3.1.2 Air Quality and Global Climate Change

This evaluation of air quality impacts incorporates the results of the Air Quality Technical Report prepared by Scientific Resources Associated (SRA) on January 26, 2010, attached as Appendix D. The analysis follows the *County of San Diego Guidelines for Determining Significance* and the *Report Format Requirements for Air Quality* (March 19, 2007). The evaluation of global climate change incorporates the results of the Greenhouse Gas and Global Warming Risk Assessment completed by SRA on September 28, 2009, attached as Appendix E. The County's current climate change guidelines use the 900 metric tons or more of greenhouse gas emissions per year screening criteria adopted by the California Air Resources Control Officers Association (CAPCOA) as the screening threshold for the climate change analysis. Applicable information from both of these reports is summarized below.

3.1.2.1 Existing Conditions

Air Quality

The project site is located in the San Diego Air Basin (SDAB). The climate within the region surrounding the project site is characterized by warm, dry summers and mild, wet winters and is dominated by a semi-permanent high-pressure cell located over the Pacific Ocean. This high-pressure cell maintains clear skies over the air basin for much of the year. It also drives the dominated onshore circulation and helps to create two types of temperature inversions, subsidence and radiation, that contributes to local air quality degradation.

Subsidence inversions occur during the warmer months, as descending air associated with the Pacific high-pressure cell meets cool marine air. The boundary between the two layers of air represents a temperature inversion that traps pollutants below it. Radiation inversion typically develops on winter nights, when air near the ground cools by radiation, and the air aloft remains warm. A shallow inversion layer that can trap pollutants is formed between the two layers.

Occasionally during the months of October through February, offshore flow becomes the dominant factor in the regional air quality. These periods, known as the so-called "Santa Ana Conditions," are typically maximal during the month of December with wind speeds from the north to east approaching 35 knots and gusting to over 50 knots. The air movement is caused by clockwise pressure circulation over the Great Basin (i.e., the high plateau east of the Sierra Mountains and west of the Rocky Mountains including most of Nevada and Utah), which results in significant downward air motion towards the ocean. Stronger Santa Ana winds can have gusts greater than 60 knots over widespread areas and gusts greater than 100 knots in canyon areas. Frequently the strongest winds in the basin occur during the night and morning hours due to the absence of onshore sea breezes. These conditions can degrade local air quality.

Regulatory Setting

Under the authority of the Clean Air Act (CAA) and its amendments, the United States Environmental Protection Agency (USEPA) regulates air quality of specific pollutants as defined by ambient air concentrations through the National Ambient Air Quality Standards (NAAQS). The USEPA established the NAAQS for certain concentrations of six "criteria" pollutants in the ambient air: nitrogen dioxides, sulfur oxides, lead, ozone, carbon monoxide, and particulate matter. The USEPA has established both primary and secondary standards for several pollutants called "criteria" pollutants, which include ozone, nitrogen dioxide, carbon monoxide, sulfur dioxide, particulate matter with an aerodynamic diameter of 10 microns or less (PM_{10}), particulate matter with an aerodynamic diameter of 2.5 microns or less ($PM_{2.5}$),

and lead (Pb). Primary standards are designed to protect human health with an adequate margin of safety. Secondary standards are designed to protect property and the public welfare from air pollutants.

The CAA allows states to adopt ambient air quality standards (AAQS) and other regulations provided they are at least as stringent as federal standards. The California Air Resources Board (CARB) has established a more stringent California Ambient Air Quality Standards (CAAQS) of the six criteria pollutants through the California CAA of 1988, and also has established CAAQS for additional pollutants, including sulfates, hydrogen sulfide, vinyl chloride and visibility-reducing particles. Areas that do not meet the NAAQS or the CAAQS for a particular pollutant are considered to be "non-attainment areas" for that pollutant.

The CARB is a state regulatory agency with authority to enforce regulations to achieve and maintain the NAAQS and CAAQS. The CARB reviews operations and programs of the local air districts, and requires each air district with jurisdiction over a non-attainment area to develop a strategy for achieving the NAAQS and CAAQS. The local air districts have the primary responsibility for the development and implementation of rules and regulations designed to attain the NAAQS and CAAQS, as well as the permitting of new or modified sources, development of air quality management plans, and adoption and enforcement of air pollution regulations.

In the SDAB, the San Diego Association of Governments (SANDAG) and the San Diego Air Pollution District (APCD) are responsible for developing and implementing the clean air plan for attainment and maintenance of the CAAQS. The San Diego County Regional Air Quality Standards (RAQS) was initially adopted in 1991 and is updated every three years. The RAQS outlines APCD's plans and control measures designed to attain the state air quality standards for ozone (O_3). The APCD has also developed the air basin's input to the State Implementation Plan (SIP), which is required under the CAA for areas that are out of attainment with air quality standards.

The project site is located in the northwestern coastal portion of the SDAB. On April 15, 2004 the SDAB was designated a basic non-attainment area for the 8-hour NAAQS for O_3. The SDAB is in attainment for the NAAQS for all other criteria pollutants. The SDAB is currently classified as a non-attainment area under the CAAQS for O_3, $PM_{2.5}$ and PM_{10}.

The APCD operates a network of ambient air monitoring stations throughout San Diego County. The purpose of the monitoring stations is to measure ambient concentrations of the pollutants and determine whether the ambient air quality meets the CAAQS and the NAAQS. The nearest ambient monitoring stations to the project site are the Escondido East Valley Parkway station, and the San Diego downtown station (which is the closest station that measures sulfur dioxide). Because both the Escondido and San Diego downtown monitoring stations are located in areas where there is substantial traffic congestion, it is likely that pollutant concentrations measured at these monitoring stations are higher than concentrations that would be observed or measured in the project area and they would thus provide a conservative estimate of background ambient air quality. Air emissions data from these two stations were used in evaluating project air impacts since they represent a worst case measurement of ambient air quality conditions.

Toxic Air Contaminants

Toxic Air Contaminants (TACs) refer to a category of air pollutants that pose a present or potential hazard to human health, but which tend to have more localized impacts than criteria pollutants. The CARB recently identified diesel particulate matter as the predominant TAC in California. Diesel

particulate matter is emitted into the air via mobile vehicles that are diesel powered. Such vehicles include heavy-duty diesel trucks, construction equipment, and passenger cars. Certain Reactive Organic Gases (ROGs) may also qualify as TACs. Because no safe level of emissions can be established for TACs region wide, the regulation of toxic air pollutants is based on a quantitative measurement of the level of cancer risk.

Global Climate Change

Recognizing the public interest regarding climate change and recent California legislation on this topic, this section provides information and an analysis of climate change related to the proposed project. There has been debate in the scientific community as to the significance of greenhouse gases in causing global warming. This debate began based upon initial observations that global surface temperatures have been steadily increasing over the past century. Overall, the surface temperature reported by some has seen an increase of roughly 0.6 degrees Centigrade. Greenhouse gases are defined as those naturally occurring and anthropogenic (man-made) chemical compounds within the atmosphere that absorb and reflect infrared radiation emitted by the Earth's surface. A numerical metric known as the "Global Warming Potential" (GWP) is a measure of how much a given mass of greenhouse gases estimated to contribute to global warming relative to carbon dioxide whose GWP is defined as 1.0. Naturally occurring greenhouse gases include carbon dioxide (CO_2), water vapor (H_2O), methane (CH_4), nitrous oxide (N_2O), and ozone (O_3). In addition, several classes of halogenated substances that contain fluorine, chlorine, or bromine also demonstrate a greenhouse gas potential. Examples of these pollutants are halocarbons, perfluorocarbons, and sulfur hexafluoride.

