Air Quality & Greenhouse Gas Assessment

Various Park Improvements at Stephen Sorensen Park

Community of Lake Los Angeles,
Los Angeles County, California

Prepared For:

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LIST OF ACRONYMS AND ABBREVIATIONS

µg/m^3	Micrograms per cubic meter
AB	Assembly Bill
AVAQMD	Antelope Valley Air Quality Management District
AQMP	Air Quality Management Plan
CAA	Clean Air Act
CAAQS	California Ambient Air Quality Standards
CalEEMod	California Emissions Estimator Model
CAPCOA	California Air Pollution Control Officers Association
CARB	California Air Resources Board
CCAA	California Clean Air Act
CEQA	California Environmental Quality Act
CH_4	Methane
CO	Carbon monoxide
CO_2	Carbon dioxide
CO_2e	Carbon dioxide equivalents
County	County of Los Angeles
DPM	Diesel particulate matter
EO	Executive Order
GHG	Greenhouse gas
IPCC	Intergovernmental Panel on Climate Change
LOS	Level of service
NAAQS	National Ambient Air Quality Standards
NO_2	Nitrogen dioxide
NOx	Nitrogen oxide
N_2O	Nitrous oxide
OPR	Office of Planning and Research
O_3	Ozone
PM_{10}	Coarse particulate matter
$PM_{2.5}$	Fine particulate matter
Ppm	Parts per million
ROG	Reactive organic gas

LIST OF ACRONYMS AND ABBREVIATIONS

SB	Senate Bill
MDAQMD	Mojave Desert Air Quality Management District
SIP	State Implementation Plan
MDAB	Mojave Desert Air Basin
SO_2	Sulfur dioxide
SRA	Source receptor area
TACs	Toxic air contaminants
USEPA	U.S. Environmental Protection Agency

1.0 INTRODUCTION

This report documents the results of an assessment of both air quality and greenhouse gas (GHG) emissions completed for the Various Park Improvements at Stephen Sorensen Park (Project), which includes the development of various new park amenities at the existing Sorensen Park located in the unincorporated community of Lake Los Angeles in Los Angeles County. This assessment was prepared using methodologies and assumptions recommended in the rules and regulations of the Antelope Valley Air Quality Management District (AVAQMD). Regional and local existing conditions are presented, along with pertinent emissions standards and regulations. The purpose of this assessment is to estimate Project-generated criteria air pollutants and GHG emissions attributable to the Project and to determine the level of impact the Project would have on the environment.

1.1 Project Location and Description

The Proposed Project is located within the existing Stephen Sorensen Park which is bound by East Avenue P and Lake Los Angeles Avenue. The Project site is currently a functional and operational park that accommodates sporting events and various community activities. The Project is proposing the development of various new park amenities including a 25,000-square foot skate park, a 2,500-square foot gazebo/stage structure, a 1,600-square foot concrete slab with fitness zone and shade structure, a 1,800-square foot shade structure for the existing playground, and associated Americans with Disabilities Act (ADA) improvements. The Project would increase total useable park space by approximately 0.57 acres. The Project site is surrounded by East Avenue P and residents to the south, undeveloped land with commercial land uses beyond to the east, undeveloped land with residents beyond to the west and Tameobit Wildlife Sanctuary to the north.

Project construction is anticipated to occur between March 2022 and July 2023 and would be implemented in four phases. Phase 1 would consist of grading and earthwork and would last approximately one month. Phase 2 would commence after completion of Phase 1 and would consist of the construction of the concrete slab with fitness zone, the shade structure covering the fitness zone, and the shade structure for the existing playground swing set. Phase 2 is expected to last approximately two months, spanning April and May 2022. Phase 3, commencing in July 2022, would consist of the construction of the gazebo and is expected to last approximately one month. A total of 76 cubic yards of soil would be cut and another 76 cubic yards filled during this time. Phase 4, anticipated to last approximately 3 months, would consist of the site preparation, grading, construction, and paving of the skate park. Site preparation and grading would begin March 2023 and occur for approximately two weeks. Construction and paving would take place starting in April 2023 and last for approximately three months.

