4.2 AIR QUALITY

4.2.1 Setting

a. Local Climate and Meteorology. The semi-permanent high-pressure system west of the Pacific coast strongly influences California's weather. It creates sunny skies throughout the summer and influences the pathway and occurrence of low pressure weather systems that bring rainfall to the area during October through April. As a result, wintertime temperatures at the university site are generally mild, while summers are warm and dry. During the day, the predominant wind direction is from the west and southwest, and at night, wind direction is from the north.

These predominant wind patterns are occasionally broken during the winter by storms coming from the north and northwest and by episodic Santa Ana winds. Santa Ana winds are strong northerly to northeasterly winds that originate from high-pressure areas centered over the desert of the Great Basin. These winds are usually warm, very dry, and often full of dust. They are particularly strong in the mountain passes and at the mouths of canyons.

Daytime summer temperatures in the area average from the high 70s to the high 80s. Nighttime low temperatures during the summer are typically in the high 50s to low 60s, while the winter high temperature tends to be in the 60s. Winter low temperatures are in the 40s. Annual average rainfall in Camarillo ranges from about 14 to 16 inches.

Two types of temperature inversions (warmer air on top of colder air) are created in the Ventura County area: subsidence and radiational (surface). The subsidence inversion is a regional effect created by the Pacific high in which air is heated as it is compressed when it flows from the high pressure area to the low pressure areas inland. This type of inversion generally forms at about 1,000 to 2,000 feet and can occur throughout the year, but is most evident during the summer months. Surface inversions are formed by the more rapid cooling of air near the ground at night, especially during winter. This type of inversion is typically lower and is generally accompanied by stable air. Both types of inversions limit the dispersal of air pollutants within the regional airshed. The primary air pollutant of concern during the subsidence inversions is ozone, while carbon monoxide (CO) and nitrogen oxides (NO_x) are of greatest concern during winter inversions.

b. Current Ambient Air Quality. Federal and state standards have been established for ozone, CO, nitrogen dioxide (NO_2), sulfur dioxide (SO_2), particulates less than 10 microns in diameter (PM_{10}), and lead. California has also set standards for sulfates, hydrogen sulfide, vinyl chloride, and visibility reducing particles. The United States Environmental Protection Agency (USEPA) recently announced changes to the National Ambient Air Quality Standards for ozone and particulate matter. The federal ozone standard was lowered to 0.08 milligrams per liter (mg/l) and the averaging period was changed from one-hour to an eight-hour running average. A new particulate matter standard for 2.5 micron particulates ($PM_{2.5}$) was created in addition to the standard for 10 micron particulates (PM_{10}).

Local air pollution control districts are required to monitor air pollutant levels to ensure that air quality standards are met and, if they are not met, to develop strategies to meet the standards.

Air basins in which air pollutant standards are exceeded are referred to as "nonattainment areas." The Ventura County Air Basin, in which the project site is located, is a nonattainment area for both the federal and state standards for ozone and the state standard for PM_{10}.

The El Rio air quality monitoring station is the closest station the project site. This station measures ozone, NO_2, and PM_{10}. None of the monitoring stations within Ventura County record CO measurements. Table 4.2-1 summarizes the annual air quality data over the past three years for the local airshed. The criteria pollutants and their potential health effects are described below.

Carbon Monoxide. Carbon monoxide, a colorless, odorless, poisonous gas, is a local pollutant that in high concentrations is found only very near the source. Carbon monoxide is a by-product of fuel combustion, but is generally not a concern with typical residential stationary sources (gas water and space heaters, gas dryers) since these are required by law to be properly vented. Automobile traffic is a major source of carbon monoxide with elevated concentrations usually found only near areas of high traffic volumes. Carbon monoxide's health effects are related to its affinity for hemoglobin in the blood. At high concentrations, carbon monoxide reduces the amount of oxygen in the blood, causing heart difficulties in people with chronic diseases, reduced lung capacity and impaired mental abilities.

Ozone. Ozone is produced by a photochemical reaction (triggered by sunlight) between nitrogen oxides (NO_x) and reactive organic gases (ROG).[1] Nitrogen oxides are formed during fuel combustion while reactive organic gases are formed during combustion and evaporation of organic solvents. Because ozone requires sunlight to form, it mostly occurs in concentrations considered serious between the months of May and October. Ozone is a pungent, colorless toxic gas that can cause detrimental health effects including respiratory and eye irritation and possible changes in lung functions. Groups most sensitive to ozone include children, the elderly, persons with respiratory disorders, and people who exercise strenuously outdoors.

