5.2 - Air Quality

5.2.1 - Introduction

This section describes the existing air quality setting and potential effects from project implementation on the site and its surrounding area. Michael Brandman Associates performed air quality analysis for the proposed project, which included construction and operational air quality modeling, and greenhouse gas emissions modeling. URBEMIS 2007 Version 9.2 was used to quantify project related emissions. The air quality modeling output is provided in Appendix C.

The South Coast Air Quality Management District (SCAQMD) submitted a comment letter regarding air quality during the Notice of Preparation comment period. The SCAQMD recommended that the following be included in the air quality analysis:

- Use of the 1993 CEQA Air Quality Handbook in the preparation of the analysis;
- Estimation of both construction and operational impacts;
- Estimation of $PM_{2.5}$ emissions;
- Use of the Localized Significance Thresholds (LSTs);
- Preparation of a Health Risk Assessment if the project attracts heavy-duty diesel vehicles; and
- Implementation of all feasible mitigation measures beyond what is required by law to minimize or eliminate significant adverse air quality impacts.

The following analysis incorporates all of the SCAQMD suggestions except for the preparation of a Health Risk Assessment. This is because the proposed project does not involve the development of uses that would generate or attract toxic air contaminants.

5.2.2 - Existing Conditions

Regulatory Setting

The proposed project is located in the City of Newport Beach in the County of Orange, and within the South Coast Air Basin (Air Basin). Regional and local air quality is impacted by dominant airflows, topography, atmospheric inversions, location, season, and time of day. The quality of the air can be assessed by measuring the concentrations of certain air pollutants over time. The higher the concentration, the more effects may be observed.

Air Pollutants

Air pollutants have different properties, health effects, and sources. The following is a description of the pollutants of concern.

- **Ozone** is not emitted directly into the air, but is formed by a photochemical reaction in the atmosphere. Ozone precursors, which include volatile organic compounds (VOC) and oxides

of nitrogen (NOx), react in the atmosphere in the presence of sunlight to form ozone. Because photochemical reaction rates depend on the intensity of ultraviolet light and air temperature, ozone is primarily a summer air pollution problem. Often, the effects of emitted VOC and NOx are felt a distance downwind of the emission sources. Ozone is subsequently considered a regional pollutant. Ground-level ozone is a respiratory irritant and an oxidant that increases susceptibility to respiratory infections and can cause substantial damage to vegetation and other materials.

Ozone can irritate lung airways and cause inflammation much like a sunburn. Other symptoms include wheezing, coughing, pain when taking a deep breath, and breathing difficulties during exercise or outdoor activities. People with respiratory problems are most vulnerable, but even healthy people who are active outdoors can be affected when ozone levels are high. Chronic ozone exposure can induce morphological (tissue) changes throughout the respiratory tract, particularly at the junction of the conducting airways and the gas exchange zone in the deep lung. Anyone who spends time outdoors in the summer is at risk, particularly children and other people who are more active outdoors. Even at very low levels, ground-level ozone triggers a variety of health problems, including aggravated asthma, reduced lung capacity, and increased susceptibility to respiratory illnesses like pneumonia and bronchitis.

Ozone also damages vegetation and ecosystems. It leads to reduced agricultural crop and commercial forest yields; reduced growth and survivability of tree seedlings; and increased susceptibility to diseases, pests, and other stresses such as harsh weather. In the United States alone, ozone is responsible for an estimated $500 million in reduced crop production each year. Ozone also damages the foliage of trees and other plants, affecting the landscape of cities, national parks and forests, and recreation areas. In addition, ozone causes damage to buildings, rubber, and some plastics.

Ozone is a regional pollutant, as the reactions forming it take place over time, and it materializes downwind from the sources of the emissions. As a photochemical pollutant, ozone is formed only during daylight hours under appropriate conditions, but it is destroyed throughout the day and night. Thus, ozone concentrations vary, depending upon both the time of day and the location. Even in pristine areas, some ambient ozone forms from natural emissions that are not controllable. This is termed background ozone. The average background ozone concentrations near sea level are in the range of 0.015 to 0.035 parts per million (ppm), with a maximum of about 0.04 ppm.

- **Reactive Organic Gases (ROG)**, also known as **Volatile Organic Compounds (VOCs)**, are defined as any compound of carbon, excluding carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates, and ammonium carbonate, which participate in atmospheric photochemical reactions. VOC consist of non-methane hydrocarbons and oxygenated hydrocarbons. Hydrocarbons are organic compounds that contain only hydrogen and carbon atoms. Non-methane hydrocarbons are hydrocarbons that do not contain the

unreactive hydrocarbon methane. Oxygenated hydrocarbons are hydrocarbons with oxygenated functional groups attached.

It should be noted that there are no state or national ambient air quality standards for VOC because they are not classified as criteria pollutants. They are regulated, however, because a reduction in VOC emissions reduces certain chemical reactions that contribute to the formulation of ozone. VOC is also transformed into organic aerosols in the atmosphere, which contribute to higher PM_{10} levels and lower visibility.

- **Nitrogen oxides (NO_x)** are a mixture of nitric oxide and nitrogen dioxide in the atmosphere. During combustion of fossil fuels, oxygen reacts with nitrogen to produce nitrogen oxides or NOx. This occurs primarily in motor vehicle internal combustion engines and fossil fuel-fired electric utility facilities and industrial boilers. The pollutant NOx is a concern because it is an ozone precursor, which means that it helps form ozone. When NOx and VOC are released in the atmosphere, they can chemically react with one another in the presence of sunlight and heat to form ozone. NOx can also be a precursor to PM_{10} and $PM_{2.5}$. Because NOx and VOC are ozone precursors, the health effects associated with ozone (as discussed above) are also indirect health effects associated with significant levels of NOx and VOC emissions.

- **Suspended particulate matter (PM_{10} and $PM_{2.5}$)** is a mixture of small particles that consists of dry solid fragments, droplets of water, or solid cores with liquid coatings. Some particles, such as dust, dirt, soot, or smoke, are large or dark enough to be seen with the naked eye. Others are so small they can only be detected using an electron microscope.
  Particle pollution includes "inhalable coarse particles," with diameters larger than 2.5 micrometers and smaller than 10 micrometers and "fine particles," with diameters that are 2.5 micrometers and smaller. For reference, $PM_{2.5}$ is approximately one-thirtieth the size of the average human hair.

  These particles come in many sizes and shapes and can be made up of hundreds of different chemicals. Some particles, known as primary particles, are emitted directly from a source, such as construction sites, unpaved roads, fields, smokestacks, or fires. Others form in complicated reactions in the atmosphere from chemicals such as sulfur dioxides and nitrogen oxides that are emitted from power plants, industrial activity, and automobiles. These particles, known as secondary particles, make up most of the fine particle pollution in the United States.

  Particle exposure can lead to a variety of health effects. For example, numerous studies link particle levels to increased hospital admissions and emergency room visits—and even to death from heart or lung diseases. Both long- and short-term particle exposures have been linked to health problems. Long-term exposures, such as those experienced by people living for many years in areas with high particle levels, have been associated with problems such as reduced lung function, the development of chronic bronchitis, and even premature death. Short-term exposures to particles (hours or days) can aggravate lung disease, causing asthma attacks and

acute bronchitis, and may increase susceptibility to respiratory infections. In people with heart disease, short-term exposures have been linked to heart attacks and arrhythmias. Healthy children and adults have not been reported to suffer serious effects from short-term exposures, although they may experience temporary minor irritation when particle levels are elevated.

- **Carbon Monoxide (CO)** is a colorless, odorless gas that is formed when carbon in fuel is not burned completely. It is a component of motor vehicle exhaust, which contributes about 56 percent of all CO emissions nationwide. Other non-road engines and vehicles (such as construction equipment and boats) contribute about 22 percent of all CO emissions nationwide. Higher levels of CO generally occur in areas with heavy traffic congestion. In cities, 85 to 95 percent of all CO emissions may come from motor vehicle exhaust. Other sources of CO emissions include industrial processes (such as metals processing and chemical manufacturing), residential woodburning, and natural sources such as forest fires. Woodstoves, gas stoves, cigarette smoke, and unvented gas and kerosene space heaters are sources of CO indoors.

  CO is a public health concern because it combines readily with hemoglobin, reducing the amount of oxygen transported in the bloodstream. The health threat from lower levels of CO is most serious for those who suffer from such heart-related diseases as angina, clogged arteries, or congestive heart failure. For a person with heart disease, a single exposure to CO at low levels may cause chest pain and reduce that person's ability to exercise; repeated exposures may contribute to other cardiovascular effects. High levels of CO can affect even healthy people. People who breathe high levels of CO can develop vision problems, reduced ability to work or learn, reduced manual dexterity, and difficulty performing complex tasks. At extremely high levels, CO is poisonous and can cause death.

  Motor vehicles are the dominant source of CO emissions in most areas. CO is described as having only a local influence because it dissipates quickly. High CO levels develop primarily during winter, when periods of light winds combine with the formation of ground-level temperature inversions (typically from the evening through early morning). These conditions result in reduced dispersion of vehicle emissions. Because CO is a product of incomplete combustion, motor vehicles exhibit increased CO emission rates at low air temperatures. High CO concentrations occur in areas of limited geographic size, sometimes referred to as hot spots. Since CO concentrations are strongly associated with motor vehicle emissions, high CO concentrations generally occur in the immediate vicinity of roadways with high traffic volumes and traffic congestion, active parking lots, and in automobile tunnels. Areas adjacent to heavily traveled and congested intersections are particularly susceptible to high CO concentrations.

- **Visibility reducing particles** are suspended particulate matter. Visibility is the distance through the air that an object can be seen without the use of instrumental assistance. Visibility reducing particles are not assessed in this analysis; however, particulate matter is assessed.

- **Vinyl chloride** is a chlorinated hydrocarbon and a colorless gas with a mild, sweet odor. Most vinyl chloride is used to make polyvinyl chloride (PVC) plastic and vinyl products. Vinyl chloride is a known carcinogen. The 24-hour state standard for vinyl chloride is 0.01 parts per million (ppm). The proposed project is not expected to generate or be exposed to vinyl chloride because proposed project uses do not utilize the chemical processes that create this pollutant. Therefore, it is not assessed in this analysis.

- **Sulfur dioxide and sulfates**. In California, sulfur is emitted during the combustion of petroleum-derived fuels (i.e., gasoline and diesel fuel) that contain sulfur. During combustion, sulfur is oxidized to sulfur dioxide (a colorless pungent gas). The sulfur dioxide is then converted to sulfate compounds in the atmosphere.

- **Lead** is a heavy metal that can accumulate in bone, soft tissue, and blood; can damage the kidneys, liver, and nervous system; and can result in learning disabilities, seizures, and death. Lead concentrations once exceeded the state and national air quality standards by a wide margin, but have not exceeded state or national air quality standards in the area for at least 10 years. Lead is no longer an additive in gasoline, which is the main reason the concentration of lead in the air is low.