2.0 AIR QUALITY

2.1 Air Quality Setting

Air quality in a region is determined by its topography, meteorology, and existing air pollutant sources. These factors are discussed below, along with the current regulatory structure that applies to the Los Angeles County portion of the Mojave Desert Air Basin (MDAB), which encompasses the Project site, pursuant to the regulatory authority of the AVAQMD.

Ambient air quality is commonly characterized by climate conditions, the meteorological influences on air quality, and the quantity and type of pollutants released. The air basin is subject to a combination of topographical and climatic factors that reduce the potential for high levels of regional and local air pollutants. The following section describes the pertinent characteristics of the air basin and provides an overview of the physical conditions affecting pollutant dispersion in the Project area.

Mojave Desert Air Basin

The MDAB is comprised of four air districts, the Kern County APCD, the Antelope Valley AQMD, the Mojave Desert AQMD, and the eastern portion of the South Coast AQMD. The Kern County APCD consists of the eastern portion of Kern County; the Antelope Valley AQMD consists of the northeastern portion of Los Angeles County; the Mojave Desert AQMD includes San Bernardino County and the most eastern portion of Riverside County; and the portion of the South Coast AQMD includes the eastern part of Riverside County.

Topography and Climate

The MDAB is an assemblage of mountain ranges interspersed with long broad valleys that often contain dry lakes. Many of the lower mountains which dot the vast terrain rise from 1,000 to 4,000 feet above the valley floor. Prevailing winds in the MDAB are out of the west and southwest. These prevailing winds are due to the proximity of the MDAB to coastal and central regions and the blocking nature of the Sierra Nevada mountains to the north; air masses pushed onshore in southern California by differential heating are channeled through the MDAB. The MDAB is separated from the southern California coastal and central California valley regions by mountains (highest elevation approximately 10,000 feet), whose passes form the main channels for these air masses. The Antelope Valley is bordered in the northwest by the Tehachapi Mountains, separated from the Sierra Nevadas in the north by the Tehachapi Pass (3,800 feet elevation). The Antelope Valley is bordered in the south by the San Gabriel Mountains, bisected by Soledad Canyon (3,300 feet). The Mojave Desert is bordered in the southwest by the San Bernardino Mountains, separated from the San Gabriels by the Cajon Pass (4,200 feet). A lesser channel lies between the San Bernardino Mountains and the Little San Bernardino Mountains (the Morongo Valley). The Palo Verde Valley portion of the Mojave Desert lies in the low desert, at the eastern end of a series of valleys (notably the Coachella Valley) whose primary channel is the San Gorgonio Pass (2,300 feet) between the San Bernardino and San Jacinto Mountains.

During the summer, the MDAB is generally influenced by a Pacific Subtropical High cell that sits off the coast, inhibiting cloud formation and encouraging daytime solar heating. The MDAB is rarely influenced

by cold air masses moving south from Canada and Alaska, as these frontal systems are weak and diffuse by the time it reach the desert. Most desert moisture arrives from infrequent warm, moist and unstable air masses from the south. The MDAB averages between three and seven inches of precipitation per year (from 16 to 30 days with at least 0.01 inches of precipitation). The MDAB is classified as a dry-hot desert climate (BWh), with portions classified as dry-very hot desert (BWhh), to indicate at least three months have maximum average temperatures over 100.4° F.

2.1.1 Criteria Air Pollutants

Criteria air pollutants are defined as those pollutants for which the federal and state governments have established air quality standards for outdoor or ambient concentrations to protect public health with a determined margin of safety. Ozone (O_3), coarse particulate matter (PM_{10}), and fine particulate matter ($PM_{2.5}$) are generally considered to be regional pollutants because they or their precursors affect air quality on a regional scale. Pollutants such as carbon monoxide (CO), nitrogen dioxide (NO_2), and sulfur dioxide (SO_2) are considered to be local pollutants because they tend to accumulate in the air locally. PM is also considered a local pollutant. Health effects commonly associated with criteria pollutants are summarized in Table 2-1.

