4.2 AIR QUALITY

This section discusses the project's long-term operational effects and construction effects on air quality. Impacts related to global climate change are addressed in Section 4.5, *Greenhouse Gas Emissions*. Air quality modeling results and calculations are included in Appendix B to this EIR.

4.2.1 Setting

a. Climate and Meteorology. The semi-permanent high pressure system west of the Pacific coast strongly influences Southern California's weather. The Mediterranean climate of the region and the coastal influence produce moderate temperatures year round, with rainfall concentrated in the winter months. The sea breeze, which is the predominant wind, is a primary factor in creating this climate and typically flows from the west-southwest in a day-night cycle with speeds generally ranging from 5 to 15 miles per hour. The sea breeze maintains the cool temperatures and clean air circulation and generally prevents warmer inland temperatures and air pollution from permeating into the Palos Verdes Peninsula, except under certain seasonal conditions such as the offshore Santa Ana winds (City of Rancho Palos General Plan, 1975).

As a result of the climate and meteorology in the South Coast Air Basin, two types of temperature inversions (warmer air on top of colder air) are created in the area: subsidence and radiational (surface). The subsidence inversion is a regional effect created by the Pacific high in which air is heated as it is compressed when it flows from the high pressure area to the low pressure areas inland. This type of inversion generally forms at about 1,000 to 2,000 feet and can occur throughout the year, but is most evident during the summer months. Surface inversions are formed by the more rapid cooling of air near the ground during the night, especially during winter. This type of inversion is typically lower and is generally accompanied by stable air. Both types of inversions limit the dispersal of air pollutants within the regional airshed, with the more stable the air (low wind speeds, uniform temperatures), the lower the amount of pollutant dispersion. The primary air pollutant of concern during the subsidence inversions is ozone, while the greatest pollutant problems during winter inversions are carbon monoxide and nitrogen oxides.

b. Air Pollution Regulation. The federal and state Clean Air Acts regulate the emission of airborne pollutants from various mobile and stationary sources. The United States Environmental Protection Agency (USEPA) is the federal agency designated to administer air quality regulation, while the California Air Resources Board (CARB) is the state equivalent in the California Environmental Protection Agency. These agencies have established ambient air quality standards for the protection of public health. Local air quality management control and planning is provided through regional Air Pollution Control Districts (APCDs) established by the CARB for the 14 statewide air basins. The CARB is responsible for control of mobile emission sources, while the local APCDs are responsible for control of stationary sources and enforcing regulations. Rancho Palos Verdes is located within the South Coast Air Basin (Basin), which is under the jurisdiction of the South Coast Air Quality Management District (SCAQMD).

Federal and state standards have been established for six criteria pollutants, including ozone (O_3), carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), particulates less than

10 and 2.5 microns in diameter (PM_{10} and $PM_{2.5}$), and lead (Pb) (see Table 4.2-1). California has also set standards for sulfates, hydrogen sulfide, vinyl chloride, and visibility-reducing particles. The local air quality management agency is required to monitor air pollutant levels to assure that air quality standards are met and, in the event they are not, to develop strategies to meet these standards. Depending on whether the standards are met or exceeded, the local air basin is classified as being in "attainment" or "nonattainment."

Table 4.2-1
Current Federal and State Ambient Air Quality Standards

Pollutant	Federal Standard	California Standard
Ozone	0.075 ppm (8-hr avg)	0.09 ppm (1-hr avg) 0.07 ppm (8-hr avg)
Carbon Monoxide	9.0 ppm (8-hr avg) 35.0 ppm (1-hr avg)	9.0 ppm (8-hr avg) 20.0 ppm (1-hr avg)
Nitrogen Dioxide	0.10 ppm (1-hr avg) 0.053 ppm (annual avg)	0.18 ppm (1-hr avg) 0.030 ppm (annual avg)
Sulfur Dioxide	0.5 ppm (3-hr avg) 0.075 ppm (1-hr avg)	0.04 ppm (24-hr avg) 0.25 ppm (1-hr avg)
Lead	1.5 $\mu g/m^3$ (3-month avg)	1.5 $\mu g/m^3$ (30-day avg)
Particulate Matter (PM_{10})	150 $\mu g/m^3$ (24-hr avg)	20 $\mu g/m^3$ (annual avg) 50 $\mu g/m^3$ (24-hr avg)
Particulate Matter ($PM_{2.5}$)	15 $\mu g/m^3$ (annual avg) 35 $\mu g/m^3$ (24-hr avg)	12 $\mu g/m^3$ (annual avg)

ppm= parts per million
$\mu g/m^3$ = micrograms per cubic meter
Source: California Air Resources Board, www.arb.ca.gov/research/aaqs/aaqs2.pdf, *June 6, 2012.*

The general characteristics of the six criteria pollutants regulated by the Federal Clean Air Act and California Clean Air Act are described below.

Ozone. Ozone is produced by a photochemical reaction (triggered by sunlight) between nitrogen oxides (NO_X) and reactive organic gases (ROG). Nitrogen oxides are formed during the combustion of fuels, while reactive organic gases are formed during combustion and evaporation of organic solvents. Because ozone requires sunlight to form, it mostly occurs in concentrations considered serious between the months of April and October. Ozone is a pungent, colorless, toxic gas with direct health effects on humans including respiratory and eye irritation and possible changes in lung functions. Groups most sensitive to ozone include children, the elderly, persons with respiratory disorders, and people who exercise strenuously outdoors.

