APPENDIX D

Air Quality Analysis

RECON

Air Quality Analysis for Amendments to the City of Chula Vista General Plan (GPA-09-01) and Otay Ranch General Development Plan (PCM-09-11)

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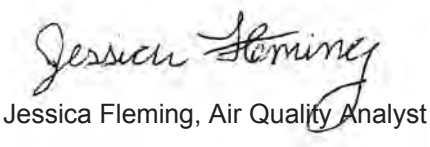

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1.0 Summary

The purpose of this report is to determine the potential air quality impacts that could occur as a result of the adoption of the proposed General Plan Amendment (GPA) and Otay Ranch General Development Plan Amendment (GDPA), and, if there is a significant impact, what measures are needed to mitigate that effect. This report provides a supplemental analysis to the air quality assessment prepared for the City of Chula Vista's (City's) 2005 General Plan Update (GPU) Environmental Impact Report (EIR). Specifically, this report focuses on the incremental increase in air emissions resulting from implementation of the Proposed Project over that anticipated from the GPU Preferred Plan. A significant air quality impact would occur if adoption of the Proposed Project would conflict with applicable air quality plans, result in significant emissions of criteria pollutants, or expose sensitive receptors to substantial pollutant concentrations.

As discussed below, the Proposed Project seeks to reduce air pollution and minimize air quality impacts by promoting mixed land use patterns and creating walkable neighborhoods and vibrant town centers. However, since the Proposed Project would increase development, the resulting emissions would be greater than those that would occur under the 2005 GPU. The result is a significant air quality impact. Mitigation measures previously identified in the GPU EIR would apply to the Proposed Project to reduce these impacts, but not to a level below significance. In addition, adoption of the Proposed Project would result in a significant and unmitigated conflict with the adopted air plan.

2.0 Introduction and Project Description

The Proposed Project is located in the south central portion of the Otay Ranch General Development Plan (GDP) area in the eastern portion of the City. The Project Area is comprised of multiple existing villages and planning areas as follows:

- Portions of Villages 4 and 7 ;
- Village 8;
- Village 9;
- Planning Area 10 (which includes the University Site and a proposed 85-acre Regional technology Park (RTP);

A portion of the southern edge of the Eastern Urban Center. The proposed village sites are separated by Village 8 East (not a part of this project) and State Route 125 (SR-

125). Figure 1 shows the regional location of the Proposed Project. Figure 2 shows an aerial photograph of the project and vicinity.

In December 2005, the City's GPU was approved and the EIR certified. The GPU presented a long-term strategy to address planning issues for the growth and development of the City outlining the community's vision for the future through land use designations and goals and policies. Although the GPU EIR addressed the entire City, the City Council did not approve land use designation changes for an area referred to as the "Deferral Area." Existing land use designations within the Deferral Area are therefore subject to pre-2005 GPU designations in accordance with the 2001 GDP. The Proposed Project seeks to amend General Plan and Otay Ranch GDP goals and policies, along with the Circulation Plan-East for the Project Area. In addition, the Proposed Project would modify the land use designations within proposed Villages 8 West, 9 and an 85-acre RTP within Planning Area 10/University Site.

The Proposed Project seeks to maintain consistency with the General Plan through the provision of walkable neighborhoods and vibrant town centers. The primary goals and objectives of the Proposed Project are as follows:

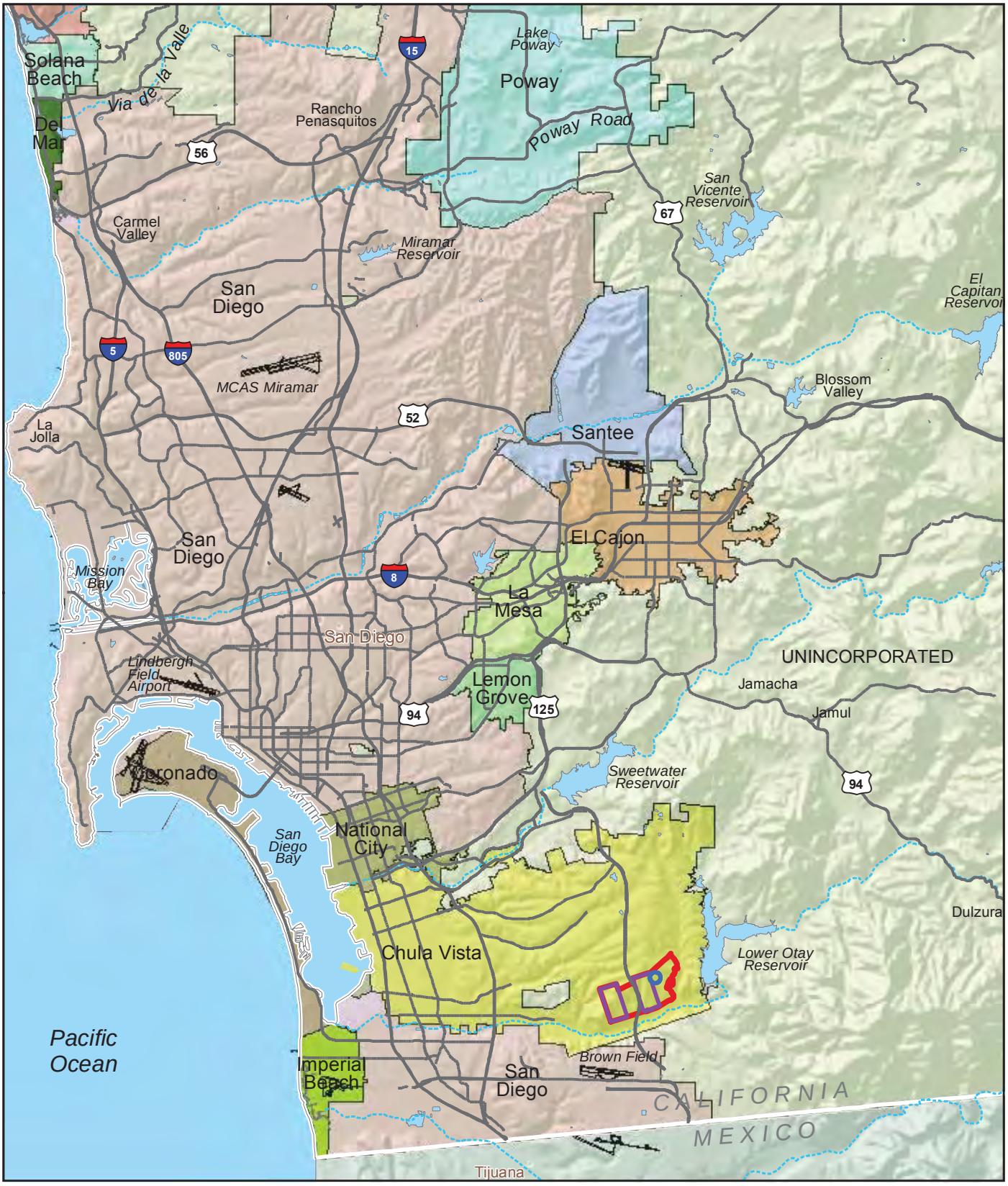
- Encourage social interaction and a diverse range of services to promote a mix of uses within a village atmosphere.

- Foster the goal of the General Plan to expand the local economy by providing a broad range of business, employment and housing opportunities that support an excellent standard of living, and improve the ability for residents to live and work locally.

- Create a Town Center within newly defined boundaries for Village 8 West and Village 9, as encouraged by the General Plan Update emphasis on providing a mix of diverse land uses that meets community needs.

- Develop a circulation plan that de-emphasizes the automobile, and places greater reliance on mass transit and pedestrian circulation.

- Target higher density and higher intensity development into specific focus areas in order to protect stable residential neighborhoods and to create mixed-use urban environments that are oriented to transit and pedestrian activity. This targeted development will be well-designed, compatible with adjacent areas, and contribute to the continued vitality of the City's economy.



Project Area

Village 8 West and Village 9

RTP

FIGURE 1

Regional Location

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FIGURE 2

Aerial Photograph of the Project Area and Vicinity

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- Provide access to, and connections between, the City's open space and trails network and the regional network, in accordance with the Chula Vista Multiple Species Conservation Program (MSCP) Subarea Plan, Chula Vista Greenbelt Master Plan, and Otay Valley Regional Park Concept Plan.

- Conserve the City's sensitive biological and other valuable natural resources.

Table 1 shows the breakdown of the Proposed Project's land uses within the Land Use Change Area as compared to the land uses analyzed in the GPU EIR. The table highlights the specific number of acres and dwelling units proposed to be increased or decreased by the Proposed Project. Overall, the Proposed Project would account for an increase of 880 units, 550,000 square feet of commercial uses, and 2.2 million square feet of industrial uses distributed throughout the Land Use Change Area. Other land use changes include an increase in park and school acreages and a decrease in Community Purpose Facility acres. Figure 3 shows the proposed land use plan.

TABLE 1
OTAY RANCH LAND USES

	Land Use Designations Analyzed in the 2005 GPU/GDP EIR[1]		Proposed Project Land Use Designations[2,3]		2005 GPU/GDP EIR Land Uses vs. Proposed Project	
Land Use	Acres	Units	Acres	Units	Acres	Units
RLM	148.6	640	95.1	436	-53.5	-204
RM	40.0	437	41.4	451	+1.4	+14
RMH	0.0	0	29.5	530	+29.5	+530
MUR	0.0	0	49.2	792	+49.2	+792
TC	149.4	3,773	85.0	1,929	-64.4	-1,844
PRK	50.3	0	55.4	0	+5.1	0
PQ	240.1	0	131.8	0	-108.3	0
OS	57.8	0	29.1	0	-28.7	0
OSP	19.6	0	19.6	0	0.0	0
EUC	22.2	320	48.3	1,912	+26.1	+1,592
RTP	0.0	0	85.0	0	+85.0	0
OTHER	0.0	0	58.6	0	+58.6	0
TOTAL	728.0	5,170	728.0	6,050	0.0	+880

[1]2005 GP statistics per City.
[2]Proposed Project includes 50 net acres in PQ category for university dedication; 19.6 acres for City of San Diego Reservoir in the PQ category; 58.6 acres for circulation roads and SR-125 ROW in the Other category.
[3]Data current as of 10/5/11.

The purpose of this report is to assess potential short- and long-term local and regional air quality impacts that could result from the incremental increase in emissions due to density/intensity of the Proposed Project compared to the 2005 GPU/GDP EIR.

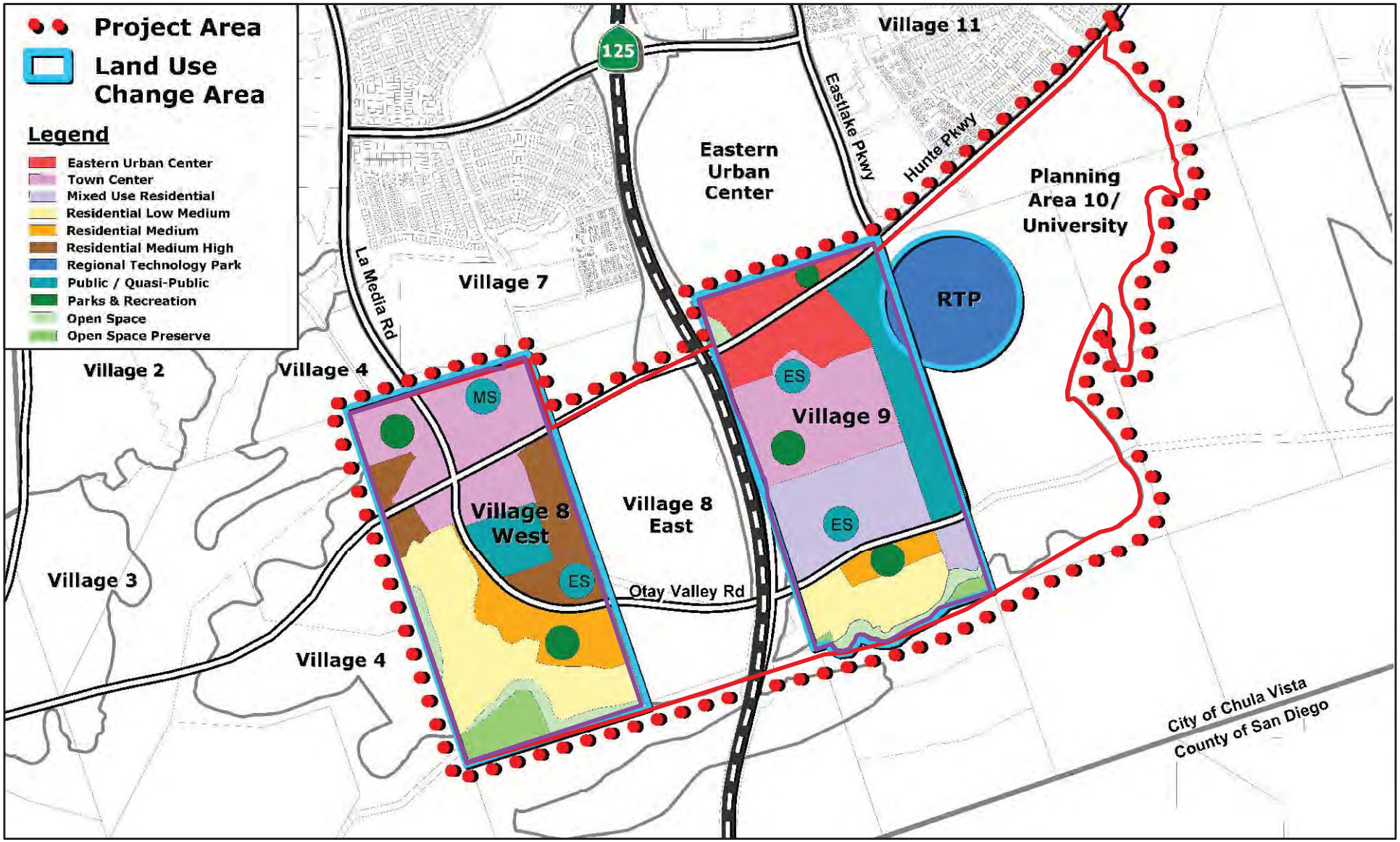

FIGURE 3

Proposed Land Uses

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Air pollution affects all southern Californians. Effects can include the following:

- Increased respiratory infection
- Increased discomfort
- Missed days from work and school
- Increased mortality

Polluted air also damages agriculture and our natural environment.

