4.2 AIR QUALITY

4.2.1 Setting

a. Local Climate and Meteorology. Ambient air quality is commonly determined by climatological conditions, the area's topography, and the quantity and type of pollutants released. The proposed project is located in the North Central Coast Air Basin (NCCAB), which covers an area of 5,159 square miles along the California coast. The northwest sector of the NCCAB is dominated by the Santa Cruz Mountains. The Diablo Range marks the northeastern boundary. The Santa Clara Valley extends into the northeastern tip of the basin. Further south, the Santa Clara Valley becomes the San Benito Valley, which runs northwest-southeast, with the Gabilan Range as its western boundary. To the west of the Gabilan Range is the Salinas Valley, which extends from Salinas at the northwest end to south of King City.

A semi-permanent high-pressure cell in the eastern Pacific is the basic controlling factor in the climate of the NCCAB. In the summer, the high-pressure cell is dominant and causes persistent west and northwest winds over the entire California coast. Air descends in the Pacific High pressure cell, forming a stable temperature inversion of hot air over a cool coastal layer of air. The onshore air currents pass over cool ocean waters to bring fog and relatively cool air into the coastal valleys. The warmer air aloft acts as a lid, inhibiting vertical air movement. The generally northwest-southeast orientation of mountainous ridges tends to restrict and channel the summer onshore air currents. Surface heating in the interior portion of the Salinas and San Benito Valleys creates a weak low pressure that intensifies the onshore air flow during the afternoon and evening. In the fall, the surface winds become weak, and the marine layer grows shallow, dissipating altogether on some days. The airflow is occasionally reversed in a weak offshore movement, and the relatively stationary air mass is held in place by the Pacific High pressure cell, which allows pollutants to build up over a period of a few days. It is most often during this season that the north or east winds develop to transport pollutants from either the San Francisco Bay Area or the Central Valley into the NCCAB.

In Santa Cruz County, coastal mountains exert strong influence on atmospheric circulation and result in generally good air quality. Small inland valleys, such as Scotts Valley, with low mountains on both sides have poorer circulation than Santa Cruz on the coastal plain. Scotts Valley is downwind of major pollutant generating centers, and these pollutants have time to form O_3 while in transit to Scotts Valley. Consequently, air pollutants tend to build up more at Scotts Valley than at Santa Cruz.

During the winter, the Pacific High migrates southward and has less influence on the NCCAB. Air frequently flows in a southeasterly direction out of the Salinas and San Benito Valleys, especially during night and morning hours. The general absence of deep, persistent inversions and the occasional storm systems usually result in good air quality for the basin as a whole in winter and early spring.

b. Regulatory Setting. The federal and state governments have been empowered by the federal and state Clean Air Acts to regulate the emission of airborne pollutants and have established ambient air quality standards for the protection of public health.

Federal and State Air Quality Standards. The Federal Clean Air Act (CAA) of 1970, as amended, establishes air quality standards for several pollutants. These pollutants are termed "criteria" pollutants because the U.S. Environmental Protection Agency (EPA) has established specific concentration threshold criteria for them based upon health effects. These National Ambient Air Quality Standards (NAAQS) are divided into primary standards and secondary standards. Primary standards are designed to protect the public health, and secondary standards are intended to protect the public welfare from effects such as visibility reduction, soiling, nuisance, and other forms of damage. Regions of the country are classified with respect to their attainment, or non-attainment, of these standards.

The California Air Resources Board (CARB) coordinates and oversees both state and federal air pollution control programs in California. As part of this responsibility, CARB monitors existing air quality, establishes state air quality standards, and limits allowable emissions from vehicular sources. Regulatory authority within established air basins is provided by Air Pollution Control and Management Districts, which control stationary-source and most categories of area-source emissions and develop regional air quality plans. The proposed project is located within the jurisdiction of the Monterey Bay Unified Air Pollution Control District (MBUAPCD).

California has established its own set of ambient air quality standards that are generally more stringent than the corresponding federal standards. The California Clean Air Act, effective January 1, 1989, provides a planning framework for attaining the state standards. Non-attainment areas in the state were required to prepare plans for attaining these standards. Attainment plans are required to demonstrate a five percent per year reduction in the emissions of nonattainment pollutants or their precursors, unless all feasible measures are being employed. The primary criteria pollutants of concern in the NCCAB are carbon monoxide (CO), ozone (O_3), nitrogen oxides (NO_x), particulate matter less than 10 microns in diameter (PM_{10}), and particulate matter less than 2.5 microns in diameter ($PM_{2.5}$).

Table 4.2-1 summarizes the current federal and state standards for each of these pollutants. These standards have been set at levels intended to be protective of public health.

The local air quality management agency is required to monitor air pollutant levels to assure that air quality standards are met, and, if they are not met, to develop strategies to meet these standards. Depending on whether the standards are met or exceeded, the local air basin is classified as being in "attainment" or as in "non-attainment." The proposed Specific Plan area falls within the jurisdiction of the Monterey Bay Unified Air Pollution Control District (MBUAPCD). The NCCAB is in attainment for all federal air quality standards, but is designated as non-attainment for the state standards for O_3 and PM_{10}.

Table 4.2-1 Federal and State Ambient Air Quality Standards

Pollutant	Averaging Time	Federal Primary Standards	California Standard
Ozone	1-Hour	---	0.09 PPM
	8-Hour	0.08 PPM	0.070 PPM
Carbon Monoxide	8-Hour	9.0 PPM	9.0 PPM
	1-Hour	35.0 PPM	20.0 PPM
Nitrogen Dioxide	Annual	0.053 PPM	0.030 PPM
	1-Hour	---	0.18 PPM
Sulfur Dioxide	Annual	0.030 PPM	---
	24-Hour	0.14 PPM	0.04 PPM
	1-Hour	---	0.25 PPM
PM_{10}	Annual	50 $\mu g/m^3$	20 $\mu g/m^3$
	24-Hour	150 $\mu g/m^3$	50 $\mu g/m^3$
$PM_{2.5}$	Annual	15 ug/m^3	12 ug/m^3
	24-Hour	65 ug/m^3	*
Lead	30-Day Average	---	1.5 $\mu g/m^3$
	3-Month Average	1.5 $\mu g/m^3$	---