Carbon Monoxide. Carbon monoxide is a local pollutant that is found in high concentrations only near the source. The major source of carbon monoxide, a colorless, odorless, poisonous gas, is automobile traffic. Elevated concentrations, therefore, are usually only found near areas of high traffic volumes. Carbon monoxide's health effects are related to its affinity for hemoglobin in the blood. At high concentrations, carbon monoxide reduces the

amount of oxygen in the blood, causing heart difficulties in people with chronic diseases, reduced lung capacity and impaired mental abilities.

Nitrogen Dioxide. Nitrogen dioxide (NO_2) is a by-product of fuel combustion, with the primary source being motor vehicles and industrial boilers and furnaces. The principal form of nitrogen oxide produced by combustion is nitric oxide (NO), but NO reacts rapidly to form NO_2, creating the mixture of NO and NO_2 commonly called NO_X. Nitrogen dioxide is an acute irritant. A relationship between NO_2 and chronic pulmonary fibrosis may exist, and an increase in bronchitis in young children at concentrations below 0.3 parts per million (ppm) may occur. Nitrogen dioxide absorbs blue light and causes a reddish brown cast to the atmosphere and reduced visibility. It can also contribute to the formation of PM_{10} and acid rain.

Suspended Particulates. PM_{10} is particulate matter measuring no more than 10 microns in diameter, while $PM_{2.5}$ is fine particulate matter measuring no more than 2.5 microns in diameter. Suspended particulates are mostly dust particles, nitrates and sulfates. Both PM_{10} and $PM_{2.5}$ are by-products of fuel combustion and wind erosion of soil and unpaved roads, and are directly emitted into the atmosphere through these processes. Suspended particulates are also created in the atmosphere through chemical reactions. The characteristics, sources, and potential health effects associated with the small particulates (those between 2.5 and 10 microns in diameter) and fine particulates ($PM_{2.5}$) can be very different. The small particulates generally come from windblown dust and dust kicked up from mobile sources. The fine particulates are generally associated with combustion processes as well as being formed in the atmosphere as a secondary pollutant through chemical reactions. Fine particulate matter is more likely to penetrate deeply into the lungs and poses a health threat to all groups, but particularly to the elderly, children, and those with respiratory problems. More than half of the small and fine particulate matter that is inhaled into the lungs remains there. These materials can damage health by interfering with the body's mechanisms for clearing the respiratory tract or by acting as carriers of an absorbed toxic substance.

Sulfur Dioxide. Sulfur dioxide (SO_2) is one of a group of highly reactive gasses known as "oxides of sulfur." The largest sources of SO_2 emissions are from fossil fuel combustion at power plants (73%) and other industrial facilities (20%). Smaller sources of SO_2 emissions include industrial processes such as extracting metal from ore, and the burning of high sulfur containing fuels by locomotives, large ships, and non-road equipment. SO_2 is linked with a number of adverse effects on the respiratory system.

Lead. Lead is a toxic metal that can be emitted from industrial sources, leaded aviation gasoline, and lead-based paint. Lead may cause a range of health effects, from behavioral problems and learning disabilities, to seizures and death. The Basin is currently in compliance with federal and state standards for lead and monitoring is only conducted periodically since the primary sources of atmospheric lead (leaded gasoline and lead-based paint) are no longer an issue in the Basin.

c. Current Ambient Air Quality. The South Coast Air Basin includes the non-desert portions of Los Angeles and San Bernardino Counties, as well as Riverside and Orange Counties. The South Coast Air Basin is in non-attainment for the federal standards for ozone, PM_{10}, and $PM_{2.5}$ as well as lead in Los Angeles County only. In addition, the basin is in

nonattainment for the state standards for ozone, nitrogen dioxide, PM_{10}, and $PM_{2.5}$ as well as lead in Los Angeles County only (CARB, 2011). The non-attainment status is a result of several factors, the primary ones being the naturally adverse meteorological conditions that limit the dispersion and diffusion of pollutants, the limited capacity of the local air shed to eliminate pollutants from the air, and the number, type, and density of emission sources within the Basin.

The SCAQMD monitors air pollutant concentrations throughout the basin at various monitoring stations. The closest SCAQMD monitoring station to the project area is the 2425 Webster Street Monitoring Station in Long Beach. However, PM_{10} and $PM_{2.5}$ data is not available from the 2425 Webster Street monitoring station; therefore, data for these pollutants has been taken from the South Long Beach monitoring station. Ambient air quality obtained from these stations characterizes the air quality representative of the ambient air quality in the project area. Table 4.2-2 summarizes exceedances of the federal and/or state ambient air quality standards at these stations.

Table 4.2-2
Ambient Air Quality Data

Pollutant	2009	2010	2011
Ozone, ppm - Worst Hour	*	0.099	0.074
Number of days of State exceedances (>0.09 ppm)	*	1	0
Number of days of Federal exceedances (>0.12 ppm)	*	0	0
Carbon Monoxide, ppm - Worst 8 Hours	*	2.60	3.31
Number of days of State/Federal exceedances (>9.0 ppm)	*	0	0
Nitrogen Dioxide, ppm - Worst Hour	*	0.118	0.090
Number of days of State exceedances (>0.25 ppm)	*	0	0
Particulate Matter <10 microns, $\mu g/m^3$ Worst 24 Hours [b]	83.0	76.0	50.0
Number of samples of State exceedances (>50 $\mu g/m^3$)	5	2	0
Number of samples of Federal exceedances (>150 $\mu g/m^3$)	0	0	0
Particulate Matter <2.5 microns, $\mu g/m^3$ Worst 24 Hours [b]	55.8	33.7	42.0
Number of samples of Federal exceedances (>35 $\mu g/m^3$)	4	0	3

