AIR QUALITY IMPACT ANALYSIS

GUASTI PLAZA SPECIFIC PLAN AMENDMENT

CITY OF ONTARIO, CALIFORNIA

Prepared for:

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METEOROLOGY CLIMATE

The climate of western San Bernardino County, as with all of Southern California, is governed largely by the strength and location of the semi-permanent high pressure center over the Pacific Ocean and the moderating effects of the nearby vast oceanic heat reservoir. Local climatic conditions are characterized by very warm summers, mild winters, infrequent rainfall, moderate daytime on-shore breezes, and comfortable humidity's. Unfortunately, the same climatic conditions that create such a desirable living climate combine to severely restrict the ability of the local atmosphere to disperse the large volumes of air pollution generated by the population and industry attracted in part by the climate.

The Guasti Plaza is situated in an area where the pollutants generated in coastal portions of the Los Angeles basin undergo photochemical reactions and then move inland across the project site during the daily sea breeze cycle. The resulting smog at times gives western San Bernardino County some of the worst air quality in all of California. Fortunately, significant air quality improvement in the last decade suggests that healthful air quality may someday be attained despite the limited regional meteorological dispersion potential.

Winds across the project area are an important meteorological parameter because they control both the initial rate of dilution of locally generated air pollutant emissions as well as controlling their regional trajectory. Winds across the project site display a very unidirectional onshore flow from the southwest-west that is strongest in summer with a weaker offshore return flow from the northeast that is strongest on winter nights when the land is colder than the ocean. The onshore winds during the day average 6-10 mph while the offshore flow is often calm or drifts slowly westward at 1-3 mph.

During the daytime, any locally generated air emissions are thus rapidly transported eastward toward Banning Pass and northeast towards Cajon Pass without generating any localized air quality impacts. The nocturnal drainage winds which move slowly across the area have some potential for localized stagnation, but fortunately, these winds have their origin in the adjacent mountains where background pollution levels are low such that any localized contributions do not create any unhealthful impacts.

In conjunction with the two characteristic wind regimes that affect the rate and orientation of horizontal pollutant transport, there are two similarly distinct types of temperature inversions that control the vertical depth through which pollutants are mixed. The summer on-shore flow is capped by a massive dome of warm, sinking air which caps a shallow layer of cooler ocean air. Such marine/subsidence inversions act like a giant lid over the basin. They allow for local mixing of emissions, but they confine the entire polluted air mass within the basin until it escapes into the desert or along the thermal chimneys formed along heated mountain slopes.

One other important local wind pattern within the project vicinity drainages occurs when high pressure over the Great Basin creates funneled, gusty down-canyon flows. The air moving downslope is warmed by a process called "adiabatic compression." Because the air was already dry at the top of the mountains, it is super-dry when it reaches the bottoms of local canyons. Such "Santa Ana" downslope winds can create dust storms, and make dust control difficult.

In winter, when the air near the ground cools while the air aloft remains warm, radiation inversions are formed that trap low-level emissions such as automobile exhaust near their source. As background levels of primary vehicular exhaust rise during the seaward return flow, the combination of rising non-local baseline levels plus emissions trapped locally by these radiation inversions creates micro-scale air pollution "hot spots" near freeways, shopping centers and other traffic concentrations in coastal areas of the Los Angeles Basin. Because the nocturnal downslope has its origin in very lightly developed areas of the San Gabriel Mountains, background pollution levels at night in winter are very low in the project vicinity. Localized air pollution contributions are insufficient to create any "hot spot" potential when superimposed upon the clean nocturnal baseline. The combination of winds and inversions are thus critical determinants in leading to the degraded air quality in summer, and the generally good air quality in winter in the project area.

AIR QUALITY SETTING

AMBIENT AIR QUALITY STANDARDS (AAQS)

In order to gauge the significance of the air quality impacts of the proposed Guasti Plaza project, those impacts, together with existing background air quality levels, must be compared to the applicable ambient air quality standards. These standards are the levels of air quality considered safe, with an adequate margin of safety, to protect the public health and welfare. They are designed to protect those people most susceptible to further respiratory distress such as asthmatics, the elderly, very young children, people already weakened by other disease or illness, and persons engaged in strenuous work or exercise, called "sensitive receptors." Healthy adults can tolerate occasional exposure to air pollutant concentrations considerably above these minimum standards before adverse effects are observed. Recent research has shown, however, that chronic exposure to ozone (the primary ingredient in photochemical smog) may lead to adverse respiratory health even at concentrations close to the ambient standard.

National AAQS were established in 1971 for six pollution species with states retaining the option to add other pollutants, require more stringent compliance, or to include different exposure periods. The initial attainment deadline of 1977 was extended several times in air quality problem areas like Southern California. In 2003, the Environmental Protection Agency (EPA) adopted a rule which extended and established a new attainment deadline for ozone for the year 2021. Because the State of California had established AAQS several years before the federal action and because of unique air quality problems introduced by the restrictive dispersion meteorology, there is considerable difference between state and national clean air standards. Those standards currently in effect in California are shown in Table 1. Sources and health effects of various pollutants are shown in Table 2.

The Federal Clean Air Act Amendments (CAAA) of 1990 required that the U.S. Environmental Protection Agency (EPA) review all national AAQS in light of currently known health effects. EPA was charged with modifying existing standards or promulgating new ones where appropriate. EPA subsequently developed standards for chronic ozone exposure (8+ hours per day) and for very small diameter particulate matter (called "PM-2.5"). New national AAQS were adopted in 1997 for these pollutants.

Planning and enforcement of the federal standards for PM-2.5 and for ozone (8-hour) were challenged by trucking and manufacturing organizations. In a unanimous decision, the U.S. Supreme Court ruled that EPA did not require specific congressional authorization to adopt national clean air standards. The Court also ruled that health-based standards did not require preparation of a cost-benefit analysis. The Court did find, however, that there was some inconsistency between existing and "new" standards in their required attainment schedules. Such attainment-planning schedule inconsistencies centered mainly on the 8-hour ozone standard. EPA subsequently agreed to downgrade the attainment designation for a large number of communities to “non-attainment” for the 8-hour ozone standard.

Table 1

Ambient Air Quality Standards

Pollutant	Averaging Time	California Standards		Federal Standards		
		Concentration	Method	Primary	Secondary	Method
Ozone (O_3)	1 Hour	0.09 ppm (180 µg/m³)	Ultraviolet Photometry	-	Same as Primary Standard	Ultraviolet Photometry
	8 Hour	0.070 ppm (137 µg/m³)		0.075 ppm (147 µg/m³)		
Respirable Particulate Matter (PM_{10})	24 Hour	50 µg/m³	Gravimetric or Beta Attenuation	150 µg/m³	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	20 µg/m³		Revoked (2006)		
Fine Particulate Matter ($PM_{2.5}$)	24 Hour	No Separate State Standard		35 µg/m³	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	12 µg/m³	Gravimetric or Beta Attenuation	15 µg/m³		
Carbon Monoxide (CO)	8 Hour	9.0 ppm (10 mg/m³)	Non-Dispersive Infrared Photometry (NDIR)	9 ppm (10 mg/m³)	None	Non-Dispersive Infrared Photometry (NDIR)
	1 Hour	20 ppm (23 mg/m³)		35 ppm (40 mg/m³)		
	8 Hour (Lake Tahoe)	6 ppm (7 mg/m³)		–	–	–
Nitrogen Dioxide (NO_2)	Annual Arithmetic Mean	0.030 ppm (57 µg/m³)	Gas Phase Chemiluminescence	0.053 ppm (100 µg/m³)	Same as Primary Standard	Gas Phase Chemiluminescence
	1 Hour	0.18 ppm (339 µg/m³)		0.100 ppm	0.053 ppm (100 µg/m³)	
Lead	30-Day average	1.5 µg/m³	Atomic Absorption	–	–	–
	Calendar Quarter	–		1.5 µg/m³	Same as Primary Standard	High Volume Sampler and Atomic Absorption
Sulfur Dioxide (SO_2)	Annual Arithmetic Mean	–	Ultraviolet Fluorescence	0.030 ppm (80 µg/m³)	–	Spectrophotometry (Pararosaniline Method)
	24 Hour	0.04 ppm (105 µg/m³)		0.14 ppm (365 µg/m³)	–	
	3 Hour	–		–	0.5 ppm (1,300 µg/m³)	
	1 Hour	0.25 ppm (655 µg/m³)		–	–	
Visibility Reducing Particles	8 Hour	Extinction coefficient of 0.23 per kilometer–visibility of 10 miles or more (0.07–30 miles or more for Lake Tahoe) due to particles when relative humidity is less than 70 percent. Method: Beta Attenuation and Transmittance through Filter Tape.		No Federal Standards		
Sulfates	24 Hour	25 µg/m³	Ion Chromatography			
Hydrogen Sulfide	1 Hour	0.03 ppm (42 µg/m³)	Ultraviolet Fluorescence			
Vinyl Chloride	24 Hour	0.01 ppm (26 µg/m³)	Gas Chromatography			

California ARB (06/26/08)

Table 2

Health Effects of Major Criteria Pollutants

Pollutants	**Sources**	**Primary Effects**
Carbon Monoxide (CO)	• Incomplete combustion of fuels and other carbon-containing substances, such as motor exhaust. • Natural events, such as decomposition of organic matter.	• Reduced tolerance for exercise. • Impairment of mental function. • Impairment of fetal development. • Death at high levels of exposure. • Aggravation of some heart diseases (angina).
Nitrogen Dioxide (NO_2)	• Motor vehicle exhaust. • High temperature stationary combustion. • Atmospheric reactions.	• Aggravation of respiratory illness. • Reduced visibility. • Reduced plant growth. • Formation of acid rain.
Ozone (O_3)	• Atmospheric reaction of organic gases with nitrogen oxides in sunlight.	• Aggravation of respiratory and cardiovascular diseases. • Irritation of eyes. • Impairment of cardiopulmonary function. • Plant leaf injury.
Lead (Pb)	• Contaminated soil.	• Impairment of blood function and nerve construction. • Behavioral and hearing problems in children.
Fine Particulate Matter (PM-10)	• Stationary combustion of solid fuels. • Construction activities. • Industrial processes. • Atmospheric chemical reactions.	• Reduced lung function. • Aggravation of the effects of gaseous pollutants. • Aggravation of respiratory and cardio respiratory diseases. • Increased cough and chest discomfort. • Soiling. • Reduced visibility.
Fine Particulate Matter (PM-2.5)	• Fuel combustion in motor vehicles, equipment, and industrial sources. • Residential and agricultural burning. • Industrial processes. • Also, formed from photochemical reactions of other pollutants, including NOx, sulfur oxides, and organics.	• Increases respiratory disease. • Lung damage. • Cancer and premature death. • Reduces visibility and results in surface soiling.
Sulfur Dioxide (SO_2)	• Combustion of sulfur-containing fossil fuels. • Smelting of sulfur-bearing metal ores. • Industrial processes.	• Aggravation of respiratory diseases (asthma, emphysema). • Reduced lung function. • Irritation of eyes. • Reduced visibility. • Plant injury. • Deterioration of metals, textiles, leather, finishes, coatings, etc.

Source: California Air Resources Board, 2002.

Evaluation of the most current data on the health effects of inhalation of fine particulate matter prompted the California Air Resources Board (ARB) to recommend adoption of the statewide PM-2.5 standard that is more stringent than the federal standard. This standard was adopted in 2002. The State PM-2.5 standard is more of a goal in that it does not have specific attainment planning requirements like a federal clean air standard, but only requires continued progress towards attainment.

Similarly, the ARB extensively evaluated health effects of ozone exposure. A new state standard for an 8-hour ozone exposure was adopted in 2005, which mirrors the federal standard. The California 8-hour ozone standard of 0.07 ppm is more stringent than the federal 8-hour standard of 0.075 ppm. The state standard, however, does not have a specific attainment deadline. California air quality jurisdictions are required to make steady progress towards attaining state standards, but there are no hard deadlines or any consequences of non-attainment. During the same re-evaluation process, the ARB adopted an annual state standard for nitrogen dioxide ($NO_{2)}$ that is more stringent than the corresponding federal standard, and strengthened the state one-hour NO_2 standard.

As part of EPA's 2002 consent decree on clean air standards, a further review of airborne particulate matter (PM) and human health was initiated. A substantial modification of federal clean air standards for PM was promulgated in 2006. Standards for PM-2.5 were strengthened, a new class of PM in the 2.5 to 10 micron size was created, some PM-10 standards were revoked, and a distinction between rural and urban air quality was adopted.

BASELINE AIR QUALITY

Existing levels of ambient air quality and historical trends and projections in the project area are best documented from measurements made near the project site. The South Coast Air Quality Management District (SCAQMD) operates a monitoring station in Ontario that measures particulate matter. The closest station to Guasti Plaza that measures nitrogen dioxide, carbon monoxide and ozone is located in Upland. Table 3 summarizes the last six years of published SCAQMD monitoring data from the Ontario and/or Upland stations. From these data the following conclusions can be drawn:

1. Photochemical smog (ozone) levels frequently exceed standards. The 1-hour state standard was violated an average of 41 days a year in the last six years near Ontario. The 8-hour state ozone standard has been exceeded an average of 48 times a year in the past five years. The Federal eight-hour ozone standard has averaged around 27 violations per year since 2003. While ozone levels are still high, they are much lower than 10 to 20 years ago. Attainment of all clean air standards in the project vicinity is not likely to occur soon, but the severity and frequency of violations is expected to continue to slowly decline during the current decade.

2. PM-10 levels have exceeded the state 24-hour standard on approximately 28 percent of all measurement days. The three times less stringent federal 24 hour-standard has not been exceeded in the past six years. Year to year fluctuations of overall maximum 24-hour PM-10 levels seem to follow no discernable trend, though 2005 had the lowest maximum 24-hour concentration (with 2006 second lowest) in the last six years.

3. The federal 24-hour PM-2.5 standard was reduced in 2006 from 65 $\mu g/m^3$to 35 $\mu g/m^3$. The substantially more stringent standard of 35 $\mu g/m^3$ has been exceeded on 6 percent of all days since 2006. The prior, more lenient, standard of 65 $\mu g/m^3$ was rarely exceeded.

4. More localized pollutants such as carbon monoxide, nitrogen oxides, etc. are very low near the project site because background levels, even in western San Bernardino County, never exceed allowable levels. There is substantial excess dispersive capacity to accommodate localized vehicular air pollutants such as NOx or CO without any threat of violating applicable AAQS.

5.

