AIR QUALITY and GHG IMPACT ANALYSES

VALLEY BOULEVARD MULTI-FAMILY RESIDENTIAL PROJECT

CITY OF EL MONTE, CALIFORNIA

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ATMOSPHERIC SETTING

The climate of the El Monte area, 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 humidities. 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.

El Monte 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 the western San Gabriel Valley some of the worst air quality in all of California. The worst air quality, however, has gradually been moving eastward. The area of heaviest ozone air pollution has gradually moved eastward from Pasadena in the 1960's to Glendora and even Upland/Ontario in the 1990's. Elevated smog levels nevertheless persist in the project area during the warmer months of the year. Despite dramatic improvement in air quality in the local area throughout the last several decades, the project site is expected to continue to experience some unhealthful air quality until beyond 2020.

Temperatures in the project vicinity average 62 degrees Fahrenheit annually with summer afternoons in the low 90's and winter mornings in the low 40's. Temperatures much above 100 or below 30 degrees occur infrequently only under unusual weather conditions and even then these limits are not far exceeded.

In contrast to the slow annual variation of temperature, precipitation is highly variable seasonally. Rainfall in the eastern portions of Los Angeles County averages 17 inches annually and falls almost exclusively from late October to early April. Summers are very dry with frequent periods of 4-5 months of no rain at all. Because much of the rainfall comes from the fringes of mid-latitude storms, a shift in the storm track of a few hundred miles can mean the difference between a very wet year and a year with drought conditions.

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 their regional trajectory. Local wind patterns show a fairly unidirectional daytime onshore flow from the SW-W with a very weak offshore return flow from the NE that is strongest on winter nights when the land is colder than the ocean. The onshore winds during the day average 6-8 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 transported eastward toward San Bernardino and Cajon Pass without generating any localized air quality impacts.

The drainage winds which move slowly across the area at night have some potential for localized stagnation. Fortunately, these winds have their origin in the San Gabriel Mountains where background pollution levels are low such that any localized contributions do not create any unhealthful impacts. The wind distribution is such that nominal project-related air quality impacts occur more on a regional scale rather than in the immediate project area. One other important wind condition occurs when a high pressure center forms over the western United States with sinking air forced seaward through local canyons and mountain passes. The air warms by compression and relative humidities drop dramatically. The dry, gusty winds from the N-NE create dust nuisance potential around areas of soil disturbance such as construction sites and sometimes create serious visibility and vehicle safety problems for vehicles on area freeways.

In conjunction with the two dominant 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. These 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.

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. Because the incoming air draining off the mountains into the San Gabriel Valley during nocturnal radiation inversion conditions is relatively clean, the summer subsidence inversions are a far more critical factor in determining area air quality than the winter time local trapping inversions.

AIR QUALITY SETTING

AMBIENT AIR QUALITY STANDARDS (AAQS)

In order to gauge the significance of the air quality impacts of the proposed 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 [1]		National Standards [2]		
		Concentration [3]	Method [4]	Primary [3,5]	Secondary [3,6]	Method [7]
Ozone (O_3)[8]	1 Hour	0.09 ppm (180 µg/m^3)	Ultraviolet Photometry	—	Same as Primary Standard	Ultraviolet Photometry
	8 Hour	0.070 ppm (137 µg/m^3)		0.070 ppm (137 µg/m^3)		
Respirable Particulate Matter (PM10)[9]	24 Hour	50 µg/m^3	Gravimetric or Beta Attenuation	150 µg/m^3	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	20 µg/m^3		—		
Fine Particulate Matter (PM2.5)[9]	24 Hour	—	—	35 µg/m^3	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	12 µg/m^3	Gravimetric or Beta Attenuation	12.0 µg/m^3	15 µg/m^3	
Carbon Monoxide (CO)	1 Hour	20 ppm (23 mg/m^3)	Non-Dispersive Infrared Photometry (NDIR)	35 ppm (40 mg/m^3)	—	Non-Dispersive Infrared Photometry (NDIR)
	8 Hour	9.0 ppm (10 mg/m^3)		9 ppm (10 mg/m^3)	—	
	8 Hour (Lake Tahoe)	6 ppm (7 mg/m^3)		—	—	
Nitrogen Dioxide (NO_2)[10]	1 Hour	0.18 ppm (339 µg/m^3)	Gas Phase Chemiluminescence	100 ppb (188 µg/m^3)	—	Gas Phase Chemiluminescence
	Annual Arithmetic Mean	0.030 ppm (57 µg/m^3)		0.053 ppm (100 µg/m^3)	Same as Primary Standard	
Sulfur Dioxide (SO_2)[11]	1 Hour	0.25 ppm (655 µg/m^3)	Ultraviolet Fluorescence	75 ppb (196 µg/m^3)	—	Ultraviolet Flourescence; Spectrophotometry (Pararosaniline Method)
	3 Hour	—		—	0.5 ppm (1300 µg/m^3)	
	24 Hour	0.04 ppm (105 µg/m^3)		0.14 ppm (for certain areas)[11]	—	
	Annual Arithmetic Mean	—		0.030 ppm (for certain areas)[11]	—	
Lead[12,13]	30 Day Average	1.5 µg/m^3	Atomic Absorption	—	—	High Volume Sampler and Atomic Absorption
	Calendar Quarter	—		1.5 µg/m^3 (for certain areas)[12]	Same as Primary Standard	
	Rolling 3-Month Average	—		0.15 µg/m^3		
Visibility Reducing Particles[14]	8 Hour	See footnote 14	Beta Attenuation and Transmittance through Filter Tape	No National Standards		
Sulfates	24 Hour	25 µg/m^3	Ion Chromatography			
Hydrogen Sulfide	1 Hour	0.03 ppm (42 µg/m^3)	Ultraviolet Fluorescence			
Vinyl Chloride[12]	24 Hour	0.01 ppm (26 µg/m^3)	Gas Chromatography			

See footnotes on next page …

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Table 1 (continued)

1. California standards for ozone, carbon monoxide (except 8-hour Lake Tahoe), sulfur dioxide (1 and 24 hour), nitrogen dioxide, and particulate matter (PM10, PM2.5, and visibility reducing particles), are values that are not to be exceeded. All others are not to be equaled or exceeded. California ambient air quality standards are listed in the Table of Standards in Section 70200 of Title 17 of the California Code of Regulations.

2. National standards (other than ozone, particulate matter, and those based on annual arithmetic mean) are not to be exceeded more than once a year. The ozone standard is attained when the fourth highest 8-hour concentration measured at each site in a year, averaged over three years, is equal to or less than the standard. For PM10, the 24 hour standard is attained when the expected number of days per calendar year with a 24-hour average concentration above 150 $\mu g/m^3$ is equal to or less than one. For PM2.5, the 24 hour standard is attained when 98 percent of the daily concentrations, averaged over three years, are equal to or less than the standard. Contact the U.S. EPA for further clarification and current national policies.