The City of Chula Vista is located within the San Diego Air Basin (SDAB), one of 15 air basins that geographically divide the state of California. The SDAB is currently classified as a federal non-attainment area for ozone and a state non-attainment area for particulate matter less than 10 microns (PM_{10}), particulate matter less than 2.5 microns ($PM_{2.5}$), and ozone.

Air quality impacts can result from the construction and operation of projects approved under the Proposed Project. Construction impacts are short-term and result from fugitive dust, equipment exhaust, and indirect effects associated with construction workers and deliveries. Operational impacts can occur on two levels: regional impacts resulting from growth-inducing development or local hot-spot effects stemming from sensitive receivers being placed close to highly congested roadways. In the case of this project, operational impacts would be primarily due to emissions to the basin from mobile sources associated with the vehicular travel along the roadways within the Project Area.

3.0 Regulatory Framework

Motor vehicles are San Diego County's leading source of air pollution and the largest contributor to greenhouse gases (County of San Diego 2008). In addition to these sources, other mobile sources include construction equipment, trains, and airplanes. Emission standards for mobile sources are established by state and federal agencies, such as the California Air Resources Board (CARB) and the U.S. Environmental Protection Agency (EPA). Reducing mobile source emissions requires the technological improvement of existing mobile sources and the examination of future mobile sources, such as those associated with new or modification projects. The State of California has developed statewide programs to encourage cleaner cars and cleaner fuels. Since 1996, smog-forming emissions from motor vehicles have been reduced by 15 percent and the cancer risk from exposure to motor vehicle air toxics has been reduced by 40 percent (County of San Diego 2008). The regulatory framework described below details the federal and state agencies that are in charge of monitoring and controlling mobile source air pollutants and what measures are currently being taken to achieve and maintain healthful air quality in the SDAB.

The state of California is divided geographically into 15 air basins for the purpose of managing the air resources of the state on a regional basis. Areas within each air basin are considered to share the same air masses and, therefore, are expected to have similar ambient air quality. If an air basin is not in either federal or state attainment for a particular pollutant, the basin is classified as a moderate, serious, severe, or extreme non-attainment area (there is also a marginal classification for federal non-attainment areas).

3.1 Federal Regulations

Ambient Air Quality Standards (AAQS) represent the maximum levels of background pollution considered safe, with an adequate margin of safety, to protect the public health and welfare. 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 Section 109 of the CAA [42 U.S.C. 7409], the U.S. EPA developed primary and secondary national ambient air quality standards (NAAQS).

Seven pollutants of primary concern have been designated: ozone (O_3), carbon monoxide (CO), sulfur dioxide (SO_2), nitrogen dioxide (NO_2), lead (Pb), and respirable particulate matter PM_{10} and $PM_{2.5}$. The primary NAAQS ". . . in the judgment of the Administrator, based on such criteria and allowing an adequate margin of safety, are requisite to protect the public health . . . " and the secondary standards ". . . protect the public welfare from any known or anticipated adverse effects associated with the presence of such air pollutant in the ambient air" [42 U.S.C. 7409(b)(2)]. The primary NAAQS were established, with a margin of safety, considering long-term exposure for the most sensitive groups in the general population (i.e., children, senior citizens, and people with breathing difficulties).

In 1997, the 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. It was recommended that the SDAB be classified as "moderate" non-attainment for the eight-hour ozone standard under Subpart 2 (U.S. EPA 2009a). Under Subpart 2, consistent with Section 182 of the CAA, the period of attainment will be no more than six years from the new effective date of designation (U.S. EPA 2009a).

Per the EPA's final rule for implementing the eight-hour ozone standard, the one-hour ozone standard was to be revoked "in full, including the associated designations and classifications, one year following the effective date of the designations for the eight-hour NAAQS [for ozone]" (69 FR 23951). As such, the one-hour ozone standard was revoked

in the SDAB on June 15, 2005. Requirements for transitioning from the one-hour to eight-hour ozone standard are described in the final rule.

On March 12, 2008, the EPA 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 EPA was required to issue final area designations no later than March 2010. However, there was insufficient information to make these designations and the EPA extended the deadline to March 2011. California must then submit a State Implementation Plan (SIP) outlining how the state will meet the standards by a date that EPA will establish in a separate rule. That date will be no later than three years after EPA's final designations. The deadline for attaining the standard may vary based on the severity of the problem in the area.

The SDAB is an unclassified area for the federal PM_{10} standard and an attainment area for the federal $PM_{2.5}$ standard (State of California 2009a).

On September 21, 2006, the 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 standard for annual $PM_{2.5}$ of 15 $\mu g/m^3$ remained the same. In addition, the EPA also revised the standard for PM_{10}. Due to a lack of evidence linking health problems to long-term exposure to coarse particle pollution, the agency revoked the annual PM_{10} standard (effective December 17, 2006). The SDAB was classified as an attainment area for the new federal 24-hour $PM_{2.5}$ standard (U.S. EPA 2009b).

In 2008, the EPA revised the primary standard for lead from 1.5 $\mu g/m^3$ to 0.15 $\mu g/m^3$ over a rolling three-month period, and revised the secondary standard to be identical to the primary standard. The 1978 lead NAAQS will be retained until one year after designations for the new standards, except in current nonattainment areas. The SDAB is in attainment of the 1978 lead NAAQS.

CARB was required to provide the EPA with designation recommendations by October 2009 and on October 14, 2009, the CARB recommended to the EPA that the SDAB be designated unclassifiable for the new lead standard. Although the CARB was required to make area designation recommendations by October 2009, the EPA recognized that the current lead sampling network is not adequate in most areas. Therefore, the EPA may take an additional two years to designate areas with insufficient data. New lead samplers will be deployed during this time period to collect additional data needed to identify designations for many areas with no or limited monitoring data. It is unknown at this time how this may affect the designation of the SDAB. The federal AAQS are presented in Table 2.

TABLE 2
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 Gravimetric 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 Gravimetric Analysis
	Annual Arithmetic Mean	12 µg/m^3	Gravimetric or Beta Attenuation	15.0 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)	–	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 Chemi-luminescence	0.053 ppm (100 µg/m^3)	Same as Primary Standard	Gas Phase Chemi-luminescence
	1 Hour	0.18 ppm (339 µg/m^3)		0.100 ppm[8]	–	
Lead[9]	30 Day Average	1.5 µg/m^3	Atomic Absorption	–	–	–
	Calendar Quarter	–		1.5 µg/m^3	Same as Primary Standard	High Volume Sampler and Atomic Absorption
	Rolling 3-Month Average[10]	–		0.15 µg/m^3		
Sulfur Dioxide (SO_2)	Annual Arithmetic Mean	–	Ultraviolet Fluorescence	0.030 ppm (80 µg/m^3)	–	Spectro-photometry (Pararosaniline Method)
	24 Hour	0.04 ppm (105 µg/m^3)		0.14 ppm (365 µg/m^3)	–	
	3 Hour	–		–	0.5 ppm (1300 µg/m^3)	
	1 Hour	0.25 ppm (655 µg/m^3)		–	–	–
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%. Method: Beta Attenuation and Transmittance through Filter Tape.		No Federal Standards		
Sulfates	24 Hour	25 µg/m^3	Ion Chroma-tography			
Hydrogen Sulfide	1 Hour	0.03 ppm (42 µg/m^3)	Ultraviolet Fluorescence			
Vinyl Chloride[9]	24 Hour	0.01 ppm (26 µg/m^3)	Gas Chroma-tography			

SOURCE: State of California 2010a.

ppm = parts per million; µg/m^3 = micrograms per cubic meter; – = not applicable.

TABLE 2
AMBIENT AIR QUALITY STANDARDS
(continued)

[1]California standards for ozone, carbon monoxide (except Lake Tahoe), sulfur dioxide (1- and 24-hour), nitrogen dioxide, suspended particulate matter—PM10, PM2.5, 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 8-hour concentration in a year, averaged over three years, is equal to or less than the standard. For PM10, the 24-hour standard is attained when the expected number of days per calendar year with a 24-hour average concentration above 150 $\mu g/m^3$ is equal to or less than one. For PM2.5, 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 the U.S. Environmental Protection Agency (EPA) for further clarification and current federal policies.

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

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

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

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

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

[8]To attain this standard, the 3-year average of the 98th percentile of the daily maximum 1-hour average at each monitor within an area must not exceed 0.100 ppm (effective January 22, 2010).

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

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

3.2 State Regulations

The EPA allows states the option to develop different (stricter) standards. The state of California generally has set more stringent limits on the seven criteria pollutants (see Table 2). The California CAA, also known as the Sher Bill or AB 2595, was signed into law on September 30, 1988, and became effective on January 1, 1989. The California CAA requires that districts implement regulations to reduce emissions from mobile sources through the adoption and enforcement of transportation control measures. The California CAA also requires that a district must (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.

The SDAB is a non-attainment area for the state ozone standards, the state PM_{10} standard, and the state $PM_{2.5}$ standard.

3.3 Toxic Air Contaminants

The public's exposure to 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.

Diesel-exhaust particulate matter emissions have been established as TACs. Diesel emissions generated within San Diego County and surrounding areas pose a potential hazard to residents and visitors. Following the identification of diesel particulate matter as a TAC in 1998, CARB has worked on developing strategies and regulations aimed at reducing the risk from diesel particulate matter. The overall strategy for achieving these reductions is found in the *Risk Reduction Plan to Reduce Particulate Matter Emissions*

from Diesel-Fueled Engines and Vehicles (State of California 2000). A stated goal of the plan is to reduce the cancer risk statewide arising from exposure to diesel particulate matter 75 percent by 2010 and 85 percent by 2020.

A number of programs and strategies to reduce diesel particulate matter that have been implemented or are in the process of being developed include (State of California 2007, 2008):

- **The Carl Moyer Program:** This program, administered by CARB, was initially approved in February 1999, and was revised in November 2000. It provides grants to private companies, public agencies, or individuals operating heavy-duty diesel engines to cover an incremental portion of the cost of cleaner on-road, off-road, marine, locomotive, and agricultural irrigation pump engines. The Carl Moyer Program is currently undergoing revisions. Revisions include increasing funding and expanding eligibility.

- **On-Road Heavy-duty Diesel Engine Reduced Emission Standards**: This rule reduces emission standards for 2007 and subsequent model year heavy-duty diesel engines (66 FR 5002, January 18, 2001).

- **On-Road Heavy-duty Diesel Engine In-Use Compliance Program**: The goal of this program is to ensure that existing vehicles/engines meet applicable emission standards throughout their useful life.

Other programs include:

- **Off-Road Mobile Sources Emission Reduction Program:** The goal of this program is to develop regulations to control emissions from diesel, gasoline, and alternative-fueled off-road mobile engines. These sources include a range of equipment, from lawn mowers to construction equipment to locomotives.

- **Heavy-Duty Vehicle Inspection and Periodic Smoke Inspection Program:** This program provides periodic inspections to ensure that truck and bus fleets do not emit excessive amounts of smoke.

- **Lower-Emission School Bus Program:** Under this program, and in coordination with the California Energy Commission, CARB developed guidelines to provide criteria for the purchase of new school buses and the retrofit of existing school buses to reduce particulate matter emissions. Along with the Carl Moyer Program, the lower-emission school bus program is currently undergoing revisions. Revisions include raising the emission requirement, streamlining the disbursement process, and extending the retrofit funding deadline.

As an ongoing process, 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.

The SDAPCD also started sampling for TACs at the Chula Vista and El Cajon monitoring stations in the mid-1980s. Once every 12 days, 24-hour samples are performed. Excluding diesel particulates, Chula Vista has shown a 69 percent reduction in the ambient incremental cancer risk from TACs (County of San Diego 2009a).

3.4 State Implementation Plan

The SIP is a collection of documents that set forth the state's strategies for achieving the air quality standards. The SDAPCD is 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 these objectives.

3.5 The California Environmental Quality Act

Section 15125(d) of the California Environmental Quality Act (CEQA) Guidelines requires discussion of any inconsistencies between the Proposed Project and applicable general plans and regional plans, including the applicable air quality attainment or maintenance plan (or SIP).

3.6 San Diego Air Pollution Control District

The SDAPCD is the agency that regulates air quality in the SDAB. 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 (TCMs) for the air quality plan prepared by the San Diego Association of Governments (SANDAG) in accordance with AB-2595 and adopted by SANDAG on March 27, 1992, as Resolution Number 92-49 and Addendum. The required triennial updates of the RAQS and corresponding TCMs were adopted in 1995, 1998, 2001, 2004, and 2009. The RAQS and TCMs 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 that are periodically reviewed and updated. These rules and regulations are available for review on the agency's web site (County of San Diego 2010).

3.7 City of Chula Vista Regulations

3.7.1 City of Chula Vista Growth Management Ordinance

The City's Municipal Code Section 19.09.050(B) requires an Air Quality Improvement Plan (AQIP) to be prepared for all major development projects. A major development project is defined as a project that would develop 50 or more dwelling units. The purpose and role of the AQIP is to reduce air emissions and energy use resulting from major development projects through improved project design and construction of structures that exceed mandated energy code requirements.

3.7.2 City of Chula Vista General Plan

Objective E 6 of the City's GP contains multiple policies focused on the improvement of air quality:

Objective E-6

Improve local air quality by minimizing the production and emission of air pollutants and toxic air contaminants, and limit the exposure of people to such pollutants.

Policies

E 6.1: Encourage compact development featuring a mix of uses that locate residential areas within reasonable walking distance to jobs, services, and transit.

E 6.2: Promote and facilitate transit system improvements in order to increase transit use and reduce dependency on the automobile.

