
IV. ENVIRONMENTAL IMPACT ANALYSIS

C. AIR QUALITY

INTRODUCTION

This section of the Draft Environmental Impact Report (DEIR) evaluates the potential air quality impacts associated with the implementation of the proposed Big Wave Wellness Center and Office Park project (“proposed project”). This air quality assessment has been prepared using analytical methodologies and evaluation criteria outlined by the California Environmental Quality Act (CEQA) Guidelines (Appendix G), the Bay Area Air Quality Management District (BAAQMD) in the document entitled, “*BAAQMD CEQA Guidelines: Assessing the Air Quality Impacts of Projects and Plans*,” published in December of 1999, and the County of San Mateo General Plan. As recommended, all three main categories of air pollutants are assessed; criteria air pollutants, toxic air contaminants (TACs), and greenhouse gases.

METHODOLOGY

The potential air quality impacts are evaluated by qualitatively and quantitatively assessing the air pollutant emissions resulting from the construction and operation of the proposed project. Construction related emissions would include construction equipment exhaust and fugitive dust associated with grading activities. Project operational emissions evaluated in this DEIR include the air emissions from the potential increase in traffic as well as area source emissions (e.g., natural gas usage in the residences and offices).

The net increase in air pollutant emissions generated by the implementation of the project has been quantitatively estimated using the URBEMIS 2007 computer model distributed for use by the California Air Resources Board (CARB) and recommended for use by the BAAQMD. These estimated air emissions were then compared to the thresholds of significance contained in the *BAAQMD CEQA Guidelines* (discussed below). In addition, the project’s consistency with all applicable State, regional, and local rules and regulations was assessed using the State CEQA Guidelines, the *BAAQMD CEQA Guidelines*, and the County of San Mateo General Plan as guidance.

ENVIRONMENTAL SETTING

Project Location

The 19.4-acre project site is located on Airport Street, northwest of the Princeton/Pillar Point Harbor area in unincorporated County of San Mateo. The County of San Mateo, which is located on the San Francisco Peninsula, is part of the nine-county San Francisco Bay Area Air Basin (“the Basin”). The Basin encompasses seven counties (Alameda, Contra Costa, Marin, San Francisco, San Mateo, Santa Clara and Napa) and portions of two others (southwestern Solano and southern Sonoma). The air quality within the Basin is influenced by a wide range of emissions sources, such as dense population centers, heavy vehicular traffic, and industry.

Climate and Topography

Per the *BAAQMD CEQA Guidelines*, the project site is located along the western coast within the peninsula subregion of the Basin.¹ The Santa Cruz Mountains run up the center of the peninsula subregion, with elevations exceeding 2000 feet at the southern end, decreasing to 500 feet in South San Francisco. As a result, coastal towns experience a high incidence of cool, foggy weather in the summer. Cities in the southeastern peninsula experience warmer temperatures and fewer foggy days because the marine layer is blocked by the ridgeline to the west. The blocking effect of the Santa Cruz Mountains results in variations in summertime maximum temperatures in different parts of the peninsula.

For example, at Half Moon Bay and San Francisco, the maximum daily temperatures in June through August are 62 to 64 degrees F, while on the eastern side at Redwood City, the maximum temperatures are in the low 80s for the same period. Daily maximum temperatures throughout the peninsula during the winter months are in the high 50s. Large temperature gradients are not seen in the minimum temperatures. Average minimum temperatures at Half Moon Bay are about 43 degrees in winter and 50-52 in summer. The east peninsula, represented by Redwood City, reports winter minimum temperatures of 40 degrees, and summer minimum temperatures of 52-54 degrees.

Two important gaps in the Santa Cruz Mountains occur on the peninsula. The larger of the two is the San Bruno Gap, extending from Fort Funston on the ocean to the San Francisco Airport. Because the gap is oriented in the same northwest to southeast direction as the prevailing winds, and because the elevations along the gap are less than 200 feet, marine air is easily able to penetrate into the bay. The other gap is the Crystal Springs Gap, between Half Moon Bay and San Carlos. As the sea breeze strengthens on summer afternoons, the gap permits maritime air to pass across the mountains, and its cooling effect is commonly seen from San Mateo to Redwood City.

Rainfall amounts on the east side of the peninsula are somewhat lower than on the west side with San Francisco and Redwood City reporting an average of 19.5 inches per year. On the west side, Half Moon Bay reports 25 inches per year. Areas in the Santa Cruz Mountains are significantly higher, especially west of the ridgeline, due to orographic-lifting induced condensation, close proximity to a moisture source, and fog drip.

Annual average wind speeds range from 5 to 10 mph throughout the peninsula, with higher wind speeds usually found along the coast. However, winds on the eastern side of the peninsula are often high in certain areas, such as near the San Bruno Gap and the Crystal Springs Gap. The prevailing winds along the peninsula's coast are from the west, although individual sites can show significant differences. The southeastern portion of the peninsula is the area most protected from the high winds and fog of the marine layer, and therefore has the highest air pollution potential.

¹ *BAAQMD CEQA Guidelines, April 1996, p. D-14.*

Existing Air Quality Conditions

Presently, three categories of air pollutants are regulated by federal, state, and/or regional government agencies; criteria pollutants, toxic air contaminants (TACs), and greenhouse gases. These air pollutants, which are emitted in the Basin via “everyday” activities, can pose significant health and environmental risks. A detailed description of each air pollutant category, the existing major sources of these air pollutants in the Basin, and the overall air quality conditions of the Basin are discussed below.

Criteria Air Pollutants

The Federal Clean Air Act (FCAA) of 1970, and subsequent Federal Clean Air Act Amendments (FCAAA) of 1977 and 1990, required the establishment of national ambient air quality standards (NAAQS) for wide-spread pollutants considered harmful to public health and the environment. These pollutants, commonly referred to as criteria pollutants, include ozone (O₃), carbon monoxide (CO), nitrogen dioxide (NO₂), respirable particulate matter (PM₁₀), fine particulate matter (PM_{2.5}), sulfur dioxide (SO₂), and lead (Pb). A description of each criteria pollutant as well as their potential health impacts are presented below.

- **Ozone (O₃)** is a highly reactive and unstable gas that is formed when reactive organic gases (ROGs) and nitrogen oxides (NO_x), both byproducts of internal combustion engine exhaust, undergo slow photochemical reactions in the presence of sunlight. Ozone concentrations are generally highest during the summer months when direct sunlight, light wind, and warm temperature conditions are favorable to the formation of this pollutant. Short-term exposures (lasting for a few hours) to ozone at levels typically observed in areas of high ozone can result in breathing pattern changes, reduction of breathing capacity, increased susceptibility to infections, inflammation of the lung tissue, and some immunological changes. Elevated ozone levels may lead to increases in school absences, daily hospital admission rates, as well as mortality rates.
- **Carbon Monoxide (CO)** is a colorless, odorless gas produced by the incomplete combustion of carbon-containing fuels, such as gasoline or wood. CO concentrations tend to be the highest during the winter morning, when little to no wind and surface-based inversions trap the pollutant at ground levels. Because CO is emitted directly from internal combustion engines, motor vehicles operating at slow speeds are the primary source of CO in the Basin. The highest ambient CO concentrations are generally found near congested transportation corridors and intersections.

Inhaled CO has no direct toxic effect on the lungs, but exerts its effect on tissues by interfering with oxygen transport. Hence, conditions with an increased demand for oxygen supply can be adversely affected by exposure to CO. Individuals most at risk include patients with diseases involving heart and blood vessels, fetuses, and patients with chronic hypoxemia (oxygen deficiency) as seen in high altitudes. Exposure to low levels of CO can cause fatigue, headaches, nausea, and dizziness, as well as aggravating cardiovascular disease. High concentrations of CO may be lethal with death resulting from asphyxiation.

- **Respirable Particulate Matter (PM₁₀) and Fine Particulate Matter (PM_{2.5})** consist of extremely small, suspended particles or droplets 10 microns and 2.5 microns or smaller in diameter. Some sources of particulate matter, like pollen and windstorms, are naturally occurring. However, in populated areas, most particulate matter is caused by road dust, diesel soot, combustion products, abrasion of tires and brakes, and construction activities. A consistent correlation between elevated ambient fine particulate matter (PM₁₀ and PM_{2.5}) levels and an increase in mortality rates, respiratory infections, number and severity of asthma attacks and the number of hospital admissions has been observed in different parts of the United States and the world. The elderly, people with pre-existing respiratory or cardiovascular disease and children are more susceptible to the effects of high levels of PM₁₀ and PM_{2.5}.
- **Nitrogen dioxide (NO₂)** is a nitrogen oxide compound that is produced from the combustion of fossil fuels, such as in internal combustion engines (both gasoline and diesel powered) and power plant facilities. Of the seven types of nitrogen oxide compounds, NO₂ is the most abundant in the atmosphere. Commuters in heavy traffic may be exposed to higher concentrations of NO₂ than those indicated by regional monitors. Short term exposure to NO₂ may lead to an increased resistance to air flow and airway contraction. Larger decreases in lung functions are observed in individuals with asthma or chronic obstructive pulmonary disease (e.g., chronic bronchitis, emphysema) than in healthy individuals, indicating a greater susceptibility of these sub-groups. Population-based studies suggest that an increase in acute respiratory illness, including infections and respiratory symptoms in children (not infants), is associated with long-term exposures to NO₂.
- **Sulfur dioxide (SO₂)** is a colorless, extremely irritating gas or liquid. It enters the atmosphere mainly as a result of burning high sulfur-content fuel oils and coal, as well as from chemical processes occurring at chemical plants and refineries. When SO₂ oxidizes in the atmosphere, it forms sulfates (SO₄). Collectively, these pollutants are referred to as sulfur oxides (SO_x). Acute exposure to SO₂ can cause an increase in resistance to air flow, as well as reduction in breathing capacity leading to severe breathing difficulties in asthmatics. In contrast, healthy individuals do not exhibit similar acute responses even after exposure to higher concentrations of SO₂. Very high levels of exposure to SO₂ can cause lung edema (fluid accumulation), lung tissue damage, and sloughing off of cells lining the respiratory tract.
- **Lead (Pb)** occurs in the atmosphere as particulate matter. Present sources of Pb include the manufacturing and recycling of batteries, paint, ink, ceramics, ammunition, and the use of secondary Pb smelters. The combustion of leaded gasoline was the primary source of airborne Pb in the Basin until the use of leaded gasoline was no longer permitted for on-road motor vehicles. Pb is also present in many soils and can get re-suspended in the air.

Fetuses, infants, and children are more sensitive than others to the adverse effects of Pb exposure. Exposure to low levels of Pb can adversely affect the development and function of the central nervous system, leading to learning disorders, distractibility, inability to follow simple commands, and lower intelligence quotient. In adults, increased Pb levels are associated with

increased blood pressure. Pb poisoning can cause anemia, lethargy, seizures, and death; although it appears that there are no direct effects of Pb on the respiratory system.

The average daily emissions of criteria pollutants from existing regional and local sources in the project vicinity are listed below in Table IV.C-1.