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

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

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

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

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

8. On October 1, 2015, the national 8-hour ozone primary and secondary standards were lowered from 0.075 to 0.070 ppm.

9. On December 14, 2012, the national annual PM2.5 primary standard was lowered from 15 $\mu g/m^3$ to 12.0 $\mu g/m^3$. The existing national 24-hour PM2.5 standards (primary and secondary) were retained at 35 $\mu g/m^3$, as was the annual secondary standard of 15 $\mu g/m^3$. The existing 24-hour PM10 standards (primary and secondary) of 150 $\mu g/m^3$ also were retained. The form of the annual primary and secondary standards is the annual mean, averaged over 3 years.

10. To attain the 1-hour national standard, the 3-year average of the annual 98th percentile of the 1-hour daily maximum concentrations at each site must not exceed 100 ppb. Note that the national 1-hour standard is in units of parts per billion (ppb). California standards are in units of parts per million (ppm). To directly compare the national 1-hour standard to the California standards the units can be converted from ppb to ppm. In this case, the national standard of 100 ppb is identical to 0.100 ppm.

11. On June 2, 2010, a new 1-hour SO_2 standard was established and the existing 24-hour and annual primary standards were revoked. To attain the 1-hour national standard, the 3-year average of the annual 99th percentile of the 1-hour daily maximum concentrations at each site must not exceed 75 ppb. The 1971 SO_2 national standards (24-hour and annual) remain in effect until one year after an area is designated for the 2010 standard, except that in areas designated nonattainment for the 1971 standards, the 1971 standards remain in effect until implementation plans to attain or maintain the 2010 standards are approved.

    Note that the 1-hour national standard is in units of parts per billion (ppb). California standards are in units of parts per million (ppm). To directly compare the 1-hour national standard to the California standard the units can be converted to ppm. In this case, the national standard of 75 ppb is identical to 0.075 ppm.

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

13. The national standard for lead was revised on October 15, 2008 to a rolling 3-month average. The 1978 lead standard (1.5 $\mu g/m^3$ as a quarterly average) remains in effect until one year after an area is designated for the 2008 standard, except that in areas designated nonattainment for the 1978 standard, the 1978 standard remains in effect until implementation plans to attain or maintain the 2008 standard are approved.

14. In 1989, the ARB converted both the general statewide 10-mile visibility standard and the Lake Tahoe 30-mile visibility standard to instrumental equivalents, which are "extinction of 0.23 per kilometer" and "extinction of 0.07 per kilometer" for the statewide and Lake Tahoe Air Basin standards, respectively.

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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.
Respirable 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 aligned with the exposure period for the federal 8-hour 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. In December, 2012, the federal annual standard for PM-2.5 was reduced from 15 $\mu g/m^3$ to 12 $\mu g/m^3$ which matches the California AAQS. The severity of the basin's non-attainment status for PM-2.5 may be increased by this action and thus require accelerated planning for future PM-2.5 attainment.

In response to continuing evidence that ozone exposure at levels just meeting federal clean air standards is demonstrably unhealthful, EPA had proposed a further strengthening of the 8-hour standard. A new 8-hour ozone standard was adopted in 2015 after extensive analysis and public input. The adopted national 8-hour ozone standard is 0.07 ppm which matches the current California standard. It will require three years of ambient data collection, then 2 years of non-attainment findings and planning protocol adoption, then several years of plan development and approval. Final air quality plans for the new standard are likely to be adopted around 2022. Ultimate attainment of the new standard in ozone problem areas such as Southern California might be after 2025.

In 2010 a new federal one-hour primary standard for nitrogen dioxide (NO_2) was adopted. This standard is more stringent than the existing state standard. Based upon air quality monitoring data in the South Coast Air Basin, the California Air Resources Board has requested the EPA to designate the basin as being in attainment for this standard. The federal standard for sulfur dioxide (SO_2) was also recently revised. However, with minimal combustion of coal and mandatory use of low sulfur fuels in California, SO_2 is typically not a problem pollutant.

BASELINE AIR QUALITY

Long-term air quality monitoring is carried out by the South Coast Air Quality Management District (SCAQMD) at various monitoring stations. There are no nearby stations that monitor the full spectrum of pollutants. Ozone, carbon monoxide, PM-2.5 and nitrogen oxides are monitored at the Pico Rivera facility, while 10-micron diameter particulate matter (PM-10) is measured at the Azusa station. Table 3 summarizes the last four years of monitoring data from a composite of these data resources. The following conclusions can be drawn from this data:

a. Photochemical smog (ozone) levels occasionally exceed standards. The 8-hour state ozone standard as well as the 1-hour state standard have been exceeded on less than two percent of all days in the past four years. The 8-hour federal standard has been exceeded on less than one percent of days for the same period. 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.

b. Measurements of carbon monoxide have shown extremely low baseline levels in comparison to the most stringent one- and eight-hour standards.

c. Respirable dust (PM-10) levels exceed the state standard on approximately 14 percent of measurement days in the last four years, but the less stringent federal PM-10 standard has not been violated once for the same period. Year to year fluctuations of overall maximum 24-hour PM-10 levels seem to follow no discernable trend.

d. A substantial fraction of PM-10 is comprised of ultra-small diameter particulates capable of being inhaled into deep lung tissue (PM-2.5). There have been only three violations of the maximum 24-hour concentration of all measurement days in the last four years. PM-2.5 can be an occasional air quality concern in the project area.

Although complete attainment of every clean air standard is not yet imminent, extrapolation of the steady improvement trend suggests that such attainment could occur within the reasonably near future.