** No separate state standard*
ppm = parts per million
$\mu g/m^3$ = micrograms per cubic meter
Source: ARB, February 22, 2007

Current Ambient Air Quality. To identify ambient concentrations of the seven criteria pollutants, the MBUAPCD operates ten air quality monitoring stations throughout the Basin. These stations are located in Monterey, Moss Landing, Salinas, Hollister, Carmel Valley, Santa Cruz, Scotts Valley, Davenport, and Watsonville. In addition, the National Parks Service operates an eleventh monitoring station at the Pinnacles National Monument in San Benito County. The monitoring station located closest to the proposed project site is located in Scotts Valley on Scotts Valley Drive. This station monitors levels of O_3 only. The closest station that monitors levels of PM_{10} is in Santa Cruz at 2544 Soquel Avenue, approximately 5 miles south of the site, while the closest station that monitors levels of CO and NO_2 is located in Davenport, approximately 10 miles west-southwest of the site. Table 4.2-2 summarizes the available annual air quality data from these monitoring stations for the years 2004-2006.

As shown in Table 4.2-2, no exceedances of state or federal standards for ozone, CO, or NO_x were recorded from 2004 to 2006. However, the Santa Cruz monitoring station recorded one exceedance of the state standard for PM_{10} in 2004. As noted above, the NCCAB is in non-attainment for the state standards for $PM_{10.}$ PM_{10} and $PM_{2.5}$ can both be classified as primary or secondary depending upon their origin. Primary particles are unchanged after being directly emitted (e.g., road dust). Secondary particulates are formed in the atmosphere largely by chemical reactions involving gases (e.g., sulfate) from directly emitted sulfur dioxides. Natural sources of particulates include sea spray, forest fires, and volcanic debris. Human-made sources include fuel combustion and industrial processes, industrial and non-industrial fugitive sources, and transportation. Attainment of state PM_{10} standards is addressed in the MBUAPCD's *1998 Report on Attainment of the California Particulate Matter Standards in the Monterey Bay Region.*

Table 4.2-2 Ambient Pollutant Concentrations Registered at the Scotts Valley, Santa Cruz, and Davenport Monitoring Stations

Pollutant	2004	2005	2006
Ozone, ppm – Worst Hour	0.091	0.078	0.094
Number of days of state exceedances (>0.09 ppm)	0	0	0
Number of days of Federal exceedances (>0.12 ppm)	0	0	0
Particulate Matter <10 microns, $\mu g/m^3$ Worst 24 Hours	80	47	37
Number of samples of state exceedances (>50 $\mu g/m^3$)	1	0	0
Number of samples of Federal exceedances (>150 $\mu g/m^3$)	0	0	0
Carbon Monoxide (ppm), Highest 8-Hour Average	1.03	0.90	0.83
Number of days of state exceedances (>9.0 ppm)	0	0	0
Number of days of Federal exceedances (>9.0 ppm)	0	0	0
Nitrogen Dioxide (ppm), Worst Hour	0.032	0.030	0.030
Number of days of state exceedances (>0.18 ppm)	0	0	0

Source: CARB, Annual Air Quality Data Summaries, 2004-2006.

Although no exceedances of the state standard for ozone (O_3) were recorded at the Scotts Valley monitoring station during this time period, the NCCAB is designated non-attainment for the state standards for O_3. Ozone is a secondary pollutant that is not produced directly by a source, but rather is formed by a reaction between nitrogen oxides (NO_x) and reactive organic gases (ROG) in the presence of sunlight (ROG is the organic compound fraction relevant to ozone formation, and sufficiently equivalent for the purposes of this analysis to volatile organic compounds, or VOC). Reductions in ozone concentrations are dependent on reducing the amount of these precursors. In the NCCAB, the major sources of ROG are on- and off-road motor vehicles, cleaning and surface coatings, solvent evaporation, landfills, petroleum production and marketing, and prescribed burning. The primary sources of NO_x are on- and off-road motor vehicles, stationary source fuel combustion, and industrial processes.

Air Quality Management Plan. The MBUAPCD regulates air quality in the NCCAB and is responsible for attainment planning related to criteria air pollutants, as well as district rule development and enforcement. It also reviews air quality analyses prepared for CEQA assessments and has published the *CEQA Air Quality Guidelines* document for use in evaluation of air quality impacts.

In accordance with the California Clean Air Act, the MBUAPCD has developed the *2004 Air Quality Management Plan for the Monterey Bay Region* (2004 AQMP). The 2004 AQMP proposes adoption of control measures for the following sources: solvent cleaning operations, spray booths (misc. coatings and cleaning solvents), degreasing operations, adhesives and sealants, natural gas-fired fan-type central furnaces, and residential water heaters. The 2004 AQMP acknowledges that, even with implementation of its recommendations, "…some areas of the Basin may still not achieve the standard." It attributes ongoing violations of the one-hour state ozone standard (prior to the data shown in Table 4.2-2) in part to "…variable meteorological conditions occurring from year to year, transport of air pollution from the San Francisco Bay Area, and locally generated emissions." MBUAPCD rules relevant to the emissions of ozone precursors (specifically, ROG) from sources related to the proposed project include Rule 425 (Use of Cutback Asphalt) and Rule 426 (Architectural Coatings).

MBUAPCD planning related to attainment of the state PM_{10} standard was addressed in the *1998 Report on Attainment of the California Particulate Matter Standards in the Monterey Bay Region* (which updated corresponding 1995 and 1996 reports), and, more recently, in the *2005 Report on the Attainment of the California Particulate Matter Standards in the Monterey Bay Region (Senate Bill 656 Implementation Plan)*. The latter plan describes the greater vulnerability of coastal locations within the NCCAB to PM_{10} standard violations, due largely to the contribution from sea salt. It focuses primarily on controlling particulate sources related to fugitive dust and smoke related to combustion, but also addresses NO_x- and ROG-related particulate formation. Consistent with the requirements of SB 656, and with the difficulty in estimating future ambient concentrations of particulate matter substantially influenced by fugitive dust sources (even disregarding unusual burn events), this plan concentrates on identification of and implementation scheduling for available PM emission control measures. Predicted adoption dates for the recommended measures varied from June 2006 to June 2007. Implementation of these measures is currently underway. For instance, the MBUAPCD is currently working on a Cement Manufacturing rule per SB 656 Measure D-5b, best practices and speed limit policies addressed (in non-regulatory fashion) in connection with Measures D-1 and D-2; the ARB has approved the MBUAPCD's application of the U.S. EPA's Exceptional Events Protocol in the context of Measure D-4; the MBUAPCD is preparing updates to both their AQMP (per Measure D-6a) and CEQA Air Quality Guidelines (per Measure D-6c) for planned publication in the Summer of 2007; and the MBUAPCD has a school-bus-oriented mitigation grant program that integrates Moyer Program (AB 923) funds and Department Motor Vehicles Renewal Fees.

