Heatherglen Planned Development, TTM 17604, CUP 15-006

Initial Study – Mitigated Negative Declaration

Appendix A – Air Quality and Greenhouse Gas Study

Air Quality and Greenhouse Gas Study
Heatherglen Residential Project
City of Highland

Prepared for:

Development 1 Group
2011 E. Financial Way, Suite 203
Glendora, CA, 91741

Prepared by:

ENTECH CONSULTING GROUP
PLANNING • ENVIRONMENTAL • CONSTRUCTION MANAGEMENT

43517 Ridge Park Drive, Suite 200
Temecula, CA 92590
(951) 506-0055

March 2017

Table of Contents

Appendices

List of Figures

List of Tables

1.0 INTRODUCTION

This air quality and greenhouse gas analysis has been prepared to support the proposed residential project's environmental review process and provide information regarding potential impacts to air quality and greenhouse gas (GHG) associated with the approval of the proposed project. This air quality and GHG study describes the existing air quality and GHG environment, identifies applicable rules and regulations, evaluates potential air quality and GHG impacts from development and operation of the project.

1.1 Project Location and Site Description

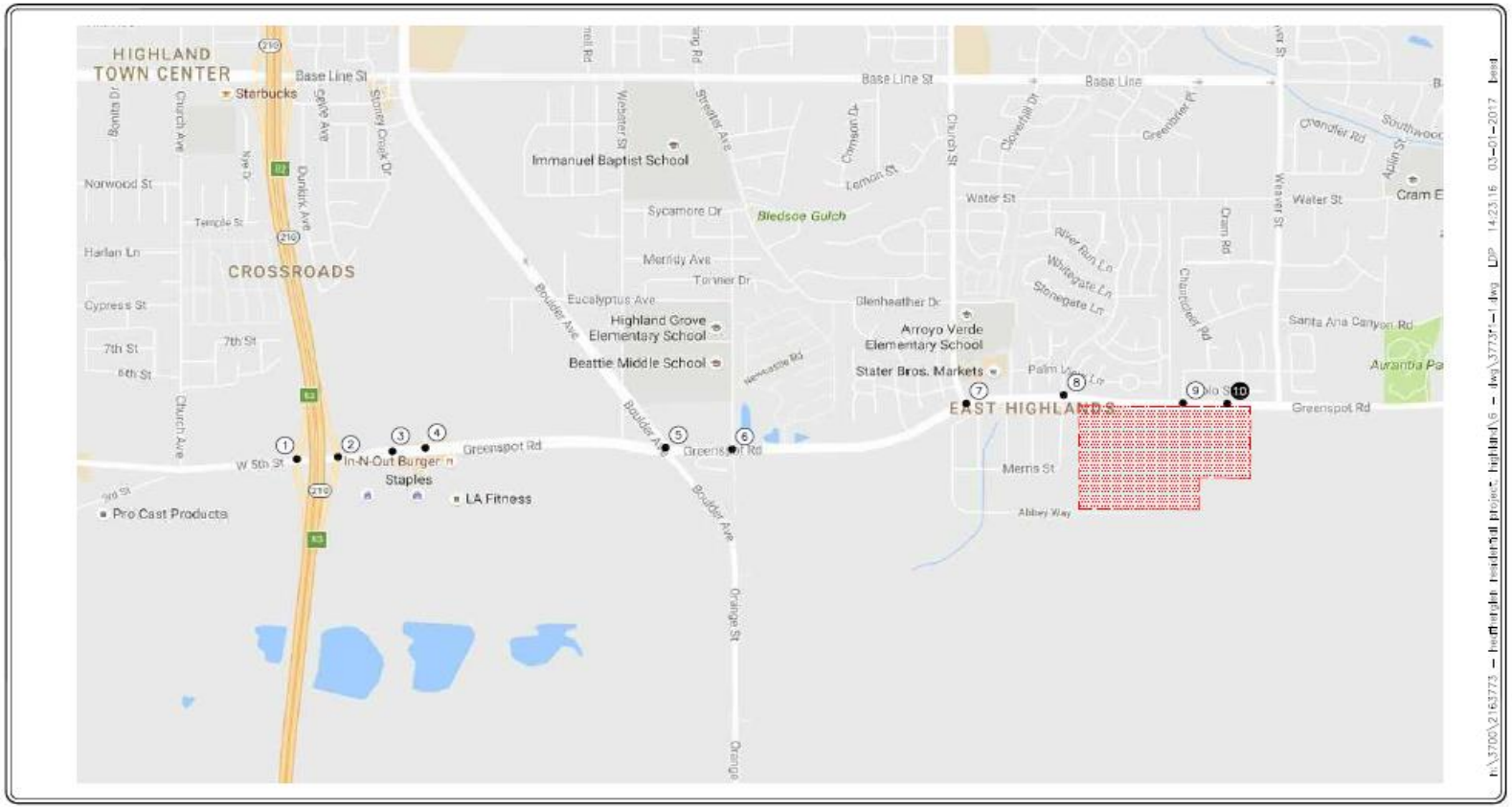
The 59.03- acre project site is located in the City of Highland, on the south side of Greenspot Road, east of Merris Street, and west of the Creek Flood Control Channel, as shown in **Figure 1** and **Figure 2**. The State Route (SR) 210 provides regional access to the project site. The principal local network of streets providing access to the site includes: Greenspot Road, Boulder Avenue, and Church Street.

The project site is currently vacant and undeveloped and has an existing General Plan Land Use and zoning designation of Agricultural/Equestrian Residential (AG/EQ). As described in the City of Highland General Plan Land Use Element, areas designated as Agricultural/Equestrian are appropriate for rural and equestrian-oriented residential development, and the current designations allow a maximum intensity of 2 dwelling units per l acre.

1.2 Project Description

The proposed residential project would develop up to 215 single-family dwelling units, a community park and areas designated for conservation and a retention basin l, as shown in **Figure 3**. The proposed project includes a General Plan Land Use amendment and a zoning designation change from AG/EQ to Planned Development (PD).

The proposed project is expected to be developed by Year 2019. As described by the Traffic Impact Analysis (TIA) prepared for the proposed project (LLG 2017), operation of the 215 single-family dwelling units is anticipated to generate 2,047 weekday daily vehicular trips (one-half arriving, one-half departing), with 161 trips (40 inbound, 121 outbound) in the weekday a.m. peak hour and 215 trips (135 inbound, 80 outbound) in the weekday p.m. peak hour.



N
W E
S

No Scale

Figure 1. Regional Map of Project

Figure 2. Project Vicinity Map Location

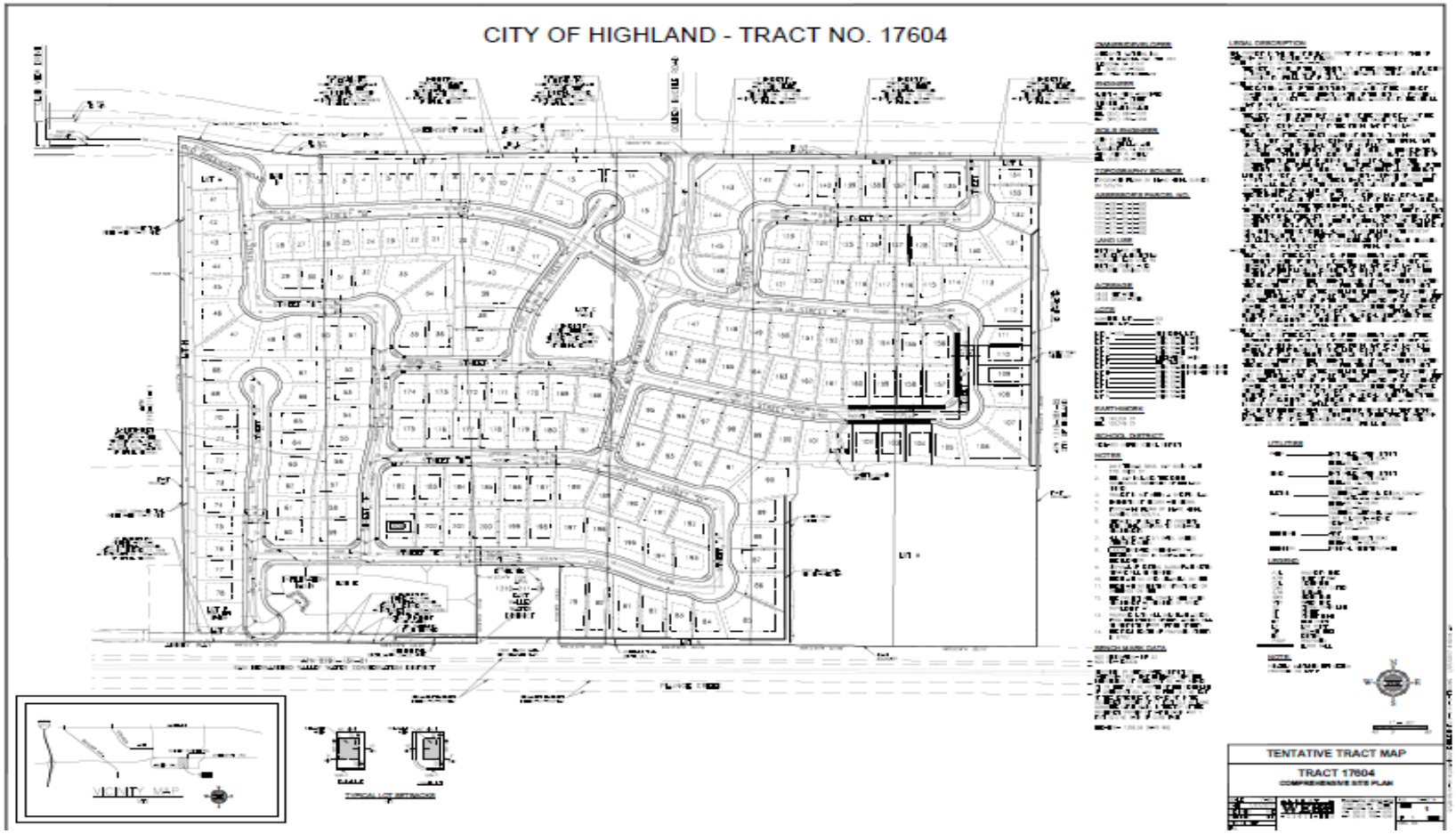


Figure 3. Proposed Project Site Plan

1.3 Sensitive Air Quality Receptors

People that are more susceptible to air quality are young children, the elderly, and people with immune deficiencies. Land uses, such as schools, daycare facilities, hospitals, elderly care facilities, residential properties and other areas that are occupied by people susceptible to air quality pollutants are considered sensitive air quality receptors.

The project area includes various different types of sensitive receptors, including residences and churches, and construction and operation related to the proposed project is approximately 100 feet from the closest sensitive receiver, which are the residences located across Greenspot Road. Due to the distance of the project to this receiver, the project has the potential to impact sensitive receivers, as described in the impact discussion in Section 6.0.

2.0 REGULATORY FRAMEWORK

The governing regulatory framework in the proposed project area includes federal, state and local agencies that enforce ambient air quality standards and specific regulations that govern project development, emitted pollutants, and ambient air quality status for the region.

2.1 Air Quality

Federal Regulations and Standards

Federal Clean Air Act

The federal Clean Air Act (CAA) requires the U.S. Environmental Protection Agency (USEPA) to establish National Ambient Air Quality Standards (NAAQS) [Title 40 Code of Federal Regulations (CFR), Part 50] to protect public health and the environment from the effects of air pollutants. The USEPA has identified "criteria" pollutants that are known to cause harm to public health and the environment. Currently there are standards set for sulfur dioxide (SO_2), carbon monoxide (CO), nitrogen dioxide (NO_2), ozone (O_3), and particulate matter less than ten micrometers in diameter (PM_{10}), particulate matter less than five micrometers in diameter ($PM_{2.5}$) and lead (Pb). These criteria pollutants are described below.