- **Hydrogen sulfide** is a flammable, colorless, poisonous gas that smells like rotten eggs. It can irritate the eyes and respiratory tract and cause symptoms like headache, nausea, vomiting, and cough. The 1-hour state standard for hydrogen sulfide is 0.03 ppm. Sources include the combustion of sulfur containing fuels (oil and coal) and organic matter that undergoes putrefaction. It is used in the production of heavy water for nuclear reactors, the manufacture of chemicals, in metallurgy, and as an analytical reagent. The proposed Project is not expected to cause exposure to hydrogen sulfide because it will not generate hydrogen sulfide in any substantial quantity. Therefore, hydrogen sulfide is not assessed in this analysis.

- **Toxic Air Contaminants (TACs)** are defined as air pollutants which may cause or contribute to an increase in mortality or serious illness, or which may pose a hazard to human health. TACs are usually present in minute quantities in the ambient air. However, their high toxicity or health risk may pose a threat to public health even at very low concentrations. In general, for those TACs that may cause cancer, there is no concentration that does not present some risk. In other words, there is no threshold level below which adverse health impacts are not expected to occur. This contrasts with the criteria pollutants for which acceptable levels of exposure can be determined and for which the state and federal governments have set ambient air quality standards.

  The ARB's TAC program traces its beginning to the criteria pollutant program in the 1960s. For many years, the criteria pollutant control program has been effective at reducing TACs, since many volatile organic compounds and PM constituents are also TACs. During the 1980s, the public's concern over toxic chemicals heightened. As a result, citizens demanded protection and control over the release of toxic chemicals into the air. In response to public

concerns, the California legislature enacted the Toxic Air Contaminant Identification and Control Act governing the release of TACs into the air. This law charges the ARB with the responsibility for identifying substances as TACs, setting priorities for control, adopting control strategies, and promoting alternative processes. The ARB has designated almost 200 compounds as TACs. Additionally, the ARB has implemented control strategies for a number of compounds that pose high health risk and show potential for effective control.

- **Diesel Particulate Matter (Diesel PM)** emissions from diesel-fueled engines was identified by the ARB engines as a TAC in August 1998 under California's TAC program. In California, diesel engine exhaust has been identified as a carcinogen. Most researchers believe that diesel exhaust particles contribute the majority of the risk.

  Diesel PM is emitted from both mobile and stationary sources. In California, on-road diesel-fueled vehicles contribute approximately 40 percent of the statewide total, with an additional 57 percent attributed to other mobile sources such as construction and mining equipment, agricultural equipment, and transport refrigeration units. Stationary sources, contributing about 3 percent of emissions, include shipyards, warehouses, heavy equipment repair yards, and oil and gas production operations. Emissions from these sources are from diesel-fueled internal combustion engines. Stationary sources that report diesel PM emissions also include heavy construction (except highway) manufacturers of asphalt paving materials and blocks, and electrical generation.

- **Greenhouse Gases**. Gases that trap heat in the atmosphere are greenhouse gases, analogous to the way a greenhouse retains heat. The accumulation of greenhouse gases in the atmosphere regulates the earth's temperature to be suitable for life. However, human activities have increased the amount of greenhouse gases in the atmosphere. Some greenhouse gases can remain in the atmosphere for hundreds of years. The following is a brief description of the most common greenhouse gases.
  - **Water vapor** is the most abundant, important, and variable greenhouse gas. It is not considered a pollutant; in the atmosphere, it maintains a climate necessary for life.
  - **Ozone** is known as a photochemical pollutant and is a greenhouse gas; however, unlike other greenhouse gases, ozone in the troposphere is relatively short-lived and, therefore, is not global in nature. Ozone is not emitted directly into the atmosphere but is formed by a complex series of chemical reactions between volatile organic compounds, nitrogen oxides, and sunlight.
  - **Aerosols** are suspensions of particulate matter in a gas emitted into the air through burning biomass (plant material) and fossil fuels. Aerosols can warm the atmosphere by absorbing and emitting heat and can cool the atmosphere by reflecting light.
  - **Carbon dioxide (CO_2)** is an odorless, colorless natural greenhouse gas. Carbon dioxide is emitted from natural and anthropogenic sources. Natural sources include the following: decomposition of dead organic matter; respiration of bacteria, plants,

animals, and fungus; evaporation from oceans; and volcanic outgassing. Anthropogenic sources are from burning coal, oil, natural gas, and wood.

- **Methane** is a flammable greenhouse gas. A natural source of methane is from the anaerobic decay of organic matter. Geological deposits, known as natural gas fields, also contain methane, which is extracted for fuel. Other sources are from landfills, fermentation of manure, and ruminants such as cattle.
- **Nitrous oxide**, also known as laughing gas, is a colorless greenhouse gas. Nitrous oxide is produced by microbial processes in soil and water, including those reactions that occur in fertilizer containing nitrogen. In addition to agricultural sources, some industrial processes (fossil fuel-fired power plants, nylon production, nitric acid production, and vehicle emissions) also contribute to its atmospheric load.
- **Chlorofluorocarbons (CFCs)** are nontoxic, nonflammable, insoluble, and chemically unreactive in the troposphere (the level of air at the earth's surface). CFCs were first synthesized in 1928 for use as refrigerants, aerosol propellants, and cleaning solvents. CFCs destroy stratospheric ozone; therefore, their production was stopped as required by the Montreal Protocol in 1987. The project would not emit CFCs.
- **Hydrofluorocarbons (HFCs)** are synthetic chemicals that are used as a substitute for CFCs. Of all the greenhouse gases, HFCs are one of three groups (the other two are perfluorocarbons and sulfur hexafluoride) with the highest global warming potential. The global warming potential is the potential of a gas to contribute to global warming; it is based on a reference scale with carbon dioxide at one. HFCs are human-made for applications such as air conditioners and refrigerants.
- **Perfluorocarbons (PFCs)** have stable molecular structures and do not break down through the chemical processes in the lower atmosphere; therefore, PFCs have long atmospheric lifetimes, between 10,000 and 50,000 years. The two main sources of PFCs are primary aluminum production and semiconductor manufacture. It is not anticipated that the project would emit PFCs.
- **Sulfur hexafluoride (SF_6)** is an inorganic, odorless, colorless, nontoxic, nonflammable gas. It has the highest global warming potential of any gas evaluated. Sulfur hexafluoride is used for insulation in electric power transmission and distribution equipment, in the magnesium industry, in semiconductor manufacturing, and as a tracer gas for leak detection. It is not anticipated that the project would emit SF_6.

Regulatory Information

Air pollutants are regulated at the national, state, and air basin level; each agency has a different degree of responsibility. The United States Environmental Protection Agency (EPA) regulates at the national level. The California Air Resources Board (ARB) regulates at the state level. The SCAQMD regulates at the air basin level.

The EPA handles global, international, national, and interstate air pollution issues and policies. The EPA sets national vehicle and stationary source emission standards, oversees approval of all State Implementation Plans (SIP), provides research and guidance in air pollution programs, and sets national Ambient Air Quality Standards (AAQS), also known as federal standards. There are national AAQS for six common air pollutants, called criteria air pollutants, which were identified resulting from provisions of the Clean Air Act of 1970. The six criteria pollutants are ozone, particulate matter (PM_{10} and $PM_{2.5}$), nitrogen dioxide, carbon monoxide (CO), lead, and sulfur dioxide. The national AAQS were set to protect the health of sensitive individuals; thus, the standards continue to change as more medical research is available regarding the health effects of the criteria pollutants.

The ARB has overall responsibility for statewide air quality maintenance and air pollution prevention. The SIP for the State of California is administered by the ARB. A SIP is a document prepared by each state describing existing air quality conditions and measures that will be followed to attain and maintain national AAQS. The ARB also administers California AAQS, or state standards, for the ten air pollutants designated in the California Clean Air Act. The ten state air pollutants are visibility reducing particulates, hydrogen sulfide, sulfates, vinyl chloride, and the six criteria pollutants.

The air pollution control agency for the Air Basin is the SCAQMD. SCAQMD is responsible for controlling emissions primarily from stationary sources. SCAQMD maintains air quality monitoring stations throughout the Air Basin. SCAQMD, in coordination with SCAG, is also responsible for developing, updating, and implementing the Air Quality Management Plan (AQMP) for the Air Basin. An AQMP is a plan prepared by an air pollution control district for a county or region designated as a nonattainment area for bringing the area into compliance with the requirements of the national and/or California ambient air quality standards. (Air basins where ambient air quality standards are exceeded are referred to as “nonattainment” areas.)

The current AQMP for the Air Basin is the 2007 AQMP, which was adopted by the SCAQMD on June 1, 2007. On July 13, 2007, the SCAQMD Board adopted 2007 Final AQMP Transportation Conformity Budgets and directed the Executive Officer to forward them to ARB for its approval and subsequent submittal to the EPA. On September 27, 2007, ARB adopted the State Strategy for the 2007 State Implementation Plan (SIP) and the 2007 AQMP as part of the SIP.

The 2007 AQMP incorporates significant new emissions inventories, ambient measurements, scientific data, control strategies, and air quality modeling. The 2007 AQMP outlines a detailed strategy for meeting the federal health-based standards for $PM_{2.5}$ by 2015 and 8-hour ozone by 2024 while accounting for and accommodating future expected growth. Most of the reductions will be from mobile sources, which is currently responsible for about 75 percent of all smog and particulate forming emissions. The 2007 AQMP includes 37 control measures proposed for adoption by the SCAQMD, including measures to reduce emissions from new commercial and residential developments, more reductions from industrial facilities, and reductions from wood-burning fireplaces and restaurant charbroilers.

Ambient Air Quality Standards

The national and state AAQS are the levels of air quality considered safe, with an adequate margin of safety, to protect the public health and welfare. The health effects of a pollutant are a function of the dose of the pollutant, the length of exposure, the pollutant's properties, and the body's ability to excrete the pollutant.

Table 5.2-1 identifies the current state and national standards, as well as the relevant effects.

