

**Cottonwood Church Site Residential Project Focused Air Quality
and Greenhouse Gas Analysis**

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COTTONWOOD CHURCH SITE RESIDENTIAL PROJECT FOCUSED AIR QUALITY AND GREENHOUSE GAS ANALYSIS

1.0 Methodology

This air quality evaluation was prepared in accordance with the requirements of the California Environmental Quality Act (CEQA) to determine if significant air quality impacts are likely to occur in conjunction with the type and scale of development associated with the Cottonwood Church Site residential project to be located in the City of Los Alamitos, California. The impact analysis contained in this report was prepared in accordance with the methodologies provided by the South Coast Air Quality Management District (SCAQMD) as included in *CEQA Air Quality Handbook* (April 1993) (*Handbook*) as well as updates included on the SCAQMD Internet web site. The analysis makes use of the CalEEMod urban emissions model, screening tables included in the SCAQMD's *Final Localized Significance Threshold Methodology* (June 2003), and *Sample Construction Scenarios for Projects Less than Five Acres in Size*, (February 2005).

The Cottonwood Church Site residential project includes the removal of 27,401 square feet of church uses and the subsequent construction and occupancy of 50 townhomes in 11 units on approximately 2.44 acres of land. The proposed structures' total area is estimated at approximately 81,207 square feet. Projected air emissions are calculated using the California Emissions Estimator Model (CalEEMod Version 2016.3.1) distributed by the SCAQMD. The CalEEMod model uses EMFAC2011 emissions factors for vehicle traffic and the OFFROAD2011 emissions factors for construction equipment. For the purposes of this analysis, construction is estimated to begin in July 2017 and follows the CalEEMod default construction schedule.

The subsequent residential occupation of the site in 2019 is also based on the CalEEMod model using the traffic-projections provided in the CalEEMod model and verified by the RK Engineering Group, Inc. (RK). Both the model and RK estimate the project's traffic volume at 291 Average Daily Trips (ADT) for the 50 dwelling units for a weekday. While RK does not report Saturday and Sunday trip rates, these are derived from the CalEEMod model and include 284 ADT on a Saturday and 242 ADT on a Sunday.

However, the existing Cottonwood Church is estimated to produce 250 ADT for a weekday. Saturday and Sunday trip rates are again derived from the CalEEMod model and include 316 ADT on a Saturday and 1,004 ADT on a Sunday. Note that both of these values are greater than those trips generated by the residential project for a weekend. Additionally, it should be noted that residential and commercial vehicle trips are of different trip lengths.

For the purposes of this analysis, the residential project replaces an existing church use, and its operational emissions will be removed. As such, the included analysis examines both the emissions from the operation of the Cottonwood Church (as modeled in 2019 when the residential project would see full occupancy), as well as the proposed residential development with the impact based on any net increase in emissions.

These calculated emissions of the project are then compared to thresholds of significance for individual projects using the SCAQMD *Handbook* as well as their Internet updates. The analysis finds that neither the construction nor the operation of the project is anticipated to result in any significant air quality impacts and all other air quality emissions and localized concentrations would remain below their respective threshold values. Furthermore, the project is found to be consistent with the goals of the Air Quality and Climate Change Plans.

2.0 Existing Conditions

2.1 Climate/Meteorology

The project area lies in the South Coast Air Basin (SCAB or Basin). The SCAB includes all of Orange County as well as the non-desert portions of Los Angeles, Riverside, and San Bernardino Counties. The Basin is located in a coastal plain with connecting broad valleys and low hills, bounded by the Pacific Ocean in the

southwest quadrant with high mountains forming the remainder of the perimeter. The general region lies in the semi-permanent high-pressure zone of the eastern Pacific. As a result, the climate is mild, tempered by cool sea breezes. This usually mild climatological pattern is infrequently interrupted by periods of extremely hot weather, winter storms, or Santa Ana winds.

The annual average temperature varies little throughout the Basin, ranging from the low to middle 60s, measured in degrees Fahrenheit (F). With a more pronounced oceanic influence, coastal areas show less variability in annual minimum and maximum temperatures than inland areas. The SCAQMD reports that the weather station located in Los Alamitos shows an annual average of 61°F. The average low is reported at 42°F in January while the average high is 80°F in September. All areas in the Basin have recorded temperatures above 100°F in recent years and temperatures as high as 108°F have been recorded at the Los Alamitos station. January is typically the coldest month in this area of the Basin, with minimum temperatures in the 30s.

In contrast to a very steady pattern of temperature, rainfall is seasonally and annually highly variable. Almost all rain falls from November through April. Summer rainfall is normally restricted to widely scattered thundershowers near the coast with slightly heavier shower activity in the east and over the mountains. Los Alamitos has had an annual rainfall of 12.94 inches as reported by Intellicast.com on the Internet (<http://www.intellicast.com/Local/History.aspx?month=1>).

Although the Basin has a semi-arid climate, the air near the surface is typically moist because of the presence of a shallow marine layer. Except for infrequent periods when dry, continental air is brought into the Basin by off-shore winds, the ocean effect is dominant. Periods of heavy fog, especially along the coast, are frequent; and low stratus clouds are a characteristic climatic feature. Annual average humidity is 70 percent at the coast and 57 percent in the east portions of the Basin.

Wind patterns across the region are characterized by easterly winds during the winter and westerly winds in the summer. Wind speed is somewhat greater during the spring months. Annually, typical winds in the project area average about 5.2 mph as measured in Los Alamitos.

Between the periods of dominant air flow, periods of air stagnation may occur, both in the morning and evening hours. Whether such a period of stagnation occurs is one of the critical determinants of air quality conditions on any given day. During the winter and fall months, surface high pressure systems over the Basin, combined with other meteorological conditions, can result in very strong, downslope Santa Ana winds. These winds normally have a duration of a few days before predominant meteorological conditions are reestablished.

In conjunction with the two characteristic wind patterns that affect the rate and orientation of horizontal pollutant transport, there are two similarly distinct types of temperature inversions that control the vertical depth through which pollutants are mixed: marine/subsidence inversion and the radiation inversion. The height of the base of the inversion at any given time is known as the "mixing height." This mixing height can change under conditions when the top of the inversion does not change. In the project area, the combination of winds and inversions are critical determinants in leading to the degraded air quality in summer and the generally good air quality in the winter.

2.2 *Ambient Air Quality*

The following characterization of the baseline atmospheric environment includes an evaluation of the ambient air quality and applicable rules, regulations, and standards for the area. Because the project has the ability to release gaseous emissions of criteria pollutants and dust into the ambient air, it falls under the ambient air quality standards promulgated on the local, State, and federal levels.

2.2.1 Affected Environment

Topographical features that affect the transport and diffusion of pollutants in the project area include the mountain ranges to the northeast that prevent the transport of pollutants. Air quality in the SCAB generally ranges from fair to poor and is similar to air quality in most of coastal southern California. The entire region experiences heavy concentrations of air pollutants during prolonged periods of stable atmospheric conditions.

The quality of the ambient air is affected by pollutants emitted into the air from stationary and mobile sources. Stationary sources can be divided into two major subcategories: point sources and area sources. Point sources consist of one or more emission sources at a facility with an identified location and are usually associated with manufacturing and industrial processing plants. Area sources are widely distributed and produce many small emissions.

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 are a combination of emissions from automobiles, trucks, and indirect sources. Indirect sources are sources that, by themselves, may not emit air contaminants; however, they indirectly cause the generation of air pollutants by attracting vehicle trips or consuming energy. Examples of indirect sources include a commercial center that generates vehicle trips and consumes energy resources through the use of natural gas for space and water heating. Indirect sources also include actions proposed by local governments, such as public and private development projects. In addition, indirect sources include those emissions created by the distance vehicles travel. Off-road sources include aircraft, ships, trains, and self-propelled construction equipment.

2.2.2 Criteria Air Pollutants

The air pollutants emitted into the ambient air by stationary and mobile sources are regulated by State and federal law. These regulated air pollutants are known as “criteria air pollutants” and are categorized as primary and secondary pollutants. Primary air pollutants are those that are emitted directly from sources. Carbon monoxide (CO), reactive organic gases (ROG), nitrogen oxides (NO_x), sulfur dioxide (SO₂), and most fine particulate matter (PM₁₀ and PM_{2.5}) including lead (Pb) and fugitive dust are primary air pollutants. Of these CO, SO₂, PM₁₀, and PM_{2.5} are criteria pollutants. ROG and NO_x are criteria pollutant precursors and go on to form secondary criteria pollutants through chemical and photochemical reaction in the atmosphere. Ozone (O₃) and nitrogen dioxide (NO₂) are the principal secondary pollutants.

Presented below is a description of each of these primary and secondary criteria air pollutants and their known health effects. Other pollutants, such as carbon dioxide (CO₂), a natural by-product of animal respiration that is also produced in the combustion process, have been linked to such phenomena as global warming. These emissions are now regulated and there are thresholds for their release. However, these pollutants do not jeopardize the attainment status of the SCAB.

Carbon monoxide (CO) is a colorless, odorless, toxic gas produced by incomplete combustion of carbon substances (e.g., gasoline or diesel fuel). The primary adverse health effect associated with CO is the interference of normal oxygen transfer to the blood, which may result in tissue oxygen deprivation.

Reactive organic gases (ROGs) are compounds comprised primarily of atoms of hydrogen and carbon. Internal combustion, associated with motor vehicle usage, is the major source of hydrocarbons. Other sources of ROG include the evaporative emissions associated with the use of paints and solvents, the application of asphalt paving, and the use of household consumer products such as aerosols. Adverse effects on human health are not caused directly by ROG but rather by reactions of ROG to form secondary pollutants. Note that for the purposes of this analysis ROG and **volatile organic compounds (VOC)**, such as the emissions released from paint, are synonymous.

Nitrogen oxides (NO_x) serve as integral participants in the process of photochemical smog production. The two major forms of NO_x are nitric oxide (NO) and nitrogen dioxide (NO₂). NO is a colorless, odorless gas formed from atmospheric nitrogen and oxygen when combustion takes place under high temperature and/or high pressure. NO₂ is a reddish-brown irritating gas formed by the combination of NO and oxygen (O). NO_x acts as an acute respiratory irritant and increases susceptibility to respiratory pathogens.

Nitrogen dioxide (NO₂) is a by-product of fuel combustion. The principal form of NO₂ produced by combustion is nitric oxide (NO). NO reacts to form NO₂, creating the mixture of NO and NO₂ commonly called NO_x. NO₂ acts as an acute irritant and, in equal concentrations, is more injurious than NO. At atmospheric concentrations, however, NO₂ is only potentially irritating. There is some indication of a relationship between NO₂ and chronic pulmonary fibrosis. Some increase in bronchitis in children (2-3 years old) has been observed at concentrations below 0.3 ppm. NO₂ absorbs blue light, resulting in a brownish-red cast to the atmosphere and reduced visibility. NO₂ also contributes to the formation of PM₁₀ (particulates having an aerodynamic diameter of 10 microns or 0.0004 inch or less in diameter).

Sulfur dioxide (SO₂) is a colorless, pungent, irritating gas formed by the combustion of sulfurous fossil fuels. Fuel combustion is the primary source of SO₂. At sufficiently high concentrations, SO₂ may irritate the upper respiratory tract. At lower concentrations, when combined with particulates, SO₂ may injure lung tissue.