- **Sulfur Dioxide.** SO2 is a colorless, extremely irritating gas or liquid that enters the atmosphere as a pollutant mainly as a result of burning high sulfur-content fuel oils and coal, and from chemical processes occurring at chemical plants and refineries. When SO2 oxidizes in the atmosphere, it forms sulfur trioxide (SO3). Collectively, these pollutants are referred to as sulfur oxides (SOx).

  Major sources of SO2 include power plants, large industrial facilities, diesel vehicles, and oil-burning residential heaters. Emissions of SO2 aggravate lung diseases, especially bronchitis. This compound also constricts the breathing passages, especially in people with asthma and people involved in moderate to heavy exercise. SO2 potentially causes wheezing, shortness of breath, and coughing. Long-term SO2 exposure has been associated with increased risk of mortality from respiratory or cardiovascular disease.

- **Carbon Monoxide.** CO is a colorless and odorless gas, is a relatively non-reactive pollutant that is a product of incomplete combustion and is mostly associated with motor vehicles. When inhaled at high concentrations, CO

combines with hemoglobin in the blood and reduces the oxygen-carrying capacity of the blood. This results in reduced oxygen reaching the brain, heart and other body tissues. This condition is especially critical for people with cardiovascular diseases, chronic lung disease, or anemia. CO measurements and modeling were important in the early 1980s when CO levels were regularly exceeded throughout California. In more recent years, CO measurements and modeling have not been a priority in most California air districts due to the retirement of older polluting vehicles, lower emissions from new vehicles, and improvements in fuels.

- **Nitrogen Dioxide.** NO2 is a reddish-brown gas that is a by-product of combustion processes. Automobiles and industrial operations are the main sources of NO2. Combustion devices emit primarily nitric oxide (NO), which reacts through oxidation in the atmosphere to form NO2. The combined emissions of NO and NO2 are referred to as NOx, which are reported as equivalent NO2. Aside from its contribution to ozone formation, NO2 can increase the risk of acute and chronic respiratory disease and reduce visibility. NO2 may be visible as a coloring component of a brown cloud on high pollution days, especially in conjunction with high ozone levels.

- **Ozone.** Ozone is the main component of photochemical smog, is primarily a summer and fall pollution problem. Ozone is not emitted directly into the air, but is formed through a complex series of chemical reactions involving other compounds that are directly emitted. These directly emitted pollutants (also known as ozone precursors) include reactive organic gases (ROGs) or volatile organic compounds (VOCs), and oxides of nitrogen (NOx). While both ROGs and VOCs refer to compounds of carbon, ROG is a term used by CARB and is identified based on a list of carbon compounds that exempts carbon compounds determined by CARB to be nonreactive. VOC is a term used by the USEPA and is identified based on USEPA's separate list of exempted compounds it identifies as having negligible photochemical reactivity. The time period required for ozone formation allows the reacting compounds to spread over a large area, producing regional pollution problems. Ozone concentrations are the cumulative result of regional development patterns rather than the result of a few significant emission sources.

  Once ozone is formed it remains in the atmosphere for one or two days. Ozone is then eliminated through reaction with chemicals on the leaves of plants,

attachment to water droplets as they fall to earth (rainout), or absorption by water molecules in clouds that later fall to earth with rain (washout).

Short-term exposure to ozone can irritate the eyes and cause constriction of the airways. In addition to causing shortness of breath, ozone can aggravate existing respiratory diseases such as asthma, bronchitis, and emphysema.

- **Particulate Matter.** PM_{10} and $PM_{2.5}$ consist of particulate matter that is 10 microns or less in diameter and 2.5 microns or less in diameter, respectively (a micron is one-millionth of a meter). PM_{10} and $PM_{2.5}$ represent fractions of particulate matter that can be inhaled into the air passages and the lungs and can cause adverse health effects. Acute and chronic health effects associated with high particulate levels include the aggravation of chronic respiratory diseases, heart and lung disease, and coughing, bronchitis and respiratory illnesses in children. Recent mortality studies have shown an association between morbidity and mortality and daily concentrations of particulate matter in the air. Particulate matter can also damage materials and reduce visibility. One common source of $PM_{2.5}$ is diesel exhaust emissions.

  PM_{10} consists of particulate matter emitted directly into the air (e.g., fugitive dust, soot, and smoke from mobile and stationary sources, construction operations, fires, and natural windblown dust) and particulate matter formed in the atmosphere by condensation and/or transformation of SO2 and ROG. Traffic generates particulate matter emissions through entrainment of dust and dirt particles that settle onto roadways and parking lots. PM_{10} and $PM_{2.5}$ are also emitted by burning wood in residential wood stoves and fireplaces and open agricultural burning. $PM_{2.5}$ can also be formed through secondary processes such as airborne reactions with certain pollutant precursors, including ROGs, ammonia (NH3), NOx, and SOx.

- **Lead.** Lead is a metal found naturally in the environment and present in some manufactured products. There are a variety of activities that can contribute to lead emissions, which are grouped into two general categories, stationary and mobile sources. On-road mobile sources include light-duty automobiles; light-, medium-, and heavy-duty trucks; and motorcycles.

  Emissions of lead have dropped substantially over the past 40 years. The reduction before 1990 is largely due to the phase-out of lead as an anti-knock agent in gasoline for on-road automobiles. Substantial emission reductions have

also been achieved due to enhanced controls in the metals processing industry. In the Basin, atmospheric lead is generated almost entirely by the combustion of leaded gasoline and contributes less than one percent of the material collected as total suspended particulates. As lead has been well below regulatory thresholds for decades and the proposed project is not a source of lead, lead is not discussed further in this analysis.

The CAA established two types of national air quality standards. Primary standards set limits to protect public health, including the health of "sensitive" populations such as asthmatics, children, and the elderly. Secondary standards set limits to protect public welfare, including protection against decreased visibility, damage to animals, crops, vegetation, and buildings. Federal standards are shown in **Table 1**.

The federal Clean Air Act also requires each state to prepare an air quality control plan, referred to as a state implementation plan (SIP). The federal Clean Air Act Amendments of 1990 (CAAA) added requirements for states with nonattainment areas to revise their SIPs to incorporate additional control measures to reduce air pollution. The SIP is modified periodically to reflect the latest emissions inventories, planning documents, and rules and regulations of the air basins, as reported by their jurisdictional agencies. USEPA is responsible for reviewing all SIPs to determine whether they conform to the mandates of the federal Clean Air Act and its amendments, and to determine whether implementing the SIPs would achieve air quality goals. In addition, the USEPA sets federal vehicle and stationary source emissions standards and provides research and guidance in air pollution programs.

State Regulations and Standards

California Clean Air Act

In 1988, the state legislature passed the California Clean Air Act, which established California's air quality goals, planning mechanisms, regulatory strategies, and standards of progress for the first time. The California Clean Air Act provides the state with a comprehensive framework for air quality planning regulation and sets state air quality standards. The California Ambient Air Quality Standards, also shown in Table 1, incorporate additional standards for most of the criteria pollutants and has set standards for other pollutants recognized by the state such as sulfates, hydrogen sulfide, vinyl chloride, and visibility-reducing particles. In general, the state standards are more health protective than the federal standards.

Table 1. Federal and State Ambient Air Quality Standards for Criteria Pollutants

Pollutant	Averaging Time[a]	State Standard	National Standard	Pollutant Health and Atmospheric Effects	Major Pollutant Sources
Ozone	1 hour	0.09 ppm	---	High concentrations can directly affect lungs, causing irritation. Long-term exposure may cause damage to lung tissue.	Formed when ROG and NOX react in the presence of sunlight. Major sources include on-road motor vehicles, solvent evaporation, and commercial / industrial mobile equipment.
	8 hours	0.070 ppm	0.075 ppm		
Carbon Monoxide (CO)	1 hour	20 ppm	35 ppm	Classified as a chemical asphyxiant, carbon monoxide interferes with the transfer of fresh oxygen to the blood and deprives sensitive tissues of oxygen.	Internal combustion engines, primarily gasoline-powered motor vehicles.
	8 hours	9.0 ppm	9 ppm		
Nitrogen Dioxide (NO_2)	1 hour	0.18 ppm	0.100 ppm	Irritating to eyes and respiratory tract. Colors atmosphere reddish-brown.	Motor vehicles, petroleum refining operations, industrial sources, aircraft, ships, and railroads.
	Annual Arithmetic Mean	0.030 ppm	0.053 ppm		
Sulfur Dioxide (SO_2)	1 hour	0.25 ppm	75 ppb	Irritates upper respiratory tract; injurious to lung tissue. Can yellow the leaves of plants, destructive to marble, iron, and steel. Limits visibility and reduces sunlight.	Fuel combustion, chemical plants, sulfur recovery plants, and metal processing.
	3 hours	---	0.5 ppm		
	24 hours	0.04 ppm	0.14 ppm		
	Annual Arithmetic Mean	---	0.030 ppm		
Respirable Particulate Matter (PM10)	24 hours	50 µg/m^3	150 µg/m^3	May irritate eyes and respiratory tract, decreases in lung capacity, cancer and increased mortality. Produces haze and limits visibility.	Dust and fume-producing industrial and agricultural operations, combustion, atmospheric photochemical reactions, and natural activities (e.g., wind-raised dust and ocean sprays).
	Annual Arithmetic Mean	20 µg/m^3	---		
Fine Particulate Matter (PM2.5)	24 hours	---	35 µg/m^3	Increases respiratory disease, lung damage, cancer, and premature death. Reduces visibility and results in surface soiling.	Fuel combustion in motor vehicles, equipment, and industrial sources; residential and agricultural burning; Also, formed from photochemical reactions of other pollutants, including NOx, sulfur oxides, and organics.
	Annual Arithmetic Mean	12 µg/m^3	12.0 µg/m^3		
Lead (Pb)	30 Day Average	1.5 µg/m^3	---	Disturbs gastrointestinal system, and causes anemia, kidney disease, and neuromuscular and neurological dysfunction (in severe cases).	Present source: lead smelters, battery manufacturing and recycling facilities. Past source: combustion of leaded gasoline.
	Calendar Quarter	---	1.5 µg/m^3		
	Rolling 3-Month Average	---	0.15 µg/m^3		
Hydrogen Sulfide	1 hour	0.03 ppm	No National Standard	Nuisance odor (rotten egg smell), headache and breathing difficulties (higher concentrations).	Geothermal power plants, petroleum production and refining.
Sulfates (SO_4)	24 hour	25 µg/m^3	No National Standard	Decrease in ventilatory functions; aggravation of asthmatic symptoms; aggravation of cardio-pulmonary disease; vegetation damage; degradation of visibility; property damage.	Industrial processes.
Visibility Reducing Particles	8 hour	Extinction of 0.23/km; visibility of 10 miles or more	No National Standard	Reduces visibility, reduced airport safety, lower real estate value, and discourages tourism.	See $PM_{2.5}$.
Vinyl Chloride	24 hour	0.01 ppm	No National Standard	Short-term exposure to high levels of vinyl chloride in the air can cause dizziness, drowsiness, and headaches. Long-term exposure through inhalation and oral exposure can cause liver damage. Cancer is a major concern from exposure to vinyl chloride via inhalation. Vinyl chloride exposure has been shown to increase the risk of angiosarcoma, a rare form of liver cancer in humans.	Polyvinyl chloride (PVC) plastic and vinyl products.

NOTE: ppm = parts per million; ppb = parts per billion; µg/m^3 = micrograms per cubic meter.
[a] The averaging time is the interval of time over which the sample results are reported.

SOURCE: SCAQMD 2016.

State Implementation Plan

The 1977 Clean Air Act Amendments require that regional planning and air pollution control agencies prepare a regional Air Quality Plan to outline the measures by which both stationary and mobile sources of pollutants can be controlled in order to achieve all standards specified in the Clean Air Act. For areas that are designated "nonattainment" with respect to a standard, the Clean Air Act specifies future dates for achieving compliance with the NAAQS and mandates that states submit and implement a State Implementation Plan (SIP) for local areas not meeting these standards. These plans must include pollution control measures that demonstrate how the standards will be met. Similarly, the 1988 California Clean Air Act also requires development of air quality plans and strategies to meet state air quality standards in areas designated as nonattainment (with the exception of areas designated as nonattainment for the state PM standards). Maintenance plans are required for attainment areas that had previously been designated nonattainment in order to ensure continued attainment of the standards.