Table 5.2-1: Ambient Air Quality Standards and Relevant Effects

Air Pollutant	Averaging Time	California Standard	National Standard	Most Relevant Effects
Ozone	1 Hour	0.09 ppm	—	(a) Decrease of pulmonary function and localized lung edema in humans and animals; (b) Risk to public health implied by alterations in pulmonary morphology and host defense in animals; (c) Increased mortality risk; (d) Risk to public health implied by altered connective tissue metabolism and altered pulmonary morphology in animals after long-term exposures and pulmonary function decrements in chronically exposed humans; (e) Vegetation damage; (f) Property damage.
	8 Hour	0.070 ppm	0.075 ppm	
Carbon Monoxide (CO)	1 Hour	20 ppm	35 ppm	(a) Aggravation of angina pectoris (chest pain or discomfort) and other aspects of coronary heart disease; (b) Decreased exercise tolerance in persons with peripheral vascular disease and lung disease; (c) Impairment of central nervous system functions; (d) Possible increased risk to fetuses.
	8 Hour	9.0 ppm	9 ppm	
Nitrogen Dioxide (NO_2)	1 Hour	0.18 ppm	—	(a) Potential to aggravate chronic respiratory disease and respiratory symptoms in sensitive groups; (b) Risk to public health implied by pulmonary and extra-pulmonary biochemical and cellular changes and pulmonary structural changes; (c) Contribution to atmospheric discoloration.
	Mean	0.030 ppm	0.053 ppm	
Sulfur Dioxide (SO_2)	1 Hour	0.25 ppm	—	Bronchoconstriction accompanied by symptoms which may include wheezing, shortness of breath and chest tightness, during exercise or physical activity in persons with asthma.
	24 Hour	0.04 ppm	0.14 ppm	
	Mean	—	0.030 ppm	
Particulate Matter (PM_{10})	24 hour	50 µg/m^3	150 µg/m^3	(a) Exacerbation of symptoms in sensitive patients with respiratory or cardiovascular disease; (b) Declines in pulmonary function growth in children; (c) Increased risk of premature death from heart or lung diseases in the elderly.
	Mean	20 µg/m^3	—	
Particulate Matter ($PM_{2.5}$)	24 Hour	—	35 µg/m^3	
	Mean	12 µg/m^3	15 µg/m^3	

Table 5.2-1 (Cont.): Ambient Air Quality Standards and Relevant Effects

Air Pollutant	Averaging Time	California Standard	National Standard	Most Relevant Effects
Sulfates	24 Hour	25 µg/m^3	—	(a) Decrease in ventilatory function; (b) Aggravation of asthmatic symptoms; (c) Aggravation of cardio-pulmonary disease; (d) Vegetation damage; (e) Degradation of visibility; (f) Property damage.
Lead	30-day	1.5 µg/m^3	—	(a) Learning disabilities; (b) Impairment of blood formation and nerve conduction.
	Quarter	—	1.5 µg/m^3	

ppm = parts per million (concentration) µg/m3 = micrograms per cubic meter ppm = parts per million
Mean = Annual Arithmetic Mean 30-day = 30-day average
Quarter = Calendar quarter
Source: California Air Resources Board, 2008.

Local Air Quality

Local air quality is best represented by examining existing ambient air quality and historical trends and projections in the vicinity of the project site and the City of Newport documented by measurements made by the SCAQMD. The City of Newport Beach is located within the central portion of Source Receptor Area (SRA) 18 (Central Orange County Coastal). The SCAQMD air quality monitoring station in the SRA 18 that is closest to the proposed project site is the Costa Mesa monitoring station, located at Mesa Verde Drive, Costa Mesa. As this monitoring station does not monitor PM_{10} and $PM_{2.5}$, data was supplemented from the Mission Viejo Station for these criteria pollutants. Data from these stations are summarized in Table 5.2-2.

Table 5.2-2: Air Quality Monitoring Summary

Air Pollutant, Averaging Time (Units)	2005	2006	2007
Ozone			
Max. 1 Hour (ppm)	0.085	0.074	0.082
Days > CAAQS (0.09 ppm)	0	0	0
Max. 8 Hour (ppm)	0.072	0.062	0.072
Days > NAAQS (0.08 ppm[1])	0	0	0
Days > CAAQS (0.070 ppm)	2	0	2
Course Particulates (PM_{10})			
Max. 24-Hour Concentration (µg/m^3)	65	104	489
Annual Average (µg/m^3)	28.1	*	38.4
Days > CAAQS 24-Hour (50 µg/ m^3)	17.5	*	37.3
Days > NAAQS 24-Hour (150 µg/ m^3)	0	0	6.1
Fine Particulates ($PM_{2.5}$)			
Max. 24-Hour Concentration (µg/m^3)	35.3	46.9	46.8
Annual Average (µg/m^3)	10.6	*	*
Days > NAAQS 24-Hour (35 µg/ m^3)	0	*	*

Table 5.2-2 (Cont.): Air Quality Monitoring Summary

Air Pollutant, Averaging Time (Units)	2005	2006	2007
Carbon Monoxide			
Max 1 Hour (ppm) [2]	4.51	4.3	4.47
Days > CAAQS (20 ppm)	0	0	0
Days > NAAQS (35 ppm)	0	0	0
Max 8 Hour (ppm)	3.16	3.01	3.13
Days > CAAQS (9.0 ppm)	0	0	0
Days > NAAQS (9.0 ppm)	0	0	0

Notes:
> = exceed ppm = parts per million * = no data or insufficient data
max = maximum CAAQS = California Ambient Air Quality Standard
NAAQS = National Ambient Air Quality Standard
[1] The ARB reported the days over the old 1997 8-hour standard of 0.08 ppm. The standard has recently been revised to 0.075 ppm.
[2] The ARB does not report 1-hour average CO concentrations in its database, only 8-hour CO concentrations. Therefore, the 1-hour CO concentration was derived by dividing the 8-hour concentration by 0.7 (CO Protocol).
Source: California Air Resources Board, 2008b.

The data show occasional violations of the state 8-hour ozone standard. The data also indicate that the area occasionally exceeds the federal and state PM_{10} standard. The CO standard has not been violated in the last three years at this station.

Attainment Status

Air basins where ambient air quality standards are exceeded are designated as "nonattainment" areas. If standards are met, the area is designated as an "attainment" area. If there is inadequate or inconclusive data to make a definitive attainment designation, they are considered "unclassified." The Air Basin is designated as nonattainment for the following standards:

- State and national PM_{10} and $PM_{2.5}$ standards;
- State ozone 1-hour standard; and
- National 8-hour ozone standard.

Climate Change/Greenhouse Gas Regulation

California Regulatory Environment

Climate change is caused by greenhouse gases emitted all around the world from a variety of sources, including the combustion of fuel for transportation and heat, cement manufacturing, and refrigerant emissions. The State of California has enacted key legislation in an effort to reduce its contribution to climate change, as discussed below.

On June 1, 2005, the Governor issued Executive Order S 3-05 which set the following greenhouse gas emission reduction targets:

- By 2010, reduce greenhouse gas emissions to 2000 levels;
- By 2020, reduce greenhouse gas emissions to 1990 levels;
- By 2050, reduce greenhouse gas emissions to 80 percent below 1990 levels.

To meet these targets, the Climate Action Team prepared a report to the Governor in 2006 that contains recommendations and strategies to help ensure the targets in Executive Order S-3-05 are met (2006 CAT Report).

In 2006, the California State Legislature enacted AB 32, the California Global Warming Solutions Act of 2006. AB 32 focuses on reducing greenhouse gas emissions in California. Greenhouse gases, as defined under AB 32, include carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride. AB 32 requires that greenhouse gases emitted in California be reduced to 1990 levels by the year 2020. ARB is the State agency charged with monitoring and regulating sources of emissions of greenhouse gases that cause global warming in order to reduce emissions of greenhouse gases. ARB approved a 1990 greenhouse gas emissions level of 427 million metric tons of carbon dioxide equivalent (MMTCO2e), on December 6, 2007. Therefore, in 2020, emissions in California are required to be at or below 427 MMTCO2e.

Under the current "business as usual" scenario, statewide emissions are increasing at a rate of approximately 1 percent per year as noted below. Also shown are the average reductions needed from all statewide sources (including all existing sources) to reduce greenhouse gas emissions back to 1990 levels.

- 1990: 427 $MMTCO_2e$
- 2004: 480 $MMTCO_2e$ (an average 11% reduction needed to achieve 1990 base)
- 2008: 495 $MMTCO_2e$ (an average 14% reduction needed to achieve 1990 base)
- 2020: 600 $MMTCO_2e$ "Business As Usual" (an average 29% reduction needed to achieve 1990 base)

Under AB 32, ARB published its Final Expanded List of Early Action Measures to Reduce Greenhouse Gas Emissions in California in October 2007. Discrete early action measures are currently underway or are enforceable by January 1, 2010. Early action measures are regulatory or non-regulatory and are currently underway or to be initiated by the ARB in the 2007 to 2012 timeframe. ARB has 44 early action measures that apply to the transportation, commercial, forestry, agriculture, cement, oil and gas, fire suppression, fuels, education, energy efficiency, electricity, and waste sectors. Of those early action measures, nine are considered discrete early action measures, as they are regulatory and enforceable by January 1, 2010. ARB estimates that the 44 recommendations are expected to result in reductions of at least 42 $MMTCO_2e$ by 2020, representing approximately 25 percent of the 2020 target.

The ARB Board approved a Climate Change Proposed Scoping Plan in December 2008. The Plan, "proposes a comprehensive set of actions designed to reduce overall carbon emissions in California, improve our environment, reduce our dependence on oil, diversify our energy sources, save energy, and enhance public health while creating new jobs and enhancing the growth in California's economy." The measures in the Scoping Plan will be developed over the next three years and will be in place by 2012.

This Plan calls for an ambitious but achievable reduction in California's carbon footprint. Reducing greenhouse gas emissions to 1990 levels means cutting approximately 30 percent from business-as-usual emission levels projected for 2020, or about 10 percent from today's levels. On a per-capita basis, that means reducing our annual emissions of 14 tons of carbon dioxide for every man, woman, and child in California down to about 10 tons per person by 2020.

SB 97 was passed in August 2007. SB 97 requires that before July 1, 2009, the Office of Planning and Research (OPR) prepare, develop, and transmit guidelines to the Resources Agency for the mitigation of the effects of greenhouse gas emissions. SB 97 also requires that, before January 1, 2010, the Resources Agency certify and adopt guidelines prepared and developed by the OPR.

Local and Regional

The City of Newport Beach (City) does not currently have formal reduction plans or regulations regarding greenhouse gases that are applicable to the proposed project.

The South Coast Air Quality Management District (SCAQMD) does not currently have formal reduction plans or regulations regarding greenhouse gases that are applicable to the proposed project.

5.2.3 - Thresholds of Significance

According to the CEQA Guidelines' Appendix G Environmental Checklist, to determine whether impacts to air quality are significant environmental effects, the following questions are analyzed and evaluated.

> Where available, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the following determinations.
>
> Would the project:
>
> a.) Conflict with or obstruct implementation of the applicable air quality plan?
>
> b.) Violate any air quality standard or contribute substantially to an existing or projected air quality violation?
>
> c.) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air

quality standard (including releasing emissions, which exceed quantitative thresholds for ozone precursors)?

d.) Expose sensitive receptors to substantial pollutant concentrations?

e.) Create objectionable odors affecting a substantial number of people?

Along with the above guidelines from the CEQA Checklist, the additional impacts are addressed in this section pursuant to SCAQMD and State guidance:

- Would the project exceed the SCAQMD significance thresholds during construction or operation of the project?
- Would the project cause or contribute to a carbon monoxide violation from project-related and cumulative traffic during operation?
- Does the project comply with the provisions of an adopted Greenhouse Gas Reduction Plan or Strategy? If no such Plan or Strategy is applicable, would the project significantly hinder or delay California's ability to meet the reduction targets contained in AB 32?