**Table IV.C-1
2008 Estimated Average Daily Regional & Local Emissions**

Emissions Source	Emissions in Tons Per Day					
	ROG	CO	NO _x	SO _x	PM ₁₀	PM _{2.5}
San Francisco Bay Area Air Basin						
Stationary Sources	106.6	44.3	50.6	45.9	16.3	12.1
Area-Wide Sources	87.9	161.9	16.9	0.6	175.5	52.9
Mobile Sources	183.1	1,541.5	380.5	14.9	20.3	16.3
Natural (non-anthropogenic) Sources	106.5	49.4	1.6	0.5	5.1	4.3
Total Emissions	484.1	1,797.0	449.7	62.0	217.2	85.6
San Mateo County						
Stationary Sources	7.4	2.1	1.7	0.1	1.0	0.8
Area-Wide Sources	8.7	11.0	1.9	0.1	16.5	4.2
Mobile Sources	18.6	159.8	39.7	0.3	1.8	1.4
Natural (non-anthropogenic) Sources	6.9	–	–	–	–	–
Total Emissions	41.6	172.8	43.3	0.4	19.3	6.3
<i>Notes: – = information not available</i>						
<i>Source: California Air Resources Board, website: http://www.arb.ca.gov/app/emsmv/emssumcat.php, July 2009.</i>						

Stationary (point) sources occur at an identified location and are usually associated with manufacturing and industry. Examples are boilers or combustion equipment that produces electricity or generates heat. Area sources are widely distributed and produce many small emissions. Examples of area sources include residential and commercial water heaters, painting operations, lawn mowers, agricultural fields, landfills, and consumer products such as barbecue lighter fluid and hair spray.

Mobile sources refer to emissions from motor vehicles, including tailpipe and evaporative emissions, and are classified as either on-road or off-road. On-road sources may be legally operated on roadways and highways. Off-road sources include aircraft, ships, trains, racecars, and self-propelled construction equipment. Mobile sources account for the majority of the air pollutant emissions within the Basin. Air pollutants can also be generated by the natural environment (natural non-anthropogenic sources). For example, fine dust particles are pulled off the ground surface and suspended in the air during high winds.

Toxic Air Contaminants (TACs)

TACs are a category of air pollutants regulated separately from criteria pollutants. TACs refer to a diverse group of air pollutants that are capable of causing chronic (e.g., of long duration) and acute (e.g., severe but of short duration) adverse effects on human health. TACs are suspected, or known, to cause

cancer, birth defects, neurological damage, or death. TACs include both organic and inorganic chemical substances that may be emitted from a variety of common sources, such as industry, agriculture, fuel combustion, and commercial operations (e.g., dry cleaners). Diesel exhaust is the predominant TAC in urban air and is estimated to represent about two-thirds of the cancer risk from TACs (based on the statewide average).

The preferred technique for reducing toxic air emissions is source reduction, and as part of a local control strategy in the Bay Area, all applications for new stationary sources are reviewed to ensure compliance with required emission controls and limits. The BAAQMD maintains an inventory of stationary sources of toxic air contaminants that emit TACs above certain threshold quantities in the Bay Area. Since the San Mateo County General Plan has not been updated since 1994, (published in 1986, Air Resources Chapter adopted in 1994) a list of facilities/stationary sources that exceed TAC threshold trigger levels in San Mateo County is not available.

Greenhouse Gases

Greenhouse gases refer to a group of compounds present in the earth's atmosphere that regulate temperature and climate by trapping a portion of the infrared radiation from the sun. The principal greenhouse gases are carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), sulfur hexafluoride (SF₆), perfluorocarbons (PFCs), hydrofluorocarbons (HFCs), and water vapor (H₂O). CO₂ is the most predominant greenhouse gas in the Earth's atmosphere, as is therefore used as the baseline for determining the warming potential of the other greenhouse gases (CO₂e equivalents). These greenhouse gases are produced via natural processes as well as human activities (e.g., combustion of fossil fuels).

Since the industrial revolution, there has been a significant increase in the amount of greenhouse gases emitted into the atmosphere. Research has shown that this exponential increase in greenhouse gas emissions from human activities has contributed to rapid Global Climate Change. Global Climate Change, also known as global warming, is a change in the average weather on earth that can be measured by wind patterns, storms, precipitation and temperature. Although there is disagreement as to the speed of global warming and the extent of the impacts attributable to human activities, most agree that there is a direct link between increased emissions of greenhouse gases and global temperature variations.

In December of 2008, the BAAQMD published a document entitled, "Source Inventory of Bay Area Greenhouse Gas Emissions."² This document is a greenhouse gas inventory for the Bay Area, which reflects the estimated 2007 greenhouse gas emissions for all seven counties located in the jurisdiction of the BAAQMD- Alameda, Contra Costa, Marin, San Francisco, San Mateo, Santa Clara, Napa, and the southern portions of Solano and Sonoma counties. This greenhouse gas inventory is based on the standards for criteria pollutant inventories and is intended to support the BAAQMD's climate protection activities.

Based on the information contained in the "Source Inventory of Bay Area Greenhouse Gas Emissions", Table IV.C-2 below shows the regional (Bay Area) and local (San Mateo County, project location) 2007

² http://www.mtc.ca.gov/planning/climate/Bay_Area_Greenhouse_Gas_Emissions_12-08.pdf

greenhouse gas emissions from existing direct and indirect greenhouse gas sources. The emissions are estimated for existing industrial, commercial, transportation, residential, forestry, and agriculture activities. The estimated greenhouse gas emissions are presented in carbon dioxide equivalents, which weight each greenhouse gas by its global warming potential. The global warming potentials used in the BAAQMD document “Source Inventory of Bay Area Greenhouse Gas Emissions” are in accordance with the Second Assessment Report (SAR) of the Intergovernmental Panel on Climate Change (IPCC).

**Table IV.C-2
2007 Estimated Regional & Local Greenhouse Gas Emissions**

Emissions Source	Emissions in Tons of CO ₂ e Per Year (2007)	
	Bay Area	San Mateo County
Electricity/Co-Generation	15,197,047	1,036,254
Off-Road Equipment	2,920,462	269,650
Agricultural/Farming	1,106,246	27,062
Industrial/Commercial		
Oil Refineries	14,187,633	0
Waste Management	1,576,275	212,580
Other	19,098,557	1,339,328
Residential Fuel Usage		
Natural Gas	6,495,464	723,595
LP Gas/Liquid Fuel	169,911	19,481
Solid Fuel	151,742	9,203
Transportation		
Off-Road	10,804,821	3,972,218
On-Road	30,844,862	3,351,469
Total Emissions	102,552,991	10,960,839
<i>Source: http://www.mtc.ca.gov/planning/climate/Bay Area Greenhouse Gas Emissions 12-08.pdf July 2009.</i>		

Ambient Air Quality

As discussed above, the FCAA requires the United States Environmental Protection Agency (U.S. EPA) to set NAAQS for six common air pollutants, typically referred to as “criteria pollutants”. The FCAA also afforded individual states the option to adopt standards that are more stringent and/or include other pollutants. As such, the CARB also established ambient air quality standards for the state (CAAQS) as outlined in the 1988 California Clean Air Act (CCAA). The national and state ambient air quality standards have been set at levels designed to protect human health, with an adequate margin of safety, including sensitive populations such as children, the elderly, and individuals suffering from respiratory disease.

Air quality in the Basin is monitored by the BAAQMD, which operates a regional network of air pollution monitoring stations to determine if the federal and state standards for criteria air pollutants (NAAQS and CAAQS) are being achieved. The BAAQMD Redwood City Monitoring Station is closest to the project site. Table IV.C-3 identifies the NAAQS and CAAQS for relevant air pollutants, the

concentrations registered, and the violations of State and Federal pollutant standards that have occurred at the Redwood City Monitoring Station from 2005 to 2007.

**Table IV.C-3
Summary of Ambient Air Quality in the Project Vicinity**

Emissions Source	Standard	Year		
		2005	2006	2007
Carbon Monoxide (CO)				
Maximum 1-hour concentration measured		4.5 ppm	2.4 ppm	5.5 ppm
Days exceeding national 1-hour standard	35 ppm	0	0	0
Days exceeding State 1-hour standard	20 ppm	0	0	0
Maximum 8-hour concentration measured		2.3 ppm	1.7 ppm	2.3 ppm
Days exceeding national & State 8-hour standard	9.0 ppm	0	0	0
Ozone (O₃)				
Maximum 1-hour concentration measured		0.084 ppm	0.085 ppm	0.077 ppm
Days exceeding State 1-hour standard	0.09 ppm	0	0	0
Maximum 8-hour concentration		0.061 ppm	0.063 ppm	0.069 ppm
Days exceeding national 8-hour standard	0.075 ppm	0	0	0
Days exceeding State 8-hour standard	0.070 ppm	0	0	0
Nitrogen Dioxide (NO₂)				
Maximum 1-hour concentration measured		0.062 ppm	0.069 ppm	0.057 ppm
Days exceeding State 1-hour standard	0.25 ppm ¹	0	0	0
Annual Arithmetic Mean (AAM)		0.015 ppm	0.014 ppm	0.013 ppm
Exceedance of national AAM standard?	0.053 ppm	No	No	No
Exceedance of State AAM standard?	0.030 ppm	No	No	No
Respirable Particulate Matter (PM₁₀)				
Maximum 24-hour concentration measured		81 µg/m ³	70 µg/m ³	56 µg/m ³
Days exceeding national 24-hour standard	150 µg/m ³	0	0	0
Days exceeding State 24-hour standard	50 µg/m ³	2	2	1
Annual Arithmetic Mean (AAM)		20.9 µg/m ³	19.8 µg/m ³	19.6 µg/m ³
Exceedance of State AAM standard?	20 µg/m ³	Yes	No	No
Fine Particulate Matter (PM_{2.5})				
Maximum 24-hour concentration measured		30.9 µg/m ³	75.3 µg/m ³	45.4 µg/m ³
Days exceeding national 24-hour standard	35 µg/m ³	0	1	1
Annual Arithmetic Mean (AAM)		8.8 µg/m ³	9.6 µg/m ³	8.3 µg/m ³
Exceedance of national AAM standard?	15 µg/m ³	No	No	No
Exceedance of State AAM standard?	12 µg/m ³	No	No	No
Notes: ppm = parts per million by volume µg/m ³ = micrograms per cubic meter				
¹ In 2008, the nitrogen dioxide standard was lowered from 0.25 to 0.18 ppm.				
Source: BAAQMD, July 2009. http://www.baaqmd.gov/Divisions/Communications-and-Outreach/Air-Quality-in-the-Bay-Area/Air-Quality-Summaries.aspx				

As shown in Table IV.C-3, the Redwood City monitoring station measurements indicate that the ambient air concentrations in the vicinity of the project have not exceeded the NAAQS or the CAAQS for CO, O₃, and NO₂ from 2005-2007 (most recent data available). The State 24-hour standard for PM₁₀ was

exceeded twice in 2005 and 2006 and once in 2007. The national 24-hour standard for PM_{2.5} was exceeded once in 2006 and 2007.