Toxic Air Contaminants

TACs have been regulated under federal air quality law since the 1977 federal Clean Air Act Amendments. The most recent federal Clean Air Act Amendments (1990) reflect a technology-based approach for reducing TACs. The first phase involves requiring facilities to install Maximum Achievable Control Technology (MACT). The MACT standards vary depending on the type of emitting source. USEPA has established MACT standards for over 20 facilities or activities, such as perchloroethylene dry cleaning and petroleum refineries. The second phase of control involves determining the residual health risk represented by air toxics emissions sources after implementation of MACT standards. Two principal laws provide the foundation for state regulation of TACs from stationary sources. In 1983, the State Legislature adopted Assembly Bill 1807, which established a process for identifying TACs and provided the authority for developing retrofit air toxics control measures on a statewide basis. Air toxics from stationary sources in California are also regulated under Assembly Bill 2588, the Air Toxics "Hot Spots" Information and Assessment Act of 1987. Regulation of TACs from mobile sources has traditionally been implemented through emissions standards for on-road motor vehicles (imposed on vehicle manufacturers) and through specifications for gasoline and diesel fuel sold in California (imposed on fuel refineries and retailers), rather than through land use decisions, air quality permits, or regulations addressing how motor vehicles are used by the general public.

In August 1998, CARB identified particulate emissions from diesel-fueled engines (diesel particulate matter, or DPM) as TACs. CARB developed the Risk Reduction Plan to Reduce Particulate Matter Emissions from Diesel-Fueled Engines and Vehicles (CARB, 2000). This document provides a plan to reduce diesel particulate emissions, with the goal of reducing emissions and the associated health risks by 75 percent in 2010 and by 85 percent in 2020. The program aims to require the use of state-of-the-art catalyzed diesel particulate filters and ultra-low sulfur diesel fuel on diesel-fueled engines.

Regional Regulations and Standards

The South Coast Air Quality Management District (SCAQMD) is responsible for managing ambient air quality and setting regulations in the South Coast Basin, establishing an air quality monitoring network for measuring levels of criteria pollutants, administering funds to reduce regional mobile source emissions, and permitting stationary air pollutant sources, such as power plants, refineries, and gas stations.

Air Quality Management Plan

The SCAQMD is responsible for developing and adopting an Air Quality Management Plan, which serves as guidance to bring the region into compliance with federal and state air quality standards. The plan includes rules to reduce emissions from various sources, including specific types of equipment, industrial processes, paints, solvents, and other consumer products.

In 2012 an AQMP was adopted by the SCAQMD to set forth a comprehensive and integrated program to obtain regional compliance with the federal 24-hour $PM_{2.5}$ air quality standard, and to provide an update to the SCAB's commitment towards meeting the federal 8-hour ozone standards. The AQMP also served to satisfy USEPA requirements for 1-hour ozone standards, as well as identifying vehicle miles travelled (VMT) emissions. The AQMP sets forth programs which require integrated planning efforts and the cooperation of all levels of government: local, regional, state, and federal. A Supplement to the 2012 AQMP was prepared to demonstrate attainment of the 24-hour $PM_{2.5}$ standard by 2015. The SCAQMD Governing Board approved the Supplement on February 5, 2015, which was also approved by CARB and the USEPA as part of the California SIP (SCAQMD 2016).

In 2016, a new AQMP was developed in partnership with CARB, USEPA, SCAG, and local governments throughout the region. The 2016 AQMP identifies control measures needed to demonstrate attainment with the federal 2008 8-hour ozone standard by 2031,

the 2012 annual $PM_{2.5}$ standard by 2025, and the 24-hour $PM_{2.5}$ standard by 2019 in the SCAB and the 2008 8-hour ozone standard by 2026 in the Coachella Valley. In addition, the 2016 AQMP provides revisions to previous plans regarding attainment of the 1997 8-hour ozone standard by 2023 and the revoked 1-hour ozone standard by 2022. Further, Appendix I (Health Effects) includes a report on the health impacts of particulate matter air pollution in the South Coast Air Basin (SCAQMD 2016).

SCAQMD Rules and Regulations

All development projects are subject to SCAQMD rules and regulations in effect at the time of construction. Specific rules applicable to the construction anticipated under the proposed project would include the following:

Rule 401 – Visible Emissions. A person shall not discharge into the atmosphere from any single source of emission whatsoever any air contaminant for a period or periods aggregating more than three minutes in any 1 hour that is as dark or darker in shade as that designated No. 1 on the Ringelmann Chart, as published by the United States Bureau of Mines.

Rule 402 – Nuisance. A person shall not discharge from any source whatsoever such quantities of air contaminants or other material that cause injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public, or that endanger the comfort, repose, health, or safety of any such persons or the public, or that cause, or have a natural tendency to cause, injury or damage to business or property. The provisions of this rule do not apply to odors emanating from agricultural operations necessary for the growing of crops or the raising of fowl or animals.

Rule 403 – Fugitive Dust. This rule is intended to reduce the amount of particulate matter entrained in the ambient air as a result of anthropogenic (human-made) fugitive dust sources by requiring actions to prevent, reduce, or mitigate fugitive dust emissions. Rule 403 applies to any activity or human-made condition capable of generating fugitive dust.

Rule 445 – Wood Burning. This rule prohibits permanently installed wood burning devices into any new development. A wood burning device means any fireplace, wood burning heater, or pellet-fueled wood heater, or any similarly enclosed, permanently installed, indoor or outdoor device burning any solid fuel for aesthetic or space-heating purposes, which has a heat input of less than one million British thermal units per hour.

Rule 481 – Spray Coating. This rule applies to all spray painting and spray coating operations and equipment and states that a person shall not use or operate any spray painting or spray coating equipment unless one of the following conditions is met:

- The spray coating equipment is operated inside a control enclosure, which is approved by the Executive Officer. Any control enclosure for which an application for permit for new construction, alteration, or change of ownership or location is submitted after the date of adoption of this rule shall be exhausted only through filters at a design face velocity not less than 100 feet per minute nor greater than 300 feet per minute, or through a water wash system designed to be equally effective for the purpose of air pollution control.

- Coatings are applied with high-volume low-pressure, electrostatic and/or airless spray equipment.

- An alternative method of coating application or control is used which has effectiveness equal to or greater than the equipment specified in the rule.

Rule 1108 - Volatile Organic Compounds. This rule governs the sale, use, and manufacturing of asphalt and limits the volatile organic compound (VOC) content in asphalt used in the Basin. This rule also regulates the VOC content of asphalt used during construction. Therefore, all asphalt used during construction of the project must comply with SCAQMD Rule 1108.

Rule 1113 – Architectural Coatings. No person shall apply or solicit the application of any architectural coating within the SCAQMD with VOC content in excess of the values specified in a table incorporated in the Rule.

Rule 1143 – Paint Thinners and Solvents. This rule governs the manufacture, sale, and use of paint thinners and solvents used in thinning of coating materials, cleaning of coating application equipment, and other solvent cleaning operations by limiting their VOC content. This rule regulates the VOC content of solvents used during construction. Solvents used during the construction phase must comply with this rule.

Rule 1186 – Fugitive Dust. This rule limits the presence of fugitive dust on paved and unpaved roads and sets certification protocols and requirements for street sweepers that are under contract to provide sweeping services to any federal, state, county, agency or special district such as water, air, sanitation, transit, or school district.

Rule 1303 – Major Emission Sources. This rule governs the permitting of re-located or new major emission sources, requiring Best Available Control Measures and setting significance limits for PM_{10} among other pollutants.

Rule 1401– New Source Review of Toxic Air Contaminants. This rule specifies limits for maximum individual cancer risk, cancer burden, and non-cancer acute and chronic hazard index from new permit units, relocations, or modifications to existing permit units, which emit toxic air contaminants.

2.2 Greenhouse Gas

Federal Regulations and Standards

Federal Clean Air Act

The federal CAA requires the USEPA to define national ambient air quality standards to protect public health and welfare in the U.S. The CAA does not specifically regulate GHG emissions; however, on April 2, 2007 the U.S. Supreme Court in Massachusetts v. U.S. Environmental Protection Agency, determined that GHGs are pollutants that can be regulated under the CAA. Currently, there are no federal regulations that establish ambient air quality standards for GHGs.

The USEPA Administrator determined that atmospheric concentrations of GHGs endanger the public health and welfare within the meaning of Section 202(a) of the CAA, and on December 7, 2009, the EPA Administrator signed two findings regarding greenhouse gases under Section 202(a) of the Clean Air Act that include:

- **Endangerment Finding:** The current and projected concentrations of the six key well-mixed greenhouse gases—carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride—in the atmosphere threaten the public health and welfare of current and future generations.

- **Cause or Contribute Finding:** The combined emissions of these well-mixed greenhouse gases from new motor vehicles and new motor vehicle engines contribute to greenhouse gas pollution, which threatens public health and welfare.

These findings do not impose requirements on developments or agencies. However, this was a prerequisite for implementing emissions standards for vehicles.

Fuel Economy Standards

The federal Corporate Average Fuel Economy (CAFE) standards for vehicles in model years 2011 to 2016 (first phase of standards) and 2017 to 2025 (second phase) provide strict fuel economy requirements. These standards are projected to result in an average industry fleetwide level of 163 grams/mile of carbon dioxide (CO_2) in model year 2025, which is equivalent to 54.5 miles per gallon (mpg) if achieved exclusively through fuel economy improvements. The program is projected to:

- Cut 6 billion metric tons of GHG over the lifetimes of the vehicles sold in model years 2012-2025.
- Save families more than $1.7 trillion in fuel costs.
- Reduce America's dependence on oil by more than 2 million barrels per day in 2025.

As part of the 2017-2025 standards rulemaking, USEPA, National Highway Traffic Safety Administration, and California Air Resources Board, an evaluation of the standards is to be completed for vehicle model years 2022-2025.

Clean Power Plan

On August 3, 2015, President Obama and the USEPA announced the Clean Power Plan. The Clean Power Plan sets standards to reduce carbon dioxide emissions by 32 percent from 2005 levels by 2030. This Plan establishes final emissions guidelines for states to follow in developing plans to reduce GHG emissions from existing fossil fuel-fired electric generating units. Specifically, the USEPA established: (1) carbon dioxide emission performance rates representing the best system of emission reduction for fossil fuel-fired electric utility steam generating units and stationary combustion turbines; (2) state-specific CO_2 goals reflecting the CO_2 emission performance rates; and (3) guidelines for the development, submittal and implementation of state plans that establish emission standards or other measures to implement the CO_2 emission performance rates, which may be accomplished by meeting the state goals. Overall, this rule will reduce CO_2 emissions from the utility power sector (Obama 2015).

State Regulations and Standards

There are currently no state regulations in California that establish ambient air quality standards for GHGs. However, California has passed laws directing CARB to develop actions to reduce GHG emissions, and there are several state legislative actions related to climate change and GHG emissions.

Executive Order S-3-05

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

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

Executive Order S-30-15

California Governor Brown announced on April 29, 2015 through Executive Order B-30-15 a new statewide policy goal to reduce GHG emissions 40 percent below their 1990 levels by 2030. This order acts as an intermediate goal to achieving 80 percent reductions by 2050 as outlined in Executive Order S-3-05, above.

Assembly Bill 32 – California Global Warming Solutions Act

California Assembly Bill 32 (AB 32), the Global Warming Solutions Act of 2006, requires CARB to establish a statewide GHG emissions cap for 2020 based on 1990 emission levels. In December 2007 CARB adopted 427 MT CO2e as the statewide GHG emissions limit equivalent to the statewide levels for 1990. This is approximately 28 percent below forecasted 2020 "business-as-usual" emissions of 596 MMT of CO2e, and about 10 percent below average annual GHG emissions during the period of 2002 through 2004 (CARB 2016).

Climate Change Scoping Plan

In December 2008, CARB approved the AB 32 Scoping Plan outlining the state's strategy to achieve the 2020 GHG emissions limit. This Scoping Plan, developed by CARB in coordination with the Climate Action Team (CAT), provides a comprehensive set of actions designed to reduce overall GHG emissions in California, improve the environment, reduce dependence on oil, diversify California's energy sources, save energy, create new jobs, and enhance public health.