MBUAPCD Rule 402 (Nuisances) does not specifically address suspended particulate matter, but is perhaps most likely to be applied in the context of human-initiated activities that release particulate matter (e.g., fugitive dust) into the air.

Association of Monterey Bay Area Governments. The Association of Monterey Bay Area Governments (AMBAG) is a council of governments for the Counties of Santa Cruz, Monterey, and San Benito. AMBAG is a regional planning agency and serves as a forum for regional issues relating to transportation, the economy, community development, and the environment. AMBAG also serves as the regional clearinghouse for projects requiring environmental documentation under federal and state law. In this role, AMBAG reviews proposed projects to analyze their impacts on AMBAG's regional planning efforts.

Although AMBAG is not an air quality management agency, it is responsible for several air quality planning issues. Specifically, as the designated Metropolitan Planning Organization (MPO) for the three counties, it is responsible, pursuant to §176(c) of the 1990 amendments to the CAA, for providing current population, employment, travel, and congestion projections for regional air quality planning efforts. It is required to quantify and document the demographic and employment factors influencing expected transportation demand, including land use forecasts. Pursuant to *California Health and Safety Code* §40460(b), AMBAG is also responsible for preparing and approving the portions of the Basin's air quality management plans relating to demographic projections and integrated regional land use, housing, employment, and transportation programs, measures, and strategies. AMBAG is also responsible for making consistency determinations for population-related projects in Monterey, San Benito, and Santa Cruz counties, and their respective cities. Consistency with the AQMP is used to determine a project's cumulative impact on regional air quality under CEQA.

Local Government. The City of Scotts Valley has the authority and responsibility to reduce air pollution through their police power and land use decision-making authority. Specifically, local governments are responsible for the mitigation of emissions resulting from land use decisions and for the implementation of transportation control measures as outlined in the AQMP. The AQMP assigns local governments certain responsibilities to assist the Basin in meeting air quality goals and policies. In general, a first step toward implementation of a local government's responsibility is accomplished by identifying air quality goals, policies, and implementation measures in its *General Plan*. Through capital improvement programs, local governments can fund infrastructure that contributes to improved air quality by requiring such improvements as ridesharing, park and ride, bicycle facilities, and traffic signal timing improvements. In accordance with CEQA requirements and the CEQA review process, local governments assess air quality impacts, require mitigation of potential air quality impacts by conditioning discretionary permits, and monitor and enforce implementation of such mitigation.

4.2.2 Impact Analysis

a. Methodology and Impact Criteria. In order to assist in determining whether a project will have a significant effect on the environment, the *CEQA Guidelines* identify criteria that may be deemed to constitute a substantial or potentially substantial adverse change in air quality.

The following impact criteria were dismissed within the Initial Study (refer to Appendix A) as being less than significant:

- *Expose sensitive receptors to substantial pollutant concentrations; and/or*
- *Create objectionable odors affecting a substantial number of people.*

Based on the criteria set forth in the Initial Study for this project, a significant impact could occur under the following conditions if the project would:

- *Conflict with or obstruct implementation of the applicable air quality plan;*
- *Violate any air quality standard or contribute substantially to an existing or projected air quality violation; or*
- *Result in a cumulatively considerable net increase of any criteria air pollutant for which the project region is in non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for O3 precursors).*

The MBUAPCD has issued criteria for determining the level of significance for project specific impacts within its jurisdiction, in accordance with the above thresholds. The City of Scotts Valley defers to these criteria when assessing project-specific and cumulative air quality impacts for projects proposed within the City. As such, projects meeting any of the criteria discussed below are considered to have significant impacts.

Construction Emissions. Construction activities that directly generate 82 pounds per day (ppd) of PM_{10} would have a significant impact on local air quality when they are located

nearby and upwind of sensitive receptors. According to district guidelines, projects requiring minimal earthmoving on 8.1 or more acres per day or grading and excavation on 2.2 or more acres per day are likely to exceed this threshold; such projects must provide further analysis to refute (or validate) a determination of significance or must acknowledge a potentially significant air quality impact.

Operational Emissions. The MBUAPCD recommends that individual projects with direct and/or indirect operational emissions that exceed any of the following thresholds be considered significant.

- *550 pounds per day of CO (direct)*
- *137 pounds per day of ROG (direct + indirect)*
- *137 pounds per day of NO_X as NO_2 (direct + indirect)*
- *150 pounds per day of Sulfur Oxides (SO_X) as SO_2 (direct)*
- *82 pounds per day of PM_{10} (on-site)*

Indirect emissions come from mobile sources that access the project site but generally emit off-site. The primary source of long-term, indirect emissions associated with residential projects is motor vehicles. Direct emissions are emitted on-site and include stationary sources and on-site mobile equipment. Examples of land uses and activities that generate direct emissions are industrial operations and sources subject to an operating permit by the MBUAPCD. Residential uses are not significant sources of direct emissions.

The URBEMIS 2007 Version 9.2.4 computer model, which was developed by the California Air Resources Board, was used to estimate construction emission factors for the proposed project and is based on parameters such as the duration of construction activity, area of disturbance, and anticipated equipment use during construction. The model used utilized similar land use categories and trip generation rates included in Section 4.11, *Transportation and Circulation* to calculate operational emissions.

Odors. Projects that would emit pollutants associated with objectionable odors in substantial concentrations could result in significant impacts if odors would cause injury, nuisance, or annoyance to a considerable number of persons or would endanger the comfort, health, or safety of the public.

b. Project Impacts and Mitigation Measures.