Nitrogen Dioxide. Nitrogen dioxide (NO_2) is a by-product of fuel combustion, with the primary source being motor vehicles and industrial boilers and furnaces. The principal form of nitrogen oxide produced by combustion is nitric oxide (NO), but NO reacts rapidly to form NO_2, creating the mixture of NO and NO_2 commonly called NO_x. Nitrogen dioxide is an acute irritant, but at typical atmospheric concentrations, it is only potentially irritating. A relationship between NO_2 and chronic pulmonary fibrosis may exist, and an increase in bronchitis in young children at concentrations below 0.3 parts per million (ppm) may occur. Nitrogen dioxide absorbs blue light and causes a reddish brown cast to the atmosphere and reduced visibility. It can also contribute to the formation of PM_{10} and acid rain.

Suspended Particulates. PM_{10} is small particulate matter measuring no more than 10 microns in diameter, while $PM_{2.5}$ is fine particulate matter measuring no more than 2.5 microns

[1] *Organic compound precursors of ozone are routinely described by a number of variations of three terms: hydrocarbons (HC), organic gases (OG), and organic compounds (OC). These terms are often modified by adjectives such as total, reactive, or volatile, and result in a rather confusing array of acronyms: HC, THC (total hydrocarbons), RHC (reactive hydrocarbons), TOG (total organic gases), ROG (reactive organic gases), TOC (total organic compounds), ROC (reactive organic compounds), and VOC (volatile organic compounds). While most of these differ in some significant way from a chemical perspective, from an air quality perspective two groups are important: non-photochemically reactive in the lower atmosphere, or photochemically reactive in the lower atmosphere (HC, RHC, ROG, ROC, and VOC). VCAPCD uses the abbreviations ROG and ROC interchangeably to denote organic precursors.*

in diameter. Suspended particulates are mostly dust particles, nitrates, and sulfates. Suspended particulates are a by-product of fuel combustion and wind erosion of soil and unpaved roads, and are directly introduced into the atmosphere through these processes. Suspended particulates are also created in the atmosphere through chemical reactions. The characteristics, sources, and potential health effects associated with the small particulates (those between 2.5 and 10 microns in diameter) and fine particulates ($PM_{2.5}$) can be very different. The small particulates generally come from windblown dust and dust kicked up from mobile sources. The fine particulates are generally associated with combustion processes as well as being formed in the atmosphere as a secondary pollutant through chemical reactions. Fine particulate matter is more likely to penetrate deeply into the lungs and poses a serious health threat to all groups, but particularly to the elderly, children, and those with respiratory problems. More than half of the small and fine particulate matter that is inhaled into the lungs remains there, which can cause permanent lung damage. These materials can damage health by interfering with the body's mechanisms for clearing the respiratory tract or by acting as carriers of an adsorbed toxic substance.

Table 4.2-1 Ambient Air Quality Data at the El Rio Monitoring Station

Pollutant	2005	2006	2007
Ozone, ppm - maximum hourly concentration (ppm)	0.076	0.089	0.089
Number of days of state exceedance (>0.09 ppm)	0	0	0
Number of days of federal exceedance (>0.12 ppm)	0	0	0
Ozone, ppm – maximum 8 hour average	0.067	0.070	0.072
Number of days of federal 8-hour average exceedance (>0.08 ppm)	0	0	0
Carbon Monoxide – maximum 8-hour concentration (ppm)	n/a	n/a	n/a
Number of days of state 8-hour exceedance (>9 ppm)	n/a	n/a	n/a
Nitrogen Dioxide – maximum 1-hour concentration (ppm)	0.070	0.050	0.053
Number of days above state exceedances (>0.25 ppm)	0	0	0
Particulate Matter <10 microns, California maximum 24-hour average concentration in $\mu g/m^3$	54.4	119.1	248.0
Number of days of state 24-hour exceedance (>50 $\mu g/m^3$) sampled/calculated	2	4	2
Number of days of national 24-hour exceedance (>150 $\mu g/m^3$) sampled/calculated	0	0	1
Particulate Matter <2.5 microns, California maximum 24-hour average concentration in $\mu g/m^3$	35.2	29.8	39.9
Number of federal 24-hour measured days exceedance (65 $\mu g/m^3$)	0	0	1