E 6.3: Ensure that operational procedures of the City promote clean air by maximizing the use of low- and zero-emissions equipment and vehicles.

E 6.4: Avoid siting new or re-powered energy-generation facilities and other major toxic air emitters within 1,000 feet of a sensitive receiver or placing a sensitive receiver within 1,000 feet of a major toxic emitter.

E 6.5: Ensure that plans developed to meet the City's energy demand use the least polluting strategies, wherever practical. Conservation, clean renewables, and clean distributed generation should be considered as part of the City's energy plan, along with larger natural gas-fired plants.

E 6.6: Explore incentives to promote voluntary air pollutant reductions, including incentives for developers who go above and beyond applicable requirements and for facilities and operations that are not otherwise regulated.

E 6.7: Encourage innovative energy conservation practices and air quality improvements in new development and redevelopment projects consistent with the City's AQIP Guidelines or its equivalent, pursuant to the City's Growth Management Program.

E 6.8: Support the use of alternative fuel transit, City fleet, and private vehicles in Chula Vista.

E 6.9: Discourage the use of landscaping equipment powered by two-stroke gasoline engines within the City and promote less polluting alternatives to their use.

E 6.10: The siting of new sensitive receivers within 500 feet of highways resulting from development or redevelopment projects shall require the preparation of a health risk assessment as part of the California Environmental Quality Act (CEQA) review of the project. Attendant health risks identified in the Health Risk Assessment (HRA) shall be feasibly mitigated to the maximum extent practicable, in accordance with CEQA, in order to help ensure that applicable federal and state standards are not exceeded.

E 6.11: Develop strategies to minimize CO hot spots that address all modes of transportation.

E 6.12: Promote clean fuel sources that help reduce the exposure of sensitive uses to pollutants.

E 6.13: Encourage programs and infrastructure to increase the availability and usage of energy-efficient vehicles, such as hybrid electric vehicles, electric vehicles, or those that run on alternative fuels.

E 6.14: The City will implement a clean vehicle/alternative fuel program for City vehicles (except safety vehicles and equipment, when not feasible) and promote the development of infrastructure to support their use.

E 6.15: Site industries in a way that minimizes the potential impacts of poor air quality on homes, schools, hospitals, and other land uses where people congregate.

Otay Ranch General Development Plan

Part II, Chapter 6, Section C establishes goals to minimize the adverse impacts of development on air quality including creating a safe and efficient multi-modal transportation network which minimizes the number and length of single passenger vehicle trips.

Objective: Minimize the number and length of single passenger vehicle trips to and from employment and commercial centers to achieve an average of 1.5 persons per passenger vehicle during weekday commute hours. While most policies associated with implementing this objective are not relevant at this level of analysis, they are listed below.

Policies:

- Encourage, as appropriate, alternative transportation incentives offered to employees, alternative work hour programs, alternative transportation promotional materials, information on car pool and van pool matching services, transit pass information, space for car-pool- and van-pool-riders-wanted advertisements, information about transit and rail service, as well as information about bicycle facilities, routes, storage, and location of nearby shower and locker facilities.

- Promote telecommuting and teleconferencing programs and policies in employment centers.

- Establish or participate in education-based commute programs, which minimize the number and length of single passenger vehicle trips.

- Provide on-site amenities in commercial and employment centers to include: childcare facilities, post offices, banking services, cafeterias/delis/restaurants, etc.

- Should Otay Ranch include a college or university, the facility should comply with RAQS transportation demand management strategies relating to such uses.

4.0 Environmental Setting

4.1 Geographic Setting

The Proposed Project is located in the SDAB about 10 miles east of the Pacific Ocean. The eastern portion of the SDAB is surrounded by mountains to the north, east, and south. These mountains tend to restrict airflow and concentrate pollutants in the valleys and low-lying areas below.

4.2 Climate

The Project Area has a Mediterranean climate characterized by warm, dry summers and mild, wet winters. The mean annual temperature for the Project Area is 61 degrees Fahrenheit (°F). The average annual precipitation is approximately 10 inches, falling primarily from November to April. Winter low temperatures in the Project Area average about 45°F, and summer high temperatures average about 74°F (Western Regional Climate Center [WRCC] 2010).

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.

Fluctuations in the strength and pattern of winds from the Pacific High Pressure Zone interacting with the daily local cycle produce periodic temperature inversions that influence the dispersal or containment of air pollutants in the SDAB. Beneath the inversion layer, pollutants become “trapped” as their ability to disperse diminishes. The mixing depth is the area under the inversion layer. 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 height of the temperature inversion in the afternoon varies between approximately 1,500 and 2,500 feet above mean sea level (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 generally tends to be better in winter than in summer. The elevation of the Project Area is approximately 200 to 400 feet above MSL.

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 Ana winds 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, local air quality may be adversely affected. In these cases, emissions from the South Coast Air Basin (SCAB) to the north blow out over the ocean and low pressure over Baja California, Mexico 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 produce the worst air quality measurements recorded in the basin.

4.3 Existing Air Quality

Air quality at a particular location is a function of the kinds, amounts, and dispersal rates of pollutants being emitted into the air locally and throughout the basin. 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 or federal standards set by the EPA. The SDAPCD maintains 10 air-quality monitoring stations located throughout the greater San Diego metropolitan region. Air pollutant concentrations and meteorological information are continuously recorded at these 10 stations. Measurements are then used by scientists to help forecast daily air pollution levels. Table 3 summarizes the number of days per year during which state and federal standards were exceeded in the SDAB overall from 2004 to 2008. The Chula Vista monitoring station, located approximately 3 miles west of the Project Area, is the nearest station to the Project Area. The Chula Vista monitoring station measures ozone, CO, NO_2, SO_2, PM_{10}, and $PM_{2.5.}$ Table 4 provides a summary of measurements of ozone, CO, NO_2, SO_2, PM_{10}, and $PM_{2.5}$ collected at the Chula Vista monitoring station for the years 2004 through 2008.

4.3.1 Ozone

Nitrogen oxides and hydrocarbons (reactive organic gases [ROGs]) are known as the chief “precursors” of ozone. These compounds react in the presence of sunlight to produce ozone. Ozone is the primary air pollution problem in the SDAB. Because sunlight plays such an important role in its formation, ozone pollution, or smog, is mainly a concern during the daytime in summer months. The SDAB is currently designated a federal and state non-attainment area for ozone. During the past 20 years, San Diego had experienced a decline in the number of days with unhealthy levels of ozone despite the region’s growth in population and vehicle miles traveled (County of San Diego 2009b).

About half of smog-forming emissions come from automobiles. Population growth in San Diego has resulted in a large increase in the number of automobiles expelling ozone-forming pollutants while operating on area roadways. In addition, the occasional transport of smog-filled air from the South Coast Air Basin (SCAB) only adds to the SDAB’s ozone problem. More strict automobile emission controls, including more

TABLE 3
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				
						2004	2005	2006	2007	2008	2004	2005	2006	2007	2008	2004	2005	2006	2007	2008
O_3	1 hour	0.09 ppm	N	N/A	N/A	.129	.113	.121	.134	.139	12	16	23	21	18	1	0	0	1	2
O_3	8 hours	0.07ppm	N	0.08 ppm	N	.095	.089	.100	.092	.109	43	51	68	50	69	8	5	14	7	11
CO	1 hour	20 ppm	A	35 ppm	A	6.90	Na	Na	Na	Na	0	Na	Na	Na	Na	0	Na	Na	Na	Na
CO	8 hours	9 ppm	A	9 ppm	A	4.11	4.71	3.61	5.18	3.51	0	0	0	0	0	0	0	0	0	0
NO_2	1 hour	0.18 ppm*	A	N/A	N/A	.125	.109	.097	.101	.123	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	.017	.015	.017	.015	Na	N/A	N/A	N/A	N/A	Na	NX	NX	NX	NX	Na
SO_2	1 hour	25 pphm	A	N/A	N/A	.045	Na	Na	Na	Na	0	Na	Na	Na	Na	N/A	N/A	N/A	N/A	Na
SO_2	24 hours	4 pphm	A	14 pphm	A	.016	Na	Na	Na	Na	0	Na	Na	Na	Na	0	Na	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	Na	Na	Na	Na	Na	Na
PM_{10}	24 hours	50 $\mu g/m^3$	N	150 $\mu g/m^3$	U	138	154	134	392	147	174.5	52.7	159.4	158.7	Na	0	2	0	1	0
PM_{10}	Annual	20 $\mu g/m^3$	N	N/A	N/A	51.7	28.6	54.1	58.5	Na	EX	EX	EX	EX	Na	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 $\mu g/m^3$	N	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. (2010b). California Air Quality Data Statistics. California Air Resources Board Internet Site. URL http://www.arb.ca.gov/adam/welcome.html.

*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 2004 through 2008.

[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; U = Unclassifiable 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 4
SUMMARY OF AIR QUALITY MEASUREMENTS RECORDED AT THE CHULA VISTA MONITORING STATION

Pollutant/Standard	2004	2005	2006	2007	2008
Ozone					
Days State 1-hour Standard Exceeded (0.09 ppm)	1	0	0	2	1
Days State 8-hour Standard Exceeded (0.07 ppm)	3	3	0	3	4
Days Federal 1-hour Standard Exceeded (0.12 ppm)[a]	0	0	0	0	0
Days '97 Federal 8-hour Standard Exceeded (0.08 ppm)	1	1	0	1	1
Days '08 Federal 8-hour Standard Exceeded (0.075 ppm)	1	1	0	1	3
Max. 1-hr (ppm)	0.097	0.093	0.084	0.105	0.107
Max 8-hr (ppm)	0.088	0.081	0.069	0.087	0.084
Nitrogen Dioxide					
Days State 1-hour Standard Exceeded (0.18 ppm)	0	0	0	0	0
Max 1-hr (ppm)	0.072	0.071	0.074	0.082	0.072
Annual Average (ppm)	0.016	0.016	0.017	0.015	0.015
PM_{10}					
Days State 24-hour Standard Exceeded (50 $\mu g/m^3$)	0	2	2	2	1
Days Federal 24-hour Standard Exceeded (150 $\mu g/m^3$)	0	0	0	0	0
Max. Daily ($\mu g/m^3$)	45.0	53.0	52.0	58.0	54.0
State Annual Average ($\mu g/m^3$)	26.4	27.0	26.3	26.1	26.7
Federal Annual Average ($\mu g/m^3$)	25.8	26.5	25.7	25.5	26.2
$PM_{2.5}$					
Days '97 Federal 24-hour Standard Exceeded (65 $\mu g/m^3$)	0	0	0	1	0
Days '06 Federal 24-hour Standard Exceeded (35 $\mu g/m^3$)	0	0	0	3	0
Max. Daily ($\mu g/m^3$)	32.7	34.3	30.2	77.8	32.9
State Annual Average ($\mu g/m^3$)	12.2	Na	11.2	Na	12.3
Federal Annual Average ($\mu g/m^3$)	12.2	11.8	11.2	12.5	12.3
Carbon Monoxide					
Days State 8-hour Standard Exceeded (9 ppm)	0	0	0	0	0
Days Federal 8-hour Standard Exceeded (9 ppm)	0	0	0	0	0
Max. 8-hr (ppm)	2.48	2.13	2.20	2.24	1.87
Sulfur Dioxide					
Days State 24-hour Standard Exceeded (0.04 ppm)	0	0	0	0	0
Days Federal 24-hour Standard Exceeded (0.14 ppm)	0	0	0	0	0
Max. Daily (ppm)	0.016	0.005	0.006	0.004	0.004
Annual Average (ppm)	0.003	0.003	0.003	0.002	0.002

SOURCE: State of California 2010b.

Na = Not available.

[a]The federal 1-hour standard for ozone (0.12 ppm) has been revoked.

efficient automobile engines, have played a large role in why ozone levels have steadily decreased.

The former national one-hour ozone standard of 0.12 ppm was not exceeded at the Chula Vista monitoring station during the 5-year period of 2004 to 2008. The stricter state one-hour ozone standard of 0.09 ppm was exceeded once in 2004, twice in 2007, and once in 2008.

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 SDAB is currently a nonattainment area for the previous national eight-hour standard and is recommended as a nonattainment area for the revised national eight-hour standard of 0.075 ppm. The previous national eight-hour standard of 0.08 ppm was exceeded one day in 2004, one day in 2005, one day in 2007, and one day in 2008 at the Chula Vista monitoring station. The revised national eight-hour standard of 0.075 ppm was exceeded one day in 2004, one day in 2005, one day in 2007, and three days in 2008. The stricter state eight-hour ozone standard of 0.07 ppm was exceeded three days in 2004, three days in 2005, three days in 2007, and four days in 2008.

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 SCAB and combine with ozone formed from local emission sources to produce elevated ozone levels in the SDAB.

Local agencies cannot control neither the source nor the transportation of pollutants from outside the air basin. 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.

Actions that have been taken in the SDAB to reduce ozone concentrations include:

- **TCMs if vehicle travel and emissions exceed attainment demonstration levels.** TCMs are strategies that will reduce transportation-related emissions by reducing vehicle use or improving traffic flow.

- **Enhanced motor vehicle inspection and maintenance program.** The smog check program is overseen by the Bureau of Automotive Repair. The program requires most vehicles to pass a smog test once every two years before registering in the state of California. The smog check program monitors the amount of pollutants automobiles produce. One focus of the program is identifying "gross polluters," or vehicles that exceed two times the allowable emissions for a particular model. Regular maintenance and tune-ups, changing the oil, and checking tire inflation can

improve gas mileage and lower air pollutant emissions. It can also reduce traffic congestion due to preventable breakdowns, further lowering emissions.

- **Clean-fuel vehicle program.** The clean-fuel vehicle program, overseen by CARB, requires the development of cleaner burning cars and clean alternative fuels by requiring the motor vehicle industry to develop new technologies to meet air quality requirements. Clean-fuel vehicles are those that meet the emissions standards set in the 1990 amendments to the Clean Air Act. Cleaner vehicles and fuels will result in continued reductions in vehicle pollutant emissions despite increases in travel.