5.2.4 - Project Impact Analysis and Mitigation Measures

This section discusses potential impacts associated with the proposed project and provides mitigation measures where necessary.

Construction Impacts

Impact 5.2-A: The project could exceed the SCAQMD significance thresholds during the construction phase of the project.

SCAQMD Significance Criteria

Regional significance thresholds have been established by SCAQMD. Projects within the South Coast Air Basin region with construction emissions in excess of any of the thresholds in Table 5.2-3 are considered to have a significant impact. Localized significance thresholds (LSTs) represent the maximum emissions from a Project that will not cause or contribute to an exceedance of the most stringent applicable state or national ambient air quality standard. The LSTs are developed based on the ambient concentrations of that pollutant for each source receptor area. The LSTs for this project are shown in Table 5.2-3.

Table 5.2-3: Construction Significance Thresholds

Pollutant	Regional Threshold (pounds per day)	Localized Significance Threshold
Nitrogen Oxides (NO_x)	100	197
Volatile Organic Compounds (VOC)	75	None
Particulate Matter (PM_{10})	150	14

Table 5.2-3 (Cont.): Construction Significance Thresholds

Pollutant	Regional Threshold (pounds per day)	Localized Significance Threshold
Particulate Matter ($PM_{2.5}$)	55	9
Oxides of Sulfur (SO_x)	150	None
Carbon Monoxide (CO)	550	1,711

ppm = parts per million $\mu g/m^3$ = micrograms per cubic meter
Source: South Coast Air Quality Management District (SCAQMD 2006 and SCAQMD 2008b) for source receptor area 18 for 5-acre disturbed per day, for receptor distance 25 meters.

Regional Impact Analysis

Construction of the proposed Project would result in air emissions from the construction equipment exhaust, worker vehicles, fugitive dust, and on-road truck travel. A summary of the emissions estimated using URBEMIS2007 and emission factors for tugboats is shown in Table 5.2-4. As shown in the table, without mitigation, emissions would exceed the SCAQMD regional significance thresholds for NOx.

Table 5.2-4: Regional Construction Emissions (Unmitigated)

Phase	Emissions (pounds per day)					
	VOC	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$
Demolition	2	12	8	0	2	1
Mass grading	5.7	50.4	25.8	<0.1	52.3	12.6
Sand export by truck	0.4	5.1	2.0	<0.1	0.2	0.2
Sand export by tugboat	3.7	54.9	12.9	0.5	2.2	2.0
Subtotal	10	110	41	1	55	15
Trenching	3	23	12	0	1	1
Building and fine grading	8	45	39	<1	13	5
Building	4	19	25	<1	1	1
Building, coating, and asphalt paving	66	37	38	<1	3	3
Maximum Daily Emissions	**66**	**110**	**41**	**1**	**55**	**15**
Significance Threshold	75	100	550	150	150	55
Significant Impact?	No	Yes	No	No	No	No

VOC = volatile organic compounds NOx = nitrogen oxides CO = carbon monoxide
SO_x = sulfur oxides PM_{10} and $PM_{2.5}$ = particulate matter
The maximum daily emissions refer to the maximum emissions that would occur in one day. Note that mass grading and export of sand is assumed to occur at the same time.
Source: MBA 2008

Sources of emissions shown in this table include those generated from onsite construction activities as well as those generated from off-site activities such as worker and delivery trips. The building phase

includes vendor trips, which would deliver building materials to the site. This analysis assumes compliance with SCAQMD Rule 403, which limits emissions of fugitive dust.

It was estimated using aerial maps of the existing buildings that approximately 30,000 cubic feet of demolition material would be removed. It was assumed that a maximum of 3,000 cubic feet of material would be removed per day.

Approximately 54,000 cubic yards of sand would be dredged. Of that, approximately 15,000 cubic yards of fill would be used for the project. The remainder of the sand/soil (39,000 cubic yards) would be exported offsite. As a worst-case assumption, approximately 3,000 cubic yards of contaminated sand would be transported via truck to a disposal site that accepts contaminated sand. The remainder of the sand would be transported to a barge and deposited in the ocean to locations near the project site. The barge would be pulled by a tugboat. Emissions from the tugboat were estimated assuming that the tugboat would operate 8 hours per day. Emission factors were obtained from the Port of Long Beach Emissions Inventory for 2007, as discussed in more detail in Appendix C. The Emissions Inventory indicated that the average year of the propulsion engine for the tugboats operating at the port is 1997; therefore, the emission factors for propulsion engines manufactured between 1987 and 1999 were used in the project inventory. A couple of pieces of other construction equipment were added to the grading equipment in URBEMIS to represent any additional equipment on the barge and/or tugboat that would assist in transferring sand.

Localized Impact Analysis

The SCAQMD Governing Board adopted a methodology for calculating localized air quality impacts through localized significance thresholds (LSTs). LSTs represent the maximum emissions from a Project that will not cause or contribute to an exceedance of the most stringent applicable state or national ambient air quality standard. The LSTs are developed based on the ambient concentrations of that pollutant for each source receptor area and are applicable to NO_x, CO, PM_{10}, and $PM_{2.5}$.

Those who are sensitive to air pollution include children, the elderly, and persons with preexisting respiratory or cardiovascular illness. For purposes of CEQA, the SCAQMD considers a sensitive receptor to be a location where a sensitive individual could remain for 24 hours, such as residences, hospitals, or convalescent facilities. Commercial and industrial facilities are not included in the definition because employees do not typically remain onsite for 24 hours. However, when assessing the impact of pollutants with 1-hour or 8-hour standards (such as nitrogen dioxide and carbon monoxide), commercial and/or industrial facilities would be considered sensitive receptors for those purposes.

The existing site encompasses 10.45 acres and is built-up in nature with residential (i.e., mobile homes) community service (e.g., community center, public tennis courts, beach access, etc.), and surface parking lot uses. However, the existing mobile home and community facilities are removed prior the construction of the project.

The closest offsite sensitive receptors are residential land uses located to the south and west of the project site. There are several mobile homes located to the west of the project site across 18th street at an approximate distance of 12 meters (40 feet) from the project boundary. There are also residences located approximately 30 meters (100 feet) south of the project boundary across West Balboa Boulevard. In addition, the project encompasses the public beach on the west side of the project site. The nearest church from the project site is approximately 97.5 meters (320 feet) from the southeast corner of the project boundary. The Newport Elementary is the closet school to the project site, located approximately 253 meters (830 feet) from the southeast corner of the project boundary. Although there are other sensitive receptors at greater distances from the Project, this assessment identifies the nearest sensitive receptors because they would receive the greatest impact from the onsite project emissions.

The localized analysis only includes onsite emissions, such as from the off-road equipment and fugitive dust. During grading, a couple of the off-road equipment would operate offsite (such as equipment associated with the export of sand via tugboat and barge). However, to present a worst-case scenario, it is assumed that all off-road emissions occur onsite.

The onsite emissions are compared with the LSTs as shown in Table 5.2-5. The results of the localized analysis indicate that PM_{10} and $PM_{2.5}$ emitted during grading has the potential to exceed the localized significance thresholds at the nearest sensitive receptors. The concentrations are greatest near the boundary of the Project site, immediately adjacent to the area being graded, and disperse rapidly. Compliance with Rule 403 will reduce the impacts, but not to a level below significance.

Table 5.2-5: Localized Significance Analysis (Construction, Unmitigated)

Activity	Onsite Emissions (pounds per day)			
	NO_x	CO	PM_{10}	$PM_{2.5}$
Demolition	10	6	2	1
Mass grading	50	24	52	13
Trenching	24	11	1	1
Building and fine grading	44	25	12	4
Building	17	12	1	1
Building, coating, and asphalt paving	34	21	3	3
Maximum Daily Emissions	50	25	52	13
Localized Significance Threshold	197	1,711	14	9
Significant Impact?	No	No	Yes	Yes

Note:
Each of the above activities does not occur at the same time; therefore, the maximum daily emissions represent the maximum emissions that would occur in one day.
Source of LST: SCAQMD mass rate localized significance thresholds for SRA 18, 25 meter distance.

Mitigation Measures

The required mitigation measures are shown below. After each mitigation measure is an analysis of how each measure would reduce air pollutant emissions.

MM 5.2-A.1 Construction grading shall be limited to no more than five acres per day.

MM 5.2-A.2 Project construction shall employ the following methods to reduce fugitive dust emissions:

- Exposed soil and sand surfaces shall be watered a minimum of three times daily.
- Implement applicable South Coast Air Quality Management District Rule 403 Best Available Control Measures.
- Reduce speed on unpaved roads to less than 15 miles per hour.

MM 5.2-A.3 The tugboat(s) used in sand export activities shall have a propulsion engine built after the year 2000.

Level of Significance After Mitigation

Less than significant.

Mitigation Measure MM 5.2-A.3 would reduce emissions from the tugboat(s) as engines built after the year 2000 result in fewer emissions. As shown in Table 5.2-6, mitigation reduces emissions of NOx to below the significance threshold.

Table 5.2-6: Regional Construction Emissions (Mitigated)

Phase	Emissions (pounds per day)					
	VOC	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$
Demolition	2	12	8	0	2	1
Mass grading	5.7	50.4	25.8	<0.1	52.3	12.6
Sand export by truck	0.4	5.1	2.0	<0.1	0.2	0.2
Sand export by tugboat	3.0	31.5	8.7	0.5	1.6	1.4
Subtotal	9	87	37	1	54	14
Trenching	3	23	12	0	1	1
Building and fine grading	8	45	39	<1	13	5
Building	4	19	25	<1	1	1
Building, coating, and asphalt paving	66	37	38	<1	3	3
Maximum Daily Emissions	**66**	**87**	**39**	**1**	**54**	**14**
Significance Threshold	75	100	550	150	150	55
Significant Impact?	No	No	No	No	No	No

Table 5.2-6 (Cont.): Regional Construction Emissions (Mitigated)

Phase	Emissions (pounds per day)					
	VOC	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$
VOC = volatile organic compounds NOx = nitrogen oxides CO = carbon monoxide SO_x = sulfur oxides PM_{10} and $PM_{2.5}$ = particulate matter The maximum daily emissions refer to the maximum emissions that would occur in one day. Note that mass grading and export of sand is assumed to occur at the same time. Source: MBA 2008						

Short-term localized emissions after implementation of the above mitigation measures are provided in Table 5.2-7. Mitigation Measures MM 5.2-A.1 and MM 5.2-A.2 would limit the amount of grading and fugitive dust, thus avoiding a potential exceedance of a localized threshold. As shown in Table 5.2-7, the localized significance threshold will not be exceeded after application of mitigation measures.

Table 5.2-7: Localized Significance Analysis (Construction, Mitigated)

Activity	Onsite Emissions (pounds per day)			
	NO_x	CO	PM_{10}	$PM_{2.5}$
Demolition	10	6	2	1
Mass grading	40	20	10	4
Trenching	24	11	1	1
Building and fine grading	44	25	5	3
Building	17	12	1	1
Building, coating, and asphalt paving	34	21	3	3
Maximum Daily Emissions	44	25	10	4
Localized Significance Threshold	197	1,711	14	9
Significant Impact?	No	No	No	No
Note: Each of the above activities does not occur at the same time; therefore, the maximum daily emissions represent the maximum emissions that would occur in one day.				