ND = No Data
** Standard to be reduced to 20 $\mu g/m^3$ effective mid- 2003.*
*** Data history at site is insufficient to determine when high concentrations are expected.*
**** Insufficient (or no) data available to determine the value.*
Source: California Air Resources Board, Air Quality Data Statistics, http://www.arb.ca.gov/aqd/aqd.htm.

The pollutants of greatest concern in Ventura County are ozone and PM_{10}. Concentrations of PM have exceeded state standards on one or more days during each of the past three calendar years. Ozone is a secondary pollutant that is not produced directly by a source, but rather is formed by a reaction between NO_x and reactive organic compounds (ROC) in the presence of sunlight. Reductions in ozone concentrations are dependent upon reducing emissions of these precursors. The major sources of ozone precursors in Ventura County are motor vehicles and other mobile equipment, solvent use, pesticide application, the petroleum industry, and electric utilities. The major sources of PM_{10} are road dust, construction, mobile sources, and farming operations. Locally, Santa Ana winds are responsible for entraining dust and occasionally causing elevated PM_{10} levels.

c. Air Pollution Regulation. Both the federal and state governments have established ambient air quality standards for the protection of public health. The USEPA is the federal agency designated to administer air quality regulation, while the California Air Resources Board (CARB) is the state equivalent in the California Environmental Protection Agency. Local control in air quality management is provided by the CARB through county-level Air Pollution Control Districts (APCDs). The CARB has established air quality standards and is responsible for the control of mobile emission sources, while the local APCDs are responsible for enforcing standards and regulating stationary sources. The CARB has established 14 air basins statewide. The project site is located in the Ventura County Air Basin, which is under the jurisdiction of the Ventura County Air Pollution Control District (APCD).

The 2007 Ventura County Air Quality Management Plan (2007 AQMP), adopted by the Ventura County Air Pollution Control Board on May 13, 2008, presents Ventura County's strategy for attaining the federal 8-hour ozone standard as required by the federal Clean Air Act Amendments of 1990. The 2007 AQMP also presents the District's Triennial Assessment and Plan Update required by the California Clean Air Act of 1988.

The 2007 AQMP contains an attainment demonstration (photochemical modeling and weight of evidence analyses) showing that Ventura County will attain the federal 8-hour ozone standard by June 15, 2013, the deadline for serious 8-hour ozone nonattainment areas. Table 4.2-2 illustrates the current federal and state air quality standards and the attainment status of the pollutants. The 2007 AQMP also contains: a Reasonable Further Progress demonstration, a Motor Vehicle Conformity Budget for transportation conformity purposes, an emissions inventory and emission forecasts, and a local control strategy containing several new and "further study" emission control measures. The new control measures are proposed revisions to existing District rules that District staff has found practicable for Ventura County pursuant to the separate every feasible measure requirement of the California Clean Air Act. The 2007 AQMP also incorporates the California Air Resources Board's State Strategy to achieve the additional emission reductions needed for all areas of the state, including Ventura County, to attain the federal 8-hour ozone standard.

Table 4.2-2 Current Federal and State Ambient Air Quality Standards and Attainment Status

Pollutant	Federal Standard	Federal Attainment Status	California Standard	State Attainment Status
Ozone	0.08 ppm (8-hr avg)	Nonattainment	0.09 ppm (1-hr avg) 0.07 ppm (8-hr avg)*	Nonattainment
Carbon Monoxide	9.0 ppm (8-hr avg) 35.0 ppm (1-hr avg)	Unclassified/ Attainment	9.0 ppm (8-hr avg) 20.0 ppm (1-hr avg)	Attainment
Nitrogen Dioxide	0.053 ppm (annual avg)	Unclassified/ Attainment	0.18 ppm (1-hr avg)	Attainment
Respirable Particulate Matter (PM_{10})	50 $\mu g/m^3$ (annual avg) 150 $\mu g/m^3$ (24-hr avg)	Unclassified/ Attainment	20 $\mu g/m^3$ (annual avg) 50 $\mu g/m^3$ (24-hr avg)	Nonattainment
Fine Particulate Matter ($PM_{2.5}$)	15 $\mu g/m^3$ (annual avg) 35 $\mu g/m^3$ (24-hr avg)	Unclassified/ Attainment	12 $\mu g/m^3$ (annual avg)	Nonattainment