Regulatory Setting

International and Federal Legislation

In 1988, the United Nations and the World Meteorological Organization established the Intergovernmental Panel on Climate Change to assess "the scientific, technical and socio-economic information relevant to understanding eh scientific basis of risk of human-induced climate change, its potential impacts, and options for adaption of mitigation." (Association of Environmental Professionals (AEP) June 2007.)

On March 21, 1994, the United States joined other countries around the world in signing the United Nations Framework Convention for Climate Change (UNFCC). Under the Convention, governments gather and share information on Greenhouse Gas (GHG) emissions, national policies, and best practices; launch national strategies for addressing GHG emissions and adapting to expected impacts, including the provision of financial and technical support to developed countries; and cooperate in preparing for adaption to the impacts of climate change (AEP, June 2007).

The Kyoto Protocol is a treaty made under the UNFCC. Countries can sign the treaty to demonstrate their commitment to reduce their emissions of GHGs or engage in emissions trading. More than 160 countries, 55 percent of global emissions, are under the protocol. However, in order for the Protocol to be formally ratified it must be adopted by the U.S. Senate, which has not yet done so.

On April 17, 2009, the EPA issued its proposed endangerment finding for GHG emissions. The EPA is proposing to find that greenhouse gasses in the atmosphere endanger the public health and welfare of current and future generations. The EPA has stated that the high atmospheric levels of greenhouse gasses are the unambiguous result of human emissions, and we are very likely to cause the observed increase in

average temperatures and other climatic changes. The EPA has determined that the effects of climate change observed to date and projected to occur in the future include, but are not limited to, the increased likelihood of more frequent and intense heat waves, more wildfires, degraded air quality, more heavy downpours and flooding, increased drought, greater sea level rise, more intense storms, harm to water resources, harm to agriculture, and harm to wildlife and ecosystems are effects on public health and welfare within the meaning of the CAA.

On March 10, 2009, in response to the FY 2008 Consolidated Appropriations Act (H.R. 2764; Public Law 110-161), EPA proposed a rule that requires mandatory reporting of GHG emissions from large sources in the United States. The proposed rule would collect accurate and comprehensive emissions dated to inform future policy decisions.

The EPA is proposing that suppliers of fossil fuels or industrial greenhouse gasses, manufacturers of vehicles and engines, and facilities that emit 25,000 metric tons or more per year of GHG emissions submit annual reports to EPA. The gasses covered by the proposed rule are carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, sulfurhexafluoride, and other fluorinated gasses, including nitrogen trifluoride and hydrofluorinated ethers.

As part of the effort to reduce emissions from vehicles, the EPA and U.S. Department of Transportation (DOT), currently intend to work in coordination to propose standards for a control of emissions of greenhouse gasses and for fuel economy, respectively. If proposed and finalized, these standards would apply to passenger cars, light-duty trucks, and medium-duty passenger vehicles (light-duty vehicles) built in model years 2012 through 2016. The EPA is proposing GHG emission standards under the CAA. The EPA expects to propose a national CO_2 vehicle emission standard under Section 202(a) of the CAA. The EPA is considering proposing standards that would, if made final, achieve on average 250 gram/mile of CO_2 in model year 2016. The standards for earlier years would begin with the 2012 model year, with a generally linear phase-in for model year 2012 to model year 2016.

California Legislation

California Assembly Bill (AB) 1493, enacted on July 22, 2002, required the CARB to develop and adopt regulations that reduce GHGs emitted by passenger vehicles and light-duty trucks. Regulations adopted by CARB will apply to 2009 and later model year vehicles. CARB estimates that the regulation will reduce GHG emissions from the light-duty/passenger vehicle fleet by an estimated 18 percent in 2020 and by 27 percent in 2030, compared to today (AEP, June 2007).

California Governor Arnold Schwarzenegger announced on June 1, 2005, through Executive Order S-3-05, GHG emission reduction targets as follows: by 2010 reduce GHG emissions to 2000 levels; by 2020 reduce GHG emissions to 1990 levels; by 2050 reduce GHG emissions to 80 percent below 1990 levels. Some literature equates these reductions to 11 percent by 2010 and 25 percent by 2020.

In 2006, the California State Legislature adopted AB 32, the California Global Warming Solutions Act of 2006. AB 32 required that by January 1, 2008, CARB determine what the statewide GHG emissions level was in 1990 and approve a statewide GHG emissions limit that is equivalent to that level, to be achieved by 2020. While the level of 1990 GHG emissions has not yet been officially approved, the CARB has estimated that the 1990 GHG emissions level was 427 million metric tons (MMT) net carbon dioxide equivalent (CO_{2e}) (CARB 2007b). In 2004, the emissions were estimated at 480 MMT net CO_{2e} (CARB 2007b). The CARB estimates that a reduction of 173 MMT net CO_{2e} emissions below business-as-usual

would be required by 2020 to meet the 1990 levels (CARB 2007b). This amounts to a 15 percent reduction from today's levels, and a 30 percent reduction from projected business-as-usual levels in 2020 (CARB 2008).

The USEPA does not currently regulate GHGs. Notwithstanding the lack of USEPA regulation of GHG emissions, in 2006 the California State Legislature adopted AB 32, the California Global Warming Solutions Act of 2006. AB 32 requires the CARB, the state agency charged with regulating statewide air quality, to develop regulations and market mechanisms that will ultimately reduce California's greenhouse gas emissions by 25 percent by 2020.

Mandatory caps will begin in 2012 for significant sources and ratchet down to meet the 2020 goals. Specifically, AB 32 requires CARB to:

- Establish a statewide greenhouse gas emission cap for 2020, based on 1990 emissions by January 1, 2008.
- Make publically available the list of discreet early action GHG emission reduction measures that can be implemented prior to the adoption of the statewide GHG limit, and the measures required to achieve compliance with the statewide limit.
- Make publically available a GHG inventory for the year 1990 and determine target levels for 2020.
- On or before January 1, 2010, adopt regulations to implement the early action GHG emission reduction measures.
- On or before January 1, 2001, adopt quantifiable, verifiable, and enforceable emission reduction measures by regulation that will achieve the statewide GHG emissions limit by 2020, to become operative on January 1, 2012, at the latest. The emission reduction measures may include direct emission reduction measures, alternative compliance mechanisms, and potential monetary and non-monetary incentives that reduce GHG emissions from any sources or categories of sources that CARB finds necessary to achieve the statewide GHG emissions limit.
- Monitor compliance with and enforce any emission reduction measure adopted pursuant to AB 32.

Prior to imposing any mandates or authorizing market mechanisms, CARB must evaluate several factors, including but not limited to, impacts on California's economy, the environment and public health; equity between regulated entities; electricity reliability; conformance with other environmental laws; and that the rules do not disproportionately impact low-income communities.

