barbara County can be characterized as Mediterranean, with warm, dry summers and cooler, damp winters. Along the coast, mild temperatures are the rule throughout the year due to the moderating influence of the Pacific Ocean.

TABLE 5.C: AMBIENT AIR QUALITY AT MONITORING STATIONS IN PROJECT VICINITY

Pollutant	Standard	2003	2002	2001
Carbon Monoxide (2003 data from Santa Barbara-Canon Perdido, earlier from Goleta-Fairview)				
Maximum 1-hr concentration (ppm)		5.9	2.8	3.5
Number of days exceeded:	State: > 20 ppm	0	0	0
	Federal: > 35 ppm	0	0	0
Maximum 8-hr concentration (ppm)		2.3	1.1	1.9
Number of days exceeded:	State: ≥ 9.0 ppm	0	0	0
	Federal: ≥9 ppm	0	0	0
Ozone (2002 & 2003 data from Santa Barbara-Canon Perdido, earlier from Goleta-Fairview)				
Maximum 1-hr concentration (ppm)		0.079	0.076	0.082
Number of days exceeded:	State: > 0.09 ppm	0	0	0
	Federal: > 0.12 ppm	0	0	0
Maximum 8-hr concentration (ppm)		0.070	0.061	0.066
Number of days exceeded:	Federal: > 0.08 ppm	0	0	0
Coarse Particulates (PM_{10}) (from Las Flores Canyon #1 station)				
Maximum 24-hr concentration ($\mu g/m^3$)		34.0	32.6	34.0
Number of days exceeded:	State: > 50 $\mu g/m^3$	0	0	0
	Federal: > 150 $\mu g/m^3$	0	0	0
Annual arithmetic average concentration ($\mu g/m^3$)		15	15	15
Exceeded for the year:	State: > 20 $\mu g/m^3$	No	No	No
	Federal: > 50 $\mu g/m^3$	No	No	No
Fine Particulates ($PM_{2.5}$) (2003 data from Santa Barbara-Canon Perdido station, 2002-1999 from Santa Maria-Broadway station)				
Maximum 24-hr concentration ($\mu g/m^3$)		24.0	21.3	43.2
Number of days exceeded:	Federal: > 65 $\mu g/m^3$	0	0	0
Annual arithmetic average concentration ($\mu g/m^3$)		8.6	9.5	10.4
Exceeded for the year:	State: > 12 $\mu g/m^3$	No	No	No
	Federal: > 15 $\mu g/m^3$	No	No	No
Nitrogen Dioxide (from Goleta-Fairview station)				
Maximum 1-hr concentration (ppm)		0.051	0.063	0.054
Number of days exceeded:	State: > 0.25 ppm	0	0	0
Annual arithmetic average concentration (ppm)		0.011	0.011	0.010
Exceeded for the year:	Federal: > 0.053 ppm	No	No	No
Sulfur Dioxide (from Goleta-Fairview station)				
Maximum 1-hr concentration (ppm)		0.005	0.006	0.010
Number of days exceeded:	State: > 0.25 ppm	0	0	0
Maximum 3-hr concentration (ppm)		0.004	0.003	0.005
Number of days exceeded:	Federal: > 0.5 ppm	0	0	0
Maximum 24-hr concentration (ppm)		0.003	0.001	0.002
Number of days exceeded:	State: > 0.04 ppm	0	0	0
	Federal: > 0.14 ppm	0	0	0
Annual arithmetic average concentration (ppm)		0.001	0.001	0.001
Exceeded for the year:	Federal: > 0.030 ppm	No	No	No

Source: SBCAPCD, EPA, and ARB 2001 to 2003
ppm = parts per million
$\mu g/m^3$ = microgram of pollutant per cubic meter of air

The climatological station closest to the site is the Santa Barbara Station (1.8 miles from the project).[1] The monthly average maximum temperature recorded at this station from 1927 to 2003 ranged from 65.2°F to 77.5°F, with an annual average maximum of 71.1°F. The monthly average minimum temperature recorded at this station ranged from 42.6°F to 58.2°F, with an annual average minimum of 50.3°F. Regional meteorology is largely dominated by a persistent high pressure area that commonly resides over the eastern Pacific Ocean. The Pacific High remains generally fixed several hundred miles offshore from May through September, enhancing onshore winds and opposing offshore winds.

From November through April, the Pacific High tends to migrate south, allowing northern storms to move across the county. About 90 percent of the total annual rainfall is received during this period. Winter conditions are usually mild, with intermittent periods of precipitation followed by mostly clear days. Rainfall amounts can vary considerably around the county. The Santa Barbara Station recorded average monthly rainfall from 1927 to 2003 as much as 4.04 inches in February to 0.47 inch or less between May and October, with an annual total of 17.62 inches. Patterns in monthly and yearly rainfall totals are unpredictable due to fluctuations in the weather.

Airflow around the county plays an important role in the movement and dispersion of pollutants. In spring and summer, when the Pacific High attains its greatest strength, onshore winds from the northwest generally prevail during the day. At night, as the sea breeze dies, weak drainage winds flow down the coastal mountains and valleys to form a light, easterly land breeze.

In the fall, the diurnal alternation of land-sea breeze circulation can cause pollutants to accumulate over the ocean for a period of one or more days and subsequently be carried back onshore with the return of the sea breeze. Strong inversions can form at this time, trapping pollutants near the surface.

This effect is intensified when the Pacific High weakens or moves inland. This may produce a "Santa Ana" condition, in which air, often pollutant-laden, is transported into the county from the east and southeast. This can occur over a period of several days until the high pressure system returns to its normal location, breaking the pattern. The onset of the typical daytime sea breeze can bring these pollutants back onshore, where they combine with local emissions to cause high pollutant concentrations. Not all occurrences of the post-Santa Ana condition lead to high ambient pollutant levels, but they do play an important role in the air pollution meteorology of the county.

➢ Air Pollution Constituents and Attainment Status (Existing Conditions)

The CARB coordinates and oversees both State and federal air pollution control programs in California. The ARB oversees activities of local air quality management agencies and maintains air quality monitoring stations throughout the State in conjunction with the EPA and local air districts. The ARB has divided the State into 15 air basins based on meteorological and topographical factors of air pollution. Data collected at these stations are used by the CARB and EPA to classify air basins as attainment, nonattainment, nonattainment-transitional, or unclassified for each criteria pollutant based on air quality data for the most recent three calendar years compared with the AAQS. Nonattainment areas are imposed with additional

[1] Western Regional Climate Center, www.wrcc.dri.edu/climsum.html

restrictions as required by the EPA. The air quality data are also used to monitor progress in attaining air quality standards.