Table 3

Air Quality Monitoring Summary
(Number of Days Standards Were Exceeded and Maximum Levels During Such Violations)

Pollutant/Standard	2003	2004	2005	2006	2007	2008
Ozone						
1-Hour > 0.09 ppm (S)	48	31	34	50	32	51
1-Hour > 0.12 ppm (F)*	15	2	8	14	-	-
8-Hour > 0.07 ppm (S)	-	31	34	54	55	65
8- Hour > 0.075 ppm (F)	35	18	15	25	18	50
Max. 1-Hour Conc. (ppm)	0.16	0.14	0.15	0.17	0.15	0.16
Carbon Monoxide						
1-Hour > 20. ppm (S)	0	0	0	0	0	0
1-Hour > 9. ppm (S, F)	0	0	0	0	0	0
Max 1-Hour Conc. (ppm)	4.0	3.3	3.0	3.0	2.0	2.0
Max 8-Hour Conc. (ppm)	2.9	2.2	2.1	1.8	1.6	1.6
Nitrogen Dioxide						
1-Hour > 0.25 ppm (S)	0	0	0	0	0	0
Max 1-Hour Conc. (ppm)	0.12	0.11	0.11	0.10	0.10	0.09
Inhalable Particulates (PM-10) [1]						
24-Hour > 50 $\mu g/m^3$ (S)	18/62	17/58	19/60	17/62	14/58	15/62
24-Hour > 150 $\mu g/m^3$ (F)	0/62	0/58	0/60	0/62	0/58	0/62
Max. 24-Hr. Conc. ($\mu g/m^3$)	149.	93.	74.	78.	115.	90.
Ultra-Fine Particulates (PM-2.5) [1]						
24-Hour > 65 $\mu g/m^3$ (F)	3/118	2/112	1/110	0/107	-	-
24-Hour > 35 $\mu g/m^3$ (F)**	-	-	-	7/107	6/102	6/113
Max. 24-Hr. Conc. ($\mu g/m^3$)	88.9	86.1	87.8	53.7	72.8	54.3

* standard revoked in 2006 **reduced to 35 $\mu g/m^3$ in 2006

Source: South Coast AQMD Upland Monitoring Station (5175)
[1] Ontario 1408 Francis Street (5817)

AIR QUALITY PLANNING

The Federal Clean Air Act (1977 Amendments) required that designated agencies in any area of the nation not meeting national clean air standards must prepare a plan demonstrating the steps that would bring the area into compliance with all national standards. The SCAB could not meet the deadlines for ozone, nitrogen dioxide, carbon monoxide, or PM-10. In the SCAB, the agencies designated by the governor to develop regional air quality plans are the SCAQMD and the Southern California Association of Governments (SCAG). The two agencies first adopted an Air Quality Management Plan (AQMP) in 1979 and revised it several times as earlier attainment forecasts were shown to be overly optimistic.

The 1990 Federal Clean Air Act Amendment (CAAA) required that all states with air-sheds with "serious" or worse ozone problems submit a revision to the State Implementation Plan (SIP). Amendments to the SIP have been proposed, revised and approved over the past decade. The most current regional attainment emissions forecast for ozone precursors (ROG and NOx) and for carbon monoxide (CO) and for particulate matter are shown in Table 4. Substantial reductions in emissions of ROG, NOx and CO are forecast to continue throughout the next several decades. Unless new particulate control programs are implemented, PM-10 and PM-2.5 are forecast to slightly increase.

The SCAQMD adopted an updated clean air "blueprint" in August 2003. The 2003 AQMP was approved by the EPA in 2004. The Air Quality Management Plan (AQMP) outlined the air pollution measures needed to meet federal health-based standards for ozone by 2010 and for particulates (PM-10) by 2006. The 2003 AQMP was based upon the federal one-hour ozone standard which was revoked late in 2005 and replaced by an 8-hour federal standard. Because of the revocation of the hourly standard, a new air quality planning cycle was initiated.

With re-designation of the air basin as non-attainment for the 8-hour ozone standard, a new attainment plan was developed. This plan shifted most of the one-hour ozone standard attainment strategies to the 8-hour standard. As previously noted, the attainment date will "slip" from 2010 to at least 2021. The updated attainment plan also includes strategies for ultimately meeting the federal PM-2.5 standard.

Table 4

South Coast Air Basin Emissions Forecasts
(Emissions in tons/day)

Pollutant	2005[a]	2010[b]	2015[b]	2020[b]
NOx	985	742	580	468
ROG	735	576	526	505
CO	4124	2950	2476	2203
PM-10	281	286	297	307
PM-2.5	103	102	102	103

[a]2005 Base Year.
[b]With current emissions reduction programs and adopted growth forecasts.

Source: California Air Resources Board, The 2009 California Almanac of Emission & Air Quality.

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The 2007 AQMP was adopted in June 2007, after extensive public review. The 2007 AQMP recognizes the interaction between photochemical processes that create both ozone and the smallest airborne particulates (PM-2.5). The 2007 AQMP is therefore a coordinated plan for both pollutants. Key emissions reductions strategies in the updated air quality plan include:

- Ultra-low emissions standards for both new and existing sources (including on-and-off-road heavy trucks, industrial and service equipment, locomotives, ships and aircraft).
- Accelerated fleet turnover to achieve benefits of cleaner engines.
- Reformulation of consumer products.
- Modernization and technology advancements from stationary sources (refineries, power plants, etc.)

Development, such as the proposed Guasti Plaza project do not directly relate to the AQMP in that there are no specific air quality programs or regulations governing "general" development. Conformity with adopted plans, forecasts and programs relative to population, housing, employment and land use is the primary yardstick by which impact significance of master planned growth is determined. If a given project incorporates any available transportation control measures that can be implemented on a project-specific basis, and if the scope and phasing of a project are consistent with adopted forecasts as shown in the Regional Comprehensive Plan (RCP), then the regional air quality impact of project growth would not be significant because of planning inconsistency. The SCAQMD, however, while acknowledging that the AQMP is a growth-accommodating document, does not favor designating regional impacts as less-than-significant just because the proposed development is consistent with regional growth projections. Air quality impact significance for the proposed project has therefore been analyzed on a project-specific basis.

AIR QUALITY IMPACT

SIGNIFICANCE CRITERIA

Air quality impacts are considered "significant" if they cause clean air standards to be violated where they are currently met, or if they measurably contribute to an existing violation of standards. Any substantial emissions of air contaminants for which there is no safe exposure, or nuisance emissions such as dust or odors, would also be considered a significant impact.

Appendix G of the California CEQA Guidelines offer the following five tests of air quality impact significance. A project would have a potentially significant impact if it:

a. Conflicts with or obstructs implementation of the applicable air quality plan.

b. Violates any air quality standard or contributes substantially to an existing or projected air quality violation.

c. Results 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).

d. Exposes sensitive receptors to substantial pollutant concentrations.

e. Creates objectionable odors affecting a substantial number of people.

PRIMARY POLLUTANTS

Air quality impacts generally occur on two scales of motion. Near an individual source of emissions or a collection of sources such as a crowded intersection or parking lot, levels of those pollutants that are emitted in their already unhealthful form will be highest. Carbon monoxide (CO) is an example of such a pollutant. Primary pollutant impacts can generally be evaluated directly in comparison to appropriate clean air standards. Violations of these standards where they are currently met, or a measurable worsening of an existing or future violation, would be considered a significant impact. Many particulates, especially fugitive dust emissions, are also primary pollutants. Because of the non-attainment status of the SCAB for PM-10 and PM-2.5, an aggressive dust control program is required to control fugitive dust for any new construction.

SECONDARY POLLUTANTS

Many pollutants, however, require time to transform from a more benign form to a more unhealthful contaminant. Their impact occurs regionally far from the source. Their incremental regional impact is minute on an individual basis and cannot be quantified except through complex photochemical computer models. Analysis of the significance of such emissions is thus based on a specified amount of emissions (pounds, tons, etc.) even though there is no way to translate those emissions directly into a corresponding ambient air quality impact.

Because of the chemical complexity of primary versus secondary pollutants, the SCAQMD has designated significant emissions levels as surrogates for evaluating regional impact significance independent of chemical transformation processes. Projects within the SCAB with daily emissions that exceed any of the following emission thresholds are recommended by the SCAQMD to be considered significant:

SCAQMD Emissions Significance Thresholds (lbs/day)

Pollutant	Construction	Operations
ROG	75	55
NOx	100	55
CO	550	550
PM-10	150	150
PM-2.5	55	55
SOx	150	150
Lead	3	3

Source: SCAQMD CEQA Air Quality Handbook, November, 1993 Rev.

ADDITIONAL INDICATORS

In its CEQA handbook, the SCAQMD also states that additional indicators should be used as screening criteria to determine the need for further analysis with respect to air quality. The additional indicators are as follows:

- Project could interfere with the attainment of the federal or state ambient air quality standards by either violating or contributing to an existing or projected air quality violation.
- Project could result in population increases within the regional statistical area which would be in excess of that projected in the AQMP and in other than planned locations for the project's build-out year.
- Project could generate vehicle trips that cause a CO hot spot.

The SCAQMD CEQA Handbook also identifies various secondary significance criteria related to toxic, hazardous or odorous air contaminants. Hazardous air contaminants are contained within the small diameter particulate matter ("PM-2.5") fraction of diesel exhaust. Such exhaust will be generated by heavy off-road construction equipment and by diesel-powered delivery trucks delivering construction materials to the project site. Possible demolition of older structures may involve the handling of asbestos-containing materials (ACMs). Any structure to be demolished must be surveyed for the possible presence of ACMs.

Health risks from toxic air contaminants (TAC's) are cumulative over an assumed 70-year lifespan. Measurable off-site public health risk from diesel TAC exposure would occur for only a brief portion of a project lifetime during facility construction, and only in dilute quantity because of substantial source-receiver separation.

Whereas the public health risk created by project activities is small, the exposure of planned project occupants to ambient TACs is a more critical issue. TACs are emitted by trucks on the I-10 and surface streets, by train movements directly south of the project site and by airport equipment that is diesel-fueled. Aircraft exhaust also contains several TACs, but no standardized risk assessment methodology exists for jet exhaust. Project site exposure to airborne TACs is therefore limited to diesel particulate matter (DPM). Such risks are expressed in terms of individual excess cancer risk. The SCAQMD CEQA Handbook recommends that any excess risk of 10 in a million should be considered potentially significant.

SENSITIVE RECEPTORS

Air quality impacts are analyzed relative to those persons with the greatest sensitivity to air pollution exposure. Such persons are called "sensitive receptors". Sensitive population groups include young children, the elderly and the acutely and chronically ill (especially those with cardio-respiratory disease).

Residential areas are considered to be sensitive to air pollution exposure because they may be occupied for extended periods, and residents may be outdoors when exposure is highest. Schools are similarly considered to be sensitive receptors. There are no sensitive receptors immediately adjacent to the Guasti Plaza site. However, the one of the project development alternatives sites 500 multi-family dwelling units that would comprise a future sensitive receptor population.

CONSTRUCTION ACTIVITY IMPACTS

Project alternatives for the proposed Guasti Plaza Specific Plan Amendment include two use scenarios for the project area:

1. Apartments, and
2. Commercial Uses

Both alternatives are analyzed separately for construction activity impacts.

Residential Use

Dust is typically the primary concern during construction of new buildings and infrastructure. Because such emissions are not amenable to collection and discharge through a controlled source, they are called "fugitive emissions." Emission rates vary as a function of many parameters (soil silt, soil moisture, wind speed, area disturbed, number of vehicles, depth of disturbance or excavation, etc.). These parameters are not known with any reasonable certainty prior to project development and may change from day to day. Any assignment of specific parameters to an unknown future date is speculative and conjectural.

Because of the inherent uncertainty in the predictive factors for estimating fugitive dust generation, regulatory agencies typically use one universal "default" factor based on the area disturbed assuming that all other input parameters into emission rate prediction fall into midrange average values. This assumption may or may not be totally applicable to site-specific conditions on the proposed project site. As noted previously, emissions estimation for project-specific fugitive dust sources is therefore characterized by a considerable degree of imprecision.

Average daily PM-10 emissions during site grading and other disturbance are stated in the SCAQMD Handbook to be 26.4 pounds/acre. This estimate is based upon required dust control measures in effect in 1993 when the AQMD CEQA Air Quality Handbook was prepared. Rule 403 was subsequently strengthened to require use of a greater array of fugitive dust control on construction projects. All construction projects in the SCAQMD are required to use strongly enhanced control procedures. Use of enhanced dust control procedures such as continual soil wetting, use of supplemental binders, early paving, etc. can achieve a substantially higher PM-10 control efficiency. Daily emissions with use of reasonably available control measures (RACMs) for PM-10 can reduce emission levels to around ten (10) pounds per acre per day. With the use of best available control measures (BACMs) the California Air Resources Board URBEMIS2007 computer model predicts that emissions can be reduced to 1-2 pounds per acre per day.

The residential project alternative includes construction of 500 multi-family units along the eastern portion of the site. For construction of these dwelling units, the Air Resource Board URBEMIS2007 computer model predicts that 3.3 acres could be under simultaneous heavy construction at some point during the build-out lifetime of the proposed project. With the use of RACMs, daily PM-10 emissions during site grading would be 33 pounds per day (3.3 X 10.0 = 3.3 lb/day). The SCAQMD significance threshold of 150 pounds per day would not be exceeded. With the use of Best Available Control Measures (BACM), daily PM-10 emissions can be further reduced. Because of the PM-10 non-attainment status of the air basin, construction activity dust emissions are considered to have a cumulatively significant impact. Use of BACMs is thus required even if SCAQMD individual CEQA thresholds are not exceeded by use of RACMs.

Current research in particulate-exposure health suggests that the most adverse effects derive from ultra-small diameter particulate matter comprised of chemically reactive pollutants such as sulfates, nitrates or organic material. A national clean air standard for particulate matter of 2.5 microns or smaller in diameter (called "PM-2.5") was adopted in 1997. A limited amount of construction activity particulate matter is in the PM-2.5 range. PM-2.5 emissions are estimated by the SCAQMD to comprise 20.8 percent of PM-10. Other studies have shown that the fugitive dust fraction of PM-2.5 is closer to 10 percent.

Exhaust emissions will result from on and off-site heavy equipment. The types and numbers of equipment will vary among contractors such that such emissions cannot be quantified with certainty. Initial clearing and will gradually shift toward building construction and then for finish construction, paving, landscaping, etc. The URBEMIS2007 computer model was used to calculate emissions from the following prototype construction equipment fleet:

Grading	1 Grader
	1 Rubber Tired Dozer
	1 Tractor/Loader/Backhoe
	1 Water Truck
Construction	3 Welders
	1 Tractor/Loader/Backhoe
	1 Generator Set
	1 Crane
	2 Forklifts
Paving	4 Cement Mixers
	1 Paver
	2 Paving Equipment
	1 Roller
	1 Tractor/Loader/Backhoe

Calculated construction activity emissions are summarized as follows:

Residential Use Construction Activity Emissions (pounds/day)

Activity	**ROG**	**NOx**	**CO**	**SO_2**	**PM-10**	**PM-2.5**	**CO_2**
Grading							
No Mitigation	3.0	25.1	13.5	0.0	34.2	8.0	2,371.7
With Mitigation	3.0	21.3	13.5	0.0	3.3	0.8	2,371.7
Construction							
No Mitigation	5.9	31.5	58.8	0.1	1.9	1.8	8,450.2
With Mitigation	5.9	29.0	58.8	0.1	1.1	0.9	8,450.2
Coating and Paving							
No Mitigation	26.8	17.5	13.5	0.0	1.5	1.4	1,872.7
With Mitigation	24.4	15.0	13.5	0.0	0.3	0.2	1,872.7
SCAQMD Threshold	75	100	550	150	150	55	-

Source: URBEMIS2007 Model, Output in Appendix

With or without the use of mitigation, peak daily construction activity emissions for a residential alternative would be well below CEQA SCAQMD thresholds and would be further reduced by recommended mitigation. The recommended emissions mitigation measures are detailed in the "Mitigation" section of this report.