Attainment Status

Ambient air concentrations of criteria pollutants are used by the U.S. EPA and the CARB to assess and classify the air quality of each air basin, county, or a specific developed area. The classification is determined by comparing actual monitoring data with federal and state standards. If a pollutant concentration in an area is lower than the federal and/or state standard, the area is classified as being in “attainment”. If the pollutant concentration exceeds the federal and/or state standard, the area is classified as a “non-attainment” area. If there is not enough data available to determine whether the standard is exceeded in an area, the area is designated “unclassified.” The attainment status for the Basin is outlined below in Table IV.C-4.

**Table IV.C-4
Ambient Air Quality Attainment Status for San Francisco Air Basin**

Pollutant	State-Level Attainment Status	National-Level Attainment Status
Ozone (1-hour)	Non-attainment	N/A
Ozone (8-hour)	Non-attainment	Non-attainment
Particulates (PM ₁₀), (24-hour)	Non-attainment	Unclassified
Particulates (PM ₁₀), (AAM)	Non-attainment	N/A
Fine Particulates (PM _{2.5}), (24-hour)	N/A	Non-attainment
Fine Particulates (PM _{2.5}), (AAM)	Non-attainment	Attainment
Carbon Monoxide (1-hour)	Attainment	Attainment
Carbon Monoxide (8-hr)	Attainment	Attainment
Nitrogen Dioxide	Attainment	Attainment
Sulfur Dioxide (1-hour)	Attainment	N/A
Sulfur Dioxide (24-hour)	Attainment	Attainment
Lead (Pb)	Attainment	Attainment
<i>Note: N/A = not applicable</i>		
<i>Source: BAAQMD, http://www.baaqmd.gov/pln/air_quality/ambient_air_quality.htm, updated December 30, 2008.</i>		

As can be seen, the Basin is considered “non-attainment” for the O₃ (8-hour) and PM_{2.5} (24-hour) federal standards, and is considered “non-attainment” for the O₃ (1-hour and 8-hour), PM₁₀ (24-hour and AAM) and PM_{2.5} (AAM) state standards.

Sensitive Receptors

Some groups of people are more affected by air pollution than others. CARB has identified the following people who are most likely to be affected by air pollution: children under 14, the elderly over 65, athletes, and people with cardiovascular and chronic respiratory diseases. These groups are classified as sensitive receptors. Locations that may contain a high concentration of these sensitive population groups include residential areas, hospitals, daycare facilities, elder care facilities, elementary schools, and parks. The project site will contain residential units and is currently bordered by the El Granada Mobile Home

Park to the north. Therefore, the potential exposure of sensitive receptors to air pollutant emissions is considered in this air quality analysis.

REGULATORY SETTING

Air quality within the Basin is addressed through the efforts of various federal, state, regional, and local government agencies. These agencies work jointly, as well as individually, to improve air quality through legislation, regulations, planning, and policy-making aimed at regulating air pollutants of concern as defined under the Federal Clean Air Act (FCAA) and the California Clean Air Act (CCAA). The agencies and legislation responsible for improving the air quality within the Basin are discussed below.

Federal Oversight

The FCAA governs air quality in the United States and is administered by the U.S. EPA. In addition to administering the FCAA, the U.S. EPA is also responsible for setting and enforcing the NAAQS for atmospheric pollutants. As part of its enforcement responsibilities, the U.S. EPA requires each state with non-attainment areas to prepare and submit a State Implementation Plan (SIP) that demonstrates the means to attain the federal standards. The SIP must integrate federal, state, and local plan components and regulations to identify specific measures to reduce pollution. These measures need to incorporate performance standards and market-based programs that can be met within the timeframe identified in the SIP.

State Oversight

The CARB, a part of the California Environmental Protection Agency, is responsible for the coordination and administration of both federal and state air pollution control programs within California. In this capacity, the CARB conducts research, sets CAAQS, compiles emission inventories, develops suggested control measures, and prepares the SIP. For example, the CARB establishes emissions standards for motor vehicles sold in California, consumer products (e.g., hair spray, aerosol paints, and barbecue lighter fluid), and various types of commercial equipment. The CARB also oversees the functions of local air pollution control districts and air quality management districts, which in turn administer air quality activities at the regional and county level.

Since the Federal Government currently does not regulate emissions of greenhouse gases, CARB has been tasked with regulating greenhouse gas emissions in California under the California Global Warming Solutions Act of 2006 (Assembly Bill No. 32; California Health and Safety Code Division 25.5, Sections 38500, et seq., or AB 32). AB 32 was passed in response to Executive Order S-3-05 issued by Governor Schwarzenegger in 2005, which sets forth a series of target dates by which statewide emission of greenhouse gases would be progressively reduced:

- By 2010, reduce greenhouse gas emissions to 2000 levels;
- By 2020, reduce greenhouse gas emissions to 1990 levels; and

- By 2050, reduce greenhouse gas emissions to 80 percent below 1990 levels.

AB 32 requires the CARB to design and implement emission limits, regulations, and other measures, such that feasible and cost-effective statewide greenhouse gas emissions are reduced to 1990 levels by 2020 (representing an approximate 25% reduction in emissions). In addition to identifying early actions to reduce greenhouse gases, CARB has also developed mandatory greenhouse gas reporting regulations that require emissions reporting for classes of facilities that collectively account for 94 percent of the stationary source emissions in California, including cement plants, oil refineries, electric generating facilities/providers, co-generation facilities, hydrogen plants and other stationary combustion sources that emit more than 25,000 metric tons per year of CO₂e emissions³.

Regional Oversight

The BAAQMD is the primary agency responsible for comprehensive air pollution control in the Basin. The BAAQMD develops rules and regulations, establishes permitting requirements for stationary sources, inspects emission sources, and enforces such measures through educational programs or fines. The BAAQMD is also tasked with addressing the State's requirements established under the CCAA (e.g., bringing the San Francisco Bay Area into attainment).

To bring the Basin into attainment for O₃ and PM, the BAAQMD has developed the 2000 Clean Air Plan (CAP), the 2005 Ozone Attainment Plan, and the Particulate Matter Implementation Schedule (November 9, 2005 BAAQMD Staff Report). The current Basin CAP, which was adopted by the BAAQMD Board of Directors on December 20, 2000, identifies the control measures that would be implemented through 2006 to reduce major sources of pollutants. The Bay Area 2005 Ozone Attainment Plan includes control measures for ozone precursors (reactive organic gases (ROGs) and NO_x), whereas the Particulate Matter Implementation Schedule addresses a variety of pollutants (including direct emissions of PM and gases that are PM precursors). The BAAQMD is currently drafting the 2009 CAP, which will:

- Update the Bay Area 2005 Ozone Strategy in accordance with the requirements of the CCAA to implement "all feasible measures" to reduce ozone
- Consider the impacts of ozone control measures on particulate matter (PM), air toxics, and greenhouse gases in a single, integrated plan
- Review progress in improving air quality in recent years
- Establish emission control measures to be adopted or implemented in the 2009-2012 timeframe

Local Oversight

Local jurisdictions, such as the County of San Mateo, have the authority and responsibility to reduce air pollution through its policies and decision-making authority. Specifically, the County of San Mateo is

³ California Air Resources Board, December 6, 2007c, *Proposed Regulation for the Mandatory Reporting of California Greenhouse Gas Emissions Pursuant to the California Global Warming Solutions Act of 2006 (AB 32)*, available at http://www.arb.ca.gov/cc/ccei/reporting/GHGReportBoardSlides12_06_07.pdf (proposed regulations were approved by CARB on December 6, 2007).

responsible for the assessment and mitigation of air emissions resulting from its land use decisions. As such, the County of San Mateo's 1986 General Plan (Air Resources Chapter adopted in 1994) and other planning and building documents identify goals and policies that help the County of San Mateo contribute to regional air quality improvement efforts. Relevant policies from the County's General Plan Air Resources Chapter include:

17.15 Reduce Air Pollutants, Odors and Dust from Stationary Sources by Regulating Land Use Development

Reduce air pollutants, offensive odors and dust from stationary sources to the maximum practicable extent by:

- a. Requiring that all demolition, grading (excluding agriculture) and construction projects conform with applicable BAAQMD recommended dust control measures, including, but not limited to, surface wetting and seeding.
- b. Requiring that all land uses (excluding agriculture) conform with applicable BAAQMD recommended odor control measures, including, but not limited to, incineration, carbon filtering and chemical scrubbing.
- c. Requiring surface mining, oil and gas operations and industrial development to reduce their dust, odor and other air quality impacts, consistent with Mineral Resource Policy (3.13, 13.15, 13.16).
- d. Referring to BAAQMD all development projects identified by BAAQMD Regulation 2 as requiring air quality permit review, including, but not limited to, gasoline stations, dry cleaning plants, solid waste disposal sites, print shops, and auto body shops. This policy does not apply to (1) residential dwellings, (2) motels/hotels, (3) restaurants, (4) office and commercial buildings where the only emissions are from gas-fired space heating, and (5) agriculture.

17.16 Reduce Public Exposure to Air Pollutants, Offensive Odors and Dust by Land Use Planning

Reduce public exposure to air pollutants, offensive odors and dust by planning the distribution of land uses in the following ways:

- a. Designating sensitive receptor areas outside of high pollution concentration areas.
- b. Establishing buffer zones between sensitive receptors and significant emission sources.
- c. Establishing buffer zones between residential land uses and any land use known to cause offensive odors or dust, consistent with Mineral Resource and Urban Land Use Chapter policies to protect adjacent land uses (Policies 3.12-3.20 and 8.24). Examples include, but are not limited to, sewage treatment plants, landfill sites, and chemical manufacturing.

- d. Allowing stationary sources to locate in areas designated by the General Plan for industrial and commercial development.

ENVIRONMENTAL IMPACTS

Thresholds of Significance

In accordance with Appendix G of Title 14, Chapter 3 of the California Code of Regulations (CCR's): The 2006 CEQA Guidelines, the proposed project would have a significant environmental impact if it would:

- a) conflict with or obstruct implementation of the applicable air quality plan.
- b) violate any air quality standard or contribute substantially to an existing or projected air quality violation.
- c) result in a cumulatively considerable net increase of any criteria pollutant for which the project region is 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.

At this time there are currently no thresholds or official guidance adopted by the BAAQMD or other agencies in California to assess the significance of potential greenhouse gas emissions. However, projects are still required under CEQA to make a meaningful attempt to identify, analyze, and mitigate any potentially significant impacts resulting from greenhouse gas emissions associated with the construction and operation of the project. As such, greenhouse gases resulting from the implementation of the project would be considered to have a significant impact if the project would:

- f) conflict with or obstruct implementation of greenhouse gas reduction measures under AB 32 and/or other state, regional, or local regulations.

Project Impacts and Mitigation Measures

In order to determine if the project has the potential to significantly impact air quality (exceed any of the thresholds listed above), the methodology outlined in the *BAAQMD CEQA Guidelines* and endorsed by the County of San Mateo were used to evaluate thresholds (a) through (e). The *BAAQMD CEQA Guidelines* recommends analytical methodologies and provides evaluation criteria, such as defined screening thresholds for pollutant emissions, in order to determine the level of significance of potential project impacts. Projects that would generate emissions below the defined thresholds are considered to have a less-than-significant impact on air quality; projects that exceed the screening thresholds must provide further analysis such as district-approved air dispersion modeling to refute (or validate) a determination of significance or must acknowledge a potentially significant air quality impact. The goals,

policies, and programs relating to greenhouse gases outlined in AB 32 and the California Office of Planning and Research (OPR) technical advisory document, were used to evaluate threshold (f).