4.3.2 Carbon Monoxide

The SDAB is classified as a state attainment area and as a federal maintenance 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. The violations that took place in 2003 were likely the result of massive wildfires that occurred throughout the County. As shown in Table 3, the federal and state eight-hour CO standards were not exceeded during the period from 2004 through 2008. The federal and state one-hour standards were not exceeded in 2004. One-hour data were not available for 2005 through 2008.

As shown in Table 4, the federal and state eight-hour CO standards were not exceeded at the Chula Vista monitoring station from 2004 through 2008. One-hour data were not available.

Small-scale, localized concentrations of CO above the state and national standards have the potential to occur at intersections with stagnation points, such as those that occur on major highways and heavily traveled and congested roadways. Localized high concentrations of CO are referred to as “CO hot spots” and are a concern at congested intersections when automobile engines burn fuel less efficiently and their exhaust contains more CO.

4.3.3 PM_{10}

PM_{10} is 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 urban activities, dust suspended by vehicle traffic, and secondary aerosols formed by reactions in the atmosphere.

Under typical conditions (i.e., no wildfires) particles classified under the PM_{10} category are mainly emitted directly from activities that disturb the soil, including travel on roads

and construction, mining, or agricultural operations. Other sources include windblown dust, salts, brake dust, and tire wear (County of San Diego 1998). For several reasons hinging on the area's dry climate and coastal location, the SDAB has special difficulty in developing adequate tactics to meet present state particulate standards.

The SDAB is designated as federal unclassified and state nonattainment for PM_{10}. In 2005, the measured federal PM_{10} standard was exceeded twice in 2005 and once in 2007 in the SDAB. The 2007 exceedance occurred on October 21, 2007, at times when major wildfires were raging throughout the county. Consequently, this exceedance was likely caused by the wildfires and would be beyond the control of the SDAPCD. As such, this event is covered under the EPA's Natural Events Policy that permits, under certain circumstances, the exclusion of air quality data attributable to uncontrollable natural events (e.g., volcanic activity, wild land fires, and high wind events). The 2005 exceedances did not occur during wildfires and are not covered under this policy.

At the Chula Vista monitoring station, the national 24-hour PM_{10} standard was not exceeded from 2004 through 2008. The stricter state 24-hour PM_{10} standard was exceeded two days in 2005, two days in 2006, two days in 2007, and one day in 2008.

4.3.4 $PM_{2.5}$

Airborne, inhalable particles with aerodynamic diameters of 2.5 microns or less have been recognized as an air quality concern requiring regular monitoring. Federal regulations required that $PM_{2.5}$ monitoring begin January 1, 1999 (County of San Diego 1999). The Chula Vista monitoring station is one of five stations in the SDAB that monitors $PM_{2.5}$. Federal $PM_{2.5}$ standards established in 1997 include an annual arithmetic mean of 15 $\mu g/m^3$ and a 24-hour concentration of 65 $\mu g/m^3$. As discussed above, the 24-hour $PM_{2.5}$ standard has been changed to 35 $\mu g/m^3$. However, this does not apply to the monitoring from 2004 to 2006. State $PM_{2.5}$ standards established in 2002 are an annual arithmetic mean of 12 $\mu g/m^3$. Table 4 shows that the prior 24-hour $PM_{2.5}$ standard of 65 $\mu g/m^3$ was exceeded one day in 2007 and the new standard of 35 $\mu g/m^3$ was exceeded three days in 2007 at the Chula Vista monitoring station.

The SDAB was classified as an attainment area for the previous federal 24-hour $PM_{2.5}$ standard of 65 $\mu g/m^3$ and has also been classified as an attainment area for the revised federal 24-hour $PM_{2.5}$ standard of 35 $\mu g/m^3$ (U.S. EPA 2004, 2009b). The SDAB is a non-attainment area for the state $PM_{2.5}$ standard (State of California 2009a).

4.3.5 Other Criteria Pollutants

The national and state standards for NO_2, SO_x, and previous standard for lead are being met in the SDAB, and the latest pollutant trends suggest that these standards will not be

exceeded in the foreseeable future. As discussed above, the CARB recommended to the EPA that the SDAB be designated unclassifiable for the new lead standard.

5.0 Thresholds of Significance

5.1 California Air Resources Board

For purposes of assessing the significance of air quality impacts, the CARB has established guidelines, as described below.

For long-term emissions, the direct impacts of a project can be measured by the degree to which the project is consistent with regional plans to improve and maintain air quality. The regional plan for San Diego is the 1991/1992 RAQS and attached TCM, as revised by the triennial updates adopted in 1995, 1998, 2001, 2004, and 2009. The CARB provides criteria for determining whether a project conforms to the RAQS (State of California 1989), which include the following:

1. Is a regional air quality plan being implemented in the Project Area?
2. Is the project consistent with the growth assumptions in the regional air quality plan?
3. Does the project incorporate all feasible and available air quality control measures?

5.2 City of Chula Vista

The City of Chula Vista assesses air impacts using Appendix G of the CEQA Guidelines. In combination, these policies and guidelines provide guidance as to what would be considered significant under CEQA.

Based on the thresholds identified in Appendix G of the CEQA guidelines, the Proposed Project would result in a significant impact to air quality if it would:

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

quantitative thresholds for ozone precursors). The City of Chula Vista uses the SCAQMD thresholds shown in Table 5 to assess the significance of air quality impacts (SCAQMD 1993).

TABLE 5
SCAQMD THRESHOLDS
(pounds per day)

Pollutant	Project Construction	Project Operation
NO_x	100	55
VOC	75	55
PM_{10}	150	150
$PM_{2.5}$	55	55
SO_x	150	150
CO	550	550

4. Expose sensitive receptors to substantial pollutant concentrations such as ozone or respirable particulates (PM_{10});

5. Create objectionable odors affecting a substantial number of people.

5.3 Public Nuisance Law (Odors)

The State of California Health and Safety Code Sections 41700 and 41705, and SDAPCD Rule 51, commonly referred to as public nuisance law, prohibit emissions from any source whatsoever in such quantities of air contaminants or other material, which cause injury, detriment, nuisance, or annoyance to the public health or damage to property. The provisions of these regulations do not apply to odors emanating from agricultural operations necessary for the growing of crops or the raising of fowl or animals. It is generally accepted that the “considerable” number of persons requirement in Rule 51 is normally satisfied when 10 different individuals/households have made separate complaints within 90 days. Odor complaints from a “considerable” number of persons or businesses in the area will be considered to be a significant, adverse odor impact.

Every use and operation shall be conducted so that no unreasonable heat, odor, vapor, glare, vibration (displacement), dust, smoke, or other forms of air pollution subject to SDAPCD standards shall be discernible at the property line of the parcel upon which the use or operation is located.

Therefore, any unreasonable odor discernible at the property line of the project site will be considered a significant odor impact.

6.0 Air Quality Assessment

Air quality impacts can result from the construction and operation of a project. Construction impacts are short term and result from fugitive dust, equipment exhaust, and indirect effects associated with construction workers and deliveries. Operational impacts can occur on two levels: regional impacts resulting from growth-inducing development or local hot-spot effects stemming from sensitive receivers being placed close to highly congested roadways. In the case of the Proposed Project, operational impacts are primarily due to emissions to the basin from mobile sources associated with the vehicular travel along the roadways within the Project Area.

Air emissions 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 generates emissions from three basics sources: construction sources, area sources (e.g. fireplaces and natural gas heating), and operational sources (e.g. traffic).

Inputs to URBEMIS 2007 include such items as the air basin containing the project, land uses, trip generation rates, trip lengths, vehicle fleet mix (percentage autos, medium truck, etc.), trip distribution (i.e. percent home to work), duration of construction phases, construction equipment usage, grading areas, season, and ambient temperature, as well as other parameters. URBEMIS 2007 does not include specific SDAB emission data. Consequently, for this assessment SCAB emission data were used. This is appropriate, because the meteorological data associated with the project are similar to the characteristics of the SCAB. The URBEMIS 2007 output files contained in Attachment 1 indicate the specific inputs for each model run. Emissions of NO_x, CO, SO_x, PM_{10}, $PM_{2.5}$, and ROG, an ozone precursor, are calculated. Emission factors are not available for lead, and consequently, lead emissions are not calculated. The SDAB is currently in attainment of the state and federal lead standards. Furthermore, fuel used in construction equipment and most other vehicles is not leaded.

6.1 Construction-related Air Quality Effects

Construction-related activities are temporary, short-term sources of air emissions. Sources of construction-related air emissions include:

- Fugitive dust from grading activities
- Construction equipment exhaust
- Construction-related trips by workers, delivery trucks, and material-hauling trucks
- Construction-related power consumption

Air pollutants generated by the construction of projects within the Project Area would vary depending upon the number of projects occurring simultaneously and the size of each individual project. Construction-related pollutants result from dust that is raised during grading, emissions from construction vehicles, and chemicals used during construction.

Fugitive dust emissions vary greatly during construction and are dependent on the amount and type of activity, silt content of the soil, and the weather. Vehicles moving over paved and unpaved surfaces, demolition, excavation, earth movement, grading, and wind erosion from exposed surfaces are all sources of fugitive dust. Construction operations are subject to the requirements established in Regulation 4, Rules 52 and 54, of the SDAPCD's rules and regulations.

The exact number and timing of all development projects that could occur under the Proposed Project are unknown. The City of Chula Vista uses the SCAQMD construction thresholds shown in Table 5 to assess the significance of air quality impacts. Approval of the proposed GPA and GDPA would not permit the construction of any individual project, and no specific construction details are available. The thresholds presented above are applied on a project-by-project basis and are not used for assessment of regional planning impacts.

Future projects under the proposed GPA and GDPA would implement standard dust and emission control during grading operations to reduce potential nuisance impacts and to ensure compliance with SDAPCD rules and regulations. In addition, future projects would be required to implement mitigation measures detailed in the GPU EIR (See, Section 7.0, below).

With implementation of standard dust and emission control measures during grading operations, compliance with SDAPCD rules and regulations, and implementation of City of Chula Vista BMPs, emissions due to construction of future projects under the proposed GPA and GDPA are not anticipated to be significant.

6.2 Operation-related Emissions

6.2.1 Mobile and Area Source Emissions

Operational source emissions would originate from traffic generated within or as a result of the Proposed Project. Area source emissions result from activities such as use of natural gas, fireplaces, and consumer products. In addition, landscaping maintenance activities associated with the proposed land uses would produce pollutant emissions.

The Proposed Project represents an increase in development potential within the Land Use Change Area as compared to that analyzed in the GPU EIR for the Preferred Plan.

In the GPU EIR, citywide air emissions were calculated using URBEMIS 2002. The land uses entered into URBEMIS 2002 for the Preferred Plan were entered into URBEMIS 2007 to obtain updated citywide emissions under the Preferred Plan. The increase in development potential within the Land Use Change Area was then modeled using URBEMIS 2007 and the results were added to the citywide emissions under the 2005 Preferred Plan to obtain the total citywide emissions due to the Proposed Project. Table 6 summarizes the increase in development potential.

TABLE 6
INCREASE IN DEVELOPMENT POTENTIAL
DUE TO PROPOSED PROJECT

Land Use	Amount
Single-Family	247 units
Multi-Family	633 units
Commercial	550,000 sf
Industrial/RTP	2.2 million sf
School	6.4 acres
Park	5.1 acres
Community Purpose Facility	-9.3 acres

sf= square feet

The average winter and summer temperatures used in URBEMIS 2007 were assumed to be 40°F and 75°F, respectively. The average trip length for San Diego County is 5.8 miles (SANDAG 2009). The defaults for other mobile source parameters such as vehicle fleet mix were assumed. Pursuant to URBEMIS 2007, the increase in development potential due to the Proposed Project would generate approximately 38,162 additional average daily trips (ADT) above that calculated for the GPU EIR.

Default area source parameters in URBEMIS 2007 were used for the analysis of area emissions, except for those associated with hearth fuel combustion. For hearth fuel combustion, it was assumed that 5 percent of households would have wood fireplaces and 10 percent would have natural gas fireplaces. It was also assumed that those households with wood fireplaces would burn a quarter of a cord per year. The defaults for natural gas use in URBEMIS 2007 were assumed.

A summary of the modeling, which include both mobile and area source emissions, is shown in Table 7. The URBEMIS 2007 output files for project operation are contained in Attachment 1. As seen in Table 7, future emissions under the Proposed Project are projected to be greater than future emissions analyzed in the GPU EIR.

TABLE 7
FUTURE (YEAR 2030) AVERAGE DAILY EMISSIONS TO THE SAN DIEGO AIR BASIN
(pounds/day)

	2005 General Plan Update Citywide Emissions			Increase in Emissions due to Proposed Project			Citywide Emissions after Buildout of the Proposed Project		
Season/Pollutant	Area Source Emissions	Operational (Vehicle Emissions)	Total Emissions[1]	Area Source Emissions	Operational (Vehicle Emissions)	Total Emissions[1]	Area Source Emissions	Operational (Vehicle Emissions)	Total Emissions[1]
Summer									
ROG	8,920	8,344	17,264	65	76	140	8,984	8,419	17,403
NO_x	1,978	8,318	10,296	17	76	92	1,994	8,395	10,389
CO	3,306	84,358	87,667	25	767	792	3,331	8,525	88,460
SO_x[2]	0	215	215	0	2	2	0	217	217
PM_{10}	10	41,776	41,785	0	382	382	10	42,158	42,167
$PM_{2.5}$	10	8,122	8,132	0	74	74	10	8,196	8,206
Winter									
ROG	24,675	9,080	33,755	186	83	269	24,861	9,163	34,051
NO_x	2,213	10,495	12,708	18	96	114	2,231	10,591	12,822
CO	18,894	91,503	110,397	146	833	980	19,040	92,336	111,377
SO_x[2]	29	215	244		2	2	29	217	246
PM_{10}	2,451	41,776	44,227	19	382	401	2,470	42,158	44,628
$PM_{2.5}$	2,359	8,122	10,481	18	74	92	2,377	8,196	10,573

[1]Totals may differ due to rounding.
[2]Emissions calculated by URBEMIS2007 are for SO_2.