Particulate matter (PM) consists of finely divided solids or liquids, such as soot, dust, aerosols, fumes, and mists. Two forms of fine particulate are now recognized. Course particles (PM₁₀) include that portion of the particulate matter with an aerodynamic diameter of 10 microns (i.e., 10 one-millionths of a meter or 0.0004 inch) or less. Fine particles (PM_{2.5}) have an aerodynamic diameter of 2.5 microns (i.e., 2.5 one-millionths of a meter or 0.0001 inch) or less. Particulate discharge into the atmosphere results primarily from industrial, agricultural, construction, and transportation activities. Wind action on the arid landscape also contributes substantially to the local particulate loading. Both PM₁₀ and PM_{2.5} may adversely affect the human respiratory system, especially in those people who are naturally sensitive or susceptible to breathing problems.

Fugitive dust poses primarily two public health and safety concerns. The first concern is that of respiratory problems attributable to the suspended particulates in the air. The second concern is that of motor vehicle accidents caused by reduced visibility during severe wind conditions. Fugitive dust may also cause significant property damage during strong windstorms by acting as an abrasive material agent. Fugitive dust can also result in a nuisance factor due to the soiling of proximate structures and vehicles.

Ozone (O₃) is one of a number of substances called photochemical oxidants that are formed when reactive organic compounds (ROC) and NO_x (both by-products of the internal combustion engine) react with sunlight. O₃ is present in relatively high concentrations in the SCAB and the damaging effects of photochemical smog are generally related to the concentrations of O₃. O₃ may pose a health threat to those who already suffer from respiratory diseases as well as healthy people. O₃ has been tied to crop damage (typically in the form of stunted growth and pre-mature death) and acts as a corrosive (resulting in property damage such as the embitterment of rubber products).

2.2.3 Toxic Air Contaminants

The public's exposure to toxic air contaminants (TAC) is an environmental health issue in California. In 1983, the California Legislature enacted a program to identify the health effects of TACs and to reduce exposure to these contaminants to protect the public health. The H&SC defines a TAC as "an air pollutant which may cause or contribute to an increase in mortality or in serious illness, or which may pose a present or potential hazard to human health." A substance that is listed as a hazardous air pollutant (HAP), pursuant to Section 112(b) of the CAA (42 U.S.C. 7412[b]) is a TAC.

Under State law, the California Environmental Protection Agency (CalEPA), acting through the CARB, is authorized to identify a substance as a TAC if it determines the substance is an air pollutant which may cause or

contribute to an increase in mortality or serious illness or which may pose a present or potential hazard to human health.

California regulates TACs primarily through Assembly Bills 1807 (Tanner Air Toxics Act) and 2588 (Air Toxics “Hot Spot” Information and Assessment Act of 1987). The Tanner Air Toxics Act sets forth a formal procedure for CARB to designate substances as TACs. Once a TAC is identified, CARB adopts an “airborne toxics control measure” for sources that emit designated TACs. If there is a safe threshold for a substance at which there is no toxic effect, the control measure must reduce exposure to below that threshold. If there is no safe threshold, the measure must incorporate toxics best available control technology (T-BACT) to minimize emissions.

Air toxics from stationary sources are regulated in California under the Air Toxics “Hot Spot” Information and Assessment Act of 1987. Under AB 2588, TAC emissions from individual facilities are quantified and prioritized by the AQMD or APCD. High priority facilities are required to perform a health risk assessment and, if specific thresholds are exceeded, required to communicate the results to the public in the form of notices and public meetings. To date, the CARB has designated nearly 200 compounds as TACs. Additionally, the CARB has implemented control measures for a number of compounds that pose high risks and show potential for effective control. The majority of the estimated health risks from TACs can be attributed to a relatively few compounds, the most important being particulate matter from diesel-fueled engines (diesel PM).

In 2000, the SCAQMD conducted a study on ambient concentrations of TACs and estimated the potential health risks from air toxics. The results showed that the overall risk for excess cancer from a lifetime exposure to ambient levels of air toxics was about 1,400 in a million. The largest contributor to this risk was diesel exhaust, accounting for 71 percent of the air toxics risk.

2.2.4 Other Effects of Air Pollution

Just as humans are affected by air pollution, so too are plants and animals. Animals must breathe the same air and are subject to the same types of negative health effects. Certain plants and trees may absorb air pollutants that can stunt their development or cause premature death, as well as interfere with their ability to convert CO₂ to oxygen. There are also numerous impacts to our economy including lost workdays due to illness, a desire on the part of business to locate in areas with a healthy environment, and increased expenses from medical costs. Pollutants may also lower visibility and cause damage to property. Certain air pollutants are responsible for discoloring painted surfaces, eating away at stones used in buildings, dissolving the mortar that holds bricks together, and cracking tires and other items made from rubber.

2.2.5 Greenhouse Gas Emissions

Federal Regulations

Office of the President

It is possible that the Federal Requirements for greenhouse gas emissions will change under the Trump Administration. However, at this time, no such action has been taken and the Federal requirements prior to the Trump Administration still serve as the basis of this analysis.

In June 2013, the Executive Office of the President released *The President’s Climate Action Plan* to reduce the causes and impacts of global climate change. The President’s comprehensive plan includes numerous steps and measures to reduce climate change. For example, to cut carbon pollution in America, the plan:

- Directs EPA to work closely with states, industry and other stakeholders to establish carbon pollution standards for both new and existing power plants;

- Makes up to \$8 billion in loan guarantee authority available for a wide array of advanced fossil energy and efficiency projects to support investments in innovative technologies;
- Directs DOI to permit enough renewables projects—like wind and solar – on public lands by 2020 to power more than 6 million homes; designates the first-ever hydropower project for priority permitting; and sets a new goal to install 100 megawatts of renewables on federally assisted housing by 2020; while maintaining the commitment to deploy renewables on military installations;
- Expands the President’s Better Building Challenge, focusing on helping commercial, industrial, and multi-family buildings cut waste and become at least 20 percent more energy efficient by 2020;
- Sets a goal to reduce carbon pollution by at least 3 billion metric tons cumulatively by 2030 – more than half of the annual carbon pollution from the U.S. energy sector – through efficiency standards set over the course of the Administration for appliances and federal buildings;
- Commits to partnering with industry and stakeholders to develop fuel economy standards for heavy-duty vehicles to save families money at the pump and further reduce reliance on foreign oil and fuel consumption post-2018; and
- Leverages new opportunities to reduce pollution of highly-potent greenhouse gases known as hydrofluorocarbons; directs agencies to develop a comprehensive methane strategy; and commits to protect our forests and critical landscapes.

To prepare the United States for the impacts of climate change, the plan:

- Directs agencies to support local climate-resilient investment by removing barriers or counterproductive policies and modernizing programs; and establishes a short-term task force of state, local, and tribal officials to advise on key actions the Federal government can take to help strengthen communities on the ground;
- Pilots innovative strategies in the Hurricane Sandy-affected region to strengthen communities against future extreme weather and other climate impacts; and building on a new, consistent flood risk reduction standard established for the Sandy-affected region, agencies will update flood-risk reduction standards for all federally funded projects;
- Launches an effort to create sustainable and resilient hospitals in the face of climate change through a public-private partnership with the healthcare industry;
- Maintains agricultural productivity by delivering tailored, science-based knowledge to farmers, ranchers, and landowners; and helps communities prepare for drought and wildfire by launching a National Drought Resilience Partnership and by expanding and prioritizing forest- and rangeland-restoration efforts to make areas less vulnerable to catastrophic fire; and
- Provides climate preparedness tools and information needed by state, local, and private-sector leaders through a centralized “toolkit” and a new Climate Data Initiative.

Finally, to lead international efforts to address global climate change, the plan:

- Commits to expand major new and existing international initiatives, including bilateral initiatives with China, India, and other major emitting countries;
- Leads global sector public financing towards cleaner energy by calling for the end of U.S. government support for public financing of new coal-fired power plants overseas, except for the most efficient coal technology available in the world's poorest countries, or facilities deploying carbon capture and sequestration technologies; and
- Strengthens global resilience to climate change by expanding government and local community planning and response capacities.

USEPA

As part of President Obama's Climate Action Plan to cut carbon pollution and lead in clean energy, EPA released its 2013 Strategic Sustainability Performance Plan that outlines actions planned over the next year to cut energy use and waste in agency operations. President Obama signed [Executive Order 13514](#) on Federal Leadership in Environmental, Energy, and Economic Performance in October 2009 setting aggressive targets for reducing waste and pollution in Federal operations by 2020. EPA's 2013 Sustainability Plan builds on four years of progress under the Executive Order and provides an overview of how the agency is saving taxpayer dollars, reducing carbon emissions, and saving energy.

The 2013 Sustainability Plan also helps guide EPA's actions to meet the new goal by directing the federal government to consume 20 percent of its electricity from renewable sources by 2020 – more than double the prior level. Meeting this renewable energy goal reduces pollution in our communities, promotes American energy independence, and supports homegrown energy produced by American workers.

The 2013 Sustainability Plan outlines actions planned for the upcoming year to continue progress in meeting the President's goals, including:

- Pursuing reconstruction of key EPA research infrastructure;
- Consolidating the Research Toxicology Laboratory in Durham, NC into the Main laboratory at Research Triangle Park, NC; and
- Continuing work on EPA's award winning water conservation program.

Additionally, On June 2, 2014, the U.S. Environmental Protection Agency, under President Obama's Climate Action Plan, proposed a commonsense plan to cut carbon pollution from power plants. The EPA's Clean Power Plan cuts carbon pollution from the power sector by 30 percent from 2005 levels. The proposal will also cut pollution that leads to soot and smog by over 25 percent in 2030. Additionally, the plan will lead to climate and health benefits worth an estimated \$55 to \$93 billion in 2030, including 2,700 to 6,000 premature deaths and 140,000 to 150,000 asthma attacks in children.

State Regulations

In 2005, in recognition of California's vulnerability to the effects of climate change, Governor Schwarzenegger established Executive Order S-3-05, which sets forth a series of target dates by which statewide emission of greenhouse gas would be progressively reduced, as follows:

- 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.

In 2006, California passed the California Global Warming Solutions Act of 2006 (AB 32; California Health and Safety Code Division 25.5, Sections 38500, et seq.), which requires 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 percent reduction in emissions).

In June 2007, CARB directed staff to pursue 37 early actions for reducing greenhouse gas emissions under AB 32. The broad spectrum of strategies to be developed – including a Low Carbon Fuel Standard, regulations for refrigerants with high global warming potentials, guidance and protocols for local governments to facilitate greenhouse gas reductions, and green ports – reflects that the serious threat of climate change requires action as soon as possible.

In addition to approving the greenhouse gas reduction strategies, CARB directed staff to further evaluate early action recommendations made at the June 2007 meeting, and to report back to CARB within 6 months. The general sentiment of CARB suggested a desire to try to pursue greater greenhouse gas emissions reductions in California in the near-term. Since the June 2007 CARB hearing, CARB staff has evaluated all 48 recommendations submitted by several stakeholders and several internally-generated staff ideas and published the *Expanded List of Early Action Measures To Reduce Greenhouse Gas Emissions In California*, recommended for board consideration in October 2007. Based on its additional analysis, CARB staff is recommending the expansion of the early action list to a total of 44 measures. Nine of the strategies meet the AB 32 definition of discrete early action measures. Discrete early action measures are measures that will be in place and enforceable by January 1, 2010. The discrete early action items include: (1) a Low Carbon Fuel standards for ethanol, biodiesel, hydrogen, electricity, compressed natural gas, liquefied petroleum gas, and biogas; (2) restrictions on High Global Warming Potential Refrigerants; (3) Landfill Methane Capture; (4) Smartway Truck Efficiency; (5) Port Electrification; (6) Reduction of perfluorocarbons from the semiconductor industry; (7) Reduction of propellants in consumer products; (8) Tire inflation; and (9) Sulfur Hexafluoride (SF6) reductions from non-electricity sector.