ppm = parts per million
$\mu g/m^3$ = micrograms per cubic meter
Source: California Air Resources Board, February 2, 2007.
**This concentration was approved by the California Air Resources Board on April 28, 2005 and became effective on May 17, 2006.*

d. Sensitive Receptors. Ambient air quality standards have been established to represent the levels of air quality considered sufficient, with an adequate margin of safety, to protect public health and welfare. They are designed to protect that segment of the public most susceptible to respiratory distress, such as children under 14; the elderly over 65; persons engaged in strenuous work or exercise; and people with cardiovascular and chronic respiratory diseases. The majority of sensitive receptor locations are therefore schools, hospitals, and residences.

Because the CSUCI is an institution, the entire site is considered a sensitive use. However, certain portions of the campus are considered to be more sensitive than others such as the residential halls which are located in the western portions of the South Quad. These areas are adjacent to Potrero Road and the Potrero Soccer Fields.

4.2.2 Impact Analysis and Mitigation Measures

a. Methodology and Significance Thresholds. The analysis of the proposed project's air quality impacts follows the guidance and methodologies recommended in the Ventura County APCD's *Guidelines for the Preparation of Air Quality Impact Analyses* (APCD Guidelines) (2003) and Air Quality Management Plan (2007). The *Air Quality Assessment Guidelines* recommend the use of the latest version of the URBEMIS program, which is provided by the ARB. The currently approved program is URBEMIS 2007 9.2.4. This program was used to

estimate air pollutant emissions associated with project operation as well as temporary emissions associated with project construction. Default assumptions were used to calculate operational emissions associated with the project. The estimate of vehicle trips associated with the development is from the EIR traffic study (see Section 4.12, *Traffic and Circulation*).

The site is under the jurisdiction of the Ventura County Air Quality District. CARB has established air quality standards and is responsible for the control of mobile emission sources, while the APCD is responsible for enforcing standards and regulating stationary sources. The APCD has not established significance thresholds for temporary construction emissions; however, the APCD recommends inclusion of standard dust control and additional ozone precursor control measures when project contributions are greater than 25lbs/day. The City's Threshold Guidelines defer to the APCD thresholds, and the APCD *Guidelines* state that a project's impact is significant if the project would:

- *Generate daily operational emissions exceeding 25 pounds of ROC or NO_x;*
- *Generate emissions causing an exceedance or making a substantial contribution to an exceedance of an ambient air quality standard;*
- *Be inconsistent with the Ventura County AQMP and emitting greater than two pounds of ROC or NO_x per day; or*
- *Directly or indirectly cause the existing population to exceed the population forecasts in the most recently adopted AQMP.*

Project operational impacts are considered significant if it would result or contribute to increased development above the Campus Master Plan projections.

b. Project Impacts and Mitigation Measures. The proposed Facilities Projects, as detailed in Section 2.0, *Project Description*, provide specific details to projects that have been identified and discussed previously in the 1998 EIR, 2000 SEIR, and/or 2004 SEIR. Proposed components not previously analyzed on any level are the Facilities Projects construction impacts, the potential future 370-acre open space conveyance and the new electrical substation.

09-Impact AQ-1 **Construction activities for the proposed facilities projects would emit emissions into the atmosphere with the majority of them occurring during the grading phase. However, the APCD has not developed construction-phase emission thresholds. Therefore, impacts are temporary and classified as Class III, *less than significant.***

On-site construction activity would cause temporary, short-term emissions of various air pollutants. NO_x and CO would be emitted during the operation of construction equipment, while fugitive dust (PM_{10}) would be emitted by activities that disturb the soil, such as demolition, grading and excavation. Maximum emissions are generally created during the grading phase of construction.