Impact AQ-1 Development pursuant to the Specific Plan would generate demolition and construction related emissions. Under a maximum development scenario of full buildout by 2009, construction facilitated by the Town Center Specific Plan would generate emissions in excess of MBUAPCD standards. This would be a Class II, *significant but mitigable* impact.

Demolition and construction in the Specific Plan area would result in temporary air quality impacts due to the use of heavy construction equipment and generation of fugitive dust. Construction activities are expected to result in temporary short-term air quality impacts. These impacts are associated with construction equipment and dust that would be generated

during grading and site preparation. Emissions would also be generated by construction employees traveling to and from the construction site, as well as trucks hauling materials to and from the site.

The Town Center Specific Plan describes a maximum buildout potential in terms of dwelling units and commercial square footage, but does not include specific phasing information. The URBEMIS analysis assumes a buildout year of 2009. According to the MBUAPCD's *CEQA Guidelines*, calculation of ROG and NO_x emissions from typical construction equipment is not necessary because temporary emissions of these ozone precursors have been accounted for in State- and federally-required air plans. The proposed project would require grading and earthmoving that, absent standard mitigation, would result in PM_{10} emissions up to 208 lbs/day (see Appendix B), which exceeds the MBUAPCD threshold of 82 lbs/day and could cause or substantially contribute to localized, temporary exceedances of the applicable PM standards at the nearest pre-existing receptor locations. Thus, impacts would be significant.

The NCCAB is in non-attainment for PM_{10}. For a district to be in attainment, the state standards for any criteria pollutant must not be exceeded for three consecutive years. Countywide, exceedances of the state 24 hour PM_{10} standard of 50 ug/m^3 occurred eight times in 2004 (once at the Scotts Valley monitoring station, seven times at the Davenport monitoring station), and twice in 2005 (both at the Davenport monitoring station).

The closest sensitive receptors include off-site residential development to the northwest and west across Skypark Drive, to the north across Blue Bonnet Lane, and the high-density residential uses bordering the Specific Plan area to the east. These residences are less than 100 feet in certain places where construction or demolition activities could occur.

The demolition of existing on-site structures would create emissions and road dust from trucks hauling debris from the site. In addition, some of the existing structures within the Specific Plan area may have been constructed before 1980. Structures built prior to 1980 could potentially contain asbestos-containing materials (ACMs), and, if constructed prior to 1978, could potentially contain lead-based paint (LBP). If these existing structures were demolished as part of future redevelopment within the plan area, this could pose a potential health risk to people if these materials were not properly handled and disposed. This health risk would be considered a potentially significant impact unless mitigation is incorporated.

Mitigation Measures. Because all construction projects can produce dust emissions, dust mitigation measures are required for all construction activities. The following mitigation measures are recommended to minimize emissions and to reduce the amount of dust that drifts onto adjacent properties. These measures would apply to both tract grading and development of individual lots.

AQ-1(a) Application of Best Available Control Technology for Construction Equipment (CBACT). The following measures shall be implemented to reduce combustion emissions from construction equipment.

- *Project applicants shall submit a grading plan for review by the MBUAPCD staff showing the area to be disturbed. A description of construction equipment that will be used and pollution reduction*

measures that will be implemented shall be provided with grading plans. Upon approval by the MBUAPCD, appropriate CBACT features shall be applied. The application of these features shall occur prior to project construction.

- *Project applicants shall be required to ensure that all construction equipment and portable engines are properly maintained and tuned according to manufacturer's specifications.*
- *Project applicants shall be required to ensure that off-road and portable diesel powered equipment, including but not limited to bulldozers, graders, cranes, loaders, scrapers, backhoes, generator sets, compressors, auxiliary power units, shall be fueled exclusively with CARB motor vehicle diesel fuel (non-taxed off-road diesel is acceptable).*
- *Project applicants shall be required to install a diesel oxidation catalyst on each of the two pieces of equipment projected to generate the greatest emissions. Installations must be prepared according to manufacturer's specifications.*

AQ-1(b) **Dust Control.** The following measures shall be implemented to reduce PM10 emissions during project construction:

- *Reduce the amount of the disturbed area where possible.*
- *Use water trucks or sprinkler systems in sufficient quantities to prevent airborne dust from leaving the site. Water shall be applied depending on conditions. Reclaimed (non-potable) water should be used whenever possible.*
- *All dirt-stock-pile areas shall be sprayed daily and/or covered as needed.*
- *Permanent dust control measures shall be identified in the approved project landscape plans and implemented as soon as possible following completion of any soil disturbing activities.*
- *Exposed ground areas that are planned to be reworked at dates greater than one month after initial grading shall be sown with a fast-germinating native grass seed and watered until vegetation is established.*
- *All disturbed soil areas not subject to revegetation shall be stabilized using approved chemical soil binders, jute netting, or other methods approved in advance by the MBUAPCD.*
- *All paved areas (roadways, driveways, sidewalks, etc.) shall be completed as soon as feasible. In addition, building pads shall be laid as soon as possible after grading unless seeding or soil binders are used.*
- *Vehicle speed for all construction vehicles shall not exceed 15 mph on any unpaved surface at the construction site.*
- *All trucks hauling dirt, sand, soil or other loose materials shall be covered or shall maintain at least two feet of freeboard (minimum vertical distance between top of load and top of trailer) in accordance with CVC Section 23114.*
- *Install wheel washers where vehicles enter and exit unpaved roads onto streets, or wash off trucks and equipment leaving the site.*

- *Sweep streets at the end of each day if visible soil material is carried onto adjacent paved roads. Water sweepers with reclaimed water shall be used where feasible.*

AQ-1(c) **Cover Stockpiled Soils.** If importation, exportation, or stockpiling of fill material is involved, soil stockpiled for more than two days shall be covered, kept moist, or treated with soil binders to prevent dust generation. Trucks transporting material shall be tarped from the point of origin to trip end.

AQ-1(d) **Dust Control Monitor.** The contractor or builder 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.

AQ-1(e) **Asbestos Sampling.** Prior to demolition work of buildings constructed prior to 1980, areas of the on-site structures shall be sampled as part of an asbestos survey in compliance with the National Emission Standards for Hazardous Air Pollutants (NESHAP). If asbestos is found in any building, asbestos-related work, including demolition, involving 100 square feet or more of asbestos containing materials (ACMs) shall be performed by a licensed asbestos abatement contractor under the supervision of a certified asbestos consultant and asbestos shall be removed and disposed of in compliance with applicable State laws. Regardless of whether asbestos is identified in any building, prior to demolition of existing structures the MBUAPCD shall be notified and an MBUAPCD Notification of Demolition and Renovation Checklist shall be submitted to both MBUAPCD and the City.

