2.2 Air Quality (including Global Climate Change)

An Air Quality Technical Report and a Global Climate Change Analysis were prepared for the Proposed Project (Revised 20119). The following section is a summary of these reports which can both be found in their entirety in Appendices D-1 and D-2 of this EIR.

2.2.1 Existing Conditions

Climate

The project area, like the rest of San Diego County's inland valley areas, has a Mediterranean climate characterized by warm, dry summers and mild, wet winters. The mean annual temperature for the project area is 74 degrees Fahrenheit (º F). The average annual precipitation is 13 inches, falling primarily from November to April. Winter low temperatures in the project area average about 44º F, and summer high temperatures average about 81º F (U.S. Department of Commerce 2006).

The dominant meteorological feature affecting the region is the Pacific High Pressure Zone, which produces the prevailing westerly to northwesterly winds. These winds tend to blow pollutants away from the coast toward the inland areas. Consequently, air quality near the coast is generally better than that which occurs at the base of the coastal mountain range.

Generally, atmospheric temperature decreases as one moves higher and further from the earth's surface; however, fluctuations in the strength and pattern of winds from the Pacific High Pressure Zone throughout the day produce periodic temperature inversions. A temperature inversion is a thin layer of the atmosphere where the decrease in temperature with elevation is less than normal. The inversion acts like a "lid" keeping pollutants "trapped" within the area under the inversion layer. This area is called the mixing depth. Generally, the morning inversion layer is lower than the afternoon inversion layer. The greater the change between the morning and afternoon mixing depths, the greater the ability of the atmosphere to disperse pollutants.

Throughout the year, the elevation of the temperature inversion within the San Diego Air Basin (SDAB) in the afternoon varies between approximately 1,500 and 2,500 feet above MSL. In winter, the morning inversion layer is about 800 feet above MSL. In summer, the morning inversion layer is about 1,100 feet above MSL. Therefore, air quality tends to be better in winter than in summer because there is a greater change in the morning and afternoon mixing depths, allowing the dispersal of "trapped" pollutants. The Project Site is situated at an elevation of approximately 650 feet above MSL (the site ranges from 300 feet to over 550 feet at the northern end).

The prevailing westerly wind pattern is sometimes interrupted by regional "Santa Ana" conditions. A Santa Ana occurs when a strong high pressure develops over the Nevada-Utah area and overcomes the prevailing westerly coastal winds, sending strong, steady, hot, dry northeasterly winds over the mountains and out to sea.

Strong Santa Anas tend to blow pollutants out over the ocean, producing clear days. However, at the onset or during breakdown of these conditions, or if the Santa Ana is weak, emissions from the South Coast Air Basin to the north are blown out over the ocean, and low pressure over Baja California draws this pollutant-laden air mass

southward. As the high pressure weakens, prevailing northwesterly winds reassert themselves and send this cloud of contamination ashore in the SDAB.

When this event does occur, the combination of transported and locally produced contaminants generates the worst air quality measurements within the SDAB.

Global Climate Change

The earth's climate is in a state of constant flux with periodic warming and cooling cycles. Extreme periods of cooling are termed "ice ages," which may then be followed by extended periods of warmth. For most of the earth's geologic history, these periods of warming and cooling have been the result of many complicated, interacting natural factors that include volcanic eruptions which spew gases and particles (dust) into the atmosphere, the amount of water, vegetation, and ice covering the earth's surface, subtle changes in the earth's orbit, and the amount of energy released by the sun (sun cycles). However, since the beginning of the Industrial Revolution around 1750, the average temperature of the earth has been increasing at a rate that is faster than can be explained by natural climate cycles alone.

With the Industrial Revolution came an increase in the combustion of carbon-based fuels such as wood, coal, oil, and "biofuels." Industrial processes have also created emissions of substances that are not found in nature. This in turn has led to a marked increase in the emissions of gases that have been shown to influence the world's climate. These gases, termed "greenhouse gases" (GHG), influence the amount of heat that is trapped in the earth's atmosphere. Because recently observed increased concentrations of GHG in the atmosphere are related to increased emissions resulting from human activity, the current cycle of global climate change ~~"global warming"~~ is generally believed to be largely due to human activity. Of late, the issue of global climate change ~~"global warming"~~ has arguably become the most important and widely debated environmental issue in the United States and the world.

Regulatory Framework

Federal Regulations

The federal Clean Air Act (CAA) was enacted in 1970 and amended in 1977 and 1990 (42 U.S.C. 7401) for the purposes of protecting and enhancing the quality of the nation's air resources to benefit public health, welfare, and productivity. In 1971, in order to achieve the purposes of the CAA the U.S. Environmental Protection Agency (EPA) developed primary and secondary national ambient air quality standards (NAAQS) for seven pollutants known as "criteria" pollutants: ozone (O_3), carbon monoxide (CO), sulfur dioxide (SO_2), nitrogen dioxide (NO_2), lead (Pb), and suspended particulates PM_{10} and $PM_{2.5}$.(Table 2.2-1).

Primary NAAQS are required to protect human health with an adequate margin of safety. Secondary standards are designed to protect property and the public welfare from air pollutants in the atmosphere.(42 U.S.C. 7409(b)(2)).

Ozone (O_3)

In 1997, the U.S. EPA promulgated a new eight-hour ozone standard of eight parts per hundred million (pphm) to replace the existing one-hour standard of 12 pphm. The SDAB is designated a "basic" non-attainment area for the new eight-hour ozone standard (U.S. EPA 2004a). Using the discretion provided by Section 172(a)(1) of the CAA, the U.S. EPA has chosen not to classify the basin (e.g., moderate, serious, etc.). Pursuant to Section 172(a)(2)(A) of the CAA, the period of attainment will be no more than five years from the effective date of designation (U.S. EPA 2004b). Consequently, the SDAB must demonstrate attainment by June 15, 2009; however, the U.S. EPA may grant an extension of the attainment date to no more than 10 years after designation, or June 15, 2014.

On March 12, 2008, the U.S. EPA further revised the eight-hour ozone standard to 7.5 pphm. On March 12, 2009, CARB submitted its recommendations for area designations for the revised federal eight-hour ozone standard. The recommendations are based on ozone measurements collected during 2006 through 2008. It was recommended that the SDAB be classified as nonattainment. The U.S. EPA will issue final area designations no later than March 2010 (if there is insufficient information to make these designation, the U.S. EPA will issue designations no later than March 2011). California must then submit an SIP outlining how the state will meet the standards by a date that the U.S. EPA will establish in a separate rule. That date will be no later than three years after the U.S. EPA's final designations (e.g., if final designations are made in 2010, the SIP must be submitted by 2013). The deadline for attaining the standard may vary based on the severity of the problem in the area.

Suspended Particulates ($PM_{2.5}$ and PM_{10})

The SDAB had been classified as an attainment area for $PM_{2.5}$; however, on September 21, 2006, the U.S. EPA revised the NAAQS for particulate matter. The 24-hour $PM_{2.5}$ standard was strengthened from 65 micrograms per cubic meter ($\mu g/m^3$) to 35 $\mu g/m^3$. The existing standards for annual $PM_{2.5}$ of 15 $\mu g/m^3$ remained the same.

States had until December 18, 2007, to make recommendations for areas to be designated attainment and nonattainment under the revised $PM_{2.5}$ standard. It was recommended that the SDAB be designated as an attainment (State of California 2007a). The U.S. EPA will make the final designations by late 2009 and those designations will become effective in April 2010. For areas designated as non-attainment, State Implementation Plans (SIP) for meeting the new standard will be due three years after the designations. States must meet the standards by April 2015 with a possible extension to April 2020.

The U.S. EPA also revised the standards for PM_{10}. Due to a lack of evidence linking health problems to long-term exposure to coarse particle pollution, the agency revoked the new annual PM_{10} standard (effective December 17, 2006) and the existing federal standard for PM_{10} was retained.

Other Criteria Pollutants

The SDAB is in attainment for the NAAQS for all other criteria pollutants.

State Regulations

The U.S. EPA allows the states the option to develop their own ambient air quality standards provided they are at least as stringent as the federal standards. The California Air Resource Board (CARB) has set more stringent limits on six of the seven criteria pollutants in the California Ambient Air Quality Standards (CAAQS). The standards are shown in Table 2.2-1.

The SDAB is a non-attainment area for the state $PM_{2.5}$ standard (State of California 2005). With regard to the CAAQS, the SDAB is currently classified as a nonattainment area for O_3 and PM_{10}. The SDAB is in attainment for the CAAQS for all other criteria pollutants.

Assembly Bill (AB) 2595, known as the California Clean Air Act, became effective on January 1, 1989, and requires that districts implement regulations to reduce emissions from mobile sources through the adoption and enforcement of transportation control measures and (South Coast Air Quality Management District [SCAQMD] 2003):

- Demonstrate the overall effectiveness of the air quality program;
- Reduce nonattainment pollutants at a rate of five percent per year, or include all feasible measures and expeditious adoption schedule;
- Ensure no net increase in emissions from new or modified stationary sources;
- Reduce population exposure to severe nonattainment pollutants according to a prescribed schedule;
- Include any other feasible controls that can be implemented, or for which implementation can begin, within 10 years of adoption of the most recent air quality plan; and
- Rank control measures by cost-effectiveness.

Toxic Air Contaminants

The public's exposure to toxic air contaminants (TACs) is a significant public health issue in California. In 1983, the California Legislature enacted a program to identify the health effects of TACs and to reduce exposure to these contaminants to protect the public health (AB 1807: Health and Safety Code sections 39650-39674). The Legislature established a two-step process to address the potential health effects from TACs. The first step is the risk assessment (or identification) phase. The second step is the risk management (or control) phase of the process.

In April 2005, the CARB published the "Air Quality and Land Use Handbook: A Community Health Perspective." The handbook makes recommendations directed at protecting sensitive land uses while balancing a myriad of other land use issues (e.g., housing, transportation needs, economics). It notes that the handbook is not regulatory or binding on local agencies and recognizes that application takes a qualitative approach. As reflected in the CARB handbook, there is currently no adopted standard for the significance of health effects from mobile sources. Therefore, the CARB has provided guidelines for the siting of land uses near heavily traveled roadways. Of pertinence to this study, the CARB guidelines indicate that siting new sensitive land uses

within 500 feet of a freeway, urban roads with 100,000 vehicles/day, or rural roads with 50,000 vehicles/day should be avoided when possible.

As an ongoing process, the CARB will continue to establish new programs and regulations for the control of diesel particulate emissions as appropriate. The continued development and implementation of these programs and policies will ensure that the public exposure to diesel particulate matter will continue to decline.

State Implementation Plan

The SIP is a collection of documents that set forth the state's strategies for achieving air quality standards. The San Diego Air Pollution Control District (SDAPCD) is the local agency responsible for preparing and implementing the portion of the SIP applicable to the SDAB. The SDAPCD adopts rules, regulations, and programs to attain state and federal air quality standards, and appropriates money (including permit fees) to achieve the objectives of the SIP.

Local Regulations

The SDAPCD prepared the 1991/1992 Regional Air Quality Strategy (RAQS) in response to the requirements set forth in AB-2595. The draft was adopted, with amendments, on June 30, 1992 (County of San Diego 1992). Attached as part of the RAQS are the transportation control measures (TCM) for the air quality plan prepared by SANDAG in accordance with AB-2595 and adopted by SANDAG on March 27, 1992, as Resolution Number 92-49 and Addendum. The required triennial update of the RAQS and corresponding TCM was adopted on December 12, 1995, 1998, 2001, and 2004. The RAQS and TCM plan set forth the steps needed to accomplish attainment of state and federal ambient air quality standards.

The SDAPCD has also established a set of rules and regulations initially adopted on January 1, 1969, and periodically reviewed and updated. The rules and regulations define requirements regarding stationary sources of air pollutants and fugitive dust.

Global Climate Change Regulations

The Coordinating Committee on the Ozone Layer was established by the United Nations Environment Program (UNEP) in 1977, and UNEP's Governing Council adopted the World Plan of Action on the Ozone Layer. Continuing efforts led to the signing in 1985 of the Vienna Convention on the Protection of the Ozone Layer. This resulted in the creation of the Montreal Protocol on Substances That Deplete the Ozone Layer (Montreal Protocol), an international treaty designed to protect the stratospheric ozone layer by phasing out production of ozone depleting substances (ODSs). The treaty was adopted on September 16, 1987 and went into force on January 1, 1989; and has been revised numerous times since, most recently in 1999.