The 2020 target reductions are currently estimated to be 174 million metric tons of carbon dioxide (CO₂) equivalent (MMTCO₂e). In total, the recommended early actions have the potential to reduce greenhouse gas emissions by at least 42 MMTCO₂e emissions by 2020, representing about 25 percent of the estimated reductions needed by 2020. The CARB Board adopted Resolution 07-55 in December 2007, approving 427 MMTCO₂e as the statewide greenhouse gas emissions limit for 2020, which is equivalent to the 1990 emissions level. The measures are in the sectors of fuels, transportation, forestry, agriculture, education, energy efficiency, commercial, solid waste, cement, oil and gas, electricity, and fire suppression.

The First Update to the AB 32 Scoping Plan was approved by the California Air Resources Board on May 22, 2014, and builds upon the initial Scoping Plan with new strategies and recommendations. The First Update identifies opportunities to leverage existing and new funds to further drive GHG emission reductions through strategic planning and targeted low carbon investments. The First Update defines ARB's climate change priorities for the next five years, and also sets the groundwork to reach long-term goals set forth in Executive Orders S-3-05 and B-16-2012. The Update highlights California's progress toward meeting the "near-term" 2020 GHG emission reduction goals defined in the initial Scoping Plan. It also evaluates how to align the State's "longer-term" GHG reduction strategies with other State policy priorities for water, waste, natural resources, clean energy, transportation, and land use.

2.3 Ambient Air Quality Standards (AAQS)

The Clean Air Act Amendment of 1971 established national Ambient Air Quality Standards (AAQS) with states retaining the option to adopt more stringent standards or to include other pollution species. These standards are

the levels of air quality considered safe, with an adequate margin of safety, to protect the public health and welfare. They are designed to protect those “sensitive receptors” most susceptible to further respiratory distress such as asthmatics, the elderly, very young children, people already weakened by other disease or illness, and persons engaged in strenuous work or exercise. Healthy adults can tolerate occasional exposure to air pollutant concentrations considerably above these minimum standards before adverse effects are observed.

Both the State of California and the federal government have established health based Ambient Air Quality Standards for six air pollutants. As shown in Table 1, these pollutants include ozone, carbon monoxide, nitrogen dioxide, sulfur dioxide, suspended particulate matter (PM₁₀, PM_{2.5}), and lead. In addition, the State has set standards for sulfates, hydrogen sulfide, vinyl chloride, and visibility reducing particles. These standards are designed to protect the health and welfare of the populace with a reasonable margin of safety.

**Table 1
AMBIENT AIR QUALITY STANDARDS FOR CRITERIA POLLUTANTS**

| Pollutant | Averaging Time | California Standard | Federal Primary Standard | Major Pollutant Sources |
|---|------------------------|----------------------------|---------------------------------|--|
| Ozone (O ₃) | 1 hour | 0.09 ppm | * | Motor vehicles, paints, coatings, and solvents. |
| | 8 hours | 0.070 | 0.075 ppm | |
| Carbon Monoxide (CO) | 1 hour | 20 ppm | 35 ppm | Internal combustion engines, primarily gasoline-powered motor vehicles. |
| | 8 hours | 9.0 ppm | 9 ppm | |
| Nitrogen Dioxide (NO ₂) | Annual Average | 0.030 ppm | 0.053 ppm | Motor vehicles, petroleum-refining operations, industrial sources, aircraft, ships, and railroads. |
| | 1 hour | 0.18 ppm | * | |
| Sulfur Dioxide (SO ₂) | Annual Average | * | 0.03 ppm | Fuel combustion, chemical plants, sulfur recovery plants, and metal processing. |
| | 1 hour | 0.25 ppm | * | |
| | 24 hours | 0.04 ppm | 0.14 ppm | |
| Suspended Particulate Matter (PM ₁₀) | Annual Arithmetic Mean | 20 µg/m ³ | * | Dust and fume-producing construction, industrial, and agricultural operations, combustion, atmospheric photochemical reactions, and natural activities (e.g. wind-raised dust and ocean sprays). |
| | 24 hours | 50 µg/m ³ | 150 µg/m ³ | |
| Suspended Particulate Matter (PM _{2.5}) | Annual Arithmetic Mean | 12 µg/m ³ | 15 µg/m ³ | Dust and fume-producing construction, industrial, and agricultural operations, combustion, atmospheric photochemical reactions, and natural activities (e.g. wind-raised dust and ocean sprays). |
| | 24 hours | * | 35 µg/m ³ | |
| Lead (Pb) | Monthly | 1.5 µg/m ³ | * | Present source: lead smelters, battery manufacturing & recycling facilities. Past source: combustion of leaded gasoline. |
| | Quarterly | * | 1.5 µg/m ³ | |
| Sulfates (SO ₄) | 24 hours | 25 µg/m ³ | * | Industrial processes. |

Notes:

ppm: parts per million; µg/m³: micrograms per cubic meter

* Standard is not applicable for this pollutant/duration by this entity.

Source: California Air Resources Board

In addition to primary and secondary Ambient Air Quality Standards, the State of California has established a set of episode criteria for ozone, carbon monoxide, nitrogen dioxide, sulfur dioxide, and particulate matter.

These criteria refer to episode levels representing periods of short-term exposure to air pollutants, which actually threaten public health.

2.4 Air Quality Management Planning

2.4.1 Local Planning Requirements

The SCAQMD and the Southern California Association of Governments (SCAG) are the agencies responsible for preparing the Air Quality Management Plan (AQMP) for the SCAB. Since 1979, a number of AQMPs have been prepared. The AQMP was designed to comply with State and federal requirements, reduce the high level of pollutant emissions in the SCAB, and ensure clean air for the region through various control measures. To accomplish its task, the AQMP relies on a multilevel partnership of governmental agencies at the federal, State, regional, and local level. These agencies (i.e., the United States Environmental Protection Agency (USEPA), CARB, local governments, SCAG, and SCAQMD) are the cornerstones that implement the AQMP programs.

In December 2016, the SCAQMD prepared the Final Draft of the *2016 Air Quality Management Plan*. The SCAQMD reports that the 2016 AQMP includes integrated strategies and measures to meet the following NAAQS 8-hour ozone standard of 75 parts per billion (ppb) by 2032, the annual PM_{2.5} standard of 12 µg/m³ by 2021-2025, the 8-hour ozone standard of 80 ppb by 2024 (updated from the 2007 and 2012 AQMPs), the 1-hour ozone standard (120 ppb) by 2023 (updated from the 2012 AQMP), and the 24-hour PM_{2.5} standard of 35 µg/m³ by 2019 (updated from the 2012 AQMP). The 2016 AQMP also takes an initial look at a recently proposed new federal 8-hour ozone standard (in the 65-70 ppb range), as well as incorporate energy, transportation, goods movement, infrastructure and other planning efforts that affect future air quality. The SCAQMD presented a Public Hearing presentation for the 2016 AQMP on February 3, 2017 and will schedule submission to the USEPA. Meanwhile, until the 2016 AQMP is adopted by the USEPA, the 2012 AQMP still serves as the planning document for air quality in the Basin.

On December 7, 2012, the SCAQMD adopted the *2012 Air Quality Management Plan*. The purposes of the 2012 AQMP for the Basin are to set forth a comprehensive and integrated program that will lead the Basin into compliance with the federal 24-hour PM_{2.5} air quality standard, to satisfy the planning requirements of the federal Clean Air Act, and to provide an update to the Basin's commitments towards meeting the federal 8-hour ozone standards. It also serves to satisfy the recent USEPA proposed requirement for a new attainment demonstration of the revoked 1-hour ozone standard, as well as a VMT emissions offset demonstration. Specifically, the Plan serves as the official SIP submittal for the federal 2006 24-hour PM_{2.5} standard, for which USEPA established a due date of December 14, 2012. In addition, the 2012 AQMP updates specific new control measures and commitments for emissions reductions to implement the attainment strategy for the 8-hour ozone SIP, and thus help to reduce reliance on CAA Section 182(e)(5) long-term measures. Once approved by the District Governing Board and CARB, the 2012 AQMP was submitted to USEPA as the 24-hour PM_{2.5} SIP addressing the 2006 PM_{2.5} NAAQS and as a limited update to the approved 8-hour ozone SIP. The 1-hour ozone attainment demonstration and VMT emissions offset demonstration was also submitted through CARB to the USEPA.

The ozone portion of the 2007 AQMP has been approved by USEPA into the SIP. The "moderate" 24-hour PM_{2.5} elements of the 2012 AQMP have also been approved by USEPA, and in January 2016 the USEPA approved the Basin's re-designation as a "serious" nonattainment area for PM_{2.5}. These approvals include SIP revisions submitted in response to USEPA's initial findings.

The District continues to implement the 2012 AQMP, which received a limited approval and limited disapproval by USEPA on April 14, 2016. Progress in implementing the 2012 AQMP can be measured by the progress in implementing control measures and the resulting emission reductions. Emission reduction commitments and reductions which will be achieved in 2014 and 2023 through already-adopted measures are based on the emission inventories and milestone years from the 2012 AQMP.

The 2012 AQMP also includes an update on the air quality status of the Salton Sea Air Basin (SSAB) in the Coachella Valley, a discussion of the emerging issues of ultrafine particle and near-roadway exposures, a report on the health effects of PM_{2.5}, and an analysis of the energy supply and demand issues that face the Basin and their relationship to air quality. As noted above, the USEPA required SIP revisions to the PM_{2.5} program in granting approval in January 2016.

The 2012 AQMP incorporates the most recent planning assumptions and the best available information including: revised stationary point and area source emissions inventories; on-road and off-road mobile source emissions inventories based on CARB’s latest EMFAC2011 and Off-Road Models; the use of new meteorological episodes for ozone and expanded air quality modeling analysis; and the latest demographic growth forecasts based on the approved 2012 Regional Transportation Plan (2012 RTP) developed by SCAG.

2.4.2 Air Quality Attainment Status

Areas that meet the ambient air quality standards are classified as “attainment” areas while areas that do not meet these standards are classified as “non-attainment” areas. The severities of the classifications for ozone non-attainment include and range in magnitude from: marginal, moderate, serious, severe, and extreme. The attainment status for the SCAB is included in Table 2.

The Basin is also designated as attainment of the California Ambient Air Quality Standards (CAAQS) for SO₂, lead, and sulfates. Areas that are designated as Severe-17 for the ozone standard must meet attainment of the 8-hour standard by 2021 (2024 if reclassified to Extreme). Areas considered as serious non-attainment of the PM₁₀ standards must have reached attainment by the end of 2006, or as expeditiously as possible. To date, the Basin still does not meet this standard. Again, the USEPA required SIP revisions to the PM_{2.5} program in granting approval in January 2016.