Operational Emissions

Impact 5.2-B: The project would not exceed the SCAQMD regional significance thresholds during operation.

Thresholds of Significance

The following regional significance thresholds have been established by SCAQMD. Projects within the South Coast Air Basin region with operation related emissions in excess of any of the thresholds presented below are considered significant:

- NOx, VOC, and $PM_{2.5}$ 55 pounds per day;
- PM_{10} and SO_x 150 pounds per day; and
- CO 550 pounds per day.

Impact Analysis

Existing Emissions

Emissions from the 57-unit mobile home park were estimated using the estimated trips provided in the project traffic study (194 trips per day). The existing emissions are shown in Table 5.2-8.

Table 5.2-8: Existing Emissions

Source	Emissions (pounds per day)					
	VOC	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$
Summer: Operational	2.4	2.7	25.0	0.0	3.4	0.7
Summer: Area *	3.9	1.0	4.8	0.0	0.0	0.0
Summer: Existing Total	**6.3**	**3.7**	**29.8**	**0.0**	**3.4**	**0.7**
Winter: Operational	2.4	3.2	24.2	0.0	3.4	0.7
Winter: Area*	3.3	1.4	0.6	0.0	0.0	0.0
Winter: Existing Total	**5.7**	**4.6**	**24.8**	**0.0**	**3.4**	**0.7**

Notes:
VOC = volatile organic compounds NOx = nitrogen oxides CO = carbon monoxide
SOx = sulfur oxides PM_{10} and $PM_{2.5}$ = particulate matter
* Area sources include natural gas, landscape, consumer products, and painting.
Source: URBEMIS Output, Appendix C

Project Emissions

Operational, or long-term, emissions occur over the life of the project. Operational emissions include mobile and area source emissions. Area source emissions are from consumer products, heaters that consume natural gas, gasoline-powered landscape equipment, and architectural coatings (painting). Mobile emissions from motor vehicles are the largest single long-term source of air pollutants from the project. Estimates of vehicle trips were based on the trip generation rates from the project-specific traffic impact analysis. The Girl Scout House emissions were not calculated as the facility will be built up to its original intensity and the net emissions would be zero. Operational emissions from vehicles and area sources were estimated using the URBEMIS2007 model.

The visiting vessel marina includes 24 slips, 40-feet in length. One additional side tie and a 200-footlong dock is provided. The water-side facilities include an accessible ramp (with a locking gate) and a floating dock structure that will provide on-water storage for sabots, CFJ's (small sailboat), 420's and other dingy-type craft that might be used by the sailing program. Space is provided for 30 sabot (on deck) and 45 small sailboats. Sailboats can use onboard engines to taxi in and out of docking areas. Emissions were estimated assuming 100 boats would taxi for one hour per day. Emission factors were generated by the U.S. EPA model, NONROAD.

Operational emissions are shown in Table 5.2-9 for the summer season and Table 5.2-10 for the winter season. As shown in the tables, project emissions would not exceed the SCAQMD's regional thresholds and are considered less than significant. Therefore, no mitigation measures are required.

Table 5.2-9: Operational Emissions (Summer, Unmitigated)

Source	Emissions (pounds per day)					
	VOC	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$
Project Vehicles	4.8	6.7	58.6	0.1	10.0	1.9
Project Area *	0.7	0.4	4.9	0.0	0.0	0.0
Project Marina Boats	2.4	13.9	8.4	2.2	1.8	1.6
Project Subtotal	7.9	21.0	71.9	2.3	11.8	3.5
Existing	-6.3	-3.7	-29.8	0.0	-3.4	-0.7
Net New Emissions	**1.6**	**17.3**	**42.1**	**2.3**	**8.4**	**2.8**
Significance Threshold	55	55	550	150	150	55
Significant Impact?	No	No	No	No	No	No

Notes:
VOC = volatile organic compounds NOx = nitrogen oxides CO = carbon monoxide
SOx = sulfur oxides PM_{10} and $PM_{2.5}$ = particulate matter
* Area sources include natural gas, landscape, consumer products, and painting.
Source: URBEMIS Output, Appendix C

Table 5.2-10: Operational Emissions (Winter, Unmitigated)

Source	Emissions (pounds per day)					
	VOC	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$
Project Operational	5.3	8.0	56.5	0.1	9.9	1.9
Project Area *	0.3	0.3	0.3	0.0	0.0	0.0
Project Marina Boats	2.4	13.9	8.4	2.2	1.8	1.6
Project Subtotal	8.0	22.2	65.2	2.3	11.7	3.5
Existing	-5.7	-4.6	-24.8	-0.0	-3.4	-0.7
Net New Emissions	**2.3**	**17.6**	**40.4**	**2.3**	**8.3**	**2.8**
Significance Threshold	55	55	550	150	150	55
Significant Impact?	No	No	No	No	No	No

Notes:
VOC = volatile organic compounds NOx = nitrogen oxides CO = carbon monoxide
SOx = sulfur oxides PM_{10} and $PM_{2.5}$ = particulate matter
* Area sources include natural gas, landscape, consumer products, and painting.
Source: URBEMIS Output, Appendix C

Mitigation Measures

No mitigation measures are required.

Level of Significance After Mitigation

Less than significant.

Carbon Monoxide Hotspot Analysis

Impact 5.2-C: The project would not cause or contribute to a carbon monoxide violation from project-related and cumulative traffic during operation.

Project and Cumulative Analysis

The intersections of Newport Blvd. and Via Lido and Newport Blvd. and 32nd Street were analyzed using the CALINE4 model, as these intersections increased the volume to capacity ratio by 2 percent. There are several inputs to the CALINE4 model. One input is the traffic volumes, which is from the project-specific Traffic Analysis. The traffic volumes used in this analysis are the existing + growth + cumulative + project peak PM hour volumes. The traffic volumes contain cumulative traffic; therefore, this analysis presents a worst-case scenario. The emission factors were generated using the EMFAC2007 model for the year 2010.

Table 5.2-11: CO Concentrations

Intersection	ID#	1 Hour Estimated CO Concentration (ppm)*	8 Hour Estimated CO Concentration (ppm)**	Significant Impact?***
Newport Blvd and Via Lido	6	6.2	4.3	No
Newport Blvd and 32nd Street	7	6.4	4.5	No

Notes:
* Caline4 output (see Appendix C for model output) plus the 1-hour background concentration of 4.47 ppm.
** The 8-hour project increment was calculated by multiplying the 1-hour Caline4 output by 0.7 (persistence factor), then adding the 8 hour background concentration of 3.13 ppm.
*** Comparison of the 1-hour concentration to the state standard of 20 ppm and the 8-hour concentration to the state/national standard of 9 ppm.
Source: Michael Brandman Associates, 2008, Appendix C

As shown in Table 5.2-11 the estimated 1-hour and 8-hour average CO concentrations at build-out in 2010 in combination with background concentrations are below the state and national ambient air quality standards. No CO hotspots are anticipated because of traffic-generated emissions by the proposed project in combination with other anticipated development in the area. Therefore, the mobile emissions of CO from the project are not anticipated to contribute substantially to an existing or projected air quality violation of CO.

Mitigation Measures

No mitigation measures are required.

Level of Significance After Mitigation

Less than significant.

Air Quality Plan

Impact 5.2-D:	The project could conflict with or obstruct implementation of the applicable air quality plan.

Thresholds of Significance

The CEQA Guidelines indicate that a significant impact would occur if the proposed project would conflict with or obstruct implementation of the applicable air quality plan. The assessment is conducted using the following criteria to determine project consistency with the current Air Quality Management Plan (AQMP).

Project Impact Analysis

Project's Contribution to Air Quality Violations

According to the SCAQMD (1993), the Project is consistent with the AQMP if the Project will not result in an increase in the frequency or severity of existing air quality violations or cause or contribute to new violations, or delay timely attainment of air quality standards or the interim emission reductions specified in the AQMP (SCAQMD 1993, Page 12-3). As shown in Impact 5.2-E, the Project could violate the air quality standards for PM_{10} and $PM_{2.5}$ locally without mitigation. Therefore, the project does not comply with this criterion and there would be a potentially significant impact.

Control Measures

The next criterion is compliance with the control measures in the 2003 AQMP and the 2007 AQMP. The 2007 AQMP has been adopted by the SCAQMD and ARB, but has not been adopted by the U.S. EPA. Therefore, the two plans are discussed herein.

The 2003 AQMP contains a number of land use and transportation control measures including the following: the District's Stationary and Mobile Source Control Measures; State Control Measures proposed by ARB; and Transportation Control Measures provided by Southern California Association of Governments (SCAG) (AQMP 2003, Page 4-3). ARB's strategy for reducing mobile source emissions include the following approaches: new engine standards; reduce emissions from in-use fleet, require clean fuels, support alternative fuels and reduce petroleum dependency, work with EPA to reduce emissions from national and state sources, and pursue long-term advanced technology measures (AQMP 2003, Page 4-25). Transportation control measures provided by SCAG include those contained in the Regional Transportation Plans (RTP), the most current version being the 2004 RTP (SCAG 2004). The RTP has control measures to reduce emissions from on-road sources by incorporating strategies such as high occupancy vehicle interventions, transit, and information-based technology interventions (AQMP 2003, Page 4-19). The measures implemented by ARB and SCAG effect the Project indirectly by regulating the vehicles that the residents may use and regulating public transportation. The Project indirectly will comply with the control measures set by ARB and SCAG.

The 2007 AQMP aims to attain the federal PM2.5 and 8-hour ozone standards by 2015 and 2024, respectively. This is done by building upon improvements from the previous plans and incorporating

all feasible control measures while balancing costs and socioeconomic impacts. The 2007 AQMP indicates that PM2.5 is formed primarily secondarily. Therefore, instead of reducing fugitive dust, the strategy for reducing PM2.5 focuses on reducing precursor emissions of SOx, directly-emitted PM2.5, NOx, and VOC. The Final 2007 AQMP control measures consist of four components: 1) the SCAQMD's Stationary and Mobile Source Control Measures; 2) ARB's Proposed State Strategy; 3) SCAQMD Staff's Proposed Policy Options to Supplement ARB's Control Strategy; and 4) Regional Transportation Strategy and Control Measures provided by SCAG.

The Project will comply with all of the SCAQMD's applicable rules and regulations. Therefore, the Project complies with this criterion.

Compliance with the City General Plan

The City of Newport Beach General Plan designates the project site as PR (Parks and Recreation) and PF (Public Facility). The project is consistent with the General Plan, and would not increase emissions above what was designated for the site.

Mitigation Measures

Implementation of Mitigation Measures MM 5.2.A-1 and MM 5.2.A-2 is required.

Level of Significance After Mitigation

Less than significant.