Table 3
Air Quality Monitoring Summary (2016-2019)
(Number of Days Standards Were Exceeded, and
Maximum Levels During Such Violations)

Pollutant/Standard	2016	2017	2018	2019
1-Hour > 0.09 ppm (S)	9	7	3	5
8-Hour > 0.07 ppm (S)	6	9	5	7
8- Hour > 0.075 ppm (F)	2	4	2	3
Max. 1-Hour Conc. (ppm)	0.11	0.12	0.12	0.108
Max. 8-Hour Conc. (ppm)	0.08	0.09	0.08	0.09
Carbon Monoxide				
1-Hour > 20. ppm (S)	0	0	0	0
1-Hour > 9. ppm (S, F)	0	0	0	0
Max 8-Hour Conc. (ppm)	1.7	2.2	1.8	1.9
Nitrogen Dioxide				
1-Hour > 0.18 ppm (S)	0	0	0	0
Max. 1-Hour Conc. (ppm)	0.06	0.07	0.08	0.06
Respirable Particulates (PM-10)				
24-Hour > 50 $\mu g/m^3$ (S)	12/60	6/55	10/60	4/61
24-Hour > 150 $\mu g/m^3$ (F)	0/60	0/55	060	0/61
Max. 24-Hr. Conc. ($\mu g/m^3$)	41.	83.	78.	82.
Fine Particulates (PM-2.5)				
24-Hour > 35 $\mu g/m^3$ (F)	2/120	1/119	0/133	0/119
Max. 24-Hr. Conc. ($\mu g/m^3$)	46.6	49.5	35.4	29.6

S=State Standard
F=Federal Standard
Source: South Coast AQMD – Pico Rivera Air Monitoring Station for Ozone, CO, NOx and PM-2.5
Azusa Monitoring Station for PM-10
data: www.arb.ca.gov/adam/

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 Air Quality Management District (AQMD) adopted an updated clean air "blueprint" in August 2003. The 2003 Air Quality Management Plan (AQMP) was approved by the EPA in 2004. The 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 was to "slip" from 2010 to 2021. The updated attainment plan also includes strategies for ultimately meeting the federal PM-2.5 standard.

Because projected attainment by 2021 required control technologies that did not exist yet, the SCAQMD requested a voluntary "bump-up" from a "severe non-attainment" area to an "extreme non-attainment" designation for ozone. The extreme designation was to allow a longer time period for these technologies to develop. If attainment cannot be demonstrated within the specified deadline without relying on "black-box" measures, EPA would have been required to impose sanctions on the region had the bump-up request not been approved. In April 2010, the EPA approved the change in the non-attainment designation from "severe-17" to "extreme." This reclassification set a later attainment deadline (2024), but also required the air basin to adopt even more stringent emissions controls.

Table 4
South Coast Air Basin Emissions Forecasts (Emissions in tons/day)

Pollutant	2020[b]	2025[b]	2030[b]
NOx	289	266	257
VOC	393	393	391
PM-10	165	170	172
PM-2.5	68	70	71

[a]2015 Base Year.
[b]With current emissions reduction programs and adopted growth forecasts.
Source: California Air Resources Board, 2013 Almanac of Air Quality

In other air quality attainment plan reviews, EPA had disapproved part of the SCAB PM-2.5 attainment plan included in the AQMP. EPA stated that the current attainment plan relied on PM-

2.5 control regulations that had not yet been approved or implemented. It was expected that a number of rules that were pending approval would remove the identified deficiencies. If these issues were not resolved within the next several years, federal funding sanctions for transportation projects could result. The 2012 AQMP included in the current California State Implementation Plan (SIP) was expected to remedy identified PM-2.5 planning deficiencies.

The federal Clean Air Act requires that non-attainment air basins have EPA approved attainment plans in place. This requirement includes the federal one-hour ozone standard even though that standard was revoked almost ten years ago. There was no approved attainment plan for the one-hour federal standard at the time of revocation. Through a legal quirk, the SCAQMD is now required to develop an AQMP for the long since revoked one-hour federal ozone standard. Because the current SIP for the basin contains a number of control measures for the 8-hour ozone standard that are equally effective for one-hour levels, the 2012 AQMP was believed to satisfy hourly attainment planning requirements.

AQMPs are required to be updated every three years. The 2012 AQMP was adopted in early 2013. An updated AQMP was required for completion in 2016. The 2016 AQMP was adopted by the SCAQMD Board in March, 2017, and has been submitted the California Air Resources Board for forwarding to the EPA. The 2016 AQMP acknowledges that motor vehicle emissions have been effectively controlled and that reductions in NOx, the continuing ozone problem pollutant, may need to come from major stationary sources (power plants, refineries, landfill flares, etc.). The current attainment deadlines for all federal non-attainment pollutants are now as follows:

8-hour ozone (70 ppb)	2032
Annual PM-2.5 (12 $\mu g/m^3$)	2025
8-hour ozone (75 ppb)	2024 (old standard)
1-hour ozone (120 ppb)	2023 (rescinded standard)
24-hour PM-2.5 (35 $\mu g/m^3$)	2019

The key challenge is that NOx emission levels, as a critical ozone precursor pollutant, are forecast to continue to exceed the levels that would allow the above deadlines to be met. Unless additional stringent NOx control measures are adopted and implemented, ozone attainment goals may not be met.

The South Coast AQMD has initiated the development of the 2022 AQMP but it is still in development. The proposed project does not relate to the AQMP in that there are no specific air quality programs or regulations governing residential projects. Conformity with adopted plans, forecasts and programs relative to population, housing, employment and land use is the primary yardstick by which impact significance of planned growth is determined. 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

STANDARDS OF SIGNIFICANCE

Air quality impacts are considered "significant" if they cause clean air standards to be violated where they are currently met, or if they "substantially" 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 offers the following four 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. Results in a cumulatively considerable net increase of any criteria pollutants for which the project region is non-attainment under an applicable federal or state ambient air quality standard.
c. Exposes sensitive receptors to substantial pollutant concentrations.
d. 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 South Coast Air Basin (SCAB) for PM-10, an aggressive dust control program is required to control fugitive dust during project 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 significance of such emissions is based upon 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 air quality impact significance independent of chemical transformation processes. Projects with daily emissions that exceed any of the following emission thresholds are recommended by the SCAQMD to be considered significant under CEQA guidelines.

Table 5
Daily Emissions Thresholds

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.

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 adjacent to a proposed site 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. The residential uses along the southwestern project perimeter would be considered the closest sensitive receptors. The project has a 15-foot setback to the southwestern boundary. Only garages of these homes are immediately adjacent to the property line. The residential structures have an additional setback.

CONSTRUCTION ACTIVITY IMPACTS

CalEEMod was developed by the SCAQMD to provide a model by which to calculate both construction emissions and operational emissions from a variety of land use projects. It calculates both the daily maximum and annual average emissions for criteria pollutants as well as total or annual greenhouse gas (GHG) emissions.

Although exhaust emissions will result from on and off-site heavy equipment, the exact types and numbers of equipment will vary among contractors such that such emissions cannot be quantified with certainty. Estimated construction emissions were modeled using CalEEMod2016.3.2 to identify maximum daily emissions for each pollutant during project construction.

The proposed development, consisting of 83 multi-family dwelling units and a 2,400 square foot recreational community center. There will be approximately 195 parking spaces provided. These uses were modeled in CalEEMod2016.3.2. The modeled default prototype construction equipment fleet and schedule is indicated in Table 6 and is based on CalEEMod defaults for a project of this size with construction starting in the first quarter of 2022.