Similar to the events that led to the Montreal Protocol, to address growing concern about global climate change, 191 countries including the United States joined an international treaty known as the United Nations Framework Convention on Climate Change (UNFCCC). The UNFCCC recognizes that the global climate is a shared resource that can be affected by industrial and other emissions of GHG, and that set an overall framework for intergovernmental efforts to tackle the challenges posed by global climate

change. Under this treaty, governments gather and share information on 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 technological support to developing countries; and cooperate in preparing for adaptation to the impacts of climate change. The UNFCCC entered into force on March 21, 1994. However, this treaty generally lacked powerful, legally binding measures.

The Kyoto Protocol (Protocol) was adopted in December 1997. The Kyoto Protocol shares the UNFCCC's objective, principles, and institutions, as it significantly strengthens the UNFCCC by committing industrialized countries to individual, legally binding targets to limit or reduce their GHG emissions. Only parties to the UNFCCC that have also become parties to the Protocol are bound by the Protocol's commitments. More than 161 countries, constituting 55 percent of global emissions, are under the protocol. Although former U.S. Vice President Al Gore symbolically signed the Protocol in 1998, the Protocol has not been formally adopted by the U.S. Senate, as is required.

In 1993, t~~T~~he U.S. developed the Climate Change Action Plan (CCAP). The CCAP consists of initiatives that involve all economic sectors and aim at reducing all significant GHG. The CCAP, backed by federal funding, cultivates cooperative partnerships between the government and the private sector to establish flexible and cost-effective ways to reduce GHG emissions within each sector. The CCAP encourages investments in new technologies, but also relies on previous actions and programs focused on saving energy and reducing emissions.

With regard to the transportation sector, the national Corporate Average Fuel Economy (CAFE) standards determine the fuel efficiency of certain vehicle classes in the U.S. After no changes since 1990, in 2007 the CAFE standards were increased for new light-duty vehicles to 35 miles per gallon (mpg) by 2020. In May 2009, President Obama announced plans to increase these CAFE standards to 35.5 mpg by 2016. With improved gas mileage, fewer gallons of transportation fuel would be combusted to travel the same distance, thereby reducing nationwide GHG emissions associated with vehicle travel.

The State of California has a number of policies and regulations that are either directly or indirectly related to GHG emissions. Only those most relevant to land use development projects are included in this discussion.

California Code of Regulations, Title 24, is the California Building Code. Part 6 of Title 24 is the Energy Efficiency Standards for Residential and Nonresidential (also known as the California Energy Code). This code, originally enacted in 1978 in response to legislative mandates, establishes energy efficiency standards for residential and non-residential buildings in order to reduce California's energy consumption. The Code is updated periodically to incorporate and consider new energy efficiency technologies and methodologies as they become available. The most recent amendments to the Code are dated September ~~11,~~ 2008~~6~~, hence known as "2008 Title 24," but became effective January 1, 2010. The current 2008 Title 24 requires energy savings of 15-35 percent above the former 2005 Title 24. The reference to 2005 Title 24 is relevant in that many of the State's long-term energy and GHG reduction goals identify energy saving targets relative to 2005 Title 24. By reducing California's energy consumptions, emissions of GHG may also be reduced.

Part 11 of Title 24 is the California Green Building Standards Code, referred to as CALGreen. This code was added to Title 24 in 2009 as a voluntary requirement. The 2010 version of CALGreen will take effect January 2011 and will institute mandatory minimum environmental performance standards for all buildings. Relevant to GHG emissions reductions, it requires a minimum 20 percent reduction in potable water use and provides incentives for green building design which could reduce energy demand and resulting GHG emissions associated with electricity generation.

With regard to transportation GHG emissions, California Assembly Bill (AB) 1493 (also referred to as Pavley or the California Light-Duty Vehicle Greenhouse Gas Standards) was enacted on July 22, 2002. It required the CARB to develop and adopt regulations to lowerthat reduce GHG emissions emitted byfrom passenger vehicles and light duty trucks to the maximum extent technologically feasible,. Regulations adopted by CARB will apply to beginning with the 2009 and later model year vehicles. CARB adopted regulations in 2004, but due to litigation and delays from the U.S. EPA was not granted authority to proceed until June 2009. With this action, it is expected that the new regulations (Pavley I and II) will reduce GHG emissions from California passenger vehicles by about 18 percent statewide. These reductions are to come from improved vehicle technologies such as small engines with superchargers, continuously variable transmissions, and hybrid electric drives.

Executive Order (EO) S-3-05, signed by Governor Schwarzenegger on June 1, 2005, established the following GHG emission reduction targets for the state of California:

- 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.

This executive order also directs the secretary of the California EPA (CalEPA) to oversee the efforts made to reach these targets, and to prepare biannual reports on the progress made toward meeting the targets and on the impacts to California related to global warming, including impacts to water supply, public health, agriculture, the coastline, and forestry. With regard to impacts, the report shall also prepare and report on mitigation and adaptation plans to combat the impacts.

In response to Executive Order S-3-05, the California legislature passed Assembly Bill 32 (AB 32), the "California Global Warming Solutions Act of 2006," inwhich was signed by the governor on September 27, 2006. It requireds the CARB to adopt rules and regulations that would reduce statewide GHG emissions to 1990 levels by 2020. In order to assess the scope of the reductions needed to return to 1990 emissions levels, CARB first estimated 2020 business-as-usual (BAU) GHG emissions. These are the GHG emissions that would be expected to occur in the absence of any state GHG reduction measures. After estimating that statewide 2020 BAU GHG emissions would be 596 metric tons, CARB then developed a Scoping Plan that identified measures to reduce BAU emissions by approximately 174 metric tons by 2020. Major reductions are to accrue from measures affecting energy and transportation (particularly on-road vehicles).

Another key vehicle emission reduction measure identified in the CARB Scoping Plan besides Pavley is the Low Carbon Fuel Standard (LCFS). Signed as Executive Order S-

01-07~~, signed~~ by Governor Schwarzenegger on January 18, 2007, it directs that a statewide goal be established to reduce the carbon intensity of California's transportation fuels by at least 10 percent by 2020. ~~It orders that a Low Carbon Fuel Standard (LCFS) for transportation fuels be established for California and directs the CARB to determine if a LCFS can be adopted as a discrete early action measure pursuant to AB 32 (The~~ CARB approved the LCFS as a discrete early action item ~~with a regulation to be adopted and implemented by 2010 at its June 2007 hearing.)~~ EO S-01-07 also instructs the CalEPA to coordinate activities between the University of California, the California Energy Commission, and other state agencies to develop and propose a draft compliance schedule to meet the 2020 target.

Also identified in the CARB Scoping Plan to address vehicle emissions is the Regional Transportation-Related GHG Targets measure. This measure identifies policies to reduce transportation emissions through changes in future land use patterns and community design, as well as through improvements in public transportation, all of which are intended to reduce VMT. By reducing VMT, vehicle GHG emissions would be reduced. This measure is linked to Senate Bill (SB) 375, which directs that regional emissions targets be established for passenger vehicles by SANDAG in its regional transportation plan as part of the Sustainable Communities Strategy (SCS). CARB expects that this measure will reduce transportation-related GHG emissions by about 5 million metric tons or 3 percent of the total needed statewide reductions.

Existing Air Quality

As stated above, the project area is within the SDAB. Air quality at a particular location is a result of the kinds and amounts of pollutants being emitted both into the air locally and throughout the basin coupled with the dispersal rates of pollutants within the region. The major factors affecting pollutant dispersion are wind speed and direction, the vertical dispersion of pollutants, which is affected by inversions, and the local topography.

Air quality is commonly expressed as the number of days in which air pollution levels exceed state standards set by the CARB and federal standards set by the U.S. EPA (see Table 2.2-1). The concentration of pollutants within the SDAB is measured at 10 stations maintained by the SDAPCD and the CARB. Table 2.2-2 summarizes the number of days per year during which state and federal standards were exceeded in the SDAB during the years 2003 to 2007. The station nearest the Project Site which is most representative of the air quality near the Project Site and measures a full range of pollutants is the Escondido – East Valley Parkway monitoring station, located approximately 15 miles south of the Project Site. Table 2.2-3 provides a summary of measurements of O_3, CO, PM_{10}, and $PM_{2.5}$ collected at the Escondido – East Valley Parkway monitoring station for the years 2003 through 2007.

Ozone

Ozone, or smog, is the primary source of air pollution in the SDAB. Nitrogen oxides and hydrocarbons, known as reactive organic gases (ROGs), are known to be the chief "precursors" of ozone. These compounds react in the presence of sunlight to produce ozone. Because sunlight plays such an important role in the formation of smog, it is at its highest concentration during the daytime in summer months. About half of these smog-forming pollutants come from automobiles (County of San Diego 2004). Population

growth in San Diego has resulted in a large increase in the number of automobiles operating on area roadways.

Not all of the ozone within the SDAB is derived from local sources. Under certain meteorological conditions, such as during Santa Ana wind events, ozone and other pollutants are transported from the South Coast Air Basin (Los Angeles) and combine with ozone formed from local emissions sources to produce elevated ozone levels in the SDAB.

As discussed above, in order to address adverse health effects due to prolonged exposure, the U.S. EPA phased out the national one-hour ozone standard and replaced it with the more protective eight-hour ozone standard. The former national one-hour ozone standard was not exceeded at the Escondido – East Valley Parkway monitoring station during the five-year period of 2003 to 2007. The stricter state standard for ozone was exceeded at the Escondido – East Valley Parkway monitoring station three days in 2003, two days in 2004, one day in 2005, and three days in 2006 (State of California 2008b).

According to SANDAG, on average approximately 42 percent of the days that had ozone concentrations over the state standard between 1987 and 1994 were attributable to pollution transported from the Los Angeles area (SANDAG 1994:249-250). Local agencies can control neither the source nor the transportation of pollutants from outside the SDAB. The SDAPCD's policy, therefore, has been to control local sources effectively enough to reduce locally produced contamination to clean air standards. Through the use of air pollution control measures outlined in the RAQS, the SDAPCD has effectively reduced ozone levels in the SDAB; however, the SDAB remains designated a nonattainment area for both national and state standards for Ozone.

Carbon Monoxide

The SDAB is classified as a state and federal attainment area for CO (County of San Diego 1998). Until 2003, no violations of the state standard for CO had been recorded in the SDAB since 1991, and no violations of the national standard had been recorded in the SDAB since 1989. As seen in Table 2.2-2, both the federal and state CO standards were exceeded in the County on one day in 2003, October 28, a day when major wildfires were raging throughout the County. This exceedance was likely caused by the wildfires and would be considered beyond the control of the SDAPCD. Such an event would be covered under the U.S. EPA's Natural Events Policy, which provides for the exclusion of air quality data attributable to uncontrollable natural events (e.g., volcanic activity, wildland fires, and high wind events). Therefore, notwithstanding this day of nonattainment, the SDAB remains in attainment for CO.

Small-scale, localized concentrations of CO above the state and national standards are called "CO hot spots." These have the potential to occur at intersections with stagnation points, such as those that occur on major highways and heavily traveled and congested roadways.

PM_{10}

PM_{10} is a particulate matter with an aerodynamic diameter of 10 microns or less. Ten microns is about one-seventh of the diameter of a human hair. Particulate matter is a

complex mixture of very tiny solid or liquid particles composed of chemicals, soot, and dust. Sources of PM_{10} emissions in the SDAB consist mainly of activities that disturb the soil including travel on roads and construction, mining, or agricultural operations, dust suspended by vehicle traffic, as well as secondary aerosols formed by reactions in the atmosphere. Other sources include windblown dust, salts, brake dust, and tire wear (County of San Diego 1998).

As of 2003, the national standards for PM_{10} had never been exceeded in the SDAB. The U.S. EPA has designated the SDAB unclassifiable for PM_{10}. In 2003, the federal PM_{10} standard was exceeded twice in the SDAB. These two exceedances result in a calculated number of days that the federal standard was exceeded of approximately nine days for the year (see Table 2.2-2). The first exceedance occurred on October 29, 2003, at a time when major wildfires were raging throughout the county. The second exceedance occurred on November 23, 2003, during high winds which caused large amounts of ash from the previous fires to be resuspended. Like the exceedance of the CO standard, these exceedances were likely caused by or were a subsequent result of the wildfires and would be beyond the control of the SDAPCD pursuant to the U.S. EPA's Natural Events Policy. Thereafter, the federal PM_{10} standard was exceeded in the SDAB on October 13, 2005 and again on October 21, 2007. These exceedances result in a calculated number of days that the federal standards were exceeded of approximately six days for 2005 and 2007 (see Table 2.2-2).

