AIR QUALITY ANALYSIS

DANA POINT HARBOR MARINA IMPROVEMENT PROJECT

DANA POINT, CALIFORNIA

LSA

June 2010

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LSA

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1.0 EXECUTIVE SUMMARY

LSA Associates, Inc. (LSA) was retained to prepare an air quality study for the proposed Dana Point Harbor Marina Improvement Project, located in the City of Dana Point (City) in Orange County (County), California.

The air quality study provides a discussion of the proposed Project, the physical setting of the Project area, and the regulatory framework for air quality. The report provides data on existing air quality, evaluates potential air quality impacts associated with the proposed Project, and identifies mitigation measures recommended for potentially significant impacts.

Emissions generated during construction of the proposed Project would exceed the South Coast Air Quality Management District's (SCAQMD) reactive organic compounds (ROC) and oxides of nitrogen (NO_X) thresholds. Compliance with the SCAQMD Rules and Regulations during construction will reduce construction-related air quality impacts from fugitive dust emissions and construction equipment emissions. However, these emissions would remain significant and unavoidable.

The proposed Project would not result in any long-term on-site stationary sources and would have a minimal change in the off-site vehicle trips. The Project's air quality impact would be less than significant because there would be no increase in stationary or mobile source emissions. Historical air quality data show that existing carbon monoxide (CO) levels for the Project area and the general vicinity do not exceed either the State or federal ambient air quality standards. Because the proposed Project would have a minimal change in off-site vehicle trips, no significant CO contributions would occur in the Project vicinity.

The localized significance analysis shows no significant impacts during construction or operations.

The potential of the project to affect global climate change are also included. Short-term construction and long-term operational emissions of the principal greenhouse gases, including carbon dioxide (CO_2) and methane (CH_4), are quantified, and significance relative to Assembly Bill (AB) 32 is discussed.

The evaluation was prepared in conformance with appropriate standards, utilizing procedures and methodologies in the SCAQMD CEQA Air Quality Handbook.

2.0 PROJECT DESCRIPTION

PROJECT LOCATION

Dana Point Harbor, constructed between 1966 and 1970, is located in the City of Dana Point, Orange County, California about 40 miles south of Long Beach/Los Angeles Harbors (Figure 1). It lies in the lee (protected side) of Dana Point Headlands within Capistrano Bay and is also protected by a 1.7 mile long and 14 to 18 feet high breakwater. Harbor channel widths vary from 350 feet in the anchorage areas to 600 feet at the Harbor entrance (Wiegel, 1993). The Harbor is subject to in-filling of sands that migrate through the quarry rock-breakwater requiring periodic maintenance dredging to maintain safe water depths. The Marina within Dana Point Harbor is divided into two basins, the East Basin and West Basin (Figure 2). Each basin operates as a separate Marina, with a total capacity of about 2,400 shallow-draft vessels. The boat launch ramp at the northeast corner of the Harbor is newly upgraded as of July 2007. Other facilities within the Harbor include the Dana Point Marine Institute, a dry boat storage hoist, fishing pier, shipyard, marine fuel dock, three yacht clubs, and a commercial sports fishing operation. Swimming is allowed at the west end of the Harbor at Baby Beach.[1]

PROPOSED PROJECT COMPONENTS

The proposed Dana Point Harbor Marina Improvement Project includes replacement of docks and slip facilities in the West and East Marinas, connection of dock gangways with the quay wall and bulkheads within those basins, and replacement of gangways and security gates to both Marina areas. Additionally, new Dry Stack Storage Staging docks and dinghy docks, along with renovations to the Marine Services docks, Orange County Sailing and Event Center docks, guest docks, Harbor Patrol docks, commercial fishing docks, and sport fishing docks are included in the proposed Project. In order to accommodate displaced boats during Project implementation a temporary dock near the breakwater next to Doheny State Beach is included in the Project (Figure 3). The number of boat slips will decrease from 2,409 to 2,293. In addition, the proposed Marina Improvement Project includes the addition of Americans with Disabilities Act (ADA) access at gangways where it currently is not available. This report specifically addresses waterside, or Marina, improvements to the Dana Point Harbor.

[1] http://www.ocparks.com/danapointharbor.

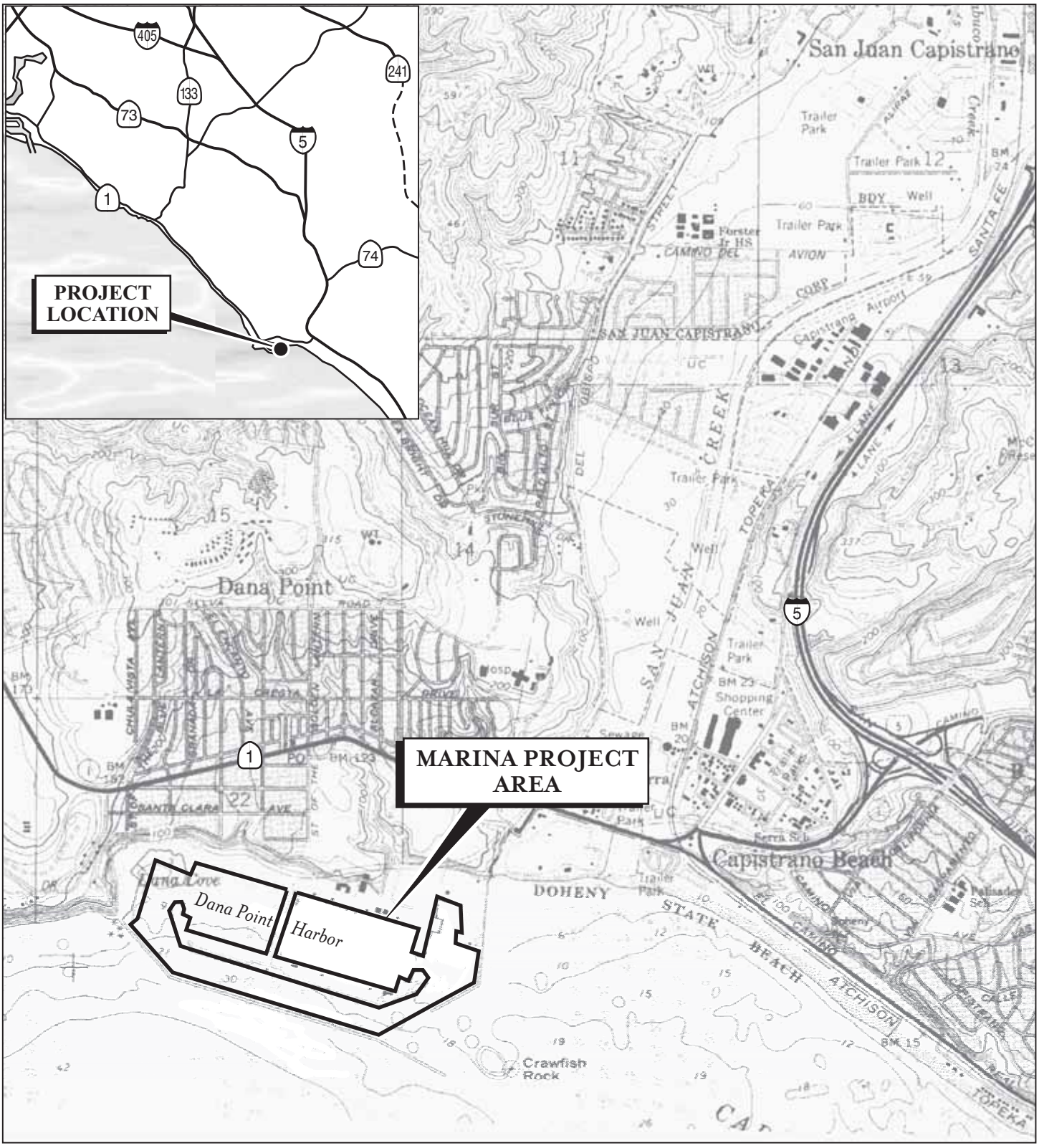

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FIGURE 1

SOURCE: USGS 7.5' Quadrangle, "Dana Point, Calif."

Dana Point Harbor Marina Improvement Project

Project Location

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FIGURE 2

Dana Point Harbor Marina Improvement Project

Existing Harbor Layout

SOURCE: URS/Cash & Associates

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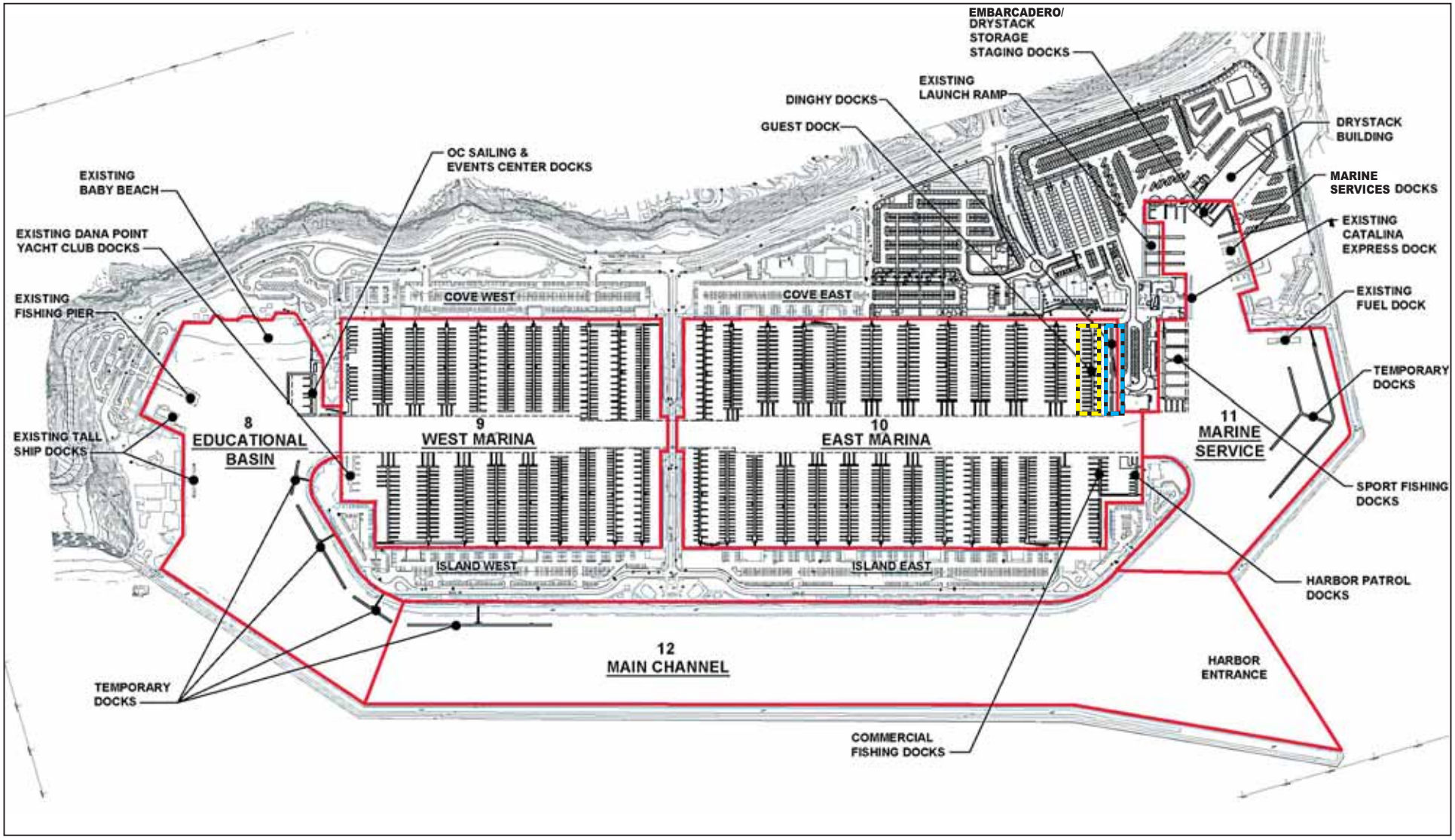

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FIGURE 3

LEGEND

- **Marina Improvement Project Area**
- **Dinghy Docks**
- **Guest Dock**

NOTE: Landslide areas are shown in accordance with the Dana Point Harbor Revitalization Plan and District Regulations Land Use Plan.