Prior to construction, an evaluation of areas of serpentinite outcrops or serpentine rich soils shall be made by a qualified professional, such as a Certified Industrial Hygienist (CIH), as to whether such conditions represent a threat to human health. If so, a safety program shall be initiated and shall include providing personal protective equipment to workers and a worker education program. The Naturally Occurring Asbestos (NOA) ATCM requirements may include but are not limited to 1) an Asbestos Dust Mitigation Plan, which must be approved by the APCD before construction begins, and 2) an Asbestos Health and Safety Program will also be required.

AQ-1(f) **Paint Waste Evaluation.** If paint is separated from the building material (e.g. chemically or physically) during demolition of the existing buildings, the paint waste will be evaluated independently from the building material by a qualified hazardous materials inspector to determine its proper management. All hazardous materials shall be handled and disposed in accordance with local,

state and federal regulations. According to the Department of Toxic Substances Control (DTSC), if paint is not removed from the building material during demolition (and is not chipping or peeling), the material can be disposed of as construction debris (a non-hazardous waste). The landfill operator will be contacted prior to disposal of building material debris to determine any specific requirements the landfill may have regarding the disposal of lead-based paint materials. The disposal of demolition debris shall comply with any such requirements.

Significance After Mitigation. With application of the dust-control measures described above, construction-related PM_{10} emissions would be reduced to approximately 50 lbs/day (refer to Appendix D), which is below the established threshold of 82 lbs/day. Therefore, implementation of the above mitigation measures would reduce impacts related to construction activity to a less than significant level.

Impact AQ-2 Development under the Specific Plan would generate operational and area emissions of air pollutants, including the ozone precursors ROG and NOx, and PM_{10}, primarily from mobile emissions. These emissions would exceed County thresholds for ROG_0. Impacts would be Class II, *significant but mitigable.*

Long term/operational emissions associated with Specific Plan implementation are those associated primarily with motor vehicle trips and, to a lesser extent, with stationary sources. Examples of stationary emission sources include laundry facilities and small service shops that may require permitting through the MBUAPCD. Other stationary sources include heating and cooling equipment, wood burning stoves and fireplaces, or other individual appliances known as "area sources."

Based on information contained in the traffic study prepared for this project, the Specific Plan would generate 11,513 average daily vehicle trips. This estimate includes a 35% reduction of commercial vehicle trips to account for pass-by trips. Pass-by trips are those vehicle trips associated with the commercial component that may be diverted trips from other existing local destinations. In some cases, the presence of these new facilities may actually shorten trip lengths for area residents, thereby offsetting a portion of the increase in emissions associated with the Specific Plan. In addition, the trip data provided by the traffic study included an overall 13% reduction of vehicle trips for each land use type to account for pedestrian, bike, and transit trips.

Specific Plan-related vehicle emissions were calculated using the URBEMIS 2007 air quality model. The model assumed a buildout year of 2009. In addition, the model accounted for reductions in emissions from proposed project components, including local serving retail and parking supply. Table 4.2-3 summarizes the emissions from area sources and vehicular traffic associated with the proposed Specific Plan. Assumptions used in the mobile emissions analysis included a project fleet mix of 44.7% light automobiles, 38.5% light trucks, 6.9% medium trucks, 3.2% heavy trucks, 5.1% motorcycles, 1.3% motor homes, and 0.3% urban and

school buses. Average trip type, length, and speed and cold/hot start default percentages and default vehicle fleet mixes provided with the model were used.

Table 4.2-3 Operational Emissions Associated with Scotts Valley Town Center Specific Plan (lbs/day)

Emission Source	ROG	NO_x	CO	SO_x	PM_{10}
Operational Emissions (indirect)	68.84	82.93	712.52	0.30	58.48
Area Emissions (direct/on-site)	68.79	10.39	234.40	0.70	36.86
Total (direct + indirect)	**137.63**	**93.32**	**946.92**	**1.00**	**95.34**
MBUAPCD Thresholds	*137 (direct + indirect)*	*137 (direct + indirect)*	*550 (direct)*	*150 (direct)*	*82 (direct)*
Emissions Exceed Threshold?	***Yes***	*No*	*No*	*No*	*No*

See Appendix B for calculations.

The proposed Specific Plan would generate an estimated 138 lbs/day of ROG, 93lbs/day of NO_X, 947 lbs/day of CO, and 95 lbs/day of PM_{10} as a result of operational emissions associated with project vehicular traffic and electrical and natural gas usage. The 137 lbs/day (direct + indirect) for ROG would exceed the MBUAPCD threshold for that pollutant; therefore, impacts would be significant.

It should be noted that mixed-use development, by design, would generate fewer trips than the same amount of residential and commercial development occurring separate from each other. Residents that live within the plan area are likely to visit the commercial uses, or work onsite. The Specific Plan proposes mixed-use development throughout the central portion of the plan area, therefore vehicle trips and associated emissions would likely be less than described above.

Ozone and PM_{10} are the only regional pollutants of concern to the MBUAPCD, based on the local attainment status. Project operation would result in indirect vehicular and area source generation of the ozone precursors ROG, which, in combination with direct sources of ROG, exceed the MBUAPCD's threshold of 137 lbs/day. Therefore, the project may contribute to exceedances of the ambient air quality standards for ozone. Due to the District's transitional status for the ozone 1-hour standard, future development within the Specific Plan area would require implementation of the MBUAPCD's best management practices intended to reduce PM_{10} and Ozone emissions.

The emissions presented in Table 4.2-3 represent the "worst-case" scenario, which would occur during the winter months for this type of development. During the winter months, indoor energy usage increases considerably, contributing to ROG emissions in excess of the established threshold. Energy-reduction measures would be necessary to reduce indoor energy usage to the extent feasible. In addition, trip reduction measures would reduce the project's ROG and other vehicle emissions.