CARB provided the EPA with California's recommendations for eight-hour ozone area designations on July 15, 2003. The recommendations and supporting data were an update to a report submitted to the EPA in July 2000. As of August 8, 2003, Santa Barbara County has been redesignated as a federal ozone attainment area for one-hour ozone. The EPA issued final designations for the eight-hour ozone designations on April 15, 2004. Table 5.D lists the attainment status for the criteria pollutants in the Basin.

TABLE 5.D: ATTAINMENT STATUS OF CRITERIA POLLUTANTS (SOUTH CENTRAL COAST AIR BASIN)

Pollutant	State	Federal
O_3 1-hour	Nonattainment-Moderate	Attainment
O_3 8-hour	Not Applicable (No State Standard)	Attainment
PM_{10}	Nonattainment	Unclassified
$PM_{2.5}$	Not Established	Not Available (Due in Dec. 2004)
CO	Attainment	Attainment/Unclassified
NO_2	Attainment	Attainment/Unclassified
SO_2	Attainment	Unclassified
Lead	Attainment	Not Applicable
All others	Attainment/Unclassified	Not Applicable

Source: ARB (www.arb.ca.gov/desig/desig.htm), 2004.

Ozone. O_3 (smog) is formed by photochemical reactions between NO_X and reactive organic gases (ROG) rather than being directly emitted. O_3 is a pungent, colorless gas typical of Southern California smog. Elevated O_3 concentrations result in reduced lung function, particularly during vigorous physical activity. This health problem is particularly acute in sensitive receptors such as the sick, the elderly, and young children. O_3 levels peak during summer and early fall. Santa Barbara County is designated as a nonattainment area for the State one-hour O_3 standard and is in attainment for the federal one-hour and eight-hour O_3 standards.

Carbon Monoxide. CO is formed by the incomplete combustion of fossil fuels, almost entirely from automobiles. It is a colorless, odorless gas that can cause dizziness, fatigue, and impairments to central nervous system functions. The entire Basin is in attainment with both federal and State CO standards.

Nitrogen Oxides. NO_2, a reddish brown gas, and nitric oxide (NO), a colorless, odorless gas, are formed from fuel combustion under high temperature or pressure. These compounds are referred to as nitrogen oxides, or NO_X. NO_X is a primary component of the photochemical smog reaction. It also contributes to other pollution problems, including a high concentration of fine particulate matter, poor visibility, and acid deposition (i.e., acid rain). NO_2 decreases lung

function and may reduce resistance to infection. The entire Basin is in attainment with both federal and State NO_2 standards.

Sulfur Dioxide. SO_2 is a colorless, irritating gas formed primarily from incomplete combustion of fuels containing sulfur. Industrial facilities also contribute to gaseous SO_2 levels. SO_2 irritates the respiratory tract, can injure lung tissue when combined with fine particulate matter, and reduces visibility and the level of sunlight. The entire Basin is in attainment or unclassified with both federal and State SO_2 standards.

Lead. Lead is found in old paints and coatings, plumbing, and a variety of other materials. Once in the blood stream, lead can cause damage to the brain, nervous system, and other body systems. Children are highly susceptible to the effects of lead. The entire Basin is in attainment for the State standard for lead.

Particulate Matter. Particulate matter is the term used for a mixture of solid particles and liquid droplets found in the air. Coarse particles, PM_{10}, derive from a variety of sources, including windblown dust and grinding operations. Fuel combustion and resultant exhaust from power plants and diesel buses and trucks are primarily responsible for fine particle, $PM_{2.5}$, levels. Fine particles can also be formed in the atmosphere through chemical reactions. PM_{10} can accumulate in the respiratory system and aggravate health problems such as asthma. The EPA's scientific review concluded that $PM_{2.5}$, which penetrates deeply into the lungs, is more likely than PM_{10} to contribute to the health effects listed in a number of recently published community epidemiological studies at concentrations that extend well below those allowed by the current PM_{10} standards. These health effects include premature death and increased hospital admissions and emergency room visits (primarily the elderly and individuals with cardiopulmonary disease); increased respiratory symptoms and disease (children and individuals with cardiopulmonary disease such as asthma); decreased lung functions (particularly in children and individuals with asthma); and alterations in lung tissue and structure and in respiratory tract defense mechanisms. The entire Basin is unclassified for the federal PM_{10} standard and is in nonattainment for the State PM_{10} standard. The attainment status of $PM_{2.5}$ in the Basin was not officially established by the EPA or the ARB at the time this analysis was prepared. However, based on the monitored data, the Basin is likely to be designated as a nonattainment area for $PM_{2.5}$.

5.5 AIR QUALITY - PROJECT FEATURES

The following features of the project as proposed by the applicant would act to reduce air quality effects associated with energy generation, vehicle exhaust emissions, and construction vehicle emissions and exhaust.

PF 5-1 Green Building. "Green building" refers to incorporation of building design and construction techniques that minimize energy use, conserve water, and reduce solid waste and hazardous substances. The project would implement a number of features to lessen energy use, water use, solid waste generation, and hazardous materials, as feasible. Chapter 12.0, Public Services, contains *Mitigation Measure PS-4*, which recommends a LEED's certification for the proposed project.

PF 5-2 Transportation Demand Management. The hospital would continue its extensive program for supporting and providing incentives for reduced vehicle trips and use of alternative

transportation modes by hospital staff, as described in Chapter 13.0, Transportation and Circulation (PF 13-4).

PF 5-3 Construction Off-Site Parking. The project proposes a plan to provide off-site parking and shuttle bus for construction workers.

PF 5-4 Construction Haul Routes. The haul routes for all construction-related trucks three tons or more entering or exiting the site shall be approved by the City's Transportation Engineer. This will ensure that routes taken will be as short as possible while avoiding sensitive areas.

5.6 AIR QUALITY - LONG-TERM IMPACTS

This section addresses potential air quality impacts from long-term operation of the proposed hospital. Long-term air emission impacts are those associated with project stationary sources, such as boiler and sterilizer equipment, and mobile sources (vehicle trips) as changed from the current condition at the project site.

Sensitive receptors are defined as children, the elderly, or ill people who can be more adversely affected by air quality problems. Land uses typically associated with sensitive receptors include schools, parks, playgrounds, childcare centers, retirement homes, convalescent homes, hospitals, and clinics. Stationary sources are of particular concern to sensitive receptors, as are emissions from construction activities. Refer to the Land Use section for information on sensitive receptors near the project site.

The proposed project site is located within and adjacent to areas frequented by individuals defined as sensitive receptors. Land uses of concern include the hospital and other medical facilities in the area, the child care center, and local residents.