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SOURCE: URS Corp.

Dana Point Harbor Marina Improvement Project

Proposed Harbor Layout

I:\CAE0601\G\Technical Report Figures\FIG-3.cdr (06/12/08)

3.0 SETTING

3.1 EXISTING ENVIRONMENTAL SETTING

The Project site is located within Orange County, which is part of the South Coast Air Basin (SCAB) and is under the jurisdiction of the South Coast Air Quality Management District (SCAQMD). The air quality assessment for the proposed Project includes estimating emissions associated with short-term construction and long-term operation of the proposed Project.

A number of air quality modeling tools are available to assess air quality impacts of projects. In addition, certain air districts, such as the SCAQMD, have created guidelines and requirements to conduct air quality analyses. The SCAQMD's current guidelines, CEQA Air Quality Handbook, 1993, were adhered to in the assessment of air quality impacts for the proposed Project.

3.1.1 Regional Air Quality

Both the State of California and the federal government have established health-based ambient air quality standards (AAQS) for seven air pollutants. As shown in Table A, these pollutants include ozone (O_3), CO, nitrogen dioxide (NO_2), sulfur dioxide (SO_2), particulate matter less than 2.5 microns in diameter ($PM_{2.5}$), particulate matter less than 10 microns in diameter (PM_{10}), and lead. In addition, the State has set standards for sulfates, hydrogen sulfide, vinyl chloride, and visibility-reducing particles. These standards are designed to protect the health and welfare of the populace with a reasonable margin of safety.

In addition to setting out primary and secondary AAQS, the State has established a set of episode criteria for O_3, CO, NO_2, SO_2, and PM_{10}. These criteria refer to episode levels representing periods of short-term exposure to air pollutants that actually threaten public health. Health effects are progressively more severe as pollutant levels increase from Stage One to Stage Three. An alert level is that concentration of pollutants at which initial stage control actions are to begin. For this Project area, SCAQMD Rule 701 applies. An alert will be declared when any one of the pollutant alert levels is reached at any monitoring site and meteorological conditions are such that the pollutant concentrations can be expected to remain at these levels for 12 or more hours or to increase; or, in the case of oxidants, the situation is likely to recur within the next 24 hours unless control actions are taken.

Table A: Ambient Air Quality Standards

Pollutant	Averaging Time	California Standards[1]		Federal Standards[2]		
		Concentration[3]	Method[4]	Primary[3,5]	Secondary[3,6]	Method[7]
Ozone (O_3)	1-Hour	0.09 ppm (180 µg/m^3)	Ultraviolet Photometry	--	Same as Primary Standard	Ultraviolet Photometry
	8-Hour	0.07 ppm (137 µg/m^3)		0.075 ppm (147 µg/m^3)		
Respirable Particulate Matter (PM_{10})	24-Hour	50 µg/m^3	Gravimetric or Beta Attenuation	150 µg/m^3	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	20 µg/m^3		--		
Fine Particulate Matter ($PM_{2.5}$)	24-Hour	No Separate State Standard		35 µg/m^3	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	12 µg/m^3	Gravimetric or Beta Attenuation	15 µg/m^3		
Carbon Monoxide (CO)	8-Hour	9.0 ppm (10 mg/m^3)	Non-Dispersive Infrared Photometry (NDIR)	9 ppm (10 mg/m^3)	None	Non-Dispersive Infrared Photometry (NDIR)
	1-Hour	20 ppm (23 mg/m^3)		35 ppm(40 mg/m^3)		
	8-Hour (Lake Tahoe)	6 ppm (7 mg/m^3)		—	—	—
Nitrogen Dioxide (NO_2)[8]	Annual Arithmetic Mean	0.030 ppm (56 µg/m^3)	Gas Phase Chemiluminescence	0.053 ppm (100 µg/m^3)	Same as Primary Standard	Gas Phase Chemiluminescence
	1-Hour	0.18 ppm (338 µg/m^3)		0.100 ppm	None	
Sulfur Dioxide (SO_2)	Annual Arithmetic Mean	—	Ultraviolet Fluorescence	0.030 ppm (80 µg/m^3)	—	Spectrophotometry (Pararosaniline Method)
	24-Hour	0.04 ppm (105 µg/m^3)		0.14 ppm (365 µg/m^3)	—	
	3-Hour	—		—	0.5 ppm (1300 µg/m^3)	
	1-Hour	0.25 ppm (655 µg/m^3)		—	—	
Lead[9]	30 Day Average	1.5 µg/m^3	Atomic Absorption	—	—	High-Volume Sampler and Atomic Absorption
	Calendar Quarter	—		1.5 µg/m^3	Same as Primary Standard	
	Rolling 3-Month Average[10]	—		0.15 µg/m^3		
Visibility-Reducing Particles	8-Hour	Extinction coefficient of 0.23 per kilometer - visibility of ten miles or more (0.07-30 miles or more for Lake Tahoe) due to particles when relative humidity is less than 70 percent. Method: Beta Attenuation and Transmittance through Filter Tape.		**No Federal Standards**		
Sulfates	24-Hour	25 µg/m^3	Ion Chromatography			
Hydrogen Sulfide	1-Hour	0.03 ppm (42 µg/m^3)	Ultraviolet Fluorescence			
Vinyl Chloride[9]	24-Hour	0.01 ppm (26 µg/m^3)	Gas Chromatography			

Source: California Air Resources Board, February 16, 2010.

Table footnotes are provided on the following page.

Footnotes:

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

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

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

[4] Any equivalent procedure which can be shown to the satisfaction of the 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 EPA. An "equivalent method" of measurement may be used but must have a "consistent relationship to the reference method" and must be approved by the EPA.

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

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

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

°C = degrees Celsius
EPA = United States Environmental Protection Agency
$\mu g/m^3$ = micrograms per cubic meter
mg/m^3 = milligrams per cubic meter
ppm = parts per million

Pollutant alert levels:[1]

- O_3: 392 micrograms per cubic meter ($\mu g/m^3$) (0.20 part per million [ppm]), 1-hour average
- CO: 45 milligrams per cubic meter (mg/m^3) (40 ppm), 1-hour average; 17 mg/m^3 (15 ppm), 8-hour average
- NO_2: 1,130 $\mu g/m^3$ (0.6 ppm), 1-hour average; 282 $\mu g/m^3$ (0.15 ppm), 24-hour average
- SO_2: 1,310 $\mu g/m^3$ (0.5 ppm), 1-hour average; 525 $\mu g/m^3$ (0.2 ppm), 24-hour average
- Particulates, measured as PM_{10}: 350 $\mu g/m^3$, 24-hour average

Table B lists the primary health effects and sources of common air pollutants. Because the concentration standards were set at a level that protects public health with an adequate margin of safety (EPA), these health effects will not occur unless the standards are exceeded by a large margin or for a prolonged period of time. State AAQS are more stringent than federal AAQS. Among the pollutants, O_3 and particulate matter ($PM_{2.5}$ and PM_{10}) are considered regional pollutants, while the others have more localized effects.

Table B: Summary of Health Effects of the Major Criteria Air Pollutants

Pollutant	Health Effects	Examples of Sources
Particulate matter ($PM_{2.5}$ and PM_{10} – less than or equal to 2.5 or 10 microns, respectively)	• Hospitalizations for worsened heart diseases • Emergency room visits for asthma • Premature death	• Cars and trucks (especially diesels) • Fireplaces, woodstoves • Windblown dust from roadways, agriculture and construction
Ozone (O_3)	• Cough, chest tightness • Difficulty taking a deep breath • Worsened asthma symptoms • Lung inflammation	• Precursor sources[1]: motor vehicles, industrial emissions, and consumer products
Carbon monoxide (CO)	• Chest pain in heart patients[2] • Headaches, nausea[2] • Reduced mental alertness[2] • Death at very high levels[2]	• Any source that burns fuel such as cars, trucks, construction and farming equipment, and residential heaters and stoves
Nitrogen dioxide (NO_2)	• Increased response to allergens	• See carbon monoxide sources
Toxic air contaminants	• Cancer • Chronic eye, lung or skin irritation • Neurological and reproductive disorders	• Cars and trucks (especially diesels) • Industrial sources, such as chrome platers • Neighborhood businesses, such as dry cleaners and service stations • Building materials and products

Source: California Air Resources Board, 2010, website: http://www.arb.ca.gov/research/health/fs/fs1/fs1.htm.
[1] Ozone is not generated directly by these sources. Rather, chemicals emitted by these precursor sources react with sunlight to form ozone in the atmosphere.
[2] Health effects from CO exposures occur at levels considerably higher than ambient.

[1] SCAQMD Rule 701, Attachment 2.

The California Clean Air Act (CCAA) provides the SCAQMD and other air districts with the authority to manage transportation activities at indirect sources. Indirect sources of pollution are generated when minor sources collectively emit a substantial amount of pollution. Examples of this would be the motor vehicles at an intersection, a mall, and on highways. The SCAQMD also regulates stationary sources of pollution throughout its jurisdictional area. Direct emissions from motor vehicles are regulated by ARB.

Climate/Meteorology. Air quality in the planning area is not only affected by various emission sources (mobile, industry, etc.), but is also affected by atmospheric conditions such as wind speed, wind direction, temperature, rainfall, etc. The combination of topography, low mixing height, abundant sunshine, and emissions from the second largest urban area in the United States gives the SCAB the worst air pollution problem in the nation.

Climate in the SCAB is determined by its terrain and geographical location. The Basin is a coastal plain with connecting broad valleys and low hills. The Pacific Ocean forms the southwestern border, and high mountains surround the rest of the SCAB. The SCAB lies in the semipermanent high pressure zone of the eastern Pacific; the resulting climate is mild and tempered by cool ocean breezes. This climatological pattern is rarely interrupted. However, periods of extremely hot weather, winter storms, or Santa Ana wind conditions do occur.

The annual average temperature varies little throughout the Basin, ranging from the low to middle 60s, measured in degrees Fahrenheit (°F). With a more pronounced oceanic influence, coastal areas show less variability in annual minimum and maximum temperatures than inland areas. The climatological station closest to the site is the Laguna Beach Station.[1] The monthly average maximum temperature recorded at this station from March 1928 until April 2007 ranged from 65.1°F in January to 78.0°F in August, with an annual average maximum of 71.2°F. The monthly average minimum temperature recorded at this station ranged from 43.0°F in January to 59.6°F in August, with an annual average minimum of 51.0°F.

The majority of annual rainfall in the Basin occurs between November and April. Summer rainfall is minimal and is generally limited to scattered thundershowers in coastal regions and slightly heavier showers in the eastern portion of the Basin and along the coastal side of the mountains. At the Laguna Beach Station the average monthly rainfall varied from 2.80 inches in February to 0.49 inch or less between May and October, with an annual total of 12.72 inches.

Although the SCAB has a semiarid climate, air near the surface is generally moist because of the presence of a shallow marine layer. With very low average wind speeds, there is a limited capacity to disperse air contaminants horizontally. The dominant daily wind pattern is an onshore 8 to 12 miles per hour (mph) daytime breeze and an offshore 3 to 5 mph nighttime breeze. The typical wind flow pattern fluctuates only with occasional winter storms or strong northeasterly (Santa Ana) winds from the mountains and deserts northeast of the SCAB. Summer wind flow patterns represent worst case conditions, because this is the period of higher temperatures and more sunlight, which results in ozone formation.

[1] Western Regional Climate Center, www.wrcc.dri.edu.