As required by AB 32, the Scoping Plan must be updated at least every five years to evaluate the mix of AB 32 policies to ensure that California is on track to meet the targets set out in the legislation. In 2014 an update to the initial Scoping Plan was developed by CARB in collaboration with the California Climate Action Team (CCAT) that built upon the initial Scoping Plan with new strategies and expanded measures, and identifies

opportunities to leverage existing and new funds to drive GHG emission reductions through strategic planning and targeted program investments.

As part of the updated to the Scoping Plan, emissions reductions required to meet the 2020 statewide GHG emissions limit were further adjusted. The adjustment resulted is 431 MMTCO2e, which is slightly higher than the 427 MMTCO2e limit of the initial Scoping Plan. The update also adjusted the 2020 BAU forecast of GHG emissions to 509 MMTCO2e, a 15 percent reduction below the estimated BAU levels was determined to be necessary to return to 1990 levels by 2020 (CARB 2014).

Executive Order S-1-07

Executive Order S-1-07, which was signed by Governor Schwarzenegger in 2007, proclaims that the transportation sector is the main source of GHG emissions in California. It establishes a goal to reduce the carbon intensity of transportation fuels sold in California by at least 10 percent by 2020. As a result of this order, CARB approved a proposed regulation to implement the low carbon fuel standard (LCFS) on April 23, 2009, which will reduce GHG emissions from the transportation sector in California by about 16 MMT in 2020. The LCFS is designed to reduce California's dependence on petroleum, create a lasting market for clean transportation technology, and stimulate the production and use of alternative, low-carbon fuels in California. The LCFS is designed to provide a durable framework that uses market mechanisms to spur the steady introduction of lower carbon fuels. The framework establishes performance standards that fuel producers and importers must meet each year beginning in 2011.

Senate Bill 375

SB 375 established mechanisms to develop regional targets to reduce passenger vehicle greenhouse gas emissions, and was adopted on September 30, 2008. On September 23, 2010, California ARB adopted the vehicular greenhouse gas emissions reduction targets that had been developed in consultation with the metropolitan planning organizations (MPOs); the targets require a 7 to 8 percent reduction by 2020 and between 13 to 16 percent reduction by 2035 for each MPO. SB 375 recognizes the importance of achieving significant greenhouse gas reductions by working with cities and counties to change land use patterns and improve transportation alternatives. Through the SB 375 process, MPOs, such as the Southern California Council of Governments (SCAG) will work with local jurisdictions in the development of sustainable communities strategies (SCS) designed to integrate development patterns and the transportation network in a way that reduces greenhouse gas emissions while meeting housing needs and other regional planning

objectives. SCAG's reduction target for per capita vehicular emissions is 8 percent by 2020 and 13 percent by 2035 (CARB, 2010).

California Green Building Standard Code

In 2016 the California Building Standards Commission adopted the 2016 California Building Standards Code that also included the latest CALGreen Code, which became effective on January 1, 2017. The mandatory provisions of the code are anticipated to reduce emissions, reduce water use, and divert construction waste from landfills. The California Energy Commission (CEC) indicates that the 2016 Title 24 standards will reduce energy consumption by 5 percent for nonresidential buildings above that achieved by the 2013 Title 24 (CEC 2016).

Clean Energy Reduction Act

Clean Energy and Pollution Reduction Act of 2015, Senate Bill (SB) 350 (Chapter 547, Statutes of 2015) was approved by Governor Brown on October 7, 2015. SB 350 will (1) increase standards by requiring that the amount of electricity generated and sold to retail customers per year from eligible renewable energy resources be increased to 50 percent by December 31, 2030; (2) require the State Energy Resources Conservation and Development Commission to establish annual targets for statewide energy efficiency savings and demand reduction that would achieve a cumulative doubling of statewide energy efficiency savings in electricity and natural gas final end uses of retail customers by January 1, 2030; (3) provide for the evolution of the Independent System Operator (ISO) into a regional organization; and (4) require the state to reimburse local agencies and school districts for certain costs mandated by the state through procedures established by statutory provisions. This Act is intended to double the energy efficiency savings in electricity and natural gas final end uses of retail customers through energy efficiency and conservation (Brown 2015).

Regional Regulations and Standards

South Coast Air Quality Management District

The SCAQMD formed a working group to identify greenhouse gas emissions thresholds for land use projects that could be used by local lead agencies in the air basin in 2008. The working group developed tiered threshold options that are contained in the SCAQMD Draft Guidance Document – Interim CEQA Greenhouse Gas Significance Threshold, that could be applied by lead agencies. The working group has not provided additional guidance since release of the interim guidance in 2008; however, the Guidance Document provides substantial evidence supporting the approaches to significance of

GHG emissions that can be considered by the lead agency in adopting its own threshold. The SCAQMD identified thresholds consist of the following tiered approach:

- Tier 1 consists of evaluating whether or not the project qualifies for any applicable exemption under CEQA.
- Tier 2 consists of determining whether the project is consistent with a greenhouse gas reduction plan. If a project is consistent with a qualifying local greenhouse gas reduction plan, it does not have significant greenhouse gas emissions.
- Tier 3 consists of screening values. A project's construction emissions are averaged over 30 years and are added to the project's operational emissions. If a project's emissions are below one of the following screening thresholds, then the project is less than significant:
    - All land use types: 3,000 $MTCO_2e$ per year
    - Based on land use type: residential: 3,500 $MTCO_2e$ per year; commercial: 1,400 $MTCO_2e$ per year; or mixed use: 3,000 $MTCO_2e$ per year

The Tier 3 screening threshold uses the Executive Order S-3-05 year 2050 goal as its basis. Achieving the Executive Order's objective would contribute to worldwide efforts to cap carbon dioxide concentrations at 450 ppm, thus stabilizing global climate.

Local Regulations and Standards

San Bernardino Associated Governments Regional Greenhouse Gas Reduction Plan

In June 2013, the San Bernardino Associated Governments (SANBAG) released a draft Regional Greenhouse Gas Reduction Plan, which summarizes the actions that each city has selected in order to reduce GHG emissions, state-mandated actions, GHG emissions avoided in 2020 associated with each local and state action, and each city's predicted progress towards their selected GHG reduction goals.

Each city has selected a goal to reduce their community GHG emissions from BAU levels by the year 2020. Each city has selected their goal based on what each city considers feasible given the local conditions within that city.

The City of Highland has selected a goal to reduce its community GHG emissions to a level that is 22 percent below its projected emissions in 2020. The City will meet and exceed this goal subject to reduction measures that are technologically feasible and cost-effective per AB 32 through a combination of state and local efforts. The City would exceed the goal with only state/county level actions, but has committed to several

additional local measures. The Pavley vehicle standards, the state's low carbon fuel standard, the RPS, and other state measures will reduce GHG emissions in Highland's on-road, solid waste, and building energy sectors in 2020. An additional reduction of will be achieved by local measures related to water efficiency, solar energy, SmartBus technologies and wastewater treatment, as well as a performance standard for new development that seeks to achieve a 29 percent reduction below projected BAU emissions for new projects.

3.0 ENVIRONMENTAL SETTING

3.1 Air Quality

Regional Setting

The ambient concentrations of air pollutants within the basin are determined by the amount of emissions released by sources and the atmosphere's ability to transport and dilute the emissions. Air quality conditions are generated by topography, wind speed, wind direction, air temperature gradients, and emissions released by air pollutant sources, which interact to move and disperse air pollutants.

The project's planning area is located within SCAB. The topography and climate within SCAB make it an area of high air pollution potential. The SCAB is a coastal plain with connecting broad valleys and low hills, bounded by the Pacific Ocean to the west and high mountains around the rest of the perimeter. The general region lies in the semi-permanent high-pressure zone of the eastern Pacific, resulting in a mild climate tempered by cool sea breezes with light average wind speeds. During the summer months, a warm air mass frequently descends over the cool, moist marine layer produced by the interaction between the ocean's surface and the lowest layer of the atmosphere. The warm upper layer forms a cap over the cool marine layer and inhibits the pollutants in the marine layer from dispersing upward. In addition, light winds during the summer further limit ventilation, and sunlight triggers the photochemical reactions that produce ozone.

Local Setting

SCAQMD maintains monitoring stations within district boundaries that monitor air quality and compliance with associated ambient standards. The project site is located in the Source Receptor Area (SRA) 34, Central San Bernardino Valley. Concentrations from the monitoring station in SRA 34 for the most recent three years (2013 – 2015) are provided in **Table 2**.

Table 2. Air Quality Data Summary (2013-2015)

Pollutant	Standard[a]	Monitoring Data by Year 2013	2014	2015
Ozone				
Highest 1 Hour Average (ppm)		0.139	0.121	0.134
Days over State Standard	0.09 ppm	22	38	52
Highest 8 Hour Average (ppm)		0.112	0.099	0.117
Days over Federal Standard	0.075 ppm	36	75	78
Days over State Standard	0.070 ppm	53	76	79
Carbon Monoxide				
Highest 8 Hour Average (ppm)		1.7	2.4	2.3
Days over Federal Standard	9.0 ppm	0	0	0
Days over State Standard	9.0 ppm	0	0	0
Nitrogen Dioxide				
Highest 1 Hour Average (ppb)		72.2	72.6	71.4
Days over Federal Standard	0.100 ppm	0	0	0
Days over State Standard	0.18 ppm	0	0	0
Annual Average (ppb)		17.6	18.0	15.2
Days over Federal Standard	0.053 ppm	0	0	0
Days over State Standard	0.030 ppm	0	0	0
Sulfur Dioxide				
Highest 1 Hour Average (ppm)		0.04	0.04	0.04
Days over Federal Standard	0.14 ppm	0	0	0
Days over State Standard	0.04 ppm	0	0	0
Particulate Matter (PM_{10})				
Highest 24 Hour Average ($\mu g/m^3$)[b]		102	140	78
Days over Federal Standard (measured)[c]	150 $\mu g/m^3$	0	0	0
Days over State Standard (measured)[c]	50 $\mu g/m^3$	3	18	17
Annual Average ($\mu g/m^3$)[b]	20 $\mu g/m^3$	31.3	34.2	30.7
Particulate Matter ($PM_{2.5}$)				
Highest 24 Hour Average ($\mu g/m^3$)[b]		55.3	73.9	53.5
Days over Federal Standard (measured)[c]	35 $\mu g/m^3$	1	1	2
Annual Average ($\mu g/m^3$)[b]		11.4	11.67	10.74

NOTES:
ppm = parts per million; $\mu g/m^3$ = micrograms per cubic meter.

[a] Generally, state standards and national standards are not to be exceeded more than once per year.

[b] Values represent federal statistics and are midnight-to-midnight 24-hour averages. State and federal statistics may differ because of different sampling methods.

[c] Measurements are usually collected every six days. Days over the standard represent the measured number of days that the standard has been exceeded.

SOURCE: SCAQMD, 2015, 2014, 2013.

Both CARB and USEPA use this type of monitoring data to designate areas according to their attainment status for criteria air pollutants. The purpose of these designations is to identify the areas with air quality problems and thereby initiate planning efforts for

improvement. The three basic designation categories are nonattainment, attainment, and unclassified. Unclassified is used in an area that cannot be classified on the basis of available information as meeting or not meeting the standards. In addition, the California designations include a subcategory of nonattainment-transitional, which is given to nonattainment areas that are progressing and nearing attainment. The current attainment status for the SCAB is provided in **Table 3**.

Table 3. South Coast Air Basin Attainment Status

	Attainment Status	
Pollutant	**Federal Standards**	**State Standards**
Ozone (1-hour)	Non-attainment/Extreme	Non-attainment
Ozone (8-hour)	Non-attainment/Extreme	Non-attainment
PM_{10}	Attainment/Maintenance	Non-attainment
$PM_{2.5}$	Non-attainment	Non-attainment
Carbon Monoxide	Attainment/Maintenance	Attainment
Nitrogen Dioxide	Attainment/Maintenance	Attainment
Sulfur Dioxide	Attainment	Attainment
Sulfates	N/A	Attainment
Lead	Non-attainment	Non-attainment
Hydrogen Sulfide	N/A	Attainment
Visibility Reducing Particles	N/A	Attainment
Vinyl	N/A	Attainment

SOURCE: CARB, 2016.