Mitigation Measures. The Scotts Valley General Plan includes objectives, policies, and actions related to public transportation and bikeways/pedestrian walkways (CP-95, CA-200,

CA-202, CA-204, CP-212, and CA-213) which would help reduce potential impacts. The following mitigation measures are recommended to further reduce impacts:

AQ-2(a) **Operational Phase Mitigation to Reduce Fuel Usage and thus Ozone precursors.** The following energy efficiency and green building techniques shall be implemented for Specific Plan projects where feasible:

- The applicant shall increase building energy efficiency ratings by at least 20% above what is required by Title 24 requirements. Potential energy consumption reduction measures include, but are not limited to:
  - Using roof material with a solar reflectance value meeting the EPA/DOE Energy Star® rating to reduce summer cooling needs and/or installing photovoltaic roof tiles;
  - Using high efficiency gas or solar water heaters;
  - Using built-in energy efficient appliances;
  - Installing double-paned windows;
  - Installing door sweeps and weather stripping if more efficient doors and windows are not available;
  - Installing low energy interior lighting;
  - Using low energy street lights (i.e. sodium); and
  - Installing high efficiency or gas space heating.
- Possible additional Green Building techniques include:
  - Consideration of the siting of proposed buildings to eliminate or minimize the development's heating and cooling needs (e.g., solar orientation).
  - Install solar systems to reduce energy needs (e.g., solar panels).
  - Install solar water heaters.
  - Plant native, drought resistant landscaping.
  - Use locally-produced building materials.
  - Use renewable or reclaimed building materials.
  - Use materials which are resource efficient, recycled, with long life cycles and manufactured in an environmentally friendly way.
  - Increase building energy efficiency ratings by at least 20% above what is required by Title 24 requirements.

AQ-2(b) **Telecommuting.** All new residences within the Specific Plan area shall be constructed with internal wiring/cabling that allows telecommuting, teleconferencing, and telelearning to occur simultaneously in at least three locations in each residence.

AQ-2(c) **Bicycle Parking**. All multi-family, commercial, and recreational sites shall include bicycle parking. At least one bicycle parking space for every 10 vehicle spaces is required.

AQ-2(d) **Transit.** Bus turnouts with direct pedestrian access shall be installed at all bus stops. Provide benches and shelters at transit stops.

AQ-2(e) **Electric Vehicles.** A minimum of 0.5% of the parking spaces shall be pre-wired and reserved for future electric vehicle (EV) use. The applicant shall consult with SCAQMD staff as to the arrangement and type of EV equipment to be installed, prior to issuance of building permits.

AQ-2(f) **Parking Area Lighting**. Permit only the use of energy-efficient low-sodium lights in parking areas.

Significance After Mitigation. Emissions associated with the proposed Specific Plan project would be substantially reduced through implementation of these required measures. Specifically, the green building requirements noted above would effectively reduce indoor energy usage, which was a major contributor to the total operational emissions during the winter months. Since the ROG emissions only exceeded the threshold by less than one pound per day, it is assumed that these measures would be more than adequate to reduce operational emissions to a less than significant level. In addition, implementation of the MBUAPCD's best management practices would reduce PM10 emissions to the extent feasible. Residual impacts would be less than significant.

Impact AQ-3 **The Specific Plan would be considered consistent with the MBUAPCD's 2004 Air Quality Management Plan because it would not generate population in excess of the population growth projections used by the MBUAPCD to forecast population-related emissions. This would be a Class III, *less than significant* impact.**

According to the MBUAPCD Guidelines, a significant impact finding should be made if a population related project (including commercial, industrial, or institutional projects intended to meet the needs of the population) would be inconsistent with the population projections adopted by Association of Monterey Bay Area Governments (AMBAG) and used in developing the Air Quality Management Plan (AQMP). It is anticipated that the Specific Plan would accommodate 300 new residences at full buildout. Based on the average number of persons per household in Scotts Valley (2.56 pph, Scotts Valley General Plan Housing Element, 2007) this would generate a population increase of approximately 750. Further population generation could occur outside the downtown area as a result of the increased commercial and industrial square footage that is proposed. However, the magnitude of such a population increase is speculative.

Based on AMBAG projections, the City expects to experience an increase from 11,697 persons in January 2008 to a projected 13,667 residents in the year 2015 (MBUAPCD, 2004). Thus, the population increase of 750 that is anticipated due to development under the Specific Plan is

consistent within AMBAG projections. Additionally, AMBAG had previously projected the population of Scotts Valley to be 13,182 by 2005 and 33,667 by 2010. However, the actual population as of 2008 remains far below those projections. Therefore, AMBAG has determined that the increase in population and housing that would result from the Specific Plan is consistent with long-term growth projections for the City and would be less than significant.

Mitigation Measures. No mitigation is required.

Significance After Mitigation. The proposed Specific Plan's consistency with the AQMP indicates that impacts to air quality are less than significant without mitigation.

c. Cumulative Impacts. The Specific Plan, in combination with pending development elsewhere in the City of Scotts Valley planning area, could contribute to the cumulative degradation of regional air quality. The NCCAB is currently in non-attainment for state PM_{10} standards. Increases in automobile traffic resulting from General Plan buildout would cause increases in ozone precursor and PM_{10} emissions. In addition, cumulative construction-related emissions would contribute to the cumulative exceedance of the state and federal ozone standard.

This project is a Specific Plan that encompasses long-range development in Scotts Valley, and is consistent with the provisions of the General Plan, as well as the local AQMP. Thus, long-term cumulative impacts are addressed by the project-specific analysis described above. Mitigation measures included for project-specific impacts are intended to address impacts on a case by case basis, and in so doing also mitigate for the cumulative condition.

4.2.3 Greenhouse Gas Emissions/Global Climate Change

Global Climate Change Setting

Global climate change (GCC) is a change in the average weather of the earth that is measured by temperature, wind patterns, precipitation, and storms over a long period of time. The baseline by which these changes are measured originates in historical records, identifying temperature changes that have occurred in the past, such as during previous ice ages. The global climate is continuously changing, as evidenced by repeated episodes of substantial warming and cooling documented in the geologic record. The rate of change has typically been incremental, with warming or cooling trends occurring over the course of thousands of years. The past 10,000 years have been marked by a period of incremental warming, as glaciers have steadily retreated across the globe. However, scientists have observed an acceleration in the rate of warming during the past 150 years.