** Indicates was insufficient (or no) data available to determine the value*
Data sourced from 2425 Webster Avenue, Long Beach Monitoring Station unless otherwise noted
[b] Data sourced from South Long Beach Monitoring Station
Source: CARB, 2009,2010 & 2011 Annual Air Quality Data Summaries available at http://www.arb.ca.gov

As shown, the ozone concentration exceeded the state standard one time in 2010, and did not exceed the state standard in 2011. The PM_{10} concentration exceeded the state standards five times in 2009 and twice in 2010 and did not exceed the federal standards in 2009, 2010 or 2011. The $PM_{2.5}$ concentration exceeded federal standards on 4 days in 2009 and 3 days in 2011. No exceedances of either the state or federal standards for NO_2 or CO occurred at the 2425 Webster Station in the last two years.

d. Air Quality Management. Under state law, the SCAQMD is required to prepare a plan for air quality improvement for pollutants for which the District is in non-compliance. The SCAQMD has adopted an Air Quality Management Plan (AQMP) that provides a strategy for the attainment of state and federal air quality standards. SCAQMD updates the AQMP every three years. Each iteration of the plan is an update of the previous plan and has a 20-year horizon. SCAQMD staff is currently developing the 2012 AQMP, which is an update to the 2007 AQMP. The SCAQMD adopted the 2007 AQMP on June 1, 2007. It was updated March 4, 2011 to include revisions to $PM_{2.5}$ and Ozone State Implementation Plan for the Basin. The 2007 AQMP incorporates the revisions made in 2011.

The 2007 AQMP was prepared to ensure continued progress towards clean air and comply with state and federal requirements. This AQMP builds upon the approaches taken in the 2003 AQMP for the South Coast Air Basin for the attainment of the federal ozone air quality standard. This AQMP highlights the significant amount of reductions needed and the urgent need to identify additional strategies, especially in the area of mobile sources, to meet all federal criteria pollutant standards within the timeframes allowed under the Clean Air Act. New standards allow for a longer compliance schedule for federal fine particulates and 8-hour ozone but with more stringent PM_{10} and 1-hour ozone standards. The 2007 AQMP proposes attainment demonstration of the federal $PM_{2.5}$ standards through a more focused control of sulfur oxides (SOx), directly-emitted $PM_{2.5}$, and nitrogen oxides (NOx) supplemented with volatile organic compounds (VOC) by 2015. The 8-hour ozone control strategy builds upon the $PM_{2.5}$ strategy, augmented with additional NOx and VOC reductions to meet the standard by 2024 assuming a bump-up is obtained. Further, the 2007 AQMP aims to reduce mobile source emissions by discussing measures that would address the remaining air quality standard exceedances in the region. The 2007 AQMP is incorporated by reference and available to download at http://www.aqmd.gov/aqmp/07aqmp/index.html.

e. Sensitive Receptors in the Project Area. Ambient air quality standards have been established to represent the levels of air quality considered sufficient, with an adequate margin of safety, to protect public health and welfare. They are designed to protect that segment of the public most susceptible to respiratory distress, such as children under 14; the people over 65 years of age; persons engaged in strenuous work or exercise; and acutely ill and chronically ill persons, especially those with cardio-respiratory diseases. The majority of sensitive receptor locations are therefore residences, schools, and hospitals. Sensitive receptors in the project area include the Belmont Assisted Living Facility and the Mirandela Senior Apartments immediately to the west and east of the site, respectively. Also immediately west of the site is the David's School Preschool and Early Childhood Center, while to the south of the site a pre-school is located at the Peninsula Church. Multi-family homes are located further west of the site. In addition, once constructed the proposed project would itself be considered a sensitive receptor for air quality.

4.2.2 Impact Analysis

a. Methodology and Significance Thresholds. The analysis of air quality impacts conforms to the methodologies recommended in the SCAQMD's *CEQA Air Quality Handbook* (1993). The handbook includes thresholds for emissions associated with both construction and operation of proposed projects. It should be noted that the SCAQMD is in the process of

developing an "Air Quality Analysis Guidance Handbook" (Handbook) to replace the 1993 CEQA Air Quality Handbook, but this is not yet available.

The regional construction emissions associated with development of the proposed project were calculated using the CalEEMOD Version 2011.11.1 (2011) computer model developed for the SCAQMD by estimating the types and number of pieces of equipment that would be used onsite during construction. These construction emissions are analyzed using the regional thresholds established by the SCAQMD and published in the *CEQA Air Quality Handbook*. The construction activities associated with development would generate diesel emissions and dust. Construction equipment that would generate criteria air pollutants includes excavators, graders, dump trucks, and loaders. Some of this equipment would be used during both grading and construction. It is assumed that all of the construction equipment used would be diesel-powered.

Operational emissions associated with onsite development were estimated using the CalEEMOD computer model and the information provided in the traffic study prepared by LLG Engineers (June 2012). Operational emissions would be comprised of mobile source emissions, energy emissions, and area source emissions. Mobile source emissions are generated by the increase in motor vehicle trips to and from the project site associated with operation of onsite development. Emissions attributed to energy use include electricity and natural gas consumption for space and water heating and cooling. Area source emissions are generated by landscape maintenance equipment, consumer products, and architectural coating.

To determine whether a significant regional air quality impact would occur, the increase in emissions generated by the proposed project was compared with the SCAQMD's recommended regional thresholds for both construction and operational emissions.