Commercial Use

The commercial project alternative includes the following uses:

Use	Size
Office	407.82 TSF
Retail	26.37 TSF
Fast Food Restaurant	3.06 TSF
High Turnover Restaurant	6.75 TSF

For construction of these uses, the Air Resource Board URBEMIS2007 computer model predicts that 5.1 acres could be under simultaneous heavy construction at some point during project build-out. With the use of RACMs, daily PM-10 emissions during site grading would be 51 pounds per day (5.1 X 10.0 = 51 lb/day). This would not exceed the SCAQMD significance threshold of 150 pounds per day would not be exceeded.

The URBEMIS2007 computer model was used to calculate emissions from the following prototype construction equipment fleet:

Grading	1 Grader
	1 Rubber Tired Dozer
	2 Tractor/Loader/Backhoes
	1 Water Truck
Construction	3 Welders
	1 Tractor/Loader/Backhoe
	1 Generator Set
	1 Crane
	2 Forklifts
Paving	4 Cement Mixers
	1 Paver
	2 Paving Equipment
	1 Roller
	1 Tractor/Loader/Backhoe

Calculated construction activity emissions are summarized as follows:

Commercial Use Construction Activity Emissions (pounds/day)

Activity	ROG	NOx	CO	SO_2	PM-10	PM-2.5	CO_2
Grading							
No Mitigation	4.2	33.8	18.8	0.0	52.8	12.3	3,163.0
With Mitigation	4.2	28.7	18.8	0.0	5.0	1.2	3,163.0
Construction							
No Mitigation	5.0	23.1	44.9	0.1	1.7	1.4	6,065.6
With Mitigation	5.0	20.6	44.9	0.1	0.7	0.5	6,065.6
Coating and Paving							
No Mitigation	75.2	14.7	11.1	0.0	1.3	1.2	1,545.3
With Mitigation	67.9	12.7	11.1	0.0	0.3	0.2	1,545.3
SCAQMD Threshold	75	100	550	150	150	55	-

Source: URBEMIS2007 Model, Output in Appendix

Although most construction emissions are slightly higher than for the residential use alternative, peak daily construction activity emissions would be well below CEQA SCAQMD thresholds and would be further reduced by recommended mitigation which are detailed in the "Mitigation" section of this report. Construction activity air quality impacts for either the residential use or commercial use alternative would be less-than-significant.

OPERATIONAL IMPACTS

Project-related operational air quality concerns derive from the mobile source emissions that will be generated from the residential or commercial uses within the Guasti Plaza Amendment area. Operational emissions for project-related traffic were calculated using a computerized procedure developed by the California Air Resources Board (CARB) for urban growth mobile source emissions. The URBEMIS2007 model was run using the trip generation factors specified above. The residential and commercial scenarios were evaluated independently.

Residential Use

The proposed 500 dwelling units would generate the following trips and mileage per day:

Land Use	Trips per day	Miles per Day
Residential Units	3,000	30,308

As seen in Table 5, none of the operational emissions for any evaluated pollutants would exceed CEQA thresholds for the residential use scenario.

Commercial Use

The Guasti Specific Plan commercial uses, daily trips and associated vehicle miles traveled (VMT) per day are as follows:

Land Use	Trips per day	Miles per Day
Office	4,490	47,829
Retail	1,052	9,442
Fast Food	1,972	17,909
Sit Down Restaurant	772	7,013
Total	8,286	82,193

Daily trips associated with the commercial uses generate almost three times more trips than from proposed residential uses. Correspondingly, as seen in Table 6, mobile source emissions from commercial site uses would cause SCAQMD thresholds to be exceeded for ROG, CO and NOx. These calculations assume full build-out in 2011. Realistically, this worst-case assumption would not likely be realized. Build-out later in the decade would occur with a cleaner vehicle fleet. However, the degree of “excess” NOx above the threshold is such that impacts would be significant even for future years.

Table 5
Project-Related Emissions Burden

Residential Uses	**Emissions (lbs/day)**						
Year 2011	**ROG**	**NOx**	**CO**	**SO2**	**PM-10**	**PM-2.5**	**CO2**
Area Sources	27.0	4.9	3.6	0.0	0.0	0.0	6,260.8
Mobile Sources	25.2	32.1	296.1	0.3	52.4	10.2	31,402.1
Total	52.2	37.0	299.7	0.3	52.4	10.2	37,662.9
SCAQMD Threshold	55	55	550	150	150	55	-
% of Threshold	95	67	54	<1	35	19	-

Commercial Uses	**Emissions (lbs/day)**						
Year 2011	**ROG**	**NOx**	**CO**	**SO2**	**PM-10**	**PM-2.5**	**CO2**
Area Sources	3.3	3.2	8.8	0.0	0.0	0.0	3,693.5
Mobile Sources	60.6	86.7	781.4	0.9	142.0	27.7	84,687.5
Total	63.9	89.9	790.1	0.9	142.1	27.7	88,381.0
SCAQMD Threshold	55	55	550	150	150	55	-
% of Threshold	116	163	144	<1	95	50	-

MICROSCALE IMPACT ANALYSIS

Micro-scale air quality impacts have traditionally been analyzed in environmental documents where the air basin was a non-attainment area for carbon monoxide (CO). However, the SCAQMD has demonstrated in the CO attainment redesignation request to EPA that there are no "hot spots" anywhere in the air basin, even at intersections with much higher volumes, much worst congestion, and much higher background CO levels than anywhere in the Ontario area. If the worst-case intersections in the air basin have no "hot spot" potential, any local impacts near the project site will be well below thresholds with an even larger margin of safety.

To verify these conclusions, a CO screening analysis was performed at the closest major intersections surrounding the project. One-hour CO concentrations were calculated on the sidewalk adjacent to these intersections. Peak one-hour levels (ppm above background) were as follows:

One-Hour CO Concentrations (ppm)

Intersections	Existing	2010	2010 With Project
AM			
Guasti Road/ Winery Road	0.6	1.3	1.7
Villa Lane	0.5	0.8	1.3
Turner Avenue	0.5	0.7	1.1
Parking Structure 1	0.4	0.6	0.9
Biane Lane	0.4	0.5	0.5
Street 5	0.4	0.4	0.7
PM			
Guasti Road/ Winery Road	0.6	1.4	1.4
Villa Lane	0.6	1.0	1.2
Turner Avenue	0.5	0.6	1.1
Parking Structure 1	0.4	0.6	1.0
Biane Lane	0.5	0.5	0.9
Street 5	0.5	0.5	0.9

Existing peak (2007) one-hour local CO background levels are 2.0 ppm. Combined background (2.0 ppm) plus local (1.7 ppm) concentrations equate to CO levels of 3.7 ppm which are far below the one-hour standard of 20 ppm. Worst-case one hour levels are even lower than the allowable 8-hour exposure of 9 ppm. Micro-scale impacts are less than significant.

GREENHOUSE GAS EMISSIONS

"Greenhouse gases" (so called because of their role in trapping heat near the surface of the earth) emitted by human activity are implicated in global climate change, commonly referred to as "global warming." These greenhouse gases contribute to an increase in the temperature of the earth's atmosphere by transparency to short wavelength visible sunlight, but near opacity to outgoing terrestrial long wavelength heat radiation. The principal greenhouse gases (GHGs) are carbon dioxide, methane, nitrous oxide, ozone, and water vapor. Fossil fuel consumption in the transportation sector (on-road motor vehicles, off-highway mobile sources, and aircraft) is the single largest source of GHG emissions, accounting for approximately half of GHG emissions globally. Industrial and commercial sources are the second largest contributors of GHG emissions with about one-fourth of total emissions.

California has passed several bills and the Governor has signed at least three executive orders regarding greenhouse gases. The Governor's Office of Planning and Research is in the process of developing CEQA significance thresholds for GHG emissions but thresholds have yet to be established. GHG statues and executive orders (EO) include AB 32, SB 1368, EO S-03-05, EO S-20-06 and EO S-01-07.

AB 32 is one of the most significant pieces of environmental legislation that California has adopted. Among other things, it is designed to maintain California's reputation as a "national and international leader on energy conservation and environmental stewardship." It will have wide-ranging effects on California businesses and lifestyles as well as far reaching effects on other states and countries. A unique aspect of AB 32, beyond its broad and wide-ranging mandatory provisions and dramatic GHG reductions are the short time frames within which it must be implemented. Major components of the AB 32 include:

- Require the monitoring and reporting of GHG emissions beginning with sources or categories of sources that contribute the most to statewide emissions.
- Requires immediate "early action" control programs on the most readily controlled GHG sources.
- Mandates that by 2020, California's GHG emissions be reduced to 1990 levels.
- Forces an overall reduction of GHG gases in California by 25-40%, from business as usual, over the next 13 years (by 2020).
- Must complement efforts to achieve and maintain federal and state ambient air quality standards and to reduce toxic air contaminants.

Statewide, the framework for developing the implementing regulations for AB 32 is under way. Additionally, through the California Climate Action Registry (CCAR), general and industry-specific protocols for assessing and reporting GHG emissions have been developed. GHG sources are categorized into direct sources (i.e. company owned) and indirect sources (i.e. not company owned). Direct sources include combustion emissions from on-and off-road mobile sources, and fugitive emissions. Indirect sources include off-site electricity generation and non-company owned mobile sources.

Greenhouse Gas Emissions Significance Thresholds

There are currently no adopted GHG significance thresholds for project CEQA clearance. The California Governor's Office of Planning and Research (OPR) has developed revisions to CEQA implementation guidelines to incorporate GHG. These were forwarded to the California National Resource Agency on April 13, 2009. They contain requirements to characterize the GHG setting, quantify the impacts resulting from the proposed project, determine impact significance, and mitigate as appropriate. They leave the determination of significance to the Lead Agency.

On December 5, 2008 the SCAQMD Governing Board adopted an Interim quantitative GHG Significance Threshold for industrial projects where the SCAQMD is the lead agency (e.g., stationary source permit projects, rules, plans, etc.) of 10,000 Metric Tons CO_2 equivalent/year. As part of the Interim GHG Significance Threshold development process for industrial projects, the SCAQMD established a working group of stakeholders that also considered thresholds for residential/commercial projects. As discussed in the Interim GHG Significance Threshold guidance document, the focus for residential/commercial projects is on performance standards and a screening level threshold. For discussion purposes, the SCAQMD's working group considered performance standards primarily focused on energy efficiency measures beyond Title 24 and a screening level of 3,000 metric tons (MT) CO_2 equivalent/year based on the relative GHG emissions contribution between residential/commercial sectors and stationary source (industrial) sectors. The working group and staff ultimately decided that additional analysis was needed to further define the performance standards and to coordinate with CARB staff's interim GHG proposal. Staff, therefore, did not recommend action for adopting an interim threshold for residential/commercial projects but rather recommended bringing this item back to the Board for discussion and possible action in March 2009 if the CARB board did not take its final action by February 2009. As of this date, no final action on a quantitative significance threshold has been taken, but 3,000 MT per year has become a *de facto* screening threshold. If the screening threshold is exceeded, enhanced mitigation for GHG emissions should be considered.

Impacts - Greenhouse Gas Emissions

Implementation of the proposed project would contribute to long-term increases in greenhouse gases (GHGs) as a result of traffic increases (mobile sources) and minor secondary fuel combustion emissions from space heating, etc. Development occurring as a result of the proposed project would also result in secondary operational increases in GHG emissions as a result of electricity generation to meet project-related increases in energy demand. Electricity generation in California is mainly from natural gas-fired power plants. However, since California imports about 20 to 25 percent of its total electricity (mainly from the northwestern and southwestern states), GHG emissions associated with electricity generation could also occur outside of California. Space or water heating, water delivery, wastewater processing and solid waste disposal also generate GHG emissions. Short-term GHG emissions will also derive from construction activities.

The General Reporting Protocol (GRP) in the California Climate Action Registry (CCAR) divides project-related operational GHG emissions into three categories. These three sources include the following:

Source 1- On-site combustion of fossil fuels (space and water heating, fireplaces, landscape utility equipment, etc.)

Source 2- Consumption of purchased energy (electricity)

Source 3- Indirect emissions (transportation, solid waste disposal, fresh-and wastewater conveyance and treatment)

For general development projects such as the Guasti Project, Source 3 is typically a much larger contributor to the GHG burden than Sources 1 and 2. For convenience, project related GHG emissions were aggregated into transportation and non-transportation sources. The transportation component is calculated and reported in the URBEMIS2007 computer model. The non-transportation sources require additional analysis, as shown below.

Construction Activity GHG Emissions

During project construction, the URBEMIS2007 computer model predicts that a peak activity day in the single worst case year of construction will generate the following CO_2 emissions for each use alternative:

Residential Use Alternative		**Commercial Use Alternative**	
Grading	2,372 lbs/day	Grading	3,163 lbs/day
Construction	8,450 lbs/day	Construction	6,066 lbs/day
Coating and Paving	1,873 lbs/day	Coating and Paving	1,543 lbs/day

Equipment exhaust also contains small amounts of methane and nitric oxides which are also GHGs. Non-CO_2 GHG emissions represent approximately a three percent increase in CO_2-equivalent emissions from diesel equipment exhaust. For purposes of analysis, it was assumed that the non-CO_2 GHG emissions from construction equipment are negligible, and that the total project construction GHG burden can be characterized by 40 peak grading, 100 peak construction activity days and 100 peak coating and paving days. The estimated annual GHG impact is estimated as follows if all the above activities were to occur in a single year:

Activity/Use	**Residential**	**Commercial**
Grading	2,372 lbs/day x 40 days	3,163 lbs/day x 40 days
Construction	8,450 lbs/day x 100 days	6,066 lbs/day x 100 days
Coating and Paving	1,873 lbs/day x 100 days	1,543 lbs/day x 100 days
Yearly Total	1,127,180 lbs/2000 lbs/ton = 564 "short" tons = **513 Metric Tons**	887,420 lbs/2,000 lbs/ton = 444 "short" tons =**303 Metric Tons**

For screening purposes, the temporary construction activity GHG emissions were compared to the chronic operational emissions in the SCAQMD's interim thresholds. The recommended screening level for commercial uses is 3,000 metric tons (MT) of CO_2-equivalent (CO_2(e)) per year. Construction activities generating 303-513 MT are well below this threshold.

Project Operational GHG Emissions

The input assumptions for operational GHG emissions calculations, and the GHG conversion from consumption to annual regional CO_2(e) emissions are summarized in Table 6. Annual GHG emissions, from both the non-transportation and transportation components are shown in Tables 7 for residential uses and Table 8 for commercial uses. As shown in Tables 7, the residential alternative would generate 8,394 MT of GHG emissions per year from combined stationary and mobile sources. The suggested screening level threshold of 3,000 MT per year (at which point enhanced mitigation would be recommended) would be exceeded.

Table 8 shows that the commercial use alternative would generate 18,605 MT of GHG emissions per year. A stronger emphasis on GHG mitigation must be placed upon project plan and design for this alternative.