Table 2
ATTAINMENT STATUS FOR THE SOUTH COAST AIR BASIN

| Pollutant | State Status | Federal Status |
|-------------------|------------------------|---|
| Ozone (1-hour) | Extreme Non-attainment | Extreme Non-attainment (under the prior standard) |
| Ozone (8-hour) | Extreme Non-Attainment | Severe-17 (may petition for Extreme) |
| PM ₁₀ | Serious Non-attainment | Serious Non-attainment |
| PM _{2.5} | Non-attainment | Non-attainment |
| CO | Attainment | Attainment/Maintenance |
| NO ₂ | Attainment | Attainment/Maintenance |

Source: California Air Resources Board

2.4.3 State Planning Requirements

Executive Order S-3-05

Under Executive Order S-3-05, as signed by Governor Arnold Schwarzenegger on June 1, 2005, the following greenhouse gas (GHG) emission reduction targets were established for California: (1) by 2010, reduce GHG emissions to 2000 levels; (2) by 2020, reduce GHG emissions to 1990 levels; and (3) by 2050, reduce GHG emissions to 80 percent below 1990 levels. In response, in March 2006, the California Environmental Protection Agency (CalEPA) published a Climate Action Team (CAT) report detailing how State agencies could implement a series of policies to meet the 2010 and 2020 goals. As indicated therein, among the policy actions that are cited are “smart land use and intelligent transportation.” The CAT states that smart land use is an umbrella term for strategies that integrate transportation and land-use decisions. Such strategies generally encourage jobs/housing proximity, promote transit-oriented development, and encourage high-density residential/commercial development along transit corridors. These strategies develop more efficient land-use

patterns within each jurisdiction or region to match population increases, workforce, and socioeconomic needs for the full spectrum of the population. Intelligent transportation systems (ITS) is the application of advanced technology systems and management strategies to improve operational efficiency of transportation systems and movement of people, goods, and service.¹

California Health and Safety Code

Section 41700 of the H&SC requires that “no person shall discharge from any source whatsoever such quantities of air contaminants or other material which causes injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public, or which endangers the comfort, response, health, or safety of any such person or the public, or which causes, or have a natural tendency to cause, injury or damage to business or property.” Section 39606(b) of the H&SC authorizes the California Air Resources Board (CARB) to adopt standards for ambient air quality “in consideration of public health and safety, and welfare, including but not limited to health, illness, irritation to the senses, aesthetic value, interference with visibility, and the effects of air pollution on the economy.” The objective of ambient air quality standards (AAQS) is to provide a basis for preventing or abating adverse health or welfare effects of air pollution (17 CCR 70101).

Section 39607(e) requires that the CARB establish and periodically review area designation criteria. The CARB makes area designations for the following nine pollutants: ozone (O₃), carbon monoxide (CO), nitrogen dioxide (NO₂), sulfur dioxide (SO₂), particulate matter less than 10 microns (PM₁₀), sulfates (SO₄), lead (Pb), hydrogen sulfide (H₂S), and visibility-reducing particles. Assembly Bill 2595, known as the California Clean Air Act (CCAA), divided non-attainment areas into categories with progressively more stringent requirements (Sections 40918-40920.5, H&SC). As specified, it is the responsibility of each air pollution control district (APCD) and air quality management district (AQMD) within the State to attain and maintain California Ambient Air Quality Standards (CAAQS).² The CCAA requires that an attainment plan be developed by all non-attainment districts for O₃, CO, sulfur oxides (SO_x), and nitrogen oxides (NO_x) that are either receptors or contributors of transported air pollutants. The CAAQS are listed in Table 1.³ Areas meeting CAAQS are classified as attainment; areas not meeting CAAQS are classified as non-attainment.

Assembly Bill 32 (California Global Warming Solutions Act of 2006), codified in Section 38500 *et seq.* of the H&SC, established a comprehensive program to reduce GHG by 2020 and identifies several major requirements that CARB is required to implement, including: (1) adoption and implementation of a list of discrete and early action GHG reduction measures; (2) approval of a Statewide 1990 emission level that becomes the Statewide 2020 emissions limits; (3) adoption of mandatory GHG reporting rules for significant GHG sources; and (4) adoption of regulations to achieve the maximum technologically feasible and cost-effective reductions. As defined in Section 38505 of the H&SC, greenhouse gases include carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF₆).

2.4.4 Federal Clean Air Act Requirements

Again, it is possible that the Federal requirements for criteria pollutants will change under the Trump Administration. However, at this time, no such action has been taken and the Federal requirements prior to the Trump Administration still serve as the basis of this analysis.

^{1/} California Environmental Protection Agency, Climate Action Team Report to Governor Schwarzenegger and the Legislature, March 2006, p. 58.

^{2/} The CARB considers an area to be non-attainment of a CAAQS for a particular pollutant if the standards for O₃, CO (except Lake Tahoe), SO₂ (1 hour and 24 hour), NO₂, PM₁₀, and visibility-reducing particles are exceeded.

^{3/} These standards are designed to protect the health and welfare of the populace with a reasonable margin of safety. In addition to primary and secondary ambient air quality standards, the State has established a set of episode criteria for ozone, carbon monoxide, nitrogen dioxide, sulfur dioxide, and particulate matter. These criteria refer to episode levels representing periods of short-term exposure to air pollutants which threaten public health.

The Federal Clean Air Act of 1970 (42 U.S.C. Section 7401 *et seq.*) (CAA) requires any new major stationary sources of air pollution and any major modifications to major stationary sources to obtain an air pollution permit before commencing construction. New Source Review (NSR) requirements (42 U.S.C. 7411) differ depending on the attainment status of the area where the major facility is to be located. Prevention of Significant Deterioration (PSD) requirements (42 U.S.C. 7470-7491) apply in areas that are in attainment of the National Ambient Air Quality Standards (NAAQS). Non-attainment area NSR requirements apply to areas that have not been able to demonstrate compliance with the NAAQS.

Section 108 of the CAA directs the USEPA to list pollutants that may reasonably be anticipated to endanger public health and welfare and to issue air quality criteria for those pollutants. The USEPA has set NAAQS for the following pollutants: carbon monoxide (CO), lead (Pb), nitrogen dioxide (NO₂), ozone (O₃), particulate matter (PM), and sulfur dioxide (SO₂). The NAAQS for those primary pollutants are listed in Table 1. Section 176(c) prohibits federal agencies from taking actions in NAAQS non-attainment or maintenance areas that do not conform to the State Implementation Plan (SIP) for the attainment and maintenance of NAAQS pursuant to Section 110(a).

2.5 Baseline Air Quality

Existing levels of ambient air quality and historical trends and projections in the project area are best documented by measurements made by the SCAQMD. The project is located at the west end of Source Receptor Area (SRA) 17 (Central Orange County). The SCAQMD maintains an air quality monitoring station for this area in Anaheim. Data from this station are summarized in Table 3. Anaheim measurements have shown that while ozone levels continue to exceed the California and national hourly standards, and values appear to have declined over the last 5 years, though 2014 seems to show some increase.

Table 3
AIR QUALITY MONITORING SUMMARY FOR THE
ANAHEIM MONITORING STATION

(Number Of Days Standards Were Exceeded And Maximum Levels During Such Violations¹)

| <i>State and Federal Pollutant/Standard</i> | <i>2011</i> | <i>2012</i> | <i>2013</i> | <i>2014</i> | <i>2015</i> |
|--|-------------|-------------|-------------|-------------|-------------|
| Ozone (O ₃) | | | | | |
| State 1-hour > 0.09 ppm | 0 | 0 | 0 | 2 | 1 |
| State 8-hour > 0.07 ppm | 1 | 0 | 0 | 6 | 1 |
| Federal 1-hour > 0.124 ppm | 0 | 0 | 0 | 0 | 1 |
| Federal 8-hour > 0.075 ppm | 0 | 0 | 0 | 4 | 1 |
| Max. 1-hour conc. (ppm) | 0.088 | 0.079 | 0.084 | 0.111 | 0.100 |
| Max. 8-hour conc. (ppm) | 0.072 | 0.067 | 0.070 | 0.081 | 0.080 |
| Carbon Monoxide (CO) | | | | | |
| State 8-hour ≥ 9.1 ppm | 0 | 0 | 0 | 0 | 0 |
| Max. 8-hour conc. (ppm) | 2.1 | 2.3 | 2.6 | 2.1 | 2.2 |
| Nitrogen Dioxide (NO ₂) | | | | | |
| State 1-hour > 180 (ppb) | 0 | 0 | 0 | 0 | 0 |
| Max. 1-hour conc. (ppb) | 73.8 | 67.3 | 81.6 | 75.8 | 59.1 |
| Inhalable Particulates (PM ₁₀) ² | | | | | |
| State 24-hour > 50 µg/m ³ | 2/60 | 0/61 | 1/59 | 2/61 | 11/363 |
| Federal 24-hour > 150 (µg/m ³) | 0/60 | 0/61 | 0/59 | 0/61 | 0/363 |
| Max. 24-hour conc. (µg/m ³) | 53 | 48 | 77 | 85 | 66 |
| Inhalable Particulates (PM _{2.5}) ² | | | | | |
| Federal 24-Hour > 35 µg/m ³ | 2/352 | 4/347 | 1/331 | 6/344 | 3/295 |
| Max. 24-Hour Conc. (µg/m ³) | 39.2 | 50.1 | 37.8 | 56.2 | 45.8 |

| <i>State and Federal Pollutant/Standard</i> | <i>2011</i> | <i>2012</i> | <i>2013</i> | <i>2014</i> | <i>2015</i> |
|---|-------------|-------------|-------------|-------------|-------------|
| Notes: | | | | | |
| ¹ With the exception of inhalable particulates (PM ₁₀ and PM _{2.5}), all values are based on 365 days per year. | | | | | |
| ² Violations per number of samples. | | | | | |

Although NO₂ measurements indicate that no standards were exceeded, NO₂ is a precursor to O₃ formation, which continually does exceed the standards. Hydrocarbons and NO₂ are emitted by both mobile and stationary sources, with the greater portion emanating from mobile sources in the Basin. Pollutants emitted from upwind cities react during their transport downwind to produce the oxidant concentrations measured at the Los Alamitos monitoring station. Therefore, all upwind areas within the SCAB contribute to the O₃ production. These concentrations increase during the summer, with concentrations increasing from the late morning through the afternoon.

With regard to particulate matter, no trend is readily apparent. The State standard for PM₁₀ was exceeded 16 of the 549 times (2.9 percent) in the last 5 years that it was monitored. The federal standard has not been violated in the last 5 years. However, the federal standard for PM_{2.5} was exceeded 16 of the 1,371 times (1.2 percent) in the last 5 years. Suspended particulate matter (both total suspended particulates [TSP] and PM₁₀ and PM_{2.5}) is a mixture of natural and manmade materials that include soil particles, biological materials, sulfates, nitrates, organic compounds, and lead. Smaller particles (PM₁₀, PM_{2.5}) are created by the combustion of fossil fuels, but are also given off from tire wear and brake dust.

2.6 Standard Conditions and Uniform Codes

All projects constructed in the SCAB are subject to standard conditions and uniform codes. Compliance with these provisions is mandatory and as such, does not constitute mitigation under CEQA. Those conditions specific to air quality are included below.

- Adherence to SCAQMD Rule 403, which sets requirements for dust control associated with grading and construction activities.
- Adherence to SCAQMD Rules 431.1 and 431.2, which require the use of low sulfur fuel for stationary construction equipment.
- Adherence to SCAQMD Rule 1108, which sets limitations on ROG content in asphalt.
- Adherence to SCAQMD Rule 1113, which sets limitations on ROG content in architectural coatings.
- Adherence to SCAQMD Rule 1143, which sets limitations on ROG content in consumer paint thinners and multipurpose solvents.

Furthermore, the project shall comply with Title 24 energy-efficient design requirements as well as the provision of window glazing, wall insulation, and efficient ventilation methods in accordance with the requirements of the Uniform Building Code (UBC).