5.6.1 PROJECT-SPECIFIC LONG-TERM AIR QUALITY IMPACTS

➢ Microscale CO Hot Spot Impacts (Project Long-Term Impacts)

One mobile source pollutant is CO, which is a direct function of vehicle idling time and, thus, traffic flow conditions. CO transport is extremely limited; it disperses rapidly with distance from the source under normal meteorological conditions. However, under certain extreme meteorological conditions, CO concentrations proximate to a congested roadway or intersection may reach unhealthful levels affecting local sensitive receptors (residents, school children, the elderly, hospital patients, etc). 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.

The proposed project contribution to increased CO concentrations at intersections in the project vicinity was evaluated. As shown in Table 5.E, under the existing conditions, all eleven intersections analyzed would have one-hour and eight-hour CO concentrations well below the federal and State standards. The existing CO concentrations are from current traffic in the vicinity of these intersections.

TABLE 5.E: EXISTING (2004) CO CONCENTRATIONS[1]

Intersection	Receptor Distance to Road Centerline (Meters)	Existing One-Hour CO Concentration (ppm)	Existing Eight-Hour CO Concentration (ppm)	Exceeds State Standards	
				1-Hr	8-Hr
Junipero St. & Bath St.	8	6.4	2.7	No	No
	8	6.4	2.7	No	No
	8	6.4	2.7	No	No
	8	6.4	2.7	No	No
Junipero St. & Castillo St.	8	6.4	2.7	No	No
	8	6.3	2.6	No	No
	8	6.3	2.6	No	No
	8	6.3	2.6	No	No
Junipero St. & Oak Park Ln.	8	6.3	2.6	No	No
	8	6.3	2.6	No	No
	8	6.3	2.6	No	No
	8	6.3	2.6	No	No
Nogales Ave. & De La Vina St.	10	6.8	2.9	No	No
	10	6.7	2.9	No	No
	10	6.7	2.9	No	No
	10	6.7	2.9	No	No
Pueblo St. & De La Vina St.	8	6.8	2.9	No	No
	8	6.8	2.9	No	No
	8	6.8	2.9	No	No
	8	6.8	2.9	No	No
Pueblo St. & Bath St.	8	6.5	2.7	No	No
	8	6.5	2.7	No	No
	8	6.5	2.7	No	No
	8	6.4	2.7	No	No
Pueblo St. & Castillo St.	8	6.5	2.7	No	No
	8	6.5	2.7	No	No
	8	6.5	2.7	No	No
	8	6.5	2.7	No	No
Pueblo St. & Oak Park Ln.	8	6.4	2.7	No	No
	8	6.4	2.7	No	No
	8	6.4	2.7	No	No
	8	6.4	2.7	No	No
Mission St. & De La Vina St.	10	7.8	3.6	No	No
	10	7.8	3.6	No	No
	10	7.7	3.6	No	No
	10	7.6	3.5	No	No
Mission St. & Bath St.	14	8.0	3.8	No	No
	14	8.0	3.8	No	No
	12	7.9	3.7	No	No
	10	7.9	3.7	No	No
Mission St. & Castillo St.	10	8.4	4.1	No	No
	8	8.3	4.0	No	No
	8	8.3	4.0	No	No
	8	8.2	3.9	No	No

Source: LSA Associates, Inc., July 2004.

[1] Includes ambient one-hour concentration of 5.9 ppm and ambient 8-hour concentration of 2.3 ppm. Measured at the 700 E. Canon Perdido, Santa Barbara, CA, AQ Station (Santa Barbara County).

Table 5.F shows that, in the year 2013 project completion year scenario, none of the 11 intersections analyzed would exceed either the one-hour or the eight-hour CO concentration federal and State standards. The lower overall CO concentrations, even though higher traffic volumes are anticipated, are generally due to lower future vehicular emissions from advanced technology and lower ambient CO levels in the future. The proposed project would contribute at most a 0.1 ppm increase to the one-hour and eight-hour CO concentrations at these intersections. ***The proposed project would not have a significant project-specific CO impact on local air quality, and no mitigation measures would be required.***

➢ Stationary and Mobile Source Emission Impacts (Project Long-Term)

The proposed hospital reconstruction would involve changes in stationary source equipment and increased vehicle trips. The stationary source emissions from the hospital uses would come from the consumption of natural gas. Based on the traffic study prepared for this project (LSA, July 2004), implementation of the proposed project would increase daily trips from 6,123 to 7,544.

Long-term operational emissions associated with the hospital, including both stationary sources and vehicle emissions were calculated with the URBEMIS 2002 model, with results summarized in Table 5.G. All these results are based on emission factors for year 2004.

Emissions of Nitrogen Oxides ($NO_{X)}$ from the hospital stationary source operations and vehicle emissions are projected to increase from 176 to 217 lbs per day, resulting in a net increase of 41 lbs per day, which exceeds the SBCAPCD impact significance threshold of 25 lbs per day for vehicle-related emissions. Similarly, Reactive Organic Compounds (ROC) emissions increase from 132 to 163 lbs per day for a net increase of 31 lbs per day, exceeding the impact significance threshold of 25 lbs per day. ***Project-related long-term air quality impacts of ROC and NO_X would be significant.***

Implementation of PF 5-1 (Green Building), PS-4 (LEED Recommended Measure), AQ-1 (California Energy Commission energy conservation measures), AQ-2 (Stationary Source Permits), and AQ-14 (Architectural Coding Emissions) could potentially reduce on-site stationary source emissions, but by an unknown amount. The effectiveness of transportation demand management measures (PF 13-5, PF 5-2, and other Transportation Mitigation Measures, such as TRF-3 [Parking Cash-Out Program]) in reducing vehicle trips cannot be assured. There are no other feasible project-specific mitigation measures identified to reduce the vehicle emissions of ROC and NO_X to below the SBCAPCD emissions thresholds. ***The proposed project residual air quality impact from ROC and NO_X emissions would be significant and unavoidable.***

➢ Diesel Toxics Impacts (Project Long-Term)

The following discussion of diesel toxics evaluates two issues: (1) the general health risks of air toxics and the contribution of diesel trucks to those risks; and (2) the proposed project's potential air toxics impact or health risk from diesel toxics.