Toxic Air Contaminants

Concentrations of toxic air contaminants (TACs), or in federal parlance, hazardous air pollutants (HAPs), are also used as indicators of ambient air quality conditions. A TAC is defined as an air pollutant that may cause or contribute to an increase in mortality or in serious illness, or that may pose a hazard to human health. TACs are usually present in minute quantities in the ambient air; however, their high toxicity or health risk may pose a threat to public health even at low concentrations.

According to The California Almanac of Emissions and Air Quality (CARB, 2009), the majority of the estimated health risk from TACs can be attributed to relatively few compounds, the most important being particulate matter from diesel-fueled engines (diesel PM). Diesel PM differs from other TACs in that it is not a single substance, but rather a complex mixture of hundreds of substances. Although diesel PM is emitted by diesel-fueled internal combustion engines, the composition of the emissions varies

depending on engine type, operating conditions, fuel composition, lubricating oil, and whether an emission control system is present.

Unlike the other TACs, no ambient monitoring data are available for diesel PM because no routine measurement method currently exists. However, CARB has made preliminary concentration estimates based on a particulate matter exposure method. This method uses the CARB emissions inventory's PM_{10} database, ambient PM_{10} monitoring data, and the results from several studies to estimate concentrations of diesel PM. In addition to diesel PM, the TACs for which data are available that pose the greatest existing ambient risk in California are benzene, 1,3-butadiene, acetaldehyde, carbon tetrachloride, hexavalent chromium, para-dichlorobenzene, formaldehyde, methylene chloride, and perchloroethylene.

Stationary source TACs tend to be approximately the same level year-round. However, TACs from mobile sources tend to be higher during the fall and winter months (SCAQMD 2000). According to the MATES III Model Estimated Carcinogenic Risk, the Plan area is within 5 cancer risk zones where risk ranges from 500 in one million to 1,200 in one million. The project area is identified as having a cancer risk of 559 in one million, which is largely due to diesel particulate emissions from roadways (SCAQMD Mates 2017).

Odorous Emissions

Odors are generally regarded as an annoyance rather than a health hazard. However, manifestations of a person's reaction to foul odors can range from psychological (e.g., irritation, anger, or anxiety) to physiological (e.g., circulatory and respiratory effects, nausea, vomiting, and headache). Offensive odors are unpleasant and can lead to public distress generating citizen complaints to local governments. The occurrence and severity of odor impacts depend on the nature, frequency, and intensity of the source, wind speed, direction, and the sensitivity of receptors. There are no existing land uses in the project area that generate noxious odorous emissions.

3.2 Greenhouse Gas

Gases that trap heat in the atmosphere are called GHGs. The major concern with GHGs is that increases in their concentrations are causing global climate change. Global climate change is a change in the average weather on Earth that can be measured by wind patterns, storms, precipitation, and temperature. Although there is disagreement as to the rate of global climate change and the extent of the impacts attributable to human

activities, most in the scientific community agree that there is a direct link between increased emissions of GHGs and long term global temperature increases.

The principal GHGs are carbon dioxide (CO_2), methane (CH4), nitrous oxide (N2O), sulfur hexafluoride (SF6), perfluorocarbons (PFCs), and hydrofluorocarbons (HFCs). Because different GHGs have different warming potential and CO2 is the most common reference gas for climate change, GHG emissions are often quantified and reported as CO2 equivalents (CO_{2e}). For example, SF6 is a GHG commonly used in the utility industry as an insulating gas in circuit breakers and other electronic equipment. SF6, while comprising a small fraction of the total GHGs emitted annually world-wide, is a much more potent GHG with 22,800 times the global warming potential as CO2. Therefore, an emission of one metric ton (MT) of SF6 could be reported as an emission of 22,800 MT of CO2e. Large emission sources are reported in million metric tons (MMT) of CO2e. The principal GHGs are described below, along with their global warming potential.

Carbon dioxide: Carbon dioxide (CO2) is an odorless, colorless, natural greenhouse gas. Carbon dioxide's global warming potential is 1. Natural sources include decomposition of dead organic matter; respiration of bacteria, plants, animals, and fungus; evaporation from oceans; and volcanic outgassing. Anthropogenic sources are from burning coal, oil, natural gas, and wood.

Methane: Methane is a flammable gas and is the main component of natural gas. It has a lifetime of 12 years, and its global warming potential is 28. Methane is extracted from geological deposits (natural gas fields). Other sources are landfills, fermentation of manure, and decay of organic matter.

Nitrous oxide: Nitrous oxide (laughing gas) is a colorless greenhouse gas that has a lifetime of 121 years, and its global warming potential is 265. Sources include microbial processes in soil and water, fuel combustion, and industrial processes.

Sulfur hexafluoride: Sulfur hexafluoride is an inorganic, odorless, colorless, and nontoxic, nonflammable gas that has a lifetime of 3,200 years and a high global warming potential of 23,500. This gas is manmade and used for insulation in electric power transmission equipment, in the magnesium industry, in semiconductor manufacturing, and as a tracer gas.

Perfluorocarbons: Perfluorocarbons have stable molecular structures and only break down by ultraviolet rays about 60 kilometers above Earth's surface. Because of this, they

have long lifetimes, between 10,000 and 50,000 years global warming potentials range from 7,000to 11,000. Two main sources of perfluorocarbons are primary aluminum production and semiconductor manufacturing.

Hydrofluorocarbons: Hydrofluorocarbons are a group of greenhouse gases containing carbon, chlorine, and at least one hydrogen atom. Global warming potentials range from 100 to 12,000. Hydrofluorocarbons are synthetic manmade chemicals used as a substitute for chlorofluorocarbons in applications such as automobile air conditioners and refrigerants.

Some of the potential effects in California of global warming may include loss in snow pack, sea level rise, more extreme heat days per year, more high ozone days, more forest fires, and more drought years (CARB, 2009). Globally, climate change has the potential to impact numerous environmental resources through potential, though uncertain, impacts related to future air temperatures and precipitation patterns. The projected effects of global warming on weather and climate are likely to vary regionally, but are expected to include the following direct effects (IPCC, 2001):

- Higher maximum temperatures and more hot days over nearly all land areas;
- Higher minimum temperatures, fewer cold days and frost days over nearly all land areas;
- Reduced diurnal temperature range over most land areas;
- Increase of heat index over land areas; and
- More intense precipitation events.

Also, there are many secondary effects that are projected to result from global warming, including global rise in sea level, impacts to agriculture, changes in disease vectors, and changes in habitat and biodiversity. While the possible outcomes and the feedback mechanisms involved are not fully understood and much research remains to be done, the potential for substantial environmental, social, and economic consequences over the long term may be great.

GHGs are produced by both direct and indirect emissions sources. Direct emissions include consumption of natural gas, heating and cooling of buildings, landscaping activities and other equipment used directly by land uses. Indirect emissions include the consumption of fossil fuels for vehicle trips, electricity generation, water usage, and solid waste disposal.

California produced 459 gross MMTCO2e in 2013 (CARB, 2014a). Combustion of fossil fuel in the transportation sector was the single largest source of California's GHG emissions in 2012, accounting for 36 percent of total GHG emissions in the state (CARB, 2014a). This sector was followed by the electric power sector (including both in-state and out-of-state sources) (21 percent) and the industrial sector (19 percent) (CARB, 2014a).

4.0 Thresholds of Significance

4.1 Air Quality

Appendix G of the California Environmental Quality Act (CEQA) Guidelines states that a project could have a significant adverse effect on air quality if any of the following would occur:

- 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 cumulative considerable net increase of any criteria pollutant for which the project region is nonattainment under any applicable federal or state ambient air quality standard (including releasing emission which exceeds quantitative thresholds for ozone precursors);
- Expose sensitive receptors to substantial pollutant concentrations; and
- Create objectionable odors affecting a substantial number of people.

Regional Air Quality Significance Thresholds

The City of Highland has not developed specific air quality thresholds for air quality impacts. However, as stated in Appendix G of the *CEQA Guidelines*, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the above determinations. As such, the significance thresholds and analysis methodologies in SCAQMD's CEQA Air Quality Handbook are used in evaluating project impacts. SCAQMD has established daily mass thresholds for regional pollutant emissions, which are shown in **Table 4**.

Table 4. SCAQMD Regional Air Quality Significance Thresholds

	Mass Daily Thresholds (lbs/day)	
Pollutant	**Construction**	**Operations**
Oxides of Nitrogen (NO_X)	100	55
Reactive Organic Gases (ROG)	75	55
Respirable Particulate Matter (PM_{10})	150	150
Fine Particulate Matter ($PM_{2.5}$)	55	55
Oxides of Sulfur (SO_X)	150	150
Carbon Monoxide (CO)	550	550
Lead[a]	3	3
TACs (including carcinogens and non-carcinogens	Maximum Incremental Cancer Risk ≥ 10 in 1 million Cancer Burden > 0.5 excess cancer cases (in areas ≥ 1 in 1 million) Chronic & Acute Hazard Index ≥ 1.0 (project increment)	

[a] As the proposed project would not involve the development of any major lead emissions sources, lead emissions are not analyzed further.

SOURCE: SCAQMD 2016.

Localized Air Quality Significance Thresholds

SCAQMD has developed Local Significance Thresholds (LSTs) that represent the maximum emissions from a project that are not expected to cause or contribute to an exceedance of the most stringent applicable federal or state ambient air quality standards, and thus would not cause or contribute to localized air quality impacts. LSTs are only applicable to the following criteria pollutants: NOx, CO, PM_{10}, and $PM_{2.5}$. LSTs are developed based on the ambient concentrations of that pollutant for each of the 38 source receptor areas (SRAs) in the SCAB. The localized thresholds, which are found in the mass rate look-up tables in SCAQMD's Final Localized Significance Threshold Methodology document, were developed for use on projects that are less than or equal to five acres in size or have a disturbance of less than or equal to 5 acres daily. Although the project site is 59.03-acres, the project is anticipated to have a disturbance of less than 5-acres daily. In addition, use of the 5-acre site LST threshold provides a conservative evaluation because the project activities within the 59.03-acre project site are evaluated as if they would occur within a 5-acre area; thus, concentrating pollutants over a smaller area and increasing potential to exceed an air quality standard. Therefore, if the emissions from the project would not exceed the applicable LSTs for a 5-acre site, then the project impacts would not be significant.

SCAQMD only provides LSTs at receptor distances of 82, 164, 328, 656, and 1,640 feet from the emissions source. The closest sensitive receptor are the residences located across Greenspot Road, which are approximately 100 feet away from the project site. Although this sensitive receptor is located farther than 82 feet of the project site, using the 82-foot threshold provides a conservative analysis, indicating the maximum potential impact that could occur from the proposed project. Therefore, the LSTs for a 5-acre site in SRA 34 (Central San Bernardino Valley) at a distance of 82 feet from a sensitive receiver (shown in **Table 5**), were used to evaluate the project's localized air quality impacts.

Table 5. SCAQMD Localized Significance Thresholds for a Five-Acre Site

Pollutant Monitored Within SRA 34 – Central San Bernardino Valley	Allowable Emissions (pounds/day) at 82 Feet (25 Meters)
Nitrogen Oxides (NOx)	270
Carbon Monoxide (CO)	1,746
Respirable Particulate Matter (PM_{10})	14
Fine Particulate Matter ($PM_{2.5}$)	8

SOURCE: SCAQMD, 2009.

Under conditions where the project's onsite emissions would, even with incorporation of mitigation, exceed the LSTs thresholds, air dispersion modeling of the project's emissions would be required to evaluate the potential localized air quality impacts of the proposed project on its surrounding sensitive receptors, in accordance with SCAQMD's recommendation. However, under conditions where it is determined that the project's peak daily emissions would not exceed the LSTs thresholds, then it can be concluded that the project's emissions would not result in adverse localized air quality impacts on surrounding sensitive receptors.