The stricter state 24-hour standard was exceeded five days in 2003, one day in 2004, one day in 2006, and two days in 2007 (State of California 2008b). These exceedances resulted in a calculated number of days that the state standard was exceeded of 30.7 days in 2003, 6.1 days in 2004, 5.8 days in 2006, and 11.5 days in 2007.

In conclusion, the SDAB remains in attainment under national standards, but is considered a non-attainment area under state standards for PM_{10}.

$PM_{2.5}$

Airborne, inhalable particles with aerodynamic diameters of 2.5 microns or less ($PM_{2.5}$) have been recognized as a pollutant requiring regular monitoring. Federal regulations required that $PM_{2.5}$ monitoring begin January 1, 1999 (County of San Diego 1999). The Escondido – East Valley Parkway monitoring station is one of five stations in the SDAB that monitors $PM_{2.5}$. The 24-hour $PM_{2.5}$ standard in effect was exceeded once in 2003, once in 2004, and twice in 2007. The SDAB was initially classified as a non-attainment area; however, it was subsequently reclassified as an attainment area for the $PM_{2.5}$ standard (U.S. EPA 2004c). The SDAB is a non-attainment area for the state $PM_{2.5}$ standard (State of California 2005).

As discussed above, the $PM_{2.5}$ standard has been revised. For the new particulate standard, state recommendations for area designations were due to the U.S. EPA by December 18, 2007, and the U.S. EPA will make the final designations by November 2009. It was recommended that the SDAB be designated as an attainment area for the revised standards (State of California 2007b). This is also the EPA's intended designation for the SDAB.

Other Criteria Pollutants

The national and state standards for NO_2, SO_2, and lead are being met in the SDAB and the latest pollutant trends suggest that these standards will not be exceeded in the foreseeable future.

Greenhouse Gases (GHGs)

There are numerous GHGs, both naturally occurring and artificial. Table 2.2-4 summarizes some of the most common. Of the gases listed in Table 2.2-4, carbon dioxide, methane, and nitrous oxide are produced by both natural and anthropogenic (human) sources. The remaining gases, hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF_6), are the result of human processes.

Details relating to the calculation of GHGs are found in the Global Climate Change Report attached to the EIR as Appendix D-2. The increase in the earth's temperature is expected to have wide ranging effects on the environment. Although global climate change is anticipated to affect all areas of the globe, there are numerous implications of direct importance to California. Statewide average temperatures are anticipated to increase by between 3 and 10.5° F by 2100. Some climate models indicate that this warming may be greater in the summer than in the winter. This could result in widespread adverse impacts to ecosystem health, agricultural production, water use and supply, and energy demand. Increased temperatures could reduce the Sierra Nevada snowpack and put additional strain on the region's water supply. In addition, increased temperatures could result in lower inversion levels leading to a decrease in air quality. It is important to note that even if GHG emissions were to be eliminated or dramatically reduced, it is projected that the effect of those emissions would continue to affect global climate for centuries.

2.2.2 Guidelines for the Determination of Significance

Air Quality

For the purposes of this EIR, the basis for the determination of significance for Guidelines 1 through 4 is the County of San Diego Guidelines for Determination of Significance, Air Quality, adopted July 30, 2007. Additionally, the threshold for ROG was obtained from Chapter 6 of the CEQA Air Quality Handbook of the SCAQMD (SCAQMD 1993) and the threshold for $PM_{2.5}$ was obtained from the SCAQMD Final Methodology to Calculate $PM_{2.5}$ and $PM_{2.5}$ Significance Thresholds (SCAQMD 2006). A project will have a significant adverse environmental impact related to air quality if the project would:

1. Conflict with or obstruct the implementation of the San Diego RAQS and/or applicable portions of the SIP.

2. Result in emissions that would violate any air quality standard or contribute substantially to an existing or projected air quality violation.

    a. Result in emissions that exceed 250 pounds per day of NOx, or 75 pounds per day of VOCs.

b. Result in emissions of carbon monoxide of 550 pounds per day, and when totaled with the ambient concentrations will exceed a 1-hour concentration of 20 parts per million (ppm) or an 8-hour average of 9 ppm.

c. Result in emissions of PM2.5 that exceed 55 pounds per day.

d. Result in emissions of PM10 that exceed 100 pounds per day and increase the ambient PM10 concentration by 5 micrograms per cubic meter (5.0 µg/m3) or greater at the maximum exposed individual.

e. Result in emissions of ROG, as a precursor to Ozone, that exceed 75 pounds per day.

3. Expose sensitive receptors (including, but not limited to, schools, hospitals, resident care facilities, day-care centers and project residents) to substantial pollutant concentrations.

   a. Place sensitive receptors near CO "hotspots" or creates CO "hotspots" near sensitive receptors.

   b. Result in exposure to TACs resulting in a maximum incremental cancer risk greater than 1 in 1 million without application of Toxics-Best Available Control Technology or a health hazard index greater than one would be deemed as having a potentially significant impact.

4. Expose considerable number of persons to objectionable odors.

Global Climate Change

~~The topic of global warming has been newly introduced for analysis in project EIRs and direct guidance is not currently provided in CEQA Guidelines. Likewise, guidelines for the determination of significance for this topic have yet to be adopted by the County. There is, however, some guidance to be found in CEQA. CEQA Guidelines Section 15144 states that drafting an EIR involves some degree of forecasting, and while forecasting the unforeseeable is not possible, an agency must use its best efforts to find out and disclose all that it can within reason. CEQA Guidelines Section 15145 deals with the difficulty in forecasting where a thorough investigation is unable to resolve an issue and the answer remains purely speculative.~~

~~CEQA Guidelines Section 15146 discusses informed decision-making. The comments on this section note that the level of analysis for a particular issue must be specific enough to permit informed decision making and public participation without engaging in a speculative analysis of environmental consequences.~~

~~With regard to climate change, it is possible to document the current state of research and to forecast an emissions inventory for GHGs associated with the Proposed Project at build out. Simple data is provided to allow for informed decision making and public participation without attempting to forecast unforeseeable consequences or speculate outcomes.~~

~~Since there are currently no published thresholds or recommended methodologies for determining the significance of a project's potential contribution to global climate change, no uniform accepted approach has been developed for assessing a project's potential impacts relative to global climate change. CARB has prepared *Preliminary Draft Staff Proposal: Recommended Approaches for Setting Interim Significance Thresholds for Greenhouse Gases under the California Environmental Quality Act* (State of California 2008c). This draft document is intended as a resource, not a guidance document; however, it recognizes that major emission sub-sources for residential and commercial uses include energy use, transportation, water use, waste, and construction and has identified the California Energy Commission (CEC) Tier II Energy Efficiency goals as an appropriate performance standard for energy use.~~

Based on Appendix G of the CEQA Guidelines, the County of San Diego has determined that a~~A~~ proposed project would~~ld~~ have a significant adverse environmental impact related to ~~global climate change~~greenhouse gas emissions if the project would:

1. Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?

~~2.~~ 2. Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases? ~~Be unable to meet the CEC Tier II Energy Efficiency Goals of a 30 percent reduction over Title 24 standards.~~

These thresholds address the potential cumulative impacts that an individual project's GHG emissions could have on ~~climate change~~greenhouse gas emissions. Threshold number one is measured by the degree to which a project is consistent with AB 32/SB375. In the absence of an adopted local Climate Action Plan, the County relies on conformance to statewide planning efforts.

As identified above, AB 32, and the related EO S-3-05, established the statewide GHG emission target of achieving 1990 GHG emissions levels by 2020. AB 32 also directed CARB to identify the GHG reduction measures needed to reduce 2020 business-as-usual (BAU) emissions to the target 1990 emissions level. In response, CARB developed a BAU 2020 Forecast of statewide GHG emissions that would occur in the absence of AB 32's mandated reductions, based on growth factors applied to past and present GHG emissions inventories (CARB 2008a). CARB then developed a Climate Change Scoping Plan which identified the GHG reduction measures necessary to reduce BAU 2020 emissions to 1990 levels, an approximate 30 percent reduction across all sectors statewide (CARB 2008b).

A more specific regional GHG inventory and projection of countywide emissions was prepared by the University of San Diego School of Law Energy Policy Initiative Center that took into account the unique characteristics of the San Diego region. Based on this inventory and 2020 emissions projections, it was concluded that countywide GHG emissions needed to be reduced by 33 percent below BAU in order to achieve 1990 emissions levels by 2020 (EPIC 2008).

Therefore, to demonstrate that the Proposed Project would not impede the implementation of AB 32, the Proposed Project must demonstrate how its 2020 GHG emissions would be reduced to 33 percent below projected BAU 2020 emissions. BAU

2020 emissions are generally defined as the emissions that would have occurred in the absence of AB 32's mandated reductions. More specific to project development proposals, BAU emissions are defined as those that would be generated through development compliant with the 2005 Title 24 standards, water conservation and waste diversion standards established in current regulations, and vehicle fleet characteristics reflecting existing engine and fuel technologies. Thus, BAU emissions do not account for recent updates to the Title 24 energy standards, pending updates to the plumbing code, pending implementation of the California Green Building Code, nor recent regulations mandating near-future improvements in vehicle fuel mileage, GHG emissions reductions and low-carbon vehicle fuels.

2.2.3 Analysis of Project Effects and Determination as to Significance

RAQS/SIP Impacts (Guideline 1)

A project would result in a significant air quality impact if the project obstructs or conflicts with implementation of the San Diego RAQS or applicable portion of the SIP.

The RAQS and the SIP rely on the local adopted plans for their projections and forecasts, which determine compliance for individual projects. SANDAG forecasts for San Diego County indicate that from 2008 to 2030, the number of housing units in the Fallbrook CP Area will increase by 41 percent, or 6,346 units (SANDAG 2006, 2008). The current Fallbrook CP designates the Project Site as Specific Plan Area and Multiple Rural Use, allowing up to 262 dwelling units. The Proposed Project could result in construction of up to 886 dwelling units. Because the densities included in the Proposed Project are not consistent with the existing, adopted San Diego County General Plan and the Fallbrook CP, they were not considered in the development of the RAQS for the SDAB. Therefore, impacts associated with conflicts with the RAQS and the SIP would be **significant (AQ-1)**.

Air Quality Standards (Guideline 2)

Air quality impacts would be significant if the Proposed Project results in emissions that would violate any air quality standard or contribute substantially to an existing or projected air quality violation. Impacts relating to CO and particulate matter concentrations are discussed under Sensitive Receptors (Guideline 3).

Emissions due to implementation of the Proposed Project were calculated using the URBEMIS 2007 computer program (Rimpo and Associates 2007). The URBEMIS 2007 program is a tool used to estimate air emissions resulting from land development projects in the state of California. The model addresses emissions from three basics sources: construction sources (short-term impacts resulting from fugitive dust, equipment exhaust, and indirect effects associated with construction workers and deliveries); area sources (e.g., fireplaces, natural gas heating, etc.); and operation related sources (e.g., traffic). Details relating to the modeling parameters and calculation data used in the URBEMIS 2007 program have been included in the technical study attached as Appendix D-1. The outcome was compared to SDAPCD Air Quality Impact Analysis (AQIA) screening levels shown in Table 2.2-5.

Construction Source Emissions

Heavy-duty construction equipment is usually diesel powered. In general, emissions from diesel powered equipment generally produce less CO and less ROGs than gasoline powered engines, but contain more NO_X, SO_X, and particulate matter (PM_{10} and $PM_{2.5}$). Diesel fuel is also not leaded. Construction activity can also result in the release VOC, a variety of toxins that appear in paint coatings and finishes.

Site grading volumes associated with construction of the Proposed Project would be balanced on-site and there would be no import or export of soil. The URBEMIS 2007 computer program assumes that construction would begin in January 2012 and last until 2025 and divides construction into seven phases: demolition, mass site grading, fine site grading, trenching, paving, building construction, and architectural coatings. Table 2.2-6 summarizes the lengths of each construction phase and the assumed numbers and pieces of equipment used for each phase.

Table 2.2-7 shows the projected maximum daily emission levels for each criteria pollutant due to construction of the Proposed Project. SDAPCD rules and regulations require the use of standard dust and emission control measures during grading operations. These standard measures are listed below and considered part of the Proposed Project design. As such they were included in the URBEMIS 2007 model.