Very small particles suspended in air can penetrate deep into the lungs during respiration, contributing to a range of health problems. Exhaust from diesel engines is a major source of these airborne particles. California's Office of Environmental Health Hazard Assessment (OEHHA) has determined that long-term exposure to diesel exhaust particulate poses the highest cancer risk of any toxic air contaminant it has evaluated. However, improvements to

TABLE 5.F: ESTIMATED COMPLETION YEAR (2013) CO CONCENTRATIONS[1]

Intersection	Receptor Distance to Road Centerline (Meters)	Project Related Increase 1-hr/8-hr (ppm)	Without/With Project One-Hour CO Concentration (ppm)	Without/With Project Eight-Hour CO Concentration (ppm)	Exceeds State Standards	
					1-Hr	8-Hr
Junipero St. & Bath St.	8 / 8	0.1 / 0.1	6.2 / 6.3	2.5 / 2.6	No	No
	8 / 8	0.1 / 0.1	6.1 / 6.2	2.4 / 2.5	No	No
	8 / 8	0.1 / 0.1	6.1 / 6.2	2.4 / 2.5	No	No
	8 / 8	0.1 / 0.1	6.1 / 6.2	2.4 / 2.5	No	No
Junipero St. & Castillo St.	8 / 8	0.1 / 0.1	6.1 / 6.2	2.4 / 2.5	No	No
	8 / 8	0.1 / 0.1	6.1 / 6.2	2.4 / 2.5	No	No
	8 / 8	0.1 / 0.1	6.1 / 6.2	2.4 / 2.5	No	No
	8 / 8	0.1 / 0.1	6.1 / 6.2	2.4 / 2.5	No	No
Junipero St. & Oak Park Ln.	8 / 8	0.1 / 0.1	6.1 / 6.2	2.4 / 2.5	No	No
	8 / 8	0.1 / 0.1	6.1 / 6.2	2.4 / 2.5	No	No
	8 / 8	0.1 / 0.1	6.1 / 6.2	2.4 / 2.5	No	No
	8 / 8	0.1 / 0.1	6.1 / 6.2	2.4 / 2.5	No	No
Nogales Ave. & De La Vina St.	10 / 10	0.0 / 0.0	6.3 / 6.3	2.6 / 2.6	No	No
	10 / 10	0.0 / 0.0	6.3 / 6.3	2.6 / 2.6	No	No
	10 / 10	0.0 / 0.0	6.3 / 6.3	2.6 / 2.6	No	No
	10 / 10	0.0 / 0.0	6.3 / 6.3	2.6 / 2.6	No	No
Pueblo St. & De La Vina St.	8 / 8	0.0 / 0.0	6.4 / 6.4	2.7 / 2.7	No	No
	8 / 8	0.0 / 0.0	6.4 / 6.4	2.7 / 2.7	No	No
	8 / 8	0.0 / 0.0	6.4 / 6.4	2.7 / 2.7	No	No
	8 / 8	0.0 / 0.0	6.4 / 6.4	2.7 / 2.7	No	No
Pueblo St. & Bath St.	8 / 8	0.1 / 0.1	6.2 / 6.3	2.5 / 2.6	No	No
	8 / 8	0.1 / 0.1	6.2 / 6.3	2.5 / 2.6	No	No
	8 / 8	0.1 / 0.1	6.2 / 6.3	2.5 / 2.6	No	No
	8 / 8	0.1 / 0.1	6.2 / 6.3	2.5 / 2.6	No	No
Pueblo St. & Castillo St.	8 / 8	0.1 / 0.1	6.2 / 6.3	2.5 / 2.6	No	No
	8 / 8	0.0 / 0.0	6.2 / 6.2	2.5 / 2.5	No	No
	8 / 8	0.0 / 0.0	6.2 / 6.2	2.5 / 2.5	No	No
	8 / 8	0.0 / 0.0	6.2 / 6.2	2.5 / 2.5	No	No
Pueblo St. & Oak Park Ln.	8 / 8	0.0 / 0.0	6.2 / 6.2	2.5 / 2.5	No	No
	8 / 8	0.0 / 0.0	6.2 / 6.2	2.5 / 2.5	No	No
	8 / 8	0.1 / 0.1	6.1 / 6.2	2.4 / 2.5	No	No
	8 / 8	0.1 / 0.1	6.1 / 6.2	2.4 / 2.5	No	No
Mission St. & De La Vina St.	10 / 10	0.0 / 0.0	7.0 / 7.0	3.1 / 3.1	No	No
	10 / 10	0.0 / 0.0	7.0 / 7.0	3.1 / 3.1	No	No
	10 / 10	0.0 / 0.0	6.9 / 6.9	3.0 / 3.0	No	No
	10 / 10	0.0 / 0.0	6.9 / 6.9	3.0 / 3.0	No	No
Mission St. & Bath St.	14 / 14	0.0 / 0.0	7.1 / 7.1	3.1 / 3.1	No	No
	12 / 12	0.0 / 0.0	7.1 / 7.1	3.1 / 3.1	No	No
	12 / 12	0.0 / 0.0	7.0 / 7.0	3.1 / 3.1	No	No
	10 / 10	0.0 / 0.0	7.0 / 7.0	3.1 / 3.1	No	No
Mission St. & Castillo St.	10 / 10	0.0 / 0.0	7.3 / 7.3	3.3 / 3.3	No	No
	8 / 10	0.1 / 0.1	7.2 / 7.3	3.2 / 3.3	No	No
	8 / 8	0.0 / 0.0	7.2 / 7.2	3.2 / 3.2	No	No
	8 / 8	0.0 / 0.0	7.2 / 7.2	3.2 / 3.2	No	No

Source: LSA Associates, Inc., July 2004.

[1] Includes ambient one-hour concentration of 5.9 ppm and ambient 8-hour concentration of 2.3 ppm. Measured at the 700 E. Canon Perdido, Santa Barbara, CA, AQ Station (Santa Barbara County).

Table 5.G: SB Cottage Hospital Vehicle-Related Operational Emissions

Source	Pollutants, lbs/day		
	ROC	NO_X	PM_{10}
Existing vehicle-related emissions	115	157	98
Reconstruction vehicle-related emissions	141	194	120
Net Vehicle-Related Project Emissions Increase	**26**	**37**	**22**
SBCAPCD Threshold	**25**	**25**	**80**
Exceed SBCAPCD Threshold?	**Yes**	**Yes**	**No**
Significant Air Quality Impact?	**Yes**	**Yes**	**No**
Existing stationary source emissions	0.04	0.53	0
Total existing project emissions	115	158	98
Reconstruction stationary source emissions	0.05	0.66	0
Total reconstruction project emissions	141	195	120
Net Total Project Emissions Increase	**26**	**37**	**22**
SBCAPCD Threshold	**240**	**240**	**80**
Exceed SBCAPCD Threshold?	**No**	**No**	**No**
Significant Air Quality Impact?	**No**	**No**	**No**

Source: LSA Associates, Inc., July 2004.

diesel fuel and diesel engines have already reduced emissions of some of the pollutants associated with diesel exhaust. The ARB has developed a Diesel Risk Reduction Plan which, when fully implemented, will result in a 75 percent reduction in particle emissions from diesel equipment by 2010 (compared to 2000 levels) and an 85 percent reduction by 2020.