During spring and early summer, pollution produced during any one day is typically blown out of the SCAB through mountain passes or lifted by warm, vertical currents adjacent to mountain slopes. Air contaminants can be transported 60 miles or more from the SCAB by ocean air during the afternoons. From early fall to winter, the transport is less pronounced because of slower average wind speed and the appearance of drainage winds earlier in the day. During stagnant wind conditions, offshore drainage winds may begin by late afternoon. Pollutants remaining in the SCAB are trapped and begin to accumulate during the night and the following morning. A low morning wind speed in pollutant source areas is an important indicator of air stagnation and the potential for buildup of primary air contaminants.

Temperature normally decreases with altitude, and a reversal of this atmospheric state, where temperature increases with altitude, is called an inversion. The height from the earth to the inversion base is known as the mixing height. Persistent low inversions and cool coastal air tend to create morning fog and low stratus clouds. Cloudy days are less likely in the eastern portions of the SCAB and are about 25 percent more likely along the coast. The vertical dispersion of air pollutants in the SCAB is limited by temperature inversions in the atmosphere close to the earth's surface.

Inversions are generally lower in the nighttime when the ground is cool, than during daylight hours when the sun warms the ground and, in turn, the surface air layer. As this heating process continues, the temperature of the surface air layer approaches the temperature of the inversion base, causing heating along its lower edge. If enough warming takes place, the inversion layer becomes weak and opens up to allow the surface air layers to mix upward. This can be seen in the middle to late afternoon on a hot summer day when the smog appears to clear up suddenly. Winter inversions typically break earlier in the day, preventing excessive contaminant buildup.

The combination of stagnant wind conditions and low inversions produces the greatest pollutant concentrations. On days of no inversion or high wind speeds, ambient air pollutant concentrations are lowest. During periods of low inversions and low wind speeds, air pollutants generated in urbanized areas are transported predominantly onshore into Riverside and San Bernardino Counties. In the winter, the greatest pollution problem is accumulation of carbon monoxide and oxides of nitrogen due to extremely low inversions and air stagnation during the night and early morning hours. In the summer, the longer daylight hours and the brighter sunshine combine to cause a reaction between hydrocarbons and oxides of nitrogen to form photochemical smog.

Global Climate Change. Global climate change is the observed increase in the average temperature of the Earth's atmosphere and oceans in recent decades. The Earth's average near-surface atmospheric temperature rose 0.6 ± 0.2 degrees Celsius (°C) (1.1 ± 0.4°F) in the 20th century. The prevailing scientific opinion on climate change is that "most of the warming observed over the last 50 years is attributable to human activities."[1] The increased amounts of CO_2 and other GHGs are the primary causes of the human-induced component of warming. They are released by the burning of fossil fuels, land clearing, agriculture, etc., and lead to an increase in the GHG effect.

[1] Intergovernmental Panel on Climate Change (IPCC), *Climate Change 2007: The Physical Science Basis*, http://www.ipcc.ch.

GHGs are present in the atmosphere naturally, released by natural sources, or formed from secondary reactions taking place in the atmosphere. They include CO_2, CH_4, nitrous oxide (N_2O), and O_3. In the last 200 years, substantial quantities of GHGs have been released into the atmosphere. These extra emissions are increasing GHG concentrations in the atmosphere, enhancing the natural greenhouse effect, which is believed to be causing global warming. While human-made GHGs include CO_2, CH_4, and N_2O, some (like chlorofluorocarbons [CFCs]) are completely new to the atmosphere.

Natural sources of CO_2 include the respiration (breathing) of humans, animals and plants and evaporation from the oceans. Together, these natural sources release approximately 150 billion tonnes[1] of CO_2 each year, far outweighing the 7 billion tonnes of human-made emissions from fossil fuel burning, waste incineration, deforestation, and cement manufacture. Nevertheless, natural removal processes such as photosynthesis by land- and ocean-dwelling plant species cannot keep pace with this extra input of human-made CO_2, and consequently the gas is building up in the atmosphere.[2]

Methane is produced when organic matter decomposes in environments lacking sufficient oxygen. Natural sources include wetlands, termites, and oceans. Human-made sources include the mining and burning of fossil fuels; digestive processes in ruminant animals such as cattle; rice paddies; and the burying of waste in landfills. Total annual emissions of CH_4 are approximately 500 million tonnes, with human-made emissions accounting for the majority. As for CO_2, the major removal process of atmospheric CH_4—chemical breakdown in the atmosphere—cannot keep pace with source emissions, and CH_4 concentrations in the atmosphere are increasing.

California is the fifteenth largest emitter of GHGs on the planet, representing about 2 percent of the worldwide emissions. In December 2007, ARB approved a GHG target for 2020 equivalent to the State's calculated GHG level in 1990. ARB developed the 2020 target after extensive technical work and a series of stakeholder meetings. The 2020 target of 427 million metric tons of carbon dioxide equivalent ($MMTCO_2E$) requires the reduction of 169 $MMTCO_2E$, or approximately 30 percent, from the State's projected 2020 emissions of 596 $MMTCO_2E$ (business as usual) and the reduction of 42 $MMTCO_2E$, or almost 10 percent, from 2002–2004 average emissions. Table C shows the current emissions and projected 2020 emissions of GHGs for the State.[3]

Air Pollution Constituents and Attainment Status. The ARB coordinates and oversees both State and federal air pollution control programs in California. The ARB oversees activities of local air quality management agencies and maintains air quality monitoring stations throughout the State in conjunction with the EPA and local air districts. The ARB has divided the State into 15 air basins based on meteorological and topographical factors of air pollution. Data collected at these stations are used by ARB and EPA to classify air basins as attainment, nonattainment, nonattainment-transitional, or unclassified, based on air quality data for the most recent 3 calendar years compared with the AAQS. Nonattainment areas are imposed with additional restrictions as required by the EPA. The air quality data are also used to monitor progress in attaining air quality standards. Table D lists the attainment status for the criteria pollutants in the Basin.

1 A tonne means a ton in the metric unit system; it is also called a metric ton. A tonne is 1,000 kilograms, or approximately 2,204 pounds.
2 Enviropedia, http://www.enviropedia.org.uk/Global_Warming/Emissions.php.
3 ARB Climate Change Scoping Plan, December 2008.

Table C: California GHG Emissions – Current and Projected ($MMTCO_2E$)

Sector	2002–2004 Average Emissions	Projected 2020 Emissions (BAU)
Transportation	179.3	225.4
Electricity	109.0	139.2
Commercial and Residential	41.0	46.7
Industry	95.9	100.5
Recycling and Waste	5.6	7.7
High GWP	14.8	46.9
Agriculture	27.7	29.8
Forest Net Emissions	-4.7	0.0
Emissions Total	**469**	**596**

Source: ARB. Greenhouse Gas Inventory. http://www.arb.ca.gov/cc/inventory/inventory.htm
BAU = Business as Usual
GWP = Global Warming Potential

Table D: Attainment Status of Criteria Pollutants in the South Coast Air Basin

Pollutant	State	Federal
O_3 1-hour	Nonattainment	N/A
O_3 8-hour	Nonattainment	Severe-17 Nonattainment
PM_{10}	Nonattainment	Serious Nonattainment
$PM_{2.5}$	Nonattainment	Nonattainment
CO	Attainment	Attainment/Maintenance
NO_2	Attainment	Attainment/Maintenance
SO_2	Attainment	Attainment
Lead	Attainment	Attainment
All others	Attainment/Unclassified	Attainment/Unclassified

Source: California Air Resources Board, 2010, http://www.arb.ca.gov/desig/desig.htm.
CO = carbon monoxide
N/A = not applicable
NO_2 = nitrogen dioxide
O_3 = ozone
PM_{10} = particulate matter less than 10 microns in diameter
$PM_{2.5}$ = particulate matte less than 2.5 microns in diameter
SO_2 = sulfur dioxide

Ozone. O_3 (smog) is formed by photochemical reactions between oxides of nitrogen and reactive organic gases (ROGs) rather than being directly emitted. O_3 is a pungent, colorless gas typical of Southern California smog. Elevated O_3 concentrations result in reduced lung function, particularly during vigorous physical activity. This health problem is particularly acute in sensitive receptors such as the sick, the elderly, and young children. O_3 levels peak during summer and early fall. The entire Basin is designated as a nonattainment area for the State 1-hour and 8-hour O_3 standards. The EPA has officially designated the status for most of the Basin regarding the 8-hour O_3 standard as "Severe

17," which means the Basin has until 2021 to attain the federal 8-hour O_3 standard. The SCAQMD has requested that the Basin's federal designation be changed from severe to extreme nonattainment. This change would extend the attainment deadline to 2023.

Carbon Monoxide. CO is formed by the incomplete combustion of fossil fuels, almost entirely from automobiles. It is a colorless, odorless gas that can cause dizziness, fatigue, and impairments to central nervous system functions. The entire Basin is in attainment for the State standards for CO. The Basin is designated as a "Severe Maintenance" area under the federal CO standards.

Nitrogen Oxides. NO_2, a reddish brown gas, and nitric oxide (NO), a colorless, odorless gas, are formed from fuel combustion under high temperature or pressure. These compounds are referred to as nitrogen oxides, or NO_X. NO_X is a primary component of the photochemical smog reaction. It also contributes to other pollution problems, including a high concentration of fine particulate matter, poor visibility, and acid deposition (i.e., acid rain). NO_2 decreases lung function and may reduce resistance to infection. The entire Basin has not exceeded both federal and State standards for NO_2 in the past 5 years with published monitoring data. It is designated as a maintenance area under the federal standards and an attainment area under the State standards.

Sulfur Dioxide. SO_2 is a colorless irritating gas formed primarily from incomplete combustion of fuels containing sulfur. Industrial facilities also contribute to gaseous SO_2 levels. SO_2 irritates the respiratory tract, can injure lung tissue when combined with fine particulate matter, and reduces visibility and the level of sunlight. The entire Basin is in attainment with both federal and State SO_2 standards.

Lead. Lead is found in old paints and coatings, plumbing, and a variety of other materials. Once in the blood stream, lead can cause damage to the brain, nervous system, and other body systems. Children are highly susceptible to the effects of lead. The entire SCAB is in attainment for the federal and State standards for lead.

Particulate Matter. Particulate matter is the term used for a mixture of solid particles and liquid droplets found in the air. Coarse particles (PM_{10}) derive from a variety of sources, including windblown dust and grinding operations. Fuel combustion and resultant exhaust from power plants and diesel buses and trucks are primarily responsible for fine particulate matter ($PM_{2.5}$) levels. Fine particles can also be formed in the atmosphere through chemical reactions. PM_{10} can accumulate in the respiratory system and aggravate health problems such as asthma. The EPA's scientific review concluded that $PM_{2.5}$, which penetrate deeply into the lungs, are more likely than coarse particles to contribute to the health effects listed in a number of recently published community epidemiological studies at concentrations that extend well below those allowed by the current PM_{10} standards. These health effects include premature death and increased hospital admissions and emergency room visits (primarily the elderly and individuals with cardiopulmonary disease); increased respiratory symptoms and disease (children and individuals with cardiopulmonary disease such as asthma); decreased lung functions (particularly in children and individuals with asthma); and alterations in lung tissue and

structure and in respiratory tract defense mechanisms. Most of the Basin is designated nonattainment for the federal and State PM_{10} and $PM_{2.5}$ standards.

Reactive Organic Compounds. Reactive organic compounds (ROCs; also known as ROGs) and volatile organic compounds (VOCs) are formed from the combustion of fuels and the evaporation of organic solvents. ROCs are not defined as criteria pollutants, but are a prime component of the photochemical smog reaction. Consequently, ROCs accumulate in the atmosphere more quickly during the winter when sunlight is limited and photochemical reactions are slower.

3.2 LOCAL AIR QUALITY

The SCAQMD, together with the ARB, maintain ambient air quality monitoring stations in the SCAB. The air quality monitoring station closest to the Project site is the Mission Viejo Station and its air quality trends are representative of the ambient air quality in the Project area. The pollutants monitored at this station are CO, O_3, PM_{10}, and $PM_{2.5}$.[1] The closest air quality monitoring site monitoring NO_2 and SO_2 is the Costa Mesa Station, and its air quality trends are also representative of the ambient air quality in the Project area.