Regional Thresholds. To determine whether a proposed project would have a significant impact to air quality, Appendix G of the *CEQA Guidelines* questions whether a project would:

a) Conflict with or obstruct implementation of the applicable air quality plan;
b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation;
c) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is in non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions that exceed quantitative thresholds for ozone precursors);
d) Expose sensitive receptors to substantial pollutant concentrations; or
e) Create objectionable odors affecting a substantial number of people.

As discussed in the Initial Study prepared for the proposed project (see Appendix A), onsite development would not generate objectionable odors that would affect a substantial number of people. No industrial, agricultural or other uses typically associated with objectionable odors are proposed. Therefore, it is unlikely that the proposed project would generate objectionable odors affecting a substantial number of people, and this impact category is not discussed further below.

A significant adverse air quality impact may occur when a project individually or cumulatively interferes with progress toward the attainment of the ozone standard by releasing emissions

that equal or exceed the established long term quantitative thresholds for pollutants, or causes an exceedance of a state or federal ambient air quality standard for any criteria pollutant. Table 4.2-3 provides the significance thresholds that have been recommended by the SCAQMD for projects within the South Coast Air Basin.

Table 4.2-3
SCAQMD Air Quality Significance Thresholds

Mass Daily Thresholds		
Pollutant	**Construction**	**Operation**
NO_x	100 lbs/day	55 lbs/day
VOC	75 lbs/day	55 lbs/day
PM_{10}	150 lbs/day	150 lbs/day
$PM_{2.5}$	55 lbs/day	55 lbs/day
SO_x	150 lbs/day	150 lbs/day
CO	550 lbs/day	550 lbs/day
Lead	3 lbs/day	3 lbs/day
Toxic Air Contaminants (TACs) and Odor Thresholds		
TACs (including carcinogens and non-carcinogens)	Maximum Incremental Cancer Risk ≥ 10 in 1 million Cancer Burden >0.5 excess cancer cases (in areas ≥ 1 in 1 million) Hazard Index ≥ 1.0 (project increment)	
Odor	Project creates an odor nuisance pursuant to SCAQMD Rule 402	
Ambient Air Quality for Criteria Pollutants [a]		
NO_2 1-hour average annual arithmetic mean	 0.18 ppm (state) 0.03 ppm (state) and 0.0534 ppm (federal)	
PM_{10} 24-hour average annual average	10.4 $\mu g/m^3$ (recommended for construction) [b] & 2.5 $\mu g/m^3$ (operation) 1.0 $\mu g/m^3$	
SO_2 1-hr average 24-hr average	0.25 ppm (state) & 0.075 ppm (federal – 99th percentile) 0.04 ppm (state)	
Sulfate 24-hour average	25 ug/m^3 (state)	
CO 1-hour average 8-hour average	SCAQMD is in attainment; project is significant if it causes or contributes to an exceedance of the following attainment standards: 20 ppm (state) 9.0 ppm (state/federal)	
Lead 30-day average Rolling 3-month average Quarterly average	 1.5 ug/m^3 (state) 0.15 ug/m^3 (federal) 1.5 ug/m^3 (federal)	

[a] *Ambient air quality thresholds for criteria pollutants based on SCAQMD Rule 1303, unless otherwise stated.*
[b] *Ambient air quality threshold based on SCAQMD Rule 403.*

KEY: ppm = parts per million; ug/m^3 = microgram per cubic meter; ≥ greater than or equal to

Source: SCAQMD, Revision March 2011, http://www.aqmd.gov/cega/hdbk.html

Localized Significance Thresholds. In addition to the above thresholds, the SCAQMD has developed Localized Significance Thresholds (LSTs) in response to the Governing Board's Environmental Justice Enhancement Initiative (1-4), which was prepared to update the *CEQA Air Quality Handbook*. LSTs were devised in response to concern regarding exposure of individuals to criteria pollutants in local communities. LSTs represent the maximum emissions from a project that will not cause or contribute to an air quality exceedance of the most stringent applicable federal or state ambient air quality standard at the nearest sensitive receptor, taking into consideration ambient concentrations in each source receptor area (SRA), project size, distance to the sensitive receptor, etc. However, LSTs only apply to emissions within a fixed stationary location, including idling emissions during both project construction and operation. LSTs have been developed for NO_x, CO, PM_{10} and $PM_{2.5}$. LSTs are not applicable to mobile sources such as cars on a roadway (SCAQMD, June 2003). As such, LSTs for operational emissions do not apply to onsite development as the majority of emissions would be generated by cars on the roadways.

LSTs have been developed for emissions within construction areas up to five acres in size. The SCAQMD provides lookup tables for project sites that measure one, two, or five acres. The proposed project is located in Source Receptor Area 3 (SRA 3). The project site is approximately 9.76 acres. However, this analysis assumes that there would be no more than five acres under active construction at one time, and relies on the five-acre LSTs for significance determinations. The five-acre LSTs provide a more stringent threshold for construction emissions compared to the analysis of emissions over a larger area.

According to the SCAQMD's publication, *Final Localized Significant Thresholds Methodology*, the use of LSTs is voluntary, to be implemented at the discretion of local agencies. LSTs for construction on a five-acre site are shown in Table 4.2-4.

Table 4.2-4 SCAQMD LSTs for Construction

Pollutant	Allowable emissions (lbs/day) as a function of receptor distance (meters) from the site boundary of a five-acre site				
	25	**50**	**100**	**200**	**500**
Gradual conversion of NO_x to NO_2	197	189	202	222	277
CO	1,796	1,984	2,608	4,119	9,852
PM_{10} *	15	46	60	88	171
$PM_{2.5}$ *	8	11	19	35	96

Source: http://www.aqmd.gov/CEQA/handbook/LST/appC.pdf, accessed June 7, 2012

** Significance Threshold of 10.4 mg/m^3*

b. Project Impacts and Mitigation Measures.