Impact AQ-1 Consistency with Air Quality Plan

A significant impact may occur if the project would conflict with or obstruct the implementation of the current Basin CAP (BAAQMD 2000 CAP). To determine if this may occur, the *BAAQMD CEQA Guidelines* recommends that the project's potential to conflict with or obstruct the current CAP be based on an evaluation of (a) the consistency of the project with the local general plan, and (b) the consistency of the general plan with the current CAP. If the applicable local general plan is consistent with the CAP, and the project is consistent with the applicable local general plan, the project would not have a significant impact under this threshold of significance. If the local general plan is not consistent with the CAP, or the project is not consistent with the local general plan, a quantitative analysis is required to determine whether the impact is significant.

a) Consistency of the project with the County of San Mateo General Plan

According to the *BAAQMD CEQA Guidelines*, a project is consistent with the general plan if the project does not require a general plan amendment. Based on the land use information contained in Chapter 7 of the County of San Mateo General Plan, the project would not require a general plan amendment. Therefore, the project is consistent with the County of San Mateo 1986 General Plan.

b) Consistency of the County of San Mateo General Plan with the BAAQMD 2000 CAP

As stated on page 20 of the *BAAQMD CEQA Guidelines*, the applicable local general plan is consistent with the current CAP if:

- the general plan population projections are consistent with the CAP and Association of Bay Area Governments (ABAG) projections.
- the rate of increase in vehicle miles traveled (VMT) does not exceed the rate of increase in population.
- the general plan implements CAP transportation control measures.
- the general plan provides buffer zones around sources of odors, toxics, and accidental releases.

Since the current County of San Mateo General Plan has not been updated since 1994, not all of these requirements are met. Therefore, the *BAAQMD CEQA Guidelines* sets the following quantitative requirements to establish consistency between the project, the County of San Mateo General Plan, and the 2000 CAP:

The project, in conjunction with past, present, and reasonably foreseeable future projects would not:

- i. exceed State or national CO concentrations standard
- ii. exceed 80 pounds/day of ROG, NO_x, or PM₁₀

- iii. pose a significant odor, toxics, or accidental release impact.

Or;

- iv. The project in combination with past, present, and reasonably foreseeable future projects would not cause the County of San Mateo's population to exceed CAP and ABAG population projections.
- v. The project in combination with past, present, and reasonably foreseeable future projects would not cause the rate of increase in VMT to exceed the rate of increase in population.

Quantitative requirements i through iii for the proposed project are discussed below in Impact AQ-2. As can be seen in Impact AQ-2, the project would not result in the exceedances of quantitative requirements i, ii, or iii. However, a quantitative evaluation for the proposed project, in conjunction with past, present, and reasonable foreseeable future projects was not conducted. Instead, requirements iv and v were evaluated to determine consistency.

The two primary components of the proposed project include: (1) the Office Park (northern parcel) development consisting of four, three-story buildings (225,000 sf total) planned for mixed office use, and a 640-space parking lot; and (2) the Wellness Center (southern parcel) development with a maximum of 70 units for approximately 50 DD adults and 20 live-in staff members, other onsite living and recreation facilities for residents, associated fencing, a separate storage building and a 73-space parking lot. Based on Section IV.M (Transportation & Traffic), the proposed project would generate an estimated 2,123 daily trips, including 292 trips during the AM peak hour, and 268 trips during the PM peak hour.

All other projects that are proposed (i.e., with pending applications), recently approved, under construction, or reasonably foreseeable that could produce a cumulative impact on the local environment are shown in Table III-1 of the Project Description (Section III). These related projects consist of approved, proposed, or projects currently under construction in the County of San Mateo (specifically the Mid-Coast Area) and the City of Half Moon Bay. These projects consist mainly of retail, restaurant, and warehouse/office uses.

As stated previously, the 2000 BAAQMD CAP is being used as guidance since the 2009 BAAQMD CAP is currently being drafted. Because the 2000 CAP only contains population and VMT projections through 2006, the project's potential to exceed CAP population projections cannot be determined.

As discussed in Section IV.K (Population & Housing), population growth associated with the Office Park and Wellness Center is more than three times greater than the projected population growth in the unincorporated Half Moon Bay area between 2009 and 2013, when assuming a conservative scenario that all persons filling the jobs and housing units at the project site would be coming from outside of the unincorporated Half Moon Bay area. However, it is anticipated that the majority of jobs and housing created by the project would be filled by the existing population due to the current unemployment and vacancy rates.

Additionally, housing to be provided at the project site is in conformity with area plans and policies because of its emphasis on providing affordable housing for developmentally disabled persons. The Housing Element, Local Coastal Program, and Montara - Moss Beach - El Granada Community Plan include variously as part of their goals to provide affordable housing options for special needs groups including the disabled. A related goal is to provide affordable housing in areas that reduce travel time between work and home. Since the housing at the project site is fulfilling a specific need identified in the local plans, this suggests that the housing at the project site is not contributing to substantial population growth in the area. Moreover, 37 of the jobs at the Wellness Center would be specifically provided for DD residents living at the project site. These jobs would not affect the balance between jobs and housing in the local community. The proposed project would assist the area in achieving a jobs/housing balance by providing approximately 825 net new jobs and 70 new housing units, or approximately 12 jobs per dwelling unit. By providing a substantial number of new job opportunities along with a moderate supply of new housing, the proposed project would not only provide adequate jobs to employ future project residents, but provides a surplus of jobs to employ existing and future residents in the surrounding community.

Regarding cumulative impacts contributing to substantial population growth, the employment potential of related projects needs to be considered. While on an individual basis, the impacts of the proposed project are not significant, cumulatively with other projects, the potential jobs created could induce substantial population growth in the area. The projects in the City of Half Moon Bay are not relevant to the cumulative impact discussion as they concern residential and park uses. Within the Midcoast area and the City of Pacifica, both of which contain insufficient local jobs for employed residents and those seeking work, as indicated by the jobs/housing imbalance in those areas and by unemployment rates, approximately 33,155 square feet and 94,743 square feet of commercial, industrial and mixed-use projects have been proposed, respectively. Applying employee generation rates to these numbers indicates that the related projects would generate up to 448 employees. Along with the 825 employees expected to be generated at the proposed project, a total of 1,250 employees could be generated by projects in the area. In the year 2030 (based on an approximately 20 year horizon from project occupation), the population in unincorporated Half Moon Bay is projected to be 12,300 and projected to be 42,100 in City of Pacifica. The ratio of jobs to employed residents is projected to be one job per 2.9 residents in unincorporated Half Moon Bay and one job per 3.1 residents in the City of Pacifica. Therefore, given the imbalance in the number of jobs compared to the number of residents, impacts associated with the potential growth in jobs stemming from the related projects would be less than significant and would create local employment opportunities for residents currently working outside of the area and for unemployed residents seeking employment.

In April of 2001, the County of San Mateo published the Countywide Transportation Plan 2010.⁴ This transportation plan estimates that the VMT increase for San Mateo County from 1990 to 2010 will be 19.8 percent. According to the California Department of Finance (Demographic Research) Unit,⁵ the population increase in San Mateo County from 1990 to 2010 will be approximately 13.7 percent (648,162

⁴ http://www.co.sanmateo.ca.us/vgn/images/portal/cit_609/10133371ctp-exec_summary.pdf

⁵ <http://www.dof.ca.gov/HTML/DEMOGRAP/ReportsPapers/ReportsPapers.php#projections>

people to 736,667). As can be seen, the projected rate of VMT increase is already estimated to be larger than the rate of population increase in San Mateo County. Therefore, the project in combination with past, present, and reasonably foreseeable future projects would not cause the rate of increase in VMT to exceed the rate of increase in population, as it is already greater. In addition, the project would incorporate bus stops and shuttle services to help minimize the increase in VMT in San Mateo County.

Based on the information discussed above, the project's potential to conflict with or obstruct implementation of the applicable air quality plan is *less than significant*.

Impact AQ-2 Construction and Operation Emissions

According to the *BAAQMD CEQA Guidelines*, a proposed project may violate an air quality standard or contribute substantially to an existing or projected air quality violation if: (1) the recommended BAAQMD construction mitigation measures are not implemented during the construction phase of the project, as appropriate, (2) and/or the project's operational emissions do not meet the six criteria outlined below.

For the project's operational emissions to be deemed insignificant, they must not:

- a) exceed established threshold values for criteria pollutants.
- b) significantly increase local carbon monoxide emissions (formation of CO hot spots).
- c) have significant odor impacts.
- d) potentially expose sensitive receptors to substantial levels of TACs.
- e) potentially expose receptors to acutely hazardous air emissions from accidental releases.
- f) have cumulative impacts that are significant.

Construction Emissions

As stated in Section III (Project Description) of the DEIR, the two primary components of the proposed project include: (1) the Office Park (northern parcel) development consisting of four, three-story buildings (225,000 sf total) planned for mixed office use, and a 640-space parking lot; and (2) the Wellness Center (southern parcel) development with a maximum of 70 units for approximately 50 DD adults and 20 live-in staff members, other onsite living and recreation facilities for residents, associated fencing, a separate storage building and a 73-space parking lot.

As shown in Table IV.C-5, the project construction time schedule would be between approximately 30 and 36 months to fully complete the Wellness Center and Office Park development. Overall, the initial grading and sorting of materials would take approximately three weeks, utilities installation about one month, and foundation construction about two months. After the construction of the foundations, the placement of the prefabricated Wellness Center units and the erection of the structures for the Office Park

would take approximately 18 months. It would take another 12 months for finish work, including the installation of the water recycling system and the solar system. The construction of the permeable parking lots and fire trails would take about three weeks to complete while the construction of the wetlands and landscaping would require about six months (assumed to begin after the completion of the Wellness Center and Office Park construction).

**Table IV.C-5
Construction Schedule**

Activity	Schedule
Initial Grading/Material Sorting	3 weeks
Utilities Installation	1 month
Foundation Construction	2 months
Wellness Center/Office Park	30 months
Permeable Parking Lot/Fire Trails	3 weeks
Wetlands/Landscaping	6 months
<i>Source: Big Wave, LLC, Facilities Plan: Draft #2, Big Wave Property, January 2009.</i>	

Construction equipment and personnel specifications are anticipated to involve, but are not limited to, the following:

- Initial grading would be accomplished with two 637 push-pull scrapers and one D-6 Cat crawler, two pickup trucks and one water truck;
- Utilities installation would involve two 20-ton excavators, one small backhoe, three dump trucks and two pickup trucks and one water truck;
- Foundation construction would involve two 20-ton excavators, one small backhoe, three dump trucks, ten pickup trucks, one water truck, and one pile driver. Approximately 3,000 cubic yards of concrete would be placed for the foundations involving 10 concrete trucks and one concrete-pumper. Approximately 250 piles may be driven involving a pile-driver, large fork lift and 60 semi truck deliveries. It is anticipated that there would be a crew of approximately 10 earth workers, 15 carpenters, and 6 driving crew;
- The placement of the prefabricated Wellness Center units and the erection of the structures for the Office Park would require two 50-ton cranes, 5 extended-lift trucks and about 15 smaller vehicles and employ a crew of approximately 30 personnel. Five tractor trailers would make about 2 trips per day to the site each;
- The construction of the permeable parking lots and fire trails would require approximately 4,100 cubic yards of base rock and 4,000 cubic yards of permeable concrete. Construction equipment would require a concrete pump truck and 5 concrete trucks. This portion of the project would employ a crew of approximately 10; and

- The construction of the wetlands and landscaping would require two backhoes and 4 pickup trucks and a crew of approximately 15 laborers.