The ambient air quality data in Table E show that NO_2, SO_2, and CO levels are below the relevant State and federal standards. The State one-hour O_3 standard was exceeded 5 to 9 times per year in the last three years. The federal eight-hour O_3 standard was exceeded 5 to 15 times per year in the last three years. The State 24-hour PM_{10} standard was exceeded three times in 2007 but has not exceeded the federal 24-hour standard since 1999. The federal 24-hour $PM_{2.5}$ standard was exceeded twice in 2007 and once in 2009 in the last three years.

3.3 REGULATORY SETTINGS

3.3.1 Federal Regulations/Standards

Pursuant to the federal Clean Air Act (CAA) of 1970, the EPA established national ambient air quality standards (NAAQS). The NAAQS were established for six major pollutants, termed "criteria" pollutants. Criteria pollutants are defined as those pollutants for which the federal and State governments have established AAQS, or criteria, for outdoor concentrations in order to protect public health.

Data collected at permanent monitoring stations are used by the EPA to classify regions as "attainment" or "nonattainment," depending on whether the regions met the requirements stated in the primary NAAQS. Nonattainment areas are imposed with additional restrictions as required by the EPA.

The EPA has designated the Southern California Association of Governments (SCAG) as the Metropolitan Planning Organization (MPO) responsible for ensuring compliance with the requirements of the CAA for the SCAB.

[1] Air quality data, 2004–2006; EPA and ARB Web sites.

Table E: Ambient Air Quality in the Project Vicinity

Pollutant	Standard	2007	2008	2009
Carbon Monoxide				
Max 1-hr concentration (ppm)		2.9	1.5	ND
No. days exceeded: State	> 20 ppm/1-hr	0	0	ND
Federal	> 35 ppm/1-hr	0	0	ND
Max 8-hr concentration (ppm)		2.2	1.1	1.0
No. days exceeded: State	9.0 ppm/8-hr	0	0	0
Federal	9 ppm/8-hr	0	0	0
Ozone				
Max 1-hr concentration (ppm)		0.108	0.118	0.121
No. days exceeded: State	> 0.09 ppm/1-hr	5	9	7
Max 8-hr concentration (ppm)		0.090	0.104	0.095
No. days exceeded: State	> 0.07 ppm/8-hr	10	25	14
Federal	> 0.075 ppm/8-hr	5	15	10
Particulates (PM_{10})				
Max 24-hr concentration ($\mu g/m^3$)		74	42	41
No. days exceeded: State	> 50 $\mu g/m^3$/24-hr	1	0	0
Federal	> 150 $\mu g/m^3$/24-hr	0	0	0
Annual Arithmetic Average ($\mu g/m^3$)		23.0	22.6	ND
Exceeded: State	> 20 $\mu g/m^3$ ann. arth. avg.	Yes	Yes	ND
Particulates ($PM_{2.5}$)				
Max 24-hr concentration ($\mu g/m^3$)		46.8	32.6	39.2
No. days exceeded: Federal	> 35 $\mu g/m^3$/24-hr	2	0	1
Annual Arithmetic Average ($\mu g/m^3$)		11.1	8.3	ND
Exceeded: State	> 12 $\mu g/m^3$ ann. arth. avg.	No	No	ND
Federal	> 15 $\mu g/m^3$ ann. arth. avg.	No	No	ND
Nitrogen Dioxide[2]				
Max 1-hr concentration (ppm)		0.074	0.081	0.065
No. days exceeded: State	> 0.25 ppm/1-hr	0	0	0
Annual arithmetic average concentration (ppm)		0.013	0.013	0.013
Exceeded: Federal	> 0.053 ppm ann. arth. avg.	No	No	No
Sulfur Dioxide[2]				
Max 24-hr concentration (ppm)		0.004	0.003	0.004
No. days exceeded: State	> 0.04 ppm/24-hr	0	0	0
Federal	> 0.14 ppm/24-hr	0	0	0
Annual arithmetic average concentration (ppm)		0.000	0.001	0.001
Exceeded: Federal	> 0.030 ppm ann. arth. avg.	No	No	No

Sources: EPA and ARB, 2010.

[1] ND: No Data. There was insufficient or no data available to determine the value.

[2] Monitored at the Costa Mesa-Mesa Verde Drive Air Monitoring Station.

ppm = parts per million

$\mu g/m^3$ = microgram of pollutant per cubic meter of air

The EPA established new national air quality standards for ground level ozone and fine particulate matter in 1997. On May 14, 1999, the Court of Appeals for the District of Columbia Circuit issued a decision ruling that the CAA, as applied in setting the new public health standards for ozone and particulate matter, was unconstitutional as an improper delegation of legislative authority to the EPA. On February 27, 2001, the U.S. Supreme Court upheld the way the government sets air quality standards under the CAA. The court unanimously rejected industry arguments that the EPA must consider financial cost as well as health benefits in writing standards. The justices also rejected arguments that the EPA took too much lawmaking power from Congress when it set tougher standards for ozone and soot in 1997. Nevertheless, the court threw out the EPA's policy for implementing new ozone rules, saying that the agency ignored a section of the law that restricts its authority to enforce such rules.

In April 2003, the EPA was cleared by the White House Office of Management and Budget (OMB) to implement the eight-hour ground-level ozone standard. The EPA issued the proposed rule implementing the eight-hour ozone standard in April 2003. The EPA completed final eight-hour nonattainment status on April 15, 2004. The EPA revoked the one-hour ozone standard on June 15, 2005.

The EPA issued the final $PM_{2.5}$ implementation rule in fall 2004 and made final designations on December 15, 2004. The EPA lowered the 24-hour $PM_{2.5}$ standard from 65 to 35 $\mu g/m^3$ and revoked the annual average PM_{10} standard in December 2006.

3.3.2 State Regulations/Standards

The State of California began to set California ambient air quality standards (CAAQS) in 1969 under the mandate of the Mulford-Carrell Act. The CAAQS are generally more stringent than the NAAQS. In addition to the six criteria pollutants covered by the NAAQS, there are CAAQS for sulfates, hydrogen sulfide, vinyl chloride, and visibility reducing particles. These standards are also listed in Table A.

Originally, there were no attainment deadlines for CAAQS. However, the CCAA of 1988 provided a time frame and a planning structure to promote their attainment. The CCAA required nonattainment areas in the State to prepare attainment plans and proposed to classify each such area on the basis of the submitted plan, as follows: moderate, if CAAQS attainment could not occur before December 31, 1994; serious, if CAAQS attainment could not occur before December 31, 1997; and severe, if CAAQS attainment could not be conclusively demonstrated at all.

The attainment plans are required to achieve a minimum 5 percent annual reduction in the emissions of nonattainment pollutants unless all feasible measures have been implemented. The SCAB is currently classified as a nonattainment area for three criteria pollutants.

3.3.3 Global Climate Change Regulations

California has recently adopted a series of laws to reduce both the level of GHGs in the atmosphere and to reduce emissions of GHGs from commercial and private activities within the State. In a response to the transportation sector's significant contribution to California's CO_2 emissions, AB

1493 (Pavley) was enacted on July 22, 2002. AB 1493 requires ARB to set GHG emission standards for passenger vehicles and light duty trucks (and other vehicles whose primary use is noncommercial personal transportation in the State) manufactured in 2009 and all subsequent model years. In setting these standards, ARB considered cost effectiveness, technological feasibility, and economic impacts. ARB adopted the standards in September 2004. When fully phased-in, the near-term (2009 to 2012) standards would result in a reduction in GHG emissions of approximately 22 percent compared to the emissions from the 2002 fleet, while the midterm (2013 to 2016) standards would result in a reduction of approximately 30 percent. To set its own GHG emissions limits on motor vehicles, California must receive a waiver from the EPA. However, in December 2007, the EPA denied the request from California for the waiver. In January 2008, the California Attorney General filed a petition for review of the EPA's decision in the Ninth Circuit Court of Appeals; however, no decision on that petition has been published as of January 2009. On January 26, 2009, the President issued an Executive Memorandum directing the EPA to reassess its decision to deny the waiver and to initiate any appropriate action.[1] On May 18, 2009, the President announced the enactment of a 35.5 mpg fuel economy standard for automobiles and light duty trucks which will begin to take effect in 2012. This standard is approximately the same standard that was proposed by California, and so the California waiver request has been shelved as a result.

In June 2005, Governor Schwarzenegger established California's GHG emissions reduction targets in Executive Order S-3-05. The Executive Order established the following goals for the State of California: GHG emissions should be reduced to 2000 levels by 2010; GHG emissions should be reduced to 1990 levels by 2020; and GHG emissions should be reduced to 80 percent below 1990 levels by 2050.

California's major initiative for reducing GHG emissions is outlined in AB 32, the "Global Warming Solutions Act," passed by the California State legislature on August 31, 2006. This effort aims at reducing GHG emissions to 1990 levels by 2020. The ARB has established the level of GHG emissions in 1990 at 427 million metric tons (MMT) of carbon dioxide equivalent (CO_2eq). The emissions target of 427 MMT requires the reduction of 169 MMT from the State's projected business-as-usual 2020 emissions of 596 MMT. AB 32 requires ARB to prepare a Scoping Plan that outlines the main State strategies for meeting the 2020 deadline and to reduce GHGs that contribute to global climate change. The Scoping Plan was approved by ARB on December 11, 2008, and includes measures to address GHG emission reduction strategies related to energy efficiency, water use, and recycling and solid waste, among other measures.[2] Emission reductions that are projected to result from the recommended measures in the Scoping Plan are expected to total 174 MMT of CO_2eq, which would allow California to attain the emissions goal of 427 MMT of CO_2eq by 2020. The Scoping Plan includes a range of GHG reduction actions that may include direct regulations, alternative compliance mechanisms, monetary and non-monetary incentives, voluntary actions, and market-based mechanisms such as a cap-and-trade system. The Scoping Plan, even after Board approval, remains a recommendation. The measures in the Scoping Plan will not be binding until after they are adopted through the normal rulemaking process. The ARB rulemaking process includes

1 Obama, President Barack. 2009. Memorandum for the Administrator of the Environmental Protection Agency. State of California Request for Waiver Under 42 U.S.C. 7543(b), the Clean Air Act. January 26.

2 California Air Resources Board. 2008. *Climate Change Proposed Scoping Plan: a framework for change*. October.

preparation and release of each of the draft measures, public input through workshops and a public comment period, followed by an ARB Board hearing and rule adoption.

In addition to reducing GHG emissions to 1990 levels by 2020, AB 32 directed ARB and the newly created Climate Action Team (CAT)[1] to identify a list of "discrete early action GHG reduction measures" that can be adopted and made enforceable by January 1, 2010. On January 18, 2007, Governor Schwarzenegger signed Executive Order S-1-07, further solidifying California's dedication to reducing GHGs by setting a new Low Carbon Fuel Standard. The Executive Order sets a target to reduce the carbon intensity of California transportation fuels by at least 10 percent by 2020 and directs ARB to consider the Low Carbon Fuel Standard as a discrete early action measure.

In June 2007, ARB approved a list of 37 early action measures, including three discrete early action measures (Low Carbon Fuel Standard, Restrictions on High Global Warming Potential Refrigerants, and Landfill Methane Capture).[2] Discrete early action measures are measures that are required to be adopted as regulations and made effective no later than January 1, 2010, the date established by Health and Safety Code (HSC) Section 38560.5. The ARB adopted additional early action measures in October 2007 that tripled the number of discrete early action measures. These measures relate to truck efficiency, port electrification, reduction of perfluorocarbons from the semiconductor industry, reduction of propellants in consumer products, proper tire inflation, and sulfur hexafluoride (SF_6) reductions from the non-electricity sector. The combination of early action measures is estimated to reduce State-wide GHG emissions by nearly 16 MMT.[3]

To assist public agencies in the mitigation of GHG emissions or analyzing the effects of GHGs under CEQA, including the effects associated with transportation and energy consumption, Senate Bill (SB) 97 (Chapter 185, 2007) requires the Governor's Office of Planning and Research (OPR) to develop CEQA Guidelines on how to minimize and mitigate a project's GHG emissions. OPR is required to prepare, develop, and transmit these guidelines on or before July 1, 2009 and the Resources Agency is required to certify and adopt them by January 1, 2010. Preliminary guidance released by OPR in June 2008 suggests that global climate change analyses in CEQA documents should be conducted for all projects that release GHGs, and that mitigation measures to reduce emissions should be incorporated into projects, to the extent feasible. On January 8, 2009, OPR released preliminary draft CEQA guideline amendments, which may be refined through a public process currently underway at the time this document was drafted. The preliminary amendments encourage lead agencies to consider many factors in performing a CEQA analysis, but preserve the discretion granted by CEQA to lead agencies in making their own determinations.