The diesel toxics of concern are a portion of the PM_{10} emissions from diesel-powered vehicles. As described above and shown in Table 5.G, operation of the proposed hospital would generate PM_{10} emissions from diesel-powered equipment exhaust. The carcinogenic and chronic health risks to nearby sensitive receptors would be less than their respective thresholds of 10 in a million and the index of 1.0, even assuming the worst case that all the PM_{10} shown above is diesel exhaust particulate. ***Long-term project operations and vehicle trips would not cause a significant health risk from diesel exhaust in the project vicinity.***

Even though long-term sources of diesel exhaust would not pose a significant health risk, it is recommended that all feasible measures to minimize diesel exhaust be implemented by all owners and operators of equipment related to the project. As such, the following procedures would further reduce diesel exhaust emissions.

Owners/operators of diesel-powered vehicles should turn off the engine when the vehicle is not in motion and follow applicable idling restrictions. They should keep vehicles well tuned and maintained, retrofit engines with pollution control devices and consider purchasing trucks and buses that meet new EPA standards ahead of schedule. To reduce pollution from existing trucks and buses, vehicle owners should use ultra-low sulfur diesel fuel in combination with pollution control equipment such as particulate matter filters. Although ultra-low sulfur diesel fuel is not required until 2006, it is currently available. In some cases, this approach could reduce particulate matter emissions by more than 90 percent.

A typical heavy-duty truck or bus would burn approximately one gallon of diesel fuel for each hour it idles, generating significant amounts of pollution, wasting fuel, and causing excessive engine wear. Instead of idling, vehicle owners could purchase small generators or auxiliary power units specifically designed for trucks and buses that provide heat, air conditioning, and/or power while a vehicle is not in motion. These devices substantially reduce the fuel consumed and emissions generated during long-duration idling.

Mitigation Measures AQ-12 and AQ-13 in Section 5.7.2, Project Construction Mitigation Measures, are recommended to reduce construction emissions. If implemented on any long-term use of diesel-powered equipment these conditions would reduce those emissions. Therefore, Recommended Mitigation Measure AQ-15 is provided below.

5.6.2 AIR QUALITY MITIGATION MEASURES (PROJECT LONG-TERM)

AQ-1 Energy Conservation Features. The proposed project shall comply with Title 24 of the California Code of Regulations established by the California Energy Commission regarding energy conservation standards. The project applicant shall incorporate the following in building plans, unless demonstrated to City Building Division that any such features are not feasible:

- Solar or low-emission water heaters used with combined space/water heater units.
- Double-paned glass or window treatment for energy conservation used in all exterior windows.

See also PF-5-1 regarding proposed energy-conserving techniques to be incorporated into the project.

AQ-2 Stationary Source Permits. Required operational permits for stationary emission sources, including boilers and sterilizers, shall be obtained by the applicant from SBCAPCD prior to occupancy permit issuance for the Central Plan or other applicable structures.

See also Transportation Mitigation for Transportation Demand Management, which includes measures that may reduce project-related vehicle trips, and associated air pollutant emissions.

➢ Recommended Mitigation Measure

AQ-15 Diesel Vehicle Emissions Control. Operators of diesel-powered vehicles should turn off the engine after five minutes when the vehicle is not in motion, keep the vehicles well-tuned and maintained, and retrofit engines with pollution control devices. Consideration should be given to purchasing trucks and buses that meet new EPA standards ahead of schedule. Vehicle owners should use ultra low-sulfur fuel in combination with pollution control equipment such as particulate matter filters.

5.6.3 SPECIFIC PLAN LONG-TERM AIR QUALITY IMPACTS

➢ Microscale CO Hot Spot Impacts (Specific Plan Long-Term)

Vehicular trips associated with the build-out of potential future development allowed by the proposed Specific Plan (SP-8)would incrementally contribute to congestion at intersections and along roadway segments in the project vicinity and thus to carbon monoxide emissions. While this potential future development could generate minor increases in traffic levels (a 1 to 2 percent increase), the analysis for the proposed project above shows that all intersections in the vicinity of the project are well below impact significance thresholds for carbon monoxide. ***The Specific Plan would also have a less than significant impact on local air quality for CO, and no mitigation measures would be required.***

➢ Stationary Source and Mobile Emission Impacts (Specific Plan Long-Term)

Based on the traffic study prepared for the proposed project (LSA, July 2004), potential future additional development under the Specific Plan would generate minor additional increases in traffic volumes beyond that identified for the current hospital development proposal, and the additional future phase of development would be expected to include some additional stationary source equipment. The air quality impacts of from build-out of the entire Specific Plan, including both current project and potential future phase, would be slightly greater than for the current project as identified in the above analysis (Table 5.G). ***Build-out of the Specific Plan would result in significant and unavoidable long-term air quality impacts associated with ROC and NO_X emissions from stationary and mobile sources.*** As discussed above, project features and mitigation measures providing energy conservation and transportation demand management could reduce air pollutant emissions but could not be assured to mitigation the impact to a less than significant level.

➢ Diesel Toxics Impacts (Specific Plan Long-Term)

Potential future development allowed under the Specific Plan could generate minor increases in traffic volumes (a 1 to 2 percent increase). This slight increase would not significantly increase diesel toxic emissions. ***Full development of SP-8 would not cause a significant health risk from diesel exhaust in the project vicinity in the long-term.*** Voluntary actions to reduce diesel exhaust emissions are recommended in the project-specific diesel toxics analysis.

5.6.4 AIR QUALITY MITIGATION MEASURES (SPECIFIC PLAN LONG-TERM)

Identified air quality mitigation measures would be applied to future phase development under the Specific Plan.

Implementation of Mitigation Measure AQ-1 (California Energy Commission energy conservation measures), and PF 5-1 (Green Building) could partially reduce on-site stationary source emissions.

Transportation demand management measures (PF 13-5, Transportation mitigation measures, and PF 5-2) could partially reduce vehicle trips and associated vehicle exhaust emissions.

5.6.5 CUMULATIVE LONG-TERM AIR QUALITY IMPACTS

In order to accurately assess the environmental impacts as a result of new or renovated developments, environmental pollution and population growth are projected for future scenarios in the City's General Plan, which includes all projects within the City, and the SBCAPCD's CAP, which includes all projects within the Basin.