Although there are exhaust emissions emitted from all engine-powered equipment, the *BAAQMD CEQA Guidelines* states that PM₁₀, typically in the form of fugitive dust, is the pollutant of greatest concern with respect to construction activities. Fugitive dust is mostly caused by material handling, grading activities, and traffic on unpaved or unimproved surfaces. As such, the BAAQMD requires that particular mitigation measures (depending on the size of the project site) geared towards PM₁₀ reduction be implemented.

As stated in the *BAAQMD CEQA Guidelines*, “[t]he District’s approach to CEQA analyses of construction impacts is to emphasize implementation of effective and comprehensive control measures rather than detailed quantification of emissions. If all of the control measures indicated [here] (as appropriate, depending on the size of the project area) will be implemented, then air pollutant emissions from construction activities would be considered a less-than-significant impact.” Therefore, if all of the construction mitigation measures required by the BAAQMD for a project site greater than four acres are implemented (identified below in Mitigation Measure AQ-2), air quality impacts related to construction of the project would *be less than significant*.

Mitigation Measure AQ-2 Construction Emissions

The applicant shall require the construction contractor to implement a dust control program. The program shall be applied to all construction activities involving grading, excavation, and use of unpaved areas for staging, extensive hauling of materials, or building demolition. The dust control program shall include the following measures:

- Water all active construction areas at least twice daily.
- Cover all trucks hauling soil, sand, and other loose materials *or* require all trucks to maintain at least two feet of freeboard.
- Pave, apply water three times daily, or apply (non-toxic) soil stabilizers on all unpaved access roads, parking areas, and staging areas at construction sites.
- Sweep daily (with water sweepers) all paved access roads, parking areas, and staging areas at construction sites.
- Sweep streets daily (with water sweepers) if visible soil material is carried onto adjacent public streets.
- Hydroseed or apply (non-toxic) soil stabilizers to inactive construction areas (previously graded areas inactive for ten days or more).
- Enclose, cover, water twice daily, or apply (non-toxic) soil binders to exposed stockpiles (dirt, sand, etc.).

- Limit traffic speeds on unpaved roads to 15 miles per hour (mph).
- Install sandbags or other erosion control measures to prevent silt runoff to public roadways.
- Replant vegetation in disturbed areas as quickly as possible.
- Install wheel washers for all existing, or wash off the tires or tracks of all trucks and equipment leaving the site.
- Limit the area subject to excavation, grading, and other construction activity at any one time.

Operational Emissions

Operational emissions associated with the proposed project would result primarily from increased vehicular trips to and from the project site, the internal combustion equipment associated with the onsite membrane bioreactor (MBR), ultraviolet (UV)-disinfected tertiary wastewater treatment plant, and the 600 kW emergency natural gas engine generator. Other sources of emissions associated with the project would include area source emissions, such as the use of natural gas for water heaters and cooking appliances. However, the proposed project would supply a majority of energy for heating, cooling and electrical demand with renewable energy, through a combination of offsite and onsite power generation. The potential onsite power systems include solar heat, photovoltaic panels, wind generation, back up and cogeneration with a natural gas generator for peak shaving and geothermal cooling. Passive heating and cooling is also a focus of the proposed development architectural design. Additionally, the electrical equipment cooling process would be a source of building heating. Natural gas fuel cells would be utilized for the backup communications power.

For the purposes of this DEIR, the potential emissions associated with the MBR, UV wastewater treatment plant and the emergency natural gas engine generator are not evaluated. This is due to the fact that:

- the specifics of the internal combustion equipment associated with the MBR, UV wastewater treatment plant and the emergency natural gas engine generator (make, model, emission factors, hours of operation, etc.) are not known at this time.
- these potential sources of air pollutants would require construction and operating permits issued by the BAAQMD. Prior to the issuance of operating permits, the BAAQMD would require that the internal combustion equipment associated with the MBR, UV wastewater treatment plant and the emergency natural gas engine generator be in compliance with the BAAQMD CEQA guidelines (which includes a cumulative impact analysis).

According to the *BAAQMD CEQA Guidelines*, a proposed project may violate an air quality standard or contribute substantially to an existing or projected air quality violation if the project’s operational emissions:

- a) Exceed established threshold values for criteria pollutants

The *BAAQMD CEQA Guidelines* states that if the total operational emissions (direct and indirect emissions) of a project exceed the thresholds listed in Table IV.C-6, the operational emissions will be considered significant. It should be noted that these significance thresholds do not account for the size of the project and therefore a larger project is more likely to exceed these thresholds.

**Table IV.C-6
BAAQMD Thresholds of Significance for Project Operations**

Pollutant	Daily Emissions (pounds/day)	Annual Emissions (tons/year)
ROG	80	15
NOx	80	15
PM ₁₀	80	15
Notes: ROG = reactive organic gases Source: BAAQMD CEQA Guidelines, page 16.		

Direct emissions are those that are emitted on a site, including stationary sources and onsite mobile equipment. Indirect emissions come from mobile sources that access the project site but generally emit off site. For many types of land-use development projects, the principal sources of air pollutant emissions are the motor vehicle trips generated by the project. The potential mobile source emissions and area source emissions resulting from the project were calculated using the URBEMIS2007 (version 9.2.4) computer model distributed for use by the CARB and recommended for use by the BAAQMD. The average daily direct and indirect emissions associated with the proposed project are presented in Table IV.C-7 and are compared with the BAAQMD project-specific recommended thresholds of significance. As shown in the table, the project would not generate average daily direct and indirect emissions of ROG, NOx, or PM₁₀ that would exceed BAAQMD-recommended thresholds. Therefore, impacts related to operational emissions for the project would be *less than significant*.

**Table IV.C-7
Air Pollutant Emissions from Project Operations (pounds/day)***

Operational Activity	ROG	NOx	PM ₁₀
Summer			
Mobile Source Emissions	12.46	9.67	28.67
Area Source Emissions	6.26	2.29	0.03
Total Operational Emissions	18.72	11.96	28.70
Significance Threshold	80	80	80
Significant Impact?	No	No	No

Winter			
Mobile Source Emissions	11.17	15.74	28.67
Area Source Emissions	5.52	2.17	0.00
Total Operational Emissions	16.69	17.91	28.67
Significance Threshold	80	80	80
Significant Impact?	No	No	No
*Highest pounds/day reported from summer and winter reports Source: Christopher A. Joseph & Associates, July 2009. Calculation data and results provided in Appendix D of this DEIR.			

b) Significantly increase local carbon monoxide emissions (formation of CO hot spots)

Traffic-congested roadways and intersections have the potential to generate localized high levels of CO. Localized areas where ambient concentrations exceed national and/or state standards for CO are termed CO “hotspots”. According to the *BAAQMD CEQA Guidelines*, if the implementation of a project results in the formation of hotspots at affected intersections due to an increase in traffic, the project will have significant operational impacts.

The *BAAQMD CEQA Guidelines* states that localized CO concentrations should be estimated for projects in which: (1) vehicle emissions of CO would exceed 550 pounds per day, (2) project traffic would impact intersections or roadway links operating at Level of Service (LOS) D, E or F, or would cause the LOS to decline to D, E or F, (3) and/or project traffic would increase traffic volumes on nearby roadways by more than ten percent.⁶

As determined in the URBEMIS 2007 run for the project (calculation data and results are included in Appendix D of this DEIR), the CO emissions associated with the project (142 pounds per day) would not exceed BAAQMD’s threshold of 550 pounds per day. However, the traffic study found that traffic generated by the project would impact intersections that operate at LOS D, E, or F. Therefore, the localized CO concentrations at affected intersections were estimated and compared to State and national CO concentration standards.

A simplified CALINE4 screening procedure developed by the BAAQMD was used to calculate the potential CO concentrations at the intersections and roadway segments listed in Table IV.C-8. The screening procedure assumes worst-case conditions and provides an estimation of maximum, worst-case CO concentrations. Maximum CO concentrations were calculated for peak-hour traffic volumes (AM and PM) as well as 8-hour traffic volumes (assumed four hours at peak AM traffic volume and four hours at peak PM traffic volume).

⁶ As stated in the *BAAQMD CEQA Guidelines*, if the increase in traffic volume is less than 100 vehicles per hour, the localized CO concentrations do not need to be estimated

**Table IV.C-8
Predicted Future Localized Carbon Monoxide Concentrations**

Intersection	CO Concentrations in Parts Per Million					
	Roadway Edge		25 Feet		50 Feet	
	1-Hour	8-Hour	1-Hour	8-Hour	1-Hour	8-Hour
Prospect Way & Capistrano Rd	6.2	2.8	5.9	2.6	5.8	2.5
Broadway & Prospect Way	6.2	2.8	5.9	2.6	5.8	2.5
Airport St & Stanford/Cornell Ave	5.9	2.6	2.7	2.4	5.7	2.4
Airport St & La Granada Ave	5.9	2.6	5.7	2.5	5.7	2.4
Airport St & Los Banos Ave	5.8	2.5	5.7	2.4	5.6	2.4
Hwy 1 & Cypress Ave	7.0	3.4	6.4	2.9	6.1	2.7
Hwy 1 & Capistrano Rd (South)	7.6	3.8	6.7	3.1	6.4	2.9
Hwy 1 & Capistrano Rd (North)	7.0	3.4	6.3	2.9	6.1	2.7
<i>Note: National 1-hour standard is 35.0 ppm State 1-hour standard is 20.0 ppm National and State 8-hour standard is 9.0 ppm Source: Christopher A. Joseph & Associates, July 2009. Calculation data and results provided in Appendix D of this DEIR.</i>						

Since Table IV.C-8 shows that the local CO concentrations at the above intersections would not exceed State or national ambient air quality standards, the potential impact from the CO emissions associated with the project’s operation would be *less than significant*.

c) Have significant odor impacts

The potential impact of odors from the implementation of the project was determined to be *less than significant*. See Impact AQ-5 for further explanation.

d) Potentially expose sensitive receptors to substantial levels of TACs

As discussed above, potential sources of TACs can include stationary sources such as industrial facilities (e.g., refineries) and commercial facilities (e.g., dry cleaners), as well as mobile sources (e.g., on-road vehicles). According to the *BAAQMD CEQA Guidelines*, when evaluating the potential impacts of TACs related to a project, two situations should be considered: (1) the proposed project is a source of TACs and will be located near sensitive receptors; and/or (2) sensitive receptors within the proposed project area will be located near an existing source of TACs. As stated in the *BAAQMD CEQA Guidelines*, a project that emits (or exposes sensitive receptors to) TACs and exceeds the following criteria is considered to have a significant air quality impact:

- Probability of contracting cancer for the Maximally Exposed Individual (MEI)⁷ exceeds 10 in one million; or

⁷ An MEI is a hypothetical offsite person, usually at or near the site boundary, who would receive the maximum exposure from a facility’s operations.