During construction, the project would be subject to SCAQMD Rule 403 (Fugitive Dust). SCAQMD Rule 403 does not require a permit for construction activities but sets forth general and specific requirements for all construction sites (as well as other fugitive dust sources) in the Basin. The general requirement prohibits a person from causing or allowing emissions of fugitive dust from construction (or other fugitive dust source) such that the presence of such dust remains visible in the atmosphere beyond the property line of the emissions source. SCAQMD Rule 403 also prohibits a construction site from causing an incremental PM₁₀ concentration impact at the property line of more than 50 µg/m³ as determined through PM₁₀ high-volume sampling. The concentration standard and associated PM₁₀ sampling do not apply if specific measures identified in the rule are implemented and appropriately documented.

In accordance with Rule 403, the SCAQMD requires that contractors implement Best Available Control Technology (BACT) for construction activities. Rule 403 identifies two sets of specific measures, one for projects less than 50 acres and another set of conditions for projects that exceed 50 acres. The requirements applicable to the project are included in Table 4. Note that these measures are regulatory requirements and as such, do not constitute mitigation under CEQA.

Table 4
SCAQMD REQUIRED BEST AVAILABLE CONTROL MEASURES
(Applicable to All Construction Activity Sources)

| Source Category | Control Measures | Guidance |
|------------------------------|---|--|
| Backfilling | Stabilize backfill material when not actively handling; and Stabilize backfill material during handling; and Stabilize soil at completion of activity | Mix backfill soil with water prior to moving; and Dedicate water truck or high capacity hose to backfilling equipment; and Empty loader bucket slowly so that no dust plumes are generated; and Minimize drop height from loader bucket. |
| Clearing and Grubbing | Maintain stability of soil through prewatering of site prior to clearing and grubbing; and Stabilize soil during clearing and grubbing activities; and Stabilize soil immediately after clearing and grubbing activities. | Maintain live perennial vegetation where possible; and Apply water in sufficient quantity to prevent generation of dust plumes. |
| Clearing Forms | Use water spray to clear forms; or Use sweeping and water spray to clear forms; or Use vacuum system to clear forms. | Use of high pressure air to clear forms may cause exceedance of Rule requirements. |
| Crushing | Stabilize surface soils prior to operation of support equipment; and Stabilize material after crushing. | Follow permit conditions for crushing equipment; and Pre-water material prior to loading into crusher; and Monitor crusher emissions opacity; and Apply water to crushed material to prevent dust plumes. |
| Cut and Fill | Pre-water soils prior to cut and fill activities; and Stabilize soil during and after cut and fill activities. | For large sites, pre-water with sprinklers or water trucks and allow time for penetration; and Use water trucks/pulls to water soils to depth of cut prior to subsequent cuts. |
| Demolition Mechanical/Manual | Stabilize wind erodible surfaces to reduce dust; and Stabilize surface soil where support equipment and vehicles will operate; and Stabilize loose soil and demolition debris; and Comply with Rule 1403. | Apply water in sufficient quantities to prevent the generation of visible dust plumes. |
| Disturbed Soil | Stabilize disturbed soil throughout the construction site; and Stabilize disturbed soil between structures | Limit vehicular traffic and disturbances on soils where possible; and If interior block walls are planned, install as early as possible; and Apply water or a stabilizing agent in sufficient quantities to prevent the generation of visible dust plumes. |

| | | |
|---------------------------------------|---|---|
| Earth-Moving Activities | Pre-apply water to depth of proposed cuts; and Re-apply water as necessary to maintain soils in a damp condition and to ensure that visible emissions do not exceed 100 feet in any direction; and Stabilize soils once earth-moving activities are complete. | Grade each project phase separately, timed to coincide with construction phase; and Upwind fencing can prevent material movement on site; and Apply water or a stabilizing agent in sufficient quantities to prevent the generation of visible dust plumes. |
| Importing/Exporting of Bulk Materials | Stabilize material while loading to reduce fugitive dust emissions; and Maintain at least six inches of freeboard on haul vehicles; and Stabilize material while transporting to reduce fugitive dust emissions; and Stabilize material while unloading to reduce fugitive dust emissions; and Comply with CVC Section 23114. | Use tarps or other suitable enclosures on haul trucks; and Check belly-dump truck seals regularly and remove any trapped rocks to prevent spillage; and Comply with track-out prevention/mitigation requirements; and Provide water while loading and unloading to reduce visible dust plumes. |
| Landscaping | Stabilize soils, materials, slopes | Apply water to materials to stabilize; and Maintain materials in a crusted condition; and Maintain effective cover over materials; and Stabilize sloping surfaces using soil binders until vegetation or ground cover can effectively stabilize the slopes; and Hydroseed prior to rain season. |
| Road Shoulder Maintenance | Apply water to unpaved shoulders prior to clearing; and Apply chemical dust suppressants and/or washed gravel to maintain a stabilized surface after completing road shoulder maintenance. | Installation of curbing and/or paving of road shoulders can reduce recurring maintenance costs; and Use of chemical dust suppressants can inhibit vegetation growth and reduce future road shoulder maintenance costs. |
| Screening | Pre-water material prior to screening; and Limit fugitive dust emissions to opacity and plume length standards; and Stabilize material immediately after screening. | Dedicate water truck or high capacity hose to screening operation; and Drop material through the screen slowly and minimize drop height; and Install wind barrier with a porosity of no more than 50% upwind of screen to the height of the drop point. |
| Staging Areas | Stabilize staging areas during use; and Stabilize staging area soils at project completion. | Limit size of staging area; and Limit vehicle speeds to 15 miles per hour; and Limit number and size of staging area entrances/exits. |
| Stockpiles/Bulk Material Handling | Stabilize stockpiled materials, and stockpiles within 100 yards of off-site occupied buildings must not be greater than eight feet in height; or must have a road bladed to the top to allow water truck access or must have an operational water irrigation system that is capable of complete stockpile coverage. | Add or remove material from the downwind portion of the storage pile; and Maintain storage piles to avoid steep sides or faces. |

| | | |
|---|---|--|
| Traffic Areas for Construction Activities | Stabilize all off-road traffic and parking areas; and Stabilize all haul routes; and Direct construction traffic over established haul routes. | Apply gravel/paving to all haul routes as soon as possible to all future roadway areas; and Barriers can be used to ensure vehicles are only used on established parking areas/haul routes. |
| Trenching | Stabilize surface soils where trencher or excavator and support equipment will operate; and Stabilize soils at the completion of trenching activities. | Pre-watering of soils prior to trenching is an effective preventive measure. For deep trenching activities, pre-trench to 18 inches soak soils via the pre-trench and resuming trenching; and Washing mud and soils from equipment at the conclusion of trenching activities can prevent crusting and drying of soil on equipment. |
| Truck Loading | Pre-water material prior to loading; and Ensure that freeboard exceeds six inches (CVC 23114) | Empty loader bucket such that no visible dust plumes are created; and Ensure that the loader bucket is close to the truck to minimize drop height while loading. |
| Turf Overseeding | Apply sufficient water immediately prior to conducting turf vacuuming activities to meet opacity and plume length standards; and Cover haul vehicles prior to exiting the site. | Haul waste material immediately off-site. |
| Unpaved Roads/Parking Lots | Stabilize soils to meet the applicable performance standards; and Limit vehicular travel to established unpaved roads (haul routes) and unpaved parking lots. | Restricting vehicular access to established unpaved travel paths and parking lots can reduce stabilization requirements. |
| Vacant Land | In instances where vacant lots are 0.10 acre or larger and have a cumulative area of 500 square feet or more that are driven over and/or used by motor vehicles and/or off-road vehicles, prevent motor vehicle and/or off-road vehicle trespassing, parking and/or access by installing barriers, curbs, fences, gates, posts, signs, shrubs, trees or other effective control measures. | |

2.7 Sensitive Receptors

Some land uses are considered more sensitive to air pollution than others due to the types of population groups or activities involved. Sensitive population groups include children, the elderly, the acutely ill, and the chronically ill, especially those with cardio-respiratory diseases.

Residential areas are considered to be sensitive to air pollution because residents (including children and the elderly) tend to be at home for extended periods of time, resulting in sustained exposure to any pollutants present. Schools are also considered as sensitive since children are present for extended durations and engage in regular outdoor activities. Recreational land uses are considered moderately sensitive to air pollution. Although

exposure periods are generally short, exercise places a high demand on respiratory functions, which can be impaired by air pollution. In addition, noticeable air pollution can detract from the enjoyment of recreation. Industrial and commercial areas are considered the least sensitive to air pollution since exposure periods are relatively short and intermittent, as the majority of the workers tend to stay indoors most of the time. In addition, the working population is generally the healthiest segment of the public.

The project is a residential land use and is sensitive in nature. The project site is located along the north side of Sausalito Street, south of Cerritos Street. Bordering sensitive land uses include the single family residential units along the western perimeter, and to the south across Sausalito Street. A mobile home park is located beyond the residential units to the southwest and single family residential units are located to the west beyond the Coyote Creek Channel. A heavy equipment storage yard is located to the east and commercial development is located across Cerritos Street to the north.

2.8 Existing Land Use Emissions

This analysis recognizes that the project site includes an operating church. The structure has an area of 27,401 square feet that would be removed with project implementation. The demolition of this area is included in the construction emissions for the project. However, the removal of these uses would also remove their associated operational emissions. As such, the operational emissions for the existing land uses are quantified using the CalEEMod model so that they could be removed from the project emissions to determine the level of impact associated with the project.

Both the CalEEMod model and RK transportation analysis estimate that the existing church use generates 250 ADT on a weekday that would be removed from the road. Weekend trip rates are taken from the CalEEMod model and include 316 ADT on a Saturday and 1,004 ADT on a Sunday. Because the model is reported to present the highest day's emissions, the reported daily emissions are actually those produced on a Sunday. The Saturday and weekday trip rates are used to determine the yearly emission levels in the calculation of greenhouse gas emissions. Table 5 presents the results of the CalEEMod model for the existing (2019) operational Sunday criteria pollutants while Table 6 presents annual greenhouse gas emissions.

**Table 5
EXISTING SUNDAY OPERATIONAL EMISSIONS
FOR CRITERIA POLLUTANTS
(pounds/day)**

| Source | ROG | NO _x | CO | SO ₂ | PM ₁₀ | PM _{2.5} |
|------------------------|------|-----------------|-------|-----------------|------------------|-------------------|
| Mobile Sources | 1.57 | 5.91 | 17.42 | 0.06 | 4.60 | 1.27 |
| Natural Gas | 0.02 | 0.15 | 0.13 | 0.00 | 0.01 | 0.01 |
| Structural Maintenance | 0.07 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Consumer Products | 0.54 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Landscape Maintenance | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Operational Total | 2.20 | 6.06 | 17.14 | 0.05 | 4.61 | 1.28 |

Notes:

The CalEEMod model projects summer and winter emissions. These can differ for mobile sources and the higher of the two values is included in the table.

The SCAQMD bases the impact of a project on the highest day of the weeks' emissions. As such, the included analysis pits the existing church's Sunday emissions, with 1,004 ADT, against the proposed residential project's weekday emissions, with 250 ADT. Therefore, the existing church would be expected to generate approximately four times as many trips on a peak day as does the proposed development, and its peak day's vehicle emissions are commensurate with this difference.

**Table 6
EXISTING YEARLY OPERATIONAL EMISSIONS
FOR GREENHOUSE GAS EMISSIONS
(Mtons/year)**

| Source | CO ₂ | CH ₄ | N ₂ O | Total CO ₂ e ¹ |
|-----------------------|-----------------|-----------------|------------------|--------------------------------------|
| Mobile Sources | 324.61 | 0.02 | 0.00 | 325.00 |
| Electricity | 75.26 | 0.00 | 0.00 | 75.53 |
| Natural Gas | 30.66 | 0.00 | 0.00 | 30.85 |
| Landscape Maintenance | 0.00 | 0.00 | 0.00 | 0.00 |
| Water Use | 8.58 | 0.03 | 0.00 | 9.50 |
| Waste Disposal | 13.70 | 1.87 | 0.00 | 78.54 |
| Operational Total | 452.81 | 1.92 | 0.00 | 519.42 |

Notes:

¹ Because different gases have different conversion factors, totals may not equal.