CO Hotspots

In the past, the qualitative screening procedure in the procedures in the Transportation Project-Level Carbon Monoxide Protocol (the Protocol) was used to determine whether a project poses the potential for a CO hotspot. According to the Protocol, projects may worsen air quality if they increase the percentage of vehicles in cold start modes by two percent or more; significantly increase traffic volumes (by five percent or more) over existing volumes; or worsen traffic flow, defined for signalized intersections as increasing average delay at intersections operating at level of service (LOS) E or F or causing an intersection that would operate at LOS D or better without the project, to operate at LOS E or F.

However, CO concentrations have declined dramatically in California, and most areas, including the Norco area, meet the state and federal CO standards. This is attributed to the fewer number of older polluting vehicles, fewer emissions from new vehicles, and improvements in fuels. Thus, the Protocol methodology, which is focused on traffic and the percentage of traffic increase, is obsolete for determining CO impacts.

For this reason, several air districts have adopted guidelines that focus on specific criteria other than LOS and percentage traffic increase. SCAQMD has not created any new screening criteria. However, the Bay Area Air Quality Management District (BAAQMD) has identified criteria, which is applicable to the proposed project. Because CEQA allows the Lead Agency to identify thresholds and SCAQMD does not have screening criteria, these BAAQMD screening criteria were used to determine the potential impacts related to CO hotspots and if emissions modeling is required. The BAAQMD criteria include:

1. Consistency with an applicable congestion management program established by the county congestion management agency for designated roads or highways, regional transportation plan, and local congestion management agency plans.

2. Traffic volumes at affected intersections would not be increased to more than 44,000 vehicles per hour.

3. Traffic volumes at affected intersections would not be increased to more than 24,000 vehicles per hour where vertical and/or horizontal mixing is substantially limited (e.g., tunnels, parking garages, bridge underpass, natural or urban street canyon, below-grade roadway) (BAAQMD, 2009).

For the purposes of this analysis, intersections that exceed the BAAQMD screening criteria should conduct dispersion modeling to determine the potential impact from the impacted intersections. Where the screening values are not exceeded, the project would be determined to be less than significant with respect to localized CO impacts.

Toxic Air Contaminant Analysis

Currently, the SCAQMD only has significance thresholds for single stationary and mobile sources of TAC emissions, such as projects involving truck stops or warehouses (SCAQMD 2003). Of the thresholds that do exist, the SCAQMD's stationary source TAC thresholds of 10 in one million for cancer risk and 1 for hazard index is the most appropriate threshold to evaluate build out of the proposed Plan. Thus, for the purpose of this TAC analysis, the 10 in one million for cancer risk criteria would be used to assess

the potential impacts of exposure of new sensitive receptors from existing mobile or stationary emissions sources.

4.2 Greenhouse Gas

Appendix G of the California Environmental Quality Act (CEQA) Guidelines states that a project could have a significant adverse effect related to greenhouse gas emissions if it would:

- Generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment; or
- Conflict with any applicable plan, policy or regulation of an agency adopted for the purpose of reducing the emissions of GHGs.

As described previously, SCAQMD has provided a tiered approach to evaluate greenhouse gas emissions generated by land use development projects. For the purposes of this analysis, the most appropriate threshold that would apply to the proposed project would be (Tier 2) to determine whether the project is consistent with the SANBAG Regional Greenhouse Gas Reduction Plan. In addition, the evaluation below provides an analysis of the proposed project based on the Tier 3 threshold of 3,500 MT/year CO2e for residential projects.

5.0 Methodology

5.1 Air Quality

This analysis focuses on the nature and magnitude of the change in the air quality environment due to implementation of the proposed project. Air pollutant emissions associated with build out of the proposed project would result from operations of the future development and from traffic volumes generated by the new industrial warehousing uses. Construction activities would also generate air pollutant emissions from construction-related traffic. The net increase in emissions generated by these activities and other secondary sources have been estimated and compared to the applicable SCAQMD thresholds of significance.

Air Quality Management Plan

The City of Highland is under the jurisdiction of the SCAQMD and the AQMP is the applicable air quality plan for the region. Projects that are consistent with the regional population, housing, and employment forecasts identified by SCAG are considered to be consistent with the AQMP growth projections, since the forecast assumptions by SCAG forms the basis of the land use and transportation control portions of the AQMP. Additionally, because SCAG's regional growth forecasts are based upon, among other things, land uses designated in general plans, a project that is consistent with the land use designated in a general plan would also be consistent with the SCAG's regional forecast projections, and thus also with the AQMP growth projections.

SCAQMD's CEQA Handbook suggests an evaluation of the following two criteria to determine whether a project involving a legislative land use action (such as the proposed project) would be consistent or in conflict with the AQMP:

- The project would not generate population and employment growth that would be inconsistent with SCAG's growth forecasts.

- The project would not result in an increase in the frequency or severity of existing air quality violations or cause or contribute to new violations, or delay the timely attainment of air quality standards or the interim emissions reductions specified in the AQMP.

Consistency Criterion No. 1 refers to the SCAG's growth forecasts and associated assumptions included in the AQMP. The future air quality levels projected in the AQMP are based on SCAG's growth projections, which are based, in part, on the general plans

of cities located within the SCAG region. Therefore, projects, uses, and growth that is consistent with the applicable assumptions used in the development of the AQMP would not jeopardize attainment of the air quality levels identified in the AQMP, even if they exceed the SCAQMD's recommended daily emissions thresholds.

Consistency Criterion No. 2 refers to the California Ambient Air Quality Standards. The SCAQMD has identified CO as the best indicator pollutant for determining whether air quality violations would occur since it is most directly related to automobile traffic, the emissions of which have been modeled by the SCAQMD to determine future air quality conditions.

Construction

Short-term construction-generated emissions of criteria air pollutants and ozone precursors associated with the proposed project were modeled using the California Emissions Estimator Model (CalEEMod), Version 2016.3.1, as recommended by SCAQMD. Construction equipment horsepower and load factors are based on the CalEEMod model defaults. The model results were used to determine whether short-term construction-related emissions of criteria air pollutants associated with the project would exceed SCAQMD's applicable regional thresholds and whether mitigation would be required. Modeling Assumptions and output files are provided in Appendix A.

In addition, to determine whether construction activities associated with the proposed project would create significant adverse localized air quality impacts on nearby sensitive receptors, the worst-case daily emissions contribution from the proposed project were compared to SCAQMD's localized significance thresholds (LSTs). The analysis of localized air quality impacts focuses only on the onsite activities of a project, and does not include emissions that are generated off-site such as from on-road haul or delivery truck trips (SCAQMD, 2009).

For analyzing localized air quality impacts, SCAQMD has developed LSTs for three project site sizes: 1 acre, 2 acres and 5 acres. The LSTs established for each of the site acreages represent the amount of pollutant emissions that would not exceed the most stringent applicable federal or state ambient air quality standards. The LST threshold for a 5-acre site was used because it would provide a conservative evaluation of project activities within the 59.03-acre project site as if they would occur within a 5-acre area; thus, concentrating pollutants over a smaller area and increasing potential to exceed an air quality standard.

The SCAQMD only provides LSTs at receptor distances of 82, 164, 328, 656, and 1,640 feet from the emissions source, the LSTs for a receptor distance of 82 feet from the project site is used for determining significance because the closest sensitive receptor is approximately 100 feet from the project site, and the LST receptor distance of 82 is the closest identified by SCAQMD thresholds.

In conducting the localized air quality analysis, which focuses only on onsite emissions, the project's onsite construction emissions generated from combustion sources (e.g., off-road construction equipment) under a worst-case construction scenario were extracted from the CalEEMod model run outputs. Overall, the daily total onsite combustion, mobile, and fugitive dust emissions associated with project construction were combined and evaluated against SCAQMD's LSTs for a 5-acre site. CalEEMod data is provided in the Appendix.

Operations

Long-term (i.e., operational) regional emissions of criteria air pollutants and precursors associated with the proposed project, including mobile- and area-source emissions, were also quantified using the CalEEMod computer model. Area-source emissions, which are widely distributed and made of many small emissions sources (e.g., building heating and cooling units, landscaping equipment, consumer products, painting operations, etc.), were modeled per the size and type of land use proposed. Mass mobile-source emissions were modeled based on the daily vehicle trips that would result from the proposed project. Project trip generation rates were available from the Traffic Impact Analysis prepared for the project by Linscott, Law, and Greenspan (LLG 2017), and the net increase in long-term operational emissions that would be generated by operation of the project was compared with the applicable SCAQMD thresholds for determination of significance.

Localized air quality impacts during operation of the proposed project is also analyzed by extracting the onsite operational emissions from the CalEEMod model run for build out of the project and evaluating those emissions against SCAQMD's applicable operational LSTs. As with construction LST analysis, only onsite- emissions are used in determining a project's potential to impact local air quality for NO_X, CO, PM_{10}, and $PM_{2.5}$.

The analysis discusses impacts from Toxic Air contaminants on a qualitative basis based on compliance with the screening levels. If implementation of the project exceeds the screening levels, then dispersion modeling would be necessary to determine the potential impacts on localized receptor.

5.2 Greenhouse Gas

Construction

SCAQMD recommends the use of CalEEMod for estimating construction and operational emissions associated with land use projects. CalEEMod incorporates the most recent versions of the Emission FACtors (EMFAC) and Off-Road Emissions (OFF-ROAD) models developed by CARB. CalEEMod estimates the emissions of CO2, CH4, and N2O as well as the resulting total CO2e emissions associated with construction-related GHG sources such as off-road construction equipment, material delivery trucks, soil haul trucks, and construction worker vehicles. As CalEEMod currently uses IPCC's 1996 SAR to assign the GWPs for CH4 and N2O, the emissions for these two GHGs were taken from the CalEEMod outputs and converted to CO2e emissions outside of CalEEMod using the updated GWPs from IPCC's AR4. The GHG analysis incorporates similar assumptions as the air quality analysis for consistency. Based on SCAQMD's 2008 Draft Guidance Document – Interim CEQA Greenhouse Gas (GHG) Significance Threshold document, SCAQMD recommends that for construction GHG emissions the total emissions for a project be amortized over a 30-year period and added to its operational emission estimates (SCAQMD, 2008).

Short-term construction-generated emissions of GHG's associated with the proposed project were modeled using the California default values where specific information was not available, and reasonable assumptions based on default model settings were used to estimate criteria air pollutant and ozone precursor emissions. GHG emissions from construction activities are associated with emissions from the construction vehicles.

Operations

Operational emissions of GHGs, including GHGs generated by direct and indirect sources, are estimated per the recommended methodologies from SCAQMD described above. Direct sources include emissions such as vehicle trips, natural gas consumption, and landscape maintenance. Indirect sources include off-site emissions occurring because of the project operations such as electricity, water consumption, and solid waste disposal. The direct and indirect emissions generated during the project operations were estimated using CalEEMod. Like the calculation of the construction-related GHG emissions, the operational emissions of CH4 and N2O were extracted from the CalEEMod output file and converted to CO2e emissions using the GWPs from IPCC's AR4. Modeling was based on project data (e.g., size and type of proposed uses) and vehicle trip information from the Traffic Impact Analysis prepared for the project by Linscott, Law, and Greenspan (LLG 2017).

6.0 AIR QUALITY ASSESSMENT

6.1 Conflict with or obstruct implementation of the applicable air quality plan

As described above, the project site is in the South Coast Air Basin, which is under the jurisdictional boundaries of the SCAQMD. The SCAQMD and Southern California Association of Governments (SCAG) are responsible for preparing the Air Quality Management Plan (AQMP), which addresses federal and state Clean Air Act (CAA) requirements. The AQMP details goals, policies, and programs for improving air quality in the Basin. In preparation of the AQMP, SCAQMD and SCAG use land use designations contained in General Plan documents to forecast, inventory, and allocate regional emissions from land use and development-related sources. For purposes of analyzing consistency with the AQMP, if a proposed project would have a development density and vehicle trip generation that is substantially greater than what was anticipated in the General Plan, then the proposed project would conflict with the AQMP. On the other hand, if a project's density is consistent with the General Plan, its emissions would be consistent with the assumptions in the AQMP, and the project would not conflict with SCAQMD's attainment plans.