Regarding the topic of climate change, it is possible to document the current state of research regarding this topic and to determine GHG emissions associated with the proposed project.

GHG Inventory for San Diego County

A specific regional GHG inventory was prepared by the University of San Diego School of Law Energy Policy Initiative Center (University of San Diego 2008). This San Diego County Greenhouse Gas Inventory (SDCGHGI) is a detailed inventory that takes into account the unique characteristics of the region in calculating emissions. The SDCGHGI calculated GHG emissions for 1990, 2006, and projected 2020 emissions. Based on this inventory and the emission projections for the region, the study found that emissions of GHGs must be reduced by 33 percent below business as usual in order for San Diego County to achieve 1990 emission levels by the year 2020. "Business as usual," or forecasted emissions, is defined

as the emissions that would occur in the absence of AB 32 mandated reductions. Construction of buildings using Title 24 building standards or the County's 2006 building code would create "business as usual" emissions. Areas where feasible reductions can occur and the strategies for achieving those reductions are outlined in the SDCGHGI. A summary of the various sectors that contribute GHG emissions in San Diego County for the year 2006 is provided in Table 3.1.2-1. Total GHGs in San Diego County are estimated at 34 MMT CO_{2e}.

3.1.2.2 Analysis of Project Effects and Determination as to Significance

The proposed project includes the construction of 28 single family homes on the 92.8-acre site. Potential air quality impacts include both construction and operational impacts. Construction impacts include emissions associated with the construction of the project. Operational impacts include emissions associated with the project following the completion of construction, including traffic at full build-out.

Guidelines for Determining Significance

The County of San Diego uses Appendix G of the *California Environmental Quality Act (CEQA) Guidelines* as thresholds of significance for air quality impacts and recognizes the San Diego Air Pollution Control District's established screening threshold for air quality emissions (Rules 20.1 et seq.) as screening standards. The climate change significance guidelines are taken from the County's Interim Guidance (2010), which relies on existing research in support of California law. The project would result in a significant air quality/global climate change impact if:

1. The project conflicts with or obstructs implementation of applicable air quality plans;
2. The project violates any air quality standards or contributes substantially to an existing or projected air quality violation;
3. The project exposes sensitive receptors to substantial pollutant concentration;
4. The project creates objectionable odors affecting a substantial number of people.
5. The project would result in a significant increase in global warming within California due to greenhouse gases;
6. The project would impede the implementation of AB32.
7. The project results in a cumulatively considerable net increase of any criteria 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 ozone precursors).

Jurisdiction for regulation of air emissions from non-mobile sources within San Diego County has been delegated to the San Diego County APCD. As part of its air quality permitting process, the APCD has established thresholds for the preparation of Air Quality Impact Assessments (AQIAs) and Air Quality Conformity Assessments (AQCAs). APCD Rule 20.2, which outlines the screening level criteria, states that any project that results in an emission increase equal to or greater than any of these levels must demonstrate through an AQIA that the project will not cause a violation of a state or national ambient air quality standard anywhere that does not already exceed that standard, cause additional violations of a national ambient air quality standard anywhere the standard is already being exceeded, cause additional violations of a state ambient air quality standard anywhere the standard is already being exceeded, or

prevent or interfere with the attainment or maintenance of any state or national ambient air quality standard.

The applicable standards are shown in Table 3.1.2-2. For projects whose stationary-source emissions are below these criteria, no AQIA is typically required and project level emissions are presumed to be less than significant.

The County of San Diego accepts the use of the screening criteria as thresholds of significance by projects for the purposes of CEQA analysis. These standards are compatible with those utilized elsewhere in the State such as the South Coast Air Quality Management District (SCAQMD) standards as part of CEQA guidance documents. These significance thresholds have been utilized in evaluating the projects air quality impacts for criteria pollutants.

For purposes of the climate change analysis, the significance threshold was determined to be 900 metric tons or more of greenhouse gasses per year consistent with the significance standard adopted by CAPCOA and the County of San Diego in its July 22, 2009 Interim Climate Change Guidelines. The County Guidelines specify that "the 900 ton screening criteria (CO2 generated annually) referenced in the CAPCOA white paper is being used as a conservative criteria for determining which projects require further analysis and mitigation with regard to climate change" (Climate Change Guidelines p. 1.)

The screening criteria are based upon guidance from CAPCOA's *CEQA and Climate Change: Evaluating and Addressing Greenhouse Gas Emissions from Projects Subject to the California Environmental Quality Act (*CAPCOA 2008*).* This White Paper references a 900 metric ton guideline as a conservative threshold for requiring further analysis and mitigation for GHG emissions. CAPCOA estimated that this threshold would exclude approximately 10 percent of new development projects would capture the remaining 90 percent of new residential development, thereby establishing a strong basis for demonstrating that cumulative reductions are being achieved across the state. This significance threshold for GHG emissions established by both CAPCOA and the County's Climate Change Guidelines has been used as a significance standard in evaluating the project's GHG emissions.

Analysis (Guideline 1 – Conflict With or Obstruct Implementation of the Applicable Air Quality Plan)

Projects that propose development that is consistent with the growth anticipated by the adopted general plan and SANDAG's growth forecast are consistent with the San Diego County RAQS and SIP. The proposed project includes a tentative map proposing the development of 28 single-family homes on the 92.8-acre site. The site's general plan designation, Intensive Agriculture (19), and its zoning designation, (A70), permits the development of 41 dwelling units on the project site. The total cumulative housing projected for the Fallbrook Subregional Area from 2000 to 2030, according to SANDAG projections, is an additional 24,016 dwelling units. The project's projected growth of 28 dwelling units is only 0.12 percent of the total growth projected for the Subregional Area. Thus the growth projected for the West Lilac Residential Project would not result in a cumulatively significant impact and the project would be consistent with the RAQS and SIP.

Analysis (Guideline 2 – Violate an Existing Air Quality Standard)

Construction Emissions

Construction activities associated with the proposed project include dust emissions from soil disturbance, combustion pollutants from on-site construction equipment and from off-site trucks hauling dirt, cement,

or building materials. Construction emissions would include emissions associated with carbon monoxide (CO), volatile and reactive organic compounds and gasses (VOC/ROG), oxides of nitrogen (NO_x), oxides of sulfur (SO_x), 10 micron particulate matter (PM_{10}), and 2.5 micron particulate matter ($PM_{2.5}$), from fugitive dust, heavy construction equipment, and construction workers commuting to or from the site.

Diesel engines emit a complex mixture of air pollutants, mainly composed of gaseous and solid materials. Visible emissions in diesel exhaust include particulate matter composed of carbon particles. The major sources of diesel particulate matter are diesel-fueled vehicles.