Impact AQ-1 Construction activity would generate on and off site air pollutant emissions that would exceed SCAQMD construction thresholds for NO_x and PM_{10}. On-site construction-related emissions would also exceed SCAQMD LSTs for PM_{10} and $PM_{2.5}$. However, with implementation of mitigation,

temporary construction impacts would be Class II, *significant but mitigable*.

Construction emissions estimates were generated for onsite development using CalEEMod software. Scheduling for the various construction phases was based on information provided by the applicant and it was assumed that construction would be completed by the Year 2015, i.e. over a span of approximately 24 months. The model considers that the grading phase of construction would occur over approximately 180 work days beginning in 2013. For the purposes of this analysis it was assumed that total grading would be approximately 145,000 cubic yards and that 143,000 cubic yards of soil would be exported and 2,000 cubic yards of soil would be imported. Construction equipment would include, but is not limited to, pavers, forklifts, graders, tractors, loaders, backhoes, dozers, and saws. Table 4.2-5 shows the estimated maximum daily on and off-site construction emissions during each of the construction years, i.e. 2013, 2014 and 2015, for each pollutant and compares the emissions to the SCAQMD maximum daily construction thresholds. Since the LSTs only apply to those emissions generated by onsite construction activities, such as emissions from onsite grading but not including hauling of excavated materials to and from the site, the relevant LSTs are compared to the estimated worst daily on-site construction emissions during the same years in Table 4.2-6.

Table 4.2-5
Maximum Daily Unmitigated On-Site and Off-Site Construction Air Pollutant Emissions

	Emissions (lbs/day)				
	ROG	**NOx**	**CO**	**PM_{10}**	**$PM_{2.5}$**
2013	12.79	108.21	71.65	188.19	14.55
2014	24.15	33.69	27.36	2.91	2.13
2015	24.11	2.63	2.52	0.38	0.23
Maximum lbs/day [a]	**24.15**	**108.21**	**71.65**	**188.19**	**14.55**
SCAQMD Thresholds	*75*	*100*	*550*	*150*	*55*
Threshold Exceeded?	**No**	**Yes**	**No**	**Yes**	**No**

Source: SCAQMD, Revision March 2011, http://www.aqmd.gov/ceqa/hdbk.html and CalEEMod;see Appendix B for calculations.
[a] Maximum daily on and off-site emissions based on highest in any construction year, i.e. 2013, 2014 or 2015.

Table 4.2-6
Maximum Daily Unmitigated On-Site Only Construction Air Pollutant Emissions

	Emissions (lbs/day)				
	ROG	**NOx**	**CO**	**PM_{10}**	**$PM_{2.5}$**
2013	9.90	79.99	45.35	22.06	13.87
2014	24.09	32.06	23.20	2.02	2.02
2015	24.05	2.57	1.90	0.22	0.22
Maximum lbs/day [a]	**24.09**	**79.99**	**45.35**	**22.06**	**13.87**

Table 4.2-6
Maximum Daily Unmitigated On-Site Only
Construction Air Pollutant Emissions

	Emissions (lbs/day)				
	ROG	**NOx**	**CO**	**PM_{10}**	**$PM_{2.5}$**
Local Significance Thresholds [b] (LSTs)	*n/a*	*197*	*1,796*	*15*	*8*
Threshold Exceeded?	**n/a**	**No**	**No**	**Yes**	**Yes**

Source: SCAQMD, Final Localized Significance Threshold Methodology, Revised July 2008 and CalEEMod; see Appendix B for calculations.
[a] Maximum daily on-site emissions based on highest in any construction year, i.e. 2013, 2014 or 2015.
[b] LSTs are for a five-acre project in SRA-3 within a distance of 82 feet (25 meters) from the site boundary

ROG would be emitted primarily during the architectural coating phase, which would last approximately 60 days (or 3 months) and would be undertaken as construction of the individual structures is completed. NO_x would be emitted primarily during the clearing and grubbing and rough grading phases, which would last approximately five months. Particulate matter emissions would also be emitted primarily during the rough grading phase, primarily during transport of cut soils from the site. As shown in Table 4.2-5, emissions of NO_x and PM_{10} would exceed the SCAQMD daily construction thresholds.

As noted previously, the LSTs only apply to those emissions generated by onsite construction activities and do not apply to offsite mobile emissions. The LSTs for sensitive receptors 82 feet (25 meters) from the project site were used to illustrate the closest receptors, which are the existing senior-housing complexes located immediately adjacent to the east and west of the site. As indicated in Table 4.2-6, emissions generated by temporary construction activities would be below the relevant LSTs for NO_x and CO during all construction years. Emissions generated by temporary construction activities would be above the LSTs for PM_{10} and $PM_{2.5}$. Therefore, impacts related to construction emissions would be potentially significant. The greatest emissions of particulate matter, from on-site construction activities only, would occur primarily during the initial clearing and grubbing phase, which would last approximately one month.

Mitigation Measures. The following mitigation measures are required to reduce emissions of NO_x during construction.

AQ-1(a) **Construction Equipment Controls.** The following shall be implemented during construction to minimize emissions of NO_x associated with diesel-fuelled construction equipment.