The Proposed Project seeks to reduce air pollution and minimize air quality impacts by promoting mixed land use patterns and creating walkable neighborhoods and vibrant town centers. However, since the Proposed Project would increase development, the resulting emissions would be greater those anticipated to occur under the 2005 GPU Preferred Plan. Additionally, since there are no air emissions generated in the Project Area currently, the resulting emissions are greater than the existing condition. The Proposed Project would result in a significant air quality impact.

6.2.2 Localized Intersection Carbon Monoxide Impacts

Small-scale, localized concentrations of CO above the state and national standards have the potential to occur near stagnation points of heavily traveled intersections. Localized, high concentrations of CO are referred to as "CO hot spots." CO hot spots can occur when projects contribute traffic to area intersections. However, CO hot spots almost exclusively occur near intersections with LOS E or worse in combination with relatively high traffic volumes on all roadways. The SDAB is in attainment of both the federal and state CO standards, and background CO concentrations are well below federal and state limits. For buildout conditions, all studied intersections are projected to operate at LOS D or better (LLG 2010). Therefore, CO hot spots are not anticipated and impacts are less than significant.

6.2.3 Toxic Air Emissions

The Environmental Element of the City of Chula Vista General Plan addresses the siting of sensitive receptors adjacent to heavily traveled roadways. Policy E6.10 states:

> The siting of new sensitive receivers within 500 feet of highways resulting from development or redevelopment projects shall require the preparation of a health risk assessment as part of the CEQA review of the project. Attendant health risks identified in the Health Risk Assessment (HRA) shall be feasibly mitigated to the maximum extent practicable, in accordance with CEQA, in order to help ensure that applicable federal and state standards are not exceeded.

The health effects of exposure to diesel particulate matter generated by traffic on roadways have been raised as a potential concern. 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 (State of California 2005).

There are two freeways in the vicinity of the Project Area that would carry more than 100,000 vehicles per day: I-805 and SR-905. The traffic report prepared for the Proposed Project indicates that year 2030 traffic volumes for I-805 and SR-905 in the project vicinity are projected to be up to 268,000 ADT and 223,000 ADT, respectively (LLG 2010). However, I-805 is located approximately 3 miles west to the western project boundary and SR-905 is located approximately 1.7 miles south of the southern project boundary. Consequently, the Proposed Project lies well outside of the land use avoidance guidelines established by the CARB, thus impacts related to toxic air emissions would be less than significant. SR-125 would carry fewer than 100,000 vehicles per day.

Further, the CARB has worked on developing strategies and regulations aimed at reducing the risk from diesel particulate matter. The overall strategy for achieving these reductions is found in the *Risk Reduction Plan to Reduce Particulate Matter Emissions from Diesel-Fueled Engines and Vehicles* (State of California 2000). A stated goal of the plan is to reduce the cancer risk statewide arising from exposure to diesel particulate matter 75 percent by 2010 and 85 percent by 2020. A number of programs and strategies to reduce diesel particulate matter that have been or are in the process of being developed include the Diesel Risk Reduction Program, which aims to reduce diesel particulate emissions over the next five to 15 years through improved automobile design and alternative fuel efficiency (State of California 2000).

6.3 Conformance with Regional Plans and City Criteria

6.3.1 California Air Resources Board

1. Is a regional air quality plan being implemented in the Project Area?

The Project Area is in the City of Chula Vista, which is within the SDAB. The 1991/1992 RAQS (and triennial updates) are implemented by SDAPCD throughout the air basin. Therefore, the Proposed Project fulfills the first criteria from the CARB guidelines described in the Thresholds of Significance section.

2. Is the project consistent with the growth assumptions in the regional air quality plan?

As noted above, the SIP is the document that sets forth the state's strategies for achieving air quality standards. The SDAPCD is the agency that regulates air quality in

the SDAB and is responsible for preparing and implementing the portion of the SIP applicable to the SDAB. The RAQS and TCM plan developed by the SDAPCD and SANDAG set forth the steps needed to accomplish attainment of state and federal ambient air quality standards. The SDAPCD adopts rules, regulations, and programs to attain state and federal air quality standards, and appropriates money (including permit fees) to achieve these objectives.

In order to meet federal air quality standards in California, the CARB required each air district to develop its own strategy for achieving the NAAQS. The SDAPCD prepared the 1991/1992 RAQS in response to the requirements set forth in the CCAA. Attached as part of the RAQS is the TCM plan prepared by SANDAG. The RAQS and TCM plan set forth the steps needed to accomplish attainment of state and federal ambient air quality standards.

The basis for these plans is the distribution of population in the region as projected by SANDAG. Growth forecasting is based in part on the land uses established by the Chula Vista General Plan. Amending the General Plan to change development potential would, necessarily, result in an inconsistency between the RAQS (that is based on the existing plan) and the amended plan.

Because the proposed land use changes would be inconsistent with the adopted General Plan upon which the RAQS was based, the Proposed Project would not conform to the current RAQS. If a project is inconsistent with the City's General Plan, it is not consistent with the growth assumptions in the RAQS. Consequently, the Proposed Project would conflict with the adopted air plan.

3. Does the project incorporate all feasible and available air quality control measures?

Approval of the Proposed Project would not permit the construction of any individual project, and no specific development details are available. Individual projects would be required to use BMPs to decrease emissions.

As discussed above, the Proposed Project seeks to maintain consistency with the General Plan within the Deferral Area through the provision of walkable neighborhoods and vibrant town centers. With implementation of the goals and objectives of the Proposed Project discussed in Section 2.0 above, the air quality control measures recommended in this report, SDAPCD rules and regulations, and BMPs required by the City, future projects within the Land Use Change Area would incorporate all necessary air quality control measures.

6.3.2 City of Chula Vista

1. Would the Proposed Project obstruct or conflict with the implementation of the San Diego RAQS or applicable portions of the SIP?

As discussed above, because the proposed land use changes would not be consistent with the adopted General Plan upon which the RAQS was based, the Proposed Project would not conform to the current RAQS. Consequently, the Proposed Project would conflict with the adopted air plan.

2. Would the Proposed Project result in emissions that would violate any air quality standard or contribute substantially to an existing or projected air quality violation?

There are currently no air quality violations on or near the Project Area (State of California 2009b). The Proposed Project would allow residential, mixed use, and park uses. It is not anticipated that projects constructed as a result of the Proposed Project would result in significant stationary sources of emissions. Impacts are less than significant.

Emissions from increased traffic on area roadways may lead to air quality violations. Emissions due to operation and construction of projects under the Proposed Project are discussed below.

3. Would the Proposed Project result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard?

Construction

Future projects under the proposed GPA and GDPA would implement standard dust and emission control during grading operations to reduce potential nuisance impacts and to ensure compliance with SDAPCD rules and regulations. In addition, future projects would be required to implement the BMPs required by the City of Chula Vista. With implementation of these measures, emissions due to construction of future projects under the proposed GPA and GDPA are not anticipated to be significant.

Operation

The region is classified as attainment for all criterion pollutants except ozone, PM_{10}, and $PM_{2.5}$. The SDAB is non-attainment for the eight-hour federal and state ozone standards. Ozone is not emitted directly, but is a result of atmospheric activity on precursors. Nitrogen oxides and hydrocarbons (ROGs) are known as the chief “precursors” of ozone. These compounds react in the presence of sunlight to produce ozone.

As discussed above, the Proposed Project seeks to reduce air pollution and minimize air quality impacts by promoting mixed land use patterns and creating walkable neighborhoods and vibrant town centers. However, since the Proposed Project would increase development, the resulting emissions would be greater those analyzed in the GPU EIR and would result in a significant air quality impact.

4. Would the Proposed Project expose sensitive receptors to substantial pollutant concentrations?

CO hot spots almost exclusively occur near intersections with LOS E or worse in combination with relatively high traffic volumes on all roadways. For buildout conditions, all studied intersections are projected to operate at LOS D or better (LLG 2010). Therefore, CO hot spots are not anticipated and impacts are less than significant.

As discussed in Section 6.2.3 above, the Project Area is located more than 500 feet from I-805 and SR-905. All other roadways are projected to have traffic volumes less than 100,000 vehicles per day. Consequently, the Proposed Project lies well outside of the land use avoidance guidelines established by the CARB, thus impacts related to toxic air emissions would be less than significant. As discussed above, future traffic volumes on SR-125 are fewer than 100,000 vehicles per day and impacts are less than significant.

5. Would the Proposed Project create objectionable odors affecting a substantial number of people?

There are no existing sources of odors within the Project Area. The Proposed Project would allow residential, mixed use, and park development, and is not anticipated to create or expose sensitive receivers to odors. The Proposed Project does not propose any specific new sources of odor that could affect sensitive receptors. Impacts are less than significant.

7.0 Conclusions and Recommendations

The proposed land use changes would be inconsistent with the adopted plans upon which the RAQS was based. Therefore, the Proposed Project would not conform to the current RAQS. Consequently, adoption of the Proposed Project would result in a significant conflict with the adopted air plan. Because the significant air impact stems from an inconsistency between the Proposed Project and the adopted plans upon which the RAQS was based, the only measure that can lessen the effect is the revision of the RAQS based on the proposed GPA and GDPA. This effort is the responsibility of SANDAG and the SDAPCD and is outside the jurisdiction of the City. As such, no mitigation is available to the City. Impacts remain significant.

Future emissions under the Proposed Project are projected to be greater than future emissions under the adopted General Plan. This is because the Proposed Project would increase development. The only measures that would reduce those emissions from daily operations are those that reduce vehicle miles traveled on area roads. The Proposed Project seeks to reduce air pollution and minimize air quality impacts by promoting

mixed land use patterns and creating walkable neighborhoods and vibrant town centers. However, impacts resulting from daily operations of the Proposed Project would remain significant.

Implementation of the following mitigation measure, as identified in the GPU EIR, is required to be incorporated into future SPA plans as a means to reduce impacts of PM_{10} emissions during construction.

5.6.5-1 Mitigation of PM_{10} impacts requires active dust control during construction. As a matter of standard practice, the City shall require the following standard construction measures during construction to the extent applicable:

1. All unpaved construction areas shall be sprinkled with water or other acceptable San Diego APCD dust control agents during dust-generating activities to reduce dust emissions. Additional watering or acceptable APCD dust control agents shall be applied during dry weather or windy days until dust emissions are not visible.

2. Trucks hauling dirt and debris shall be properly covered to reduce windblown dust and spills.

3. A 20-mile-per-hour speed limit on unpaved surfaces shall be enforced.

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

5. On-site stockpiles of excavated material shall be covered or watered.

6. Disturbed areas shall be hydroseeded, landscaped, or developed as quickly as possible and as directed by the City and/or APCD to reduce dust generation.

7. To the maximum extent feasible:

   - Heavy-duty construction equipment with modified combustion/fuel injection systems for emissions control shall be utilized during grading and construction activities.

   - Catalytic reduction for gasoline-powered equipment shall be used.

8. Equip construction equipment with prechamber diesel engines (or equivalent) together with proper maintenance and operation to reduce emissions of nitrogen oxide, to the extent available and feasible.

9. Electrical construction equipment shall be used to the extent feasible.

10. The simultaneous operations of multiple construction equipment units shall be minimized (i.e., phase construction to minimize impacts).

With the application of this mitigation measure, significant impacts resulting from fugitive dust impacts during construction would be less than significant

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ATTACHMENT 1

URBEMIS 2007 Output Files Relating to 2005 General Plan Update

2005 GPU Citywide Emissions

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Summary Report for Summer Emissions (Pounds/Day)

File Name: L:\DRAFT\4829\Air\2005GP_Citywide.urb924

Project Name: 4829 2005 GPU Citywide Emissions

Project Location: South Coast AQMD

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

AREA SOURCE EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (lbs/day, unmitigated)	8,920.03	1,977.90	3,305.97	0.12	9.70	9.61	2,457,612.41

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (lbs/day, unmitigated)	8,344.45	8,317.91	84,358.15	215.30	41,775.61	8,122.08	24,402,891.97

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (lbs/day, unmitigated)	17,264.48	10,295.81	87,664.12	215.42	41,785.31	8,131.69	26,860,504.38

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Detail Report for Summer Area Source Unmitigated Emissions (Pounds/Day)

File Name: L:\DRAFT\4829\Air\2005GP_Citywide.urb924

Project Name: 4829 2005 GPU Citywide Emissions

Project Location: South Coast AQMD

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

AREA SOURCE EMISSION ESTIMATES (Summer Pounds Per Day, Unmitigated)

Source	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
Natural Gas	148.46	1,952.30	1,038.20	0.02	3.68	3.64	2,453,966.22
Hearth - No Summer Emissions							
Landscape	407.52	25.60	2,267.77	0.10	6.02	5.97	3,646.19
Consumer Products	5,890.37						
Architectural Coatings	2,473.68						
TOTALS (lbs/day, unmitigated)	8,920.03	1,977.90	3,305.97	0.12	9.70	9.61	2,457,612.41

Area Source Changes to Defaults

Percentage of residences with wood stoves changed from 10% to 0%

Percentage of residences with natural gas fireplaces changed from 85% to 10%

Cords of wood burned per year per wood fireplace changed from 0.22 cords per year to 0.25 cords per year

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Detail Report for Summer Operational Unmitigated Emissions (Pounds/Day)

File Name: L:\DRAFT\4829\Air\2005GP_Citywide.urb924

Project Name: 4829 2005 GPU Citywide Emissions

Project Location: South Coast AQMD

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

OPERATIONAL EMISSION ESTIMATES (Summer Pounds Per Day, Unmitigated)