The emission levels summarized in Table 2.2-7 are the maximum emissions for each pollutant allowed during different phases of construction. Because each phase would not necessarily occur simultaneously, these levels represent a worst-case scenario. As also shown in Table 2.2-7, with incorporation of the standard construction measures listed below, maximum daily construction emissions of NO_X (Guideline 2(a)), CO (Guideline 2(b)), $PM_{2.5}$ (Guideline 2(c)), PM_{10} (Guideline 2(d)), or ROG (Guideline 2(e)) are projected to be **less than significant.**

a. All unpaved construction areas shall be sprinkled with water or other acceptable SDAPCD dust-control agents at least three times daily and during dust-generating activities to reduce dust emissions. Additional watering or acceptable SDAPCD dust-control agents shall be applied during dry weather or windy days until dust emissions are not visible.

b. Apply soil stabilizers to inactive areas.

c. A 15-mile-per-hour speed limit on unpaved surfaces shall be enforced.

d. On dry days, dirt and debris spilled onto paved surfaces shall be swept up immediately to reduce re-suspension of particulate matter caused by vehicle movement. Approach routes to construction sites shall be cleaned daily of construction-related dirt in dry weather.

e. Disturbed areas shall be hydroseeded, landscaped, or developed as quickly as possible and as directed by the County and/or SDAPCD to reduce dust generation.

To determine the Proposed Project's potential emissions relating to VOC (Guideline 2(b), the SCAB emission data and the SCAQMD rules regarding architectural VOC content were used. Specifically, the SCAQMD rules require the use of low VOC content

paint as follows: residential interior coatings are required to have a content less than or equal to 50 grams per liter, residential exterior coatings a content less than or equal to 100 grams per liter, and non-residential exterior and interior coatings a content less than or equal to 250 grams per liter.

As shown in Table 2.2-7, if the Proposed Project does not conform to low VOC content architectural coating, construction related emissions of VOC would be **significant (AQ-2)**.

On-site Operation and Area Source Emissions

The Proposed Project would result in operation related emissions from traffic and on-site source emissions from activities such as natural gas fireplaces, and landscaping maintenance activities[1]. Among other parameters used in the URBEMIS 2007 model, basic assumptions for the evaluation of these emissions include: build-out of the Proposed Project would occur in 2025; the Proposed Project would generate 8,740 average daily trips (LOS Engineering 2009); and all of the residential units would have natural gas fireplaces.

Future retail uses are proposed within the Campus Park project located adjacent to the Proposed Project. URBEMIS 2007 assumes that retail uses located within 0.5 mile of the Proposed Project would reduce trips by two percent. Buses ~~would~~ could also serve the project area, further reducing vehicle trips. These measures were taken into account for calculating operational emissions.

The total average daily emissions resulting from vehicular traffic and on-site activities for the Proposed Project are shown in Table 2.2-8. As seen, emissions of NO_X and VOCs (Guideline 2(a)), CO (Guideline 2(b)), $PM_{2.5}$ (Guideline 2(c)) are not projected to violate any air quality standard; however, emissions of PM_{10} (Guideline 2(d)) and ROG (Guideline 2(e)) are anticipated to exceed the significance thresholds during both summer and winter months. In order to reduce these emission levels the Proposed Project promotes walking, bicycle riding, or horseback riding as alternative forms of transportation to motorized vehicles by including the following features into the specific plan:

- Complete sidewalk coverage in the project area
- Street trees to provide shade throughout the project area
- Internal trail system with connections to a regional system
- Bike routes with paved shoulders to most major destinations
- Mixed residential uses and routes that are visually interesting

[1] The on-site WWTP is not expected to be a source of pollutant emissions; the WWTP is expected to be run on electricity with diesel generators standing by only in the case of emergency

- Pedestrian and bicyclist safety through lighting, signalization and signage, bike lanes (as appropriate), and crosswalks

Despite these design considerations, on-site operational and source emissions of ROG and PM_{10} will continue to violate air quality standards. Therefore, impacts associated with these pollutants would be **significant (AQ-3).**

Sensitive Receptors (Guideline 3)

Carbon Monoxide Hotspots

Air quality impacts would be significant if the Proposed Project exposes sensitive receptors (including, but not limited to, schools, hospitals, resident care facilities, day-care centers, and project residents) to substantial pollutant concentrations.

Small-scale, localized concentrations of CO greater than the state and national standards have the potential to occur near stagnation points of heavily traveled intersections. These "CO hot spots" can occur when projects contribute traffic to area intersections. "CO hot spots" almost exclusively occur near intersections operating at a LOS E or worse when in combination with high traffic volumes on neighboring roadways. The SDAB is in attainment of both the federal and state CO standards, and background CO concentrations are also below federal and state allowable limits.

A "CO hot spot" analysis was performed using California Line Source Model (CALINE; Caltrans 1989) and emission rates calculated by EMission FACtors (EMFAC; State of California 2002). The model, prepared in accordance with the Transportation Project-Level Carbon Monoxide Protocol (Caltrans Protocol) established by Caltrans (Garza et al. 1997) is included in Appendix D-1. Traffic volumes, intersection and roadway configurations, and speeds were provided by the traffic report (LOS Engineering 2009). The specific procedure followed is detailed in Appendix B of the Caltrans Protocol.

For near-term conditions, the micro-scale "CO hot spot" analysis was performed at four intersections within the project area: SR-76 at the I-15 northbound and southbound ramps, SR-76 at Horse Ranch Creek Road, and Old Highway 395 at Pala Mesa Drive. These intersections were chosen because they will operate at LOS F experiencing some of the highest traffic volumes of all the intersections examined in the project traffic report (LOS Engineering 2009). All other intersections in the project vicinity are projected to operate at LOS D or better or have lower traffic volumes and delay times than the analyzed intersections. Therefore, CO concentrations at other intersections would be less than concentrations at these analyzed intersections. The basic configuration of the intersections and the receptor locations for a typical intersection are illustrated in Figure 2.2-1.

Table 2.2-9 shows that estimates of one-hour CO concentrations at the intersections range from 6.5 to 7.2 ppm and the eight-hour CO concentrations range from 4.6 to 5.0 ppm. These one-hour CO concentrations are below the 20 ppm state standard and the 35 ppm national standard, and these eight-hour CO concentrations are below the state's 9 ppm standard. Therefore, impacts associated with "CO hotspots" (Guidelines 2(b) and 3(a)) would be **less than significant**.

Diesel-Fired Particulate Matter

Diesel-fired particulate matter has been identified as a TAC. The health risks associated with diesel particulate matter are those related to long-term exposures (i.e., cancer and chronic effects). Long-term health risk effects are generally evaluated for an exposure period of 70 years (i.e., lifetime exposure).

A health risk evaluation was conducted to assess the potential for illness due to exposure to diesel exhaust particulate matter based on Part IV of the *Air Toxics Hot Spots Program Risk Assessment Guidelines* maximum diesel particulate concentration was calculated by the SCREEN3 computer program (which conservatively does not account for particulate settling) and child and adult breathing rates from Part IV of the *Air Toxics Hot Spots Program Risk Assessment Guidelines* were assigned. The assessment results in a cancer risk of 7.7 in one million for children and 5.1 in one million for adults. Details of the inhalation doses and calculations are included in the air quality technical report included as Appendix D-1 of the EIR.

This SDAPCD Rule 1210 considers an excess cancer risk of one in one million to be a quantifiable risk, while a risk of ten in one million is the level of risk at which the APCD requires public notification. Additionally, the County of San Diego considers the unit health risk guideline of significance to be ten in one million with the use of Toxic-Best Available Control Technology (T-BACT).

On July 26, 2007, CARB adopted the in-use, off-road diesel vehicle regulation to reduce diesel PM and NO_x emissions from in-use heavy-duty diesel equipment (State of California 2007b). The regulation requires any person who owns or operates off-road diesel equipment to apply exhaust retrofits to capture pollutants and to quickly re-power heavy polluting fleets with newer, cleaner engines. The compliance date for large fleets (greater than 5,000 horsepower) is 2010. By complying with the in-use, off-road diesel vehicle regulation, construction equipment would be considered applying T-BACT and the threshold of ten in one million would apply. The Proposed Project would result in cancer risks of 7.7 in one million and 5.1 in one million, less than the applied threshold. Should the construction fleet not meet these in-use, off-road diesel vehicle regulations, impacts associated with exposure to TACs (Guideline 3(b)) would be **significant (AQ-4).**

Toxic Air Emissions

With regard to toxic air emission, the Proposed Project lies outside of the land use avoidance guidelines established by the CARB. The nearest heavily traveled roadways to the Project Site are I-15 and SR-76. The traffic report indicates that year 2030 traffic volumes for I-15 and SR-76 in the project vicinity are projected to be 254,000 ADT and 42,500 ADT, respectively (LOS Engineering 2009). Future traffic on SR-76 adjacent to the Project Site, which is currently characterized by a rural environment, is approximately one half of the 50,000 ADT guideline cited above for a rural roadway. I-15 is more than 1,500 feet from the nearest proposed development. Consequently, the development envisioned by the Proposed Project lies well outside of the land use avoidance guidelines established by the CARB, and therefore, impacts are **less than significant**.

Odors (Guideline 4)

Air quality impacts would be significant if the Proposed Project generates objectionable odors or place sensitive receptors next to existing objectionable odors, which will affect a considerable number of persons or the public. Assessing odor impacts depends on such variables as wind speed, wind direction and the sensitivity of receptors to different odors. The WWTP is proposed to be located in the southern most portion of the site, adjacent to SR-76 and proposed residences.

Odor control would be provided to reduce any potential impacts to the surrounding areas. The preliminary treatment building, equalization basins, and solids dewatering facilities within the WWTP are common places where odors can be generated. These structures would be enclosed and the air would be conveyed to either wet scrubbers or activated carbon odor control units. Pursuant to Section 6300 of the County of San Diego Zoning Ordinance odor control units would be designed to treat odorous air from within treatment structures so not to emit matter causing unpleasant odors which are perceptible by the average person at or beyond the lot line of the WWTP. The WWTP would be located within relative proximity to residential areas; therefore, odor treatment units would be required to provide a dilution ratio of one volume of odorous air to eight volumes of clean air. The treatment structures for which odor control would be provided are the inlet pump station, preliminary treatment building, equalization basin, and solids handling building. Objectionable levels of odors are not expected within the other treatment structures. Wastewater treatment processes such as aeration and disinfection basins that are not enclosed within buildings would be covered.

Additionally, the Proposed Project intends to use recycled water for on-site irrigation. This process entails the removal of solid material through a treatment process within the WWTP. This recycled water would be used to irrigate the 49.3 acres of existing agricultural land. Recycled water is used regularly throughout the San Diego region and is not associated with odor impacts. Therefore, odor impacts (Guideline 4) associated with the WWTP and use of recycled water would be **less than significant**.

Global Climate Change (Guideline 5)

A significant air quality impact related to global climate change would occur if the Proposed Project would interfere with the State's ability to achieve the 2020 GHG reduction goals and strategies identified in AB 32\EO S-3-05 and not reduce its GHG emissions by 33 percent compared to BAU (as defined in the CARB BAU 2020 Forecast). ~~be unable to meet the CEC Tier II Energy Efficiency Goals of a 30 percent reduction over Title 24~~. The analysis below includes an emissions assessment from both construction and operational sources and a qualitative impact assessment based on CARB recommendations, as well as a discussion of measures that have been incorporated into the project design that would reduce GHG emissions. Emissions were calculated for ~~"business as usual"~~BAU and P~~p~~roposed P~~p~~roject conditions. ~~"B~~usiness as AU~~usual"~~ is considered to be development according to the ~~current~~ energy efficiency standards established in the 2005 Title 24, the energy code in effect at the time BAU emissions were projected.

The three primary GHGs that would be emitted by the Proposed Project are CO_2, CH_4, and N_2O. These GHGs have varying amounts of GWP. As shown in Table 2.2-4, the

100-year GWP potential for CO_2, CH_4, and N_2O are 1, 21, and 310, respectively. GHG emission factors are summarized below in Table 2.2-10.