However, the existing church is estimated by the CalEEMod model to produce 772,668 vehicle miles per year, while the proposed residential development would produce 965,589 vehicle miles per year, or approximately 25 percent more vehicle miles per year. Therefore a comparison of the church's peak Sunday emissions to those from the residential development on a weekday could be construed to result in a misrepresentation of the actual impact associated with the residential development.

As such, for the purposes of this analysis, existing emissions for the church, and later the proposed residential development, are presented and compared for the peak days (i.e., Sunday for the church and weekdays for the residences) as well as an "average" day as determined by division of the annual emissions by 365 days for the year. This average day's emissions for the church are included in Table 7.

**Table 7
EXISTING AVERAGE DAILY OPERATIONAL EMISSIONS
FOR CRITERIA POLLUTANTS
(pounds/day)**

| Source | ROG | NO _x | CO | SO ₂ | PM ₁₀ | PM _{2.5} |
|------------------------|------|-----------------|------|-----------------|------------------|-------------------|
| Mobile Sources | 0.50 | 2.28 | 6.93 | 0.02 | 2.03 | 0.56 |
| Natural Gas | 0.03 | 0.26 | 0.11 | 0.00 | 0.02 | 0.02 |
| Structural Maintenance | 0.14 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Consumer Products | 1.61 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Landscape Maintenance | 0.09 | 0.03 | 2.84 | 0.00 | 0.01 | 0.01 |
| Operational Total | 2.37 | 2.57 | 9.88 | 0.02 | 2.06 | 0.59 |

Notes:

Based on the annual emissions divided by 365 days per year.

3.0 *Threshold of Significance Criteria*

Presented below are the threshold of significance criteria identified by the SCAQMD relative to this topical issue. In accordance therewith, the proposed project would normally be deemed to produce a significant land use impact if the project or if project-related activities were to:

- Conflict with or obstruct implementation of the applicable air quality plan.
- Violate any air quality standard or contribute substantially to an existing or projected air quality violation.

- 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 standards.
- Expose sensitive receptors to substantial air pollutant concentrations.
- Create objectionable odors affecting a substantial number of people.
- Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment.
- Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases.

As indicated in Section 15064(i)(1) of the State CEQA Guidelines, “cumulatively considerable” is defined to mean “that the incremental effects of an individual project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects.”

In order to determine whether or not the proposed project would cause a significant effect on the environment, the impact of the project must be determined by examining the types and levels of emissions generated, and its impacts on factors that affect air quality. To accomplish this determination of significance, the SCAQMD has established air pollution thresholds against which a proposed project can be evaluated and assist lead agencies in determining whether or not the proposed project is significant. If the thresholds are exceeded by a proposed project, then it should be considered significant.

While the final determination of whether or not a project is significant is within the purview of the lead agency, the SCAQMD recommends that the following air pollution thresholds be used in determining whether the construction or operational phase of a proposed project is significant. As recommended by the SCAQMD, if the lead agency finds that the proposed project has the potential to exceed any of these air pollution thresholds, the project should be considered significant.

3.1 Construction Phase - Thresholds of Significance

The following significance thresholds for air quality have been established by the SCAQMD on a daily basis for construction emissions:

- 75 pounds per day for ROG
- 100 pounds per day for NOx
- 550 pounds per day for CO
- 150 pounds per day of SOx
- 150 pounds per day for PM₁₀
- 55 pounds per day for PM_{2.5}

During construction, if any of the identified daily air pollutant thresholds are exceeded by the proposed project, then the project’s air quality impacts may be considered significant.

3.2 Operational Phase - Thresholds of Significance

Specific criteria air pollutants have been identified by the SCAQMD as pollutants of special regional concern. Based upon this categorization, the following significance thresholds have been established by the SCAQMD for project operations:

- 55 pounds per day of ROG
- 55 pounds per day of NOx
- 550 pounds per day of CO
- 150 pounds per day of SOx
- 150 pounds per day of PM₁₀

- 55 pounds per day for PM_{2.5}

Projects within the SCAB with daily operational-related emissions that exceed any of the above emission thresholds may be considered significant. The SCAQMD indicates in Chapter 6 of their *Handbook* that they consider a project to be mitigated to a level of insignificance if its primary effects are mitigated below the thresholds provided above.

With respect to greenhouse gases, the SCAQMD Working Group has established a tentative threshold of 3,000 metric tons (Mtons) per year for CO₂e emissions for residential and commercial projects, and a threshold of 10,000 Mtons per year for industrial projects.

3.3 Local Emission Standards

In addition to the mass daily threshold values presented above, projects that have the ability to exceed or add measurably to an existing excess of the ambient concentrations presented in Table 1 may be considered significant. The following localized significance thresholds have been established by the SCAQMD for individual projects:

- California State 1-hour CO standard of 20.0 ppm
- California State 8-hour CO standard of 9.0 ppm
- California State 1-hour NO₂ standard of 0.18 ppm
- SCAQMD 24-hour construction PM₁₀ and PM_{2.5} standards of 10.4 µg/m³
- SCAQMD 24-hour operational PM₁₀ and PM_{2.5} standards of 2.5 µg/m³

If ambient levels already exceed a State or federal standard, then project emissions are considered significant if they increase ambient concentrations by a measurable amount. In the case of CO, the SCAQMD defines a measurable amount as 1.0 ppm or more for the 1-hour CO concentration or 0.45 ppm or more for the 8-hour CO concentrations. The SCAQMD indicates that they consider a project to be mitigated to a level of insignificance if its secondary effects are mitigated below these thresholds.

4.0 Environmental Impacts and Mitigation Measures

The Cottonwood Church Site residential project includes the removal of 27,401 square feet of church uses and the subsequent construction and occupancy of 50 townhomes in 11 units comprising approximately 81,207 square feet on approximately 2.44 acres of land.

Projected air emissions are calculated using the California Emissions Estimator Model (CalEEMod Version 2016.3.1) distributed by the SCAQMD. The CalEEMod model uses EMFAC2011 emissions factors for vehicle traffic and the OFFROAD2011 emissions factors for construction equipment.

For the purposes of this analysis, construction is estimated to begin on July 1, 2018 following the CalEEMod default construction schedule. Daily emissions are based on the higher of the summer or winter emissions, regardless of when they actually would occur. Demolition is modeled to include the 27,401 feet of existing structure as well as 1.8 acres of asphalt for a total 2.43 acres, leaving about 500 square feet for existing foliage.

The subsequent occupation of the site is estimated in 2019 and also based on the CalEEMod model, verified using traffic-projections provided by RK. In accordance with these projections, the project is estimated to generate approximately 291 ADT on a weekday. While RK does not report Saturday and Sunday trip rates, these are taken from the CalEEMod model and include 284 ADT on a Saturday and 242 ADT on a Sunday. These weekend trip rates are used to determine the yearly emission levels in the calculation of greenhouse gas emissions.

Similarly, in accordance with the model and RK projections, the existing Cottonwood Church is estimated to generate approximately 250 ADT on a weekday. Again, while RK does not report Saturday and Sunday trip rates, these are taken from the CalEEMod model and include 284 ADT on a Saturday and 1,004 ADT on a Sunday.

For ease of the reader, the analysis follows the format included in the California CEQA Guidelines, Appendix G: Environmental Checklist Form for Section III. AIR QUALITY and Section VII. GREENHOUSE GAS EMISSIONS addressing each issue included in those sections, respectively.

4.1 Project Consistency With the Applicable Air Quality Plan

Less than Significant Impact. CEQA requires that projects be consistent with the AQMP. A consistency determination plays an essential role in local agency project review by linking local planning and unique individual projects to the AQMP in the following ways: (1) it fulfills the CEQA goal of fully informing local agency decision-makers of the environmental costs of the project under consideration at a stage early enough to ensure that air quality concerns are fully addressed; and (2) it provides the local agency with ongoing information assuring local decision-makers that they are making real contributions to clean air goals contained in the AQMP.

Only new or amended general plan elements, specific plans, and regionally significant projects need to undergo a consistency review. This is because the AQMP strategy is based on projections from local general plans. Projects that are consistent with the local general plan are, therefore, considered consistent with the air quality management plan.

As proposed, the Applicant seeks approval for a 50 unit residential development on 2.44 gross acres of land. The project represents infill development. Neither the construction (Table 8) nor the operation (Table 9) of the project is projected to exceed the daily threshold values suggested by the SCAQMD. Additionally, the project would not result in significant localized air quality impacts. As such, the project is consistent with the goals of 2012 AQMP and, in that respect, does not present a significant air quality impact.

4.2 Project Potential to Violate or Add to a Violation of an Air Quality Standard

4.2.1 Construction Impacts

Less than Significant Impact. Air quality impacts may occur during site preparation and construction activities required to implement the proposed land use. Major sources of emissions during construction include exhaust emissions, fugitive dust generated as a result of demolition activities and soil and material disturbance during site preparation and grading activities, and the emission of ROG's during the painting of the structures.

As noted, the project involves the demolition of the existing church and construction of 50 single-family, residential town house units. Based on the proposed land use, by default the CalEEMod model allocates the construction over 269 working days and this schedule was retained for the analysis. Construction is assumed to begin on July 1, 2017 and end on July 12, 2018 thereby allowing for full occupancy in 2019.

The site contains 27,401 square feet of structures. Additionally, approximately 1.8 acres of the site are currently paved and these materials would first be removed in demolition.

With respect to the structures, the CalEEMod model estimates that each square foot of floor area generates 0.046 ton of waste material.

$$27,401 \text{ square feet} \times 0.046 \text{ ton/square foot} = 1,260 \text{ tons}$$

Typical paving would have a depth of 6 inches. Based on an area of 1.8 acres and a depth of 0.5 foot:

$1.8 \text{ acres} \times 43,560 \text{ square feet/acre} \times 0.5 \text{ foot} / 27 \text{ cubic feet/cubic yard} = 1,452 \text{ cubic yards to be removed}$

Asphaltic concrete has a weight of about 3,780 pounds per cubic yard.

$1,452 \text{ cubic yards} \times 3,780 \text{ pounds per cubic yard} = 5,488,560 \text{ pounds} / 2,000 \text{ pounds/ton} = 2,744 \text{ tons}$

The total amount of material to be removed is then calculated below:

$1,260 \text{ tons} + 2,744 \text{ tons} = 4,004 \text{ tons}$

The CalEEMod model default puts site demolition at 20 days. The CalEEMod model assumes that this movement of materials would generate 396 truck hauls over the 20 day period, or about 20 hauls per day.

SCAQMD's Rule 403 governs fugitive dust emissions from construction projects. This rule sets forth a list of control measures that must be undertaken for all construction projects to ensure that no dust emissions from the project are visible beyond the property boundaries. Adherence to Rule 403 is mandatory and as such, does not denote mitigation under CEQA. The following analysis assumes the use of the minimal measures specified in Rule 403 that overlap between the rule and the CalEEMod model. These include: (1) soil stabilizers shall be applied to unpaved roads; (2) ground cover shall be quickly applied in all disturbed areas; and (3) the active construction site shall be watered twice daily. The model assigns a control efficiency of 55 percent for twice daily watering and a similar efficiency was assumed for other controlled dust-producing, heavy equipment activities. In actuality, Rule 403 specifies several measures that the CalEEMod model does not consider (Table 4), so the modeled PM₁₀ and PM_{2.5} emissions associated with fugitive dust are considered conservative.