Construction heavy equipment requirements were estimated based on similar projects and an estimate of the requirements for construction of the project. The equipment types and number used in contained in Table 4 of the Air Quality Technical Report attached as Appendix D. The equipment types and number of pieces of equipment used in the analysis represents a worst-case estimate of the number and type of equipment required at any one time. Grading/site preparation and site utilities/infrastructure construction will occur simultaneously toward the end of the site preparation phase; this overlap of construction phases is anticipated to last no more than one month. House construction will not occur simultaneously with other construction and will be implemented in phases during project construction. Emissions from the construction phase of the project were estimated through the use of the URBEMIS Model, Version 9.2.4. Best management practices (BMPs) to reduce the amount of fugitive dust generated from construction of the proposed project would be employed. The following fugitive dust control measures were included in the calculations of construction emissions in the URBEMIS Model:

- Apply soil stabilizers to inactive areas
- Replace ground cover in disturbed areas as soon as possible
- Control during equipment loading/unloading
- Water active sites and haul roads a minimum of twice daily
- Reduce speeds on unpaved roads to 15 mph

Maximum project construction emissions during the rough grading phase for the project are shown on Table 3.1.2-3. These emissions were then compared with the San Diego Air Pollution Control District's significance thresholds shown in Table 3.1.2-2.

As shown on Table 3.1.2-3, total construction emissions from all sources for the proposed project are well below the significance thresholds for CO, NO_x, SO_x, PM_{10}, $PM_{2.5}$, and ROG.

Construction activities are also a source of fugitive dust emissions that may have a substantial, but temporary, impact on local air quality. These emissions are typically associated with land clearing, excavating, and construction of a proposed project. Substantial dust emissions also occur when vehicles travel on paved and unpaved surfaces and haul trucks lose material.

Based on the information provided by the project applicant, the maximum of 25 percent of the site (23.2 acres) would be graded on any single day. Total construction was assumed to last for 12 months. Based on the maximum grading anticipated for the project, construction activities will produce 39.01 pounds per day of PM_{10}, and 12.89 pounds per day of $PM_{2.5}$ during the worst case grading and site preparation activities. The PM_{10} emission generated by construction activities is well below the 100 pound per day significance threshold established by the San Diego Air Pollution Control District (SDAPCD). The $PM_{2.5}$ emission generated by construction activities is also well below the SDAPCD significance threshold for this pollutant of 55 pounds per day. Accordingly, the project impacts would have less than significant fugitive dust emissions and no mitigation is required.

Operational Emissions

Operational emissions for the project would include emissions associated with CO, ROG, NO_x, SO_x, PM_{10}, and $PM_{2.5}$ associated with project traffic and with area sources such as fireplaces, landscaping, and energy use. The main operational impacts associated with the project would be from project-generated traffic. Minor impacts would be associated with energy use and the use of fireplaces at the residences.

To address whether the project would result in emissions that would violate any air quality standard or contribute substantially to an existing or proposed air quality violation, the emissions associated with project-generated traffic were compared with the County of San Diego's significance criteria. According to the Traffic Impact Report (Darnell & Associates 2009), the project-generated daily traffic is estimated to be 12 trips per dwelling unit; for 28 residences, the trips associated with the project will amount to 336 average daily trips (ADT).

SRA used the EMFAC2007 Model (CARB 2007) to estimate emissions associated with project-generated traffic, The EMFAC2007 Model is the latest version of the Caltrans emission factor model for on-road traffic. The project is a residential development; therefore, project-related traffic is estimated to consist of light duty autos and light duty trucks (i.e., small trucks, SUVs, and vans). For conservative purposes, emission factors representing the vehicle mix for 2010 were used to estimate emissions. Based on the results of the EMFAC2007 Model for subsequent years, emissions would decrease on an annual basis from 2010 onward due to phase-out of higher polluting vehicles and implementation of more stringent emission standards that are taken into account in the EMFAC2007 Model. The average trip length was assumed to be 20 miles to account for commute distances to and from the project site. It should be noted that this is a conservative assumption, as local trips for shopping, school, and errands would likely be much shorter than 20 miles.

Operational impacts associated with area sources, including natural gas usage, fireplace usage, consumer products, architectural coatings for maintenance purposes, and landscaping were calculated using the URBEMIS Model, Version 9.2.4. For conservative purposes, it was assumed that all residences would be equipped with wood-burning fireplaces. The peak operational emissions for the criteria pollutants were compared to the SDAPCD significant thresholds.

Table 3.1.2-4, presents the project operational emissions of CO, NO_x, SO_x, PM_{10}, $PM_{2.5}$ and ROG. The emissions are well below the SDAPCD significant thresholds. Accordingly, project impacts will be less than significant for vehicular operational emissions and no mitigation is required.

CO Hotspots

Projects involving traffic impacts may result in the formation of locally high concentrations of CO, known as CO "hot spots." CO emissions are the result of the combustion process and therefore primarily associated with mobile source emissions (vehicles). CO concentrations tend to be higher in urban areas where there are many mobile-source emissions. The County of San Diego Guidelines for Determining Significance of Air Quality (2007) note that CO "hot spots" or pockets where the CO concentrations exceed the federal or state standards have been found to occur only at signalized intersections that operate at or below a level of service (LOS) of LOS E with peak-hour trips for that intersection exceeding 3,000 trips based on data provided by the Sacramento Metropolitan Air Management District. Therefore, any project that would place receptors within 500 feet of a signalized intersection operating at or below LOS E with peak-hour trips exceeding 3,000 trips or projects that will cause road intersections to operate at or below a LOS E with intersection peak-hour trips exceeding 3,000 trips are required to conduct a CO hot spot analysis.

The Traffic Impact Analysis (Darnell & Associates 2009) evaluated existing plus project traffic on all intersections in the area which is shown on Table 7 of the traffic report attached as Appendix B. This analysis indicated that all intersections in the area operate at acceptable levels of service of LOS D or better. This analysis also documented that project traffic would not have any impacts upon any intersections during either AM or PM peak hour traffic. Accordingly, the project will not result in any CO "hot spots" and project impacts are less than significant for CO hot spots. The project does not result in an exceedance of any CO standard.

Analysis (Guideline 3 – Expose Sensitive Receptors to Substantial Pollutant Concentrations)

Sensitive receptors are typically defined as residential units, daycare centers, educational facilities, residential care facilities, and hospitals. Sensitive receptors surrounding the project site are residential uses.

To evaluate whether project construction could result in a significant impact to nearby sensitive receptors, an evaluation of diesel exhaust particulate matter was conducted. Diesel exhaust particulate matter is known to the state of California as carcinogenic compounds. The risks associated with exposure to substances with carcinogenic effects are typically evaluated based on a lifetime of chronic exposure, which is defined in the California Office of Environmental Health Hazard Assessment (OEHHA) guidelines, Diesel exhaust particulate matter would be emitted during construction due to the operation of heavy equipment at the site. Because diesel exhaust particulate matter is considered to be carcinogenic, long-term exposure to diesel exhaust emissions have the potential to result in adverse health impacts.

To assess whether there is a potential for a significant impact associated with exposure to diesel exhaust particulate matter, a screening evaluation was conducted on the particulate emissions. The maximum heavy equipment exhaust particulate emissions would be 4.59 lbs/day during site grading; this emission rate was assumed to occur throughout assumed 12-month construction period. Based on the configuration of heavy equipment sources, the emission source was represented as a point source 10 feet high, with a stack diameter of six inches, a stack exit temperature of 300 degrees Fahrenheit, and a stack exit velocity of one meter/second, which is considered to be a minimum stack velocity. It was assumed that the equipment would operate for eight hours per day, six days per week. The nearest existing receptors were located based on the site map and aerial photographs for the project area.