SB 375, signed into law on October 1, 2008, is intended to enhance ARB's ability to reach AB 32 goals by directing ARB to develop regional GHG emissions reduction targets to be achieved within the automobile and light truck sectors for 2020 and 2035. ARB will work with California's 18 metropolitan planning organizations to align their regional transportation, housing, and land use plans

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1 CAT is a consortium of representatives from State agencies who have been charged with coordinating and implementing GHG emission reduction programs that fall outside of ARB's jurisdiction.

2 California Air Resources Board. 2007. *Expanded List of Early Action Measures to Reduce Greenhouse Gas Emissions in California Recommended for Board Consideration*. October.

3 California Air Resources Board. 2007. "ARB approves tripling of early action measures required under AB 32." News Release 07-46. http://www.arb.ca.gov/newsrel/nr102507.htm. October 25.

and prepare a "Sustainable Communities Strategy" to reduce the number of vehicle miles traveled in their respective regions and demonstrate the region's ability to attain its GHG reduction targets.

Additionally, SB 375 provides incentives for creating attractive, walkable, and sustainable communities and revitalizing existing communities. The bill exempts home builders from certain CEQA requirements if they build projects consistent with the new sustainable community strategies. It will also encourage the development of more alternative transportation options, to promote healthy lifestyles and reduce traffic congestion.

3.4 REGIONAL AIR QUALITY PLANNING FRAMEWORK

The 1976 Lewis Air Quality Management Act established the SCAQMD and other air districts throughout the State. The federal CAA Amendments of 1977 required that each state adopt an implementation plan outlining pollution control measures to attain the federal standards in nonattainment areas of the state.

The ARB coordinates and oversees both State and federal air pollution control programs in California. The ARB oversees activities of local air quality management agencies and is responsible for incorporating air quality management plans for local air basins into a State Implementation Plan (SIP) for the EPA approval. The ARB maintains air quality monitoring stations throughout the State in conjunction with local air districts. Data collected at these stations are used by the ARB to classify air basins as "attainment" or "nonattainment" with respect to each pollutant and to monitor progress in attaining air quality standards. The ARB has divided the State into 15 air basins. Significant authority for air quality control within them has been given to local air districts that regulate stationary source emissions and develop local nonattainment plans.

3.4.1 Regional Air Quality Management Plan (AQMP)

The SCAQMD and the SCAG are responsible for formulating and implementing the AQMP for the SCAB. Every three years the SCAQMD prepares a new AQMP, updating the previous plan and having a 20-year horizon. The SCAQMD adopted the 2003 AQMP in August 2003 and forwarded it to ARB for review and approval. The ARB approved a modified version of the 2003 AQMP and forwarded it to the EPA in October 2003 for review and approval.

The 2003 AQMP updates the attainment demonstration for the federal standards for O_3 and PM_{10}; replaces the 1997 attainment demonstration for the federal CO standard and provides a basis for a maintenance plan for CO for the future; and updates the maintenance plan for the federal NO_2 standard that the SCAB has met since 1992. The 2003 AQMP proposes policies and measures to achieve federal and State standards for healthful air quality in the SCAB.

This revision to the AQMP also addresses several State and federal planning requirements and incorporates significant new scientific data, primarily in the form of updated emissions inventories, ambient measurements, new meteorological episodes, and new air quality modeling tools. This AQMP is consistent with and builds upon the approaches taken in the 1997 AQMP and the 1999 Amendments to the ozone SIP for the SCAB for the attainment of the federal ozone air quality standard. However, this revision points to the urgent need for additional emission reductions (beyond

those incorporated in the 1997/1999 Plan) to offset increased emission estimates from mobile sources and meet all federal criteria pollutant standards within the time frames allowed under the federal Clean Air Act.

The SCAQMD adopted the 2007 AQMP on June 1, 2007, which it describes as a regional and multiagency effort (i.e., the SCAQMD Governing Board, ARB, SCAG, and EPA). State and federal planning requirements will include developing control strategies, attainment demonstration, reasonable further progress, and maintenance plans. The 2007 AQMP also incorporates significant new scientific data, primarily in the form of updated emissions inventories, ambient measurements, new meteorological episodes, and new air quality modeling tools. The ARB approved the 2007 AQMP on September 27, 2007, and adopted it as part of the 2007 SIP. The SCAQMD has forwarded the 2007 AQMP to the EPA for its review and approval.

4.0 METHODOLOGY

A number of modeling tools are available to assess air quality impacts of projects. In addition, certain air districts, such as the SCAQMD, have created guidelines and requirements to conduct air quality analysis. SCAQMD's current guidelines, CEQA Air Quality Handbook, April, 1993, were adhered to in the assessment of air quality impacts for the proposed Project.

The air quality assessment includes estimating emissions associated with short-term construction and long-term operation of the proposed Project. Criteria pollutants with regional impacts would be emitted by Project related vehicular trips, as well as by emissions associated with stationary sources used on site.

The net increase in pollutant emissions determine the significance and impact on regional air quality as a result of the proposed Project. The results also allow the local government to determine whether the proposed Project will deter the region from achieving the goal of reducing pollutants in accordance with the AQMP in order to comply with federal and State ambient air quality standards.

SCAQMD has developed localized significance threshold (LST) methodology that can be used to determine whether or not a project may generate significant adverse localized air quality impacts. LSTs represent the maximum emissions from a project that will not 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. SCAQMD's current guidelines, *Final Localized Significance Threshold Methodology* (June 2003), were adhered to in the assessment of air quality impacts for the proposed Project.

The LST mass rate look-up tables are used to determine whether the daily emissions for the proposed construction and operational activities could result in significant localized air quality impacts. The emissions of concern from construction activities are NO_X and CO combustion emissions from construction equipment and fugitive PM_{10} dust from construction site preparation activities. The primary emissions from operational activities include but are not limited to NO_X and CO combustion emissions from stationary sources and/or on-site mobile equipment. Off-site mobile emissions from the Project are not included in the emissions compared to the LSTs.

4.1 THRESHOLDS OF SIGNIFICANCE

A Project would normally be considered to have a significant effect on air quality if the Project would violate any ambient air quality standards, contribute substantially to an existing air quality violation, expose sensitive receptors to substantial pollutants concentrations, or conflict with adopted environmental plans and goals of the community in which it is located.

In addition to the federal and State AAQS, there are daily and quarterly emissions thresholds for construction and operation of a proposed Project in the SCAB. The SCAB is administered by the SCAQMD, and guidelines and emissions thresholds established by the SCAQMD in its *CEQA Air*

Quality Handbook (SCAQMD, April 1993) are used in this analysis. It should be noted that the emission thresholds were established based on the attainment status of the air basin in regard to air quality standards for specific criteria pollutants. Because the concentration standards were set at a level that protects public health with adequate margin of safety (EPA), these emission thresholds are regarded as conservative and would overstate an individual project's contribution to health risks.

4.1.1 Thresholds for Construction Emissions

The following California Environmental Quality Act (CEQA) significance thresholds for construction emissions have been established for the SCAB:

- 75 pounds per day (lbs/day) of reactive organic compounds (ROC)
- 100 lbs/day of NO_X
- 550 lbs/day of CO
- 150 lbs/day of PM_{10}
- 55 lbs/day of $PM_{2.5}$
- 150 lbs/day of sulfur oxides (SO_X)

Projects in the SCAB with construction related emissions that exceed any of the emission thresholds are considered to be significant under the SCAQMD guidelines.

4.1.2 Thresholds for Operational Emissions

The daily operational emissions "significance" thresholds for the SCAB are as follows.

Emission Thresholds for Pollutants with Regional Effects. Projects with operation related emissions that exceed any of the emission thresholds listed below are considered significant under the SCAQMD guidelines.

- 55 lbs/day of ROC
- 55 lbs/day of NO_X
- 550 lbs/day of CO
- 150 lbs/day of PM_{10}
- 55 lbs/day of $PM_{2.5}$
- 150 lbs/day of SO_X

Local Microscale Concentration Standards. The significance of localized Project impacts under CEQA depends on whether ambient CO levels in the vicinity of the Project are above or below State and federal CO standards. If ambient levels are below the standards, a Project is considered to have a significant impact if Project emissions result in an exceedance of one or more of these standards. If

ambient levels already exceed a State or federal standard, Project emissions are considered significant if they increase one-hour CO concentrations by 1.0 part per million (ppm) or more or eight-hour CO concentrations by 0.45 ppm or more. The following are applicable local emission concentration standards for carbon monoxide.

- California State one-hour CO standard of 20.0 ppm
- California State eight-hour CO standard of 9.0 ppm

4.1.3 Thresholds for Localized Significance

For this Project, the appropriate Source Receptor Area (SRA) for LST is the Capistrano Valley area, according to the SRA/City Table on the SCAQMD LST Web site.[1] The site is larger than five acres, however, it is expected that construction operations will not exceed five acres in any one day, so the five acre thresholds were used. The nearest sensitive receptor is the Marina Inn located north of the proposed Project site at a distance of approximately 50 meters (m). The following thresholds apply for this Project.

Construction thresholds for a 5 ac site:

- 330 lbs/day of NO_X at 50 m
- 2,102 lbs/day of CO at 50 m
- 37 lbs/day of PM_{10} at 50 m
- 11 lbs/day of $PM_{2.5}$ at 50 m

Operational thresholds for a 2 ac site:

- 330 lbs/day of NO_X at 50 m
- 2,102 lbs/day of CO at 50 m
- 9 lbs/day of PM_{10} at 50 m
- 3 lbs/day of $PM_{2.5}$ at 50 m

4.1.4 Global Climate Change

As the SCAQMD has recognized, the analysis of GHGs is much different than the analysis of criteria pollutants for the following reasons. For criteria pollutants, significance thresholds are based on daily emissions because attainment or nonattainment is based on daily exceedances of applicable AAQS. Further, several ambient AAQS are based on relatively short-term exposure effects on human health (e.g., 1-hour and 8-hour). Since the half-life of CO_2 is approximately 100 years, for example, the effects of GHGs are longer-term, affecting global climate over a relatively long time frame. As a result, the SCAQMD's current position is to evaluate GHG effects over a longer time frame than a single day.

[1] www.aqmd.gov/ceqa/handbook/LST/LST.html.

The recommended approach for GHG analysis included in OPR's June 2008 release is to: (1) identify and quantify GHG emissions, (2) assess the significance of the impact on climate change, and (3) if significant, identify alternatives and/or mitigation measures to reduce the impact below a level of significance.[1] The June 2008 OPR guidance provides some additional direction regarding planning documents as follows: "CEQA can be a more effective tool for GHG emissions analysis and mitigation if it is supported and supplemented by sound development policies and practices that will reduce GHG emissions on a broad planning scale and that can provide the basis for a programmatic approach to project-specific CEQA analysis and mitigation…. For local government lead agencies, adoption of general plan policies and certification of general plan EIRs that analyze broad jurisdiction-wide impacts of GHG emissions can be part of an effective strategy for addressing cumulative impacts and for streamlining later project-specific CEQA reviews."