TABLE 2.2-10
GHG EMISSION FACTORS

Gas	Vehicle Emission Factors (pounds/gallon)[1]	Electricity Generation Emission Factors (pounds/MWh)[2]	Natural Gas Combustion Emission Factors (pound/million ft^3)[3]
Carbon Dioxide	19.564	1,340	120,000
Methane	0.00055	0.0111	2.3
Nitrous Oxide	0.0002	0.0192	2.2

[1]SOURCE: BAAQMD 2006.
[2]SOURCE: U.S. DOE 2002.
[3]SOURCE: U.S. EPA 1998.

Construction Emissions

Construction GHG emissions would result from heavy construction equipment, worker vehicle miles traveled (VMT), and water usage. Emissions of CO_2 during construction of the Proposed Project were calculated using the URBEMIS 2007 computer program (Rimpo and Associates 2007). The Proposed Project would emit 9,169 pounds per day of CO_2 during each year from 2012 through 2016 during grading of the Project Site, and approximately 25,890 pounds per day of CO_2 during each year from 2017 through 2024 when operating under ~~"business as usual"~~BAU conditions. This is equivalent to 1,518 metric tons per year from 2012 through 2016 and 4,286 metric tons per year from 2017 through 2024. As discussed below under Solid Waste, the Proposed Project would recycle construction materials such as wood palettes and spools, and scrap lumber, metals, and concrete as much as possible, thus decreasing these BAU emissions. However, these reductions cannot be readily quantified at this time.

Operational Emissions

Operational sources of GHG emissions include transportation, energy (electricity and natural gas), water use and solid waste.

Transportation

BAU v~~V~~ehicle emissions were estimated using the emission factors developed by the Bay Area Air Quality Management District (BAAQMD) and the estimated VMT per day estimated by the URBEMIS 2007 computer program for the Proposed Project. The estimated VMT was based on t~~T~~he Proposed Project's ~~would~~ generation~~e~~ of 8,740 ADT (LOS Engineering 2009). The URBEMIS 2007 computer program models VMT based on ADT using average vehicle fleet mix, fuel type, and engine load parameters for a given project type and size. The Proposed Project is residential and the vehicle population would likely consist of passenger cars and light trucks. The U.S. EPA estimates that the average fuel economy for passenger cars is 23.9 miles per gallon (mpg) and the average fuel economy for light trucks is 17.4 mpg (U.S. EPA 2005). To be conservative, a fuel economy of 17.4 mpg was used and multiplied by the estimated daily VMT of 87,374 obtained from the URBEMIS model to calculate vehicle emissions. ~~It should also be noted that fuel economy is likely to improve in future years.~~ Vehicle emissions

associated with BAU conditions~~the Proposed Project~~ would thus generate 16,393.23 metric tons of CO_2 Eq per year.

It should also be noted that fuel economy is likely to improve in future years in accordance with the federal CAFE Standards, thus potentially reducing GHG emissions associated with VMT. Also in future years, statewide vehicular GHG emissions would be further reduced through mandatory regulations on vehicle manufacture and vehicle fuels. These are the AB 1493 Pavley Vehicle GHG Standards and the Low Carbon Fuel Standards, identified in the CARB Scoping Plan to reduce overall statewide GHG emissions by 18 percent and 9 percent respectively. A third CARB measure, the Vehicle Efficiency Measure, is estimated to reduce statewide GHG emissions by another 2.5 percent. Altogether, these state and federal regulations would reduce vehicle emissions by 2020 by approximately 30 percent (See CARB Scoping Plan Table 2 reproduced as Table 2 in *Meadowood Global Climate Change Technical Analysis* technical report attached to this EIR as Appendix D-2).

The Proposed Project incorporates the following project-specific measures into the project design related to transportation and motor vehicle use that would further contribute to reductions in emissions from vehicles.

- Bike lanes and wide trails and pathways are designed throughout the Proposed Project to promote non-motorized transportation. For example, bicycle riding is encouraged within designated bike lanes along the roadways and a separate 10-foot wide multi use, non-motorized trail along Horse Ranch Creek Road to encourage biking to the town center or to the college campus.

- The design of the Proposed Project encourages residents to walk and bike through their neighborhoods to the on-site school, park and town center, commercial areas, and college located in adjacent proposed projects. For example, Horse Ranch Creek Road which is the main access road to all proposed projects and, as previously discussed, is designed to accommodate non-motorized traffic.

- The Proposed Project will be conditioned to participate, along with the other projects in the vicinity, in the contribution of funds for the acquisition, design, and construction of a future t~~T~~ransit node ~~Long term transit planning includes a transit node~~ in the location of the I-15/SR-76 quadrant.

~~Circulation within the Proposed Project is accomplished using a system of roadways combined with a trail and sidewalk system for bike and pedestrian use. Interior roads link through the Proposed Project, Campus Park and the Campus Park West properties allowing residents easy access to the planned town center and commercial areas located in these other projects.~~Incorporation of these quantifiable reductions into the Proposed Project's calculation of vehicle emissions results in a projected emission of 11,475.26 metric tons of CO_2 Eq per year, 30 percent less than the annual BAU vehicle emissions of 16,393.23 metric tons of CO_2 Eq. (See complete vehicle GHG emissions calculations in Attachment 2 of Appendix D-2.)

Energy Use (Electricity and Natural Gas)

Due to the nature of the electrical grid, it is not possible to predict certainty where electrical power is generated. Therefore, GHG emissions resulting from electricity generation associated with the Proposed Project were estimated using national average emission factors developed by the U.S. Department of Energy (U.S. DOE 2002) and existing electricity consumption rates. In 2006, the average electricity consumption for a residential consumer was 7,080 kilowatt hours per year (kWh) and the average electricity consumption for a commercial consumer was 69,216 kWh per year (U.S. DOE 2006). For the purposes of this analysis, it was assumed that the electricity consumption for the proposed school would be the same as for a commercial consumer. Under BAU conditions, tThe proposed 844 units and elementary school would consume 6,044,736 kWh (6,044.736 megawatt hours [MWh]) per year. This would result in 3,691.03 metric tons of CO_2 Eq per year being emitted under BAU conditions. Table 2.2-10 shows the GHG emission factors used for estimating emissions due to electricity generation.

By contrast with BAU, the Proposed Project includes specific design features that would increase energy efficiency compared to BAU by 45 percent and thus substantially reduce BAU GHG emissions associated with electricity consumption. A 45 percent energy improvement compared to BAU is gained through the Proposed Project's participation in the Building Industry Association's California Green Builder (CGB) Program and design that incorporates a 30 percent improvement in energy efficiency above that required in the 2008 Title 24 energy code. Because the 2008 Title 24 energy code contains standards to achieve 15 percent greater energy efficiency than the 2005 Title 24 energy code on which BAU is based, a project design that achieves a 30 percent increase over the 2008 Title 24 energy code energy code results in a 45 percent increase in energy efficiency over the 2005 Title 24 energy code. Resulting electricity emissions from the Proposed Project would be 32,030.07 metric tons of CO_2 Eq per year. It should also be noted that there are legislative and regulatory efforts underway to specifically reduce GHG emissions from electricity generation. Implementation of CARB'sa Renewable Portfolio Standard will requires utilities to purchase 20 percent of their electricity from renewable sources resulting in the reduction of GHG emissions by another 13 percent overall. However, tThis is not considered in either the BAU"business as usual" or Proposed Project calculations.

BAU GHG emissions resulting from natural gas combustion were estimated using the emission factors developed by the U.S. EPA (1998) and existing natural gas consumption rates. In 2006, the average natural gas consumption rate for a residential consumer was 67,847 cubic feet per year, and the natural gas consumption rate for a commercial consumer was 537,416 cubic feet per year (U.S. DOE 2007). Under BAU conditions, tThe Proposed Project would consume 57,800,284 cubic feet per year. This would result in 3,165.28 metric tons of CO_2 Eq per year. Factoring in increased energy efficient design, as described below, results in 1,740.90 metric tons of CO_2 Eq per year being emitted by the Proposed Project.

The Proposed Project incorporates the following energy efficiency measures to achieve a 45 percent reduction in energy (electricity and natural gas) compared to BAU:

- Build homes that comply with the U.S. Environmental Protection Agency's Energy Star criteria~~, which results in homes that are at least 30% more energy efficient than required by Title 24~~.

- Beyond what is required, install improved HVAC systems and duct seals; enhanced ceiling, attic, and wall insulation; high-efficiency water heaters; energy-efficient three-coat stucco exteriors; energy-efficient lighting; and high-efficiency window glazing.

- Outdoor and indoor shaded areas have been implemented into the design of the multi-family planning areas to reduce energy use. Large parking lots have been avoided and plantings throughout the site will provide comfortable living spaces, while reducing energy consumption.

- The Proposed Project will minimize site lighting to that necessary for security, safety, and identification.

These energy features would undergo independent third party inspection and diagnostics as part of the CGB verification and commissioning process. Assurance of the Proposed Project's increased energy performance would be demonstrated through the Title 24 Compliance Report process and CGB verification.

Water Use

Water use and energy are ~~often~~ closely linked. The provision of potable water to residents 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 Proposed Project would have an embodied energy of 2,779 kWh/acre foot or 0.0085 kWh/gallon (Torcellini et al. 2003). Under BAU conditions, t~~T~~he Proposed Project would require 728,000 gallons per day. The embodied energy demand associated with this BAU water use was converted to GHG emissions with the same electrical grid coefficients as the other purchased electricity. This would result in 1,250.33 metric tons of CO_2 Eq per year being generated by water use under BAU conditions.

The Proposed Project however incorporates the following water conservation and efficiency measures to achieve a 25 percent reduction in water usage compared to BAU and in addition to what is required by the state plumbing code:

- The Proposed Project shall use either reclaimed water or groundwater to irrigate common areas and retained agricultural groves.

- By utilizing the new stormwater regulations, more efficient irrigation will be used; therefore, reducing the Proposed Project's water demand.

- The Proposed Project shall install low water usage appliances and advanced plumbing systems such as parallel hot water piping or hot water recirculation systems, and fixtures such as ultra-low flow toilets, water-saving showerheads and kitchen faucets, and buyer-optional high-efficiency clothes washers.

- The Proposed Project shall offset the remainder of its delivered water requirement by participating in an offset program ~~with the SDCWA or MWD~~.. The Proposed Project will be required to develop an off-set program ~~in conjunction with annexation into SDCWA or MWD. The goal of these actions is~~ to achieve a net zero project-wide water demand.

Of the BAU 728,000 gpd water demand~~required by the Proposed Project~~, the Proposed Project's implementation of water conservation and efficiency measures will reduce the overall demand by approximately 25 percent. The amount of delivered water will be further decreased by utilizing recycled wastewater to irrigate the HOA recreational areas, parks, the elementary school fields, common area slopes and existing avocado groves retained on-site. Presently, the existing avocado and citrus groves are irrigated with groundwater on the property. This same groundwater will continue to be utilized on the retained avocado groves during drier months to supplement recycled water supplies, further reducing the delivered water requirement. Finally, the Proposed Project shall offset the remainder of its delivered water requirement by participating in an offset program with the SDCWA or MWD. The goal of these actions is to achieve a net zero project-wide water demand. For purposes of quantifying GHG emissions from embodied water use, a reduction of 25 percent was assumed in the Proposed Project calculations, resulting in the Proposed Project's emission of 937.75 metric tons of CO_2 Eq per year.

As a requirement of the voluntary CGB program, projects must demonstrate a minimum 20 percent reduction in water use compared to the current plumbing code requirements. The Proposed Project would exceed this minimum and incorporate design that achieves a 25 percent reduction in water consumption. Assurance of the Proposed Project's increased water conservation would be demonstrated by verifying each plumbing fixture and fitting meets the reduced flow rate or by calculating a 25 percent reduction in the building water use baseline as required through the CGB verification process. This means of demonstrating increased water conservation is identical to the one included in the new CGB Standards code which became effective January 2011 and now comprises Part 11 of Title 24.

Solid Waste

The disposal of solid waste produces GHG emissions from anaerobic decomposition in landfills, incineration, transportation of waste, and disposal. It was assumed that multi-family residential developments would generate 1.2 tons per year per unit, based on development in compliance with current waste management regulations. The Proposed Project under BAU conditions would therefore generate 567.6 tons of solid waste per year. The U.S. EPA's' WARM was used to calculate the GHG emissions associated with this volume of~~due to~~ solid waste ~~generated by the Proposed Project~~. WARM divides solid waste into many different categories including yard trimmings, paper products, metals, aluminum, glass, food waste, plastics, and other materials. An estimate of the distribution of these materials was obtained from the U.S. EPA (2008). The solid waste associated with the Proposed Project under BAU conditions would generate 342 metric tons of CO_2 Eq per year.