1. *All diesel construction equipment shall meet Interim Tier 4 EPA emission standards.*
2. *Construction contractors shall minimize equipment idling time throughout construction. Engines shall be turned off if idling would be for more than five minutes.*
3. *Equipment engines shall be maintained in good condition and in proper tune as per manufacturers' specifications.*
4. *The number of pieces of equipment operating simultaneously shall be minimized.*

5. *Construction contractors shall use alternatively fueled construction equipment (such as compressed natural gas, liquefied natural gas, or electric), when feasible.*
6. *The engine size of construction equipment shall be the minimum practical size.*
7. *Heavy-duty diesel-powered construction equipment manufactured after 1996 (with federally mandated clean diesel engines) shall be utilized wherever feasible.*
8. *During the smog season (May through October), the construction period should be lengthened so as to minimize the number of vehicles and equipment operating at the same time.*

City Municipal Code Section 17.56.020 requires that "All grading, landscaping and construction activities shall exercise effective dust control techniques, either through screening and/or watering. It is unlawful to cause or allow airborne dust or particles to leave a property and settle on, or otherwise impact in any way, surrounding properties." The following mitigation measures, which are consistent with City code Section 17.56.020, are required to reduce particulate matter emissions associated with site preparation and grading activities. These measures are also consistent with SCAQMD Rule 403, which identifies measures to reduce fugitive dust.

AQ-1(b) **Fugitive Dust Control Measures.** The following shall be implemented during construction to minimize fugitive dust emissions:

1. *All exposed, disturbed, and graded areas onsite shall be watered three times (3x) daily until completion of project construction to minimize the entrainment of exposed soil.*
2. *Pre-grading/excavation activities shall include watering the area to be graded or excavated before commencement of grading or excavating activities. Application of water (preferably reclaimed, if available) should penetrate sufficiently to minimize fugitive dust during grading activities.*
3. *Fugitive dust produced during grading, excavation, and construction activities shall be controlled by the following activities:*
   - *Trucks transporting material on and off the site must be tarped from the point of origin or must maintain at least one feet of freeboard.*
   - *All graded and excavated material, exposed soil areas, and active portions of the construction site, including unpaved on-site roadways, shall be treated to prevent fugitive dust. Treatment shall include, but not necessarily be limited to, periodic watering, application of environmentally-safe soil stabilization materials, and/or roll-compaction as appropriate. Watering shall be done as often as necessary and reclaimed water shall be used whenever possible.*
4. *Ground cover must be replaced in disturbed areas as quickly as possible.*
5. *During periods of high winds (i.e., wind speed sufficient to cause fugitive dust to affect adjacent properties), all clearing, grading, earth moving,*

and excavation operations shall be curtailed to the degree necessary to prevent fugitive dust from being an annoyance or hazard, either off-site or on-site.

6. *The contractor must provide adequate loading/unloading areas that limit track-out onto adjacent roadways through the utilization of wheel washing, rumble plates, or another method achieving the same intent.*
7. *Adjacent streets and roads shall be swept at least once per day, preferably at the end of the day, if visible soil material is carried over to adjacent streets and roads.*
8. *Personnel involved in grading operations, including contractors and subcontractors, shall wear respiratory protection in accordance with California Division of Occupational Safety and Health regulations.*
9. *All residential units located within 500 feet of the construction site must be sent a notice regarding the construction schedule of the proposed project. A sign legible at a distance of 50 feet must also be posted in a prominent and visible location at the construction site, and must be maintained throughout the construction process. All notices and the signs must indicate the dates and duration of construction activities, as well as provide a telephone number where residents can inquire about the construction process and register complaints.*
10. *Visible dust beyond the property line emanating from the project must be prevented to the maximum extent feasible.*
11. *Signs shall be posted on-site limiting construction traffic to 15 miles per hour or less.*
12. *Dust control requirements shall be shown on all grading plans.*
13. *These control techniques must be indicated in project specifications. Compliance with the measure shall be subject to periodic site inspections by the City.*

Significance After Mitigation. Implementation of mitigation measures AQ-1 a and b would reduce construction-related air emissions to below SCAQMD thresholds, including LSTs, as shown in tables 4.2-7 and 4.2-8. In particular, it is estimated that covering or tarping of vehicles travelling to and from the site would result in a 91% decrease in fugitive dust emissions associated with hauling excavated material from the site (SCAQMD, 2007).

While only NO_X and PM_{10} emissions would exceed thresholds, implementation of the required mitigation measures would also reduce the emission of ROG and $PM_{2.5}$. It should be noted that use of diesel construction equipment meeting Interim Tier 4 EPA emissions standards would result in an increase in construction-related CO emissions; however, these emissions would remain below the established significance threshold. Daily construction emissions for all criteria pollutants analyzed with implementation of mitigation measures are shown in Table 4.2-7.

Table 4.2-7
Total On and Off Site Construction Emissions After Mitigation Compared to SCAQMD Daily Emissions Thresholds

	Emissions (lbs/day)				
	ROG	**NOx**	**CO**	**PM_{10}**	**$PM_{2.5}$**
2013	7.72	78.73	311.78	21.03	4.57
2014	23.77	18.89	29.10	0.36	0.29
2015	23.77	1.30	2.45	0.03	0.02
Maximum lbs/day [a]	**23.77**	**78.73**	**311.78**	**21.03**	**4.57**
SCAQMD Thresholds	*75*	*100*	*550*	*150*	*55*
Exceeds Thresholds?	**No**	**No**	**No**	**No**	**No**

[a] *Maximum daily on and off-site emissions based on highest in any construction year, i.e. 2013, 2014 or 2015.*

Note 1. Maximum daily emissions account for the overlap of construction phases. These values represent the maximum emissions scenario. Maximum daily emissions would not occur each day of the construction period.