The EPA's approved air dispersion model, AERMOD, was used to estimate the downwind impacts at the closest receptors to the construction site. The model was run using preprocessed meteorological data from the Palomar Energy (Escondido) surface meteorological monitoring station and the MCAS Miramar upper air meteorological monitoring station for 2004. Escondido is closest meteorological monitoring station for which pre-processed meteorological data are available from the SDAPCD. Based on the results of the modeling, risks associated with temporary exposure to diesel particulate from heavy equipment exhaust were estimated by multiplying the maximum annual impact by the diesel unit risk factor for carcinogenic risk. Because the unit risk factor is based on 70 years (840 months) of exposure for 24 hours per day, 365 days per year, the results of the analysis were scaled to an exposure of 8 hours per day, 6 days per week, for 12 months.

Based on the risk calculations in the air quality analysis prepared by SRA, the maximum excess cancer risk predicted would be 0.303 in a million, which is below the County of San Diego's significant risk level of one in a million. The maximum chronic hazard index would be 0.0002, which is below the County of San Diego's significance hazard level of 1.0. Risks associated with exposure to diesel particulate during construction would therefore be less than significant. Air dispersion modeling output files and risk calculations are provided in Appendix A of the air quality analysis.

Vehicular traffic may result in minor amounts of toxic air contaminants (TACs). Based on the County of San Diego's requirements, a quantitative evaluation of the potential for risks associated with exposure to diesel particulate emissions generated by vehicles from the proposed residences must be conducted. Based on EMFAC outputs and considering only light duty autos and light duty trucks, the total percentage of trips for diesel light duty autos is approximately 0.4 percent, and the total percentage of trips for diesel light duty trucks is approximately 0.4 percent. Therefore, there is approximately one trip per day out of 336 project-related trips that would be attributable to diesel light duty autos (0.4 percent of 262 light-duty auto trips), and less than one trip per day attributable to diesel light duty trucks (0.4 percent of 74 light-duty truck trips) out of 336 trips that would be attributable to diesel light duty trucks. Traffic would travel along the project internal roadway to access the West Lilac Residential Development, for a distance of 0.2 miles, where existing receptors could be affected by emissions from diesel vehicles. Total daily emissions of diesel particulate were calculated to be 0.00011 lbs/day.

Potential impacts to sensitive receptors were evaluated based on the South Coast Air Quality Management District's "Health Risk Assessment Guidance for Analyzing Cancer Risks from Mobile Source Diesel Emissions" (SCAQMD 2002).

The highest annual average concentration was predicted at a receptor located north of the West Lilac Development. The highest annual average diesel particulate concentration was predicted to be 0.00001 $\mu g/m^3$. Multiplying by the unit risk factor of 3 x 10-4 ($\mu g/m3$)-1 to calculate excess cancer risk, assuming 70 years of exposure for 365 days per year, 24 hours per day, the maximum excess cancer risk along the roadway would be 0.003 in a million, which is below the San Diego County's significance threshold of 1 in a million. Dividing by the reference exposure level for diesel particulate matter of 5.0 $\mu g/m^3$ to calculate the chronic hazard index indicates that the maximum chronic hazard index would be 0.000002, which is below the San Diego County's significance threshold of 1.0. Impacts that are farther from the roadway would be lower as concentrations decrease with increasing distance from the roads. The potential impacts associated with exposure to diesel emissions from light duty autos and light duty trucks accessing the residences at the West Lilac Residential Development are therefore less than significant.

Analysis (Guideline 4 – Odors)

According to the *SCAQMD CEQA Air Quality Handbook*, land uses associated with odor complaints include agricultural uses, wastewater treatment plants, food processing plants, chemical plants, composting activities, refineries, landfills, dairies, and fiberglass molding operations. The existing agricultural uses would remain and the proposed project would introduce 28 single family units. The decrease in agricultural land decreases the likelihood of objectionable odors associated with the on-site agriculture. The project could produce objectionable odors resulting from emissions from motor vehicles that may contain volatile organic compounds, ammonia, carbon dioxide, hydrogen sulfide, methane, alcohols, aldehydes, amines, carbonyls, esters, disulfides dust and endotoxins from the construction and operational phases. These substances, if present at all, would only be in trace amounts (less than 1 $\mu g/m^3$) and the lots are large and vehicle odors would dissipate over the distance between lots. Therefore, the residential development itself would not be a substantial source of odor impacts. Consequently, odor impacts generated by the new residential development are expected to be less than significant as experienced by surrounding receptors (neighbors). Moreover, the effects of objectionable odors would be localized to the immediate surrounding area and would not contribute to a cumulatively considerable odor.

The new residential units could be affected by the existing agricultural odor setting. Presumably, property buyers would consider the existing land uses prior to purchasing these parcels and if agricultural odors were interpreted as unpleasant, the owner would buy elsewhere. However, a list of past, present and future projects within the surrounding area were evaluated and most of these projects are similar subdivisions that include an agricultural and residential component. None of these projects creates or increases any objectionable odors to a significant degree. Therefore, odor impacts from existing agricultural uses would be less than significant.

Project construction could result in minor amounts of odor compounds associated with diesel heavy equipment exhaust. Because the construction equipment would be operating at various locations throughout the construction site, and because any operation that would occur in the vicinity of existing receptors would be temporary and spaced over large lots, impacts associated with odors during construction would be less than significant.

Analysis (Guidelines 5and 6 – Global Warming and Climate Change)

There are two existing sources of carbon storage at the project site: natural vegetation and soils. The key issue is the balance between the loss of existing vegetation and future carbon storage associated with landscaping. The situation is further complicated by changes in fire regime. Carbon in vegetation is likely to be released into the atmosphere through wildfire every 20 to 150 years. Carbon in landscaped areas will be protected from wildfire. The balance between these factors will influence the long-term carbon budget on the site. Also, it should be noted that agricultural operations also result in emissions of GHGs through the use of equipment and vehicles associated with the operations.

The majority of carbon within the site is stored in the soil. Soil carbon accumulates from inputs of plant and animal matter, roots, and other living components of the soil ecosystem (e.g., bacteria, worms, etc.). Soil carbon is lost through biological respiration, erosion, and other forms of disturbance. Overall, soil carbon moves more slowly through the carbon cycle, and it offers greater potential for long-term carbon storage. Field observations suggest that urban soils can sequester relatively large amounts of carbon. Observations from across the United States suggest that warmer and drier climates (such as southern California) may have slightly higher soil organic matter levels when compared to equivalent areas before development.

Typical Adverse Effects

The Climate Scenarios Report (CCCC 2006), uses a range of emissions scenarios developed by the Intergovernmental Panel on Climate Change (IPCC) to project a series of potential warming ranges (i.e., temperature increases) that may occur in California during the 21st century. Three warming ranges were identified: Lower warming range (3.0 to 5.5 degrees Fahrenheit (ºF)); medium warming range (5.5 to 8.0 ºF); and higher warming range (8.0 to 10.5 ºF). The Climate Scenarios report then presents an analysis of the future projected climate changes in California under each warming range scenario.

According to the report, substantial temperature increases would result in a variety of impacts to the people, economy, and environment of California. These impacts would result from a projected increase in extreme conditions, with the severity of the impacts depending upon actual future emissions of GHGs and associated warming. These impacts are described below.