The Proposed Project incorporates the following measures to reduce the generation of solid waste:

- The Proposed Project will meet or exceed the requirements of the County's Construction and Demolition Debris Ordinance (Sections 68.508 through 68.518 of the County Code of Regulatory Ordinances) that requires recycling of 90 per cent of inerts and 70 per cent of other materials.

- Recycling bins as well as trash bins will be provided to each resident.

- The Proposed Project will conform to the applicable County recycling activities.

The reduction in GHG emission from these measures is not readily quantifiable and Proposed Project waste emissions were thus assumed to be the same as those generated under BAU conditions: 342 metric tons of CO_2 Eq per year

Total Greenhouse Gas Emissions

Table 2.2-11 shows the projected GHG emissions, expressed as equivalent CO_2 emissions, resulting from the Proposed Project under ~~"business as usual"~~BAU conditions compared to the Proposed Project with GHG-reducing design features.

TABLE 2.2-11
~~"BUSINESS AS USUAL"~~SUMMARY OF BAU AND PROPOSED PROJECT GHG EMISSIONS
(metric tons/year)

Emission Source	BAU Total CO_2 Eq	Proposed Project Total CO_2 Eq	Percent Reduction
Electricity Usage Emissions	3,691.03	2,030.07	45%**
Natural Gas Usage Emissions	3,165.28	1,740.90	45%**
Water Usage Emissions	1,250.33	937.75	25%**
Solid Waste Emissions	342.00	342.00	0%
Vehicular Emissions	16,393.23	11,475.26	30%*
Total CO_2 Eq[1]	**24,841.87**	**16,525.98**	**34**%

* Denotes GHG reductions achieved through State measures.
** Denotes GHG reductions achieved through project-specific design features.

As shown in Table 2.2-11, under BAU conditions, the Proposed Project is projected to emit 24,841.87 metric tons of CO_2 Eq per year ~~under "business as usual" conditions~~. However, by implementing increased energy- and water-efficiency performance into the Proposed Project design, resulting GHG emissions would be 34 percent less than BAU GHG emissions for 2020, or 16,525.98 metric tons of CO_2 Eq per year. The Proposed Project's contribution to cumulative statewide GHG emissions would therefore be less than significant.

The California Environmental Quality Act; Addressing Global Warming Impacts at the Local Agency Level (State of California 2008c) provides a list of measures appropriate for minimization of potentially significant effects of global climate change. Many of the Proposed Project design features~~measures~~ detailed above are included in this list. Implementation of these ~~measures~~ project design features will allow the Proposed Project to meet the ~~CEC recommendations for a Tier II goal for residential and commercial projects equivalent to a 30 percent reduction compared to business as usual (Title 24 standards)~~County's goal of achieving a 33 percent reduction in BAU GHG emissions by 2020, and by extension, the State's ability to achieve its 2020 GHG

reduction goals and strategies as identified in AB 32\EO S-3-05. Therefore, the Proposed Project would not impede implementation of AB 32, and global climate change impacts from the Proposed Project would be **less than significant**.

2.2.4 Cumulative Impact Analysis

Because air quality is a regional issue, the cumulative study area for air quality impacts cannot be limited to a defined localized area, but rather include the SDAB as a whole. Therefore impacts to regional plans and policies, such as the RAQS and SIPs, must be considered as part of the cumulative analysis. Additionally, a project will have a significant cumulative impact on air quality if it would result in a cumulatively considerable net increase of any criteria pollutant for which the SDAB is listed as nonattainment under an applicable CAAQS. As previously stated, the SDAB is currently classified as a nonattainment area for PM_{10} and $O_{3.}$

RAQS/SIP Impacts (Guideline 1)

As discussed under direct impacts, because the Proposed Project includes densities not currently described in the General Plan or Fallbrook CP, the Proposed Project is not represented in SANDAG growth forecasts nor included in the current RAQS or SIP. Because the entire air basin is affected by project level impacts, the Proposed Project would result in a **significant cumulative impact (AQ-5)**.

Violation of Air Quality Standards (Guideline 2)

Construction-Related Emissions

$PM_{2.5}$ and PM_{10} emissions associated with construction activities generally result in "near field" impacts, generally within one mile or less of the Project Site. The Palomar College, Campus Park and Campus Park West projects are within a one mile radius. These projects, if constructed at the same time as the Proposed Project, could result in a cumulative impact due to particulate emissions. Cumulatively considerable net increases in pollutant emissions during the construction phase would typically happen if two or more projects near each other are simultaneously constructing projects. Although construction of these other projects is beyond the control of the Proposed Project, it is unlikely all will be constructed at the same time. As discussed above, the Proposed Project would be required to implement standard dust control measures during construction as well as conform to SCAQMD regulations for the application of architectural coatings. Therefore, because fugitive dust impacts are localized and all construction sites would be required to adhere to the same regulations, cumulative impacts resulting from $PM_{2.5}$ and PM_{10} emissions from simultaneous construction activity within the project vicinity would be **less than significant**.

As discussed above, construction of the Proposed Project would result in emissions of diesel-fired particulate matter. If neighboring projects were to be constructed at the same time as the Proposed Project, emissions of diesel-fired particulate matter from construction equipment could result in a cumulative impact. Should the construction fleet not meet these in-use, off-road diesel vehicle regulations discussed above, impacts associated with exposure to TACs (Guideline 3(b)) would be **significant (AQ-6).**

On-site Operation and Area Source Emissions

Implementation of the Proposed Project will result in the violation of air quality standards related to PM_{10} and ROG. These emissions would continue to be above the significance thresholds despite project design measures. Therefore, the Proposed Project would have a **cumulatively significant impact (AQ-7)**.

Sensitive Receptors (Guideline 3)

CO Hot Spots

A CO "hot spot" impact could result in the vicinity of the Project Site due to traffic from cumulative projects. The TIS identified 95 nearby projects which are anticipated to generate traffic on the same roadways as the Proposed Project. These projects were included in the CO modeling based on the CO "hot spot" evaluation; therefore cumulative impacts associated with traffic emissions would be **less than significant**.

Odors (Guideline 4)

Odor impacts for the Proposed Project would be less than significant. As there is no existing regional cumulative odor issue, the contribution from the Proposed Project would not cause or contribute to a cumulative odor impact. Therefore, cumulative odor impacts would be **less than significant**.

Global Climate Change (Guideline 5)

~~Forecasts for GHG emissions are not available. The completion of a statewide emissions inventory as required by AB32 may be helpful is establishing a baseline forecast for analysis of GHG emissions in future CEQA documents.~~

By implementing increased energy- and water-efficiency performance into the Proposed Project design, resulting GHG emissions would be 34 percent less than BAU GHG emissions for 2020. The Proposed Project's contribution to cumulative statewide GHG emissions would therefore be **less than significant**.

~~Implementation of the Proposed Project would result in GHG emissions as discussed above. Significant direct impacts associated with those emissions are not anticipated due to features incorporated into the Proposed Project that would result in 30 percent reduction in emissions compared to "business as usual." The implementation of these design measures would avoid significant direct impacts and cumulative impacts would be **less than significant**.~~

2.2.5 Mitigation Measures Proposed to Minimize the Significant Effects

M-AQ-1/AQ-5: The Proposed Project ~~is~~ was not considered in SANDAG growth projections used as a basis for ~~and thus is not consistent with~~ RAQS and the SIP. While the Proposed Project contains smart growth features, which would serve to reduce motor vehicle use, a major goal of the RAQS Transportation Control Measures (TCMs), this would not eliminate this inconsistency with RAQS for the SDAB. This inconsistency can only be rectified when SANDAG updates the RAQS based on the growth projections after the Proposed Project has been

approved. ~~Until SANDAG updates the RAQS and SIP, there is no feasible mitigation available to reduce this impact, t~~Thus impacts would be **significant and unmitigable**.

M-AQ-2: During the architectural coatings painting phase of construction, the applicant shall use interior coatings with a VOC content less than or equal to 50 grams per liter; residential exterior coatings with a content less than or equal to 100 grams per liter; and non-residential exterior and interior coatings with a content less than or equal to 250 grams per liter.

M-AQ-4/AQ-6: To utilize Toxic-Best Available Control Technology (T-BACT) and mitigate for impacts, the applicant shall ensure that 10 percent of the construction fleet uses any combination of diesel catalytic converters, diesel oxidation catalysts, diesel particulate filters and/or CARB certified Tier I, II, or III equipment.

M-AQ-3/AQ-7: The Proposed Project design would promote walking, bicycle riding, and horseback riding as alternative forms of transportation to motorized vehicles and would reduce the projected operational emissions. However, this will not completely reduce emissions to a level below significance. No additional feasible mitigation is available, thus impacts would remain **significant and unmitigable**.

2.2.6 Conclusion

Consistency with RAQS/SIP

Implementation of the Proposed Project would conflict with the existing San Diego RAQS and applicable SIP because the density proposed is not consistent with current land use plans and SANDAG housing forecasts (AQ-1 and AQ-5). This represents a significant impact for which there is no available feasible mitigation. Therefore, upon implementation of the Proposed Project, the direct and cumulative impacts will remain significant and unmitigable.

The existing SANDAG forecasts for regional growth are based on the Regional Comprehensive Plan for the San Diego Area (RCP) that was adopted in 2004, stating, “the RCP will function as a ‘living’ document, evolving over time as specific policies and programs are advanced. It will be updated every few years to reflect the region's accomplishments, add new topics that weren't included in this initial RCP, and address the region's changing needs.” The 2007 annual monitoring report finds that the “region continues to experience serious housing affordability problems.”

In order to address growth and housing needs, the County of San Diego is in the process of updating its General Plan, which specifically proposes to recognize the Project Site and surrounding areas as a region designated for increased housing. The Proposed Project is still being proposed as designed because, although inconsistent with the current SANDAG forecasts, it will serve to meet the proposed needs of the County General Plan update. In addition to addressing affordable housing, implementation of the Proposed Project would address the need for diversity in housing types.

Construction-Related Emissions

Construction of the Proposed Project would be significant and the applicant is required to use architectural coating with low VOC content and meet T-BACT standards (AQ-2, AQ-4, and AQ-6). Implementation of the mitigation measures discussed above would reduce all direct and cumulative impacts to a level less than significant.

On-site Operation-Related Emissions

Implementation of the Proposed Project would result in on-site traffic and area source emissions greater than the applicable thresholds for ROG, and PM_{10} (AQ-3 and AQ-7). Project design considerations such as complete sidewalk coverage, internal trails, and paved shoulders for bicycle use, would promote walking, bicycle riding, and horseback riding as alternative forms of transportation and reduce traffic and area source emissions. In addition, future retail uses proposed within the Campus Park project and future bus service would further reduce vehicle trips. Even with these design measures, direct and cumulative impacts associated with emissions of ROG, and PM_{10} remain significant and unmitigable based on the URBEMIS 2007 air quality model. This model however, does not include anticipated reductions to air emissions resulting from recent regulations on motor vehicles. These regulations on future motor vehicles would further reduce ROG and PM_{10} emissions, although the reduction cannot be quantified at this time. Otherwise, the only way to reduce these emissions is to reduce the VMT. Therefore, no feasible mitigation exists to reduce the remaining significant impact associated with operational emissions. Proposed alternatives that would result in fewer VMT are discussed in Chapter 5.

As currently designed, the Proposed Project will allow the County to address some of its current and projected challenges in relation to an increased population that requires affordable housing and diversity of housing types. The Proposed Project and its surrounding area have been targeted in the Draft General Plan Update as a region that could support increased population. The result is that multiple projects are proposing development which will change the existing land usages to urban land usage, increasing air quality related impacts. Although each project will likely provide design measures, like the Proposed Project, both direct and cumulative impacts within the region is unavoidable. Therefore, significant direct and cumulative impacts will remain. A Statement of Overriding Considerations would be required to be adopted to address this significant and unmitigated impact.