Note 2. The season with the highest emissions calculated for each pollutant was used. Winter emissions were used for all pollutants.

Source: CalEEMod calculations, see Appendix B

Table 4.2-8 shows the mitigated construction emissions compared to SCAQMD LSTs at a distance of 82 feet (25 meters). While only PM_{10} and $PM_{2.5}$ emissions exceeded the LSTs, mitigation measures would also reduce emissions of NOx. Again, use of diesel construction equipment meeting Interim Tier 4 EPA emissions standards would result in an increase in construction-related CO emissions but these would be below the applicable threshold in either case. The mitigated on-site construction emissions for all criteria pollutants analyzed with respect to LSTs are shown in Table 4.2-8.

Table 4.2-8
Total On-Site Construction Criteria Pollutant Emissions Compared to Localized Significance Thresholds

	Emissions (lbs/day)			
	NOx	**CO**	**PM_{10}**	**$PM_{2.5}$**
2013	24.02	301.06	6.93	3.89
2014	17.27	24.94	0.18	0.18
2015	1.24	1.83	0.01	0.1
Localized Significance Threshold	**197**	**1,796**	**15**	**8**
Threshold Exceeded?	**No**	**No**	**No**	**No**

Source: SCAQMD, October 2009, http://www.aqmd.gov/CEQA/handbook/LST/appC.pdf, accessed online June 2012, and CalEEMod calculations, see Appendix B.

As shown in Table 4.2-7, NO_x and PM_{10} emissions would be successfully mitigated below their respective SCAQMD daily emissions thresholds. Emissions of PM_{10} and $PM_{2.5}$ would also be mitigated well below their respective LSTs, as shown in Table 4.2-8. Therefore, with mitigation, impacts would be less than significant.

Impact AQ-2 Operation of the proposed project would generate criteria air pollutant emissions. However, regional emissions would not exceed SCAQMD operational significance thresholds. Therefore, operational impacts to regional air quality would be Class III, *less than significant*.

Long-term operational emissions associated with the proposed project are those attributed to vehicle trips (mobile emissions), the use of natural gas and electricity (energy emissions), and consumer products, architectural coatings, and landscape maintenance equipment (area emissions). CalEEMod was used to calculate emissions based on the land uses for the proposed project and the number of vehicle trips generated by the development. The trip generation rates calculated in the Traffic and Circulation Study prepared by LLG Engineers (June 2012) were used as inputs for the residential land use in CalEEMod. As shown in Table 4.2-9, overall emissions would not exceed SCAQMD thresholds. Therefore, operational impacts associated with the proposed project would be less than significant.

Table 4.2-9
Operational Emissions (lbs/day)

Emission Source	ROG	NO_x	CO	PM_{10}	$PM_{2.5}$
Area	3.77	0.06	5.11	0.10	0.10
Energy	0.05	0.39	0.17	0.03	0.03
Mobile	2.85	7.15	26.16	5.60	0.49
Total Emissions	**6.67**	**7.60**	**31.44**	**5.73**	**0.62**
SCAQMD Thresholds	*55*	*55*	*550*	*150*	*55*
Exceeds Threshold?	***No***	***No***	***No***	***No***	***No***

Source: CalEEMod calculations, see Appendix B.

As noted previously, SCAQMD's local significance thresholds do not apply to long term operational emissions, which are regional in nature. Local significance thresholds apply to local emissions directly sourced from the project site, which primarily apply to construction phase activities.

Mitigation Measures. Impacts would be less than significant and no mitigation measures would be required.

Level of Significance After Mitigation. Impacts related to operational emissions would be less than significant without mitigation.

Impact AQ-3 The proposed project would be consistent with the AQMP. Impacts would be Class III, *less than significant*.

Criteria for determining consistency with the SCAQMD's AQMP are defined in Chapter 12, Section 12.2 and Section 12.3 of the SCAQMD's CEQA Air Quality Handbook, and include the following:

- *The project will not result in an increase in the frequency or severity existing air quality violations or cause or contribute to new violations, or delay the timely attainment of air quality standards or the interim emissions reductions specified in the AQMP.*
- *The proposed project will not exceed the assumptions in the AQMP based on the year of project buildout.*

The SCAQMD has identified CO as the best indicator pollutant for determining whether air quality violations would occur since it is most directly related to automobile traffic. As discussed under Impact AQ-2, long-term emissions associated with development of the proposed project would not exceed significance thresholds for CO or any other criteria pollutant. As such, the proposed project would not exacerbate existing violations.

The current AQMP was adopted in 2007. The growth assumptions used in the 2007 AQMP are based on the Southern California Association of Governments (SCAG) growth forecasts developed in 2007 and used in the 2008 Regional Transportation Plan. It should be noted that SCAG recently developed revised growth forecasts for the region and it is planned to incorporate these into the next AQMP which, according to the SCAQMD website, is under preparation. In the interim, it is appropriate to compare the proposed project with the growth assumptions used in the adopted AQMP. If the proposed project would not facilitate growth exceeding the 2008 growth forecasts, then the project would be consistent with the assumptions in the adopted AQMP.