Table 8 includes the daily emissions projected for site construction. Note that all emissions are within their respective threshold values and the impact is less than significant. Furthermore, even if the various phases were to "overlap" into the next phase, all emissions would remain within their respective threshold values and again, the impact is less than significant.

**Table 8
COMPARISON OF PROJECTED CONSTRUCTION EMISSIONS
AND DAILY CRITERIA VALUES
(pounds/day)**

| Source | ROG | NOx | CO | SO ₂ | PM ₁₀ Dust | PM ₁₀ Exhaust | PM ₁₀ Total | PM _{2.5} Dust | PM _{2.5} Exhaust | PM _{2.5} Total |
|------------------------------|------|-------|-------|-----------------|--------------------------|-----------------------------|---------------------------|---------------------------|------------------------------|----------------------------|
| Demolition | | | | | | | | | | |
| Off Road Diesel | 2.76 | 26.76 | 15.56 | 0.02 | 0.87 | 1.65 | 2.52 | 0.13 | 1.54 | 1.67 |
| On Road Diesel | 0.21 | 6.84 | 1.59 | 0.02 | 0.34 | 0.04 | 0.38 | 0.09 | 0.04 | 0.13 |
| Worker Trips | 0.07 | 0.05 | 0.57 | 0.00 | 0.15 | 0.00 | 0.15 | 0.04 | 0.00 | 0.04 |
| Totals | 3.04 | 33.65 | 17.72 | 0.04 | 1.36 | 1.69 | 3.05 | 0.26 | 1.58 | 1.84 |
| Site Preparation | | | | | | | | | | |
| Off Road Diesel | 2.13 | 26.72 | 14.42 | 0.02 | 0.32 | 1.11 | 1.43 | 0.03 | 1.02 | 1.06 |
| Worker Trips | 0.04 | 0.03 | 0.35 | 0.00 | 0.09 | 0.00 | 0.09 | 0.02 | 0.00 | 0.02 |
| Totals | 2.17 | 26.75 | 14.77 | 0.02 | 0.41 | 1.11 | 1.52 | 0.05 | 1.02 | 1.08 |
| Grading | | | | | | | | | | |
| Off Road Diesel | 2.32 | 26.16 | 10.78 | 0.02 | 1.33 | 1.30 | 2.63 | 0.68 | 1.19 | 1.88 |
| Worker Trips | 0.06 | 0.04 | 0.44 | 0.00 | 0.11 | 0.00 | 0.11 | 0.03 | 0.00 | 0.03 |
| Totals | 2.38 | 26.20 | 11.22 | 0.02 | 1.44 | 1.30 | 2.74 | 0.71 | 1.19 | 1.91 |
| Building Construction | | | | | | | | | | |
| Off Road Diesel | 3.34 | 23.03 | 16.31 | 0.03 | 0.00 | 1.47 | 1.47 | 0.00 | 1.41 | 1.41 |

| | | | | | | | | | | |
|--------------------------------|-------|-------|-------|------|------|------|------|------|------|------|
| Vendor Trips | 0.02 | 0.64 | 0.19 | 0.00 | 0.03 | 0.01 | 0.04 | 0.01 | 0.01 | 0.01 |
| Worker Trips | 0.20 | 0.14 | 1.59 | 0.00 | 0.40 | 0.00 | 0.41 | 0.11 | 0.00 | 0.11 |
| Totals | 3.56 | 23.81 | 18.09 | 0.03 | 0.43 | 1.48 | 1.92 | 0.12 | 1.42 | 1.53 |
| Asphalt Paving | | | | | | | | | | |
| Off Road Diesel | 1.40 | 14.25 | 11.98 | 0.02 | 0.00 | 0.85 | 0.85 | 0.00 | 0.78 | 0.78 |
| Worker Trips | 0.08 | 0.05 | 0.59 | 0.00 | 0.17 | 0.00 | 0.17 | 0.04 | 0.00 | 0.05 |
| Asphalt Totals | 1.48 | 14.30 | 12.57 | 0.02 | 0.17 | 0.85 | 1.02 | 0.04 | 0.78 | 0.83 |
| Coating | | | | | | | | | | |
| Off-Gas | 50.81 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Off Road Diesel | 0.30 | 2.01 | 1.85 | 0.00 | 0.00 | 0.15 | 0.15 | 0.00 | 0.15 | 0.15 |
| Worker Trips | 0.04 | 0.02 | 0.28 | 0.00 | 0.08 | 0.00 | 0.08 | 0.02 | 0.00 | 0.02 |
| Coating Totals | 51.15 | 2.03 | 2.13 | 0.00 | 0.08 | 0.15 | 0.23 | 0.02 | 0.15 | 0.17 |
| Daily Threshold (Any Phase) | 75 | 100 | 550 | 150 | → | → | 150 | → | → | 55 |
| Exceeds Threshold? | No | No | No | No | | | No | | | No |

Notes:

The CalEEMod model projects summer and winter emissions and the higher of the two values is included in the table.

4.2.2 Operational Impacts

Less than Significant Impact. The major source of long-term air quality impacts is that associated with the emissions produced from project-generated vehicle trips. With the exception of wood combustion, stationary sources add only minimally to these values.

Mobile Source Emissions

In accordance with the traffic projections, the proposed residential project is estimated to generate approximately 291 ADT on a weekday, 284 ADT on a Saturday, and 242 ADT on a Sunday. Similarly, the existing Cottonwood Church is estimated to generate approximately 250 ADT on a weekday, 316 ADT on a Saturday, and 1,004 ADT on a Sunday.

Emissions associated with project-related trips assume full occupancy in 2019. Since emissions per vehicle are reduced each year due to tightening emissions restrictions and the replacement of older vehicles from the road, the use of 2019 emission factors presents a reasonable worst-case analysis with regards to operational air quality impacts. Again, both summer and winter scenarios were modeled and the higher of the two values is included in Table 9.

Stationary Source Emissions

In addition to vehicle trips, the occupants would produce emissions from on-site sources including the combustion of natural gas for space and water heating and the use of other heating sources (e.g., hearths). Additionally, the structures would be maintained and this requires repainting over time, thus resulting in the release of additional ROG emissions. Also, the use of consumer aerosol products, such as cleaners, is associated with the project and these release ROG emissions. Finally, landscaped areas require maintenance and equipment used in this effort produce combustion emissions. The resultant emissions are projected by the CalEEMod computer model and included in Table 9.

Again, because the SCAQMD methodology is based on peak day emissions, the table compares the weekday emissions for the residential project to the Sunday emissions for the existing church. Note all emissions are within their criteria values and the impact is less than significant.

Table 9
PROJECTED PEAK DAY OPERATIONAL EMISSIONS
AND DAILY CRITERIA VALUES
(pounds/day)

| Source | ROG | NOx | CO | SO₂ | PM₁₀ | PM_{2.5} |
|---------------------------------|------------|------------|-----------|-----------------------|------------------------|-------------------------|
| Mobile Sources | 0.54 | 2.31 | 7.36 | 0.03 | 2.13 | 0.59 |
| Natural Gas | 0.03 | 0.26 | 0.11 | 0.00 | 0.02 | 0.02 |
| Structural Maintenance | 0.14 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Consumer Products | 1.61 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Hearth | 13.10 | 1.04 | 25.43 | 0.06 | 3.82 | 3.82 |
| Landscape Maintenance | 0.13 | 0.05 | 4.15 | 0.00 | 0.02 | 0.02 |
| Total Weekday Emissions | 15.55 | 3.66 | 37.05 | 0.09 | 5.99 | 4.45 |
| Total Existing Sunday Emissions | 2.20 | 6.06 | 17.14 | 0.05 | 4.61 | 1.28 |
| Net Increase | 13.35 | <2.40> | 19.91 | 0.04 | 1.38 | 3.17 |
| Threshold | 55 | 55 | 550 | 150 | 150 | 55 |
| Exceeds Threshold? | No | No | No | No | No | No |

Notes:

The CalEEMod model projects summer and winter emissions. These can differ for mobile sources and the higher of the two values is included in the table.

It should be pointed out that while most emissions show a slight increase, this is due to the inclusion of “hearths” to the residential units. The Applicant specifies that the homes shall be Leed-certified and these hearth emissions would in all probability not be produced. Still, in the interest in providing a reasonable worst-case scenario, and provide the Applicant with the maximum flexibility in design, these emissions have been tabulated and included. If these hearth emissions are not to be included, all emissions would show a decline from peak Sunday levels produced by the use of the church.

In the interest of presenting a “fair” analysis of the actual impact associated with the project, Table 10 presents the projected average days’ emissions for the residential project and compares these to those that would be expected from the average day’s church use. These values were derived by modeling the yearly emissions and dividing those values by 365 days. Again, all increases are well under their threshold levels and the impact is less than significant.

Table 10
PROJECTED AVERAGE DAY OPERATIONAL EMISSIONS
AND DAILY CRITERIA VALUES
(pounds/day)

| Source | ROG | NOx | CO | SO₂ | PM₁₀ | PM_{2.5} |
|----------------------------------|------------|------------|-----------|-----------------------|------------------------|-------------------------|
| Mobile Sources | 0.50 | 2.28 | 6.93 | 0.02 | 2.03 | 0.56 |
| Natural Gas | 0.03 | 0.26 | 0.11 | 0.00 | 0.02 | 0.02 |
| Structural Maintenance | 0.14 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Consumer Products | 1.61 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Hearth | 0.90 | 0.07 | 1.74 | 0.00 | 0.26 | 0.26 |
| Landscape Maintenance | 0.09 | 0.03 | 2.84 | 0.00 | 0.02 | 0.02 |
| Total Average Daily Emissions | 3.27 | 2.64 | 11.62 | 0.02 | 2.33 | 0.86 |
| Total Existing Average Emissions | 2.37 | 2.57 | 9.88 | 0.02 | 2.06 | 0.59 |
| Net Increase | 0.90 | 0.07 | 1.74 | 0.00 | 0.27 | 0.27 |

| | | | | | | |
|---|----|----|-----|-----|-----|----|
| Threshold | 55 | 55 | 550 | 150 | 150 | 55 |
| Exceeds Threshold? | No | No | No | No | No | No |
| Notes: Based on the annual emissions divided by 365 days per year. | | | | | | |

4.3 *Project Potential to Result in a Cumulatively Considerable Increase in Criteria Pollutants*

Less than Significant Impact. In accordance with SCAQMD methodology, projects that do not exceed or can be mitigated to less than the daily threshold values do not add significantly to a cumulative impact. Neither the construction nor the operation of the project would exceed the recommended SCAQMD threshold levels and this impact is less than significant.

4.4 *Project Potential to Expose Sensitive Receptors to Substantial Pollutant Concentrations*

4.4.1 *Short-Term Localized Impacts, Criteria Pollutants*

Less than Significant Impact. In addition to the mass daily threshold standards discussed above, project construction has the potential to raise localized ambient pollutant concentrations. This could present a significant impact if these concentrations were to exceed the ambient air quality standards included in Table 1 at receptor locations.

The SCAQMD has developed screening tables for the construction and operation of projects up to five acres in size. These tables are included in the SCAQMD’s “Final Localized Significance Threshold Methodology” (June 2003) and are periodically updated on the SCAQMD Internet web site. The most current update was in 2008 and these data are use in the analysis. The emissions values included in the screening tables are based on only those emissions produced at the site and do not include off-site mobile source emissions (i.e., trucks and worker vehicles) that spread over a much larger area.