- Ground-level concentrations of non-carcinogenic TACs would result in a hazard index⁸ greater than one (1) for the MEI.

To identify and track existing sources of TACs in certain areas, the California Legislature enacted the Air Toxics Hot Spots Information and Assessment Act (AB 2588) in September of 1987. This law requires facilities with stationary sources to report the types and quantities of certain substances their facilities routinely release into the air. The goals of AB 2588 are to collect emission data, identify facilities having localized impacts, ascertain health risks, and notify nearby residents of significant risks based on estimated cancer and non-cancer health risks. According to the CARB website,⁹ there are five facilities registered under the Air Toxics Hot Spots Act within one mile of the project site. The name of the five facilities, their yearly emissions of TACs, and the BAAQMD risk assessment trigger thresholds are listed below in Table IV.C-9. As discussed in the BAAQMD Regulation 2, Rule 5, if these trigger thresholds are exceeded for any one source and/or facility, a health risk assessment is required.

**Table IV.C-9
Emissions from AB 2588 Facilities within 1 Mile of Project Site (pounds/year)**

Facility Name	Benzene	Ethylene Glycol	Formaldehyde	Nickel	Toluene	Xylene
30 CES/CEVC	3.1	0.1	19.3	0.1	0	0
Half Moon Bay Airport	0	0	0	0	4.9	1.0
Montara Sanitary District	0	0	0.3	0	0	0
Montara Water & Sanitary Dis.	0	0	0.2	0	0	0
Sewer Authority Mid-Coastside	0	0	0.2	0	0	0
Total Operational Emissions	3.1	0.1	20	0.1	4.9	1.0
BAAQMD Trigger Level	6.4	15,000	30	0.73	12,000	27,000
Risk Assessment Required?	No	No	No	No	No	No

Source: <http://www.arb.ca.gov/app/emsinv/facinfo/facinfo.php>, March 2009.

As can be seen in Table IV.C-9, no single facility exceeds the BAAQMD health risk assessment trigger levels. In fact, the total emissions of all five facilities are less than the BAAQMD trigger levels. Therefore, based on the information above, the implementation of the project would not locate sensitive receptors near existing significant sources of TACs.

The implementation of the project would generate traffic trips. TAC emissions from motor vehicles are generally a result of diesel exhaust emissions associated with truck or bus operations. Since the number of new daily truck trips generated by the implementation of the project would be relatively low (2.62 percent of total daily trips, or 56 truck trips), the amount of TACs that would be generated

⁸ A hazard index measures the potential for non-cancer health effects. It is the ratio of the estimated exposure level to the Reference Exposure Level, which is the level at or below which no adverse health effects are anticipated.

⁹ <http://www.arb.ca.gov/app/emsinv/facinfo/facinfo.php>

by these new trips over a 24-hour period is not anticipated to exceed the thresholds of significance for TACs listed above. As such, since the project site would not be located near land uses that have the potential to emit a large amount of TACs or generate a significant number of truck trips per day, the operational emissions related to TACs would be *less than significant*.¹⁰

e) Potentially expose receptors to acutely hazardous air emissions from accidental releases

The *BAAQMD CEQA Guidelines* states that the determination of significance regarding accidental releases of acutely hazardous materials (AHMs) should be made for: (1) projects using or storing AHMs located near existing receptors, and (2) development projects resulting in receptors located near existing facilities using or storing AHMs. Any project resulting in receptors being within the Emergency Response Planning Guidelines (ERPG) exposure level 2¹¹ for a facility will have a significant air quality impact.

In March of 2007, the environmental and geotechnical consulting firm Treadwell & Rollo conducted a Phase I Environmental Site Assessment (Phase I report) for the project. According to the Phase I report, the project site is adjoined by Half Moon Bay Airport to the northeast; live-work spaces, Coastside Self Storage, and various light industrial-use buildings to the southeast; the Pacific Ocean to the southwest; and El Granada Mobile Home Park to the northwest. A review of environmental regulatory agency lists and records was performed for the project site and adjoining properties to identify potential sources of or activities involving hazardous substances or petroleum products. Based on the investigation, the Half Moon Bay Airport stores and uses jet fuel for small planes. Also, one underground storage tank (UST) with unknown contents was identified within 500 feet of the project site at the Half Moon Bay Airport. However, there is no indication of a past release of hazardous materials or petroleum products from this UST or any storage facility on this property. Moreover, a jet fuel release or spill does not typically result in an ERPG exposure level 2.

Based on the current project description, the project will not store or use AHMs. The water and wastewater treatment system would not use any chemicals, as disinfection is accomplished with physical membrane filtering and UV light. The wastewater treatment plant also has fixed gasketed covers and air resulting from the non-chemical activated sludge system would be routed through a soil filter (air scrubbed) before being released into the atmosphere.

¹⁰ As stated previously, for the purposes of this DEIR, the potential emissions associated with the internal combustion equipment for the MBR, UV wastewater treatment plant and the emergency natural gas engine generator are not evaluated. This is due to the fact that the specifics of the MBR, UV wastewater treatment plant internal combustion equipment and the emergency natural gas engine generator (make, model, emission factors, hours of operation, etc.) are not known at this time and that they would require construction and operating permits issued by the BAAQMD (which requires compliance with the BAAQMD CEQA guidelines before issuance).

¹¹ ERPG exposure level 2 is defined as the maximum airborne concentration below which it is believed that nearly all individuals could be exposed for up to one hour without experiencing or developing irreversible or other serious health effects or symptoms which could impair an individual's ability to take protective action.

Since the project would not include the use or storage of AHMs and the Phase I report for the project site did not identify any hazardous materials that could likely result in an ERPG exposure level 2, the potential to expose receptors to acutely hazardous air emissions from accidental releases of AHMs is ***less than significant***.

f) Have cumulative impacts that are significant

According to the BAAQMD CEQA Guidelines, any project that would individually have a significant air quality impact would also have a significant cumulative air quality impact. Since the project's operational emissions do not have any individual significant air quality impacts under the BAAQMD CEQA Guidelines, the project's cumulative operational impacts will be ***less than significant***.

Impact AQ-3 Cumulative Regional Operational Impacts

As stated previously, the Basin is considered "non-attainment" for the O₃ (8-hour) and PM_{2.5} (24-hour) federal standards, and is considered "non-attainment" for the O₃ (1-hour and 8-hour), PM₁₀ (24-hour and AAM) and PM_{2.5} (AAM) state standards. As such, the *BAAQMD CEQA Guidelines* states that a project would result in a significant increase of criteria pollutant emissions if the operation of the project emits more than 80 pounds per day of ozone precursors (ROG and NOx) or PM₁₀. As discussed in Impact AQ-2(a), the operational emissions for the project would not exceed the BAAQMD-recommended thresholds of 80 pounds per day. Therefore, the project's potential impact on criteria pollutant emissions would be ***less than significant***.

Impact AQ-4 Sensitive Receptors

The BAAQMD's definition of significant criteria pollutant concentrations are outlined in Impact AQ-2(a) above. In addition to criteria pollutant exposure, projects that have the potential to emit TACs or expose sensitive receptors to TACs as outlined in Impact AQ-2(d) could also have significant impacts. As stated in Impact AQ-2(a) and (d), the project would not expose sensitive receptors to substantial pollutant (criteria and TAC) concentrations. Therefore, the project's potential to expose sensitive receptors to substantial pollutant concentrations is ***less than significant***.

Impact AQ-5 Objectionable Odors

The project would have a significant impact if the implementation of the project would result in a frequent exposure of members of the public to objectionable odors. According to the BAAQMD, the main facility types that have the potential to create objectionable odors are listed below in Table IV.C-10. In addition, Table IV.C-10 lists the proximity receptors would have to be to these types of facilities to require further analysis.

**Table IV.C-10
Project Screening Trigger Levels for Potential Odor Sources**

Type of Operation	Project Screening Distance (miles)
Wastewater Treatment Plant	1
Sanitary Landfill	1
Transfer Station	1
Composting Facility	1
Petroleum Refinery	2
Asphalt Batch Plant	1
Chemical Manufacturing	1
Fiberglass Manufacturing	1
Painting/Coating Operations	1
Rendering Plant	1
Coffee Roaster	1
<i>Source: BAAQMD CEQA Guidelines, February 2009.</i>	

Offsite (Existing) Facilities

Based on the information contained in Table IV.C-9, there are three facilities within 1 mile of the proposed project site that could potentially expose sensitive receptors to objectionable odors: the Montara Sanitary District Facility (Facility ID 14543), the Montara Water and Sanitary District Facility (Facility ID 13639), and the Sewer Authority Mid-Coastline Facility (Facility ID 14542). According to the BAAQMD CEQA Guidelines, in order for a potentially significant odor impact to occur, one or more of these facilities would have to have:

- a) more than one confirmed complaint per year averaged over a three year period, or
- b) three or more unconfirmed complaints per year averaged over a three year period.

Based on the information obtained from the BAAQMD's Department of Public Records, no odor complaints for these three facilities have been submitted to the BAAQMD within the last three years. Therefore, the potential to expose receptors to objectionable offsite odors is ***less than significant***.

Onsite Facilities

As described in more detail in Section III (Project Description), a wastewater treatment plant would be constructed onsite as part of the proposed project. All sewage treatment plants generate odors, with hydrogen sulfide (H₂S) being the most prevalent malodorous gas. It has a very unique, unpleasant and discernable odor (rotten eggs). Odors can become a nuisance if they are allowed to escape the immediate sewage treatment area and spread to areas where people reside, work or congregate. The proposed wastewater treatment plant would be completely covered with aluminum plates and hatches and sealed with rubber gaskets. A vacuum fan would distribute all process air through a soil scrubber constructed adjacent to the plant. The wastewater plans for the project indicate that odors will be vented to a soil scrubber system that will be constructed adjacent to the treatment plant. The soil scrubber system is

described as being 150 square feet in area, covered in loam, wood or root chips, and planted in native vegetation.

This type of odor removal system is common and can be effective. Soil scrubber and other odor removal systems are normally sized on the basis of the air flow from the treatment plant blower system. Preliminary calculations should be provided to support the proposed sizing and confirm how the scrubber will be incorporated into the site plan. Odor generation is a potentially significant concern due to the location of the treatment plant in the southern corner of the project site, where there is very little buffer area between the treatment plant and neighboring properties or the Wellness Center buildings on the site. This is a *potentially significant* impact.

However, the following mitigation measure would reduce Impact AQ-5 to a less-than-significant level:

Mitigation Measure AQ-5 Sewage Treatment Odors

The project applicant shall provide supporting engineering calculations and site plan details to verify the basis of design for the odor removal system. This information shall be supplied as part of the engineering report to be submitted for review and approval by the RWQCB.