The proposed project is a hospital reconstruction/renovation project. There would be no substantial population growth associated with the proposed project. The project is proposed to accommodate the need for hospital use as population grows with the City's General Plan projections. The project is consistent with the adopted CAP. The CO hot spots analysis includes traffic increases due to this proposed project combined with other known projects in the vicinity, as shown on Figure 13.7 in the Transportation chapter of this EIR.

The significant project-specific impact associated with long-term NO_X and ROC emissions would also constitute a considerable contribution to long-term cumulative impacts from the project with other reasonably foreseeable future projects. Energy conservation mitigation would reduce stationary source emissions, but no mitigation is identified to reduce vehicle emissions. ***The project contribution to cumulative air quality (NO_X and ROC) impacts is significant and unavoidable.***

5.7 AIR QUALITY - TEMPORARY CONSTRUCTION IMPACTS

Air quality impacts during demolition and construction of the proposed project result from demolition and soil disturbance and equipment exhaust. Major sources of air pollutant emissions during demolition, site preparation, grading, and construction include: (1) exhaust emissions from construction vehicles; (2) fugitive dust generated by construction vehicles and equipment traveling over exposed surfaces; (3) demolition activities; and (4) soil disturbances

from grading and backfilling. Construction emissions are of particular concern to sensitive receptors. Refer to the Land Use Chapter of this EIR and Figure 4.3 for information on sensitive receptors near the project. See Hazards Chapter for additional analysis of hazardous materials issues during demolition and site preparation.

5.7.1 PROJECT CONSTRUCTION AIR QUALITY IMPACTS

Demolition, reconstruction, and remodeling would be phased over approximately nine years, estimated to occur through the year 2013. The hospital is proposed to remain operational during the entire construction duration. This analysis evaluates construction and vehicle exhaust emissions and diesel toxics, fugitive dust and particulate matter associated with site preparation, grading and construction.

➢ Demolition, Vehicle Exhaust, and Dust Impacts (Project Construction)

Over the course of the entire construction period, the proposed project would include the demolition of 270,705 square feet of existing structures, including 233,170 square feet of the existing main hospital building and Eye Center and 37,535 square feet of structures located on the adjacent block bounded by Oak Park Lane and Junipero, Castillo, and Pueblo Streets. Preliminary earthwork quantities for the proposed project are143,600 cubic yards (cy) cut and 60,500 cy fill.

URBEMIS 2002, issued by the CARB, was used to model emissions from these demolitions and construction activities. See Appendix B, "URBEMIS 2002 Modeling," for modeling details. This model includes both exhaust and fugitive emissions from the entire construction process. It includes emissions from not only the major activities of demolition, grading and construction, but also worker commuting, architectural coatings, etc. Note that the project plan to provide off-site parking for construction workers, with a shuttle bus provided to transport workers (PF 5-3), would reduce these emissions shown below in Table 5.H, which lists the resulting emissions associated with construction activities for the proposed project by year. Construction-related emissions during any year would not exceed annual guidelines for any criteria pollutant. The proposed project would generate pollutants from exhaust and fugitive dust in amounts less than the SBCAPCD guidelines. ***Construction emissions from exhaust and fugitive dust would be adverse, but less than significant.***

TABLE 5.H: CONSTRUCTION EMISSIONS—EQUIPMENT EXHAUST AND FUGITIVE DUST

Year	Phase	Months of Activity		Pollutants (tons/year)			
		Demolition	Grading & Construction	ROC	NO_X	SO_X	PM_{10}
2005	1A, 1B, 2A, 2B, 3	11	11	1.9	14	0.0	0.7
2006	2A, 2B, 3, 4	12	12	1.9	14	0.0	0.6
2007	2A, 4	4	12	1.9	13	0.0	0.6
2008	4	4	12	1.9	13	0.0	0.6
2009	4	4	12	1.9	12	0.0	0.5
2010	5A, 5B	8	12	1.9	12	0.0	0.5
2011	5A, 5B, 6	4	12	1.9	12	0.0	0.5
2012	6, 8	0	12	1.9	12	0.0	0.5
2013	8	0	12	1.9	12	0.0	0.5
SBCAPCD Annual Guidelines (Rule 202F)				**25**	**25**	**25**	**25**

Source: LSA Associates, Inc., July 2004.

The construction emissions guidelines would not be exceeded by the project, however implementation of the dust suppression techniques listed below[1] (Mitigation Measures AQ-3 through AQ-11) is recommended in accordance with SCAPCD and City policy to reduce fugitive dust generation (and the PM_{10} component). Compliance with these measures would minimize potential effects on nearby sensitive receptors including residents, hospital patients and children at both the existing and proposed child care centers. Similarly, Mitigation Measures AQ-12 and AQ-13 are recommended to reduce equipment emissions, and AQ-14 would recognize Air District rules for architectural coatings to reduce emissions.

➢ Diesel Toxics Impacts (Project Construction)

As is shown in Table 5.H above, it is expected that construction of the proposed project would generate PM_{10} emissions below District guidelines. Using the OEHHA technique for estimating potential health risks, as described in Appendix I of the Air Toxics Hot Spots Program Risk Assessment Guidelines, (OEHHA, August 2003), and detailed in Appendix B of this EIR, the carcinogenic and chronic health risks to nearby sensitive receptors would be less than the respective impact significance thresholds of 10 in a million and the index of 1.0, even assuming the worst case that 10 percent of the PM_{10} shown above is diesel exhaust particulate. ***Project construction activities would not cause a significant health risk from diesel exhaust in the project vicinity.*** No mitigation measures are required; however, the practices identified under the long-term diesel discussion and Recommended Mitigation Measure AQ-15 are recommended to reduce emissions.

[1] From both the *Santa Barbara Cottage Hospital Seismic Compliance And Modernization Plan*, July 2003, Section 8.0 Environmental Considerations/Completed Site Studies-Summary of Conclusions and Recommendations and the *Scope and Content of Air Quality Sections in Environmental Documents*, June 2004, SPCAPCD, Section 5, Mitigation Measures and Residual Impacts.

5.7.2 AIR QUALITY MITIGATION MEASURES (PROJECT CONSTRUCTION)

Project-related construction activities would not generate emissions sufficient to exceed the impact significance guidelines stated herein, and no mitigation measures are required to reduce impacts to a less than significant level. However, the following Mitigation Measures AQ-3 through AQ-11 are recommended to be implemented per CAP and City policy (*Scope and Content of Air Quality Sections in Environmental Documents* [SBCAPCD 2004] to reduce fugitive dust emissions. Measures AQ-12 and AQ-13 are ozone precursor control measures also from the *Scope and Content of Air Quality Sections in Environmental Documents* (SBCAPCD 2004) to reduce NO_X emissions from construction equipment. Measure AQ-14 recognizes that application of architectural coatings needs to occur in compliance with SBCAPCD regulations to minimize air pollutant emissions. All measures would be implemented by the project contractor.