Public Health **-** Higher temperatures are expected to increase the frequency, duration, and intensity of conditions conducive to air pollution formation. For example, days with weather conducive to ozone (O_3)

formation are projected to increase by 25 to 35 percent under the lower warming range and 75 to 85 percent under the medium warming range. In addition, if global background O_3 levels increase as is predicted in some scenarios, it may become impossible to meet local air quality standards. An increase in wildfires could also occur, and the corresponding increase in the release of pollutants including $PM_{2.5}$ could further compromise air quality. The climate scenarios report indicates that large wildfires could become up to 55 percent more frequent if GHG emissions are not significantly reduced.

Potential health effects from global climate change may arise from temperature increases, climate-sensitive diseases, extreme events, and air quality. There may be direct temperature effects through increases in average temperature leading to more extreme heat waves and less extreme cold spells. Those living in warmer climates are likely to experience more stress and heat-related problems (e.g., heat rash and heat stroke). In addition, climate sensitive diseases (such as malaria, dengue fever, yellow fever, and encephalitis) may increase, such as those spread by mosquitoes and other disease-carrying insects.

Water Resources - A vast network of reservoirs and aqueducts capture and transport water throughout the state from Northern California rivers and the Colorado River. The current distribution system relies on Sierra Nevada mountain snowpack to supply water during the dry spring and summer months. Rising temperatures, potentially compounded by decreases in precipitation, could severely reduce spring snowpack, increasing the risk of summer water shortages. In addition, if temperatures continue to rise, more precipitation would fall as rain instead of snow, further reducing the Sierra Nevada spring snowpack by as much as 70 to 90 percent. The state's water resources are also at risk from rising sea levels. An influx of seawater would degrade California's estuaries, wetlands, and groundwater aquifers. Due to the existing agricultural operation, the project site has an active water commitment from the Rainbow Municipal Water District to transfer to the new residential lots.

Agriculture - Increased GHG and associated increases in temperature are expected to cause widespread changes to the agricultural industry, reducing the quantity and quality of agricultural products statewide. Significant reductions in available imported water supply to support agriculture would also impact production. Crop growth and development will change as will the intensity and frequency of pests and diseases. However, the agriculture on this project is primarily supported by well water that appears to be stable and ongoing or pending decreases in imported water should not affect the on-site agricultural resources of the project.

Ecosystems/Habitats - Continued global warming will likely shift the ranges of existing invasive plants and weeds, thus alternating competition patterns with native plants. Range expansion is expected in many species while range contractions are less likely in rapidly evolving species with significant populations already established. Continued global warming is also likely to increase the populations of and types of pests. Continued global warming would also affect natural ecosystems and biological habitats throughout the State. The project site habitat currently has been altered and is actively managed as tree crop agriculture.

Wildland Fires - Global warming is expected to increase the risk of wildfire and alter the distribution and character of natural vegetation. If temperatures rise into the medium warming range, the risk of large wildfires in California could increase by as much as 55 percent, which is almost twice the increase expected if temperatures stay in the lower warming range. However, since wildfire risk is determined by a combination of factors including precipitation, winds, temperature, and landscape and vegetation conditions, future risks will not be uniform throughout the State. The project has implemented a fire protection plan to reduce the risk from wildland fire.

Rising Sea Levels - Rising sea levels, more intense coastal storms, and warmer water temperatures will increasingly threaten the State's coastal regions. Under the high warming scenario, sea level is anticipated to rise 22 to 35 inches by 2100. A sea level risk of this magnitude would inundate coastal areas with salt water, accelerate coastal erosion, threaten levees and inland water systems, and disrupt wetlands and natural habitats. The project is not in a tidal inundation zone.

Project Related GHG Emissions

Construction Emissions - Construction GHG emissions include emissions from heavy construction equipment, truck traffic, and worker trips. Emissions were calculated using the URBEMIS Model, Version 9.2.4, for completed and proposed construction. The URBEMIS Model contains emission factors from the OFFROAD2007 model for heavy construction equipment (CARB 2007), and from the EMFAC2007 Model for on-road vehicles. Construction emissions are summarized in Table 3.1.2-5.

Construction emissions are well below the 900 metric ton level suggested by CAPCOA below which reporting would be required for the purpose of GHG inventories. Construction emissions would be less than significant. An evaluation of operational emissions from the proposed project indicates that emissions would also be less than the 900 metric ton significance threshold, as indicated in Table 3.1.2-6. A discussion of the methodology used to calculation emissions is provided below. Emission calculations are provided in Appendix A of the Greenhouse Gas and Global Warming Risk Assessment (Appendix E of EIR).

Energy Use Emissions - As discussed above, energy use generates GHG through emissions from power plants that generate electricity as well as emissions from natural gas usage at the facility itself. Indirect emissions from electricity use and emissions from natural gas use were calculated based on emission factors in the California Climate Action Registry General Reporting Protocol, Version 3.0 (CCAR 2008). The project proposes to develop 28 residential dwelling units. According to the California Energy Commission (2004), the average annual residential energy use rate is 5,914 kWh per residential unit. Natural gas use was estimated based on average gas consumption per square foot as reported by SCAQMD (SCAQMD 1993). Natural gas consumption was multiplied by the Center for Clean Air Policy (CCAP) emission factors for CO_2 equivalents per therm. CO_2 for household electricity and natural gas use were combined and converted to metric tons for reporting.

Water - Water use and energy use are often closely linked. The provision of potable water to commercial users consumes large amounts of energy associated with five stages: source and conveyance, treatment, distribution, end use, and wastewater treatment. This inventory estimated that delivered water for the project will have an embodied energy of 3,519 kWh/acre foot or 0.0108 kWh/gallon (Wilkinson and Wolfe 2005).

Water usage was estimated based on an estimated water usage of 35 gallons per year per square foot (Dziegielewski 2000), assuming on average the homes in the development would be 4,000 square feet. Business as usual water usage, without water management strategies implemented, is estimated at 700,000 gallons per year.

Transportation - As discussed previously, on-road vehicle emissions account for 46 percent of existing GHG emissions in San Diego County. Several regulatory initiatives have been passed to reduce emissions from on-road vehicles. These initiatives include improvements in the Corporate Average Fuel Economy (CAFE) standard included in Title 49 of the Energy Independence and Security Act of 2007, AB 1493, and the Low Carbon Fuel Standard (LCFS). The federal CAFE standard determines the fuel efficiency of certain vehicle classes in the United States, and has remained largely unchanged since 1990; however,

federal initiatives have increased CAFE standards for new light-duty vehicles to 35 miles per gallon by 2020. The new CAFE standards will take effect no sooner than 2011, which was the start date used in the SDCGHGI. It is anticipated that CAFE standard improvements would reduce GHG emissions by 5 percent by the year 2016, and by 12 percent by the year 2020. For the purpose of this analysis, the reduction in emissions attributable to implementation of the CAFE standard reductions was assumed to be 12 percent.