The greatest amount of grading is anticipated to occur on the new access road area that would include the proposed roadway, athletic fields, and parking lot. This parcel of land was previously analyzed in the 2004 SEIR. This site is relatively flat, as it is currently used for

agricultural production and no demolition of structures would be involved. The construction of the facilities would be relatively short due to the nature of the proposed facilities. Construction of such would not result in a significant amount of emissions to the construction phase as compared to the grading activities.

The URBEMIS 2007 v.9.2.4 computer air quality software was utilized to create a model projecting construction emissions that would occur from construction of the proposed facilities projects. It is anticipated that grading of this area would require up to 250,000 cubic yards of fill soil from a site approximately five miles away. It should be noted that URBEMIS defaults were used for construction activities and timing. Additionally, the model includes a phase called "Building Construction." There are no buildings being constructed by the proposed facilities projects, but rather, it refers to the minor construction of the electrical substation, lighting, and utilities. Construction of the electrical substation represents a fraction of the construction activities due to its nature. Table 4.2-3 illustrates the construction emissions estimates for the proposed project. Appendix B includes the construction air modeling data in its entirety.

Table 4.2-3 Construction Emission Estimates

	ROG	NO_x	CO	CO_2	Total PM_{10} [a]	Total $PM_{2.5}$ [a]
Totals	35.65	314.09	301.13	35,646.42	447.86	103.88

Source: URBEMIS 2007 v.9.2.4 (Appendix B)
a These totals includes watering the site 2x daily as a standard construction measure.

As illustrated in Table 4.2-3, the estimated emissions would contribute to decreased air quality on a temporary basis. It should be noted, the URBEMIS model includes watering 2 times daily for standard construction measures for dust abatement, while CSUCI construction requirements include watering 3 times daily. This would further reduce total PM_{10} and $PM_{2.5}$ generation.

The APCD considers construction emissions temporary impacts and therefore, construction emissions are less than significant. Furthermore, CSUCI includes standard mitigation measures in all of their construction contracts. Additionally, as part of the 1998 Master Plan EIR, mitigation measure AQ-1(a), Dust Control Measures, and AQ-1(b), Ozone Precursor Control Measures, would apply to the construction of the proposed facilities. Therefore, impacts related to construction emissions are less than significant.

Mitigation Measures. Mitigation measures AQ-1(a) and AQ-1(b) from the 1998 Campus Master Plan EIR includes the Ventura County APCD recommended measures to reduce air quality impacts related to construction. The proposed 2009 Facilities Projects would implement these measures. Appendix E contains a listing of all of the mitigation measures from the previous EIRs.

Significance after Mitigation. Implementation of the already adopted mitigation measures would ensure temporary construction emissions are further reduced.

09-Impact AQ-2 Development of the proposed facilities are consistent with the adopted Campus Master Plans and would not

result in growth of the established FTES, resulting in increased operational emissions. Therefore, operational air quality impacts are Class III, *less than significant*.

The proposed project would construct facilities identified in the Campus Master Plan. These facilities in nature are not growth inducing. The potential future open space conveyance is the only component of the proposed facilities projects which may result in operational impacts due to the traffic generated by the use. However, the trip generation expected (14 average daily trips as indicated in Section 4.7 Transportation/Traffic) would not result in operational impacts to air quality due to the nature of the area proposed, and due to the fact that the type and intensity of use would remain essentially unchanged from its current Ventura County ownership. The facilities and potential future conveyance area would not result in additional FTES. The proposed facilities and potential future conveyance area would serve the previously anticipated buildout population. Operational air quality impacts were originally analyzed in the 1998 Campus Master Plan and identified mitigation measures to reduce impacts. Less than significant operational impacts would occur from implementation of the proposed facilities projects.

Mitigation Measures. None required.

Significance after Mitigation. Impacts are less than significant without mitigation.

c. Cumulative Impacts. The air basin is currently in non-attainment for the state PM_{10} standard and the state and federal ozone standard. The proposed projects, in combination with pending and approved development on the CSUCI campus and elsewhere in Ventura County, as identified in Table 3-1, could contribute to the cumulative degradation of regional air quality. However, the projects included in the cumulative development scenario do not include components that would result in population growth or increase the FTES of the CSUCI campus. Therefore, the cumulative projects would not contribute to population that would exceed Ventura County AQMP population forecasts. Therefore, cumulative projects would not hinder progress towards attainment of standards. For that reason, cumulative air quality impacts are considered less than significant.