AQ-3 Dust Mitigation - Site Watering. Water trucks or sprinkler systems shall be used in the late morning, during clearing, grading, earthmoving or transportation of cut and fill materials, and after work is completed for the day to prevent dust from leaving the project site and to create a crust after each day's activities cease. Reclaimed water shall be used if available. Frequency of construction site watering shall be increased when wind speeds exceed 15 miles per hour (mph) to reduce PM_{10} emissions.

AQ-4 Dust Mitigation - Speed Limit. An onsite speed limit of 15 miles per hour shall be imposed for operation of construction vehicles on dirt surfaces.

AQ-5 Dust Mitigation - Gravel Pad/Street Sweepings. Gravel pads shall be installed at all access points prior to beginning construction to prevent tracking of mud onto public roads. Streets adjacent to the project site shall be inspected daily for accumulation of mud, dirt, or silt on streets. Affected road segments shall be cleaned daily.

AQ-6 Dust Mitigation - Stockpile Treatment. All stockpiled soil materials shall be watered regularly as needed to inhibit dust generation. Excavated material and stockpiled soil shall be covered if not being used within the next 48 hours.

AQ-7 Dust Mitigation - Grading Suspension. Grading and scraping operations will be suspended when wind speeds exceed 20 mph to reduce PM_{10} emissions.

AQ-8 Dust Mitigation - Site Stabilization. Disturbed areas will be permanently stabilized with landscaping ground cover or site improvements as soon as practicable following the completion of earthwork.

AQ-9 Dust Mitigation - Truck Covering. All trucks hauling dirt, sand, soil, or other loose materials are to be covered or should maintain at least two feet of freeboard in accordance with the requirements of California Vehicle Code (CVC) section 23114 (freeboard means vertical space between the top of the load and top of the trailer).

AQ-10 Dust Mitigation - Monitor. The contractor shall designate a person or persons to monitor the dust control program and to order increased watering, as necessary, to prevent transport of dust off site. Their duties shall include holiday and weekend periods when work may not be in progress. The name and telephone number of such persons shall be provided to the City and SBCAPCD prior to permit clearance for grading.

AQ-11 Dust Mitigation - Plan Specifications. Prior to grading permit clearance, the applicant shall include all dust control requirements as notes on construction grading and building plans.

AQ-12 Construction Equipment Emissions. Heavy-duty diesel-powered construction equipment manufactured after 1996 (with federally mandated "clean" diesel engines) shall be utilized wherever feasible. The engine size of construction equipment shall be the minimum practical size. Construction equipment shall be maintained in tune per the manufacturers' specifications. Construction equipment operating onsite shall be equipped with two to four degree engine timing retard or precombustion chamber engines. Catalytic converters shall be installed on gasoline-powered equipment, if feasible. Diesel catalytic converters, diesel oxidation catalysts and diesel particulate filters as certified and/or verified by EPA or California shall be installed, if available. Ultra low-sulfur diesel fuel shall be used. Diesel engines should be turned off when not in motion and operators shall follow applicable idling restrictions. Vehicles shall be kept well-tuned and maintained. Diesel powered equipment will be replaced by electric equipment whenever feasible.

AQ-13 Construction Equipment Operations. The number of construction equipment operating simultaneously shall be minimized through efficient management practices to ensure that the smallest practical number of equipment is operating at any one time. The Construction Contractor shall ensure that work crews shut off equipment when not in use.

AQ-14 Architectural Coating Emissions. Compliance with the SBCAPCD Rules and Regulations on the use of architectural coatings shall be implemented as applicable, including using pre-coated/natural colored building materials, using water-based or low-VOC coating, and using coating transfer or spray equipment with high transfer efficiency.

See also Transportation Section mitigation measures to reduce construction traffic during peak-hour traffic periods.

5.7.3 SPECIFIC PLAN CONSTRUCTION AIR QUALITY IMPACTS

Potential future development allowable under the proposed Specific Plan (SP-8) would generate impacts from demolition, reconstruction, and remodeling similar to the impacts of the proposed project discussed previously.

➢ Vehicle Exhaust and Fugitive Dust Impacts (Specific Plan Construction)

Potential development under SP-8 would involve the demolition of approximately 370,000 square feet (270,000 square feet for the proposed project and approximately 100,000 square feet of additional existing building space for potential future reconstruction). Future reconstruction work as allowed under the SP-8 could require additional preliminary earthwork quantities of approximately 143,600 cubic yards (cy) cut and 60,500 cy fill.

URBEMIS 2002 was used to model emissions from these potential construction activities. See Appendix B in this EIR, "URBEMIS 2002 Modeling," for modeling details. It is assumed that any future development/reconstruction work within SP-8 would require a plan to provide off-site parking for construction workers, with a shuttle bus provided to transport workers as with the proposed project, which would reduce vehicle emissions. Table 5.I lists the resulting emissions associated with construction activities for the Specific Plan by year. Construction-related emissions from exhaust and fugitive dust are shown to not exceed annual SBCAPCD

guidelines for any criteria pollutant during any year. ***Construction-related pollutants from development of SP-8 would be adverse but less than significant.***

TABLE 5.I: CONSTRUCTION EMISSIONS OF POTENTIAL FUTURE DEVELOPMENT

Year	Months of Activity		Pollutants (tons/year)			
	Demolition	Grading & Construction	ROC	NO_X	SO_X	PM_{10}
2005–2013	See Table 5.H above					
2013	2	12	1.9	12	0.0	0.5
2014	0	12	1.9	13	0.0	0.6
2015	1	12	1.9	12	0.0	0.5
2016	0	12	1.9	12	0.0	0.5
2017	0	12	1.9	12	0.0	0.5
2018	0	12	1.9	12	0.0	0.5
2019	0	8	1.3	8.0	0.0	0.3
SBCAPCD Annual Guideline			**25**	**25**	**25**	**25**

Source: LSA Associates, Inc., July 2004.

Although the pollutant guidelines would not be exceeded, implementation of the dust suppression techniques listed above (Mitigation Measures AQ-3 through AQ-11) are recommended to reduce fugitive dust generation (and the PM_{10} component) in accordance with SBCAPCD and City policy. Compliance with these measures would reduce impacts on nearby sensitive receptors including residents, hospital patients and children at the child care center. Mitigation Measures AQ-12 and AQ-13 are recommended to reduce equipment exhaust emissions. Mitigation Measure AQ-14 is recommended to reduce emissions from architectural coatings.