Table 6
Annual Non-Transportation Consumption/Generation

Land Use	*Unit*	*Electricity (MWHR)*	*Nat. Gas (10^6 cu ft)*	*Solid Waste (tons)*	*Water (10^6 gal)*
Residential	DU	5.6	0.0481	0.73	0.073
Office	KSF	12.9	0.0240	0.75	0.047
Retail	KSF	13.6	0.0348	2.40	0.040
Restaurant	KSF	47.4	0.0576	1.72	0.182

Conversion to CO_2(e) [tons/year]

Electricity	MWHR x 0.364 tons/MWHR (1)
Nat. Gas	10^6 cubic feet x 54.6 tons/10^6 cubic feet (2)
Solid Waste	tons x 0.46 tons/ton (3)
Water and Wastewater	10^6 gal(MG) x 4.62 tons/MG (4)

(1) California Climate Action Registry

(2) California Climate Action Registry

(3) Energy Information Admin., Voluntary Reporting of GHG

(4) California Energy Commission, Integrated Energy Policy Report (12.7 MWHR per MG conveyed, treated and disposed in Southern California)

Table 7

Project-Related GHG Emissions Residential Uses

Phase	***Unit***	***Electricity (MWHR)***	***Nat. Gas (10^6 cu ft)***	***Solid Waste (tons)***	***Water (MG))***
Residential	500 DU	2,800	24	365	36
Conversion Factor		*0.364*	*54.6*	*0.46*	*4.62*
CO_2(e) tons/yr		1,019	1,310	168	166

Residential Uses

Total Non-Transportation **2,663 tons/year**

Total Transportation* **5,731.1 tons/year**

Combined tons CO_2(e)/yr **8,394 tons/year**

Transportation Share **68 %**

Residential = 365 days/yr

Table 8

Project-Related GHG Emissions Commercial Uses

Phase	*Unit*	*Electricity (MWHR)*	*Nat. Gas (10^6 cu ft)*	*Solid Waste (tons)*	*Water (MG))*
Office	407.8 TSF	5,261	10	306	19
Retail	26.4 TSF	359	1	63	1
Restaurant	9.8 TSF	465	1	17	2
Total		6,085	12	386	22
Conversion Factor		*0.364*	*54.6*	*0.46*	*4.62*
CO_2(e) tons/yr		2,215	655	178	102

Total Non-Transportation	**3,150 tons/year**
Total Transportation*	**15,455 tons/year**
Combined tons CO_2(e)/yr	**18,605 tons/year**
Transportation Share	**83 %**

* Retail, restaurant= 365 days/yr

Greenhouse Gas Emissions Reduction Measures

GHG reduction options on a project-level basis are similar to those measures designed to reduce criteria air pollutants (those with ambient air quality standards). Measures that reduce trip generation or trip lengths, measures that optimize the transportation efficiency of a region, and measures that promote energy conservation within a development will reduce GHG emissions. Additionally, carbon sequestering can be achieved through urban forestry measures.

Project-specific mitigation recommendations to reduce the global cumulative impact from project implementation include the following:

Land Use and Transportation

- Promote increased utilization of public transit
- Provide continued support for rideshare programs to encourage the use of alternatives to the single occupant vehicle (SOV) for site access and trips originating at the site

Energy Conservation (Residential)

- Construct the new residential building to exceed California Title 24 energy efficiency requirements by ten (10) percent.
- Maximize use of low pressure sodium and/or fluorescent lighting
- Require acquisition of new appliances and equipment to meet Energy Star certification

Energy Conservation (Commercial)

- Construct the new office buildings to LEED specification.
- Maximize use of low pressure sodium and/or fluorescent lighting

Urban Forestry

- Participate in green waste collection and recycling programs for landscape maintenance

Encourage use of landscaping with low water requirements and fast growth.

MITIGATION

CONSTRUCTION EMISSIONS MITIGATION

Construction activity air pollution emissions are not anticipated to individually exceed SCAQMD CEQA thresholds for either a residential or commercial development alternative. Regardless, the non-attainment status of the air basin requires that Best Available Control Measures (BACMs) be used where feasible. Recommended construction activity mitigation including BACM's includes:

Dust Control

- Apply soil stabilizers to inactive areas.
- Prepare a high wind dust control plan and implement plan elements and terminate soil disturbance when winds exceed 25 mph.
- Stabilize previously disturbed areas if subsequent construction is delayed.
- Water exposed surfaces and haul roads 3 times/day.
- Cover all stock piles with tarps.
- Replace ground cover in disturbed areas as soon as feasible.
- Reduce speeds on unpaved roads to less than 15 mph.

Exhaust Emissions

- Require 90-day low-NOx tune-ups for off-road equipment.
- Limit allowable idling to 5 minutes for trucks and heavy equipment.
- Utilize equipment whose engines are equipped with diesel oxidation catalysts if available.
- Utilize diesel particulate filter on heavy equipment where feasible.

Painting and Coatings

- Use low VOC coatings and high pressure-low volume sprayers.

OPERATIONAL EMISSIONS MITIGATION

Operational emissions will not exceed adopted significance thresholds for residential site uses. However, the commercial use alternative will exceed operational emissions thresholds of significance for ROG, NOx and CO.

APPENDIX

URBEMIS2007 Computer Model Output

- Residential Use Alternative
- Commercial Use Alternative

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Urbemis 2007 Version 9.2.4

Combined Summer Emissions Reports (Pounds/Day)

File Name:

Project Name: Guasti Plaza Specific Plan Amendment-Residential Use

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

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Summary Report:

CONSTRUCTION EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5	CO2
2010 TOTALS (lbs/day unmitigated)	5.94	31.50	58.76	0.07	32.91	1.85	34.16	6.87	1.69	8.02	8,450.22
2010 TOTALS (lbs/day mitigated)	5.94	29.02	58.76	0.07	3.06	0.83	3.25	0.64	0.75	0.86	8,450.22
2011 TOTALS (lbs/day unmitigated)	26.82	29.18	55.08	0.07	0.29	1.73	2.03	0.10	1.58	1.69	8,449.28
2011 TOTALS (lbs/day mitigated)	24.44	26.83	55.08	0.07	0.29	0.77	1.06	0.10	0.69	0.80	8,449.28

AREA SOURCE EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (lbs/day, unmitigated)	27.00	4.92	3.64	0.00	0.02	0.02	6,260.75

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (lbs/day, unmitigated)	25.19	32.07	296.09	0.32	52.38	10.21	31,402.10

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (lbs/day, unmitigated)	52.19	36.99	299.73	0.32	52.40	10.23	37,662.85

Construction Unmitigated Detail Report:

CONSTRUCTION EMISSION ESTIMATES Summer Pounds Per Day, Unmitigated

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5	CO2

Time Slice 1/1/2010-6/30/2010 Active Days: 129	3.04	25.05	13.51	0.00	**32.91**	1.25	**34.16**	**6.87**	1.15	**8.02**	2,371.71
Fine Grading 01/01/2010-06/30/2010	3.04	25.05	13.51	0.00	32.91	1.25	34.16	6.87	1.15	8.02	2,371.71
Fine Grading Dust	0.00	0.00	0.00	0.00	32.90	0.00	32.90	6.87	0.00	6.87	0.00
Fine Grading Off Road Diesel	3.00	24.99	12.46	0.00	0.00	1.25	1.25	0.00	1.15	1.15	2,247.32
Fine Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fine Grading Worker Trips	0.03	0.06	1.05	0.00	0.01	0.00	0.01	0.00	0.00	0.00	124.39
Time Slice 7/1/2010-12/31/2010 Active Days: 132	5.94	**31.50**	**58.76**	**0.07**	0.29	**1.85**	2.14	0.10	**1.69**	1.79	**8,450.22**
Building 07/01/2010-06/30/2011	5.94	31.50	58.76	0.07	0.29	1.85	2.14	0.10	1.69	1.79	8,450.22
Building Off Road Diesel	3.65	16.55	11.20	0.00	0.00	1.19	1.19	0.00	1.10	1.10	1,621.20
Building Vendor Trips	1.10	12.73	9.83	0.02	0.08	0.53	0.61	0.03	0.49	0.52	2,350.81
Building Worker Trips	1.19	2.23	37.74	0.05	0.21	0.12	0.33	0.08	0.10	0.18	4,478.21
Time Slice 1/3/2011-6/30/2011 Active Days: 129	5.48	29.18	55.08	**0.07**	0.29	1.73	2.03	0.10	1.58	1.69	8,449.28
Building 07/01/2010-06/30/2011	5.48	29.18	55.08	0.07	0.29	1.73	2.03	0.10	1.58	1.69	8,449.28
Building Off Road Diesel	3.39	15.67	10.85	0.00	0.00	1.14	1.14	0.00	1.05	1.05	1,621.20
Building Vendor Trips	1.02	11.47	9.11	0.02	0.08	0.47	0.56	0.03	0.43	0.46	2,350.85
Building Worker Trips	1.08	2.04	35.12	0.05	0.21	0.12	0.33	0.08	0.10	0.18	4,477.24

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Time Slice 7/1/2011-12/30/2011 Active Days: 131	**26.82**	17.54	13.52	0.00	0.02	1.52	1.54	0.01	1.40	1.41	1,872.66
Asphalt 07/01/2011-12/31/2011	2.96	17.48	12.45	0.00	0.01	1.52	1.53	0.01	1.40	1.40	1,736.48
Paving Off-Gas	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving Off Road Diesel	2.80	17.10	10.16	0.00	0.00	1.50	1.50	0.00	1.38	1.38	1,418.44
Paving On Road Diesel	0.02	0.25	0.10	0.00	0.00	0.01	0.01	0.00	0.01	0.01	38.21
Paving Worker Trips	0.07	0.13	2.20	0.00	0.01	0.01	0.02	0.00	0.01	0.01	279.83
Coating 07/01/2011-12/31/2011	23.87	0.06	1.07	0.00	0.01	0.00	0.01	0.00	0.00	0.01	136.18
Architectural Coating	23.84	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.03	0.06	1.07	0.00	0.01	0.00	0.01	0.00	0.00	0.01	136.18

Phase Assumptions

Phase: Fine Grading 1/1/2010 - 6/30/2010 - Default Fine Site Grading/Excavation Description

Total Acres Disturbed: 13.16

Maximum Daily Acreage Disturbed: 3.29

Fugitive Dust Level of Detail: Default

10 lbs per acre-day

On Road Truck Travel (VMT): 0

Off-Road Equipment:

1 Graders (174 hp) operating at a 0.61 load factor for 6 hours per day

1 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day

1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Paving 7/1/2011 - 12/31/2011 - Default Paving Description

Acres to be Paved: 3.29

Off-Road Equipment:

4 Cement and Mortar Mixers (10 hp) operating at a 0.56 load factor for 6 hours per day

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1 Pavers (100 hp) operating at a 0.62 load factor for 7 hours per day

2 Paving Equipment (104 hp) operating at a 0.53 load factor for 6 hours per day

1 Rollers (95 hp) operating at a 0.56 load factor for 7 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day

Phase: Building Construction 7/1/2010 - 6/30/2011 - Default Building Construction Description

Off-Road Equipment:

1 Cranes (399 hp) operating at a 0.43 load factor for 6 hours per day

2 Forklifts (145 hp) operating at a 0.3 load factor for 6 hours per day

1 Generator Sets (49 hp) operating at a 0.74 load factor for 8 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 8 hours per day

3 Welders (45 hp) operating at a 0.45 load factor for 8 hours per day

Phase: Architectural Coating 7/1/2011 - 12/31/2011 - Default Architectural Coating Description

Rule: Residential Interior Coatings begins 1/1/2005 ends 6/30/2008 specifies a VOC of 100

Rule: Residential Interior Coatings begins 7/1/2008 ends 12/31/2040 specifies a VOC of 50

Rule: Residential Exterior Coatings begins 1/1/2005 ends 6/30/2008 specifies a VOC of 250

Rule: Residential Exterior Coatings begins 7/1/2008 ends 12/31/2040 specifies a VOC of 100

Rule: Nonresidential Interior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

Rule: Nonresidential Exterior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

Construction Mitigated Detail Report:

CONSTRUCTION EMISSION ESTIMATES Summer Pounds Per Day, Mitigated

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5	CO2

Time Slice 1/1/2010-6/30/2010 Active Days: 129	3.04	21.30	13.51	0.00	3.06	0.19	3.25	0.64	0.18	0.81	2,371.71
Fine Grading 01/01/2010-06/30/2010	3.04	21.30	13.51	0.00	3.06	0.19	3.25	0.64	0.18	0.81	2,371.71
Fine Grading Dust	0.00	0.00	0.00	0.00	3.05	0.00	3.05	0.64	0.00	0.64	0.00
Fine Grading Off Road Diesel	3.00	21.24	12.46	0.00	0.00	0.19	0.19	0.00	0.17	0.17	2,247.32
Fine Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fine Grading Worker Trips	0.03	0.06	1.05	0.00	0.01	0.00	0.01	0.00	0.00	0.00	124.39
Time Slice 7/1/2010-12/31/2010 Active Days: 132	5.94	29.02	**58.76**	**0.07**	0.29	0.83	1.13	0.10	0.75	0.86	**8,450.22**
Building 07/01/2010-06/30/2011	5.94	29.02	58.76	0.07	0.29	0.83	1.13	0.10	0.75	0.86	8,450.22
Building Off Road Diesel	3.65	14.06	11.20	0.00	0.00	0.18	0.18	0.00	0.16	0.16	1,621.20
Building Vendor Trips	1.10	12.73	9.83	0.02	0.08	0.53	0.61	0.03	0.49	0.52	2,350.81
Building Worker Trips	1.19	2.23	37.74	0.05	0.21	0.12	0.33	0.08	0.10	0.18	4,478.21
Time Slice 1/3/2011-6/30/2011 Active Days: 129	5.48	26.83	55.08	**0.07**	0.29	0.77	1.06	0.10	0.69	0.80	8,449.28
Building 07/01/2010-06/30/2011	5.48	26.83	55.08	0.07	0.29	0.77	1.06	0.10	0.69	0.80	8,449.28
Building Off Road Diesel	3.39	13.32	10.85	0.00	0.00	0.17	0.17	0.00	0.16	0.16	1,621.20
Building Vendor Trips	1.02	11.47	9.11	0.02	0.08	0.47	0.56	0.03	0.43	0.46	2,350.85
Building Worker Trips	1.08	2.04	35.12	0.05	0.21	0.12	0.33	0.08	0.10	0.18	4,477.24

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Time Slice 7/1/2011-12/30/2011 Active Days: 131	24.44	14.98	13.52	0.00	0.02	0.25	0.27	0.01	0.23	0.23	1,872.66
Asphalt 07/01/2011-12/31/2011	2.96	14.91	12.45	0.00	0.01	0.24	0.26	0.01	0.22	0.23	1,736.48
Paving Off-Gas	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving Off Road Diesel	2.80	14.53	10.16	0.00	0.00	0.23	0.23	0.00	0.21	0.21	1,418.44
Paving On Road Diesel	0.02	0.25	0.10	0.00	0.00	0.01	0.01	0.00	0.01	0.01	38.21
Paving Worker Trips	0.07	0.13	2.20	0.00	0.01	0.01	0.02	0.00	0.01	0.01	279.83
Coating 07/01/2011-12/31/2011	21.49	0.06	1.07	0.00	0.01	0.00	0.01	0.00	0.00	0.01	136.18
Architectural Coating	21.45	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.03	0.06	1.07	0.00	0.01	0.00	0.01	0.00	0.00	0.01	136.18