Table 2-1. Criteria Air Pollutants- Summary of Common Sources and Effects

Pollutant	Major Man-Made Sources	Human Health & Welfare Effects
CO	An odorless, colorless gas formed when carbon in fuel is not burned completely; a component of motor vehicle exhaust.	Reduces the ability of blood to deliver oxygen to vital tissues, effecting the cardiovascular and nervous system. Impairs vision, causes dizziness, and can lead to unconsciousness or death.
NO_2	A reddish-brown gas formed during fuel combustion for motor vehicles, energy utilities and industrial sources.	Respiratory irritant; aggravates lung and heart problems. Precursor to ozone and acid rain. Causes brown discoloration of the atmosphere.
O_3	Formed by a chemical reaction between reactive organic gases and nitrogen oxides (NOx) in the presence of sunlight. Common sources of these precursor pollutants include motor vehicle exhaust, industrial emissions, solvents, paints and landfills.	Irritates and causes inflammation of the mucous membranes and lung airways; causes wheezing, coughing and pain when inhaling deeply; decreases lung capacity; aggravates lung and heart problems. Damages plants; reduces crop yield.
PM_{10} & $PM_{2.5}$	Power plants, steel mills, chemical plants, unpaved roads and parking lots, wood-burning stoves and fireplaces, automobiles and others.	Increased respiratory symptoms, such as irritation of the airways, coughing, or difficulty breathing; aggravated asthma; development of chronic bronchitis; irregular heartbeat; nonfatal heart attacks; and premature death in people with heart or lung disease. Impairs visibility (haze).
SO_2	A colorless, nonflammable gas formed when fuel containing sulfur is burned. Examples are refineries, cement manufacturing, and locomotives.	Respiratory irritant. Aggravates lung and heart problems. Can damage crops and natural vegetation. Impairs visibility.

Source: California Air Pollution Control Officers Association (CAPCOA 2013)

2.1.2 Toxic Air Contaminants

In addition to the criteria pollutants discussed above, toxic air contaminants (TACs) are another group of pollutants of concern. TACs are considered either carcinogenic or noncarcinogenic based on the nature of the health effects associated with exposure to the pollutant. For regulatory purposes, carcinogenic TACs

are assumed to have no safe threshold below which health impacts would not occur, and cancer risk is expressed as excess cancer cases per one million exposed individuals. Noncarcinogenic TACs differ in that there is generally assumed to be a safe level of exposure below which no negative health impact is believed to occur. These levels are determined on a pollutant-by-pollutant basis.

There are many different types of TACs, with varying degrees of toxicity. Sources of TACs include industrial processes such as petroleum refining and chrome plating operations, commercial operations such as gasoline stations and dry cleaners, and motor vehicle exhaust. Public exposure to TACs can result from emissions from normal operations, as well as from accidental releases of hazardous materials during upset conditions. The health effects of TACs include cancer, birth defects, neurological damage, and death.

2.1.3 Ambient Air Quality

O_3, PM_{10}, and $PM_{2.5}$ are the pollutant species most potently affecting the Project region. Ambient air quality at the Project site can be inferred from ambient air quality measurements conducted at nearby air quality monitoring stations. The California Air Resources Board (CARB) maintains more than 60 monitoring stations throughout California. The Lancaster - Division Street air quality monitoring station (43301 Division Street, Lancaster, CA 93535), located approximately 18-mile northwest of the Project site, is the closest station to the site. The Lancaster - Division Street monitoring station monitors ambient concentrations of O_3, $PM_{2.5}$, and PM_{10}. Ambient emission concentrations will vary due to localized variations in emission sources and climate and should be considered "generally" representative of ambient concentrations in the Project area.