Pursuant to SB 97, OPR submitted to the Secretary for Natural Resources its proposed amendments to the State CEQA Guidelines for GHG emissions on April 13, 2009. These proposed CEQA Guidelines amendments would provide guidance to public agencies regarding the analysis and mitigation of the effects of GHG emissions in draft CEQA documents. The Natural Resources Agency will conduct formal rulemaking in 2009, prior to certifying and adopting the amendments, as required by SB 97. The Natural Resources Agency must certify and adopt the guidelines on or before January 1, 2010.

On December 30, 2009, the California Natural Resources Agency adopted CEQA Guidelines Amendments related to climate change. The amendments became effective on March 18, 2010, and state:

> (a) The determination of the significance of greenhouse gas emissions calls for a careful judgment by the Lead Agency consistent with the provisions in section 15064. A lead agency should make a good-faith effort, based on available information, to describe, calculate or estimate the amount of greenhouse gas emissions resulting from a project. A lead agency shall have discretion to determine, in the context of a particular project, whether to:
>
> > (1) Use a model or methodology to quantify greenhouse gas emissions resulting from a project, and which model or methodology to use. The lead agency has discretion to select the model it considers most appropriate provided it supports its decision with substantial evidence. The lead agency should explain the limitations of the particular model or methodology selected for use; or
> >
> > (2) Rely on a qualitative analysis or performance based standards.
>
> (b) A lead agency may consider the following when assessing the significance of impacts from greenhouse gas emissions on the environment:
>
> > (1) The extent to which the project may increase or reduce greenhouse gas emissions as compared to the existing environmental setting.

[1] State of California, 2008. Governor's Office of Planning and Research. *CEQA and Climate Change: Addressing Climate Change Through California Environmental Quality Act Review*. June 19.

> (2) Whether the project emissions exceed a threshold of significance that the lead agency determines applies to the project.
>
> (3) The extent to which the project complies with regulations or requirements adopted to implement a statewide, regional, or local plan for the reduction or mitigation of greenhouse gas emissions. Such regulations or requirements must be adopted by the relevant public agency through a public review process and must include specific requirements that reduce or mitigate the project's incremental contribution of greenhouse gas emissions. If there is substantial evidence that the possible effects of a particular project are still cumulatively considerable notwithstanding compliance with the adopted regulations or requirements, an EIR must be prepared for the project.

CEQA Guidelines Section 15064(b) provides that the "determination of whether a project may have a significant effect on the environment calls for careful judgment on the part of the public agency involved, based to the extent possible on scientific and factual data," and further, states that an "ironclad definition of significant effect is not always possible because the significance of an activity may vary with the setting."

Individual projects incrementally contribute toward the potential for global climate change on a cumulative basis in concert with all other past, present, and probable future projects. While individual projects are unlikely to measurably affect global climate change, each project incrementally contributes toward the potential for global climate change on a cumulative basis, in concert with all other past, present, and probable future projects.

Revisions to Appendix G of the CEQA Guidelines suggest that the project be evaluated for the following impacts:

- Would the project generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment?
- Would the project conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs?

However, despite this, the CEQA statutes, OPR Guidelines, and the draft proposed changes to the CEQA Guidelines prescribe thresholds of significance or a particular methodology for performing an impact analysis; as with most environmental topics, significance criteria are left to the judgment and discretion of the Lead Agency.

In this vacuum, on December 5, 2008, the SCAQMD adopted an interim GHG threshold of significance for projects where it is the Lead Agency using a tiered approach for determining significance.[1] The objective of the SCAQMD's interim GHG threshold of significance proposal is to achieve a GHG emission capture rate of 90 percent of all new or modified stationary source projects. SCAQMD asserts that a GHG threshold of significance based on a 90 percent emission capture rate is considered more appropriate to address the long-term adverse impacts associated with global climate change because most projects will be required to implement GHG reduction measures. SCAQMD

[1] SCAQMD Draft Guidance Document – *Interim CEQA Greenhouse Gas Significance Threshold*. October 2008.

further asserts that a 90 percent GHG emission capture rate sets the emission threshold low enough to capture a substantial fraction of future stationary source projects that will be constructed to accommodate future statewide population and economic growth while setting the emission threshold high enough to exclude small projects that will in aggregate contribute a relatively small fraction of the cumulative statewide GHG emissions. The following bullet points describe the basic structure of SCAQMD's tiered interim GHG significance threshold for stationary sources:

- **Tier 1** consists of evaluating whether or not the project qualifies for any applicable exemption under CEQA. For example, SB 97 specifically exempts a limited number of projects until it expires in 2010. If the project qualifies for an exemption, no further action is required. If the project does not qualify for an exemption, then it would move to the next tier.
- **Tier 2** consists of determining whether or not the project is consistent with a GHG reduction plan that may be part of a local general plan, for example. The concept embodied in this tier is equivalent to the existing consistency determination requirements in CEQA Guidelines Sections 15064(h)(3), 15125(d), or 15152(a). The GHG reduction plan must, at a minimum, comply with AB 32 GHG reduction goals; include an emissions inventory agreed upon by either ARB or the SCAQMD, have been analyzed under CEQA and have a certified Final CEQA document, and have monitoring and enforcement components. If the proposed project is consistent with the qualifying local GHG reduction plan, it is not significant for GHG emissions. If the project is not consistent with a local GHG reduction plan, there is no approved plan, or the GHG reduction plan does not include all of the components described above, the project would move to Tier 3.
- **Tier 3** establishes a screening significance threshold level to determine significance using a 90 percent GHG emission capture rate. The 90 percent capture rate GHG significance screening level in Tier 3 for stationary sources was derived using the following methodology. Using the SCAQMD's Annual Emission Reporting (AER) Program, the reported annual natural gas consumption for 1,297 permitted facilities for 2006 through 2007 was compiled and the facilities were rank-ordered to estimate the 90th percentile of the cumulative natural gas usage for all permitted facilities. Approximately 10 percent of facilities evaluated comprise more than 90 percent of the total natural gas consumption, which corresponds to 10,000 metric tons of CO_2 equivalent emissions per year ($MTCO_2e/yr$) (the majority of combustion emissions comprise CO_2). At the November 5, 2009 Board meeting Staff recommended the following GHG screening thresholds: Residential: 3500 tons per year (tpy) CO_2e, Commercial: 1400 tpy CO_2e, Mixed use: 3000 tpy CO_2e. If a project's GHG emissions exceed the GHG screening threshold, the project would move to Tier 4.
- **Tier 4** establishes a decision tree approach that includes compliance options for projects that have incorporated design features into the project and/or implement GHG mitigation measures.
    - Option No. 1: Reduction Target (percentage)
        - Max percentage reduction (land use sector reduction-23.9 percent, Scoping Plan overall reduction-28 percent)
        - Target updated as AB 32 Scoping Plan revised
        - Residual emissions not to exceed 25,000 MT CO_2e/yr
        - Base case scenario to be defined
    - Option No. 2: Efficiency Target

- 4.6 MT CO_2e per scoping plan for project level threshold (land use emissions only) and total residual emissions not to exceed 25,000 MT CO_2e/yr
- 6.6 MT CO_2e per scoping plan for plan level threshold (all sectors)

If a project fails to meet any of these emissions reduction targets and efficiency targets, the project would move to Tier 5.

- **Tier 5** would require projects that implement off-site GHG mitigation that includes purchasing offsets to reduce GHG emission impacts to purchase sufficient offsets for the life of the project (30 years) to reduce GHG emissions to less than the applicable GHG screening threshold level.

The interim GHG significance threshold that was adopted by the SCAQMD Governing Board only applies to stationary source/industrial projects where the SCAQMD is the Lead Agency under CEQA. The types of projects that the significance threshold applies to include: SCAQMD rules, rule amendments, and plans (e.g., AQMPs). In addition, the SCAQMD may be the Lead Agency under CEQA for projects that require discretionary approval (i.e., projects that require air quality permits from the SCAQMD and that allow the SCAQMD to exercise discretion with regard to imposing permit conditions). However, for the purposes of this analysis and because the project is an industrial use with stationary sources, the County will use the Tier 3 threshold.

In addition to analyzing the project's GHG impacts consistent with the above SCAQMD approach, this air quality analysis analyzes whether the project's GHG emissions should be considered cumulatively significant based on the following:

- It would hinder attainment of the State's goals of reducing GHG emissions to 1990 levels by 2020, as stated in the Global Warming Solutions Act of 2006. A project may be considered to help attainment of the State's goals by being consistent with an adopted Statewide 2020 GHG emissions limit or the plans, programs, and regulations adopted to implement the Global Warming Solutions Act of 2006.
- It would fail to achieve increased energy efficiency or reduce overall GHG emissions from an existing facility.
- It would significantly increase the consumption of fuels or other energy resources, especially fossil fuels that contribute to GHG emissions when consumed.

The analysis uses compliance with AB 32, considered a "previously approved mitigation program," as set forth in the CEQA Guidelines §15064(h)(3), to determine if the project's incremental contribution of GHGs is a cumulatively considerable contribution to global climate change. OPR's proposed draft amendment to Section 15064.7 of the CEQA Guidelines reinforces the use of this approach. CEQA Guideline Section 15064(h)(3) states three main conditions that a plan must meet to be sufficient for use as a basis for determining significance of GHG emissions. The plan must:

1) Be "a previously approved plan or mitigation program";

2) Provide "specific requirements that will avoid or substantially lessen the cumulative problem"; and

3) "Be specified in law or adopted by the public agency with jurisdiction over the affected resources through a public review process to implement, interpret, or make specific the law enforced or administered by the public agency."

AB 32 meets conditions one and three provided above. Accordingly, in addition to determining whether the project's GHG emissions exceed the SCAQMD's interim industrial section stationary source threshold, In order to determine the significance of the project GHG emission impact on climate change, consistency or inconsistency with the reduction targets in AB 32 is also evaluated. To do so, project features that implement specific reduction measures identified in the rules and regulations that implement AB 32 were evaluated.

5.0 IMPACTS

Air pollutant emissions associated with the Project would occur over the short term from construction activities, such as fugitive dust from site preparation and grading, and emissions from equipment exhaust. Implementation of the proposed Project is not expected to alter the long-term operation of the Dana Point Harbor Marinas. Therefore, no changes to the long-term emissions are anticipated.

5.1 CONSTRUCTION IMPACTS

Construction activities produce combustion emissions from various sources such as utility engines, on-site heavy-duty construction vehicles, equipment hauling materials to and from the site, and motor vehicles transporting the construction crew. Exhaust emissions from construction activities envisioned on site would vary daily as construction activity levels change. The use of construction equipment on site would result in localized exhaust emissions.

Equipment Exhaust and Related Construction Activities. Construction of the Marina Improvement Project is planned to occur in multiple phases over approximately eight years. Each of these phases has been further divided into multiple sub phases, such as the removal of the existing piles and slips, the installation of new piles, and the installation of new slips. The maximum exhaust emissions generated within each of the construction sub-phases are listed in Table F and detailed in Appendix A. This table shows that construction equipment/vehicle emissions during slip and pile removal and installation periods for construction of the proposed Project would exceed the SCAQMD established daily emissions threshold for NO_X and ROC.

Fugitive Dust. Fugitive dust emissions are generally associated with land clearing, exposure, and cut-and-fill operations. Because all construction operations related to the Marina Improvement Project will be conducted on or underwater, no fugitive dust is expected to be generated by these operations. However, fugitive dust could be generated as construction equipment or trucks travel on and off the Harbor property, or from the excavation and pile installation for the ADA gangways and foundations. These emissions will be relatively small and are included in Table F.

Odors

Heavy-duty equipment in the Project area during construction would potentially emit odors, primarily from diesel engine sources and pile driving. However, the construction activity would be short-term and construction odors would cease to occur after individual construction is completed. In addition, on-shore wind conditions at the Harbor are fairly consistent and will function to quickly disperse and dilute any odorous emissions. No other sources of objectionable odors have been identified for the proposed Project and no mitigation measures are required.