The project site has an existing zoning designation of Agricultural/Equestrian Residential (AG/EQ), which allows 2 units per acre, and would result in a maximum of 118 single-family dwelling units. The proposed project includes a General Plan Land Use amendment and a zoning designation change from AG/EQ to Planned Development (PD), and would develop up to 215 single-family dwelling units. This is an increase of 97 single-family units that would be developed beyond the existing land use designations.

However, the 2016 SCAG Regional Transportation Growth Projections anticipate a 1.5 percent growth rate within the City of Highland through the year 2020. The U.S. Census FactFinder estimated that in 2015 the City of Highland had 16,554 housing units and a very low homeowner vacancy rate of 0.7 percent, which indicates that additional homeowner housing is needed to meet the needs of the City's residents, and to provide a "healthy" housing market. The 215 single-family residences that would be developed by the proposed project would equate to a 1.3 increase in total residential units within the City, which is below the SCAG anticipated 1.5 percent annual increase in housing, and would assist in providing units to fill the City's homeowner housing needs. Thus, the project would comply with Consistency Criterion No. 1 listed above in the Methodology Section.

In regards to Consistency Criterion No. 2, which evaluates the potential of the proposed project to increase the frequency or severity of existing air quality violations, the analysis (described below) indicates that the project would not result in impacts related to an increase in air quality violation, and no significant adverse impacts are anticipated. Therefore, the proposed project is consistent with Consistency Criterion No.2, and impacts related to conflict with or obstruction with an applicable air quality plan would be less than significant.

Overall, implementation of the proposed project would be consistent Consistency Criterion 1 and 2; therefore, impacts related to conflict or obstruction of the AQMP would not occur.

6.2 Violate any air quality standard or contribute substantially to an existing or projected air quality violation

Construction

Construction activities could generate substantial amounts of dust (including PM_{10} and $PM_{2.5}$) primarily from "fugitive" sources (i.e., emissions released through means other than through a stack or tailpipe) and other criteria air pollutants primarily from the operation of heavy equipment construction machinery (primarily diesel operated) and construction worker automobile trips (primarily gasoline operated).

Fugitive dust emissions would vary from day to day, depending on the level and type of activity, silt content of the soil, and the prevailing weather. Sources of fugitive dust during construction could include vehicle movement over paved and unpaved surfaces, demolition, excavation, earth movement, grading, and wind erosion from exposed surfaces.

Construction activities would also result in the emission of other criteria pollutants from equipment exhaust, construction-related vehicular activity and construction worker automobile trips. Emission levels for construction activities would vary depending on the number and type of equipment, duration of use, operation schedules, and the number of construction workers. Criteria pollutant emissions of ROG and NOx from these emission sources would incrementally add to the regional atmospheric loading of ozone precursors during project construction.

Mobile source emissions, primarily NOx, would result from the use of construction equipment such as graders, backhoes, and cranes. During the finishing phase, paving operations and the application of architectural coatings (i.e., paints) and other building

materials would release ROG. The assessment of construction air quality impacts considers each of these potential sources.

It is mandatory for all construction projects in the SCAB to comply with SCAQMD Rule 403 for fugitive dust that include, applying water in sufficient quantities to prevent the generation of visible dust plumes, applying soil binders to uncovered areas, reestablishing ground cover as quickly as possible, utilizing a wheel washing system to remove bulk material from tires and vehicle undercarriages before vehicles exit the construction site, and maintaining effective cover over exposed areas.

SCAQMD Rule 402 identifies standards to reduce quantities of air contaminants or other materials which cause injury, detriment, nuisance or annoyance to any considerable number of persons or the public, or which endanger the comfort, repose, health or safety of any such persons or the public, or which cause or have natural tendency to cause injury or damage to business or property. SCAQMD Rule 403 regulates operations, which periodically may cause fugitive dust emissions into the atmosphere.

SCAQMD Rule 1108 governs the VOC content of asphalt, Rules 1113 and 1143 that govern the VOC content in architectural coating, paint, thinners, and solvents, was accounted for in the construction emissions modeling. Furthermore, the use of low VOC coatings was included to reduce the ROG emissions that would be generated from the application of architectural coating.

Construction scheduling was based on CalEEMod defaults and typical construction scheduling, and CalEEMod default equipment was used. As shown in **Table 6**, the proposed project would not result in a significant impact to air quality during construction activities. The calculated emission results from CalEEMod demonstrate that the construction of this project would not exceed the SCAQMD thresholds, and that construction related impacts on regional air quality would be less than significant.

Table 6. Peak-Day Unmitigated Construction Emissions (lbs/day)

Construction Season	ROG	NOx	CO	SO_2	PM_{10}	$PM_{2.5}$
Summer	30.8	68.0	39.9	0.06	21.1	12.6
Winter	30.8	68.0	39.8	0.06	21.1	12.6
SCAQMD Significance Threshold	**75**	**100**	**550**	**150**	**150**	**55**
Exceed Significance?	No	No	No	No	No	No

However, to reduce potential impacts related to LSTs (as described below), mitigation measures would be implemented during construction, which would reduce emissions further below thresholds, as shown in **Table 7**.

Table 7. Peak-Day Mitigated Construction Emissions (lbs/day)

Construction Season	ROG	NOx	CO	SO_2	PM_{10}	$PM_{2.5}$
Summer	30.6	5.4	34.1	0.06	2.8	1.5
Winter	30.6	5.4	34.0	0.06	2.8	1.6
SCAQMD Significance Threshold	**75**	**100**	**550**	**150**	**150**	**55**
Exceed Significance?	No	No	No	No	No	No

Operation

Implementation of the proposed project would result in long-term regional emissions of criteria air pollutants and ozone precursors associated with area sources, such as natural gas consumption, landscaping, applications of architectural coatings, and consumer products, in addition to operational mobile emissions. Development of the proposed project would result in 2,047 weekday daily trips.

Operations emissions associated with the proposed project were modeled using CalEEMod. Model defaults were adjusted to reflect project-specific data, including the size and type of the proposed land use and project specific trip rates. The highest modeled operations emissions are presented in **Table 8**. Significance is determined based on the total project contribution to regional criteria pollutant emissions.

Table 8. Operational Emissions (lbs/day)

Source	ROG	NO_x	CO	SO_2	PM_{10}	$PM_{2.5}$
Area	14.2	3.9	67.8	0.2	8.4	8.4
Energy	0.2	1.9	0.8	0.01	0.2	0.2
Mobile	4.5	22.2	60.7	0.2	15.1	4.2
Total Emissions	**18.9**	**28.0**	**129.3**	**0.4**	**23.67**	**12.8**
Significance Thresholds	**55**	**55**	**550**	**150**	**150**	**55**
Exceed thresholds?	No	No	No	No	No	No

As shown in Table 9, the operational emissions of criteria pollutants that would be generated by the project would be below the SCAQMD's applicable thresholds. Therefore, the project's operational emissions would not substantially contribute to emissions concentrations that exceed the NAAQS and CAAQS and impacts would be less than significant.

6.3 Expose sensitive receptors to substantial pollutant concentrations.

Sensitive receptors are populations that are more susceptible to the effects of air pollution than are the population at large. The SCAQMD identifies the following as sensitive receptors: residences, long-term health care facilities, rehabilitation centers, convalescent centers, retirement homes, churches, schools, playgrounds, child care centers, and athletic facilities.

In an urbanized environment, air pollutant concentrations are usually most prominent along busy streets and at busy intersections, where automotive exhausts can build up while vehicles stop and idle or slow down to approach and proceed through or make turning movements. The primary source of potential air toxics associated with operation of the proposed project include diesel particulates from trucks use and idling on the project site.

Construction activities would be short-term and sensitive receptors would be exposed to air pollutants from construction emissions for short-term limited time during construction activities. Health risk is evaluated assuming a constant exposure to emissions of a 70-year lifetime, 24 hours a day, seven days a week. As the exposure to receptors would be short-term and limited during development activities, impacts from construction activities would be less than significant. Implementation of the proposed project would result in new single-family residential land uses that may utilize solvents, cleaners, and generate motor vehicle emissions, which are not anticipated to emit TAC emissions in appreciable quantities.

CO Hotspots

CO concentration is a direct function of motor vehicle activity (e.g., idling time and traffic flow conditions), particularly during peak commute hours and certain meteorological conditions. Under specific meteorological conditions (e.g., stable conditions that result in poor dispersion), CO concentrations may reach unhealthy levels with respect to local sensitive land uses such as residential areas, schools, and hospitals. Because of reduced speeds and vehicle queuing, “hot spots” typically occur at high traffic volume intersections.

As described above, the proposed project would in 2,047 vehicle trips per day. Of these trips 161 would occur in the a.m. peak hour and 215 would occur in the p.m. peak hour. The TIA prepared for the proposed project (LLG 2017) details that the proposed project would not result in more than 44,000 vehicles per hour at an intersection, which is the

volume of peak hour traffic required to generate or contribute to a CO hotspot. In addition, the project would not result in an impact to a CMP location. Therefore, CO hotspots would not result from the proposed project.

Localized Construction Air Quality Impacts – Criteria Air Pollutants

As discussed previously, the daily on-site construction emissions generated by the proposed project were evaluated against SCAQMD's LSTs for a 5-acre site to determine whether the emissions would cause or contribute to adverse localized air quality impacts. The nearest sensitive receptor is approximately 100 feet to the project site under construction; thus, the mass rate look-up table receptor distance of 82 feet is used to evaluate the potential localized air quality impacts associated with the peak day construction emissions from the project.

Table 9 identifies the daily unmitigated, localized on-site emissions that are estimated to occur during the project construction. As shown, the daily unmitigated emissions would exceed the applicable SCAQMD LST thresholds for PM_{10} and $PM_{2.5}$.

Table 9. Unmitigated Localized Daily Construction Emissions (lbs/day)

Construction Season	NOx	CO	PM_{10}	$PM_{2.5}$
Summer	52.3	23.5	20.9	12.6
Winter	52.3	23.5	20.9	12.6
SCAQMD Significance Threshold	**270**	**1,746**	**14**	**8**
Exceed Significance?	No	No	**Yes**	**Yes**

Therefore, **Mitigation Measure 1 & 2** would be implemented to provide additional requirements beyond Rule 403, which requires watering active sites at three times daily and implementation of Tier IV diesel engine standards. **Mitigation Measure 1** requires active areas to be watered three times per day to keep soil moist enough so visible plumes are eliminated, covering disturbed areas, and requirements for vehicles to travel at a maximum of 25 mph on site the project site during construction activities. With implementation of **Mitigation Measure 1**, construction emissions would be reduced below the LST thresholds, as shown in **Table 10**.

Table 10. Mitigated Localized Daily Construction Emissions (lbs/day)

Construction Season	NOx	CO	PM_{10}	$PM_{2.5}$
Summer	2.0	20.9	2.8	1.6
Winter	2.0	20.9	2.8	1.6
SCAQMD Significance Threshold	**270**	**1,746**	**14**	**8**
Exceed Significance?	No	No	No	No

Mitigation Measure 1: The construction plans and specifications shall state that in addition to standard Rule 403 requirements, the following measures shall be incorporated into project construction activities:

- All clearing, grading, earth-moving, or excavation activities shall cease when winds exceed 25 mph per SCAQMD guidelines in order to limit fugitive dust emissions.
- The contractor shall ensure that all disturbed unpaved roads and disturbed areas within the project site are watered at least three (3) times daily during dry weather; preferably in the mid-morning, afternoon, and after work is done for the day.
- The contractor shall ensure that traffic speeds within the project site areas are reduced to 15 miles per hour or less.

Mitigation Measure 2: Implementation of Tier IV Diesel Engine Standards

6.4 Create objectionable odors affecting a substantial number of people

The SCAQMD Air Quality Handbook identifies the following uses as having a potential odor issues: wastewater treatment plants, food processing plants, agricultural uses, chemical plants, composting, refineries, landfills, dairies, and fiberglass moldings. The proposed project would develop single-family residential uses that do not involve the types of uses that would emit objectionable odors affecting a substantial number of people.