Impact AQ-6 Greenhouse Gas Emissions

AB 32 focuses on reducing greenhouse gas emissions in California, and requires the CARB, the State agency charged with regulating statewide air quality, to adopt rules and regulations that would achieve greenhouse gas (GHG) emissions equivalent to statewide levels in 1990 by 2020. This 2020 target date reflects California's AB 32 mandate for greenhouse gas emissions reductions based on the following CARB timeline:¹²

January 1, 2009	CARB adopts a "scoping plan" indicating how emissions reductions will be achieved.
January 1, 2010	Early-action measures take effect (discussed below).
January 1, 2012	Greenhouse gas rules and market mechanisms adopted by the CARB are legally enforceable.
December 31, 2020	Deadline for achieving 2020 greenhouse gas emission cap.

As reflected in the AB 32 timeline, CARB has not yet established greenhouse gas thresholds or produced a formal guidance document for greenhouse gas impact analysis. In addition, no thresholds or official guidance has been currently adopted by the BAAQMD or other agencies in California to assess the significance of potential greenhouse gas emissions. However, in October 2007, Governor Schwarzenegger signed Senate Bill 97 (SB 97), which requires the Governor's Office of Planning and Research (OPR) to prepare CEQA guidelines to address the potential impacts of greenhouse gases and

¹² California Air Resources Board, <http://www.arb.ca.gov/cc/cc.htm>.

provide recommended mitigation measures. These guidelines and regulations are expected to be certified and adopted by the State Resources Agency by January 1, 2010. In the interim, OPR, in collaboration with the California Resources Agency, the California Environmental Protection Agency and the California Air Resources Board, recently provided a new technical advisory¹³ containing informal guidance for public agencies as they address the issue of climate change in their CEQA documents. This technical advisory provides OPR's perspective on the issue and precedes the development of implementing regulations for CEQA, in accordance with Senate Bill 97 (Chapter 185, Statutes of 2007).

In the technical advisory, OPR recommends each public agency that is a lead agency for complying with CEQA to develop its own approach to performing a climate change analysis for projects that generate greenhouse gas emissions. A consistent approach should be applied for the analysis of such projects, and the analysis must be based on best available information. For such projects, three types of analyses are used to determine whether the project could be in conflict with the State, regional, and local measures for reducing greenhouse gas emissions. The analyses are as follows:

- a) Quantify the potential greenhouse gas emissions associated with the implementation of the project.
- b) Assess the significance of the impact on climate change using applicable guidance documents and State, regional, and local greenhouse gas reduction goals.
- c) Assess whether elements of the project and associated mitigation measures contribute to the efficiency of the project and sufficiently reduce greenhouse gas emissions.

a) Greenhouse Gas Quantification

In order to make a meaningful and significant attempt to analyze the project's effects on greenhouse gas (GHG) emissions and climate change, the potential direct and indirect greenhouse gas emissions due to the implementation of the project were estimated. To estimate the potential greenhouse gas emissions from the construction of the proposed project, the URBEMIS 2007 computer model (distributed for use by the CARB) was used. As discussed above in Impact AQ-2, the project construction time schedule would be between approximately 30 and 36 months to fully complete the Wellness Center and Office Park development. Table IV.C-11 outlines the project phases, associated timelines, and the required construction equipment. All of this information was input into the URBEMIS 2007 computer model in lieu of the URBEMIS 2007 default construction values in order to estimate the greenhouse gases resulting from construction of the project as accurately as possible.

During operation of the proposed project, the consumption of fossil fuels to generate electricity and to provide heating and hot water for the onsite land uses, the conveyance of water, solid waste generation, as well as the consumption of fuel by on-road mobile vehicles associated with the project generates GHG emissions. To estimate the GHG emissions, it was necessary to determine the project's consumption rates

¹³ Governor's Office of Planning and Research. "CEQA and Climate Change: Addressing Climate Change Through California Environmental Quality Act (CEQA) Review". June 19, 2008.

as well as the GHG emissions factors. The consumption rates for these project-related activities are consistent with those identified in the Utility & Service Systems Section (Section IV.N). The GHG emission factors from the California Climate Action Registry (CCAR) Protocol for natural gas and electricity were then applied to the respective consumption rates, to calculate annual GHG emissions in metric tons. GHG emissions from water consumption were determined by evaluating the water-related energy use relationship identified in the California Energy Commission (CEC) California’s Water-Energy Relationship document.¹⁴ The solid waste emission rate was obtained from the EPA’s Solid Waste Management and Greenhouse Gases: A Life-Cycle Assessment of Emissions and Sinks¹⁵. The on-road mobile vehicle miles per day and vehicle fleet mix with the proposed project were estimated using the URBEMIS 2007 computer model. The GHG emission factors from the CCAR Protocol for motor vehicles were applied to calculate annual GHG emissions in metric tons.

**Table IV.C-11
Construction Schedule & Required Equipment**

Activity	Schedule	Equipment
Initial Grading/Material Sorting	3 weeks	2 push-pull scrapers, 1 Cat crawler, 2 pickup trucks, 1 water truck
Utilities Installation	1 month	2 (20 ton) excavators, 1 backhoe, 3 dump trucks, 2 pickup trucks, 1 water truck
Foundation Construction	2 months	2 (20 ton) excavators, 1 backhoe, 3 dump trucks, 10 pickup trucks, 1 water truck, 1 pile driver
Wellness Center/Office Park	30 months	2 (50 ton) cranes, 5 extended lift trucks, 15 small vehicles, 5 tractor trailers (2 trips/day), 1 water truck
Permeable Parking Lot/Fire Trails	3 weeks	Concrete pump truck, 5 concrete trucks
Wetlands/Landscaping	6 months	2 backhoes, 4 pickup trucks

Source: Big Wave, LLC, Facilities Plan: Draft #2, Big Wave Property, January 2009.

As shown in Table IV.C-12 below, construction of the project would produce approximately 2,738 tons of CO₂e emissions per highest year and project operations would produce approximately 4,374 metric tons of CO₂e emissions per year.

**Table IV.C-12
Estimated Greenhouse Gas Emissions for the Proposed Project**

Emissions Source	CO ₂ e Emissions (metric tons/year)
Construction	
Construction Activities (2010)	1,327
Construction Activities (2011)	2,738
Construction Activities (2012)	1,154
Operations	
Natural Gas Use	631

¹⁴ California Energy Commission. *California’s Water-Energy Relationship*. November 2005.

¹⁵ United States Environmental Protection Agency. *Solid Waste Management and Greenhouse Gases, A Life-Cycle Assessment of Emissions and Sinks*. Third Edition. September, 2006.

**Table IV.C-12
Estimated Greenhouse Gas Emissions for the Proposed Project**

Emissions Source	CO ₂ e Emissions (metric tons/year)
Electricity Use ¹	1,529
Waste Generation	81
Motor Vehicles	2,132
<i>Proposed Project Operations Total</i>	<i>4,374</i>
<i>Notes:</i> ¹ Emissions from electricity use may be significantly lower than reported since the project may generate a portion of its electrical, heating, and cooling energy for the site via onsite renewable resources (e.g., wind power, solar power). Source: Christopher A. Joseph & Associates, April 2009. Calculation data and results provided in Appendix D of this DEIR.	

- b) Assess the significance of the impact on climate change using applicable guidance documents and State, regional, and local greenhouse gas reduction goals.

As stated previously, there are currently no thresholds or official guidance adopted by the BAAQMD or other agencies in California to assess the significance of potential greenhouse gas emissions. However, a feasible way to determine if the project would have a significant impact on greenhouse gas emissions is to evaluate if the implementation of the project would conflict with any recommended State, regional, and/or local greenhouse gas reduction goals or policies that are applicable to the project.

AB 32

As an initial step of AB 32, CARB was required to adopt regulations that require the reporting and verification of statewide greenhouse gas emissions by January 1, 2008. These newly adopted regulations require emissions reporting beginning January 1, 2009 for classes of facilities that collectively account for 94 percent of the stationary source emissions in California, including cement plants, oil refineries, electric generating facilities/providers, co-generation facilities, hydrogen plants, and other stationary combustion sources that emit more than 25,000 metric tons per year of CO₂e emissions.¹⁶ Since the project would not fall under any of these industrial categories that are required to report their greenhouse gas emissions and would not have any significant stationary sources, the project is not subject to CARB's mandatory reporting.

As a central requirement of AB 32, the CARB was assigned the task of developing a Scoping Plan that outlines the State's strategy to achieve the 2020 greenhouse gas emissions limit. This Scoping Plan, which was developed by CARB, was published in October 2008. The Scoping Plan proposed a comprehensive set of actions designed to reduce overall greenhouse gas emissions in California, improve the environment, reduce the State's dependence on oil, diversify the State's energy sources, save energy,

¹⁶ California Air Resources Board, December 6, 2007c, *Proposed Regulation for the Mandatory Reporting of California Greenhouse Gas Emissions Pursuant to the California Global Warming Solutions Act of 2006 (AB 32)*, available at http://www.arb.ca.gov/cc/ccei/reporting/greenhouse_gasReportBoardSlides12_06_07.pdf (proposed regulations were approved by CARB on December 6, 2007).

create new jobs, and enhance public health. As shown in Table IV.C-13, the project would be consistent with all feasible and applicable strategies of the recommended measures of CARB Scoping Plan to reduce greenhouse gas emissions in California.

**Table IV.C-13
Project Consistency with CARB Scoping Plan
Recommended Greenhouse Gas Emission Reduction Measures**

Measure	Project Consistency
California Air Resources Board	
<u>California Cap-and-Trade Program Linked to Western Climate Initiative Partner Jurisdictions</u> Implement a broad-based California cap-and-trade program to provide a firm limit on emissions. Link the California cap-and-trade program with other Western Climate Initiative Partner programs to create a regional market system to achieve greater environmental and economic benefits for California. Ensure California’s program meets all applicable AB 32 requirements for market-based mechanisms.	Not applicable. While this measure is not specifically applicable to the project, the project would not preclude the implementation of this measure by CARB.
<u>California Light-Duty Vehicle Greenhouse Gas Standards</u> Implement adopted Pavley standards and planned second phase of the program. Align zero-emission vehicle, alternative and renewable fuel and vehicle technology programs with long-term climate change goals.	Consistent. The vehicles that travel to and from the project site on public roadways would be in compliance with CARB vehicle standards that are in effect at the time of vehicle purchase.
<u>Energy Efficiency</u> Maximize energy efficiency building and appliance standards, and pursue additional efficiency efforts including new technologies, and new policy and implementation mechanisms. Pursue comparable investment in energy efficiency from all retail providers of electricity in California (including both investor-owned and publicly owned utilities).	Consistent. The project would be required to be constructed in compliance with the standards of Title 24 that are in effect at the time of development. The current 2005 Title 24 standards are approximately 8.5 percent more efficient than those of the 2001 standards. In addition, by targeting a LEED Platinum rating, the project would exceed Title 24 standards.
<u>Renewables Portfolio Standard</u> Achieve 33 percent renewable energy mix statewide.	Not applicable. While this measure is not applicable, the project would not preclude the implementation of this measure by municipal utility providers. In addition, the project will include sources of renewable energy including solar panels and wind energy.
<u>Low Carbon Fuel Standard</u> Develop and adopt the Low Carbon Fuel Standard.	Consistent. Residents, and employees of the project could purchase low carbon fuel once they are commercially available in the region and local vicinity.
<u>Regional Transportation-Related Greenhouse Gas Targets</u> Develop regional greenhouse gas emissions reduction targets for passenger vehicles.	Consistent. The passenger vehicles that travel to and from the project site on public roadways would be subject to all applicable CARB efficiency standards that are in effect at the time of vehicle manufacture.
<u>Vehicle Efficiency Measures</u> Implement light-duty vehicle efficiency measures.	Consistent. The light-duty vehicles that travel to and from the project site on public roadways would be subject to all applicable CARB efficiency standards that are in effect at the time of vehicle manufacture.
<u>Goods Movement</u> Implement adopted regulations for the use of shore power for ships at berth. Improve efficiency in goods	Not applicable. While this measure is not applicable, the project would not preclude the implementation of this measure by CARB.