Table F: Peak Day Construction Emissions by Sub-Phase[1]

Sub-Phase	CO (lbs/day)	ROC (lbs/day)	NO_x (lbs/day)	Sox (lbs/day)	PM_{10} (lbs/day)	$PM_{2.5}$ (lbs/day)	CO_2 (lbs/day)
Removal of Existing Slips and Piles	441.8	**179.9**	**121.4**	0.5	7.7	6.7	10,733.6
Installation of New Piles	319.2	**135.3**	31.9	0.3	2.6	2.2	2,901.6
Installation of New Slips	340.3	**140.5**	70.9	0.4	4.6	4.0	6,343.5
SCAQMD Emissions Threshold	**550**	**75**	**100**	**150**	**150**	**55**	**n/a**
Exceed Significance?	NO	YES	YES	NO	NO	NO	n/a

Source: LSA Associates, Inc., June 2008.
[1] It is assumed that there is no overlap of these construction phases.

5.2 LONG-TERM PROJECT-RELATED EMISSIONS IMPACTS

Long-term air emission impacts are associated with any change in permanent use of the Project site by on-site stationary and off-site mobile sources that substantially increase emissions. Stationary source emissions include emissions associated with electricity consumption and natural gas usage. Mobile source emissions would result from vehicle trips associated with the proposed Project. The proposed Project would not result in any long-term on-site stationary sources and would have a minimal change in the off-site vehicle trips. Therefore, no emissions were calculated for the proposed Project from long-term mobile source or long-term stationary sources. The Project's air quality impact would be less than significant because there would be no increase in stationary or mobile source emissions.

CO Hotspots Analysis. The primary mobile source pollutant of local concern is CO, which is a direct function of vehicle idling time caused by traffic conditions. CO transport is extremely limited; it disperses rapidly with distance from the source under normal meteorological conditions. Under certain extreme meteorological conditions, CO concentrations proximate to a congested roadway or intersection may reach unhealthy levels affecting local sensitive receptors (residents, schoolchildren, the elderly, hospital patients, etc.). Typically, high CO concentrations are associated with roadways or intersections operating at unacceptable levels of service or with extremely high traffic volumes. In areas with high ambient CO concentrations, modeling of CO concentrations is recommended in determining a Project's effect on local CO levels. Because the proposed Project does not increase or expand capacity, it would have either no change or only a minimal change in off-site vehicle trips, and no significant CO contributions would occur in the Project vicinity. Therefore, no CO "hot spots" are expected, and modeling of CO emissions is not necessary.

5.3 LOCALIZED SIGNIFICANCE

The following analysis was performed per SCAQMD *Final Localized Significance Threshold Methodology* (June 2003). The closest sensitive receptor (The Marina Inn) to this proposed site is located to the north at a distance of approximately 50 m. Thus, LST values for 50 m were used.

Table G shows the construction-related emissions of NO_X, CO, PM_{10}, and $PM_{2.5}$ (see Appendix A) compared to the LSTs for the Capistrano Valley Area.

Table G shows that the calculated emissions rates for the proposed construction activities are below the localized significance thresholds for NO_X, CO, PM_{10}, and $PM_{2.5}$ for all sensitive receptors. Therefore, the proposed construction activities would not cause any short-term, localized, significant air quality impacts.

Table G: Summary of Construction Emissions Localized Significance

Construction Phase	Emission Rates (lbs/day)			
	CO	**NO_X**	**PM_{10}**	**$PM_{2.5}$**
Removal of Existing Slips and Piles	441.8	121.4	7.7	6.7
Installation of New Piles	319.2	31.9	2.6	2.2
Installation of New Slips	340.3	70.9	4.6	4.0
Localized Significance Threshold (at 50 m)	**2,102**	**330**	**37**	**11**
Exceed Significance?	**No**	**No**	**No**	**No**

Source: LSA Associates, Inc., June 2008

5.4 AIR QUALITY MANAGEMENT PLAN CONSISTENCY

An AQMP describes air pollution control strategies to be taken by a city, county, or region classified as a nonattainment area. The main purpose of an AQMP is to bring the area into compliance with federal and State air quality standards. CEQA requires that certain proposed projects be analyzed for consistency with the AQMP. For a project to be consistent with the AQMP adopted by the SCAQMD, the pollutants emitted from the project should not exceed the SCAQMD daily threshold or cause a significant impact on air quality, or the project must already have been included in the AQMP projection. However, if feasible mitigation measures are implemented and shown to reduce the impact level from significant to less than significant, a project may be deemed consistent with the AQMP. The AQMP uses the assumptions and projections of local planning agencies to determine control strategies for regional compliance status. Since the AQMP is based on local General Plans, projects that are deemed consistent with the General Plan are found to be consistent with the AQMP. The proposed project would not result in any population growth and is consistent with the City's General Plan. In addition, the proposed Project is not expected to result in any increase in long-term regional air quality emissions. Therefore, the Project will not conflict with the AQMP, and no significant impact will result with respect to implementation of the AQMP.

5.5 AIR QUALITY CUMULATIVE IMPACTS

Construction of the Project would contribute cumulatively to the local and regional air pollutants, together with other projects under construction. As detailed previously, the Project would result in significant construction-related air quality impacts pertaining to NO_X and ROC [precursors to O_3] emissions. Thus, it is anticipated that these additional NO_X and ROC emissions would result in significant cumulative air quality impacts.

The proposed Project would also contribute to adverse cumulative air quality impacts because construction activity would result in additional emissions of pollutants, which may exacerbate ambient levels currently in excess of applicable NAAQS or CAAQS for PM_{10} and O_3 (because NO_X and ROC are precursors to O_3). The proposed Project, in conjunction with other planned projects, would contribute to the existing nonattainment status. Therefore, the Project-level and cumulative short-term construction impacts of the proposed Project would remain significant and unavoidable.

5.5.1 Global Climate Change

This section evaluates potential significant impacts to global climate change that could result from implementation of the proposed project. Because it is not possible to tie specific GHG emissions to actual changes in climate, this evaluation focuses on the project's emission of GHGs. Mitigation measures are identified as appropriate.

GHG Emissions Background. Emissions estimates for the proposed project are discussed below. GHG emissions estimates are provided herein for informational purposes only, as there is no established quantified GHG emissions threshold. Bearing in mind that CEQA does not require "perfection" but instead "adequacy, completeness, and a good faith effort at full disclosure," the analysis below is based on methodologies and information available to the County at the time this analysis was prepared. Estimation of GHG emissions in the future does not account for all changes in technology that may reduce such emissions; therefore, the estimates are based on past performance and represent a scenario that is worse than that which is likely to be encountered (after energy-efficient technologies have been implemented). While information is presented below to assist the public and the County's decision-makers in understanding the project's potential contribution to global climate change impacts, the information available to the County is not sufficiently detailed to allow a direct comparison between particular project characteristics and particular climate change impacts, nor between any particular proposed mitigation measure and any reduction in climate change impacts.

Construction and operation of project development would generate GHG emissions. Typically, more than 80 percent of the total energy consumption takes place during the use of buildings, and less than 20 percent is consumed during construction.[1] However, as the proposed project is replacing an existing use with a similar facility, the long-term impact on energy consumption would be negligible.

Overall, the following activities associated with the proposed project could directly or indirectly contribute to the generation of GHG emissions:

- **Construction Activities:** During construction of the project, GHGs would be emitted through the operation of construction equipment and from worker and vendor vehicles, each of which typically uses fossil-based fuels to operate. The combustion of fossil-based fuels creates GHGs such as CO_2, CH_4, and N_2O. Furthermore, CH_4 is emitted during the fueling of heavy equipment.
- **Solid Waste Disposal:** Solid waste generated by the project could contribute to GHG emissions in a variety of ways. Landfilling and other methods of disposal use energy for transporting and

[1] United Nations Environment Programme (UNEP), 2007. *Buildings and Climate Change: Status, Challenges and Opportunities*, Paris, France.

managing the waste, and they produce additional GHGs to varying degrees. Landfilling, the most common waste management practice, results in the release of CH_4 from the anaerobic decomposition of organic materials. CH_4 is 25 times more potent a GHG than CO_2. However, landfill CH_4 can also be a source of energy. In addition, many materials in landfills do not decompose fully, and the carbon that remains is sequestered in the landfill and not released into the atmosphere.

- **Motor Vehicle Use:** Transportation associated with the proposed project would result in GHG emissions from the combustion of fossil fuels in daily automobile and truck trips.

Preliminary guidance from OPR and recent letters from the Attorney General critical of CEQA documents that have taken different approaches indicate that lead agencies should calculate, or estimate, emissions from vehicular traffic, energy consumption, water conveyance and treatment, waste generation, and construction activities. The calculation presented below includes construction emissions in terms of CO_2.

GHG emissions generated by the proposed project would predominantly consist of CO_2. In comparison to criteria air pollutants such as O_3 and PM_{10}, CO_2 emissions persist in the atmosphere for a substantially longer period of time. While emissions of other GHGs, such as CH_4, are important with respect to global climate change, emission levels of other GHGs are less dependent on the land use and circulation patterns associated with the proposed land use development project than are levels of CO_2.

Construction activities produce combustion emissions from various sources such as site grading, utility engines, on-site heavy-duty construction vehicles, equipment hauling materials to and from the site, and motor vehicles transporting the construction crew. Exhaust emissions from on-site construction activities would vary daily as construction activity levels change.

The actual details of the future construction schedule are not known. The only GHG with well-studied emissions characteristics and published emissions factors for construction equipment is CO_2. The construction modeling (Table F) lists a peak daily emissions rate of 10,734 lbs/day of CO_2 during the removal of the existing piles and slips. The removal of the existing slips and piles will require up to 80 days to complete. The installation of the new piles and slips will require 320 days and 40 days, respectively. The total CO2 generated during the project construction will be 2,041,000 lbs or 925 metric tons.

The project would be required to implement the construction exhaust control measures listed in Section 5.6 including minimization of construction equipment idling and implementation of proper engine tuning and exhaust controls. Both of these measures would reduce GHG emissions during the construction period (but other measures would be required to reduce GHG emissions to a less than significant level).

Due to the global nature of this phenomenon and the scale of the emissions, total emissions are expressed in units of teragrams (a trillion [10^{12}] grams or one million metric tons [tonnes]) per year (Tg/year). This is the standard metric unit used worldwide. As described above, the project will produce 925 metric tonnes of CO_2, which is approximately 0.0093 Tg/year of CO_2. As a comparison, the existing emissions from the entire SCAG region are estimated to be approximately 176.79 million

metric tonnes of CO_2 per year and approximately 496.95 million metric tonnes of CO_2 per year for the entire State.

As described above, project-related GHG emissions are not confined to a particular air basin but are dispersed worldwide. Consequently, it is difficult to determine how project-related GHG emissions would contribute to global climate change and how global climate change may impact California. Therefore, project-related GHG emissions are not project-specific impacts to global warming but are instead the project's contribution to this cumulative impact.

Implementation of the project would result in GHG emission levels that would not substantially conflict with implementation of the GHG reduction goals under AB 32 or other State regulations. However, in order to ensure that the proposed project complies with and would not conflict with or impede the implementation of reduction goals identified in AB 32, the Governor's Executive Order S-3-05, and other strategies to help reduce GHGs to the level proposed by the Governor, Mitigation Measure GCC-1 shall be implemented.

5.6 STANDARD CONDITIONS

The Project must comply with the following standard conditions. Therefore, implementation of these measures was included in the analysis above.

A. The Project is required to comply with regional rules that assist in reducing short-term air pollutant emissions generated during construction. SCAQMD Rule 403 requires that fugitive dust be controlled with best available control measures so that the presence of such dust does not remain visible in the atmosphere beyond the property line of the emission source. In addition, SCAQMD Rule 402 requires implementation of dust suppression techniques to prevent fugitive dust from creating a nuisance off site. Applicable dust suppression techniques from Rule 403 are summarized below. Implementation of these dust suppression techniques would reduce the fugitive dust generation (and thus the PM_{10} and $PM_{2.5}$ components). Compliance with these rules would reduce the short-term Project air quality impacts on nearby sensitive receptors.