Construction Related Mitigation Measures

The following mitigation measures apply to Phase: Fine Grading 1/1/2010 - 6/30/2010 - Default Fine Site Grading/Excavation Description

For Soil Stablizing Measures, the Apply soil stabilizers to inactive areas mitigation reduces emissions by:

PM10: 84% PM25: 84%

For Soil Stablizing Measures, the Replace ground cover in disturbed areas quickly mitigation reduces emissions by:

PM10: 5% PM25: 5%

For Soil Stablizing Measures, the Water exposed surfaces 3x daily watering mitigation reduces emissions by:

PM10: 61% PM25: 61%

For Unpaved Roads Measures, the Reduce speed on unpaved roads to less than 15 mph mitigation reduces emissions by:

PM10: 44% PM25: 44%

For Unpaved Roads Measures, the Manage haul road dust 3x daily watering mitigation reduces emissions by:

PM10: 61% PM25: 61%

For Graders, the Diesel Particulate Filter (DPF) 1st Tier mitigation reduces emissions by:

PM10: 85% PM25: 85%

For Graders, the Diesel Oxidation Catalyst 15% mitigation reduces emissions by:

NOX: 15%

For Rubber Tired Dozers, the Diesel Particulate Filter (DPF) 1st Tier mitigation reduces emissions by:

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PM10: 85% PM25: 85%

For Rubber Tired Dozers, the Diesel Oxidation Catalyst 15% mitigation reduces emissions by:

NOX: 15%

For Tractors/Loaders/Backhoes, the Diesel Particulate Filter (DPF) 1st Tier mitigation reduces emissions by:

PM10: 85% PM25: 85%

For Tractors/Loaders/Backhoes, the Diesel Oxidation Catalyst 15% mitigation reduces emissions by:

NOX: 15%

For Water Trucks, the Diesel Particulate Filter (DPF) 1st Tier mitigation reduces emissions by:

PM10: 85% PM25: 85%

For Water Trucks, the Diesel Oxidation Catalyst 15% mitigation reduces emissions by:

NOX: 15%

The following mitigation measures apply to Phase: Paving 7/1/2011 - 12/31/2011 - Default Paving Description

For Cement and Mortar Mixers, the Diesel Particulate Filter (DPF) 1st Tier mitigation reduces emissions by:

PM10: 85% PM25: 85%

For Cement and Mortar Mixers, the Diesel Oxidation Catalyst 15% mitigation reduces emissions by:

NOX: 15%

For Pavers, the Diesel Particulate Filter (DPF) 1st Tier mitigation reduces emissions by:

PM10: 85% PM25: 85%

For Pavers, the Diesel Oxidation Catalyst 15% mitigation reduces emissions by:

NOX: 15%

For Paving Equipment, the Diesel Particulate Filter (DPF) 1st Tier mitigation reduces emissions by:

PM10: 85% PM25: 85%

For Paving Equipment, the Diesel Oxidation Catalyst 15% mitigation reduces emissions by:

NOX: 15%

For Rollers, the Diesel Particulate Filter (DPF) 1st Tier mitigation reduces emissions by:

PM10: 85% PM25: 85%

For Rollers, the Diesel Oxidation Catalyst 15% mitigation reduces emissions by:

NOX: 15%

For Tractors/Loaders/Backhoes, the Diesel Particulate Filter (DPF) 1st Tier mitigation reduces emissions by:

PM10: 85% PM25: 85%

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For Tractors/Loaders/Backhoes, the Diesel Oxidation Catalyst 15% mitigation reduces emissions by:

NOX: 15%

The following mitigation measures apply to Phase: Building Construction 7/1/2010 - 6/30/2011 - Default Building Construction Description

For Cranes, the Diesel Particulate Filter (DPF) 1st Tier mitigation reduces emissions by:

PM10: 85% PM25: 85%

For Cranes, the Diesel Oxidation Catalyst 15% mitigation reduces emissions by:

NOX: 15%

For Forklifts, the Diesel Particulate Filter (DPF) 1st Tier mitigation reduces emissions by:

PM10: 85% PM25: 85%

For Forklifts, the Diesel Oxidation Catalyst 15% mitigation reduces emissions by:

NOX: 15%

For Generator Sets, the Diesel Particulate Filter (DPF) 1st Tier mitigation reduces emissions by:

PM10: 85% PM25: 85%

For Generator Sets, the Diesel Oxidation Catalyst 15% mitigation reduces emissions by:

NOX: 15%

For Tractors/Loaders/Backhoes, the Diesel Particulate Filter (DPF) 1st Tier mitigation reduces emissions by:

PM10: 85% PM25: 85%

For Tractors/Loaders/Backhoes, the Diesel Oxidation Catalyst 15% mitigation reduces emissions by:

NOX: 15%

For Welders, the Diesel Particulate Filter (DPF) 1st Tier mitigation reduces emissions by:

PM10: 85% PM25: 85%

For Welders, the Diesel Oxidation Catalyst 15% mitigation reduces emissions by:

NOX: 15%

The following mitigation measures apply to Phase: Architectural Coating 7/1/2011 - 12/31/2011 - Default Architectural Coating Description

For Residential Architectural Coating Measures, the Residential Exterior: Use Low VOC Coatings mitigation reduces emissions by:

ROG: 10%

For Residential Architectural Coating Measures, the Residential Interior: Use Low VOC Coatings mitigation reduces emissions by:

ROG: 10%

For Nonresidential Architectural Coating Measures, the Nonresidential Exterior: Use Low VOC Coatings mitigation reduces emissions by:

ROG: 10%

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For Nonresidential Architectural Coating Measures, the Nonresidential Interior: Use Low VOC Coatings mitigation reduces emissions by:

ROG: 10%

Area Source Unmitigated Detail Report:

AREA SOURCE EMISSION ESTIMATES Summer Pounds Per Day, Unmitigated

Source	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
Natural Gas	0.38	4.90	2.09	0.00	0.01	0.01	6,257.94
Hearth - No Summer Emissions							
Landscape	0.12	0.02	1.55	0.00	0.01	0.01	2.81
Consumer Products	25.65						
Architectural Coatings	0.85						
TOTALS (lbs/day, unmitigated)	27.00	4.92	3.64	0.00	0.02	0.02	6,260.75

Area Source Changes to Defaults

Operational Unmitigated Detail Report:

OPERATIONAL EMISSION ESTIMATES Summer Pounds Per Day, Unmitigated

Source	ROG	NOX	CO	SO2	PM10	PM25	CO2
Apartments mid rise	25.19	32.07	296.09	0.32	52.38	10.21	31,402.10
TOTALS (lbs/day, unmitigated)	25.19	32.07	296.09	0.32	52.38	10.21	31,402.10

Operational Settings:

Does not include correction for passby trips

Does not include double counting adjustment for internal trips

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Analysis Year: 2011 Temperature (F): 80 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
Apartments mid rise	13.16	6.00	dwelling units	500.00	3,000.00	30,308.40
					3,000.00	30,308.40

Vehicle Fleet Mix

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Light Auto	51.6	0.8	99.0	0.2
Light Truck < 3750 lbs	7.3	2.7	94.6	2.7
Light Truck 3751-5750 lbs	23.0	0.4	99.6	0.0
Med Truck 5751-8500 lbs	10.6	0.9	99.1	0.0
Lite-Heavy Truck 8501-10,000 lbs	1.6	0.0	81.2	18.8
Lite-Heavy Truck 10,001-14,000 lbs	0.5	0.0	60.0	40.0
Med-Heavy Truck 14,001-33,000 lbs	0.9	0.0	22.2	77.8
Heavy-Heavy Truck 33,001-60,000 lbs	0.5	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	2.8	64.3	35.7	0.0
School Bus	0.1	0.0	0.0	100.0
Motor Home	0.9	0.0	88.9	11.1

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Travel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
Urban Trip Length (miles)	12.7	7.0	9.5	13.3	7.4	8.9
Rural Trip Length (miles)	17.6	12.1	14.9	15.4	9.6	12.6
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)

Operational Changes to Defaults

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Urbemis 2007 Version 9.2.4

Combined Summer Emissions Reports (Pounds/Day)

File Name: C:\Documents and Settings\Sara Gerrick\Application Data\Urbemis\Version9a\Projects\Gusti Commercial Uses.urb924

Project Name: Guasti Plaza Specific Plan Amendment-Commercial Use

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

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Summary Report:

CONSTRUCTION EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5	CO2
2010 TOTALS (lbs/day unmitigated)	5.01	33.75	44.91	0.05	51.01	1.80	52.81	10.65	1.65	12.31	6,065.63
2010 TOTALS (lbs/day mitigated)	5.01	28.70	44.91	0.05	4.73	0.47	5.01	0.99	0.43	1.24	6,065.63
2011 TOTALS (lbs/day unmitigated)	75.17	21.58	42.21	0.05	0.20	1.41	1.61	0.07	1.29	1.36	6,064.89
2011 TOTALS (lbs/day mitigated)	67.91	19.23	42.21	0.05	0.20	0.45	0.64	0.07	0.40	0.47	6,064.89

AREA SOURCE EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (lbs/day, unmitigated)	3.31	3.15	8.76	0.00	0.03	0.03	3,693.49

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (lbs/day, unmitigated)	60.56	86.70	781.36	0.87	142.02	27.65	84,687.52

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (lbs/day, unmitigated)	63.87	89.85	790.12	0.87	142.05	27.68	88,381.01

Construction Unmitigated Detail Report:

CONSTRUCTION EMISSION ESTIMATES Summer Pounds Per Day, Unmitigated

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5	CO2

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Time Slice 1/1/2010-6/30/2010 Active Days: 129	4.21	33.75	18.79	0.00	51.01	1.80	52.81	10.65	1.65	12.31	3,162.97
Fine Grading 01/01/2010-06/30/2010	4.21	33.75	18.79	0.00	51.01	1.80	52.81	10.65	1.65	12.31	3,162.97
Fine Grading Dust	0.00	0.00	0.00	0.00	51.00	0.00	51.00	10.65	0.00	10.65	0.00
Fine Grading Off Road Diesel	4.16	33.67	17.48	0.00	0.00	1.79	1.79	0.00	1.65	1.65	3,007.48
Fine Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fine Grading Worker Trips	0.04	0.08	1.31	0.00	0.01	0.00	0.01	0.00	0.00	0.01	155.49
Time Slice 7/1/2010-12/31/2010 Active Days: 132	5.01	23.08	44.91	0.05	0.20	1.49	1.69	0.07	1.36	1.43	6,065.63
Building 07/01/2010-06/30/2011	5.01	23.08	44.91	0.05	0.20	1.49	1.69	0.07	1.36	1.43	6,065.63
Building Off Road Diesel	3.65	16.55	11.20	0.00	0.00	1.19	1.19	0.00	1.10	1.10	1,621.20
Building Vendor Trips	0.42	4.78	3.92	0.01	0.03	0.20	0.23	0.01	0.18	0.19	909.64
Building Worker Trips	0.94	1.76	29.79	0.04	0.17	0.10	0.26	0.06	0.08	0.14	3,534.80
Time Slice 1/3/2011-6/30/2011 Active Days: 129	4.63	21.58	42.21	0.05	0.20	1.41	1.61	0.07	1.29	1.36	6,064.89
Building 07/01/2010-06/30/2011	4.63	21.58	42.21	0.05	0.20	1.41	1.61	0.07	1.29	1.36	6,064.89
Building Off Road Diesel	3.39	15.67	10.85	0.00	0.00	1.14	1.14	0.00	1.05	1.05	1,621.20
Building Vendor Trips	0.39	4.31	3.64	0.01	0.03	0.18	0.21	0.01	0.16	0.17	909.66
Building Worker Trips	0.85	1.61	27.72	0.04	0.17	0.10	0.26	0.06	0.08	0.14	3,534.03

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Time Slice 7/1/2011-12/30/2011 Active Days: 131	75.17	14.72	11.10	0.00	0.02	1.26	1.28	0.01	1.16	1.17	1,545.26
Asphalt 07/01/2011-12/31/2011	2.54	14.67	10.27	0.00	0.01	1.26	1.27	0.00	1.16	1.16	1,439.88
Paving Off-Gas	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving Off Road Diesel	2.34	14.17	8.17	0.00	0.00	1.24	1.24	0.00	1.14	1.14	1,131.92
Paving On Road Diesel	0.03	0.39	0.15	0.00	0.00	0.02	0.02	0.00	0.01	0.02	59.23
Paving Worker Trips	0.06	0.11	1.95	0.00	0.01	0.01	0.02	0.00	0.01	0.01	248.74
Coating 07/01/2011-12/31/2011	72.63	0.05	0.83	0.00	0.00	0.00	0.01	0.00	0.00	0.00	105.38
Architectural Coating	72.60	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.03	0.05	0.83	0.00	0.00	0.00	0.01	0.00	0.00	0.00	105.38

Phase Assumptions

Phase: Fine Grading 1/1/2010 - 6/30/2010 - Default Fine Site Grading/Excavation Description

Total Acres Disturbed: 20.38

Maximum Daily Acreage Disturbed: 5.1

Fugitive Dust Level of Detail: Default

10 lbs per acre-day

On Road Truck Travel (VMT): 0

Off-Road Equipment:

1 Graders (174 hp) operating at a 0.61 load factor for 8 hours per day

1 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 8 hours per day

2 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day

1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Paving 7/1/2011 - 12/31/2011 - Default Paving Description

Acres to be Paved: 5.1

Off-Road Equipment:

4 Cement and Mortar Mixers (10 hp) operating at a 0.56 load factor for 6 hours per day

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1 Pavers (100 hp) operating at a 0.62 load factor for 7 hours per day

2 Paving Equipment (104 hp) operating at a 0.53 load factor for 6 hours per day

1 Rollers (95 hp) operating at a 0.56 load factor for 7 hours per day

Phase: Building Construction 7/1/2010 - 6/30/2011 - Default Building Construction Description

Off-Road Equipment:

1 Cranes (399 hp) operating at a 0.43 load factor for 6 hours per day

2 Forklifts (145 hp) operating at a 0.3 load factor for 6 hours per day

1 Generator Sets (49 hp) operating at a 0.74 load factor for 8 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 8 hours per day

3 Welders (45 hp) operating at a 0.45 load factor for 8 hours per day

Phase: Architectural Coating 7/1/2011 - 12/31/2011 - Default Architectural Coating Description

Rule: Residential Interior Coatings begins 1/1/2005 ends 6/30/2008 specifies a VOC of 100

Rule: Residential Interior Coatings begins 7/1/2008 ends 12/31/2040 specifies a VOC of 50

Rule: Residential Exterior Coatings begins 1/1/2005 ends 6/30/2008 specifies a VOC of 250

Rule: Residential Exterior Coatings begins 7/1/2008 ends 12/31/2040 specifies a VOC of 100

Rule: Nonresidential Interior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

Rule: Nonresidential Exterior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

Construction Mitigated Detail Report:

CONSTRUCTION EMISSION ESTIMATES Summer Pounds Per Day, Mitigated

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5	CO2

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Time Slice 1/1/2010-6/30/2010 Active Days: 129	4.21	28.70	18.79	0.00	4.73	0.27	5.01	0.99	0.25	1.24	3,162.97
Fine Grading 01/01/2010-06/30/2010	4.21	28.70	18.79	0.00	4.73	0.27	5.01	0.99	0.25	1.24	3,162.97
Fine Grading Dust	0.00	0.00	0.00	0.00	4.73	0.00	4.73	0.99	0.00	0.99	0.00
Fine Grading Off Road Diesel	4.16	28.62	17.48	0.00	0.00	0.27	0.27	0.00	0.25	0.25	3,007.48
Fine Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fine Grading Worker Trips	0.04	0.08	1.31	0.00	0.01	0.00	0.01	0.00	0.00	0.01	155.49
Time Slice 7/1/2010-12/31/2010 Active Days: 132	5.01	20.60	44.91	0.05	0.20	0.47	0.67	0.07	0.43	0.50	6,065.63
Building 07/01/2010-06/30/2011	5.01	20.60	44.91	0.05	0.20	0.47	0.67	0.07	0.43	0.50	6,065.63
Building Off Road Diesel	3.65	14.06	11.20	0.00	0.00	0.18	0.18	0.00	0.16	0.16	1,621.20
Building Vendor Trips	0.42	4.78	3.92	0.01	0.03	0.20	0.23	0.01	0.18	0.19	909.64
Building Worker Trips	0.94	1.76	29.79	0.04	0.17	0.10	0.26	0.06	0.08	0.14	3,534.80
Time Slice 1/3/2011-6/30/2011 Active Days: 129	4.63	19.23	42.21	0.05	0.20	0.45	0.64	0.07	0.40	0.47	6,064.89
Building 07/01/2010-06/30/2011	4.63	19.23	42.21	0.05	0.20	0.45	0.64	0.07	0.40	0.47	6,064.89
Building Off Road Diesel	3.39	13.32	10.85	0.00	0.00	0.17	0.17	0.00	0.16	0.16	1,621.20
Building Vendor Trips	0.39	4.31	3.64	0.01	0.03	0.18	0.21	0.01	0.16	0.17	909.66
Building Worker Trips	0.85	1.61	27.72	0.04	0.17	0.10	0.26	0.06	0.08	0.14	3,534.03

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Time Slice 7/1/2011-12/30/2011 Active Days: 131	67.91	12.70	11.10	0.00	0.02	0.24	0.26	0.01	0.22	0.23	1,545.26
Asphalt 07/01/2011-12/31/2011	2.54	12.66	10.27	0.00	0.01	0.24	0.25	0.00	0.22	0.23	1,439.88
Paving Off-Gas	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving Off Road Diesel	2.34	12.15	8.17	0.00	0.00	0.22	0.22	0.00	0.20	0.20	1,131.92
Paving On Road Diesel	0.03	0.39	0.15	0.00	0.00	0.02	0.02	0.00	0.01	0.02	59.23
Paving Worker Trips	0.06	0.11	1.95	0.00	0.01	0.01	0.02	0.00	0.01	0.01	248.74
Coating 07/01/2011-12/31/2011	65.37	0.05	0.83	0.00	0.00	0.00	0.01	0.00	0.00	0.00	105.38
Architectural Coating	65.34	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.03	0.05	0.83	0.00	0.00	0.00	0.01	0.00	0.00	0.00	105.38

Construction Related Mitigation Measures

The following mitigation measures apply to Phase: Fine Grading 1/1/2010 - 6/30/2010 - Default Fine Site Grading/Excavation Description

For Soil Stablizing Measures, the Apply soil stabilizers to inactive areas mitigation reduces emissions by:

PM10: 84% PM25: 84%

For Soil Stablizing Measures, the Replace ground cover in disturbed areas quickly mitigation reduces emissions by:

PM10: 5% PM25: 5%

For Soil Stablizing Measures, the Water exposed surfaces 3x daily watering mitigation reduces emissions by:

PM10: 61% PM25: 61%

For Unpaved Roads Measures, the Reduce speed on unpaved roads to less than 15 mph mitigation reduces emissions by:

PM10: 44% PM25: 44%

For Unpaved Roads Measures, the Manage haul road dust 3x daily watering mitigation reduces emissions by:

PM10: 61% PM25: 61%

For Graders, the Diesel Particulate Filter (DPF) 1st Tier mitigation reduces emissions by:

PM10: 85% PM25: 85%

For Graders, the Diesel Oxidation Catalyst 15% mitigation reduces emissions by:

NOX: 15%

For Rubber Tired Dozers, the Diesel Particulate Filter (DPF) 1st Tier mitigation reduces emissions by:

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PM10: 85% PM25: 85%

For Rubber Tired Dozers, the Diesel Oxidation Catalyst 15% mitigation reduces emissions by:

NOX: 15%

For Tractors/Loaders/Backhoes, the Diesel Particulate Filter (DPF) 1st Tier mitigation reduces emissions by:

PM10: 85% PM25: 85%

For Tractors/Loaders/Backhoes, the Diesel Oxidation Catalyst 15% mitigation reduces emissions by:

NOX: 15%

For Water Trucks, the Diesel Particulate Filter (DPF) 1st Tier mitigation reduces emissions by:

PM10: 85% PM25: 85%

For Water Trucks, the Diesel Oxidation Catalyst 15% mitigation reduces emissions by:

NOX: 15%

The following mitigation measures apply to Phase: Paving 7/1/2011 - 12/31/2011 - Default Paving Description

For Pavers, the Diesel Particulate Filter (DPF) 1st Tier mitigation reduces emissions by:

PM10: 85% PM25: 85%

For Pavers, the Diesel Oxidation Catalyst 15% mitigation reduces emissions by:

NOX: 15%

For Paving Equipment, the Diesel Particulate Filter (DPF) 1st Tier mitigation reduces emissions by:

PM10: 85% PM25: 85%

For Paving Equipment, the Diesel Oxidation Catalyst 15% mitigation reduces emissions by:

NOX: 15%

For Rollers, the Diesel Particulate Filter (DPF) 1st Tier mitigation reduces emissions by:

PM10: 85% PM25: 85%

For Rollers, the Diesel Oxidation Catalyst 15% mitigation reduces emissions by:

NOX: 15%

The following mitigation measures apply to Phase: Building Construction 7/1/2010 - 6/30/2011 - Default Building Construction Description

For Cranes, the Diesel Particulate Filter (DPF) 1st Tier mitigation reduces emissions by:

PM10: 85% PM25: 85%

For Cranes, the Diesel Oxidation Catalyst 15% mitigation reduces emissions by:

NOX: 15%

For Forklifts, the Diesel Particulate Filter (DPF) 1st Tier mitigation reduces emissions by:

PM10: 85% PM25: 85%

For Forklifts, the Diesel Oxidation Catalyst 15% mitigation reduces emissions by:

NOX: 15%

For Generator Sets, the Diesel Particulate Filter (DPF) 1st Tier mitigation reduces emissions by:

PM10: 85% PM25: 85%

For Generator Sets, the Diesel Oxidation Catalyst 15% mitigation reduces emissions by:

NOX: 15%

For Tractors/Loaders/Backhoes, the Diesel Particulate Filter (DPF) 1st Tier mitigation reduces emissions by:

PM10: 85% PM25: 85%

For Tractors/Loaders/Backhoes, the Diesel Oxidation Catalyst 15% mitigation reduces emissions by:

NOX: 15%

For Welders, the Diesel Particulate Filter (DPF) 1st Tier mitigation reduces emissions by:

PM10: 85% PM25: 85%

For Welders, the Diesel Oxidation Catalyst 15% mitigation reduces emissions by:

NOX: 15%

The following mitigation measures apply to Phase: Architectural Coating 7/1/2011 - 12/31/2011 - Default Architectural Coating Description

For Residential Architectural Coating Measures, the Residential Exterior: Use Low VOC Coatings mitigation reduces emissions by:

ROG: 10%

For Residential Architectural Coating Measures, the Residential Interior: Use Low VOC Coatings mitigation reduces emissions by:

ROG: 10%

For Nonresidential Architectural Coating Measures, the Nonresidential Exterior: Use Low VOC Coatings mitigation reduces emissions by:

ROG: 10%

For Nonresidential Architectural Coating Measures, the Nonresidential Interior: Use Low VOC Coatings mitigation reduces emissions by:

ROG: 10%

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Area Source Unmitigated Detail Report:

AREA SOURCE EMISSION ESTIMATES Summer Pounds Per Day, Unmitigated

Source	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
Natural Gas	0.22	3.07	2.58	0.00	0.01	0.01	3,682.25
Hearth - No Summer Emissions							
Landscape	0.49	0.08	6.18	0.00	0.02	0.02	11.24
Consumer Products	0.00						
Architectural Coatings	2.60						
TOTALS (lbs/day, unmitigated)	3.31	3.15	8.76	0.00	0.03	0.03	3,693.49

Area Source Changes to Defaults

Operational Unmitigated Detail Report:

OPERATIONAL EMISSION ESTIMATES Summer Pounds Per Day, Unmitigated

Source	ROG	NOX	CO	SO2	PM10	PM25	CO2
High turnover (sit-down) rest.	4.93	7.44	65.80	0.07	12.12	2.36	7,205.17
Fast food rest. w/ drive thru	12.50	18.99	168.02	0.19	30.94	6.02	18,398.88
Strip mall	6.76	10.02	88.40	0.10	16.31	3.17	9,694.93
Office park	36.37	50.25	459.14	0.51	82.65	16.10	49,388.54
TOTALS (lbs/day, unmitigated)	60.56	86.70	781.36	0.87	142.02	27.65	84,687.52

Operational Settings:

Does not include correction for passby trips

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Does not include double counting adjustment for internal trips

Analysis Year: 2011 Temperature (F): 80 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
High turnover (sit-down) rest.		114.40	1000 sq ft	6.75	772.20	7,013.51
Fast food rest. w/ drive thru		644.40	1000 sq ft	3.06	1,971.86	17,909.45
Strip mall		39.90	1000 sq ft	26.37	1,052.16	9,441.06
Office park		11.01	1000 sq ft	407.82	4,490.10	47,828.53
					8,286.32	82,192.55

Vehicle Fleet Mix

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Light Auto	51.6	0.8	99.0	0.2
Light Truck < 3750 lbs	7.3	2.7	94.6	2.7
Light Truck 3751-5750 lbs	23.0	0.4	99.6	0.0
Med Truck 5751-8500 lbs	10.6	0.9	99.1	0.0
Lite-Heavy Truck 8501-10,000 lbs	1.6	0.0	81.2	18.8
Lite-Heavy Truck 10,001-14,000 lbs	0.5	0.0	60.0	40.0
Med-Heavy Truck 14,001-33,000 lbs	0.9	0.0	22.2	77.8
Heavy-Heavy Truck 33,001-60,000 lbs	0.5	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	2.8	64.3	35.7	0.0

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Vehicle Fleet Mix

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
School Bus	0.1	0.0	0.0	100.0
Motor Home	0.9	0.0	88.9	11.1

Travel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
Urban Trip Length (miles)	12.7	7.0	9.5	13.3	7.4	8.9
Rural Trip Length (miles)	17.6	12.1	14.9	15.4	9.6	12.6
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)						
High turnover (sit-down) rest.				5.0	2.5	92.5
Fast food rest. w/ drive thru				5.0	2.5	92.5
Strip mall				2.0	1.0	97.0
Office park				48.0	24.0	28.0

Operational Changes to Defaults

DIESEL TRUCK HEALTH RISK ASSESSMENT

WAL-MART SUPERCENTER

CITY OF ONTARIO, CALIFORNIA

Prepared for:

David Evans and Associates, Inc.
Attn: Josephine Alido
4200 Concours St., Suite 200
Rancho Cucamonga, CA 91764

Date:

April 19, 2007

Project No.: P06-024HRA

Introduction

Increased diesel exhaust emissions from on-site construction equipment operations and from increased delivery truck traffic may expose area-wide residents to elevated levels of diesel exhaust. In 1998, the California Scientific Review Panel (SRP) released its findings culminating four years of studies describing public exposure and health effects of diesel exhaust. Diesel exhaust includes over 40 substances listed by the U. S. Environmental Protection Agency (EPA) as hazardous air pollutants. Fifteen of these substances are listed by the International Agency for Research on Cancer (IARC) as known or probable carcinogens.

Diesel exhaust is a complex mixture of small carbon particles, microscopic droplets of semi-volatile liquids, and gases. Short-term exposures at high concentrations have been observed in many studies to cause increased cough, labored breathing, chest tightness, and wheezing. These levels of exposures more typically occur in occupational settings such as bus garages rather than in the ambient environment. Short-term ambient exposures to diesel exhaust may induce inflammatory immunological reactions such as asthma, and may exacerbate human reactions to nasal allergens.

Chronic effects of diesel exposure have been observed in all populations, but children with still-developing respiratory systems appear more vulnerable. A direct correlation between the level of diesel exposure and children's adverse health reactions has been documented in many studies, including a recently released report by the USC School of Medicine. Although the carcinogenicity of diesel exhaust is most often stated as the primary exposure issue, chronic non-cancer effects are also an important consideration.

Based upon the available evidence, the SRP adopted an individual cancer risk level that is correlated to the amount of diesel particulate matter (DPM) exposure. DPM is used as a surrogate for all solid, liquid and gaseous components in diesel exhaust. The adopted risk level is a lifetime probability of 300 in a million of developing a serious form of cancer per microgram per cubic meter ($\mu g/m^3$) of DPM exposure. The lifetime risk for all Californians is around 270,000 in a million (27% of people will develop life-threatening cancer in their lifetime). The ambient level of DPM in Southern California is 2-3 $\mu g/m^3$ such that the typical cancer risk is 600-900 in a million for a 70-year lifetime. For purposes of health risk assessment from a specified source of DPM, the South Coast AQMD has adopted a DPM exposure threshold of significance for CEQA reviews. An excess cancer risk exceeding ten in a million (the Proposition 65 Alert Level) is considered significant. A risk of less than one in a million is insignificant. A risk between one and ten in a million is considered adverse, but generally less than significant. A number of health and air toxics agencies have adopted standardized protocols to perform public exposure analyses.

The analysis protocols for toxic air contaminants (TAC) such as DPM is to initially assume that any receptor will be exposed to 70 years of emissions while remaining in one single outdoor spot for 24 hours per day, 365 days per year for the entire 70-year period. If the 70-year exposure assumption is not appropriate because the receptor either does not remain in one location or the project does not last 70 years, the calculation may be adjusted. Because the construction duration is much less than 70 years, and because daytime dispersion is generally good in Ontario, only the operational impacts were considered for detailed analysis.

The analysis procedure typically is carried out for worst-case exposure assumptions using screening level atmospheric dispersion estimates that are over-predictive. If the worst-case screening analysis approach predicts a less-than-significant impact, then more comprehensive approaches are generally not considered necessary. DPM screening level health risk assessment was therefore conducted for delivery truck exhaust in order to determine if a more detailed analysis is necessary.

The results of the screening level analysis using the SCREEN3 computer model showed no adverse impact. That analysis, however, focused only on the Wal-Mart trucks, and assumed that truck movement and turbulence will disperse emissions throughout the project site. In reality, there will be non-Wal-Mart diesel trucks from contract vendors, and emissions will be heavily concentrated within the two loading dock areas.