The proposed project includes the construction of 60 new senior-housing units, which have an estimated operational year of 2015. The senior housing facility would include residential units with two bedrooms and would be intended for senior residents, but would allow residents that are less than 55 years of age, such as children of the primary residents. Therefore, it is assumed for a conservative estimate that the project would generate 2.664 persons per unit, consistent with the California Department of Finance 2012 data for average households in the City of Rancho Palos Verdes. Based on an assumed occupancy of 2.664 persons per unit, the proposed project would increase the population of Rancho Palos Verdes by approximately 160 persons. Added to the existing population of 41,897 (California Department of Finance, 2012), the proposed project would increase the population of Rancho Palos Verdes to 42,057. This is approximately 1,189 persons lower than the population forecast of 43,246 for 2015 (SCAG, 2008), and is therefore consistent with the adopted AQMP. Impacts would be less than significant.

Mitigation Measures. Impacts would be less than significant and no mitigation measures would be required.

Level of Significance After Mitigation. Impacts related to AQMP consistency would be less than significant without mitigation.

Impact AQ-4 Vehicle traffic associated with the proposed project could incrementally increase localized carbon monoxide (CO) levels. However, CO levels would not exceed SCAQMD thresholds for

further CO hotspot analysis and would not be expected to exceed federal or state ambient air quality standards. Impacts would be Class III, *less than significant*.

The SCAQMD defines typical sensitive receptors as residences, schools, playgrounds, childcare centers, athletic facilities, long-term health care facilities, rehabilitation centers, convalescent centers, and retirement homes. As stated above in the Setting, sensitive receptors would include the senior residential facilities adjacent to and in the vicinity of the site, the nearby preschool and the proposed project itself once constructed. When evaluating potential air quality impacts to sensitive receptors, the SCAQMD is primarily concerned with high localized concentrations of CO. Motor vehicles, and traffic-congested roadways and intersections are the primary source of high localized CO concentrations. Localized CO "hotspots" can occur at intersections with heavy peak hour traffic. Specifically, hotspots can be created at intersections where traffic levels are sufficiently high such that the local CO concentration exceeds the federal AAQS of 35.0 parts per million (ppm) or the state AAQS of 20.0 ppm. CO emissions are a function of vehicle idling time, meteorological conditions, and traffic flow. Under certain extreme meteorological conditions, CO concentrations near a congested roadway or intersection may reach unhealthful levels (i.e., adversely affecting residents, school children, hospital patients, the elderly, etc.).

The Basin is in attainment of State and federal CO standards and has been for several years. Exhaust standards, cleaner burning fuels, and motor vehicle inspection and maintenance programs have all contributed to the reduced per-vehicle CO emissions. At the 2425 Webster Avenue, Long Beach monitoring station, the maximum 8-hour CO level recorded since 2009 was 3.31 parts per million (ppm), 64% lower than the 9 ppm state and federal 8-hour standard.

SCAQMD recommends that a local CO hotspot analysis be conducted if an intersection meets one of the following criteria: 1) the intersection is at level of service (LOS) D or worse and where the project increases the volume to capacity ratio by 2 percent, or 2) the project decreases LOS at an intersection to D or worse.

According to the traffic study (Appendix G to this EIR), the proposed project would not cause any intersection to decrease to LOS D or worse. As shown in Table 4.8-3 in Section 4.8 *Traffic and Circulation*, the intersection of Highridge Road and Hawthorne Boulevard currently operates at LOS D during the AM Peak Hour. However, as shown in Table 4.8-9, the change in volume to capacity ratio as a result of the project would be less than 0.02 at this intersection. Since the change in volume to capacity ratio as a result of the proposed project would not increase by 0.02 at this intersection, CO hotspot impacts would be less than significant.

Mitigation Measures. Impacts would be less than significant and no mitigation measures would be required.

Significance After Mitigation. Impacts related to CO hotspots would be less than significant without mitigation.

c. Cumulative Impacts. The South Coast Air Basin is a non-attainment area for the federal and state standards for ozone and PM_{10}. Any growth within the Los Angeles metropolitan area would contribute to existing exceedances of ambient air quality standards

when taken as a whole with existing development. Cumulative impacts to air quality are evaluated under two sets of thresholds for CEQA and SCAQMD.

Previously, consistency with the AQMP was used to determine whether a project would substantially contribute to cumulative air quality impacts. However, SCAQMD no longer recommends relying solely upon consistency with the AQMP as an appropriate methodology for assessing cumulative air quality impacts. Instead, SCAQMD's approach to determining cumulative air quality impacts for criteria air pollutants is to first determine whether or not a proposed project would result in a significant project-level impact to regional air quality based on SCAQMD significance thresholds. If the project exceeds SCAQMD thresholds, then the lead agency needs to consider the additive effects of related projects only if the proposed project is part of an ongoing regulatory program or is contemplated in a Program EIR, and the related projects are located within approximately one mile of the proposed project. If there are related projects within the vicinity (one-mile radius) of the proposed project that are part of an ongoing regulatory program or are contemplated in a Program EIR, then additive effects of the related projects should be considered.

The proposed 60 senior-housing units along with approximately 1,805 residential dwelling units and 330,719 square feet of non-residential development (see Table 3-1 in Section 3.0, *Environmental Setting*) account for the anticipated cumulative development in the project area. As demonstrated in Table 4.2-9, the proposed project would not generate emissions exceeding SCAQMD thresholds. As discussed under Impact AQ-1, construction-generated emissions would exceed SCAQMD significance thresholds for NOx and PM_{10}. However, with implementation of mitigation measures AQ-1(a) and AQ-1(b), temporary construction impacts would be reduced to a less than significant level.

Therefore, in accordance with SCAQMD guidance on determining cumulative impacts, the proposed project would not result in a cumulatively considerable contribution to air quality impacts.

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