In addition, odors generated that could be generated by construction activities are required to follow SCAQMD Rule 402 to prevent odor nuisances on sensitive land uses. SCAQMD Rule 402, Nuisance, states:

> *A person shall not discharge from any source whatsoever such quantities of air contaminants or other material which cause injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public, or which endanger the comfort, repose, health or safety of any such persons or the public, or which cause, or have a natural tendency to cause, injury or damage to business or property.*

During construction of the proposed project, emissions from construction equipment, such as diesel exhaust, and volatile organic compounds from architectural coatings and paving activities may generate odors. However, these odors would be temporary and localized to the construction site; and therefore, are not expected to affect a substantial number of people. Thus, impacts relating to both operational and construction activity odors from implementation of project would be less than significant.

6.5 Cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors).

The Basin is considered the cumulative study area for air quality. Because the Basin is currently classified as a state nonattainment area for ozone, PM_{10}, and $PM_{2.5}$, cumulative development consisting of the proposed project along with other reasonably foreseeable future projects in the Basin could violate an air quality standard or contribute to an existing or projected air quality violation. However, based on SCAQMD's cumulative air quality impact methodology, SCAQMD recommends that if an individual project results in air emissions of criteria pollutants (ROG, CO, NO_x, SO_x, PM_{10}, or $PM_{2.5}$) that exceed the SCAQMD's recommended daily thresholds for project-specific impacts, then it would also result in a cumulatively considerable net increase of these criteria pollutants for which the project region is in non-attainment under an applicable federal or state ambient air quality standard.

As shown in Tables 7 and 8, the project's construction emissions would not exceed SCAQMD's daily thresholds. Thus, because the proposed project's construction-period impact would be less than significant, the proposed project would not result in a significant cumulative impact, when considered with other past, present and reasonably foreseeable projects.

Operational emissions associated with the proposed project, as shown in Table 9 would not exceed the SCAQMD's thresholds of significance for any criteria pollutants. Thus, because the proposed project's operational impacts would be less than significant, the proposed project would not result in a cumulatively considerable net increase in any nonattainment pollutants, and impacts would be less than significant.

7.0 GREENHOUSE GAS ASSESSMENT

7.1 The proposed project could generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment.

Construction Emissions

Construction activities would be temporary, but could contribute to global climate change impacts. Construction activities would result in the emission of GHGs from equipment exhaust, construction-related vehicular activity and construction worker automobile trips. Emission levels for construction activities would vary depending on the number and type of equipment, duration of use, operation schedules, and the number of construction workers.

Total estimated construction-related GHG emissions for the proposed project are shown in **Table 11**. As shown, the total estimated unmitigated and mitigated GHG emissions during construction would equal approximately 460 MTCO2e. This would equal to approximately 15.3 MTCO2e per year after amortization over 30 years per SCAQMD methodology.

Table 11. Estimated Total Construction-Related GHG Emissions

Emission Source	Estimated CO_2e Emissions
Total Construction Emissions	460
Annual Construction (Amortized over 30 years)	**15.3**

Notes: CO_2e= carbon dioxide equivalent; MT =metric tons; MT/yr = metric tons per year.

Operational Emissions

Area and indirect sources of GHG emissions associated with the proposed project would primarily result from electricity and natural gas consumption, water transport (the energy used to pump water), and solid waste generation. GHG emissions from electricity consumed within the project site would be generated off-site by fuel combustion at the electricity provider. GHG emissions from water transport are also indirect emissions resulting from the energy required to transport water from its source. In addition, the project would generate GHG emissions from motor vehicle trips.

The estimated operational GHG emissions that would be generated from implementation of the project are shown in **Table 12**. Additionally, in accordance with SCAQMD's recommendation, the amortized construction-related GHG emissions from Table 11 is added to the operational emissions estimate to determine the total annual GHG emissions.

As shown in Table 13, the proposed project's annual GHG emission generation would be approximately 4,326.3 $MTCO_2e$ per year (detailed calculations are included in Appendix A of this report), which would exceed SCAQMD's Tier 3 threshold of 3,500 $MTCO_2e$ per year for residential land uses. Vehicular emissions related to operations would consists of 70.4 percent of these emissions; and energy consumption from heating, cooling, lighting, and appliance usage would generate 23.4 percent of these emissions.

Table 12. Estimated Construction and Operations-Related GHG Emissions

Emission Source	Estimated Emissions CO_2e (MT/yr)
Construction	15.3
Annual Mitigated Construction (Amortized over 30 years)	
Project Operations	
Area Sources	45.19
Energy Consumption	1,012.6
Mobile Sources	3,046.0
Solid Waste	119.8
Water Consumption	102.7
Total (Construction and Operational Emissions)	**4,326.3**
Threshold	**3,500**
Exceed Threshold?	Yes

Notes: CO_2e= carbon dioxide equivalent; MT/yr = metric tons per year; %=percent.

However, the proposed project would meet the Tier 2 threshold of being consistent with the applicable greenhouse gas reduction plan. Although most of the "local measures" in the SANBAG Regional Greenhouse Gas Reduction Plan apply to city-wide actions that are not related to specific development projects, such as the proposed project, the following project design features of the proposed project are consistent with the Regional Greenhouse Gas Reduction Plan and include: incorporation of passive solar design techniques including building orientation, energy-saving materials, roof overhangs, and window and door placement; participate in incentive programs for incorporation of solar

and photovoltaic panels (active solar); provision of secure space for bicycle storage; use of native and drought-tolerant landscaping (xeriscaping) and drip irrigation to conserve water resources.

In addition, and as described previously, the project includes design features that are consistent with the Regional Greenhouse Gas Reduction Plan, and the City of Highland would require the project to meet the performance standard of 29 percent reduction below projected BAU emissions for new projects. The Regional Greenhouse Gas Reduction Plan anticipates these measures to include energy-efficient appliances and alternative energy sources, water conservation, landscaping, and site design, which are included in the proposed project, as described above. Implementation of the performance standards for new development is ensured during the City's approval and development permitting process. Thus, the proposed project would be consistent with the Regional Greenhouse Gas Reduction Plan, and would meet the Tier 2 threshold. Therefore, impacts related to the generation of GHGs would be less than significant.

7.2 The proposed project could conflict with any applicable plan, policy or regulation of an agency adopted for the purpose of reducing the emissions of GHGs.

As described above, the City of Highland is a participant in the SANBAG Regional Greenhouse Gas Reduction Plan. The specific goals and actions included in the SANBAG Regional Greenhouse Gas Reduction Plan that are applicable to the proposed project include those pertaining to energy and water use reduction, promotion of green building measures, waste reduction, and reduction in vehicle miles traveled. The proposed project would be required to include all mandatory green building measures for new developments under the CALGreen Code, as required by the City's Municipal Code Chapter 15.38, which requires that the new buildings reduce water consumption, employ building commissioning to increase building system efficiencies, divert construction waste from landfills, and install low pollutant emitting finish materials. In addition, the code requires that all landscaping comply with water efficient landscaping requirements. Furthermore, implementation of CALGreen compliant building and appliance standards would result in water, energy, and construction waste reductions for the proposed project.

Also as described above, the project includes design features that are consistent with the Regional Greenhouse Gas Reduction Plan, and the City of Highland would require the project to meet the performance standard of 29 percent reduction below projected BAU

emissions for new projects. Thus, the proposed project would not conflict with any applicable plan, policy or regulation of an agency adopted for reducing the emissions of greenhouse gases, and impacts would be less than significant.

8.0 REFERENCES

8.1 Air Quality

California Air Resources Board (CARB). 2013. Area Designation Maps/State and National. Accessed at: www.arb.ca.gov/desig/adm/adm.htm/

CARB. 2013b. *Ambient Air Quality Standards*. Accessed at: http://www.arb.ca.gov/research/aaqs/aaqs2.pdf.

CARB. 2009. *The California Almanac of Emissions and Air Quality – 2009 Edition*. Accessed at: http://www.arb.ca.gov/aqd/almanac/almanac09/almanac09.htm.

CARB, 2009. *Climate Change Scoping Plan: A Framework for Change*. Amended May 11, 2009. Accessed at: http://www.arb.ca.gov/cc/scopingplan/document/adopted_scoping_plan.pdf

South Coast Air Quality Management District (SCAQMD). 2015. *Draft Risk Assessment Procedures for Rules 1402, 1021.1 and 212.*

SCAQMD. 2011. *SCAQMD Air Quality Significance Thresholds*. Accessed at: http://www.aqmd.gov/CEQA/handbook/signthres.pdf.

SCAQMD. NAAQS/CAAQS and Attainment Status for South Coast Air Basin - February 2016. (SCAQMD 2016). Accessed at: http://www.aqmd.gov/docs/default-source/clean-air-plans/air-quality-management-plans/naaqs-caaqs-feb2016.pdf?sfvrsn=2

MATES III Carcinogenic Risk Interactive Map. Accessed at: http://www.aqmd.gov/home/library/air-quality-data-studies/health-studies/mates-iii

SCAQMD 2000. *Multiple Air Toxics Exposure Study in the South Coast Air Basin (MATES-II)* Accessed at: http://www.aqmd.gov/home/library/air-quality-data-studies/health-studies/mates-ii

SCAQMD. 2003. *Final Localized Significance Threshold Methodology*, Appendix C – Mass Rate LST Look-up Tables. Revised October 21, 2009. Accessed at: http://www.aqmd.gov/docs/default-source/ceqa/handbook/localized-significance-thresholds/appendix-c-mass-rate-lst-look-up-tables.pdf?sfvrsn=2

United States Environmental Protection Agency (USEPA). 2013. *The Greenbook Nonattainment Areas for Criteria Pollutants.* Accessed at: http://www.epa.gov/air/oaqps/greenbk/index.html.

8.2 Greenhouse Gas

Brown. 2015. California Legislative Information. *SB-350 Clean Energy and Pollution Reduction Act of 2015*. Accessed at: https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=201520160SB350

California Energy Commission. 2016 Building Energy Efficiency Standards for Residential and Nonresidential Buildings. June 2015.

http://www.energy.ca.gov/2015publications/CEC-400-2015-037/CEC-400-2015-037-CMF.pdf.

CARB. 2010. *Proposed SB 375 Greenhouse Gas Targets: Documentation of the Resulting Emission Reductions based on MPO Data*, August 9, 2010. Accessed at: http://arb.ca.gov/cc/sb375/mpo.co2.reduction.calc.pdf

CARB. 2016. AB 32 Scoping Plan. Accessed at: http://www.arb.ca.gov/cc/scopingplan/scopingplan.htm

CARB. 2014. Proposed First Update to the Climate Change Scoping Plan: Building on the Framework. May 2014. Accessed at:

http://www.arb.ca.gov/cc/scopingplan/document/updatedscopingplan2013.htm

California Air Resources Board (CARB). 2014a. California Greenhouse Gas Inventory for 2000-2012 — by Category as Defined in the 2008 Scoping Plan. Accessed at: http://www.arb.ca.gov/cc/inventory/data/tables/ghg_inventory_scopingplan_00-12_2014-03-24.pdf

IPCC. 2001. Intergovernmental Panel on Climate Change (IPCC). 2001. *Climate Change 2001: Working Group I: The Scientific Basis*. Last revised: 2001. Accessed at: http://www.grida.no/climate/ipcc%5Ftar/wg1/032.htm#f5

Obama. 2015. Climate Change and President Obama's Action Plan. September 2015. Accessed at: https://www.whitehouse.gov/climate-change

San Bernardino Association of Governments Regional greenhouse Gas Reduction Plan. March 2014. Accessed at:
http://www.sanbag.ca.gov/planning2/plan_greenhouse.html

SCAQMD. 2008. Greenhouse Gas CEQA Significance Thresholds. Accessed at: http://www.aqmd.gov/ceqa/handbook/GHG/GHG.html

USEPA Transportation and climate CAFÉ regulations and standards.
https://www3.epa.gov/otaq/climate/regulations.htm
https://www3.epa.gov/otaq/climate/regs-light-duty.htm

Appendix A CalEEMod Results