Air Quality Violations

Impact 5.2-E:	**The project could violate an air quality standard or contribute substantially to an existing or projected air quality violation.**

Impact Analysis

The South Coast Air Basin, the geographical area in which the project is located, is in nonattainment for PM_{10}, $PM_{2.5}$, and ozone. Levels of ozone and PM_{10} are locally high enough that contributions from new sources may add to the concentrations of those pollutants and contribute to a projected air quality violation. Two criteria are used to assess the significance of this impact: 1) the localized construction analysis (see Impact 5.2-A); and 2) the CO hotspot analysis (see Impact 5.2-C).

The localized construction analysis uses thresholds that represent the maximum emissions for a project that would not cause or contribute to an exceedance of the most stringent applicable national or state ambient air quality standard. These LSTs are specific to each source receptor area. If the project results in emissions that do not exceed those thresholds, it follows that it would not cause or contribute to a local exceedance of the standard. The localized construction analysis demonstrated that without mitigation, the project could exceed the localized thresholds for PM_{10} at nearby sensitive receptors. Therefore, according to this criterion, the air pollutant emissions during construction would result in a significant impact.

A CO hotspot analysis is the appropriate tool to determine if project emissions of CO during operation would exceed ambient air quality standards. The main source of air pollutant emissions during operation are from offsite motor vehicles traveling on the roads surrounding the project site. The CO hotspot analysis demonstrated that project emissions of CO during operation along with emissions from other foreseeable projects in the area would not result in an exceedance of the most stringent ambient air quality standards for CO. Therefore, according to this criterion, air pollutant emissions during operation would result in a less than significant impact.

Mitigation Measures

Implementation of Mitigation Measures MM 5.2-A.1 and MM 5.2-A.2 is required.

Level of Significance After Mitigation

Less than significant.

Cumulative Impacts

Impact 5.2-F:	**The project could result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions, which exceed quantitative thresholds for ozone precursors).**

Threshold of Significance

In accordance with CEQA Guidelines 15130(b), this analysis of cumulative impacts incorporates a summary of projections. The following tiered approach is to assess cumulative air quality impacts.

1. Consistency with the regional thresholds for nonattainment pollutants;
2. Project consistency with existing air quality plans;
3. Assessment of the cumulative health effects of the pollutants.

Impact Analysis

Regional Analysis

If an area is in nonattainment for a criteria pollutant, then the background concentration of that pollutant has historically been over the ambient air quality standard. It follows that if a project exceeds the regional threshold for that nonattainment pollutant, then it would result in a cumulatively considerable net increase of that pollutant and result in a significant cumulative impact.

The South Coast Air Basin is in nonattainment for PM_{10}, $PM_{2.5}$, and ozone. Therefore, if the project exceeds the regional thresholds for PM_{10}, or $PM_{2.5}$, then it contributes to a cumulatively considerable impact for those pollutants. Additionally, if the project exceeds the regional threshold for NOx or VOC, then it follows that the project would contribute to a cumulatively considerable impact for ozone.

The regional significance analysis of construction emissions demonstrated that emissions of VOC, PM_{10}, and $PM_{2.5}$ would not be over SCAQMD regional significance thresholds. Therefore, the

project does not contribute to a cumulatively significant regional impact to the budget of the pollutants PM_{10} and $PM_{2.5}$. However, the regional analysis demonstrated that emissions of NOx would be over the regional significance threshold without mitigation. Therefore, the project could significantly contribute to the ozone budget in the South Coast Air Basin.

Other criteria pollutants would not contribute to a cumulative effect because the background levels are not high enough for project concentrations to make a substantial difference in the overall cumulative concentration.

Plan Approach

The geographic scope for cumulative air quality impacts is the South Coast Air Basin because that is the area in which the air pollutants generated by the sources within the Basin circulate and are often trapped. SCAQMD is required to prepare and maintain an AQMP and a State Implementation Plan to document the strategies and measures to be undertaken to reach attainment of ambient air quality standards. While the SCAQMD does not have direct authority over land use decisions, it was recognized that changes in land use and circulation planning were necessary to maintain clean air. The SCAQMD evaluated the entire Basin when it developed the AQMP.

According to the analysis contained in Impact 5.2-D, the project is not consistent with the most recent AQMP without mitigation.

Cumulative Health Impacts

The Basin is in nonattainment for ozone, PM_{10}, and $PM_{2.5}$, which means that the background levels of those pollutants are at times higher than the ambient air quality standards. The air quality standards were set to protect public health, including the health of sensitive individuals (i.e., elderly, children, and the sick). Therefore, when the concentration of those pollutants exceeds the standard, it is likely that some sensitive individuals in the population experience health effects. However, the health effects are a factor of the dose-response curve. Concentration of the pollutant in the air (dose), the length of time exposed, and the response of the individual are factors involved in severity and nature of health impacts. If a significant health impact results from project emissions, it does not mean that 100 percent of the population would experience health effects.

The regional analysis of construction and operational emissions indicates that the project would exceed the SCAQMD regional significance thresholds for NOx (ozone precursor). Because ozone is a secondary pollutant (it is not emitted directly but formed by chemical reactions in the air), it can be formed miles downwind of the project site. Project emissions of NOx would contribute to the background concentration of ozone and cumulatively cause health effects. Health effects of ozone could include the following: (a) Decrease of pulmonary function and localized lung edema in humans and animals; (b) Risk to public health implied by alterations in pulmonary morphology and host defense in animals; (c) Increased mortality risk; and/or (d) Risk to public health implied by altered connective tissue metabolism and altered pulmonary morphology in animals after long-term

exposures and pulmonary function decrements in chronically exposed humans. This is a potentially significant cumulative health impact.

During construction, as was shown in the localized analysis, the project could result in a significant cumulative contribution to $PM_{2.5}$ and PM_{10} at nearby sensitive receptors. Sensitive individuals may experience health impacts when concentrations of those pollutants exceed the ambient air quality standards. Health impacts may include the following: (a) exacerbation of symptoms in sensitive patients with respiratory or cardiovascular disease; (b) declines in pulmonary function growth in children; and/or (c) increased risk of premature death from heart or lung diseases in the elderly. This is a potentially significant cumulative health impact.

Mitigation Measures

Implementation of Mitigation Measures MM 5.2-A.1 and MM 5.2-A.2 is required.

Level of Significance After Mitigation

Less than significant. Therefore, there would not be significant cumulative health effects from implementation of the project.

Sensitive Receptors

Impact 5.2-G:	**The project could expose sensitive receptors to substantial pollutant concentrations.**

Impact Analysis

Construction

The localized construction analysis uses thresholds that represent the maximum emissions for 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. The thresholds are also based on the location of the sensitive receptors. If the project results in emissions under those thresholds, it follows that the project would not cause or contribute to an exceedance of the standard. If the standards are not exceeded at the sensitive receptor locations, it follows that the receptors would not be exposed to substantial pollutant concentrations.

The localized construction analysis demonstrated that without mitigation, the project would not exceed the localized thresholds for CO or nitrogen dioxide. However, the localized thresholds for PM_{10} and $PM_{2.5}$ are exceeded during grading activities. Therefore, during construction, the project could expose sensitive receptors to substantial pollutant concentrations of PM_{10} and $PM_{2.5}$. This is a potentially significant impact.

The construction equipment would emit diesel particulate matter, which is a carcinogen. However, the diesel particulate matter emissions are short term in nature. Determination of risk from diesel particulate matter is considered over a 70-year exposure time. Therefore, considering the dispersion

of the emissions and the short time frame, exposure to diesel particulate matter is anticipated to be less than significant.

Operation

A CO hotspot analysis is the appropriate tool to determine if project emissions of CO during operation would exceed ambient air quality standards. The main source of air pollutant emissions during operation are from offsite motor vehicles traveling on the roads surrounding the project. The CO hotspot analysis (Impact 5.2-C) demonstrated that emissions of CO during operation would not result in an exceedance of the most stringent ambient air quality standards for CO. Therefore, according to this criterion, air pollutant emissions during operation would result in a less than significant impact. Additionally, the other criteria pollutants would not exceed the regional significance thresholds; therefore, it is anticipated that the project would not expose sensitive receptors during operation.

The ARB Air Quality and Land Use Handbook contains recommendations that will "help keep California's children and other vulnerable populations out of harm's way with respect to nearby sources of air pollution," including recommendations for distances between sensitive receptors and certain land uses. Some of the land uses includes freeways, urban roads, distribution centers, fueling stations, and dry cleaners. The proposed project is not located within the distances of concern. Therefore, air pollution from the land uses assessed in the ARB Handbook would not significantly impact the project.

Indoor air pollutants that may be associated with operation of the project include VOCs from new carpets and paints, mold spores, radon, cigarette smoke, and combustion sources. The air pollutants that are controlled by the construction of the project include VOCs from carpets and paints and radon. VOCs from new carpets and new paint are temporary impacts that can be reduced by proper ventilation after installation. The health impact from these sources is anticipated to be less than significant.

Radon is a naturally occurring colorless, odorless, and tasteless radioactive gas originating from the radioactive decay of uranium in rock, soil, and groundwater. Radon gets inside a building primarily from soil under homes. It is a known human lung carcinogen and is the largest source of radiation exposure to the general public. Most is rapidly exhaled; however, the inhaled decay products can deposit into the lung where they irradiate sensitive airway cells increasing the risk of lung cancer. According to the EPA map of radon zones, the project is within zone 2, which has a moderate potential for radon exposure. It is anticipated that current building codes would mitigate the potential of radon exposure to less than significant.

During operation of the project, the only known sources of toxic pollutants are benzene and/or diesel particulate matter from the exhaust of vehicles and boat engines that would access the project site and from the vehicles on the surrounding roadway network. However, the levels of those pollutants are

not expected to be high enough to evoke a negative health consequence. The impact from toxic pollutants is less than significant.

Mitigation Measures

Implementation of Mitigation Measures 5.2-A.1 MM and MM 5.2-A.2 is required.

Level of Significance After Mitigation

Less than significant.

Objectionable Odors

Impact 5.2-H:	**The project would not create objectionable odors affecting a substantial number of people.**

Impact Analysis

Land uses typically considered to be associated with odors include wastewater treatment facilities, waste-disposal facilities, or agricultural operations. The project does not contain land uses typically associated with emitting objectionable odors.

Diesel exhaust will be emitted during construction (from the heavy duty equipment) and operation (from the boat diesel engines). VOCs will also be emitted during construction of the project from painting and asphalt paving. These odors are objectionable to some; however, the odors will disperse rapidly from the project site and therefore should not be at a level to induce a negative response.

Mitigation Measures

No mitigation measures are required.

Level of Significance After Mitigation

Less than significant.

Greenhouse Gas Emissions

Impact 5.2-I:	**The project could result in an increase in greenhouse gas emissions that could significantly hinder or delay the State's ability to meet the reduction targets contained in AB 32.**

Impact Analysis

Neither the City nor the SCAQMD have adopted a Greenhouse Gas Reduction Plan or Strategy or threshold of significance criteria that would apply to the proposed project. As a result, an analysis must be made to determine whether the project would significantly hinder or delay California's ability to meet the reduction targets contained in AB 32. The threshold used in this analysis is as follows:

Does the project comply with the provisions of an adopted Greenhouse Gas Reduction Plan or Strategy? If no such Plan or Strategy is applicable, would the project significantly hinder or delay California's ability to meet the reduction targets contained in AB 32?