Screening level allowable emissions are calculated from the “mass-rate look-up tables” included in the “Final Localized Significance Threshold Methodology” (Appendix C). Rather than using the entirety of the site, the CalEEMod emissions model bases the area of disturbance on equipment use. Dozers, graders, and crawler tractors are estimated to disturb an area of 0.5 acre while scrapers are estimated to disturb 1.0 acre over an 8-hour work day.

Referring back to Table 8, the CalEEMod model estimates that demolition results in the highest levels of NOx emissions, building construction results in the highest levels of CO, and grading results in the highest levels of both PM₁₀, and PM_{2.5}. The PM₁₀ and PM_{2.5} values for site preparation are less than those for grading, and by default site preparation would disturb 1.5 acres on a daily basis, whereas grading would only disturb 1 acre daily. Because the emissions’ concentrations are based on a volume per unit area, grading presents the worst-case scenario for particulate generation.

The screening tables include sites of 1, 2, and 5 acres with receptors at 25, 50, 100, 200, and 500 meters away. The provided methodology notes that site sizes and receptor distances that lie between those values included in the screening manual may be determined by linear interpolation. The methodology also denotes that the 25 meter distance is the minimum distance to be used, even if receptors are located closer than this distance.

The daily activity associated with the 1 acre of site grading is included in the screening manual. The project site is located along the north side of Sausalito Street, east of Sausalito Court. Bordering sensitive land uses include the single family residential units located along the western perimeter. Based on these locations, the 25 meter minimal distance is used in the analysis.

In this case, the project lies within SRA 17 (Central Orange County) and screening levels for a 1-acre site for CO and NO_x with receptors at 25 meters are 485 and 81 pounds per day, respectively. At peak values of 16.31 and 26.76 pounds per day for CO and NO_x during building construction and demolition, respectively, these construction emissions would not create localized impacts.

Because the Basin is a non-attainment area for particulate matter, the thresholds for both PM₁₀ and PM_{2.5} are much more stringent than those for CO and NO_x. In these cases, the screening tables show allowable values of 4 and 3 pounds per day, respectively, for a 1-acre site with receptors at 25 meters. At 2.63 and 1.88 pounds per day, respectively, construction would not create significant localized PM₁₀ or PM_{2.5} impacts.

4.4.2 Long-Term Localized Impacts, Off-site Criteria Pollutants

Less than Significant Impact. Long-term effects of the proposed project could also be significant if they exceed the CAAQS. As noted for construction, these criteria only apply to CO, NO₂, PM₁₀, and PM_{2.5}. CO and NO₂ would be significant if the project were to raise existing levels above those values included in the CAAQS. Again, because the Basin is a non-attainment area for particulate matter, the operational thresholds for both PM₁₀ and PM_{2.5} are set at a measurable increase of 2.5 µg/m³.

Unlike construction equipment that generates exhaust and dust in a set area, the primary source of emissions from project operations is due to the addition of vehicles on the roadway system. These emissions are then spread over a vast area and do not result in localized concentrations in proximity to the project site. In accordance with the SCAQMD “Fact Sheet, Localized Significance Thresholds” (no date), “LSTs only apply to emissions, at a fixed location, including idling emissions, during both project construction and operations. LSTs are not applicable to mobile sources traveling over roadways.” Because the emissions created on-site during project operations (e.g., the combustion of natural gas) are well under those created during construction, and no significant localized impacts were projected for construction, localized modeling for the project operations is not prepared for residential, limited commercial, or light industrial development that does not include a truck terminal(www.aqmd.gov/ej/i-4/i4.htm).

Because CO is the criteria pollutant that is produced in greatest quantities from vehicle combustion and does not readily disperse into the atmosphere, historically, long-term adherence to AAQS was typically demonstrated through an analysis of localized CO concentrations. In the past, areas of vehicle congestion had the potential to create “pockets” of CO called “hot spots.” However, the SCAB has now been designated as an Attainment area of both the State and federal CO standards, and no hot spots have been reported in project area in more than the last 5 years. CO is no longer a localized pollutant of concern near roadways and as such this analysis is no longer necessary.

4.5 Project Potential to Create Objectionable Odors

Less than Significant Impact. Project construction would involve the use of heavy equipment creating exhaust pollutants from on-site earth movement and from equipment bringing concrete and other building materials to the site. With regards to nuisance odors, any air quality impacts will be confined to the immediate vicinity of the equipment itself. By the time such emissions reach any sensitive receptor sites away from the project site, they will be diluted to well below any level of air quality concern. An occasional “whiff” of diesel exhaust from passing equipment and trucks accessing the site from public roadways may result. Such brief exhaust odors are an adverse but less-than-significant, air quality impact. Additionally, some odor would be produced from the application of asphalt, paints, and coatings. Any exposure to these common odors would be of short-term duration and, while potentially adverse, are less than significant.

Operational odors could be produced from on-site food preparation. These odors are common in the environment and would not constitute a significant impact.

4.6 Project Potential to Generate Greenhouse Gas Emissions, Either Directly or Indirectly, that may have a Significant Impact on the Environment

Less than Significant Impact. To provide guidance to local lead agencies on determining significance for GHG emissions in their CEQA documents, the SCAQMD has convened a GHG CEQA Significance Threshold Working Group. The SCAQMD is in the process of establishing a threshold for GHG emissions to determine a project’s regional contribution toward global climate change impacts for California. On December 5, 2008, SCAQMD adopted a threshold of 3,000 metric tons (MTons) of CO₂e per year for residential and commercial projects for which it is the lead agency under CEQA.

With respect to construction, the SCAQMD recommends that the construction emissions be totaled and amortized over a period of 30 years, and added to the emissions generated by the project’s operation.

Construction

The CalEEMod default estimates that construction would take approximately 269 working days to complete. For the purposes of this analysis, construction is estimated to begin on July 1, 2017 and follow the CalEEMod default construction schedule with completion on July 12, 2018. Construction activities would consume fuel and result in the generation of greenhouse gases. Construction CO₂e emissions are as projected using the CalEEMod computer model and included in Table 11.

**Table 11
CONSTRUCTION-RELATED GREENHOUSE GAS EMISSIONS
(Mtons/year)**

| Year | CO ₂ | CH ₄ | N ₂ O | Total CO ₂ e ¹ |
|-----------------------------|-----------------|-----------------|------------------|--------------------------------------|
| 2017 | 181.29 | 0.04 | 0.00 | 182.17 |
| 2018 | 165.12 | 0.03 | 0.00 | 165.89 |
| Total | 346.41 | 0.07 | 0.00 | 348.06 |
| Total per Year ² | 11.55 | 0.00 | 0.00 | 11.60 |

Notes:

¹ Because different gases have different conversion factors, totals may not equal.

² Averaged over a period of 30 years.

Site Operations

In the case of site operations, the majority of greenhouse gas emissions, and specifically CO₂, is due to vehicle travel and energy consumption. As shown in Table 12, the CalEEMod model projects that combined, mobile, area source, energy, waste, and water conveyance would generate 591.55 Mtons of CO₂e on an annual basis. When the construction emissions are amortized over 30 years and added to this value, the total (i.e., 603.15 Mtons of CO₂e) is under the suggested threshold of 3,000 Mtons per year and the impact is less than significant. Additionally, when the existing emissions from the church are removed, the increase is calculated at just 83.73 Mtons of CO₂e on an annual basis and again, is less than significant.

**Table 12
YEARLY OPERATIONAL GREENHOUSE GAS EMISSIONS
(Mtons/year)**

| Source | CO ₂ | CH ₄ | N ₂ O | Total CO ₂ e ¹ |
|----------------|-----------------|-----------------|------------------|--------------------------------------|
| Mobile Sources | 396.85 | 0.02 | 0.00 | 397.29 |
| Electricity | 84.53 | 0.00 | 0.00 | 84.83 |
| Natural Gas | 55.69 | 0.00 | 0.00 | 55.69 |

| | | | | |
|-----------------------------|--------|--------|------|--------|
| Hearth | 15.52 | 0.02 | 0.00 | 16.02 |
| Landscape Maintenance | 0.84 | 0.00 | 0.00 | 0.86 |
| Water Use | 21.82 | 0.11 | 0.00 | 25.29 |
| Waste Disposal | 4.67 | 0.28 | 0.00 | 11.57 |
| Proposed Land Use Sub-Total | 579.92 | 0.43 | 0.00 | 591.55 |
| Construction Amortization | 11.55 | 0.00 | 0.00 | 11.60 |
| Total Yearly Emissions | 591.47 | 0.43 | 0.00 | 603.15 |
| Existing Yearly Emissions | 452.81 | 1.92 | 0.00 | 519.42 |
| Net Increase | 138.66 | <1.49> | 0.00 | 83.73 |
| Threshold | --- | --- | --- | 3,000 |
| Exceeds Threshold? | | | | No |

Notes:

¹ Because different gases have different conversion factors, totals may not equal.

4.7. Project potential to conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases.

Less than Significant Impact. An impact can also be potentially significant if the project does not comply with the applicable plans necessary for the reduction of greenhouse gases. Like air quality impacts, projects that generate de minimus levels (i.e., less than 3,000 Mtons of CO₂e per year) and don't result in a significant impact or can be mitigated to less than significant would be deemed to be in compliance of the local policies with respect to GHG. Even so, the project is subject to the requirements of State Assembly Bill 32 and any requirements set forth therein. Like adherence to SCAQMD requirements (e.g., Rule 403 for dust control), adherence to SB32, and any measures outlined therein, would be requisite and as such, are not mitigation under CEQA.

Construction

As demonstrated above, construction is estimated to generate about 348.06 Mtons of CO₂e. While SCAQMD methodology spreads these emissions over a 30 year project life, this total, even if produced in a single year, is well below the 3,000-Mton threshold value and the cumulative impact to climate change is less than significant. As such, construction would not conflict with existing plans and policies.

Site Operations

As shown above, the operation of the project is anticipated to result in an increase of about 83.73 Mtons of CO₂e on an annual basis and is less than the 3,000-Mton per year threshold suggested by the SCAQMD. As such, the impact is less than significant.

The project would be constructed in accordance with the Green Building Code of the CBC. In addition, the project proposes the following energy efficiencies for new residential buildings:

- Develop in previously developed neighborhood
- Use existing infrastructure
- Build with a density over 7 units per acre
- No invasive plant material
- Limit use of grass
- Use drip irrigation high efficiency system
- Design irrigation system to match needs of plant material
- Use non-toxic pest control

- Use third party inspector for verification of installation of irrigation
- Use High Efficiency bathroom faucets and toilets
- Design heating and air conditioning system to exceed LEED requirements
- Use tankless water heaters
- Use Energy Star appliances
- Use non-toxic air conditioning refrigerant
- Use detailed cut list to minimize waste of framing materials
- Recycle waste material from jobsite
- Use High Efficiency filters on heating and air system
- Seal garage walls to prevent indoor air contamination

Consequently, the project would not conflict with policies or regulations aimed at reducing greenhouse gas.

5.0 References

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Appendices

- Appendix A CalEEMod Model Results for Cottonwood Church's Winter Emissions***
- Appendix B CalEEMod Model Results for Cottonwood Church's Summer Emissions***
- Appendix C CalEEMod Model Results for Cottonwood Church's Annual Emissions***
- Appendix D CalEEMod Model Results for Cottonwood Residential Project's Winter Emissions***
- Appendix E CalEEMod Model Results for Cottonwood Residential Project's Summer Emissions***
- Appendix F CalEEMod Model Results for Cottonwood Residential Project's Annual Emissions***