GCC is a documented effect, with the degree to which the change is caused by anthropogenic (man-made) sources under study. The increase in warming has coincided with the global Industrial Revolution, which has seen the widespread reduction of forests to accommodate urban centers, agriculture, and the use of fossil fuels, primarily burning of coal, oil, and natural gas for energy. Per the United Nations Intergovernmental Panel on Climate Change (IPCC, 2007), the understanding of anthropogenic warming and cooling influences on climate has led to a very high confidence (90% or greater chance) that the global average net effect of human activities since 1750 has been one of warming. Most of the observed increase in global average

temperatures since the mid-20th century is very likely due to the observed increase in anthropogenic greenhouse gases (GHG) concentrations per the IPCC (November 2007). While there is some disagreement by individual scientists[1] with some of the findings of the IPCC, the overwhelming majority of scientists working on climate change agree with the main conclusions, as do the vast majority of major scientific societies and national academies of science. Disagreement within the scientific community is always present for all issues, however, the current state of knowledge is substantially in favor of GCC warming, with eleven of the last twelve years (1995-2006) ranking among the twelve warmest years in the instrumental record of global surface temperature since 1850 (IPCC, 2007). In addition, the majority of scientists agree that anthropogenic sources are a main, if not primary, contributor to the GCC warming.

Gases that trap heat in the atmosphere are often called greenhouse gases (GHG), analogous to the way in which a greenhouse retains heat. Common GHG include water vapor, carbon dioxide, methane, nitrous oxides, fluorinated gases, and ozone. GHG are emitted by both natural processes and human activities. The accumulation of GHG in the atmosphere regulates the earth's temperature. Without the natural heat trapping effect of GHG, the earth's surface would be about 34° C cooler (CAT, 2006). However, it is believed that emissions from human activities, particularly the consumption of fossil fuels for electricity production and transportation, have elevated the concentration of these gases in the atmosphere beyond the level of naturally occurring concentrations. Concentrations of carbon dioxide in the atmosphere have risen approximately 35% since the Industrial Revolution. Per the IPCC (2007), the global atmospheric concentration of carbon dioxide has increased from a pre-industrial value of about 280 parts per million (ppm) to 379 ppm in 2005. The atmospheric concentration of carbon dioxide in 2005 exceeds by far the natural range over the last 650,000 years (180 to 300 ppm) as determined from ice cores. The annual carbon dioxide concentration growth rate was larger during the last 10 years (1995–2005 average: 1.9 ppm per year) than it has been since the beginning of continuous direct atmospheric measurements (1960–2005 average: 1.4 ppm per year), although there is year-to-year variability in growth rates.

Greenhouse Gas Inventory - State of California. California is a substantial contributor of global GHGs as it is the second largest contributor in the United States and the sixteenth largest in the world. Based upon the 2004 GHG inventory data (the latest year available) compiled by the California Energy Commission (CEC, December 2006), California produced 492 million metric tons of carbon dioxide equivalent (CDE[2]). The major source of GHG in California is transportation, contributing 41% of the state's total GHG emissions. Electricity generation is the second largest source, contributing 22% of the state's GHG emissions (CEC, December 2006). Most, or 81%, of California's 2004 GHG emissions (in terms of CDE) were carbon dioxide produced from fossil fuel combustion, with 2.8% from other sources of CO_2, 5.7% from methane, and 6.8% from nitrous oxide (CEC, December 2006).

[1] A list of such scientists can be found at http://en.wikipedia.org/wiki/List_of_scientists_opposing_the_mainstream_scientific_assessment_of_global_warming

[2] Carbon dioxide equivalent (CDE or CO_2E) is a quantity that describes, for a given mixture and amount of GHGs, the amount of CO_2 (usually in metric tons; million metric tons = MMTCO2E) that would have the same global warming potential (GWP) when measured over a specified timescale (generally, 100 years).

Global Climate Change Impact Analysis

In the absence of adopted thresholds of significance for greenhouse gas emissions, the cumulative impact analysis includes an estimate of the project-specific CO_2 emissions and an estimate of the CO_2 emissions from the cumulative projects listed above and compares these to the statewide CO_2 emissions. The analysis focuses on CO_2 emissions because these are the major GHG component, and the URBEMIS emissions model provides information on CO_2 emissions expected from various residential and non-residential uses.

The estimated annual CO_2 emitted as a result of the buildout under the proposed Specific Plan, as modeled with URBEMIS, is estimated at about 7,176 tons, which is equivalent to about 0.0065 million metric tons. Cumulative development would generate annual CO_2 emissions estimated at 20,786 tons, which is equivalent to about 0.019 million metric tons (see Table 4.2-4).

Table 4.2-4 Estimated CO_2 Emissions from Proposed Specific Plan + Cumulative Projects

Long-Term Emission Source	CO_2 Emissions - Annual (tons/year)
Proposed Project Area (stationary)	1,428.71
Proposed Project Vehicle (mobile)	5,747.13
Total Specific Plan Operational Emissions	**7,175.84**
Cumulative Projects Area (stationary)	1,979.36
Cumulative Projects Vehicle (mobile)	18,806.57
Total Cumulative Operational Emissions	**20,785.93**
TOTAL CO_2 EMISSIONS	**27,961.77**

Source: URBEMIS 2007 v.9.2.4. See Appendix B for results and assumptions.

The California Energy Commission (CEC) has developed an inventory of statewide GHG emissions. According to the CEC, in 2004 (the most recent year for which data is available) California sources contributed 431 million metric tons of CO_2. Table 4.2-5 compares CO_2 emissions generated by Town Center-specific development and cumulative development to overall statewide CO_2 emissions. The contribution of approximately 0.0065 million metric tons of CO_2 estimated as a result of the proposed Specific Plan is approximately 0.0015% of the statewide emissions. The contribution of 0.019 million metric tons of CO_2 estimated as a result of the buildout in the cumulative projects list is approximately 0.0044% of the statewide emissions.

Table 4.2-5 Town Center, Cumulative and Statewide CO_2 Emissions Comparison

Emission Source	CO_2 Emissions (million metric tons/year)	% of Statewide annual CO_2 Emissions
State of California (2004)	431	100%
Proposed Specific Plan	0.0065	0.0015%
Cumulative Projects	0.019	0.044%

Source: California Energy Commission, 2007 and URBEMIS 2007 v.9.2.2. See Appendix B for results and assumptions.