Applicable Rule 403 Measures:

- Water active landside construction areas at least twice daily. Locations where equipment operations are to occur will be thoroughly watered prior to use.
- All trucks hauling dirt, sand, soil, or other loose materials are to be covered, or should maintain at least two feet of freeboard in accordance with the requirements of California Vehicle Code (CVC) section 23114 (freeboard means vertical space between the top of the load and top of the trailer).
- Use low-sulfur fuel for stationary construction equipment. This is required by SCAQMD Rules 431.1 and 431.2.

B. The following additional dust suppression measures in the SCAQMD *CEQA Air Quality Handbook* are included to further reduce the likelihood of air quality impacts:

- Sweep all streets once per day if visible soil materials are carried to adjacent streets (recommend water sweepers with reclaimed water).
- Pave, water, or chemically stabilize all on-site roads as soon as feasible.
- Minimize at all times the area disturbed by earthmoving or excavation operations.

C. The construction contractor will select the construction equipment used on site based on low-emission factors and high energy efficiency. The Construction Contractor will ensure that construction plans include a statement that all construction equipment will be tuned and maintained in accordance with the manufacturer's specifications.

D. The construction contractor will time the construction activities so as to not interfere with peak-hour traffic and minimize obstruction of through traffic lanes adjacent to the site; if necessary, a flagperson shall be retained to maintain safety adjacent to existing roadways.

E. The construction contractor will support and encourage ridesharing and transit incentives for the construction crew.

5.6.1 Global Climate Change Impacts

Minimization Measure GCC-1. To the extent feasible and to the satisfaction of the County, the following measures shall be incorporated into the design and construction of the project (including specific building projects):

Energy Efficiency Measures.

- Install efficient lighting and lighting control systems.
- Install solar or light-emitting diodes (LEDs) for outdoor lighting.

Solid Waste Measures.

- Reuse and recycle construction waste (including, but not limited to, concrete, lumber, metal, and cardboard);
- Provide interior and exterior storage areas for recyclables and green waste and adequate recycling containers located in public areas; and

In addition, the project would also be subject to all applicable regulatory requirements, which would also reduce the GHG emissions of the project. After implementation of Minimization Measure GCC-1 and application of regulatory requirements, the project would implement appropriate GHG reduction strategies and would not conflict with or impede implementation of reduction goals identified in AB 32, the Governor's Executive Order S-3-05, and other strategies to help reduce GHGs to the level proposed by the Governor. Therefore, the project's contribution to cumulative GHG emissions would be reduced to a less than significant level.

5.7 LEVEL OF SIGNIFICANCE AFTER MITIGATION

The proposed Project would result in significant unavoidable short-term construction air quality impacts (ROC and NO_X emissions [precursors to O_3]) after implementation of standard conditions and SCAQMD rules and regulations. While the adherence to SCAQMD rules and regulations would reduce this impact, it would remain significant and adverse because the SCAQMD daily threshold would be exceeded. No feasible mitigation measures beyond compliance with SCAQMD rules and regulations are available to offset this significant impact.

The Project construction activities would also contribute to construction-related adverse cumulative air quality impacts because the Basin is presently in nonattainment for O_3, and the Project, in conjunction with other planned projects, would contribute to the existing nonattainment status for O_3.

6.0 REFERENCES

California Air Resources Board Web site: http://www.arb.ca.gov.

California Air Resources Board. *Climate Change Scoping Plan*, December 2008.

South Coast Air Quality Management District. Air Quality Management Plan, 2007.

South Coast Air Quality Management District. *CEQA Air Quality Handbook*, 1993.

South Coast Air Quality Management District. *Final Localized Significance Threshold Methodology*, June 2003.

South Coast Air Quality Management District. *Final Methodology to Calculate Particulate Matter (PM) 2.5 and $PM_{2.5}$ Significance Thresholds*, October 2006.

Western Regional Climate Center Web site: http://www.wrcc.dri.edu.

APPENDIX A

CONSTRUCTION EMISSIONS WORKSHEETS

Dana Point Harbor

ENGINE EXHAUST EMISSIONS

Source [1]	Parameter 1	Parameter 2	CO Emission Factor	CO Emission (lbs/day)	ROC Emission Factor	ROC Emission (lbs/day)	NOx Emission Factor	NOx Emission (lbs/day)	SOx Emission Factor	SOx Emission (lbs/day)	PM10 Emission Factor	PM10 Emission (lbs/day)	PM2.5 Emission Factor	PM2.5 Emission (lbs/day)	CO2 Emission Factor	CO2 Emission (lbs/day)
Phase 1a: Remove Existing Slips and Piles																
Diesel Crane	8 hours/day	2 unit	0.637 lb/hr	10.2	0.188 lb/hr	3.0	1.695 lb/hr	27.1	0.001 lb/hr	0.0	0.076 lb/hr	1.2	0.067 lb/hr	1.1	95.080 lb/hr	1,521.3
Backhoe	8 hours/day	2 unit	0.414 lb/hr	6.6	0.131 lb/hr	2.1	0.830 lb/hr	13.3	0.001 lb/hr	0.0	0.064 lb/hr	1.0	0.057 lb/hr	0.9	51.820 lb/hr	829.1
Loader	8 hours/day	1 unit	0.555 lb/hr	4.4	0.173 lb/hr	1.4	1.382 lb/hr	11.1	0.001 lb/hr	0.0	0.077 lb/hr	0.6	0.069 lb/hr	0.5	86.290 lb/hr	690.3
Bobcat	8 hours/day	1 unit	0.399 lb/hr	3.2	0.168 lb/hr	1.3	0.329 lb/hr	2.6	0.000 lb/hr	0.0	0.039 lb/hr	0.3	0.035 lb/hr	0.3	20.540 lb/hr	164.3
1200HP Tugboats	1 hours/day	2 unit	1.024 lb/hr	2.0	0.339 lb/hr	0.7	5.000 lb/hr	10.0	0.115 lb/hr	0.2	0.155 lb/hr	0.3	0.138 lb/hr	0.3	316.930 lb/hr	633.9
Diesel Generator	8 hours/day	1 unit	0.322 lb/hr	2.6	0.094 lb/hr	0.8	0.656 lb/hr	5.2	0.001 lb/hr	0.0	0.048 lb/hr	0.4	0.043 lb/hr	0.3	40.250 lb/hr	322.0
Air Compressors	8 hours/day	2 unit	0.293 lb/hr	4.7	0.131 lb/hr	2.1	0.247 lb/hr	3.9	0.000 lb/hr	0.0	0.029 lb/hr	0.5	0.026 lb/hr	0.4	15.660 lb/hr	250.6
Gas Skiffs	5 hours/day	2 unit	37.667 lb/hr	376.7	16.521 lb/hr	165.2	0.011 lb/hr	0.1	0.011 lb/hr	0.1	0.156 lb/hr	1.6	0.139 lb/hr	1.4	30.320 lb/hr	303.2
Heavy Duty Trucks	40 miles	40 trips per day	6.733 gr/VMT	23.7	0.867 gr/VMT	3.1	13.366 gr/VMT	47.1	0.014 gr/VMT	0.0	0.481 gr/VMT	1.7	0.416 gr/VMT	1.5	1500.110 gr/VMT	5,291.4
Worker Commute (Light Duty Auto)	40 miles	25 trips per day	3.430 gr/VMT	7.6	0.150 gr/VMT	0.3	0.420 gr/VMT	0.9	0.003 gr/VMT	0.0	0.032 gr/VMT	0.1	0.017 gr/VMT	0.0	330.290 gr/VMT	727.5
<TOTAL>				441.8		179.9		121.4		0.5		7.7		6.7		10,733.6

Phase 1b: Install New Piles																
Diesel Crane	4 hours/day	2 unit	0.637 lb/hr	5.1	0.188 lb/hr	1.5	1.695 lb/hr	13.6	0.001 lb/hr	0.0	0.076 lb/hr	0.6	0.067 lb/hr	0.5	95.080 lb/hr	760.6
Pile Driver	4 hours/day	1 unit	0.475 lb/hr	1.9	0.131 lb/hr	0.5	1.241 lb/hr	5.0	0.001 lb/hr	0.0	0.054 lb/hr	0.2	0.048 lb/hr	0.2	68.120 lb/hr	272.5
1200HP Tugboats	1 hours/day	2 unit	1.024 lb/hr	2.0	0.339 lb/hr	0.7	5.000 lb/hr	10.0	0.115 lb/hr	0.2	0.155 lb/hr	0.3	0.138 lb/hr	0.3	316.930 lb/hr	633.9
Gas Skiffs	4 hours/day	2 unit	37.667 lb/hr	301.3	16.521 lb/hr	132.2	0.011 lb/hr	0.1	0.011 lb/hr	0.1	0.156 lb/hr	1.2	0.139 lb/hr	1.1	30.320 lb/hr	242.6
Heavy Duty Trucks	40 miles	2 trips per day	6.733 gr/VMT	1.2	0.867 gr/VMT	0.2	13.366 gr/VMT	2.4	0.014 gr/VMT	0.0	0.481 gr/VMT	0.1	0.416 gr/VMT	0.1	1500.110 gr/VMT	264.6
Worker Commute (Light Duty Auto)	40 miles	25 trips per day	3.430 gr/VMT	7.6	0.150 gr/VMT	0.3	0.420 gr/VMT	0.9	0.003 gr/VMT	0.0	0.032 gr/VMT	0.1	0.017 gr/VMT	0.0	330.290 gr/VMT	727.5
<TOTAL>				319.2		135.3		31.9		0.3		2.6		2.2		2,901.6
Phase 1c: Install New Slips																
Diesel Crane	8 hours/day	2 unit	0.637 lb/hr	10.2	0.188 lb/hr	3.0	1.695 lb/hr	27.1	0.001 lb/hr	0.0	0.076 lb/hr	1.2	0.067 lb/hr	1.1	95.080 lb/hr	1,521.3
Gas Skiffs	4 hours/day	2 unit	37.667 lb/hr	301.3	16.521 lb/hr	132.2	0.011 lb/hr	0.1	0.011 lb/hr	0.1	0.156 lb/hr	1.2	0.139 lb/hr	1.1	30.320 lb/hr	242.6
1200HP Tugboats	1 hours/day	2 unit	1.024 lb/hr	2.0	0.339 lb/hr	0.7	5.000 lb/hr	10.0	0.115 lb/hr	0.2	0.155 lb/hr	0.3	0.138 lb/hr	0.3	316.930 lb/hr	633.9
Diesel Generator	8 hours/day	1 unit	0.322 lb/hr	2.6	0.094 lb/hr	0.8	0.656 lb/hr	5.2	0.001 lb/hr	0.0	0.048 lb/hr	0.4	0.043 lb/hr	0.3	40.250 lb/hr	322.0
Air Compressors	8 hours/day	2 unit	0.293 lb/hr	4.7	0.131 lb/hr	2.1	0.247 lb/hr	3.9	0.000 lb/hr	0.0	0.029 lb/hr	0.5	0.026 lb/hr	0.4	15.660 lb/hr	250.6
Heavy Duty Trucks	40 miles	20 trips per day	6.733 gr/VMT	11.9	0.867 gr/VMT	1.5	13.366 gr/VMT	23.6	0.014 gr/VMT	0.0	0.481 gr/VMT	0.8	0.416 gr/VMT	0.7	1500.110 gr/VMT	2,645.7
Worker Commute (Light Duty Auto)	40 miles	25 trips per day	3.430 gr/VMT	7.6	0.150 gr/VMT	0.3	0.420 gr/VMT	0.9	0.003 gr/VMT	0.0	0.032 gr/VMT	0.1	0.017 gr/VMT	0.0	330.290 gr/VMT	727.5
<TOTAL>				340.3		140.5		70.9		0.4		4.6		4.0		6,343.5

Peak Emissions for Phase		CO	441.8	ROC	179.9	NOx	121.4	SOx	0.5	PM10	7.7	PM2.5	6.7	CO2	10,733.6
	Threshold		550		75		100		150		150		150		NA