➢ Diesel Toxics Impacts (Specific Plan Construction)

While potential future development allowed by the proposed Specific Plan would result in up to five additional years of construction, impacts from diesel toxics would be essentially the same as the proposed project above. A 10-year period of exposure spread over a 70-year lifetime is not significantly different than a 15-year period of exposure. ***Diesel impacts associated with Specific Plan construction would be less than significant.*** No mitigation measures are required; however, Mitigation Measures AQ-12 and AQ-13 are recommended to reduce emissions.

5.7.4 AIR QUALITY MITIGATION MEASURES (SPECIFIC PLAN CONSTRUCTION)

Mitigation Measures AQ-3 through AQ-14 are recommended to reduce potential construction emissions from full build out of SP-8.

5.7.5 CUMULATIVE CONSTRUCTION AIR QUALITY IMPACTS

Based on District and City evaluation criteria, cumulative construction-related air quality emissions from construction projects occurring within the Air Basin are not significant. Project-specific air quality impacts and impacts from build-out of the entire specific plan area are identified as less than significant, and mitigation measures are identified to minimize construction dust, particulates, and equipment emissions. It cannot be known if or when other construction projects in the vicinity would be built. Other construction projects would also be subject to standard mitigation measures consistent with SBCAPCD and City policy to minimize incremental contributions to cumulative air quality impacts. ***The project and specific plan contribution to cumulative construction air quality impacts would be less than significant.***

5.8 AIR QUALITY - SUMMARY OF IMPACTS

➢ Long-Term Air Quality Impacts

The proposed project long-term operations would result in daily vehicular and stationary source emissions of ROC and NO_X that would exceed the daily emissions guidelines established by the SBCAPCD, a ***significant and unavoidable project-specific and cumulative impact***. No feasible mitigation measures have been identified that could reduce the operational emissions to below the SBCAPCD emissions guidelines. Implementation of AQ-1, California Energy Commission Energy Conservation Measures, and AQ-2 could potentially lessen stationary operational emissions. Long-term impacts associated with carbon monoxide hot spots and diesel emissions would be ***less than significant***. However, Recommended Mitigation Measure AQ-15 has been included to help reduce diesel emissions from vehicles used in the long-term project operations.

➢ Construction Air Quality Impacts

Project-specific, specific plan, and cumulative construction air quality impacts would be ***less than significant***. Recommended mitigation measures have been identified that would minimize construction-related emissions associated with dust, equipment exhaust, and architectural coating application.

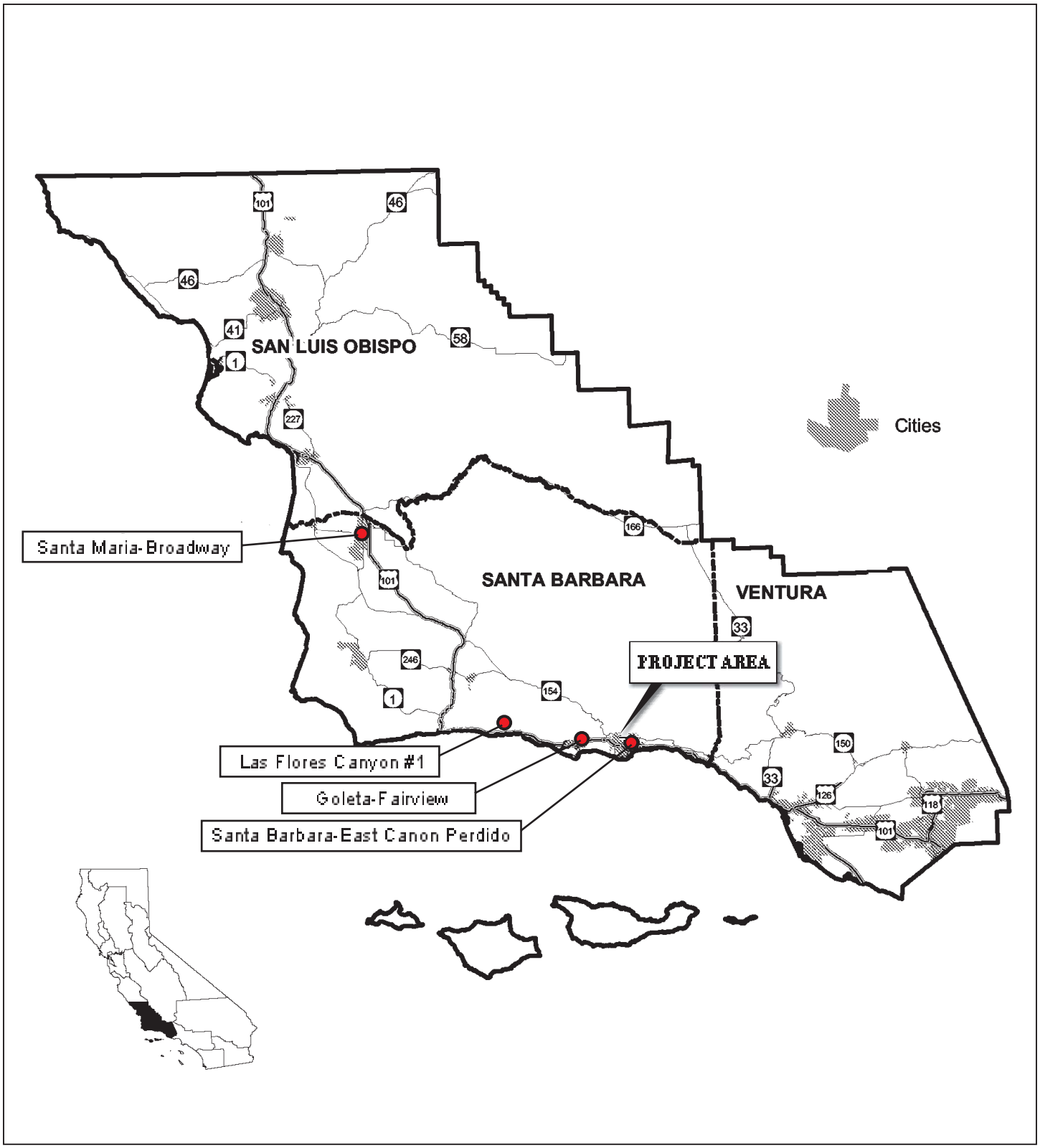

FIGURE 5.1

Cottage Hospital
South Central Coast Air Basin