Table 6
Construction Activity Equipment Fleet

Phase Name and Duration	Equipment
Demolition (5 days)	1 Concrete Saw
	1 Dozer
	3 Loader/Backhoes
Grading (5 days)	1 Grader
	1 Dozer
	2 Loader/Backhoes
Construction (220 days)	1 Crane
	2 Forklifts
	1 Generator Set
	3 Welders
	1 Loader/Backhoe
Paving (10 days)	1 Paver
	4 Mixers
	1 Loader/Backhoe
	2 Rollers
	1 Paving Equipment
Painting (10 days)	1 Air Compressor

Utilizing this indicated equipment fleet shown in Tables 6 the following worst case daily construction emissions are calculated by CalEEMod and are listed in Table 7.

Table 7
Construction Activity Emissions
Maximum Daily Emissions (pounds/day)

Maximal Construction Emissions	ROG	NOx	CO	SO_2	PM-10	PM-2.5
2022	56.6	17.0	18.1	0.0	3.9	2.3
2023	56.6	1.3	2.4	0.0	0.3	0.1
SCAQMD Thresholds	75	100	550	150	150	55

Peak daily construction activity emissions are estimated to be well below SCAQMD CEQA thresholds with the mandatory watering of exposed dirt surfaces at least three times per day to minimize the generation of fugitive dust generation during grading.

Construction equipment exhaust contains carcinogenic compounds within the diesel exhaust particulates. The toxicity of diesel exhaust is evaluated relative to a 24-hour per day, 365 days per year, 70-year lifetime exposure. The SCAQMD does not generally require the analysis of construction-related diesel emissions relative to health risk due to the short period for which the majority of diesel exhaust would occur. Health risk analyses are typically assessed over a 9-, 30-,

or 70-year timeframe and not over a relatively brief construction period due to the lack of health risk associated with such a brief exposure.

LOCALIZED SIGNIFICANCE THRESHOLDS

The SCAQMD has developed analysis parameters to evaluate ambient air quality on a local level in addition to the more regional emissions-based thresholds of significance. These analysis elements are called Localized Significance Thresholds (LSTs). LSTs were developed in response to Governing Board's Environmental Justice Enhancement Initiative 1-4 and the LST methodology was provisionally adopted in October 2003 and formally approved by SCAQMD's Mobile Source Committee in February 2005.

Use of an LST analysis for a project is optional. For the proposed project, the primary source of possible LST impact would be during construction. LSTs are applicable for a sensitive receptor where it is possible that an individual could remain for 24 hours such as a residence, hospital or convalescent facility.

LST screening tables are available for 25, 50, 100, 200 and 500 meter source-receptor distances. For this project the nearest sensitive use is the adjacent residences to the southwest and therefore the most stringent 25-meter distance was selected for analysis.

LSTs are only applicable to the following criteria pollutants: oxides of nitrogen (NOx), carbon monoxide (CO), and particulate matter (PM-10 and PM-2.5). LSTs represent the maximum emissions from a project that are not expected to cause or contribute to an exceedance of the most stringent applicable federal or state ambient air quality standard, and are developed based on the ambient concentrations of that pollutant for each source receptor area and distance to the nearest sensitive receptor.

The SCAQMD has issued guidance on applying CalEEMod to LSTs. LST pollutant screening level concentration data is currently published for 1, 2 and 5 acre sites for varying distances. Since CalEEMod calculates construction emissions based on the number of equipment hours and the maximum daily soil disturbance activity possible for each piece of equipment, the following tables should be used to determine the maximum daily disturbed-acreage for comparison to LSTs.

Table 8
Maximum Daily Disturbed Acreage per Equipment Type

Equipment Type	Acres/8-hr-day
Crawler Tractor	0.5
Graders	0.5
Rubber Tired Dozers	0.5
Scrapers	1

Based on this table, the proposed project will result in 1.0 disturbed daily acre during peak construction grading activity:

(1 grader x 0.5 +1 dozer x 0.5= 1.0 acre disturbed).

The following thresholds and emissions in Table 9 are therefore determined (pounds per day):

Table 9
LST and Project Emissions (pounds/day)

LST 1.0 acres/25 meters East San Gabriel Valley	**CO**	**NOx**	**PM-10**	**PM-2.5**
Max On-Site Emissions	625	89	5	3
Project Emissions				
2022	18	17	4	2
2023	2	1	1	1

CalEEMod Output in Appendix

LSTs were compared to the maximum daily construction activities. As seen in Table 9, with mitigation, emissions meet the LST for construction thresholds. LST impacts are less-than-significant with mandatory dust suppression.

OPERATIONAL IMPACTS

The project would generate 680 daily trips using trip generation numbers provided by the project traffic consultant. Operational emissions were calculated using CalEEMod2016.3.2 for an assumed project build-out year of 2023 as a target for full occupancy. The operational impacts are shown in Table 10. As shown, operational emissions will not exceed applicable SCAQMD operational emissions CEQA thresholds of significance.

Table 10
Daily Operational Impacts

	Operational Emissions (lbs/day)					
Source	**ROG**	**NOx**	**CO**	**SO_2**	**PM-10**	**PM-2.5**
Area	*2.2	1.3	7.4	0.0	0.1	0.1
Energy	0.1	0.3	0.1	0.0	0.0	0.0
Mobile	1.3	6.5	17.8	0.1	4.8	1.3
Total	**3.6**	**8.1**	**25.3**	**0.1**	**4.9**	**1.4**
SCAQMD Threshold	55	55	550	150	150	55
Exceeds Threshold?	No	No	No	No	No	No

Source: CalEEMod2016.3.2 Output in Appendix
*assumes use of natural gas heaths for residential use

FREEWAY PROXIMITY IMPACTS

The California Air Resources Board (CARB) developed land use siting guidelines to minimize residential exposure to diesel particulate matter (DPM), a known carcinogen. These guidelines

recommend that new residences maintain a 500-foot setback from freeways and high volume arterials unless it is demonstrated that unacceptable levels of risk do not exist on a local scale. The closest point of the proposed project is within 470 feet of the nearest San Bernardino Freeway travel lanes.

The closest proposed residences are only marginally within the potential zone of impact. The CARB guidelines were developed more than ten years ago with diesel trucks becoming dramatically cleaner in the last decade. A health risk screening analysis was performed using conservative input parameters for this site. If the screening analysis predicted an acceptable level of DPM exposure risk, a more detailed health risk analysis (HRA) is not considered to be warranted. EPA's AERSCREEN dispersion model was applied to DPM emissions from 3,865 diesel trucks using the freeway each day. The model input/output and impact discussion are included in the appendix.