Table 2-2 summarizes the published data concerning O_3, $PM_{2.5}$, and PM_{10} since 2016 from the Lancaster - Division Street monitoring station for each year that the monitoring data is provided. As previously described, O_3, PM_{10}, and $PM_{2.5}$ are the pollutant species most potently affecting the Project region.

Table 2-2. Summary of Ambient Air Quality Data

Pollutant Standards	2016	2017	2018
O_3 – Lancaster- Division Street Monitoring Station			
Max 1-hour concentration (ppm)	0.108	0.109	0.125
Max 8-hour concentration (ppm) (State/federal)	0.091 / 0.090	0.087 / 0.087	0.105 / 0.104
Number of days above 1-hour standard (State/federal)	3 / 0	10 / 0	5 / 1
Number of days above 8-hour standard (State/federal)	65 / 60	43 / 43	49 / 48
PM_{10} – – Lancaster- Division Street Monitoring Station			
Max 24-hour concentration (µg/m^3) (State/federal)	* / 145.0	* / 82.4	* / 89.3
Number of days above 24-hour standard (State/federal)	* / 0	* / 0	* / 0
$PM_{2.5}$ – – Lancaster- Division Street Monitoring Station			
Max 24-hour concentration (µg/m^3) (State/federal)	64.8 / 64.8	26.6 / 26.6	40.4 / 40.4
Number of days above federal 24-hour standard	2.0	0.0	1.0

Source: CARB 2019a
µg/m^3 = micrograms per cubic meter; ppm = parts per million
* = Insufficient data available

The U.S. Environmental Protection Agency (USEPA) and CARB designate air basins or portions of air basins and counties as being in "attainment" or "nonattainment" for each of the criteria pollutants. Areas that do not meet the standards are classified as nonattainment areas. The National Ambient Air Quality Standards (NAAQS) (other than O_3, PM_{10}, $PM_{2.5}$, and those based on annual averages or arithmetic mean) are not to be exceeded more than once per year. The NAAQS for O_3, PM_{10}, and $PM_{2.5}$ are based on statistical calculations over one- to three-year periods, depending on the pollutant. The California Ambient Air Quality Standards (CAAQS) are not to be exceeded during a three-year period. The attainment status for the MDAB is included in Table 2-3.

The determination of whether an area meets the state and federal standards is based on air quality monitoring data. Some areas are unclassified, which means there is insufficient monitoring data for determining attainment or nonattainment. Unclassified areas are typically treated as being in attainment. Because the attainment/nonattainment designation is pollutant specific, an area may be classified as nonattainment for one pollutant and attainment for another. Similarly, because the state and federal standards differ, an area could be classified as attainment for the federal standards of a pollutant and as nonattainment for the state standards of the same pollutant. The region is designated as a nonattainment area for the federal O_3 standards and nonattainment for state O_3 and PM_{10} standards (CARB 2018).

Table 2-3. Attainment Status of Criteria Pollutants in the Mojave Desert Air Basin

Pollutant	State Designation	Federal Designation
O_3	Nonattainment	Nonattainment
PM_{10}	Nonattainment	Unclassified
$PM_{2.5}$	Unclassified	Unclassified/Attainment
CO	Attainment	Unclassified/Attainment
NO_2	Attainment	Unclassified/Attainment
SO_2	Attainment	Unclassified/Attainment

Source: CARB 2018

2.2 Regulatory Framework

2.2.1 Federal

Clean Air Act

The Clean Air Act (CAA) of 1970 and the CAA Amendments of 1971 required the USEPA to establish the NAAQS, with states retaining the option to adopt more stringent standards or to include other specific pollutants. On April 2, 2007, the U.S. Supreme Court found that carbon dioxide (CO_2) is an air pollutant covered by the CAA; however, no NAAQS have been established for CO_2.