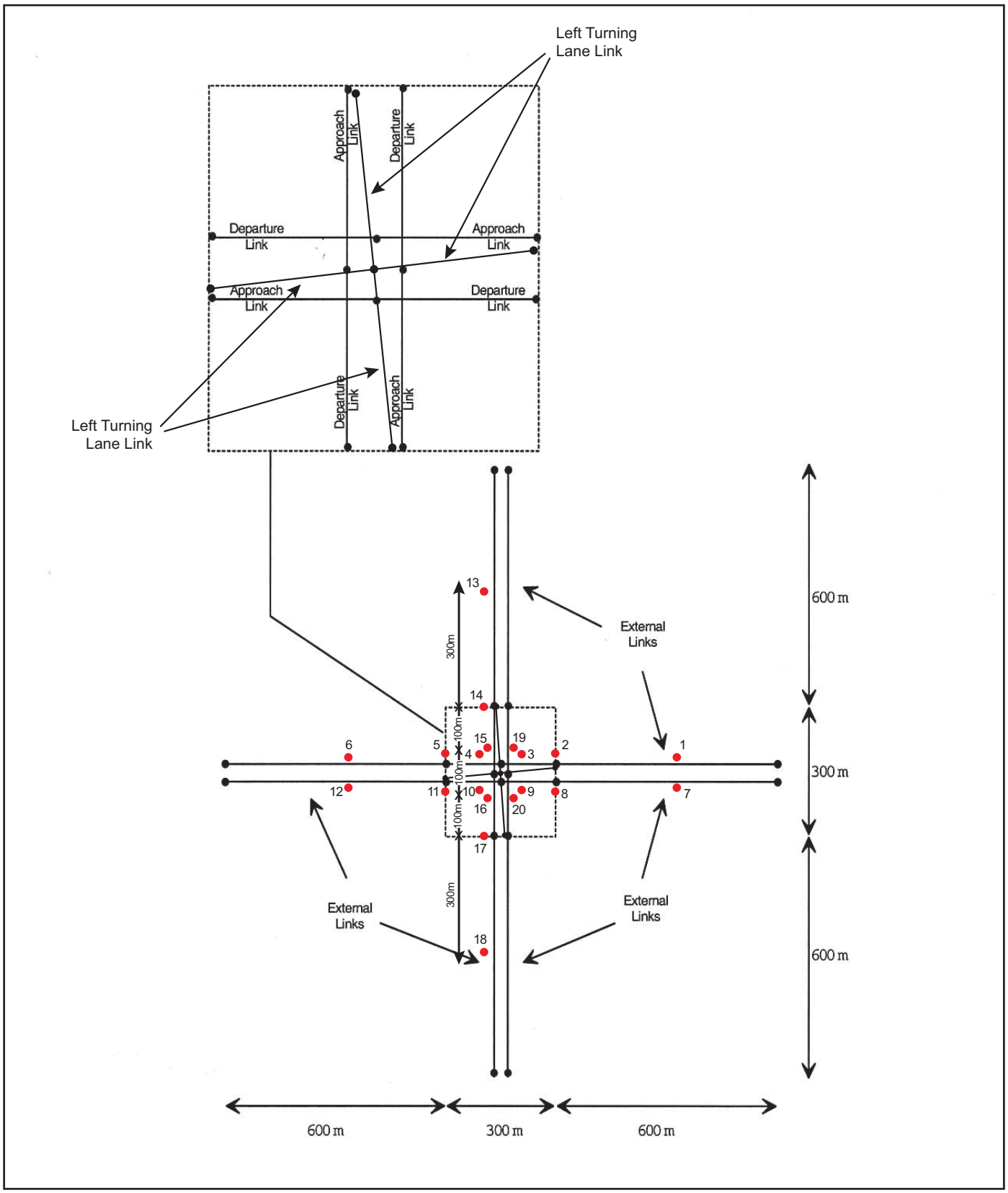
Global Climate Change

A comparison of the Proposed Project relative to BAU was evaluated for significance based on the statewide 2020 goals contained in Assembly Bill (AB) 32 and Executive Order (EO) S-3-05; and in the regional San Diego goal estimated by the San Diego Energy Policy Initiative Center (EPIC) as necessary to meet the statewide/AB 32 goals. The San Diego EPIC regional goal directs that development projects must reduce their GHG emissions by 33 percent compared to BAU.

The Proposed Project incorporates project design features that substantially reduce its demands for energy and water use, resulting in GHG emissions 34% percent below BAU GHG emissions. Specifically, the Proposed Project would design and construct all buildings to achieve 30 percent greater energy efficiency than is required in the current

2008 Title 24 Energy Efficiency Standards, and would design and construct all buildings to achieve a minimum 25 percent greater water conservation/efficiency than is required in the current 2007 plumbing code. The Proposed Project thus incorporates design features adequate to reduce BAU emissions to target levels. With the implementation of these design features, global climate change impacts from the Proposed Project would be less than significant.

~~There are no established thresholds for GHG emissions at this time; however, state and federal mandated reductions creates the goal for the Proposed Project's 30 percent reduction in "business as usual" GHG emissions. The Proposed Project includes a number of project features resulting in the avoidance of potentially significant impacts resulting from GHG emissions. These include measures that will increase energy efficiency, and water conservation, and decrease solid waste production and motor vehicle emissions. Implementation of the project design measures listed above the Proposed Project will decrease "business as usual" emissions of GHGs by the goal of 30 percent. Therefore, impacts associated with global climate change will be less than significant.~~



● Receptors at 3m from edge of roadway and 1.8m high

● Link end point

FIGURE 2.2-1

Link and Receptor Network For a Single Intersection with Dedicated Left Turn Lanes

RECON

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TABLE 2.2-1
AMBIENT AIR QUALITY STANDARDS

Pollutant	Averaging Time	California Standards[1]		Federal Standards[2]		
		Concentration[3]	Method[4]	Primary[3,5]	Secondary[3,6]	Method[7]
Ozone (O_3)	1 Hour	0.09 ppm (180 µg/m^3)	Ultraviolet Photometry	--	Same as Primary Standard	Ultraviolet Photometry
	8 Hour	0.07 ppm (137 µg/m^3)		0.075 ppm (147 µg/m^3)		
Respirable Particulate Matter (PM_{10})	24 Hour	50 µg/m^3	Gravimetric or Beta Attenuation	150 µg/m^3	Same as Primary Standard	Inertial Separation and Gravimetic Analysis
	Annual Arithmetic Mean	20 µg/m^3		--		
Fine Particulate Matter ($PM_{2.5}$)	24 Hour	No Separate State Standard		35 µg/m^3	Same as Primary Standard	Inertial Separation and Gravimetic Analysis
	Annual Arithmetic Mean	12 µg/m^3	Gravimetric or Beta Attenuation	15 µg/m^3		
Carbon Monoxide (CO)	8 Hour	9.0 ppm (10 mg/m^3)	Non-dispersive Infrared Photometry (NDIR)	9 ppm (10 mg/m^3)	None	Non-dispersive Infrared Photometry (NDIR)
	1 Hour	20 ppm (23 mg/m^3)		35 ppm (40 mg/m^3)		
	8 Hour (Lake Tahoe)	6 ppm (7 mg/m^3)		--	--	--
Nitrogen Dioxide (NO_2)	Annual Arithmetic Mean	0.030 ppm (57 µg/m^3)	Gas Phase Chemilumine-scence	0.053 ppm (100 µg/m^3)	Same as Primary Standard	Gas Phase Chemiluminescence
	1 Hour	0.18 ppm (339 µg/m^3)		--		
Lead[8]	30 days average	1.5 µg/m^3	Atomic Absorption	--	--	High Volume Sampler and Atomic Absorption
	Calendar Quarter	--		1.5 µg/m^3	Same as Primary Standard	
	Rolling 3-Month Average[9]	--		0.15 µg/m^3		
Sulfur Dioxide (SO_2)	Annual Arithmetic Mean	--	Ultraviolet Fluorescence	0.030 ppm (80 µg/m^3)	--	Spectrphotomerty (Pararosoaniline Method)
	24 Hour	0.04 ppm (105 µg/m^3)		0.14 ppm (365 µg/m^3)	--	
	3 Hour	--		--	0.5 ppm (1300 µg/m^3)	
	1 Hour	0.25 ppm (665 µg/m^3)		--	--	
Visibility Reducing Particles	8 Hour	Extinction coefficient of 0.23 per kilometer –visibility of 10 miles or more (0.07 – 30 miles or more for Lake Tahoe) due to particles when relative humidity is less than 70 percent. Method: Beta Attenuation and Transmittance through Filter Tape.		No Federal Standards		
Sulfates	24 Hour	25 µg/m^3	Ion Chroma-tography	No Federal Standards		
Hydrogen Sulfide	1 Hour	0.03 ppm (42 µg/m^3)	Ultraviolet Fluorescence	No Federal Standards		
Vinyl Chloride[8]	24 Hour	0.01 ppm (26 µg/m^3)	Gas Chroma-tography	No Federal Standards		

SOURCE: State of California 2008a.

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

[1]California standards for ozone, carbon monoxide (except Lake Tahoe), sulfur dioxide (1 and 24 hour), nitrogen dioxide, suspended particulate matter—PM_{10}, $PM_{2.5}$, and visibility reducing particles are values that are not to be exceeded. All others are not to be equaled or exceeded. California ambient air quality standards are listed in the Table of Standards in Section 70200 of Title 17 of the California Code of Regulations.

[2]National standards (other than ozone, particulate matter, and those based on annual averages or annual arithmetic mean) are not to be exceeded more than once a year. The ozone standard is attained when the fourth highest eight-hour concentration in a year, averaged over three years, is equal to or less than the standard. For PM_{10}, the 24-hour standard is attained when 99 percent of the daily concentrations, averaged over three years, are equal to or less than the standard. For $PM_{2.5}$, the 24-hour standard is attained when 98 percent of the daily concentrations, averaged over three years, are equal to or less than the standard. Contact U.S. EPA for further clarification and current federal policies.

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

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

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

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

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

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

[9]National lead standard, rolling 3-month average: final rule signed October 15, 2008.

TABLE 2.2-2
AMBIENT AIR QUALITY SUMMARY – SAN DIEGO AIR BASIN

Pollutant	Average Time	California Ambient Air Quality Standards[a]	Attainment Status	National Ambient Air Quality Standards[b]	Attainment Status[c]	Maximum Concentration					Number of Days Exceeding State Standard					Number of Days Exceeding National Standard				
						2003	2004	2005	2006	2007	2003	2004	2005	2006	2007	2003	2004	2005	2006	2007
O_3	1 hour	0.09 ppm	N	N/A	N/A	.125	.129	.113	.121	.134	24	12	16	23	21	1	1	0	0	0
O_3	8 hours	0.07ppm	N	0.08 ppm	N	.103	.095	.089	.100	.092	N/A	N/A	N/A	N/A	50	6	8	5	14	7
CO	1 hour	20 ppm	A	35 ppm	A	12.70	6.90	Na	Na	Na	0	0	Na	Na	Na	0	0	Na	Na	Na
CO	8 hours	9.0 ppm	A	9 ppm	A	10.64	4.11	4.71	3.61	5.18	1	0	0	0	0	1	0	0	0	0
NO_2	1 hour	0.18 ppm*	A	N/A	N/A	.148	.125	.109	.097	.101	0	0	0	0	0	N/A	N/A	N/A	N/A	N/A
NO_2	Annual	0.030 ppm*	N/A	0.053 ppm	A	.019	.017	.015	.017	.015	N/A	N/A	N/A	N/A	N/A	NX	NX	NX	NX	NX
SO_2	1 hour	25 pphm	A	N/A	N/A	.036	.045	Na	Na	Na	0	0	Na	Na	Na	N/A	N/A	N/A	N/A	N/A
SO_2	24 hours	4 pphm	A	14 pphm	A	.020	.016	Na	Na	Na	0	0	Na	Na	Na	0	0	Na	Na	Na
SO_2	Annual	N/A	N/A	3 pphm	A	Na	Na	Na	Na	Na	N/A	N/A	N/A	N/A	N/A	Na	Na	Na	Na	Na
PM_{10}	24 hours	50 $\mu g/m^3$	N	150 $\mu g/m^3$	N	289	138	154	134	394	150.7	174.5	13.1	159.4	159.0	9.2	0	5.8	0	6
PM_{10}	Annual	20 $\mu g/m^3$	N	N/A	N/A	52.6	51.7	28.6	54.1	59	EX	EX	EX	EX	EX	N/A	N/A	N/A	N/A	N/A
$PM_{2.5}$	24 hours	N/A	N/A	35 $\mu g/m^3$	A	Na	Na	Na	Na	Na	Na	Na	Na	Na	Na	Na	Na	Na	Na	Na
$PM_{2.5}$	Annual	12 $\mu g/m^3$	A	15 $\mu g/m^3$	A	Na	Na	Na	Na	Na	Na	Na	Na	Na	Na	Na	Na	Na	Na	Na

SOURCE: State of California 2006, 2008b.
*This concentration was approved by the Air Resources Board on February 22, 2007. New 1-hour and annual concentrations would not have been exceed during the years 2003 through 2007.
[a]California standards for ozone, carbon monoxide (except at Lake Tahoe), sulfur dioxide (1-hour and 24-hour), nitrogen dioxide, and PM_{10} are values that are not to be exceeded. Some measurements gathered for pollutants with air quality standards that are based upon 1-hour, 8-hour, or 24-hour averages, may be excluded if the CARB determines they would occur less than once per year on average.
[b]National standards other than for ozone and particulates, and those based on annual averages or annual arithmetic means are not to be exceeded more than once a year. The 1-hour ozone standard is attained if, during the most recent 3-year period, the average number of days per year with maximum hourly concentrations above the standard is equal to or less than one.
[c]A = attainment; N = non-attainment; N/A = not applicable; Na = data not available; NX = annual average not exceeded; EX = annual average exceeded.
NOTE: Federal 1 hour ozone standard revoked in SDAB on June 15, 2005
ppm = parts per million, pphm = parts per hundred million, $\mu g/m^3$ = micrograms per cubic meter.
Calculated days are the estimated number of days that a measurement would have been greater than the level of the standard had measurements been collected every day. The number of days above the standard is not necessarily the number of violations of the standard for the year.