Construction

Emissions from the combustion of fuel from construction equipment and associated worker vehicles were estimated using URBEMIS2007. The emissions of carbon dioxide from project construction equipment and worker vehicles are shown in Table 5.2-12. Emissions of nitrous oxide and methane are negligible. As shown in Table 5.2-12, onsite emissions total 467 metric tons of carbon dioxide equivalents ($MTCO_2e$) from all phases.

Table 5.2-12: Construction Greenhouse Gas Emissions (Unmitigated)

Phase	Carbon Dioxide Emissions (tons)	Emissions ($MTCO_2e$)
Demolition	6	5
Mass grading	110	100
Export of sand via tugboat	42	38
Trenching	13	12
Building	301	273
Fine grading	26	24
Asphalt paving	15	14
Architectural Coating	1	1
Total	**514**	**467**

$MTCO_2e$ = metric tons of carbon dioxide equivalent, converted from tons by multiplying by 0.9072
Source: MBA 2008, Appendix C

Operation

Operational emissions are emissions that would occur over the life of the project. Operational emissions include emissions from landscaping equipment, indirect emissions from transporting water to the project, indirect electricity emissions, natural gas combustion, refrigerants (air conditioning and refrigerators), and motor vehicles. Only the main sources of emissions were estimated; minor sources such as landscaping emissions are not shown. Emissions from the existing 57-unit mobile home park were accounted for and are shown in the Table 5.2-13. The Girl Scout House emissions were not calculated as the facility will be built up to its original intensity and the net emissions would be zero. However, indirect electricity and natural gas emissions from the Girl Scout House would be reduced from compliance with updated Title 24 energy efficiency regulations. The operational emissions from the project are shown in Table 5.2-13. As shown in the table, there is a post-project increase of 667 $MTCO_2e$ per year.

Table 5.2-13: Existing Land Uses Operational Greenhouse Gas Emissions (Unmitigated)

Source	Emissions - Metric tons of Carbon Dioxide Equivalents per year ($MTCO_2e$/year)		
	Existing (57 mobile homes)	Project	Difference in Emissions
Water transport for building uses and landscaping	-20	10	-10
Indirect electricity	-117	106	-11
Natural gas	-197	65	-132
Refrigerants	-370	276	-94
Motor vehicles	-343	1000	+657
Boats	0	257	+257
Total	**-1,047**	**1,714**	**667**
Source: MBA 2008, Appendix C			

Several greenhouse gases were not estimated for the following reasons. The project does not contribute substantially to water vapor because water vapor concentrations in the upper atmosphere are primarily due to climate feedbacks rather than emissions from project-related activities.

Ozone is a greenhouse gas; however, unlike the other greenhouse gases, ozone in the troposphere is relatively short-lived and therefore is not global in nature. Aerosols can contribute to global warming and cooling; however, the IPCC does not have global warming potentials for aerosols due to the low level of scientific certainty (IPCC 2007). Additionally, ozone and aerosols are not included in the ARB inventory of greenhouse gas emissions. Therefore, the project's contribution of aerosols and ozone is not estimated.

There is a ban on chlorofluorocarbons; therefore, the project would not generate emissions of these greenhouse gases and they are not considered any further in this analysis. Perfluorocarbons and sulfur hexafluoride are typically used in industrial applications, none of which would be used by the project.

Onsite Greenhouse Gas Reduction Options

Although not required by statute or regulation, there are voluntary greenhouse gas reduction strategies available for projects to reduce greenhouse gas emissions. The Newport Beach General Plan Natural Resources Element includes policies that potentially reduce energy use and vehicle miles traveled. The California Attorney General has provided suggestions on ways to reduce overall impacts. The ARB approved a Scoping Plan in December 2008, which includes a few measures that would be applicable to the Project. The Governor's Office of Planning and Research has suggested mitigation measures. These policies and measures are assessed below to determine the applicability and feasibility of such reduction measures to the proposed project.

General Plan

The City of Newport Beach General Plan does not contain specific greenhouse gas or climate change policies or goals. However, the Natural Resources Element includes policies that have the potential to reduce indirect greenhouse gas emissions from vehicle miles traveled and energy use. Therefore, compliance with the applicable policies would reduce greenhouse gas emissions from the Project. Project consistency with applicable policies is shown in Table 5.2-14. As shown in the table, with mitigation, the Project is consistent with the applicable policies except for NR 6.8, which recommends supporting the development of alternative fuel infrastructure.

Table 5.2-14: Consistency with General Plan Air Quality Policies

Policies	Project Consistency and Applicability
NR 6.1 Walkable Neighborhoods Provide for walkable neighborhoods to reduce vehicle trips by siting amenities such as services, parks, and schools in close proximity to residential areas.	The project is consistent with this policy by siting a community center and enhanced recreational opportunities near existing housing and employment.
NR 6.2 Mixed-Use Development Support mixed-use development consisting of commercial or office with residential uses in accordance with the Land Use Element that increases the opportunity for residents to live in proximity to jobs, services, and entertainment.	Consistent. Although the project does not included a residential component it is locating the recreational facility near residential development, which will provides the opportunity to walk to recreation and reduce the vehicle miles traveled.
NR 6.8 Accessible Alternative Fuel Infrastructure Support the development of alternative fuel infrastructure that is available and accessible to the public, and provide incentives for alternative fuel vehicles.	Not consistent.
NR 7.1 Fuel Efficient Equipment Support the use of fuel efficient heating equipment and other appliances.	Consistent with Mitigation Measure MM 5.2-I.6.
NR 7.3 Incentives for Air Pollution Reduction Provide incentives to promote siting or to use clean air technologies and building materials (e.g., fuel cell technologies, renewable energy sources, UV coatings, hydrogen fuel)	Consistent with Mitigation Measure MM 5.2-I.5.
NR 8.1 Management of Construction Activities to Reduce Air Pollution Require developers to use and operate construction equipment, use building materials and paints, and control dust created by construction activities to minimize air pollutants.	Consistent with Mitigation Measures MM 5.2-I.1 through MM 5.2-I.4.
Source of Policies: City of Newport Beach General Plan, Natural Resources Element (Newport 2006) Source of Consistency Assessment: Michael Brandman Associates	

Attorney General

The Office of the California Attorney General has distributed voluntary mitigation measures and resources (AG 2008). The feasible mitigation measures are included as mitigation measures in this analysis.

CAPCOA

On January 8, 2008, the California Air Pollution Control Officers Association (CAPCOA) released a paper to provide a common platform of information and tools for public agencies. The disclaimer states that it is not a guidance document but a resource to enable local decision makers to make the best decisions they can in the face of incomplete information during a period of change. The paper indicates that it is an interim resource and does not endorse any particular approach. It discusses three groups of potential thresholds, including a no significance threshold, a threshold of zero, and a non-zero threshold (CAPCOA 2008). The non-zero quantitative thresholds as identified in the paper range from 900 to 50,000 metric tons per year. The paper also contains sample mitigation measures. The feasible measures are included in this analysis.

OPR

The Governor's Office of Planning and Research (OPR) is planning on publishing new CEQA Guidelines by July 1, 2009, which will provide regulatory guidance on the analysis and mitigation of greenhouse gas emissions in CEQA documents. In the interim, OPR published a Technical Advisory, which offers informal guidance regarding the steps lead agencies should take to address climate change in their CEQA documents. The Advisory contains examples of mitigation measures used by some public agencies to reduce greenhouse gas emissions provided for illustrative purposes only. Table 5.2-15 determines project consistency with the example measures. The feasible measures are included as mitigation measures in this analysis. As shown in the table, many of the example measures are not applicable to the Project and some of the measures are feasible and are applied as mitigation measures.

Table 5.2-15: Consistency with OPR Example Mitigation Measures

Example Measure	Project Applicability or Feasibility
Land Use and Transportation	
Implement land use strategies to encourage jobs/housing proximity, promote transit-oriented development, and encourage high density development along transit corridors. Encourage compact, mixed-use projects, forming urban villages designed to maximize affordable housing and encourage walking, bicycling and the use of public transit systems.	Consistent. Although the project does not included a residential component it is locating the recreational facility near residential development, which will provides the opportunity to walk to recreation and reduce vehicle miles traveled.
Encourage infill, redevelopment, and higher density development, whether in incorporated or unincorporated settings.	Consistent with the nature of the project as infill development.

Table 5.2-15 (Cont.): Consistency with OPR Example Mitigation Measures

Example Measure	Project Applicability or Feasibility
Encourage new developments to integrate housing, civic and retail amenities (jobs, schools, parks, shopping opportunities) to help reduce VMT resulting from discretionary automobile trips.	Consistent. The project provides recreational opportunities near existing residential and employment centers.
Incorporate features into project design that would accommodate the supply of frequent, reliable and convenient public transit.	Consistent. The project is located near existing public transit.
Implement street improvements that are designed to relieve pressure on a region's most congested roadways and intersections.	Consistent. The City implements street improvements as necessary.
Urban Forestry	
Plant trees and vegetation near structures to shade buildings and reduce energy requirements for heating/cooling.	Consistent with Mitigation Mmeasure 5.2.I.6.
Preserve or replace onsite trees (that are removed due to development) as a means of providing carbon storage.	Consistent with project design features.
Green Buildings	
Encourage public and private construction of LEED (Leadership in Energy and Environmental Design) certified (or equivalent) buildings.	Consistent with Mitigation Measures MM 5.2-I.5, MM 5.2-I.6, and MM 5.2-I.7 which require LEED similar credits.
Energy Conservation Policies and Actions	
Recognize and promote energy saving measures beyond Title 24 requirements for residential and commercial projects.	Consistent with Mitigation Measure MM 5.2-I.6.
Where feasible, include in new buildings facilities to support the use of low/zero carbon fueled vehicles, such as the charging of electric vehicles from green electricity sources.	Not consistent.
Programs to Reduce Solid Waste	
Implement a Construction and Demolition Waste Recycling Ordinance to reduce the solid waste created by new development.	Consistent with Mitigation Measure MM 5.2-I.5.
Source for Measure: Office of Planning and Research (OPR 2008) Source for Project Consistency Analysis: Michael Brandman Associates	

ARB Scoping Plan

The ARB Board approved a Scoping Plan in December 2008. The Plan outlines reduction measures which will be in place prior to the year 2012. Project consistency or applicability with those measures is assessed below. As shown in Table 5.2-16, the Project is consistent with the applicable measures with mitigation.