A more detailed risk assessment was therefore conducted at forty residential sites closest to the project site at the apartments to the west, the single family homes south of 5^{th} Street, and the single-family homes east on Mountain Avenue. The ISCST3 computer model was combined with Ontario Airport surface meteorological data and applied to the source emissions data from loading dock operations. Input data were derived from truck exhaust emissions projections in the recently released EMFAC2007 computer model between 2008 and 2077. Input assumptions are shown in the appendix. The highest DPM exposure locations are predicted to experience the following individual excess cancer risks (risk in a million), compared to the SCAQMD *de minimis* impact risk of one in a million, were as follows:

Receptor	70-Year Risk (per million)
West	0.41
South	0.39
East	0.14

The excess cancer risk for a 70-year life-time exposure is less than the one in a million minimal significance level.

A P P E N D I X

Model Input Parameters

ISCST3 Risk Analysis Output

Ontario Super Wal-Mart HRA Input Parameters

Ten diesel trucks per day, 5 minute idle at delivery, 5 minute idle at departure, 3 minute maneuver through lot to reach/depart from loading docks. 70-year EMFAC averages, One TRU at one loading dock per day, one hour of operation.

The site is a rectangular parcel; the SW corner is at 137m (X), and 70 m (Y)

The N-S dimension is 274 meters from the SW corner, E-W extends 244 meters from the SW corner

Receptors are located along the western property line (no set-back), across the street south of the site, and across the street east of the site.

The receptor end points are: West (137,70) to (137,314)
South (137,49) to (411,49)
East (445,70) to (445,314)

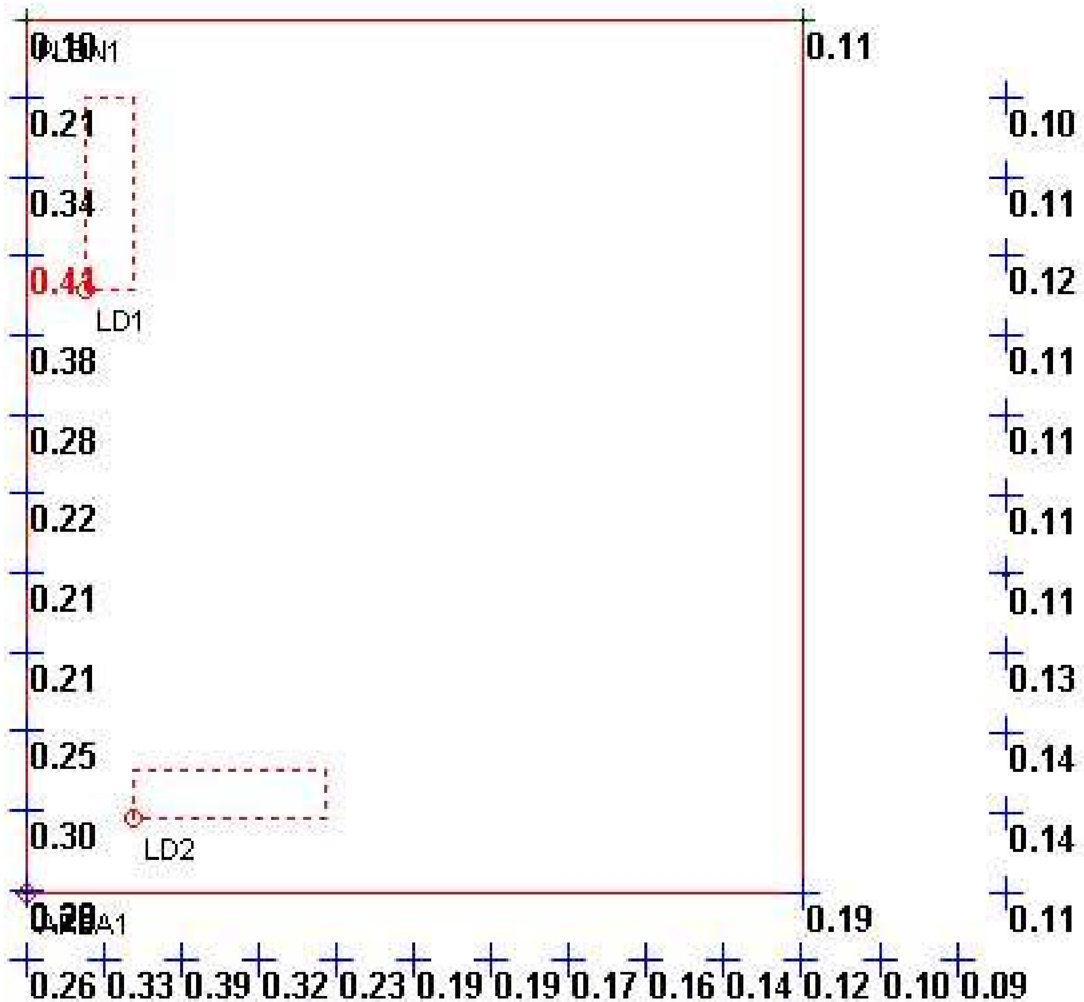
Diesel particulate emissions:

Idling/maneuvering at the Loading Dock - Area Source (155,259) at SW corner
15 meter east, 61 m north
0.0033 microgram/m*m/second

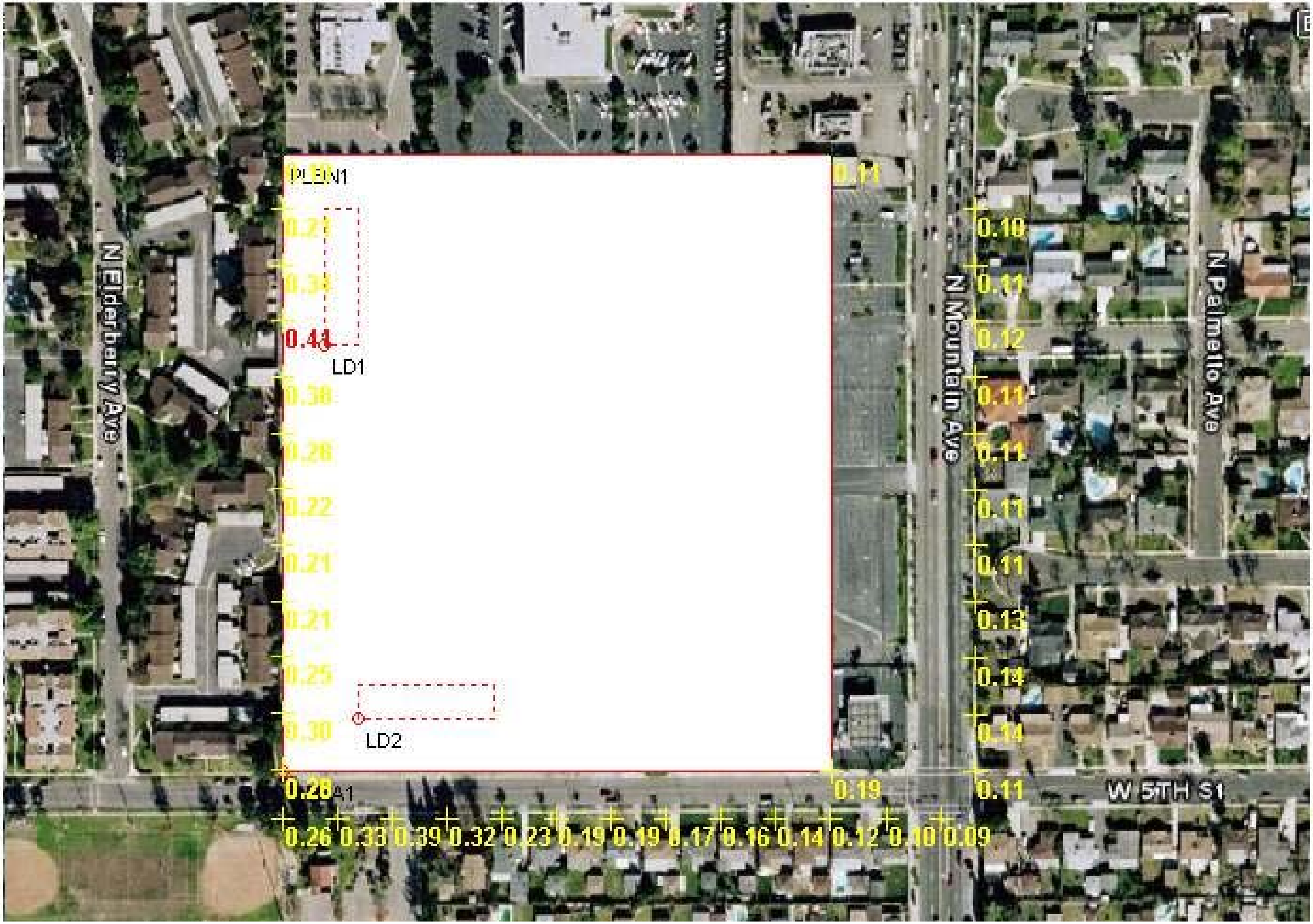
Loading Dock 2 Area Source (170,93) at SW corner 61 m east, 15 m north
0.0035 microgram/m*m/second

Trucks in/out in entire site: Area Source (137,70) at SW corner 274 meter north,
244 meter east Rate = 0.00004 microgram/m*m/second

OntarioWM004.jpg



OntarioWM003.jpg



```
**
****************************************
**
** ISCST3 Input Produced by:
** ISC-AERMOD View Ver. 5.6.0
** Lakes Environmental Software Inc.
** Date: 4/5/2007
** File: C:\Giroux\ONTWM2.INP
**
****************************************
**
**
****************************************
** ISCST3 Control Pathway
****************************************
**
**
CO STARTING
   TITLEONE Ontario Walmart Cancer Risk
   MODELOPT CONC  URBAN NOCALM
   AVERTIME PERIOD
   POLLUTID CNCRSK
   TERRHGTS FLAT
   RUNORNOT RUN
CO FINISHED
**
****************************************
** ISCST3 Source Pathway
****************************************
**
**
SO STARTING
** Source Location **
** Source ID - Type - X Coord. - Y Coord. **
   LOCATION AREA1 AREA 437886.860 3771405.540
   LOCATION LD1 AREA 437904.860 3771594.540
** DESCRSRC Loading Dock 1
   LOCATION LD2 AREA 437919.860 3771428.540
** DESCRSRC Loading Dock 2
** Source Parameters **
   SRCPARAM AREA1 4.0E-11 1.829 244.000 274.000 0.000
   SRCPARAM LD1 3.3E-09 3.658 15.000 61.000 0.000
   SRCPARAM LD2 3.5E-09 3.658 61.000 15.000 0.000
   CONCUNIT 3.19E8 GRAMS/M2-SEC/ RISK/PER/MILLION
   SRCGROUP ALL
SO FINISHED
**
****************************************
** ISCST3 Receptor Pathway
****************************************
**
**
RE STARTING
** DESCRREC "FENCEGRD" "Receptors generated from Fenceline Grid"
   DISCCART    438130.86   3771405.53
   DISCCART    438130.30   3771384.54
   DISCCART    438105.90   3771384.54
   DISCCART    438081.50   3771384.54
   DISCCART    438057.10   3771384.54
```

```
   DISCCART    438032.70   3771384.54
   DISCCART    438008.30   3771384.54
   DISCCART    437983.90   3771384.54
   DISCCART    437959.50   3771384.54
   DISCCART    437935.10   3771384.54
   DISCCART    437910.70   3771384.54
   DISCCART    437886.86   3771384.54
   DISCCART    437886.86   3771406.30
   DISCCART    437886.86   3771431.21
   DISCCART    437886.86   3771456.12
   DISCCART    437886.86   3771481.03
   DISCCART    437886.86   3771505.94
   DISCCART    437886.86   3771530.85
   DISCCART    437886.86   3771555.76
   DISCCART    437886.86   3771580.67
   DISCCART    437886.86   3771605.57
   DISCCART    437886.86   3771630.48
   DISCCART    437886.86   3771655.39
   DISCCART    438130.87   3771405.54
   DISCCART    438194.86   3771655.54
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   DISCCART    438194.86   3771480.54
   DISCCART    438194.86   3771455.54
   DISCCART    438194.86   3771430.54
   DISCCART    438194.86   3771405.54
** DESCRREC "" ""
   DISCCART    438155.01   3771384.54
   DISCCART    438180.10   3771384.54
** BEGIN OF NESTED GRID RECEPTORS
** END OF NESTED GRID RECEPTORS
** Discrete Cartesian Plant Boundary - Primary Receptors
** Plant Boundary Name PLBN1
** DESCRREC "FENCEPRI" "Cartesian plant boundary Primary Receptors"
   DISCCART    437886.86   3771679.54
   DISCCART    437886.86   3771405.54
   DISCCART    438130.86   3771405.54
   DISCCART    438130.86   3771679.54
RE FINISHED
**
****************************************
** ISCST3 Meteorology Pathway
****************************************
**
**
ME STARTING
   INPUTFIL C:\MBA\ONTARI~1\POMONA.ASC
   ANEMHGHT 10 METERS
   SURFDATA 54109 1981
   UAIRDATA 99999 1981
ME FINISHED
**
****************************************
** ISCST3 Output Pathway
****************************************
**
```

```
**
OU STARTING
   PLOTFILE PERIOD ALL ONTWM2.IS\ONTWMCAN.PLT
OU FINISHED

***********************************
*** SETUP Finishes Successfully ***
***********************************
```

```
 *** ISCST3 - VERSION 02035 ***    *** Ontario Walmart Cancer Risk
***        04/05/07
                                   ***
***        20:44:11
**MODELOPTs:
PAGE   1
CONC                    URBAN FLAT
NOCALM

                                           ***     MODEL SETUP OPTIONS
SUMMARY       ***
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - - - - - - -

**Intermediate Terrain Processing is Selected

**Model Is Setup For Calculation of Average CONCentration Values.

  --  SCAVENGING/DEPOSITION LOGIC --
**Model Uses NO DRY DEPLETION.  DDPLETE =  F
**Model Uses NO WET DEPLETION.  WDPLETE =  F
**NO WET SCAVENGING Data Provided.
**NO GAS DRY DEPOSITION Data Provided.
**Model Does NOT Use GRIDDED TERRAIN Data for Depletion Calculations

**Model Uses URBAN Dispersion.

**Model Uses User-Specified Options:
           1. Final Plume Rise.
           2. Stack-tip Downwash.
           3. Buoyancy-induced Dispersion.
           4. Not Use Calms Processing Routine.
           5. Not Use Missing Data Processing Routine.
           6. Default Wind Profile Exponents.
           7. Default Vertical Potential Temperature Gradients.

**Model Assumes Receptors on FLAT Terrain.

**Model Assumes No FLAGPOLE Receptor Heights.

**Model Calculates PERIOD Averages Only

**This Run Includes:     3 Source(s);      1 Source Group(s); and
41 Receptor(s)

**The Model Assumes A Pollutant Type of:  CNCRSK

**Model Set To Continue RUNning After the Setup Testing.

**Output Options Selected:
         Model Outputs Tables of PERIOD Averages by Receptor
         Model Outputs External File(s) of High Values for Plotting
(PLOTFILE Keyword)

**Misc. Inputs:  Anem. Hgt. (m) =    10.00 ;    Decay Coef. =    0.000
;    Rot. Angle =     0.0
                 Emission Units = GRAMS/M2-SEC/
;  Emission Rate Unit Factor =   0.31900E+09
                 Output Units   = RISK/PER/MILLION
```

```
**Approximate Storage Requirements of Model =     1.2 MB of RAM.

**Input Runstream File:          ONTWM2.INP
**Output Print File:             ONTWM2.OUT
```