TABLE 2.2-3
SUMMARY OF AIR QUALITY MEASUREMENTS RECORDED
AT THE ESCONDIDO EAST VALLEY PARKWAY MONITORING STATION

Pollutant/Standard	2003	2004	2005	2006	2007
Ozone					
Days State 1-hour Standard Exceeded (0.09 ppm)	3	2	1	3	0
Days Federal 1-hour Standard Exceeded (0.12 ppm)	0	0	0	0	0
Days Federal 8-hour Standard Exceeded (0.08 ppm)	0	2	0	2	0
Days State 8-hour Standard Exceeded (0.07 ppm)	9	9	2	11	5
Max. 1-hr (ppm)	0.105	0.099	0.095	0.108	0.094
Max 8-hr (ppm)	0.083	0.086	0.079	0.096	0.077
Carbon Monoxide					
Days State 8-hour Standard Exceeded (20 ppm)	1	0	0	0	0
Days Federal 8-hour Standard Exceeded (35 ppm)	1	0	0	0	0
Max. 1-hr (ppm)	12.7*	6.3	5.9	5.7	5.2
Max. 8-hr (ppm)	10.64	3.61	3.10	3.61	3.19
Nitrogen Dioxide					
Days State 1-hour Standard Exceeded (0.25 ppm)	0	0	0	0	0
Max 1-hr (ppm)	0.135	0.080	0.076	0.071	0.072
Annual Average (ppm)	0.020	0.018	0.016	0.017	0.016
PM_{10}					
Days State 24-hour Standard Exceeded (50 $\mu g/m^3$)	30.7	6.1	0	5.8	11.5
Days Federal 24-hour Standard Exceeded (150 $\mu g/m^3$)	3.3	0	0	0	0
Max. Daily ($\mu g/m^3$)	179*	57	42	51	68
State Annual Average ($\mu g/m^3$)	32.7	27.3	23.9	24.2	26.9
Federal Annual Average ($\mu g/m^3$)	31.6	27.5	23.9	24.1	26.7
$PM_{2.5}$					
Days Federal 24-hour Standard Exceeded (65 $\mu g/m^3$)	1	1	0	0	2
Max. Daily ($\mu g/m^3$)	69.2	67.3	43.1	40.6	126.2*
Annual Average ($\mu g/m^3$)	14.2	14.1	Na	11.5	13.3

SOURCE: State of California 2006, 2008b.
Na = not available
Lead concentrations in the SDAB have not exceeded the state or federal standard during at least the past 10 years.
*The measurement was taken during the San Diego County forest fire and, therefore, is not an accurate representation of ambient conditions.

TABLE 2.2-4
GLOBAL WARMING POTENTIALS (GWP) AND ATMOSPHERIC LIFETIMES (YEARS) USED IN THE INVENTORY

Gas	Atmospheric Lifetime	100-year GWP[a]
Carbon Dioxide (CO_2)	50-200	1
Methane (CH_4)[b]	12±3	21
Nitrous oxide (N_20)	120	310
HFC-23	264	11,700
HFC-125	32.6	2,800
HFC-134a	14.6	1,300
HFC-143a	48.3	3,800
HFC-152a	1.5	140
HFC-227ea	36.5	2,900
HFC-236fa	209	6,300
HFC-4310mee	17.1	1,300
CF_4	50,000	6,500
C_2F_6	10,000	9,200
C_4F_{10}	2,600	7,000
C_6F_{14}	3,200	7,400
SF_6	3,200	23,900

SOURCE: U.S. EPA 2002.
[a]GWPs used here are calculated over 100-year time horizon.
[b]The methane GWP includes the direct effects and those indirect effects due to the production of tropospheric ozone and stratospheric water vapor. The indirect effect due to the production of CO_2 is not included.

TABLE 2.2-5
SCREENING-LEVEL CRITERIA FOR AIR QUALITY IMPACT ANALYSIS

	Total Emissions	
Pollutant	Lb. Per Hour	Lb. Per Day
Respirable Particulate Matter (PM_{10})	---	100
Oxides of Nitrogen (NOx)	25	250
Oxides of Sulfur (SOx)	25	250
Carbon Monoxide (CO)	100	550
Lead and Lead Compounds	---	3.2
Volatile Organic Compounds (VOCs)*	---	75

*The threshold for VOCs is based on the guideline of significance for reactive organic gases from Chapter 6 of the CEQA Air Quality Handbook of the South Coast Air Quality Management District (SCAQMD 1993). This standard is appropriate because the meteorological data associated with the project is similar to characteristics of the San Coast Air Basin.

TABLE 2.2-6
CONSTRUCTION PARAMETERS

Phase	Length of Phase (Weeks)	Equipment Used	Horse-power	Load Factor	Hours/ Day
Demolition	2	3 Excavators	168.00	0.570	8.0
		2 Rubber Tired Dozers	357.00	0.590	8.0
Mass Site Grading	153	1 Excavator	168.00	0.570	8.0
		1 Grader	174.00	0.610	8.0
		1 Rubber-Tired Dozer	357.00	0.590	8.0
		3 Scrapers	313.00	0.720	8.0
		3 Tractor/Loader/Backhoe	108.00	0.550	8.0
		1 Water Truck	189.00	0.500	8.0
Fine Site Grading	66	1 Excavator	168.00	0.570	8.0
		1 Grader	174.00	0.610	8.0
		1 Rubber-Tired Dozer	357.00	0.590	8.0
		3 Scrapers	313.00	0.720	8.0
		3 Tractor/Loader/Backhoe	108.00	0.550	8.0
		1 Water Truck	189.00	0.500	8.0
Trenching	22	2 Excavators	168.00	0.570	8.0
		1 Other General Industrial Equipment	238.00	0.510	8.0
		1 Tractor/Loader/Backhoe	108.00	0.550	8.0
Paving	22	1 Paver	100.00	0.620	8.0
		2 Paving Equipment	104.00	0.530	8.0
		2 Roller	95.00	0.560	6.0
Building Construction	385	1 Crane	399.00	0.430	7.0
		3 Forklifts	145.00	0.300	8.0
		1 Generator Set	49.00	0.740	8.0
		3 Tractor/Loader/Backhoe	108.00	0.550	7.0
		1 Welders	45.00	0.450	8.0
Architectural Coatings	53	N/A	N/A	N/A	N/A

SOURCE: Rimpo and Associates 2007.
NOTE: Load Factor = percentage of time equipment uses the full load potential.
N/A = Not Applicable

TABLE 2.2-7
SUMMARY OF WORST-CASE CONSTRUCTION EMISSIONS WITHOUT MITIGATION
(pounds/day)

Year	ROG	NO_x	CO	Sox[1]	PM_{10} Dust	PM_{10} Exhaust	PM_{10}	$PM_{2.5}$ Dust	$PM_{2.5}$ Exhaust	$PM_{2.5}$
2012	10	84	45	0	97	4	100	20	4	24
2013	10	79	42	0	97	4	100	20	3	24
2014	9	73	41	0	97	3	100	20	3	23
2015	9	67	39	0	97	3	100	20	3	23
2016	8	62	38	0	97	3	99	20	3	23
2017	6	30	122	0	1	2	3	0	2	2
2018	6	27	115	0	1	2	3	0	1	2
2019	5	25	108	0	1	1	2	0	1	2
2020	5	23	101	0	1	1	2	0	1	2
2021	4	19	77	0	1	1	2	0	1	1
2022	4	19	77	0	1	1	2	0	1	
2023	4	19	77	0	1	1	2	0	1	1
2024	74	19	77	0	1	1	2	0	1	1
2025	74	0	1	0	0	0	0	0	0	0
SDAPCD Guideline of Significance[2]	75	250	550	250	--	--	100	--	--	55

[1]Emissions calculated by URBEMIS 2007 are for SO_2.
[2]Thresholds for ROG and $PM_{2.5}$ were obtained from the SCAQMD.

TABLE 2.2-8
PROJECT (YEAR 2025) AVERAGE DAILY EMISSIONS TO THE SAN DIEGO AIR BASIN
(pounds/day)

Season	Pollutant	Area Source Emission	Operational (Vehicle) Emission	Total Emission	SDAPCD Significance Threshold[2]
Summer	ROG	54	36	**90**	75
	NOx	16	31	47	250
	CO	30	365	395	550
	SOx[1]	0	1	1	250
	PM10	0	143	**143**	100
	PM2.5	0	28	28	55
Winter	ROG	51	33	**84**	75
	NOx	22	46	68	250
	CO	11	361	383	550
	SOx[1]	0	1	1	250
	PM10	0	143	**143**	100
	PM2.5	0	28	28	55

SDAPCD = San Diego Air Pollution Control District

[1] Emissions calculated by URBEMIS 2007 are for SO_2.
[2] Thresholds for ROG and $PM_{2.5}$ were obtained from the SCAQMD.

TABLE 2.2-9
TRAFFIC RELATED CO CONCENTRATIONS
(ppm)*

Receiver	SR-76 at I-15 Southbound Ramp		SR-76 at I-15 Northbound Ramp		SR-76 at Pankey Road		Old Highway 395 at Pala Mesa Drive	
	1-Hour Concentration	8-Hour Concentration	1-Hour Concentration	8-Hour Concentration	1-Hour Concentration	8-Hour Concentration	1-Hour Concentration	8-Hour Concentration
1	7.0	4.9	7.2	5.0	7.0	4.9	6.5	4.6
2	7.2	5.0	7.1	5.0	7.1	5.0	6.5	4.6
3	7.1	5.0	7.1	5.0	7.1	5.0	6.5	4.6
4	7.1	5.0	7.2	5.0	7.1	5.0	6.6	4.6
5	7.1	5.0	7.2	5.0	7.1	5.0	6.5	4.6
6	7.2	5.0	7.2	5.0	7.1	5.0	6.5	4.6
7	7.1	5.0	7.2	5.0	7.1	5.0	6.5	4.6
8	7.1	5.0	7.2	5.0	7.1	5.0	6.5	4.6
9	7.1	5.0	7.2	5.0	7.2	5.0	6.5	4.6
10	7.1	5.0	7.1	5.0	7.1	5.0	6.5	4.6
11	7.1	5.0	7.1	5.0	7.1	5.0	6.5	4.6
12	7.1	5.0	7.0	4.9	7.1	5.0	6.5	4.6
13	6.6	4.6	6.6	4.6	6.7	4.7	6.6	4.6
14	6.7	4.7	6.6	4.6	6.7	4.7	6.7	4.7
15	6.8	4.8	6.7	4.7	6.8	4.8	6.6	4.6
16	6.7	4.7	6.7	4.7	6.8	4.8	6.6	4.6
17	6.7	4.7	6.7	4.7	6.8	4.8	6.6	4.6
18	6.8	4.8	6.6	4.6	6.8	4.8	6.6	4.6
19	6.7	4.7	6.9	4.8	6.8	4.8	6.7	4.7
20	6.7	4.7	6.9	4.8	6.7	4.7	6.7	4.7

*Assumes 6.30 ppm background hourly concentrations.