Source	ROG	NOX	CO	SO2	PM10	PM25	CO2
Single family housing	1,122.10	1,009.49	10,767.86	26.37	5,040.24	982.85	2,979,167.34
Apartments low rise	726.89	633.06	6,752.56	16.54	3,160.75	616.35	1,868,245.19
Apartments mid rise	366.01	302.66	3,228.30	7.91	1,511.11	294.67	893,181.41
Elementary school	8.12	7.09	71.84	0.18	35.62	6.93	20,802.17
Junior high school	6.17	5.15	52.20	0.13	25.88	5.03	15,114.38
City park	115.51	120.74	1,198.25	3.11	607.88	118.04	353,363.24
Regnl shop. center	2,452.16	2,504.83	24,756.91	64.55	12,617.66	2,449.56	7,327,960.60
General office building	111.71	96.36	995.45	2.50	482.74	93.96	283,175.24
General light industry	31.23	32.09	337.94	0.84	160.35	31.25	94,487.73
General heavy industry	51.74	52.55	572.10	1.38	261.74	51.10	155,472.07
Industrial park	685.61	716.39	7,463.71	18.62	3,585.28	698.17	2,107,244.33
Library	2,222.98	2,388.33	23,703.19	61.59	12,024.86	2,335.02	6,990,062.64
Undeveloped Park	78.76	64.39	639.04	1.66	324.19	62.95	188,452.53
Beach Ocean or Bay park	303.48	318.86	3,164.58	8.22	1,605.42	311.75	933,233.79

Resort Hotel	51.58	54.76	543.50	1.41	275.72	53.54	160,276.78
Hotel with Convention	10.40	11.16	110.72	0.29	56.17	10.91	32,652.53
TOTALS (lbs/day, unmitigated)	8,344.45	8,317.91	84,358.15	215.30	41,775.61	8,122.08	24,402,891.97

Does not include correction for passby trips

Does not include double counting adjustment for internal trips

Analysis Year: 2030 Temperature (F): 75 Season: Summer

Emfac: Version : Emfac2007 V2.3 Nov 1 2006

Summary of Land Uses

Land Use Type	Acreage	Trip Rate	Unit Type	No. Units	Total Trips	Total VMT
Single family housing	16,760.67	10.00	dwelling units	50,282.00	502,820.00	2,916,356.10
Apartments low rise	2,463.44	8.00	dwelling units	39,415.00	315,320.00	1,828,856.06
Apartments mid rise	661.18	6.00	dwelling units	25,125.00	150,750.00	874,350.03
Elementary school		7.10	1000 sq ft	500.94	3,556.67	20,628.71
Junior high school		5.65	1000 sq ft	457.38	2,584.20	14,988.34
City park		50.00	acres	1,214.22	60,711.00	352,123.80
Regnl shop. center		27.55	1000 sq ft	45,743.66	1,260,237.80	7,309,379.49
General office building		6.89	1000 sq ft	6,993.12	48,182.60	279,459.07
General light industry		80.00	acres	200.00	16,000.00	92,800.00
General heavy industry		120.00	acres	217.52	26,102.40	151,393.93
Industrial park		200.00	acres	1,789.01	357,802.00	2,075,251.68
Library		400.00	acres	3,002.39	1,200,955.96	6,965,544.78
Undeveloped Park		5.00	acres	6,475.57	32,377.85	187,791.53

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Summary of Land Uses

Land Use Type	Acreage	Trip Rate	Unit Type	No. Units	Total Trips	Total VMT
Beach Ocean or Bay park		60.00	acres	2,672.30	160,338.00	929,960.45
Resort Hotel		100.00	acres	275.37	27,537.00	159,714.60
Hotel with Convention		300.00	acres	18.70	5,610.00	32,538.00
					4,170,885.48	24,191,136.57

Vehicle Fleet Mix

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Light Auto	49.4	0.0	100.0	0.0
Light Truck < 3750 lbs	7.3	0.0	100.0	0.0
Light Truck 3751-5750 lbs	23.9	0.0	100.0	0.0
Med Truck 5751-8500 lbs	11.4	0.0	100.0	0.0
Lite-Heavy Truck 8501-10,000 lbs	1.8	0.0	83.3	16.7
Lite-Heavy Truck 10,001-14,000 lbs	0.5	0.0	60.0	40.0
Med-Heavy Truck 14,001-33,000 lbs	1.0	0.0	20.0	80.0
Heavy-Heavy Truck 33,001-60,000 lbs	0.6	0.0	0.0	100.0
Other Bus	0.1	0.0	0.0	100.0
Urban Bus	0.1	0.0	0.0	100.0
Motorcycle	2.7	33.3	66.7	0.0
School Bus	0.1	0.0	0.0	100.0
Motor Home	1.1	0.0	90.9	9.1

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Travel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
Urban Trip Length (miles)	5.8	5.8	5.8	5.8	5.8	5.8
Rural Trip Length (miles)	5.8	5.8	5.8	5.8	5.8	5.8
Trip speeds (mph)	30.0	30.0	30.0	30.0	30.0	30.0
% of Trips - Residential	32.9	18.0	49.1			
% of Trips - Commercial (by land use)						
Elementary school				20.0	10.0	70.0
Junior high school				20.0	10.0	70.0
City park				5.0	2.5	92.5
Regnl shop. center				2.0	1.0	97.0
General office building				35.0	17.5	47.5
General light industry				50.0	25.0	25.0
General heavy industry				90.0	5.0	5.0
Industrial park				41.5	20.8	37.8
Library				5.0	2.5	92.5
Undeveloped Park				5.0	2.5	92.5
Beach Ocean or Bay park				5.0	2.5	92.5
Resort Hotel				5.0	2.5	92.5
Hotel with Convention				5.0	2.5	92.5

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Operational Changes to Defaults

Ambient summer temperature changed from 80 degrees F to 75 degrees F

Ambient winter temperature changed from 60 degrees F to 50 degrees F

Home-based work urban trip length changed from 12.7 miles to 5.8 miles

Home-based work rural trip length changed from 17.6 miles to 5.8 miles

Home-based shop urban trip length changed from 7 miles to 5.8 miles

Home-based shop rural trip length changed from 12.1 miles to 5.8 miles

Home-based other urban trip length changed from 9.5 miles to 5.8 miles

Home-based other rural trip length changed from 14.9 miles to 5.8 miles

Commercial-based commute urban trip length changed from 13.3 miles to 5.8 miles

Commercial-based commute rural trip length changed from 15.4 miles to 5.8 miles

Commercial-based non-work urban trip length changed from 7.4 miles to 5.8 miles

Commercial-based non-work rural trip length changed from 9.6 miles to 5.8 miles

Commercial-based customer urban trip length changed from 8.9 miles to 5.8 miles

Commercial-based customer rural trip length changed from 12.6 miles to 5.8 miles

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Urbemis 2007 Version 9.2.4

Summary Report for Winter Emissions (Pounds/Day)

File Name: L:\DRAFT\4829\Air\2005GP_Citywide.urb924

Project Name: 4829 2005 GPU Citywide Emissions

Project Location: South Coast AQMD

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

AREA SOURCE EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (lbs/day, unmitigated)	24,674.85	2,213.14	18,894.11	28.74	2,451.25	2,359.42	2,792,661.24

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (lbs/day, unmitigated)	9,080.39	10,495.02	91,503.23	215.46	41,775.61	8,122.08	23,068,083.22

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (lbs/day, unmitigated)	33,755.24	12,708.16	110,397.34	244.20	44,226.86	10,481.50	25,860,744.46

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Urbemis 2007 Version 9.2.4

Detail Report for Winter Area Source Unmitigated Emissions (Pounds/Day)

File Name: L:\DRAFT\4829\Air\2005GP_Citywide.urb924

Project Name: 4829 2005 GPU Citywide Emissions

Project Location: South Coast AQMD

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

AREA SOURCE EMISSION ESTIMATES (Winter Pounds Per Day, Unmitigated)

Source	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
Natural Gas	148.46	1,952.30	1,038.20	0.02	3.68	3.64	2,453,966.22
Hearth	16,162.34	260.84	17,855.91	28.72	2,447.57	2,355.78	338,695.02
Landscaping - No Winter Emissions							
Consumer Products	5,890.37						
Architectural Coatings	2,473.68						
TOTALS (lbs/day, unmitigated)	24,674.85	2,213.14	18,894.11	28.74	2,451.25	2,359.42	2,792,661.24

Area Source Changes to Defaults

Percentage of residences with wood stoves changed from 10% to 0%

Percentage of residences with natural gas fireplaces changed from 85% to 10%

Cords of wood burned per year per wood fireplace changed from 0.22 cords per year to 0.25 cords per year

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Urbemis 2007 Version 9.2.4

Detail Report for Winter Operational Unmitigated Emissions (Pounds/Day)

File Name: L:\DRAFT\4829\Air\2005GP_Citywide.urb924

Project Name: 4829 2005 GPU Citywide Emissions

Project Location: South Coast AQMD

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

OPERATIONAL EMISSION ESTIMATES (Winter Pounds Per Day, Unmitigated)

Source	ROG	NOX	CO	SO2	PM10	PM25	CO2
Single family housing	1,143.36	1,275.19	11,594.00	26.39	5,040.24	982.85	2,818,249.82
Apartments low rise	722.42	799.67	7,270.64	16.55	3,160.75	616.35	1,767,333.31
Apartments mid rise	349.70	382.31	3,475.99	7.91	1,511.11	294.67	844,936.88
Elementary school	7.96	8.95	77.80	0.18	35.62	6.93	19,663.93
Junior high school	5.85	6.50	56.53	0.13	25.88	5.03	14,287.36
City park	129.79	152.26	1,304.91	3.12	607.88	118.04	333,933.89
Regnl shop. center	2,703.96	3,158.47	26,991.55	64.60	12,617.66	2,449.56	6,924,646.62
General office building	108.83	121.65	1,072.27	2.50	482.74	93.96	267,755.36
General light industry	34.96	40.53	362.15	0.84	160.35	31.25	89,367.24
General heavy industry	57.80	66.44	607.95	1.38	261.74	51.10	147,118.52
Industrial park	776.44	904.68	8,021.58	18.63	3,585.28	698.17	1,992,736.93
Library	2,553.06	3,011.92	25,813.19	61.64	12,024.86	2,335.02	6,605,720.63
Undeveloped Park	73.23	81.20	695.93	1.66	324.19	62.95	178,090.65
Beach Ocean or Bay park	342.42	402.12	3,446.28	8.23	1,605.42	311.75	881,920.81

Resort Hotel	58.68	69.06	591.88	1.41	275.72	53.54	151,464.11
Hotel with Convention	11.93	14.07	120.58	0.29	56.17	10.91	30,857.16
TOTALS (lbs/day, unmitigated)	9,080.39	10,495.02	91,503.23	215.46	41,775.61	8,122.08	23,068,083.22

Does not include correction for passby trips

Does not include double counting adjustment for internal trips

Analysis Year: 2030 Temperature (F): 50 Season: Winter

Emfac: Version : Emfac2007 V2.3 Nov 1 2006

Summary of Land Uses

Land Use Type	Acreage	Trip Rate	Unit Type	No. Units	Total Trips	Total VMT
Single family housing	16,760.67	10.00	dwelling units	50,282.00	502,820.00	2,916,356.10
Apartments low rise	2,463.44	8.00	dwelling units	39,415.00	315,320.00	1,828,856.06
Apartments mid rise	661.18	6.00	dwelling units	25,125.00	150,750.00	874,350.03
Elementary school		7.10	1000 sq ft	500.94	3,556.67	20,628.71
Junior high school		5.65	1000 sq ft	457.38	2,584.20	14,988.34
City park		50.00	acres	1,214.22	60,711.00	352,123.80
Regnl shop. center		27.55	1000 sq ft	45,743.66	1,260,237.80	7,309,379.49
General office building		6.89	1000 sq ft	6,993.12	48,182.60	279,459.07
General light industry		80.00	acres	200.00	16,000.00	92,800.00
General heavy industry		120.00	acres	217.52	26,102.40	151,393.93
Industrial park		200.00	acres	1,789.01	357,802.00	2,075,251.68
Library		400.00	acres	3,002.39	1,200,955.96	6,965,544.78
Undeveloped Park		5.00	acres	6,475.57	32,377.85	187,791.53

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Summary of Land Uses

Land Use Type	Acreage	Trip Rate	Unit Type	No. Units	Total Trips	Total VMT
Beach Ocean or Bay park		60.00	acres	2,672.30	160,338.00	929,960.45
Resort Hotel		100.00	acres	275.37	27,537.00	159,714.60
Hotel with Convention		300.00	acres	18.70	5,610.00	32,538.00
					4,170,885.48	24,191,136.57

Vehicle Fleet Mix

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Light Auto	49.4	0.0	100.0	0.0
Light Truck < 3750 lbs	7.3	0.0	100.0	0.0
Light Truck 3751-5750 lbs	23.9	0.0	100.0	0.0
Med Truck 5751-8500 lbs	11.4	0.0	100.0	0.0
Lite-Heavy Truck 8501-10,000 lbs	1.8	0.0	83.3	16.7
Lite-Heavy Truck 10,001-14,000 lbs	0.5	0.0	60.0	40.0
Med-Heavy Truck 14,001-33,000 lbs	1.0	0.0	20.0	80.0
Heavy-Heavy Truck 33,001-60,000 lbs	0.6	0.0	0.0	100.0
Other Bus	0.1	0.0	0.0	100.0
Urban Bus	0.1	0.0	0.0	100.0
Motorcycle	2.7	33.3	66.7	0.0
School Bus	0.1	0.0	0.0	100.0
Motor Home	1.1	0.0	90.9	9.1

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Travel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
Urban Trip Length (miles)	5.8	5.8	5.8	5.8	5.8	5.8
Rural Trip Length (miles)	5.8	5.8	5.8	5.8	5.8	5.8
Trip speeds (mph)	30.0	30.0	30.0	30.0	30.0	30.0
% of Trips - Residential	32.9	18.0	49.1			
% of Trips - Commercial (by land use)						
Elementary school				20.0	10.0	70.0
Junior high school				20.0	10.0	70.0
City park				5.0	2.5	92.5
Regnl shop. center				2.0	1.0	97.0
General office building				35.0	17.5	47.5
General light industry				50.0	25.0	25.0
General heavy industry				90.0	5.0	5.0
Industrial park				41.5	20.8	37.8
Library				5.0	2.5	92.5
Undeveloped Park				5.0	2.5	92.5
Beach Ocean or Bay park				5.0	2.5	92.5
Resort Hotel				5.0	2.5	92.5
Hotel with Convention				5.0	2.5	92.5