Over a 70-year lifetime, the average DPM emission factor is 0.018 grams per mile 30-year average 2020 to 2050). The EPA dispersion model predicts an excess individual cancer risk of 2.022 in a million at the closest proposed residence. If this risk is adjusted to account for greater exposure sensitivity among infants and young children, the screening level risk becomes 3.437 in a million. This value is less than the ten in a million-significance threshold recommended by the SCAQMD in its CEQA Air Quality Handbook. Freeway proximity to the proposed project is not a citing issue.

CONSTRUCTION EMISSIONS MITIGATION

Construction activities are not anticipated to cause dust emissions to exceed SCAQMD CEQA thresholds. Nevertheless, mandatory dust control measures are required for use because of the non-attainment status of the air basin and proximity of adjacent residential uses. Recommended mitigation includes:

Fugitive Dust Control

- Apply soil stabilizers or moisten inactive areas.
- Prepare a high wind dust control plan.
- Address previously disturbed areas if subsequent construction is delayed.
- Water exposed surfaces as needed to avoid visible dust leaving the construction site (typically 2-3 times/day).
- Cover all stock piles with tarps at the end of each day or as needed.
- Provide water spray during loading and unloading of earthen materials.
- Minimize in-out traffic from construction zone
- Cover all trucks hauling dirt, sand, or loose material and require all trucks to maintain at least two feet of freeboard
- Sweep streets daily if visible soil material is carried out from the construction site

Similarly, ozone precursor emissions (ROG and NOx) are calculated to be below SCAQMD CEQA thresholds. However, because of the regional non-attainment for photochemical smog, the use of reasonably available control measures for diesel exhaust is recommended. Combustion emissions control includes:

Exhaust Emissions Control

- Utilize well-tuned off-road construction equipment.
- Establish a preference for contractors using Tier 3 or better heavy equipment.
- Enforce 5-minute idling limits for both on-road trucks and off-road equipment.

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 in some parts of the infrared spectrum. The principal greenhouse gases (GHGs) are carbon dioxide, methane, nitrous oxide, ozone, and water vapor. For purposes of planning and regulation, Section 15364.5 of the California Code of Regulations defines GHGs to include carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons and sulfur hexafluoride. 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. 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, to be achieved 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. Maximum GHG reductions are expected to derive from increased vehicle fuel efficiency, from greater use of renewable energy and from increased structural energy efficiency. Additionally, through the California Climate Action Registry (CCAR now called the Climate Action Reserve), 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.

THRESHOLDS OF SIGNIFICANCE

In response to the requirements of SB97, the State Resources Agency developed guidelines for the treatment of GHG emissions under CEQA. These new guidelines became state laws as part of Title 14 of the California Code of Regulations in March, 2010. The CEQA Appendix G guidelines were modified to include GHG as a required analysis element. A project would have a potentially significant impact if it:

- Generates GHG emissions, directly or indirectly, that may have a significant impact on the environment, or,

- Conflicts with an applicable plan, policy or regulation adopted to reduce GHG emissions.

Section 15064.4 of the Code specifies how significance of GHG emissions is to be evaluated. The process is broken down into quantification of project-related GHG emissions, making a determination of significance, and specification of any appropriate mitigation if impacts are found to be potentially significant. At each of these steps, the new GHG guidelines afford the lead agency with substantial flexibility.

Emissions identification may be quantitative, qualitative or based on performance standards. CEQA guidelines allow the lead agency to "select the model or methodology it considers most appropriate." The most common practice for transportation/combustion GHG emissions quantification is to use a computer model such as CalEEMod, as was used in the ensuing analysis.

The significance of those emissions then must be evaluated; the selection of a threshold of significance must take into consideration what level of GHG emissions would be cumulatively considerable. The guidelines are clear that they do not support a zero net emissions threshold. If the lead agency does not have sufficient expertise in evaluating GHG impacts, it may rely on thresholds adopted by an agency with greater expertise.

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 (MT) CO_2 equivalent/year. In September 2010, the Working Group released revisions which recommended a threshold of 3,000 MT CO_2e for all land use types. This 3,000 MT/year recommendation has been used as a guideline for this analysis. In the absence of an adopted numerical threshold of significance, project related GHG emissions in excess of the guideline level are presumed to trigger a requirement for enhanced GHG reduction at the project level.

PROJECT RELATED GHG EMISSIONS GENERATION

Construction Activity GHG Emissions

The build-out timetable for this project is assumed to be less than two years. During project construction, the CalEEMod2016.3.2 computer model predicts that the construction activities will generate the annual CO_2e emissions identified in Table 11.

Table 11
Construction Emissions (Metric Tons CO_2e)

	CO_2e
Year 2022	403.1
Year 2023	1.3
Total	404.4
Amortized	13.5

*CalEEMod Output provided in appendix

SCAQMD GHG emissions policy from construction activities is to amortize emissions over a 30-year lifetime. The amortized level is also provided. GHG impacts from construction are considered individually less-than-significant.

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 the CalEEMod2016.3.2 output files found in the appendix of this report.

The total operational and annualized construction emissions are identified in Table 12.

Table 12
Operational Emissions

Consumption Source	MT $CO_2(e)$ tons/year
Area Sources*	19.5
Energy Utilization	186.7
Mobile Source	973.1
Solid Waste Generation	26.1
Water Consumption	43.1
Annualized Construction	13.5
Total	**1262.0**
Guideline Threshold	3,000

*assumes natural gas hearths for residential use

This total is below the guideline threshold of 3,000 MTY CO_2e threshold suggested by the SCAQMD.

CONSISTENCY WITH GHG PLANS, PROGRAMS AND POLICIES

The City of El Monte has not yet developed a Greenhouse Gas Reduction Plan. The City has not adopted regulations for the purpose of reducing GHGs applicable to this project. The applicable GHG planning document is AB-32. As discussed above, the project is not expected to result in a significant increase in GHG emissions. As a result, the project results in GHG emissions below the recommended SCAQMD threshold. Therefore, the project would not conflict with any applicable plan, policy, or regulation to reduce GHG emissions.

APPENDIX

CALEEMOD2016.3.2 COMPUTER MODEL OUTPUT

HEALTH RISK SCREENING ANALYSIS

HEALTH RISK SCREENING ANALYSES

VALLEY BOULEVARD MULTI-FAMILY RESIDENTIAL PROJECT

EL MONTE, CALIFORNIA

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Date:

August 9, 2021

Project No.: P18-038 AQ

INTRODUCTION

On April 28, 2005, the California Air Resources Board approved the adoption of a handbook entitled "Proposed Air Quality and Land Use Handbook: A Community Health Perspective." A key recommendation in the handbook was that new sensitive land uses should not be sited within 500 feet of a freeway. For freeway proximity, the health risk derives primarily from diesel particulate matter (DPM). DPM emissions from trucks have decreased substantially in the last ten years since the handbook was released.