*** AREA SOURCE DATA ***

SOURCE ID	NUMBER PART. CATS.	EMISSION RATE (GRAMS/SEC /METER**2)	X (METERS)	Y (METERS)	BASE ELEV. (METERS)	RELEASE HEIGHT (METERS)	X-DIM OF AREA (METERS)	Y-DIM OF AREA (METERS)	ORIENT. OF AREA (DEG.)	INIT. SZ (METERS)	EMISSION RATE SCALAR VARY BY
AREA1	0	0.40000E-10	437886.9	3771405.5	0.0	1.83	244.00	274.00	0.00	0.00	
LD1	0	0.33000E-08	437904.9	3771594.5	0.0	3.66	15.00	61.00	0.00	0.00	
LD2	0	0.35000E-08	437919.9	3771428.5	0.0	3.66	61.00	15.00	0.00	0.00	

```
 *** ISCST3 - VERSION 02035 ***    *** Ontario Walmart Cancer Risk
***        04/05/07
                                   ***
***        20:44:11
**MODELOPTs:
PAGE   3
CONC                    URBAN FLAT
NOCALM



                                          *** SOURCE IDs DEFINING SOURCE
GROUPS ***

GROUP ID                                                     SOURCE IDs


 ALL       AREA1   , LD1     , LD2     ,
```

```
 *** ISCST3 - VERSION 02035 ***    *** Ontario Walmart Cancer Risk
***        04/05/07
                                   ***
***        20:44:11
**MODELOPTs:
PAGE   4
CONC                     URBAN FLAT
NOCALM


                                            *** DISCRETE CARTESIAN
RECEPTORS ***
                                              (X-COORD, Y-COORD, ZELEV,
ZFLAG)
                                                          (METERS)

    ( 438130.9, 3771405.5,       0.0,       0.0);          ( 438130.3,
3771384.5,       0.0,       0.0);
    ( 438105.9, 3771384.5,       0.0,       0.0);          ( 438081.5,
3771384.5,       0.0,       0.0);
    ( 438057.1, 3771384.5,       0.0,       0.0);          ( 438032.7,
3771384.5,       0.0,       0.0);
    ( 438008.3, 3771384.5,       0.0,       0.0);          ( 437983.9,
3771384.5,       0.0,       0.0);
    ( 437959.5, 3771384.5,       0.0,       0.0);          ( 437935.1,
3771384.5,       0.0,       0.0);
    ( 437910.7, 3771384.5,       0.0,       0.0);          ( 437886.9,
3771384.5,       0.0,       0.0);
    ( 437886.9, 3771406.3,       0.0,       0.0);          ( 437886.9,
3771431.3,       0.0,       0.0);
    ( 437886.9, 3771456.0,       0.0,       0.0);          ( 437886.9,
3771481.0,       0.0,       0.0);
    ( 437886.9, 3771506.0,       0.0,       0.0);          ( 437886.9,
3771530.8,       0.0,       0.0);
    ( 437886.9, 3771555.8,       0.0,       0.0);          ( 437886.9,
3771580.8,       0.0,       0.0);
    ( 437886.9, 3771605.5,       0.0,       0.0);          ( 437886.9,
3771630.5,       0.0,       0.0);
    ( 437886.9, 3771655.5,       0.0,       0.0);          ( 438130.9,
3771405.5,       0.0,       0.0);
    ( 438194.9, 3771655.5,       0.0,       0.0);          ( 438194.9,
3771630.5,       0.0,       0.0);
    ( 438194.9, 3771605.5,       0.0,       0.0);          ( 438194.9,
3771580.5,       0.0,       0.0);
    ( 438194.9, 3771555.5,       0.0,       0.0);          ( 438194.9,
3771530.5,       0.0,       0.0);
    ( 438194.9, 3771505.5,       0.0,       0.0);          ( 438194.9,
3771480.5,       0.0,       0.0);
    ( 438194.9, 3771455.5,       0.0,       0.0);          ( 438194.9,
3771430.5,       0.0,       0.0);
    ( 438194.9, 3771405.5,       0.0,       0.0);          ( 438155.0,
3771384.5,       0.0,       0.0);
    ( 438180.1, 3771384.5,       0.0,       0.0);          ( 437886.9,
3771679.5,       0.0,       0.0);
    ( 437886.9, 3771405.5,       0.0,       0.0);          ( 438130.9,
3771405.5,       0.0,       0.0);
    ( 438130.9, 3771679.5,       0.0,       0.0);
```

*** METEOROLOGICAL DAYS SELECTED FOR PROCESSING ***
(1=YES; 0 =NO)

```
          1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1
1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
          1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1
1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
          1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1
1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
          1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1
1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
          1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1
1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
          1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1
1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
          1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1
1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
          1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1
```

NOTE: METEOROLOGICAL DATA ACTUALLY PROCESSED WILL ALSO DEPEND ON WHAT IS INCLUDED IN THE DATA FILE.

*** UPPER BOUND OF FIRST THROUGH FIFTH WIND SPEED CATEGORIES ***
(METERS/SEC)

1.54, 3.09, 5.14, 8.23, 10.80,

*** WIND PROFILE EXPONENTS ***

STABILITY CATEGORY	WIND SPEED CATEGORY 1	2	3	4	5	6
A	.15000E+00	.15000E+00	.15000E+00	.15000E+00	.15000E+00	.15000E+00
B	.15000E+00	.15000E+00	.15000E+00	.15000E+00	.15000E+00	.15000E+00
C	.20000E+00	.20000E+00	.20000E+00	.20000E+00	.20000E+00	.20000E+00
D	.25000E+00	.25000E+00	.25000E+00	.25000E+00	.25000E+00	.25000E+00
E	.30000E+00	.30000E+00	.30000E+00			

.30000E+00	.30000E+00	.30000E+00			
F	.30000E+00	.30000E+00	.30000E+00	.30000E+00	.30000E+00
	.30000E+00				

*** VERTICAL POTENTIAL TEMPERATURE GRADIENTS ***
(DEGREES KELVIN PER METER)

STABILITY CATEGORY	WIND SPEED CATEGORY 1	2	3	4	5	6
A	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00
B	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00
C	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00
D	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00
E	.20000E-01	.20000E-01	.20000E-01	.20000E-01	.20000E-01	.20000E-01
F	.35000E-01	.35000E-01	.35000E-01	.35000E-01	.35000E-01	.35000E-01

*** ISCST3 - VERSION 02035 ***   *** Ontario Walmart Cancer Risk ***   04/05/07
***
***   20:44:11
**MODELOPTs:
PAGE   6
CONC   URBAN FLAT
NOCALM

*** THE FIRST 24 HOURS OF METEOROLOGICAL DATA ***

FILE: C:\MBA\ONTARI~1\POMONA.ASC
FORMAT: (4I2,2F9.4,F6.1,I2,2F7.1,f9.4,f10.1,f8.4,i4,f7.2)
SURFACE STATION NO.: 54109   UPPER AIR STATION NO.: 99999
NAME: UNKNOWN   NAME: UNKNOWN
YEAR: 1981   YEAR: 1981

YR MN DY HR	FLOW VECTOR	SPEED (M/S)	TEMP (K)	STAB CLASS	MIXING HEIGHT (M) RURAL	MIXING HEIGHT (M) URBAN	USTAR (M/S)	M-O LENGTH (M)	Z-0 (M)	IPCODE	PRATE (mm/HR)
81 01 01 01	292.3	1.00	284.3	7	522.6	170.0	0.0000	0.0	0.0000	0	0.00
81 01 01 02	282.4	0.00	284.3	7	507.0	170.0	0.0000	0.0	0.0000	0	0.00
81 01 01 03	242.5	1.00	283.1	7	491.4	170.0	0.0000	0.0	0.0000	0	0.00
81 01 01 04	233.5	1.00	283.1	7	475.8	170.0	0.0000	0.0	0.0000	0	0.00
81 01 01 05	219.0	0.00	282.6	7	460.3	170.0	0.0000	0.0	0.0000	0	0.00
81 01 01 06	184.5	1.00	283.1	7	444.7	170.0	0.0000	0.0	0.0000	0	0.00
81 01 01 07	229.5	1.00	285.4	6	1.4	170.7	0.0000	0.0	0.0000	0	0.00
81 01 01 08	224.6	0.00	287.6	5	47.0	192.0	0.0000	0.0	0.0000	0	0.00
81 01 01 09	276.5	1.00	289.8	4	92.5	213.3	0.0000	0.0	0.0000	0	0.00
81 01 01 10	324.1	1.00	291.5	3	138.0	234.7	0.0000	0.0	0.0000	0	0.00
81 01 01 11	291.6	1.34	294.3	2	183.5	256.0	0.0000	0.0	0.0000	0	0.00
81 01 01 12	350.6	1.00	297.6	2	229.0	277.3	0.0000	0.0	0.0000	0	0.00
81 01 01 13	312.2	1.00	298.7	2	274.5	298.7	0.0000	0.0	0.0000	0	0.00
81 01 01 14	56.7	2.24	299.8	3	320.0	320.0	0.0000	0.0	0.0000	0	0.00
81 01 01 15	67.3	2.24	299.3	3	320.0	320.0	0.0000	0.0	0.0000	0	0.00
81 01 01 16	98.2	1.79	298.7	4	320.0	320.0	0.0000	0.0	0.0000	0	0.00

81 01 01 17	87.6	1.34	295.4	5	325.6	318.5	0.0000
0.0	0.0000	0	0.00				
81 01 01 18	120.1	1.34	291.5	6	357.2	310.3	0.0000
0.0	0.0000	0	0.00				
81 01 01 19	88.0	1.00	289.8	7	388.8	302.1	0.0000
0.0	0.0000	0	0.00				
81 01 01 20	168.2	1.00	287.0	7	420.4	293.9	0.0000
0.0	0.0000	0	0.00				
81 01 01 21	291.1	1.00	286.5	7	452.0	285.7	0.0000
0.0	0.0000	0	0.00				
81 01 01 22	227.0	1.00	287.0	7	483.5	277.4	0.0000
0.0	0.0000	0	0.00				
81 01 01 23	203.2	1.00	285.9	7	515.1	269.2	0.0000
0.0	0.0000	0	0.00				
81 01 01 24	224.7	1.00	285.4	7	546.7	261.0	0.0000
0.0	0.0000	0	0.00				

*** NOTES: STABILITY CLASS 1=A, 2=B, 3=C, 4=D, 5=E AND 6=F.
FLOW VECTOR IS DIRECTION TOWARD WHICH WIND IS BLOWING.

*** THE PERIOD (8760 HRS) AVERAGE CONCENTRATION   VALUES FOR SOURCE GROUP: ALL   ***
INCLUDING SOURCE(S):   AREA1   , LD1   , LD2   ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF CNCRSK   IN RISK/PER/MILLION   **

X-COORD (M)	Y-COORD (M)	CONC	X-COORD (M)	Y-COORD (M)	CONC
438130.88	3771405.50	0.19273	438130.31	3771384.50	0.11685
438105.91	3771384.50	0.13712	438081.50	3771384.50	0.15519
438057.09	3771384.50	0.17341	438032.69	3771384.50	0.18786
438008.31	3771384.50	0.19213	437983.91	3771384.50	0.22547
437959.50	3771384.50	0.32287	437935.09	3771384.50	0.38577
437910.69	3771384.50	0.33257	437886.88	3771384.50	0.25548
437886.88	3771406.25	0.27832	437886.88	3771431.25	0.29691
437886.88	3771456.00	0.24580	437886.88	3771481.00	0.21496
437886.88	3771506.00	0.20520	437886.88	3771530.75	0.22126
437886.88	3771555.75	0.27544	437886.88	3771580.75	0.37974
437886.88	3771605.50	0.40933	437886.88	3771630.50	0.33986
437886.88	3771655.50	0.21337	438130.88	3771405.50	0.19273
438194.88	3771655.50	0.09626	438194.88	3771630.50	0.11147
438194.88	3771605.50	0.11693	438194.88	3771580.50	0.11494
438194.88	3771555.50	0.10920	438194.88	3771530.50	0.10546
438194.88	3771505.50	0.11066	438194.88	3771480.50	0.12635
438194.88	3771455.50	0.13915	438194.88	3771430.50	0.13603
438194.88	3771405.50	0.11301	438155.00	3771384.50	0.10066

438180.09	3771384.50	0.08998
437886.88	3771679.50	0.10217
437886.88	3771405.50	0.27892
438130.88	3771405.50	0.19273
438130.88	3771679.50	0.11274

```
 *** ISCST3 - VERSION 02035 ***    *** Ontario Walmart Cancer Risk
***        04/05/07
                                   ***
***        20:44:11
**MODELOPTs:
PAGE   8
CONC                  URBAN FLAT
NOCALM

                                           *** THE SUMMARY OF MAXIMUM
PERIOD (  8760 HRS) RESULTS ***


                                       ** CONC OF CNCRSK   IN
RISK/PER/MILLION                         **


NETWORK
GROUP ID                      AVERAGE CONC                RECEPTOR  (XR,
YR, ZELEV, ZFLAG)   OF TYPE  GRID-ID
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - - - - -

ALL      1ST HIGHEST VALUE IS       0.40933 AT (  437886.88,
3771605.50,      0.00,      0.00)  DC      NA
         2ND HIGHEST VALUE IS       0.38577 AT (  437935.09,
3771384.50,      0.00,      0.00)  DC      NA
         3RD HIGHEST VALUE IS       0.37974 AT (  437886.88,
3771580.75,      0.00,      0.00)  DC      NA
         4TH HIGHEST VALUE IS       0.33986 AT (  437886.88,
3771630.50,      0.00,      0.00)  DC      NA
         5TH HIGHEST VALUE IS       0.33257 AT (  437910.69,
3771384.50,      0.00,      0.00)  DC      NA
         6TH HIGHEST VALUE IS       0.32287 AT (  437959.50,
3771384.50,      0.00,      0.00)  DC      NA
         7TH HIGHEST VALUE IS       0.29691 AT (  437886.88,
3771431.25,      0.00,      0.00)  DC      NA
         8TH HIGHEST VALUE IS       0.27892 AT (  437886.88,
3771405.50,      0.00,      0.00)  DC      NA
         9TH HIGHEST VALUE IS       0.27832 AT (  437886.88,
3771406.25,      0.00,      0.00)  DC      NA
        10TH HIGHEST VALUE IS       0.27544 AT (  437886.88,
3771555.75,      0.00,      0.00)  DC      NA


 *** RECEPTOR TYPES:  GC = GRIDCART
                      GP = GRIDPOLR
                      DC = DISCCART
                      DP = DISCPOLR
                      BD = BOUNDARY
```

```
*** Message Summary : ISCST3 Model Execution ***

 --------- Summary of Total Messages --------

A Total of             0 Fatal Error Message(s)
A Total of             0 Warning Message(s)
A Total of          2114 Informational Message(s)

A Total of          2114 Calm Hours Identified


   ******** FATAL ERROR MESSAGES ********
              ***  NONE  ***


   ********   WARNING MESSAGES   ********
              ***  NONE  ***


   ************************************
   *** ISCST3 Finishes Successfully ***
   ************************************
```