AB 1493 (also known as the Pavley Bill) is a standard for new light-duty passenger vehicles. AB 1493 has not been implemented due to legal challenges, but requires automobile manufacturers to reduce vehicle emissions of GHGs in light-duty vehicles, which are defined as light-duty passenger cars, light-duty trucks, and medium-duty trucks/vehicles. CARB estimates that the regulation will reduce climate change emissions from light-duty passenger vehicle fleet by an estimated 18 percent in 2020 and by 27 percent in 2030 (AEP 2007). Once implemented, emissions from new light-duty vehicles are expected to be reduced in San Diego County by 21 percent by 2020. For the purpose of this analysis, it was assumed that emissions from vehicles would be reduced by 18 percent.

The LCFS was included in Executive Order S-01-07, and addresses the type of fuel used in vehicles. The LCFS seeks to reduce the carbon content of the fuel, therefore reducing GHG emissions even if the total fuel consumption is not reduced. The LCFS has been approved by CARB as a discrete early action item under AB 32 and implementing regulations are currently under development. The SDCGHGI assumed a 10 percent reduction in GHG emissions in San Diego County by the year 2020 due to the LCFS. For the purpose of this analysis, a 10 percent reduction in GHG was assumed due to the LCFS.

The results of the inventory for operational emissions for the proposed project are presented in Table 3.1.2-6. These include GHG emissions associated with buildings (natural gas, purchased electricity) and water consumption (energy embodied in potable water). Table 3.1.2-6 summarizes projected emissions using the methodologies noted above.

As shown on Table 3.1.2-5, project construction GHG emissions total 346 metric tons per year which is well below the 900 metric ton significance threshold established by both CAPCOA and the County's Climate Change Guidelines. As shown on Table 3.1.2-6, the project's operational GHG emissions total 860 metric tons per year which is also below the 900 metric ton significance threshold. Accordingly, the project does not result in a significant GHG-emission contribution and the impact is less than significant. No mitigation is required.

3.1.2.3 Cumulative Analysis

Analysis (Guideline 7 – Cumulative Impacts)

Air Quality

Based on the County of San Diego guidelines (County of San Diego 2007), a project would result in a cumulatively significant impact if the project results in a significant contribution to the cumulative increase in pollutants for which the SDAB is listed as nonattainment for the CAAQS and NAAQS. As discussed above, the SDAB is considered a nonattainment area for the NAAQS for ozone and the CAAQS for ozone, PM_{10}, and $PM_{2.5}$. Cumulatively considerable net increases during the construction phase would typically happen if two or more projects near each other are simultaneously constructing projects. A project that has a significant direct impact on air quality with regard to emissions of PM_{10}, $PM_{2.5}$, NO_x, or VOCs during construction would also have a significant cumulatively considerable net increase. In the event direct impacts from a proposed project are less than significant, a project may still

have a cumulatively considerable impact on air quality if the emissions of concern from the proposed project, in combination with the emissions of concern from other proposed projects or reasonably foreseeable future projects within a proximity relevant to the pollutants of concern, are in excess of the guidelines identified in Section 3.0.

As discussed in Section 3.1.2.2, emissions of ROG, NO_X, PM_{10}, and $PM_{2.5}$ during construction and operations would be below the screening-level thresholds and direct air quality impacts would be less than significant. PM_{10} and $PM_{2.5}$ emissions during construction typically result in localized impacts. The Air Quality Technical Report (attached as Appendix D) utilized the Localized Significance Threshold Methodology from the South Coast Air Quality Management District to evaluate localized dust impacts. The analysis showed that PM_{10} concentrations would decrease by 99 percent at a distance of 100 meters (approximately 330 feet) from the project boundary. The project and other cumulative projects (Stehly, Dabbs, and Pfaff) that could be grading concurrently and in proximity (within 100 meters) are rural residential projects with grading proposed to occur independently on individual lots. Even if grading occurs concurrently, the proposed project with the other cumulative projects would be required to comply with SDAPCD regulations and BMPs to minimize criteria air pollutant emissions to the extent feasible. SDAPCD Rule 55 requires that no project would discharge dust emissions of 10% opacity or greater for a period aggregating more than 3 minutes in any 60 minute period beyond the property line during construction activities. Each project's dust emissions would be subject to this Rule. In addition, PM emissions would deplete rapidly with distance from each property boundary as explained above. Therefore, construction would not result in a cumulatively considerable impact on air quality.

The guidelines for the consideration of operational cumulatively considerable net increases are treated differently due to the mobile nature of the emissions. The SDAB's RAQS, based on growth projections derived from the allowed General Plan densities, are updated every three years by SDAPCD and lay out the programs for attaining the CAAQS and NAAQS for ozone precursors. The County of San Diego Guidelines for Determining Significance (2007) state that a project which conforms to the County of San Diego General Plan, and does not have emissions exceeding the County's screening level thresholds, will not create a cumulatively considerable net increase to ozone since the emissions were accounted for in the RAQS. As discussed in the analysis under Guideline 1 in Section 3.1.2.2, the proposed project is consistent with the SDAPCD RAQS and SIP. Additionally, as discussed in Section 3.1.2.2, emissions of ROG, NO_X, PM_{10}, and $PM_{2.5}$ during project construction and operations would be below the screening level thresholds. The project would not create any CO hotspots at affected intersections. Therefore, project operations would not result in a cumulatively considerable impact on ambient air quality.

Since the project does not result in any cumulatively considerable air quality impacts, no mitigation measures are required. Standard BMPs for dust control will be utilized during construction to reduce emissions of fugitive dust to the extent feasible.

Global Climate Change

The greenhouse gas and global warming risk assessment completed for the project determined the project would generate levels of CO_2 during both construction and operation below the 900 metric ton significance threshold. The project's impact upon GHG emissions and global warming is therefore not significant. Accordingly, the project's contribution to both greenhouse gases and global warming is not cumulatively significant.

3.1.2.4 Significance of Impacts Prior to Mitigation

The project impact is less than significant for air quality impacts with adoption of the dust control design features described in Section 3.1.2.5 below.

The project results in a less than significant level of GHG emissions and its climate change impacts are less than significant. No mitigation is required.

3.1.2.5 Conclusion

Air Quality

The proposed project would result in emissions of air pollutants for both the construction phase and operational phase of the project. The air quality impact analysis evaluated the potential for adverse impacts to the ambient air quality due to construction and operational emissions. Construction emissions would include emissions associated with fugitive dust, heavy construction equipment and construction workers commuting to and from the site. The emissions associated with construction are less than the significance threshold for all pollutants. Measures that are incorporated into the project description to reduce impacts associated with construction include the following:

- Apply soil stabilizers to inactive areas
- Replace ground cover in disturbed areas as soon as possible
- Control during equipment loading/unloading
- Water active sites and haul roads a minimum of twice daily
- Reduce speeds on unpaved roads to 15 mph

These measures constitute best management practices for dust control.
Operational emissions would be associated with traffic accessing the proposed project, with area sources such as fireplaces, energy use, and landscaping. Based on the evaluation of air emissions, the project emissions would be less than significant for all operational pollutants, both direct and cumulative, and would therefore not pose a significant impact or cumulatively considerable impact on the ambient air quality.

Global Climate Change

The project's emissions of GHGs would result in emissions that are below the 900 metric ton threshold identified by CAPCOA (2008) and the County's Climate Change Guidelines as measurable. Based on this standard, the proposed project has a less than significant cumulative impact on GHG emissions and climate change and the project complies with the California Global Warming Solutions Act (AB 32).