Health risk as a dose:response relationship is assumed to occur over a 70-year lifetime. The estimated risk associated with residential proximity to roadways thus entails a projection of diesel exhaust characteristics between now and 2090.

One corner of the proposed project site is within 500 feet of the I-10 Freeway. Most of the site is outside the 500-foot setback recommendation. If the site were squarely within the ARB's risk avoidance zone, a site-specific health risk assessment (HRA) would be an appropriate requirement for discretionary approvals. However, because the site is only marginally within that zone and because those recommendations are based upon emissions data that is no longer completely applicable, a health risk screening (HRS) approach was undertaken. If the HRS can demonstrate an acceptable level of risk with appropriately conservative assumptions, a full-brown HRA would not be necessary for the proposed project.

HEALTH RISK SCREENING ASSESSMENT FROM FREEWAY TRAFFIC

Diesel exhaust is an identified carcinogen. Cancer risk increases with intensity and duration of exposure. In the absence of a completely safe exposure level, the SCAQMD has adopted a prudent risk avoidance level based upon the overall risk experience in a lifetime.

The risk level of 10 in a million under conservative exposure assumptions (never leaving the same spot and never going inside a structure in an entire lifetime) is considered to be less-than-significant (SCAQMD CEQA Manual, 1993). A risk of less than one in a million is considered completely negligible.

The individual cancer risk to the proposed development located near to the I-10 freeway in El Monte was calculated using an EPA screening level dispersion model which predicts the downwind concentration of DPM to which residential receptors could be exposed. The AERSCREEN air dispersion model was used to evaluate concentrations of DPM and PM2.5 from diesel exhaust.

A DPM exposure was calculated for truck exhaust emissions. Truck volumes were obtained from the California DOT Traffic Census website (http://traffic-counts.dot.ca.gov/). The study counted 3,865 heavy diesel trucks per day on the segment of the I-10 adjacent to the project site in 2016. An annual (70 year) average exposure was determined assuming state and national DPM control programs are presumed to increase in effectiveness as older, "dirtier" trucks wear out. DPM emissions from trucks are shown to gradually decline in the future according to EMFAC2017, the California Air Resources Board tool for estimating emissions from on-road vehicles which was

used to calculate vehicular emissions associated with heavy duty diesel trucks. EMFAC2011 emissions calculations only extend to 2050. DPM emissions were shown to gradually decline between 2020 and 2050, and then assumed to remain at the 2050 level until 2090. An average PM-2.5 emission rate of 0.018 grams per mile was assumed to be a reasonable average for the 70-year time period. The risk zone for any resident of the proposed El Monte project is estimated to extend for 500 feet in either direction for a 1,000 foot impact zone.

Therefore, the DPM emission rate (lbs/hour) is calculated as follows:

3,865 trucks/day x 0.018 grams/mile x 453 grams/lb x .2 mile x 1 day/24 hours = .00013 lbs/hour

As shown in the attached AERSCREEN output file, the maximum one hour PM-2.5 concentration is calculated to be 0.0674 $\mu g/m^3$. The hourly to annual scaling factor is 0.1. AERSCREEN output thus indicates that freeway exposure will produce a maximum annual DPM concentration of 0.00674 $\mu g/m^3$. The excess individual cancer risk factor for DPM exposure is approximately 300 in a million per 1 $\mu g/m^3$ of lifetime exposure. Therefore, the maximal risk would be 300 x 0.00674 $\mu g/m^3$ = 2.022 in a million. The maximum individual cancer risk would be below the 10 in a million significance threshold.

The California Office of Environmental Health Hazard Assessment (OEHHA) guidelines use a weighted multiplier of 1.7 to account for increased sensitivity for infants and adolescents during their assumed 70 year life cycle. The resulting risk of 3.437 in a million would still be below the 10 in a million-significance threshold. Even with ultra-conservative exposure assumptions (never leaving the home, never inside), the calculated risk is well below the ten in a million significance level.

HEALTH RISK FROM VALLEY BOULEVARD

According to the project traffic analysis and data from the City of El Monte[1], Valley Boulevard currently carries around 31-32,000 vehicles per day. Without knowledge of the quantity of diesel trucks, a qualitative health risk assessment is not possible. However, as shown on the attachments, that volume is consistent with much of El Monte, and many roadways in Southern California are subject to similar, or higher traffic counts. The California Air Resources Board, in 1996, considered an arterial roadway of 50,000 ADT to be a concern for toxic air emissions. Motor vehicles, especially diesel-powered, have become substantially cleaner in the last 25 years since that guidance was promulgated. Local traffic volumes on Valley Blvd. are thus far below any potential level of health risk to the adjacent community.

[1] https://www.elmonteca.gov/DocumentCenter/View/1876/Traffic_Count_Map-El-Monte?bidId=