Operational Changes to Defaults

Ambient summer temperature changed from 80 degrees F to 75 degrees F

Ambient winter temperature changed from 60 degrees F to 50 degrees F

Home-based work urban trip length changed from 12.7 miles to 5.8 miles

Home-based work rural trip length changed from 17.6 miles to 5.8 miles

Home-based shop urban trip length changed from 7 miles to 5.8 miles

Home-based shop rural trip length changed from 12.1 miles to 5.8 miles

Home-based other urban trip length changed from 9.5 miles to 5.8 miles

Home-based other rural trip length changed from 14.9 miles to 5.8 miles

Commercial-based commute urban trip length changed from 13.3 miles to 5.8 miles

Commercial-based commute rural trip length changed from 15.4 miles to 5.8 miles

Commercial-based non-work urban trip length changed from 7.4 miles to 5.8 miles

Commercial-based non-work rural trip length changed from 9.6 miles to 5.8 miles

Commercial-based customer urban trip length changed from 8.9 miles to 5.8 miles

Commercial-based customer rural trip length changed from 12.6 miles to 5.8 miles

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Urbemis 2007 Version 9.2.4

Summary Report for Annual Emissions (Tons/Year)

File Name: L:\DRAFT\4829\Air\2005GP_Citywide.urb924

Project Name: 4829 2005 GPU Citywide Emissions

Project Location: South Coast AQMD

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

AREA SOURCE EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (tons/year, unmitigated)	1,830.01	363.30	826.14	0.37	32.29	31.12	451,562.39

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (tons/year, unmitigated)	1,567.64	1,650.46	15,830.02	39.28	7,624.04	1,482.27	4,372,326.92

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (tons/year, unmitigated)	3,397.65	2,013.76	16,656.16	39.65	7,656.33	1,513.39	4,823,889.31

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Urbemis 2007 Version 9.2.4

Detail Report for Annual Area Source Unmitigated Emissions (Tons/Year)

File Name: L:\DRAFT\4829\Air\2005GP_Citywide.urb924

Project Name: 4829 2005 GPU Citywide Emissions

Project Location: South Coast AQMD

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

AREA SOURCE EMISSION ESTIMATES (Annual Tons Per Year, Unmitigated)

Source	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
Natural Gas	27.09	356.30	189.47	0.00	0.67	0.66	447,848.84
Hearth	202.11	2.33	222.80	0.35	30.52	29.37	3,048.12
Landscape	74.37	4.67	413.87	0.02	1.10	1.09	665.43
Consumer Products	1,074.99						
Architectural Coatings	451.45						
TOTALS (tons/year, unmitigated)	1,830.01	363.30	826.14	0.37	32.29	31.12	451,562.39

Area Source Changes to Defaults

Percentage of residences with wood stoves changed from 10% to 0%

Percentage of residences with natural gas fireplaces changed from 85% to 10%

Cords of wood burned per year per wood fireplace changed from 0.22 cords per year to 0.25 cords per year

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Urbemis 2007 Version 9.2.4

Detail Report for Annual Operational Unmitigated Emissions (Tons/Year)

File Name: L:\DRAFT\4829\Air\2005GP_Citywide.urb924

Project Name: 4829 2005 GPU Citywide Emissions

Project Location: South Coast AQMD

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

OPERATIONAL EMISSION ESTIMATES (Annual Tons Per Year, Unmitigated)

Source	ROG	NOX	CO	SO2	PM10	PM25	CO2
Single family housing	206.08	200.40	2,015.39	4.81	919.84	179.37	533,908.89
Apartments low rise	132.39	125.67	1,263.86	3.02	576.84	112.48	334,815.94
Apartments mid rise	65.80	60.08	604.23	1.44	275.78	53.78	160,070.73
Elementary school	1.47	1.41	13.47	0.03	6.50	1.26	3,727.15
Junior high school	1.11	1.02	9.79	0.02	4.72	0.92	2,708.06
City park	21.95	23.95	225.17	0.57	110.94	21.54	63,306.84
Regnl shop. center	462.84	496.89	4,654.08	11.78	2,302.72	447.04	1,312,817.88
General office building	20.21	19.12	186.34	0.46	88.10	17.15	50,741.44
General light industry	5.93	6.37	63.15	0.15	29.26	5.70	16,932.51
General heavy industry	9.81	10.44	106.59	0.25	47.77	9.33	27,865.48
Industrial park	130.65	142.20	1,396.06	3.40	654.31	127.42	377,606.22
Library	425.77	473.81	4,454.19	11.24	2,194.54	426.14	1,252,305.63
Undeveloped Park	14.04	12.77	120.09	0.30	59.16	11.49	33,762.24
Beach Ocean or Bay park	57.75	63.26	594.67	1.50	292.99	56.89	167,193.63

Resort Hotel	9.85	10.86	102.13	0.26	50.32	9.77	28,714.41
Hotel with Convention	1.99	2.21	20.81	0.05	10.25	1.99	5,849.87
TOTALS (tons/year, unmitigated)	1,567.64	1,650.46	15,830.02	39.28	7,624.04	1,482.27	4,372,326.92

Does not include correction for passby trips

Does not include double counting adjustment for internal trips

Analysis Year: 2030 Season: Annual

Emfac: Version : Emfac2007 V2.3 Nov 1 2006

Summary of Land Uses

Land Use Type	Acreage	Trip Rate	Unit Type	No. Units	Total Trips	Total VMT
Single family housing	16,760.67	10.00	dwelling units	50,282.00	502,820.00	2,916,356.10
Apartments low rise	2,463.44	8.00	dwelling units	39,415.00	315,320.00	1,828,856.06
Apartments mid rise	661.18	6.00	dwelling units	25,125.00	150,750.00	874,350.03
Elementary school		7.10	1000 sq ft	500.94	3,556.67	20,628.71
Junior high school		5.65	1000 sq ft	457.38	2,584.20	14,988.34
City park		50.00	acres	1,214.22	60,711.00	352,123.80
Regnl shop. center		27.55	1000 sq ft	45,743.66	1,260,237.80	7,309,379.49
General office building		6.89	1000 sq ft	6,993.12	48,182.60	279,459.07
General light industry		80.00	acres	200.00	16,000.00	92,800.00
General heavy industry		120.00	acres	217.52	26,102.40	151,393.93
Industrial park		200.00	acres	1,789.01	357,802.00	2,075,251.68
Library		400.00	acres	3,002.39	1,200,955.96	6,965,544.78
Undeveloped Park		5.00	acres	6,475.57	32,377.85	187,791.53

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Summary of Land Uses

Land Use Type	Acreage	Trip Rate	Unit Type	No. Units	Total Trips	Total VMT
Beach Ocean or Bay park		60.00	acres	2,672.30	160,338.00	929,960.45
Resort Hotel		100.00	acres	275.37	27,537.00	159,714.60
Hotel with Convention		300.00	acres	18.70	5,610.00	32,538.00
					4,170,885.48	24,191,136.57

Vehicle Fleet Mix

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Light Auto	49.4	0.0	100.0	0.0
Light Truck < 3750 lbs	7.3	0.0	100.0	0.0
Light Truck 3751-5750 lbs	23.9	0.0	100.0	0.0
Med Truck 5751-8500 lbs	11.4	0.0	100.0	0.0
Lite-Heavy Truck 8501-10,000 lbs	1.8	0.0	83.3	16.7
Lite-Heavy Truck 10,001-14,000 lbs	0.5	0.0	60.0	40.0
Med-Heavy Truck 14,001-33,000 lbs	1.0	0.0	20.0	80.0
Heavy-Heavy Truck 33,001-60,000 lbs	0.6	0.0	0.0	100.0
Other Bus	0.1	0.0	0.0	100.0
Urban Bus	0.1	0.0	0.0	100.0
Motorcycle	2.7	33.3	66.7	0.0
School Bus	0.1	0.0	0.0	100.0
Motor Home	1.1	0.0	90.9	9.1

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Travel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
Urban Trip Length (miles)	5.8	5.8	5.8	5.8	5.8	5.8
Rural Trip Length (miles)	5.8	5.8	5.8	5.8	5.8	5.8
Trip speeds (mph)	30.0	30.0	30.0	30.0	30.0	30.0
% of Trips - Residential	32.9	18.0	49.1			
% of Trips - Commercial (by land use)						
Elementary school				20.0	10.0	70.0
Junior high school				20.0	10.0	70.0
City park				5.0	2.5	92.5
Regnl shop. center				2.0	1.0	97.0
General office building				35.0	17.5	47.5
General light industry				50.0	25.0	25.0
General heavy industry				90.0	5.0	5.0
Industrial park				41.5	20.8	37.8
Library				5.0	2.5	92.5
Undeveloped Park				5.0	2.5	92.5
Beach Ocean or Bay park				5.0	2.5	92.5
Resort Hotel				5.0	2.5	92.5
Hotel with Convention				5.0	2.5	92.5

Operational Changes to Defaults

Ambient summer temperature changed from 80 degrees F to 75 degrees F

Ambient winter temperature changed from 60 degrees F to 50 degrees F

Home-based work urban trip length changed from 12.7 miles to 5.8 miles

Home-based work rural trip length changed from 17.6 miles to 5.8 miles

Home-based shop urban trip length changed from 7 miles to 5.8 miles

Home-based shop rural trip length changed from 12.1 miles to 5.8 miles

Home-based other urban trip length changed from 9.5 miles to 5.8 miles

Home-based other rural trip length changed from 14.9 miles to 5.8 miles

Commercial-based commute urban trip length changed from 13.3 miles to 5.8 miles

Commercial-based commute rural trip length changed from 15.4 miles to 5.8 miles

Commercial-based non-work urban trip length changed from 7.4 miles to 5.8 miles

Commercial-based non-work rural trip length changed from 9.6 miles to 5.8 miles

Commercial-based customer urban trip length changed from 8.9 miles to 5.8 miles

Commercial-based customer rural trip length changed from 12.6 miles to 5.8 miles

Otay Ranch Additional Emissions

8/16/2011 8:18:36 AM

Urbemis 2007 Version 9.2.4

Summary Report for Summer Emissions (Pounds/Day)

File Name: L:\DRAFT\4829\Air\Additional_Emissions.urb924

Project Name: 4829 Otay Ranch Additional Emissions

Project Location: South Coast AQMD

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

AREA SOURCE EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (lbs/day, unmitigated)	64.76	16.54	25.16	0.00	0.08	0.08	20,431.44

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (lbs/day, unmitigated)	75.60	76.08	767.45	1.97	382.29	74.30	223,044.70

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (lbs/day, unmitigated)	140.36	92.62	792.61	1.97	382.37	74.38	243,476.14

8/16/2011 8:19:19 AM

Urbemis 2007 Version 9.2.4

Detail Report for Summer Area Source Unmitigated Emissions (Pounds/Day)

File Name: L:\DRAFT\4829\Air\Additional_Emissions.urb924

Project Name: 4829 Otay Ranch Additional Emissions

Project Location: South Coast AQMD

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

AREA SOURCE EMISSION ESTIMATES (Summer Pounds Per Day, Unmitigated)

Source	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
Natural Gas	1.23	16.35	9.50	0.00	0.03	0.03	20,405.31
Hearth - No Summer Emissions							
Landscape	2.36	0.19	15.66	0.00	0.05	0.05	26.13
Consumer Products	45.14						
Architectural Coatings	16.03						
TOTALS (lbs/day, unmitigated)	64.76	16.54	25.16	0.00	0.08	0.08	20,431.44

Area Source Changes to Defaults

Percentage of residences with wood stoves changed from 10% to 0%

Percentage of residences with natural gas fireplaces changed from 85% to 10%

Cords of wood burned per year per wood fireplace changed from 0.22 cords per year to 0.25 cords per year

8/16/2011 8:19:25 AM

Urbemis 2007 Version 9.2.4

Detail Report for Summer Operational Unmitigated Emissions (Pounds/Day)

File Name: L:\DRAFT\4829\Air\Additional_Emissions.urb924

Project Name: 4829 Otay Ranch Additional Emissions

Project Location: South Coast AQMD

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

OPERATIONAL EMISSION ESTIMATES (Summer Pounds Per Day, Unmitigated)

Source	ROG	NOX	CO	SO2	PM10	PM25	CO2
Single family housing	5.51	4.96	52.89	0.13	24.76	4.83	14,634.55
Apartments mid rise	9.22	7.63	81.33	0.20	38.07	7.42	22,502.84
Regnl shop. center	52.19	54.66	540.23	1.41	275.33	53.45	159,905.47
General light industry	8.68	8.83	93.00	0.23	44.13	8.60	26,001.84
TOTALS (lbs/day, unmitigated)	75.60	76.08	767.45	1.97	382.29	74.30	223,044.70

Does not include correction for passby trips

Does not include double counting adjustment for internal trips

Analysis Year: 2030 Temperature (F): 75 Season: Summer

Emfac: Version : Emfac2007 V2.3 Nov 1 2006

Summary of Land Uses

Land Use Type	Acreage	Trip Rate	Unit Type	No. Units	Total Trips	Total VMT
Single family housing	82.33	10.00	dwelling units	247.00	2,470.00	14,326.00
Apartments mid rise	16.66	6.00	dwelling units	633.00	3,798.00	22,028.40

8/16/2011 8:19:25 AM

Summary of Land Uses

Land Use Type	Acreage	Trip Rate	Unit Type	No. Units	Total Trips	Total VMT
Regnl shop. center		50.00	1000 sq ft	550.00	27,500.00	159,500.01
General light industry		51.80	acres	85.00	4,403.00	25,537.40
					38,171.00	221,391.81