TABLE 3.1.2-1
San Diego County 2006 GHG Emissions by Category

Sector	Total Emissions (MMTCO2e)	Percent of Total Emissions
On-Road Transportation	16	46%
Electricity	9	25%
Natural Gas Consumption	3	9%
Civil Aviation	1.7	5%
Industrial Processes & Products	1.6	5%
Other Fuels/Other	1.1	4%
Off-Road Equipment & Vehicles	1.3	4%
Waste	0.7	2%
Agriculture/Forestry/Land Use	0.7	2%
Rail	0.3	1%
Water-Born Navigation	0.13	0.4%

TABLE 3.1.2-2
Thresholds of Significance for Air Quality Impacts

Pollutant	Thresholds of Significance (Pounds per Day)	Clean Air Act Less Than Significant Levels (Tons per Year)
Carbon Monoxide (CO)	550	100
Oxides of Nitrogen (NO_x)	250	50
Oxides of Sulfur (SO_x)	250	100
Particulate Matter (PM_{10})	100	100
Particulate Matter ($PM_{2.5}$)	55	100
Volatile / Reactive Organic Compounds & Gases (VOC/ROG)	75	50

Source: SDAPCD Rule 1501, 20.2(d)(2), 1995; EPA 40 CFR 93, 1993.

Threshold for VOCs based on the threshold of significance for reactive organic gases (ROGs) from Chapter 6 of the CEQA Air Quality Handbook of the South Coast Air Quality Management District.

Threshold for ROGs in the eastern portion of the County based on the threshold of significance for reactive organic gases (ROGs) from Chapter 6 of the CEQA Air Quality Handbook of the Southeast Desert Air Basin.

Thresholds are applicable for either construction or operational phases of a project action.

The $PM_{2.5}$ threshold is based upon the proposed standard identified in the Final Methodology to Calculate Particulate Matter (PM) 2.5 and $PM_{2.5}$ Significance Thresholds," published by SCAQMD in October 2006.

TABLE 3.1.2-3
Estimated Construction Emissions – with Dust Control Measures

Emission Source	ROG	NOx	CO	SO_x	PM_{10}	$PM_{2.5}$
lbs/day						
Grading						
Fugitive Dust	-	-	-	-	32.33	6.75
Heavy Equipment Exhaust	10.93	91.59	46.00	0.00	4.59	4.22
Worker Travel – Vehicle Emissions	0.08	0.15	2.26	0.00	0.02	0.01
Total	11.01	91.74	48.62	0.00	36.94	10.98
Significance Criteria	75	250	550	250	100	55
Significant?	*No*	*No*	*No*	*No*	*No*	*No*
Trenching						
Heavy Equipment Exhaust	4.75	38.43	17.70	0.00	2.06	1.90
Worker Travel – Vehicle Emissions	0.05	0.09	1.57	0.00	0.01	0.01
Total	**4.80**	**38.43**	**19.27**	**0.00**	**2.07**	**1.91**
Significance Criteria	75	250	550	250	100	55
Significant?	*No*	*No*	*No*	*No*	*No*	*No*
Maximum Daily Emissions – Overlap of Grading and Trenching Phase	15.81	130.18	67.89	0.01	39.01	12.89
Significance Criteria	75	250	550	250	100	55
Significant?	*No*	*No*	*No*	*No*	*No*	*No*
Paving						
Asphalt Offgassing	2.89	-	-	-	-	-
Heavy Equipment Exhaust	5.59	43.44	20.61	0.00	2.52	2.32
Construction Truck Trips	0.95	12.35	4.74	0.02	0.56	0.48
Worker Travel – Vehicle Emissions	0.06	0.11	1.83	0.00	0.02	0.01
Total	**9.49**	**55.90**	**27.18**	**0.02**	**3.10**	**2.81**
Significance Criteria	75	250	550	250	100	55
Significant?	*No*	*No*	*No*	*No*	*No*	*No*
House Construction/Architectural Coatings						
Heavy Equipment Exhaust	3.30	18.52	11.13	0.00	1.22	1.12
Construction Truck Trips	0.06	0.71	0.55	0.00	0.03	0.03
Worker Travel – Vehicle Emissions	0.13	0.25	4.23	0.01	0.04	0.02
Architectural Coatings Offgassing	8.23	-	-	-	-	-
Architectural Coatings Worker Travel	0.01	0.02	0.40	0.00	0.00	0.00
Total	**11.73**	**19.50**	**16.31**	**0.01**	**1.29**	**1.17**
Significance Criteria	75	250	550	250	100	55
Significant?	*No*	*No*	*No*	*No*	*No*	*No*

Source: SRA, January 2010

TABLE 3.1.2-4
Operational Vehicle Trip Emissions

	ROG	NOx	CO	SO_x	PM_{10}	$PM_{2.5}$
lbs/day[a]						
Natural Gas Usage	0.03	0.35	0.15	0.00	0.00	0.00
Hearth Emissions	26.91	0.31	29.68	0.05	4.07	3.91
Landscaping Emissions	0.23	0.01	1.25	0.00	0.00	0.00
Consumer Products	1.37	-	-	-	-	-
Architectural Coatings	0.40	-	-	-	-	-
Vehicular Emissions	3.70	4.61	52.68	0.06	0.52	.030
Total	**32.64**	**5.28**	**83.76**	**0.11**	**4.59**	**4.21**
Significance Criteria	75	250	550	250	100	55
Significant?	*No*	*No*	*No*	*No*	*No*	*No*
Tons/Year						
Natural Gas Usage	0.00	0.06	0.03	0.00	0.00	0.00
Hearth Emissions	1.10	0.01	1.22	0.00	0.17	0.16
Landscaping Emissions	0.02	0.00	0.11	0.00	0.00	0.00
Consumer Products	0.25	-	-	-	-	-
Architectural Coatings	0.07	-	-	-	-	-
Vehicular Emissions	0.67	0.84	9.61	0.01	0.10	0.21
Total	**2.11**	**0.91**	**10.97**	**0.01**	**0.27**	**0.21**
Significance Criteria	10	40	100	100	15	10
Significant?	*No*	*No*	*No*	*No*	*No*	*No*

Source: SRA, January 2010
[a]Maximum of summer and winter emissions from URBEMIS Model outputs

TABLE 3.1.2-5
Construction GHG Emissions Metric Tons/Year

Construction Phase	CO_2 Emissions, Metric Tons
Mass Grading	247
Utilities	75
Paving	52
Building Construction	171
Architectural Coatings	1
Total	**346**

Source: SRA, September 2009

TABLE 3.1.2-6
Summary of Estimated Operational Greenhouse Gas Emissions

Emission Source	Annual Emissions (Metric tons/year)		
	CO_2	**CH4**	**N_2O**
Operational Emissions			
Electricity Use Emissions	132	0.001	0.0006
Natural Gas Use Emissions	66	0.01	0.0001
Water Consumption Emissions	18	0.0001	0.00008
Vehicle Emissions	628	0.052	0.047
Total	**844**	**0.062**	**0.047**
Global Warming Project Factor	1	21	310
CO_2Equivalent Emissions	844	1	15
Total CO_2 Equivalent Emissions	**860**		

Source: SRA, September 2009

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