Table 5.2-16: Consistency with Scoping Plan Reduction Measures

ARB Scoping Plan Reduction Measure	Project Consistency or Applicability
3 Energy Efficiency Maximize energy efficiency building and appliance standards, and pursue additional efficiency efforts.	Consistent with Mitigation Measure MM 5.2-I.6.
13 Green Building Strategy Expand the use of green building practices to reduce the carbon footprint of California's new and existing inventory of buildings.	Consistent with Mitigation Measure MM 5.2-I.6.
16 Sustainable Forests Preserve forest sequestration and encourage the use of forest biomass for sustainable energy generation.	Not applicable. However, the project will integrate trees into the site design.
17 Water Continue efficiency programs and use cleaner energy sources to move water.	Consistent with Mitigation Measures MM 5.2-I.10 and MM 5.2-I.11.
15 Recycling and Waste Increase waste diversion, composting, and commercial recycling, and move toward zero-waste.	Consistent with Mitigation Measure MM 5.2-I.5.
Source of ARB Scoping Plan Reduction Measure: ARB 2008. Source of Project Consistency or Applicability: Michael Brandman Associates	

Summary of Project Level Impacts

Without mitigation, the construction and operation of the project could hinder or delay California's ability to meet the reduction targets by 2020 because it is not implementing feasible measures to reduce its contribution of greenhouse gas emissions.

Cumulative Effects

Even a very large individual project cannot generate enough greenhouse gas emissions to measurably influence global climate change. It is a project's incremental contribution combined with the cumulative increase of all other sources of greenhouse gases that together cause climate change impacts. However, the theory that an increase of one molecule of an air pollutant constitutes significant increase (one-molecule theory) should not be the basis of a de-facto significance threshold, as discussed in the decision for *Community for a Better Environment v. California Resources Agency* (103 Cal. App. 4th 98 (2002): "this does not mean, however, that any additional effect in a nonattainment area for that effect necessarily creates a significant cumulative impact; the 'one [additional] molecule rule' is not the law."

While climate change is a global issue and each contribution of greenhouse gases may have a cumulative effect, there is no established methodology available to determine either the magnitude or the significance of the effect of an individual project on this global issue. As a result, the conclusions reached by any attempt to do so would be speculative. According to CEQA Guidelines 15145, "if, after thorough investigation, a Lead Agency finds that a particular impact is too speculative for evaluation, the agency should note its conclusion and terminate the discussion of the impact." The

assessment of cumulative climate change impacts, which are project impacts plus all the other "cumulative" projects, is speculative for the following reasons:

- The list of cumulative projects for climate change is unknown, in that it could conceivably include all projects around the globe. Guidelines for establishing the radius for climate change have not yet been adopted. Without such guidelines, it is impossible to know how big the impact study area is supposed to be. For example, does the list of projects include those only within a one-mile radius of the project, or does it include projects within the entire air basin, or the state of California? For this reason, the "project list" approach for conducting a CEQA cumulative impacts analysis is not feasible.
- Large-scale assessments and emission reduction strategies must be formulated to evenly address greenhouse gas emissions on a regional level that includes land use patterns, energy generation and consumption, transportation, water transport, waste disposal, and the other major sources of greenhouse gas emissions. A region-specific plan would create the basis of a cumulative threshold and provide a platform for cumulative analysis on the project level. There is no approved plan that covers the jurisdiction of the project that discusses global climate change or greenhouse gases; therefore, the plan approach is not viable at this time. State and local agencies are currently developing strategies to reduce greenhouse gases in their jurisdictions; however, these strategies are not complete at this time.
- There are no adopted legal, regulatory, or advisory thresholds for measuring project or cumulative impacts of greenhouse gases.
- Available climate change models are not sensitive enough to be able to predict the effect of a single project on global temperatures and the resultant effect on climate; therefore, they cannot be used to evaluate the significance of a project's impact. Thus, insufficient information and predictive tools exist to assess whether a single project would result in a significant impact on global climate. For these reasons, determining the significance of the project's impact on global climate would involve undue speculation.

Mitigation Measures

MM 5.2-I.1 During project construction, construction equipment shall be properly maintained in accordance with manufacturer's specifications; maintenance shall include proper tuning and timing of engines. During maintenance, precautions shall be taken to ensure that fuel is not leaked onto the ground. Equipment maintenance records and equipment design specification data sheets shall be kept on-site during construction and subject to inspection by the SCAQMD.

MM 5.2-I.2 During project construction, the project proponent shall require all contractors to turn off all construction equipment and delivery vehicles when not in use.

MM 5.2-I.3 Prior to project construction, the project proponent will provide a traffic control plan that will describe in detail safe detours around the project construction site and provide temporary traffic control (i.e., flag person) during debris transport and other construction-related truck hauling activities.

MM 5.2-I.4 During project construction, onsite electrical hook ups shall be provided for electric construction tools including saws, drills and compressors, to eliminate the need for diesel powered electric generators.

MM 5.2-I.5 To reduce waste, the project shall do the following:

- Each building shall provide an easily accessible area that serves the entire building and is dedicated to the collection and storage of non-hazardous materials for recycling, including (at a minimum) paper, corrugated cardboard, glass, plastics, and metals.
- Recycle and/or salvage at least 50% of non-hazardous construction and demolition debris. Develop and implement a construction waste management plan that, at a minimum, identifies the materials to be diverted from disposal and whether the materials will be sorted on-site or co-mingled. Excavated soil and land-clearing debris do not contribute to this credit. Calculations can be done by weight or volume, but must be consistent throughout.
- A minimum of 10 percent of the building materials shall be one of the following: extracted, processed, and manufactured regionally; recycled content; salvaged material; refurbished material; or reused material.

MM 5.2-I.6 To reduce electricity and/or natural gas usage, the project shall do the following:

- Install ENERGY STAR alternatives for all lighting and control systems, appliances, and equipment that have ENERGY STAR alternatives.
- Use daylight as an integral part of the lighting systems in the buildings.
- Optimize energy performance by exceeding Title 24 Energy Efficiency requirements by 21 percent.
- For a minimum of 50 percent of the site hardscape (including roads, sidewalks, courtyards, and parking lots), provide either shade, paving materials with a solar reflective index of at least 29, or an open grid system.

MM 5.2-I.7 The boat docks shall have signs that prohibit engine idling.

MM 5.2-I.8 Construction plans shall provide preferential parking (such as covered or shaded) for a minimum of two carpool/vanpool vehicles near the entrance of the building(s). Clearly indicate carpool/vanpool spaces with signage approved by the City of

Newport Beach. The project shall provide secure bicycle racks and/or storage (within 200 yards of the building entrances. Each building shall also contain a minimum of one shower/changing facility to encourage bicycle usage.

MM 5.2-I.9 The project shall install pervious concrete in targeted areas as recommended by the International Society of Arboriculture to reduce runoff and help onsite shade trees to develop healthy root systems.

Water Conservation

Water conservation affects air quality through the reduction in air pollutant emissions generated by the transport and treatment of water, and reduces offsite energy consumption.

MM 5.2-I.10 Project landscaping plans shall require the use of moisture sensors, rain shut-off devices, check valves, and a WaterSmart irrigation controller to the maximum extent feasible. (A moisture-sensing device measures the amount of water in the soil; a rain-sensing device is a device that automatically shuts off the irrigation system when it rains; an anti-drain valve or check valve is a valve located under a sprinkler head that holds water in a system so it minimizes drainage; an automatic controller is a mechanical or solid-state timer, capable of operating valve stations to set the days and length of time of a water application.) Turf shall be prohibited from all areas except for the lawn/open play area. Drought-resistant plants shall be incorporated into the landscaping plan. Plans shall be subject to approval by the City of Newport Beach.

MM 5.2-I.11 The project shall utilize water conservation technologies and practices to the maximum extent feasible. Water conservation measures shall include, but are not limited to:

- High-efficiency toilets
- EPA WaterSense-labeled faucets

Level of Significance After Mitigation

Less than significant.

Construction

Mitigation measures that improve the efficiency of construction would reduce emissions of carbon dioxide during construction from worker trips and the construction equipment. It is anticipated that the reductions from Mitigation Measures MM 5.2-I.1 through MM 5.2-I.4 would reduce emissions of carbon dioxide from construction equipment and vehicles by at least five percent. The mitigation measures would not reduce emissions from the export of sand via tugboat. Unmitigated emissions equal approximately 490 $MTCO_2e$. Total reductions are 4 percent, lowering emissions to 446

$MTCO_2e$, as shown in Table 5.2-17. Feasible mitigation measures reduce the project's contribution of greenhouse gas emissions. Therefore, the emissions during construction are less than significant.

Table 5.2-17: Construction Greenhouse Gas Emissions (Mitigated)

Phase	Carbon Dioxide Emissions (tons)	Emissions ($MTCO_2e$)
Demolition	6	5
Mass grading	110	100
Export of sand via tugboat	42	38
Trenching	13	12
Building	301	273
Fine grading	26	24
Asphalt paving	15	14
Architectural Coating	1	1
Subtotal Unmitigated	**514**	**467**
Mitigation Reduction (from Air Quality Mitigation)	**-24**	**- 21**
Total Mitigated Emissions	**490**	**446**
Source: MBA 2008		

Operation

The proposed project incorporates a number of features and mitigation measures that would minimize greenhouse gas emissions to the maximum extent practicable. These features and mitigation measures are consistent with all applicable strategies identified by the ARB. Project design features/location, and the mitigation measures listed previously would reduce greenhouse gases.

Reductions to electricity and natural gas sources are estimated at 21 percent each, pursuant to Mitigation Measure MM 5.2-I.6. The reduction of water use through Mitigation Measures MM 5.2-I.10 and MM 5.2-I.11 could reduce water use by at least 10 percent. Mitigation Measure MM 5.2-I.8 combined with the project's location as infill development near existing transit corridors could reduce greenhouse gas emissions from motor vehicles by 5%.

As shown in Table 5.2-18, after mitigation, operation of the proposed project would result in new emissions of approximately 580 $MTCO_2e$ per year, which is a 13 percent reduction from mitigation.

Table 5.2-18: Operational Greenhouse Gas Emissions (Mitigated)

Source	Metric tons of Carbon Dioxide Equivalents per year		
	Unmitigated	Reduction (%)	Mitigated
Water transport for building uses and landscaping	10	10	9
Indirect electricity	106	21	84
Natural gas	65	21	51
Refrigerants	276	0	276
Motor vehicles	1,000	5	950
Boats	257	0	257
Subtotal Project Emissions	1,714	-	1,627
Existing Land Use Emissions	-1,047	0	-1,047
Net New Emissions	**667**	13	**580**
Source: MBA 2008.			

The proposed project incorporates a number of features and mitigation measures that would minimize greenhouse gas emissions to the maximum extent practicable. These features and mitigation measures are consistent with all applicable strategies identified by the ARB. Moreover, given the project site's previous support of urban development and its proximity to surrounding development, the development of the project would be consistent with greenhouse gas emissions reduction strategies that emphasize reuse and redevelopment of developed or previously developed land uses. Additionally, the project would be providing recreational uses for the surrounding residents, which could reduce vehicle miles traveled for the residents. For these reasons, the proposed project's greenhouse gas emissions would be less than significant.