**Table IV.C-13
Project Consistency with CARB Scoping Plan
Recommended Greenhouse Gas Emission Reduction Measures**

Measure	Project Consistency
movement activities.	
<u>Million Solar Roofs Program</u> Install 3,000 MW of solar-electric capacity under California's existing solar programs.	Consistent Solar panels will be installed on all roofs.
<u>Medium/Heavy-Duty Vehicles</u> Adopt medium and heavy-duty vehicle efficiency measures.	Consistent. The medium and heavy-duty vehicles that travel to and from the project site on public roadways would be subject to all applicable CARB efficiency standards that are in effect at the time of vehicle manufacture.
<u>Industrial Emissions</u> Require assessment of large industrial sources to determine whether individual sources within a facility can cost-effectively reduce greenhouse gas emissions and provide other pollution reduction co-benefits. Reduce greenhouse gas emissions from fugitive emissions from oil and gas extraction and gas transmission. Adopt and implement regulations to control fugitive methane emissions and reduce flaring at refineries.	Not applicable. The project is not an industrial facility and would not involve the operation of industrial processes.
<u>High Speed Rail</u> Support implementation of a high speed rail system.	Not applicable. While this measure is not applicable, the project would not preclude the implementation of this measure by the State.
<u>Green Building Strategy</u> Expand the use of green building practices to reduce the carbon footprint of California's new and existing inventory of buildings.	Consistent. As discussed previously, the project would target a LEED Platinum rating by incorporating a variety of green building elements, including use of efficient water management techniques, green roofs, and other sustainability features.
<u>High Global Warming Potential Gases</u> Adopt measures to reduce high global warming potential gases.	Consistent. As discussed above, the project applicant intends to target a LEED Platinum rating for the project, which would entail the incorporation of a variety of green building elements.
<u>Recycling and Waste</u> Reduce methane emissions at landfills. Increase waste diversion, composting, and commercial recycling. Move toward zero-waste.	Consistent. The project would be subject to the requirements of AB 939 that require a minimum of 50 percent diversion for the year 2000. The project would also be subject to all applicable State requirements for solid waste reduction as they change in the future.
<u>Sustainable Forests</u> Preserve forest sequestration and encourage the use of forest biomass for sustainable energy generation.	Not applicable. The project is not located within or near a forest.
<u>Water</u> Continue efficiency programs and use cleaner energy sources to move and treat water.	Consistent. As discussed previously, the project applicant intends to target a LEED Platinum rating for the project, which would include the incorporation of efficient water management techniques.
<u>Agriculture</u> In the near-term, encourage investment in manure digesters and at the five-year Scoping Plan update determine if the program should be made mandatory by 2020.	Not applicable. The project would not include agricultural uses on the scale that would warrant manure digesters.
<i>Sources: Air Resources Board, Climate Change Proposed Scoping Plan, October 2008 and Christopher A. Joseph & Associates, January 2009.</i>	

Based on the discussion above, the project would not conflict or obstruct the implementation of CARB’s Scoping Plan. As such, the project’s potential impact on greenhouse gas emissions and climate change would be deemed *less than significant* under AB 32.

OPR

The OPR technical advisory discussed above identifies examples of mitigation measures that have been employed by some public agencies to reduce greenhouse gas emissions, either as general development policies or on a project-by-project basis. All of the applicable mitigation measures contained in the OPR technical advisory are consistent with the green building and sustainable principles for the project as shown in Table IV.C-14 below:

**Table IV.C-14
Project Consistency with OPR Recommended Greenhouse Gas Mitigation Measures**

OPR Recommended Mitigation Measure	Project Consistency
Implement land use strategies to encourage jobs/housing proximity, encourage compact, mixed-use projects	Consistent. This project is designated as a mixed-use development consisting of residential, general office, light manufacturing, sustainable organic food production, and research and development uses.
Encourage walking, bicycling, and the use of public transit systems	Consistent. The project provides a variety of transportation choices by including safe and convenient transportation alternatives. The project would implement parking procedures that result in office workers utilizing ride sharing, shuttle service to park and ride lots, and public transportation. The project would extend multi-purpose bike and walking trails, connecting the project to parks and services. These trails may include the trail to the Post Ridge property and the multipurpose trail along Airport Street and Princeton.
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. This project is designated as a mixed-use development consisting of residential, general office, light manufacturing, sustainable organic food production, and research and development uses.
Plant trees and vegetation near structures to shade buildings and reduce energy requirements for heating/cooling	Consistent. Landscaping plans will be designed in conjunction with structural elements to provide for the most energy effective buildings.
Encourage public and private construction of LEED certified or equivalent buildings	Consistent. All structures for the project will be LEED certified (platinum certification).
Recognize and promote energy saving measures beyond Title 24 requirements for residential and commercial projects	Consistent. All structures for the project will be LEED certified, which includes energy efficiency requirements beyond Title 24.
Incorporate onsite renewable energy production, including installation of photovoltaic cells or other solar options	Consistent. The potential renewable, onsite power systems include solar heat, photovoltaic panels, wind generation, and geothermal cooling.
Create bicycle lanes and walking paths directed to the location of schools, parks, and other destination points	Consistent. The project would extend multi-purpose bike and walking trails, connecting the project to parks and services. These trails may include the trail to the Post Ridge property and the multipurpose trail along Airport Street and Princeton.

As shown in Table IV.C-14 above, the project would be consistent with mitigation measures and methodologies contained in the OPR advisory document. As such, the project's potential impact on greenhouse gas emissions and climate change would be deemed *less than significant* under the OPR technical advisory document.

c) Would elements of the project and associated mitigation measures contribute to the efficiency of the project and sufficiently reduce greenhouse gas emissions?

To achieve environmental sustainability and associated decreases in greenhouse gas emissions, the project will pursue the following:

- Obtain Platinum LEED certification
- Offset the conversion of farmland to development, with 25 acres of leased land in the airport zoned industrial for permanent high yield farming with recycled water
- Pursue alternative transportation options
- Construct bicycle storage and changing facilities
- Provide priority parking for low-emitting, fuel-efficient vehicles (5% of total parking spaces)
- Create efficient parking
- Restore natural habitat
- Maximize open space with over 57% of the Wellness Center site restored as State Designated wetlands and over 45% of the Office Park site restored as State Designated wetlands. Over 47% of the entire site will be restored as wetlands.
- Significantly reduce existing impermeable surface (proposed project has less than 25% permeable surfaces).
- Maximize storm water infiltration and native plant evapotranspiration.
- Create permeable pavement with high reflectivity and porous, open grid design
- Install solar panels on all roofs. Solar panels absorb heat energy and convert it to electricity and building heat, reducing the building and roof temperatures.
- Install wind power system.
- Install minimal outdoor lighting and paths illuminated with three-foot-tall bollards.
- Provide tenant guidelines for energy efficiency and environmental protection.

- Landscape with native plants that do not require water or maintenance once mature.
- Use only recycled water to irrigate landscapes.
- Exceed the usage amount of implemented ground water recharge systems
- Reduce water consumption by 30% from current standards with recycled water used for toilets. Certify energy systems through LEED. The project goals may be as high as producing all of the buildings' energy onsite.
- Cool building geothermally and without refrigerants
- Recycle over 50% of the construction waste, ultimate goal is 75%.
- Use recycled materials to construct buildings: at least 1% with a goal of 20%. Crushed recycled concrete for base rock is approximately 20%.
- Use 20% locally processed and produced materials (possible with concrete tilt-up buildings)
- Limit smoking in the buildings
- Air condition buildings with controlled outdoor air
- Exceed ventilation standards by 30%
- Use only low emitting materials. Adhesives and sealants will be avoided.
- Implement an Indoor Air Quality management plan during construction
- Minimize use of high emitting paint, carpets, and composite wood or fiber
- Design buildings to incorporate chemical and pollutant source control
- Design and incorporate thermal comfort by way of opening windows and individual thermostats
- Incorporate a minimum of 2% glazing on windows and light buildings with 75% natural daylight
- Create occupied spaces with scenic outside views (over 90%)
- Employ LEED accredited professionals, focusing on a certified innovative design process

The implementation of these green building principles, performance standards, and mitigation measures will extensively reduce the potential greenhouse gas emissions associated with the implementation of the project. As such, the project's potential impact on greenhouse gas emissions and climate change would be deemed ***less than significant*** under this analysis.

CUMULATIVE IMPACTS

Because the proposed project would not individually have a significant air quality impact, the BAAQMD requires that a determination of cumulative impacts be based on an evaluation of the consistency of the proposed project with the local general plan and of the general plan with the regional air quality plan (CAP). If a project is proposed in a city or county with a general plan that is consistent with the CAP, and the project is consistent with that general plan, the project would not have a significant cumulative impact. If the city or county general plan is not consistent with the CAP, or the project is not consistent with the general plan, quantitative analysis is required to determine whether the impact is significant.

As discussed in Impact AQ-1, since the current County of San Mateo General Plan has not been updated since the Air Resources Chapter was adopted in 1994, it does not meet all of the qualitative requirements outlined in the *BAAQMD CEQA Guidelines* to be considered consistent with the BAAQMD 2000 CAP. Therefore, the *BAAQMD CEQA Guidelines* sets the following quantitative requirements to establish consistency between the project, the County of San Mateo General Plan, and the 2000 CAP:

The project, in conjunction with past, present, and reasonably foreseeable future projects would not:

- i. exceed State or national CO concentrations standards
- ii. exceed 80 pounds/day of ROG, NO_x, or PM₁₀
- iii. pose a significant odor, toxics, or accidental release impact

Or;

- iv. The project in combination with past, present, and reasonably foreseeable future projects would not cause the County of San Mateo's population to exceed CAP and ABAG population projections
- v. The project in combination with past, present, and reasonably foreseeable future projects would not cause the rate of increase in VMT to exceed the rate of increase in population

Based on the information contained in Impact AQ-1, the project, in conjunction with past, present, and reasonably foreseeable future projects would not result in the exceedances of quantitative requirements iv and v. Therefore, the project is consistent with the County of San Mateo General Plan and the County of San Mateo General Plan is consistent with the 2000 CAP.

As such, the cumulative air quality impacts associated with the implementation of the project would be ***less than significant***.

LEVEL OF SIGNIFICANCE AFTER MITIGATION

With the implementation of Mitigation Measure AQ-2 and AQ-5, air quality impacts related to construction, operational and cumulative emissions would be ***less than significant***.

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