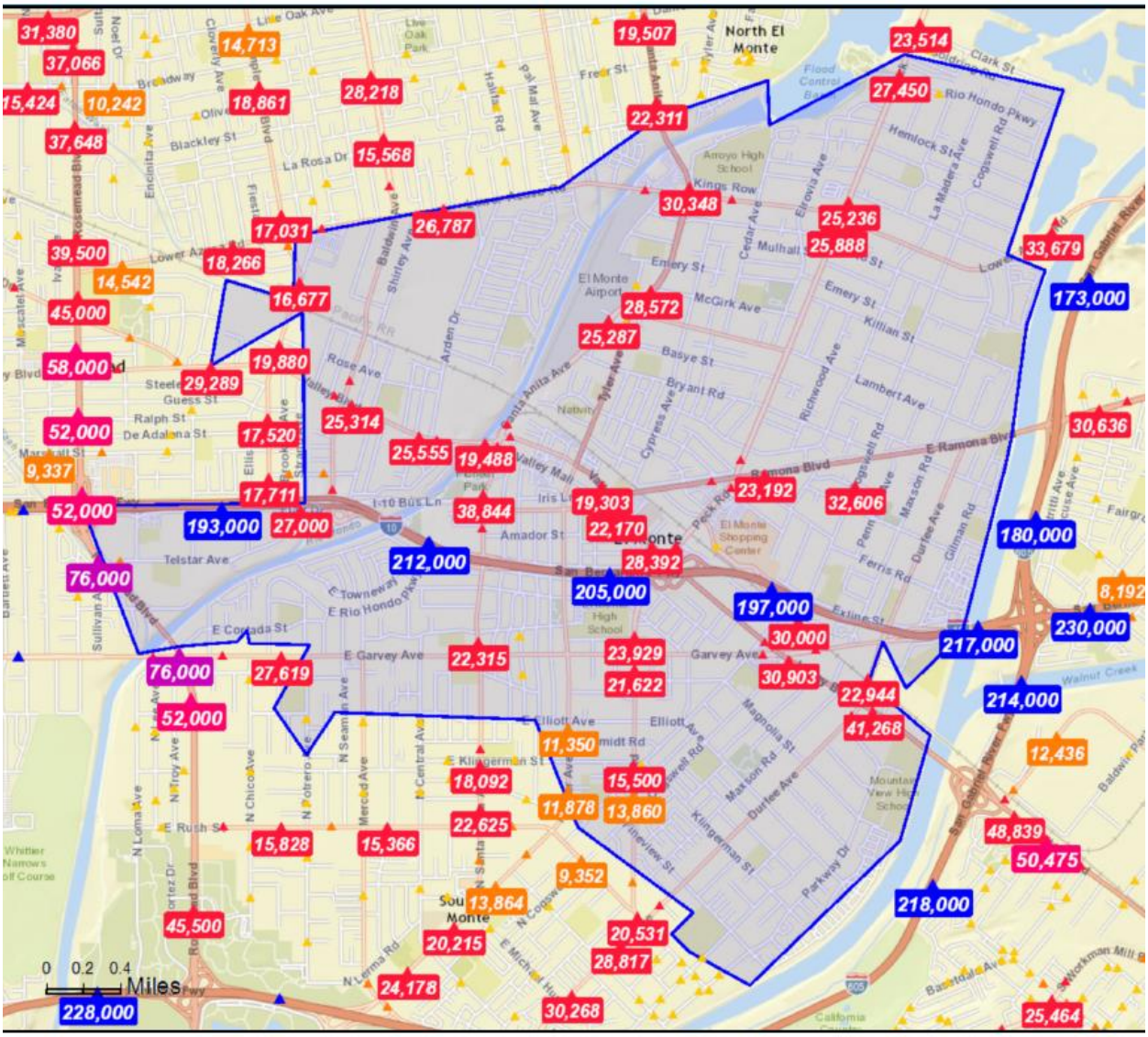
Attachments

- **Valley Boulevard Traffic Counts**
- **Aerscreen Output**

El Monte Traffic Counts

El Monte City, CA
El Monte City, CA (0622230)
Geography: Place

Prepared by Es



Average Daily Traffic Volume

- ***Up to 6,000 vehicles per day***
- ***6,001 - 15,000***
- ***15,001 - 30,000***
- ***30,001 - 50,000***
- ***50,001 - 100,000***
- ***More than 100,000 per day***