Vehicle Fleet Mix

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Light Auto	49.4	0.0	100.0	0.0
Light Truck < 3750 lbs	7.3	0.0	100.0	0.0
Light Truck 3751-5750 lbs	23.9	0.0	100.0	0.0
Med Truck 5751-8500 lbs	11.4	0.0	100.0	0.0
Lite-Heavy Truck 8501-10,000 lbs	1.8	0.0	83.3	16.7
Lite-Heavy Truck 10,001-14,000 lbs	0.5	0.0	60.0	40.0
Med-Heavy Truck 14,001-33,000 lbs	1.0	0.0	20.0	80.0
Heavy-Heavy Truck 33,001-60,000 lbs	0.6	0.0	0.0	100.0
Other Bus	0.1	0.0	0.0	100.0
Urban Bus	0.1	0.0	0.0	100.0
Motorcycle	2.7	33.3	66.7	0.0
School Bus	0.1	0.0	0.0	100.0
Motor Home	1.1	0.0	90.9	9.1

Travel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
Urban Trip Length (miles)	5.8	5.8	5.8	5.8	5.8	5.8

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Travel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
Rural Trip Length (miles)	5.8	5.8	5.8	5.8	5.8	5.8
Trip speeds (mph)	30.0	30.0	30.0	30.0	30.0	30.0
% of Trips - Residential	32.9	18.0	49.1			
% of Trips - Commercial (by land use)						
Regnl shop. center				2.0	1.0	97.0
General light industry				50.0	25.0	25.0

Operational Changes to Defaults

Ambient summer temperature changed from 80 degrees F to 75 degrees F

Ambient winter temperature changed from 60 degrees F to 50 degrees F

Home-based work urban trip length changed from 12.7 miles to 5.8 miles

Home-based work rural trip length changed from 17.6 miles to 5.8 miles

Home-based shop urban trip length changed from 7 miles to 5.8 miles

Home-based shop rural trip length changed from 12.1 miles to 5.8 miles

Home-based other urban trip length changed from 9.5 miles to 5.8 miles

Home-based other rural trip length changed from 14.9 miles to 5.8 miles

Commercial-based commute urban trip length changed from 13.3 miles to 5.8 miles

Commercial-based commute rural trip length changed from 15.4 miles to 5.8 miles

Commercial-based non-work urban trip length changed from 7.4 miles to 5.8 miles

Commercial-based non-work rural trip length changed from 9.6 miles to 5.8 miles

Operational Changes to Defaults

Commercial-based customer urban trip length changed from 8.9 miles to 5.8 miles

Commercial-based customer rural trip length changed from 12.6 miles to 5.8 miles

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Urbemis 2007 Version 9.2.4

Summary Report for Winter Emissions (Pounds/Day)

File Name: L:\DRAFT\4829\Air\Additional_Emissions.urb924

Project Name: 4829 Otay Ranch Additional Emissions

Project Location: South Coast AQMD

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

AREA SOURCE EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (lbs/day, unmitigated)	186.27	18.31	146.33	0.22	18.79	18.08	22,952.25

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (lbs/day, unmitigated)	82.77	95.96	833.17	1.97	382.29	74.30	210,828.82

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (lbs/day, unmitigated)	269.04	114.27	979.50	2.19	401.08	92.38	233,781.07

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Urbemis 2007 Version 9.2.4

Detail Report for Winter Area Source Unmitigated Emissions (Pounds/Day)

File Name: L:\DRAFT\4829\Air\Additional_Emissions.urb924

Project Name: 4829 Otay Ranch Additional Emissions

Project Location: South Coast AQMD

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

AREA SOURCE EMISSION ESTIMATES (Winter Pounds Per Day, Unmitigated)

Source	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
Natural Gas	1.23	16.35	9.50	0.00	0.03	0.03	20,405.31
Hearth	123.87	1.96	136.83	0.22	18.76	18.05	2,546.94
Landscaping - No Winter Emissions							
Consumer Products	45.14						
Architectural Coatings	16.03						
TOTALS (lbs/day, unmitigated)	186.27	18.31	146.33	0.22	18.79	18.08	22,952.25

Area Source Changes to Defaults

Percentage of residences with wood stoves changed from 10% to 0%

Percentage of residences with natural gas fireplaces changed from 85% to 10%

Cords of wood burned per year per wood fireplace changed from 0.22 cords per year to 0.25 cords per year

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Urbemis 2007 Version 9.2.4

Detail Report for Winter Operational Unmitigated Emissions (Pounds/Day)

File Name: L:\DRAFT\4829\Air\Additional_Emissions.urb924

Project Name: 4829 Otay Ranch Additional Emissions

Project Location: South Coast AQMD

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

OPERATIONAL EMISSION ESTIMATES (Winter Pounds Per Day, Unmitigated)

Source	ROG	NOX	CO	SO2	PM10	PM25	CO2
Single family housing	5.62	6.26	56.95	0.13	24.76	4.83	13,844.07
Apartments mid rise	8.81	9.63	87.57	0.20	38.07	7.42	21,287.36
Regnl shop. center	58.70	68.92	588.99	1.41	275.33	53.45	151,104.64
General light industry	9.64	11.15	99.66	0.23	44.13	8.60	24,592.75
TOTALS (lbs/day, unmitigated)	82.77	95.96	833.17	1.97	382.29	74.30	210,828.82

Does not include correction for passby trips

Does not include double counting adjustment for internal trips

Analysis Year: 2030 Temperature (F): 50 Season: Winter

Emfac: Version : Emfac2007 V2.3 Nov 1 2006

Summary of Land Uses

Land Use Type	Acreage	Trip Rate	Unit Type	No. Units	Total Trips	Total VMT
Single family housing	82.33	10.00	dwelling units	247.00	2,470.00	14,326.00
Apartments mid rise	16.66	6.00	dwelling units	633.00	3,798.00	22,028.40

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Summary of Land Uses

Land Use Type	Acreage	Trip Rate	Unit Type	No. Units	Total Trips	Total VMT
Regnl shop. center		50.00	1000 sq ft	550.00	27,500.00	159,500.01
General light industry		51.80	acres	85.00	4,403.00	25,537.40
					38,171.00	221,391.81

Vehicle Fleet Mix

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Light Auto	49.4	0.0	100.0	0.0
Light Truck < 3750 lbs	7.3	0.0	100.0	0.0
Light Truck 3751-5750 lbs	23.9	0.0	100.0	0.0
Med Truck 5751-8500 lbs	11.4	0.0	100.0	0.0
Lite-Heavy Truck 8501-10,000 lbs	1.8	0.0	83.3	16.7
Lite-Heavy Truck 10,001-14,000 lbs	0.5	0.0	60.0	40.0
Med-Heavy Truck 14,001-33,000 lbs	1.0	0.0	20.0	80.0
Heavy-Heavy Truck 33,001-60,000 lbs	0.6	0.0	0.0	100.0
Other Bus	0.1	0.0	0.0	100.0
Urban Bus	0.1	0.0	0.0	100.0
Motorcycle	2.7	33.3	66.7	0.0
School Bus	0.1	0.0	0.0	100.0
Motor Home	1.1	0.0	90.9	9.1

Travel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
Urban Trip Length (miles)	5.8	5.8	5.8	5.8	5.8	5.8

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Travel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
Rural Trip Length (miles)	5.8	5.8	5.8	5.8	5.8	5.8
Trip speeds (mph)	30.0	30.0	30.0	30.0	30.0	30.0
% of Trips - Residential	32.9	18.0	49.1			
% of Trips - Commercial (by land use)						
Regnl shop. center				2.0	1.0	97.0
General light industry				50.0	25.0	25.0

Operational Changes to Defaults

Ambient summer temperature changed from 80 degrees F to 75 degrees F

Ambient winter temperature changed from 60 degrees F to 50 degrees F

Home-based work urban trip length changed from 12.7 miles to 5.8 miles

Home-based work rural trip length changed from 17.6 miles to 5.8 miles

Home-based shop urban trip length changed from 7 miles to 5.8 miles

Home-based shop rural trip length changed from 12.1 miles to 5.8 miles

Home-based other urban trip length changed from 9.5 miles to 5.8 miles

Home-based other rural trip length changed from 14.9 miles to 5.8 miles

Commercial-based commute urban trip length changed from 13.3 miles to 5.8 miles

Commercial-based commute rural trip length changed from 15.4 miles to 5.8 miles

Commercial-based non-work urban trip length changed from 7.4 miles to 5.8 miles

Commercial-based non-work rural trip length changed from 9.6 miles to 5.8 miles

Operational Changes to Defaults

Commercial-based customer urban trip length changed from 8.9 miles to 5.8 miles

Commercial-based customer rural trip length changed from 12.6 miles to 5.8 miles

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Urbemis 2007 Version 9.2.4

Summary Report for Annual Emissions (Tons/Year)

File Name: L:\DRAFT\4829\Air\Additional_Emissions.urb924

Project Name: 4829 Otay Ranch Additional Emissions

Project Location: South Coast AQMD

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

AREA SOURCE EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (tons/year, unmitigated)	13.37	3.03	6.30	0.00	0.25	0.25	3,752.08

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (tons/year, unmitigated)	14.23	15.08	144.06	0.36	69.77	13.56	39,962.53

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (tons/year, unmitigated)	27.60	18.11	150.36	0.36	70.02	13.81	43,714.61

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Urbemis 2007 Version 9.2.4

Detail Report for Annual Area Source Unmitigated Emissions (Tons/Year)

File Name: L:\DRAFT\4829\Air\Additional_Emissions.urb924

Project Name: 4829 Otay Ranch Additional Emissions

Project Location: South Coast AQMD

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

AREA SOURCE EMISSION ESTIMATES (Annual Tons Per Year, Unmitigated)

Source	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
Natural Gas	0.23	2.98	1.73	0.00	0.01	0.01	3,723.97
Hearth	1.55	0.02	1.71	0.00	0.23	0.23	23.34
Landscape	0.43	0.03	2.86	0.00	0.01	0.01	4.77
Consumer Products	8.24						
Architectural Coatings	2.92						
TOTALS (tons/year, unmitigated)	13.37	3.03	6.30	0.00	0.25	0.25	3,752.08

Area Source Changes to Defaults

Percentage of residences with wood stoves changed from 10% to 0%

Percentage of residences with natural gas fireplaces changed from 85% to 10%

Cords of wood burned per year per wood fireplace changed from 0.22 cords per year to 0.25 cords per year

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Urbemis 2007 Version 9.2.4

Detail Report for Annual Operational Unmitigated Emissions (Tons/Year)

File Name: L:\DRAFT\4829\Air\Additional_Emissions.urb924

Project Name: 4829 Otay Ranch Additional Emissions

Project Location: South Coast AQMD

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

OPERATIONAL EMISSION ESTIMATES (Annual Tons Per Year, Unmitigated)

Source	ROG	NOX	CO	SO2	PM10	PM25	CO2
Single family housing	1.01	0.98	9.90	0.02	4.52	0.88	2,622.72
Apartments mid rise	1.66	1.51	15.22	0.04	6.95	1.35	4,032.83
Regnl shop. center	9.92	10.84	101.56	0.26	50.25	9.76	28,647.36
General light industry	1.64	1.75	17.38	0.04	8.05	1.57	4,659.62
TOTALS (tons/year, unmitigated)	14.23	15.08	144.06	0.36	69.77	13.56	39,962.53

Does not include correction for passby trips

Does not include double counting adjustment for internal trips

Analysis Year: 2030 Season: Annual

Emfac: Version : Emfac2007 V2.3 Nov 1 2006

Summary of Land Uses

Land Use Type	Acreage	Trip Rate	Unit Type	No. Units	Total Trips	Total VMT
Single family housing	82.33	10.00	dwelling units	247.00	2,470.00	14,326.00
Apartments mid rise	16.66	6.00	dwelling units	633.00	3,798.00	22,028.40

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Summary of Land Uses

Land Use Type	Acreage	Trip Rate	Unit Type	No. Units	Total Trips	Total VMT
Regnl shop. center		50.00	1000 sq ft	550.00	27,500.00	159,500.01
General light industry		51.80	acres	85.00	4,403.00	25,537.40
					38,171.00	221,391.81

Vehicle Fleet Mix

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Light Auto	49.4	0.0	100.0	0.0
Light Truck < 3750 lbs	7.3	0.0	100.0	0.0
Light Truck 3751-5750 lbs	23.9	0.0	100.0	0.0
Med Truck 5751-8500 lbs	11.4	0.0	100.0	0.0
Lite-Heavy Truck 8501-10,000 lbs	1.8	0.0	83.3	16.7
Lite-Heavy Truck 10,001-14,000 lbs	0.5	0.0	60.0	40.0
Med-Heavy Truck 14,001-33,000 lbs	1.0	0.0	20.0	80.0
Heavy-Heavy Truck 33,001-60,000 lbs	0.6	0.0	0.0	100.0
Other Bus	0.1	0.0	0.0	100.0
Urban Bus	0.1	0.0	0.0	100.0
Motorcycle	2.7	33.3	66.7	0.0
School Bus	0.1	0.0	0.0	100.0
Motor Home	1.1	0.0	90.9	9.1

Travel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
Urban Trip Length (miles)	5.8	5.8	5.8	5.8	5.8	5.8

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Travel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
Rural Trip Length (miles)	5.8	5.8	5.8	5.8	5.8	5.8
Trip speeds (mph)	30.0	30.0	30.0	30.0	30.0	30.0
% of Trips - Residential	32.9	18.0	49.1			
% of Trips - Commercial (by land use)						
Regnl shop. center				2.0	1.0	97.0
General light industry				50.0	25.0	25.0

Operational Changes to Defaults

Ambient summer temperature changed from 80 degrees F to 75 degrees F

Ambient winter temperature changed from 60 degrees F to 50 degrees F

Home-based work urban trip length changed from 12.7 miles to 5.8 miles

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Commercial-based non-work rural trip length changed from 9.6 miles to 5.8 miles

Operational Changes to Defaults

Commercial-based customer urban trip length changed from 8.9 miles to 5.8 miles

Commercial-based customer rural trip length changed from 12.6 miles to 5.8 miles