No threshold or guidance currently exists; therefore, no conclusive statements regarding significance of this impact can be made. However, because of the importance of GCC and its consequences, recommended mitigation measures are provided below.

Efforts to reduce future air pollutant emissions would result in substantial decreases in the total amount of GHG emissions associated with development under the proposed Plan. The Climate Action Team, established by Executive Order S-3-05 has recommended strategies (Table 4.2-6) to reduce GHG emissions at a statewide level to meet the goals of the Executive Order (http://www.climatechange.ca.gov/ climate_action_team/index.html). Several of these actions are already required by California regulations, or are similar to components of the proposed Plan.

Table 4.2-6 Climate Action Team Strategies

HFC Reduction Strategies	Measure requires the installation of mechanical air conditioners and refrigeration units that use non-ozone depleting chemicals.
Achieve 50% Statewide Recycling Goal	Measure requires a solid waste-recycling plan that aims to recycle 35-50% of overall disposable waste. Note that such recycling is already required in California, and already achieved in the Plan Area (refer to Section 4.3 *Public Services*).
Diesel Anti-Idling	Measure requires the reduction of diesel truck idling times. Note that CARB has already implemented a regulation to limit diesel idling to no more than 5 minutes.
Urban Forest	Measure requires the use of landscaping to shade building and parking lots.
Building Energy Efficiency Standards	Measure requires passive or fan-aided cooling, outdoor lighting designed for high efficiency solar-powered, natural lighting in buildings, architectural design to reduce energy use and increase energy efficiency, and use of landscaping to shade buildings.
Appliance Energy Efficiency	Measure requires use of energy efficient appliances and lighting.
Green Building Initiative	Building design to incorporate green building features such as recycled exterior masonry, recycled or low impact floors, recycled insulation, and low VOC paint.
California Solar Initiative	Measure requires solar energy collectors for each building.

The Specific Plan includes several design elements that are inherently mitigative, and would reduce GHG emission impacts. The mitigative design elements include the following:

- *Mixed uses consisting of office, commercial retail, civic and residential;*
- *Pedestrian paths and paseos designed as integral circulation routes through plazas and green spaces that encourage walking and enhances the pedestrian experience;*
- *Pedestrian paths or connections to link individual buildings within the project area and to neighboring properties;*
- *Use of "green" and "cool" roofs to reduce heat and glare build up on rooftops;*
- *Use of solar panels on rooftops;*
- *Consider the use of rapidly renewable materials such as bamboo, wool, cotton insulation, agrifiber, wheatboard, strawboard and cork;*
- *Design buildings to maximize interior daylight and provide connection between indoor spaces and the outdoors. Strategies to consider include building orientation, exterior and interior permanent shading devices and high performance glazing.*
- *Limit the use of potable water or other subsurface water for the use of irrigation.*

Mitigation Measures

In addition to the trip-reduction and energy efficient mitigation required under Impact AQ-2, the following mitigation measures are recommended to reduce the contribution of GHGs resulting from development under the Specific Plan.

GHG-1 **Construction Phase Mitigation to Reduce Fuel Usage and thus Greenhouse Gases**. Upon application for grading permits for discretionary projects, the applicant shall submit grading plans, the proposed rate of material movement, and a construction equipment schedule to the MBUAPCD. In addition, the applicant shall implement the following measures where feasible to mitigate equipment emissions:

- *All construction equipment and portable engines shall be properly maintained and tuned according to manufacturer's specifications;*
- *All off-road and portable diesel powered equipment, including but not limited to bulldozers, graders, cranes, loaders, scrapers, backhoes, generator sets, compressors, auxiliary power units, shall be fueled exclusively with CARB-certified motor vehicle diesel fuel;*
- *The applicant shall maximize to the extent feasible, the use of diesel construction equipment meeting the California Air Resources Board's 1996 (or newer) certification standard for off-road heavy-duty diesel engines.*
- *All on and off-road diesel equipment shall not be allowed to idle for more than 5 minutes. Signs shall be posted in the designated queuing areas to remind drivers and operators of the 5 minute idling limit;*
- *The applicant shall electrify equipment where feasible;*
- *The applicant shall substitute gasoline-powered for diesel-powered equipment where feasible;*
- *The applicant shall use alternatively fueled construction equipment, such as compressed natural gas (CNG), liquefied natural gas (LNG), propane or biodiesel, where feasible; and*
- *The applicant shall apply Best Available Control Technology (CBACT) as determined by the APCD.*
- *Recycle/Reuse demolished construction material.*

GHG-2 **Transportation Emissions.** The Specific Plan shall further offset greenhouse gas (GHG) emissions by improving nearby transit amenities, reducing vehicle trips, thereby reducing fossil fuel consumption, and related GHG impacts:

- *Coordinate controlled intersections so that traffic passes more efficiently through congested areas. Where signals are installed, require the use of Light Emitting Diode (LED) traffic lights.*
- *Set specific limits on idling time for commercial vehicles, including delivery and construction vehicles.*

- *Develop the necessary infrastructure to encourage the use of alternative fuel vehicles (e.g., electric vehicle charging facilities and conveniently located alternative fueling stations).*
- *Develop transportation policies that give funding preference to public transit.*
- *Provide public education and publicity on public transportation services.*

GHG-3 **Solar Systems in New Construction.** For all new residential subdivisions of five or more lots, new multi-family development projects of five or more units, and new commercial or mixed-use development exceeding 5,000 square feet, solar systems or other non greenhouse gas technologies that result in a 50% or more reduction in electrical and/or water heating needs shall be implemented to the extent feasible.

GHG-4 **Carbon Offset Credits.** Applicants for future discretionary development projects shall consider participation in a carbon offset program as an alternative to various green building techniques described above that may be infeasible. The applicant could opt to make a one-time payment to a carbon offset fund as approved by the MBUAPCD, to achieve verifiable, quantifiable reductions in greenhouse gas emissions, by supporting carbon-reducing projects such as renewable energy, energy efficiency, and reforestation projects. The payment would be equal to 100% of the project's carbon footprint, as calculated by a carbon offset organization, such as Carbonfund.org.