Source: ©2015 Market Planning Solutions, Inc.

```
 AERSCREEN 16216 / AERMOD 16216r
04/29/19

13:40:48

 TITLE: El Monte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 ******************************  AREA PARAMETERS
****************************
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 SOURCE EMISSION RATE:         0.164E-03 g/s             0.130E-02 lb/hr

 AREA EMISSION RATE:           0.104E-07 g/(s-m2)        0.823E-07 lb/(hr-
m2)
 AREA HEIGHT:                       3.05 meters              10.00 feet
 AREA SOURCE LONG SIDE:           304.80 meters            1000.00 feet
 AREA SOURCE SHORT SIDE:           51.82 meters             170.00 feet
 INITIAL VERTICAL DIMENSION:        4.57 meters              15.00 feet
 RURAL OR URBAN:                   URBAN
 POPULATION:                       50000

 INITIAL PROBE DISTANCE =          5000. meters             16404. feet



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 ************************  BUILDING DOWNWASH PARAMETERS
***********************
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                BUILDING DOWNWASH NOT USED FOR NON-POINT SOURCES


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----
 ***************************  FLOW SECTOR ANALYSIS
***************************
                  25 meter receptor spacing: 1. meters - 5000. meters
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    MAXIMUM  IMPACT  RECEPTOR

    Zo        SURFACE   1-HR CONC  RADIAL  DIST   TEMPORAL
    SECTOR    ROUGHNESS  (ug/m3)    (deg)   (m)    PERIOD
   -----------------------------------------------------
```

```
      1*       1.000    0.6738E-01   0   150.0     WIN
 * = worst case diagonal

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----
 **********************  MAKEMET METEOROLOGY PARAMETERS
********************
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----

 MIN/MAX TEMPERATURE:    249.8 / 310.9 (K)

 MINIMUM WIND SPEED:       2.5 m/s

 ANEMOMETER HEIGHT:     10.000 meters

 SURFACE CHARACTERISTICS INPUT: AERMET SEASONAL TABLES

 DOMINANT SURFACE PROFILE: Urban
 DOMINANT CLIMATE TYPE:    Average Moisture
 DOMINANT SEASON:          Winter

 ALBEDO:                  0.35
 BOWEN RATIO:             1.50
 ROUGHNESS LENGTH:       1.000 (meters)

 SURFACE FRICTION VELOCITY (U*) NOT ADUSTED


        METEOROLOGY CONDITIONS USED TO PREDICT OVERALL MAXIMUM IMPACT
        -------------------------------------------------------------

  YR MO DY JDY HR
  -- -- -- --- --
  10 01 01   1 01

     H0     U*     W*  DT/DZ ZICNV ZIMCH  M-O LEN    Z0  BOWEN ALBEDO  REF
WS
  - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- -
 -37.34  0.346 -9.000  0.020 -999.  468.     85.2 1.000   1.50   0.35
2.50

     HT  REF TA     HT
 - - - - - - - - - - -
   10.0   249.8    2.0

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 ************************ AERSCREEN AUTOMATED DISTANCES
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                   OVERALL MAXIMUM CONCENTRATIONS BY DISTANCE
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DIST (m)	MAXIMUM 1-HR CONC (ug/m3)	DIST (m)	MAXIMUM 1-HR CONC (ug/m3)
1.00	0.6147E-01	2525.00	0.3888E-03
25.00	0.6274E-01	2550.00	0.3835E-03
50.00	0.6399E-01	2575.00	0.3784E-03
75.00	0.6560E-01	2600.00	0.3735E-03
100.00	0.6631E-01	2625.00	0.3686E-03
125.00	0.6689E-01	2650.00	0.3639E-03
150.00	0.6738E-01	2675.00	0.3592E-03
175.00	0.3724E-01	2700.00	0.3547E-03
200.00	0.2302E-01	2725.00	0.3502E-03
225.00	0.1555E-01	2750.00	0.3458E-03
250.00	0.1253E-01	2775.00	0.3415E-03
275.00	0.1044E-01	2800.00	0.3374E-03
300.00	0.8924E-02	2825.00	0.3333E-03
325.00	0.7765E-02	2850.00	0.3292E-03
350.00	0.6849E-02	2875.00	0.3253E-03
375.00	0.6112E-02	2900.00	0.3215E-03
400.00	0.5506E-02	2925.00	0.3177E-03
425.00	0.5000E-02	2950.00	0.3140E-03
450.00	0.4572E-02	2975.00	0.3104E-03
475.00	0.4206E-02	3000.00	0.3068E-03
500.00	0.3889E-02	3025.00	0.3033E-03
525.00	0.3611E-02	3050.00	0.2999E-03
550.00	0.3367E-02	3075.00	0.2966E-03
575.00	0.3151E-02	3100.00	0.2933E-03
600.00	0.2958E-02	3125.00	0.2901E-03
625.00	0.2785E-02	3150.00	0.2869E-03
650.00	0.2629E-02	3174.99	0.2838E-03
675.00	0.2488E-02	3200.00	0.2808E-03
700.00	0.2359E-02	3225.00	0.2778E-03
725.00	0.2242E-02	3250.00	0.2748E-03
750.00	0.2134E-02	3275.00	0.2720E-03
775.00	0.2036E-02	3300.00	0.2691E-03
800.00	0.1945E-02	3325.00	0.2664E-03
825.00	0.1860E-02	3350.00	0.2636E-03
850.00	0.1782E-02	3375.00	0.2610E-03
875.00	0.1710E-02	3400.00	0.2583E-03
900.00	0.1643E-02	3425.00	0.2557E-03
925.00	0.1580E-02	3450.00	0.2532E-03
950.00	0.1521E-02	3475.00	0.2507E-03
975.00	0.1466E-02	3500.00	0.2482E-03
1000.00	0.1414E-02	3525.00	0.2458E-03
1025.00	0.1365E-02	3550.00	0.2434E-03
1050.00	0.1320E-02	3575.00	0.2411E-03
1075.00	0.1276E-02	3600.00	0.2388E-03
1100.00	0.1236E-02	3625.00	0.2366E-03
1125.00	0.1197E-02	3650.00	0.2343E-03
1150.00	0.1161E-02	3675.00	0.2321E-03
1175.00	0.1126E-02	3700.00	0.2300E-03
1200.00	0.1093E-02	3725.00	0.2279E-03
1225.00	0.1062E-02	3750.00	0.2258E-03

1250.00	0.1032E-02	3775.00	0.2237E-03
1275.00	0.1004E-02	3800.00	0.2217E-03
1300.00	0.9769E-03	3825.00	0.2197E-03
1325.00	0.9512E-03	3850.00	0.2178E-03
1350.00	0.9266E-03	3875.00	0.2158E-03
1375.00	0.9031E-03	3900.00	0.2139E-03
1400.00	0.8807E-03	3925.00	0.2121E-03
1425.00	0.8591E-03	3950.00	0.2102E-03
1450.00	0.8385E-03	3975.00	0.2084E-03
1475.00	0.8187E-03	4000.00	0.2066E-03
1500.00	0.7998E-03	4025.00	0.2049E-03
1525.00	0.7815E-03	4050.00	0.2031E-03
1550.00	0.7640E-03	4075.00	0.2014E-03
1575.00	0.7472E-03	4100.00	0.1998E-03
1600.00	0.7310E-03	4125.00	0.1981E-03
1625.00	0.7153E-03	4150.00	0.1965E-03
1650.00	0.7003E-03	4175.00	0.1948E-03
1675.00	0.6857E-03	4200.00	0.1933E-03
1700.00	0.6718E-03	4225.00	0.1917E-03
1725.00	0.6583E-03	4250.00	0.1901E-03
1750.00	0.6452E-03	4275.00	0.1886E-03
1775.00	0.6326E-03	4300.00	0.1871E-03
1800.00	0.6205E-03	4325.00	0.1856E-03
1825.00	0.6087E-03	4350.00	0.1842E-03
1850.00	0.5973E-03	4375.00	0.1827E-03
1875.00	0.5863E-03	4400.00	0.1813E-03
1900.00	0.5756E-03	4425.00	0.1799E-03
1924.99	0.5653E-03	4449.99	0.1785E-03
1950.00	0.5553E-03	4475.00	0.1771E-03
1975.01	0.5455E-03	4500.00	0.1758E-03
2000.01	0.5361E-03	4525.00	0.1745E-03
2025.00	0.5270E-03	4550.00	0.1731E-03
2050.00	0.5181E-03	4575.00	0.1718E-03
2075.00	0.5095E-03	4600.00	0.1706E-03
2100.00	0.5009E-03	4625.00	0.1693E-03
2125.00	0.4928E-03	4650.00	0.1681E-03
2150.00	0.4849E-03	4675.00	0.1668E-03
2175.00	0.4772E-03	4700.00	0.1656E-03
2200.00	0.4698E-03	4725.00	0.1644E-03
2225.00	0.4625E-03	4750.00	0.1632E-03
2250.00	0.4555E-03	4775.00	0.1620E-03
2275.00	0.4486E-03	4800.00	0.1609E-03
2300.00	0.4419E-03	4825.00	0.1598E-03
2325.00	0.4354E-03	4850.00	0.1586E-03
2350.00	0.4290E-03	4875.00	0.1575E-03
2375.00	0.4228E-03	4900.00	0.1564E-03
2400.00	0.4168E-03	4925.00	0.1553E-03
2425.00	0.4109E-03	4950.00	0.1542E-03
2450.00	0.4052E-03	4975.00	0.1532E-03
2475.00	0.3996E-03	5000.00	0.1521E-03
2500.00	0.3941E-03		

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 **********************  AERSCREEN MAXIMUM IMPACT SUMMARY
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 3-hour, 8-hour, and 24-hour scaled
 concentrations are equal to the 1-hour concentration as referenced in
 SCREENING PROCEDURES FOR ESTIMATING THE AIR QUALITY
 IMPACT OF STATIONARY SOURCES, REVISED (Section 4.5.4)
 Report number EPA-454/R-92-019
 http://www.epa.gov/scram001/guidance_permit.htm
 under Screening Guidance

                      MAXIMUM      SCALED      SCALED      SCALED
SCALED
                       1-HOUR      3-HOUR      8-HOUR     24-HOUR
ANNUAL
   CALCULATION          CONC        CONC        CONC        CONC
CONC
    PROCEDURE         (ug/m3)     (ug/m3)     (ug/m3)     (ug/m3)
(ug/m3)
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 FLAT TERRAIN       0.6743E-01  0.6743E-01  0.6743E-01  0.6743E-01     N/A

 DISTANCE FROM SOURCE        153.00 meters



 IMPACT AT THE
 AMBIENT BOUNDARY   0.6147E-01  0.6147E-01  0.6147E-01  0.6147E-01     N/A

 DISTANCE FROM SOURCE          1.00 meters
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