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

The USEPA has classified air basins (or portions thereof) as being in attainment, nonattainment, or unclassified for each criteria air pollutant, based on whether or not the NAAQS have been achieved. If an area is designated unclassified, it is because inadequate air quality data were available as a basis for a nonattainment or attainment designation. Table 2-3 lists the federal attainment status of the MDAB for the criteria pollutants.

2.2.2 State

California Clean Air Act

The California CAA (CCAA) allows the state to adopt ambient air quality standards and other regulations provided that they are at least as stringent as federal standards. CARB, a part of the California Environmental Protection Agency, is responsible for the coordination and administration of both federal and state air pollution control programs within California, including setting the CAAQS. CARB also conducts research, compiles emission inventories, develops suggested control measures, and provides oversight of local programs. CARB establishes emissions standards for motor vehicles sold in California,

consumer products (such as hairspray, aerosol paints, and barbecue lighter fluid), and various types of commercial equipment. It also sets fuel specifications to further reduce vehicular emissions. CARB also has primary responsibility for the development of California's State Implementation Plan (SIP), for which it works closely with the federal government and the local air districts.

California State Implementation Plan

The federal AA (and its subsequent amendments) requires each state to prepare an air quality control plan referred to as the SIP. The SIP is a living document that is periodically modified to reflect the latest emissions inventories, plans, and rules and regulations of air basins as reported by the agencies with jurisdiction over them. The CAA Amendments dictate that states containing areas violating the NAAQS revise their SIPs to include extra control measures to reduce air pollution. The SIP includes strategies and control measures to attain the NAAQS by deadlines established by the CAA. The USEPA has the responsibility to review all SIPs to determine if they conform to the requirements of the CAA.

State law makes CARB the lead agency for all purposes related to the SIP. Local air districts and other agencies prepare SIP elements and submit them to CARB for review and approval. CARB then forwards SIP revisions to the USEPA for approval and publication in the Federal Register.

The AVAQMD is the agency primarily responsible for ensuring that national and state ambient air quality standards are not exceeded and that air quality conditions are maintained in the MDAB. In an attempt to achieve NAAQS and CAAQS and maintain air quality, the air district has completed the following air quality attainment plans and reports, which together constitute the SIP for the portion of the MDAB encompassing the Project:

- AVAQMD Ozone Attainment Plan 2004 (State & Federal)
- AVAQMD 2006 8-hr Ozone RACT SIP Analysis
- AVAQMD 2014 Supplement to the 2006 RACT SIP Analysis
- AVAQMD 2006 8-hr Ozone Federal Negative Declarations for 51 Source Categories
- AVAQMD 2010 8-hr Ozone Federal Negative Declarations for 3 Source Categories
- AVAQMD 2008 Ozone Attainment Plan
- AVAQMD Smoke Management Program
- AVAQMD California Environmental Quality Act (CEQA) & Federal Conformity Guidelines
- AVAQMD 2015 8-Hour RACT SIP Analysis
- AVAQMD 2015 8-hr Ozone Federal Negative Declaration for 20 CTG Source Categories
- AVAQMD 2016 8-hr Ozone Federal Negative Declaration for 7 CTG Source Categories
- AVAQMD 2016 Federal 75 ppb Ozone Attainment Plan

2.2.3 Local

Antelope Valley Air Quality Management District

As previously described, the AVAQMD is the agency primarily responsible for ensuring that federal and state ambient air quality standards are not exceeded and that air quality conditions are maintained. Responsibilities of the AVAQMD include, but are not limited to, adopting and enforcing rules and regulations concerning sources of air pollution, issuing permits for stationary sources of air pollution, monitoring ambient air quality and meteorological conditions, and implementing programs and regulations required by the federal CAA and CAA Amendments. Provisions applicable to the Proposed Project are summarized as follows:

- **Rule 201 – Permits to Construct** applies to the construction of air emissions sources that are not otherwise exempt under Rule 219.
- **Rule 203 – Permit to Operate** requires air emissions sources that are not exempted by Rule 219 to obtain operating permit.
- **Rule 219 – Equipment Not Requiring a Permit** describes the type of equipment that does not require a permit pursuant to District Rules 201 and 203.
- **Rule 401 – Visible Emissions** limits visibility of fugitive dust to less than No. 1 on the Ringlemann Chart (i.e., 20 percent opacity).
- **Rule 402 – Nuisance** applies when complaints from the public are received by the district.
- **Rule 403 – Fugitive Dust** prohibits visible dust beyond the property line of the emission source, requires "every reasonable precaution" to minimize fugitive dust emissions and prevent trackout of materials onto public roadways, and prohibits greater than 100 µg/m^3 difference between upwind and downwind particulate concentrations.
- **Rule 404 – Particulate Matter Concentration** sets concentration limits based on the flow rate of the discharge. The concentration limits would apply to discharge from a stack (e.g., baghouse).
- **Rule 405 – Solid Particulate Matter Weight** limits emissions based on the weight of material processed.
- **Rule 900 – New Source Performance Standards** incorporates federal regulation (40 CFR 60) that affects the construction of emissions units. Requirements may or may not apply depending on the size, construction, and manufacture date of equipment that will be used. Specifically, NSPS OOO (40 CFR 60.670) applies to equipment in nonmetallic mineral processing plants.
- **Regulation XIII – New Source Review** contains a number of rules that are applied to new and modified sources.

2.3 Air Quality Emissions Impact Assessment

2.3.1 Thresholds of Significance

The impact analysis provided below is based on the following California Environmental Quality Act (CEQA) Guidelines Appendix G thresholds of significance. The Project would result in a significant impact to air quality if it would:

- Conflict with or obstruct implementation of any applicable air quality plan;
- Result in a cumulatively considerable net increase of any criteria pollutant for which the Project region is nonattainment under an applicable federal or state ambient air quality standard (including releasing emissions that exceed quantitative thresholds for ozone precursors);
- Expose sensitive receptors to substantial pollutant concentrations; or
- Result in other emissions (such as those leading to odors adversely affecting a substantial number of people).

Antelope Valley Air Quality Management District Thresholds

The significance criteria established by the applicable air quality management or air pollution control district (AVAQMD) may be relied upon to make the above determinations. According to the AVAQMD, an air quality impact is considered significant if the Proposed Project would violate any ambient air quality standard, contribute substantially to an existing or projected air quality violation, or expose sensitive receptors to substantial pollutant concentrations. The AVAQMD has established daily and annual thresholds of significance for air quality for construction and operational activities of land use development projects. The thresholds applicable to the construction phase and operation are shown in Table 2-4.

Table 2-4. AVAQMD Regional Significance Thresholds

Air Pollutant	Construction Activities and Operations
	Pounds Per Day
CO	548
NO_x	137
ROG	137
SO_x	137
PM_{10}	82
$PM_{2.5}$	65
	Tons Per Year
CO	100
NO_x	25
ROG	25
SO_x	25
PM_{10}	15
$PM_{2.5}$	12

Source: AVAQMD 2016

By its very nature, air pollution is largely a cumulative impact. No single project is sufficient in size, by itself, to result in nonattainment of ambient air quality standards. Instead, a project's individual emissions contribute to existing cumulatively significant adverse air quality impacts. If a project's individual emissions exceed its identified significance thresholds, the project would be cumulatively considerable. Projects that do not exceed significance thresholds would not be considered cumulatively considerable.

AVAQMD Air Quality Attainment Plans

As previously mentioned, the Project site is located within the Los Angeles County portion of the MDAB, which is under the jurisdiction of the AVAQMD. The AVAQMD is required, pursuant to the federal CAA, to reduce emissions of criteria pollutants for which the air basin is in nonattainment. In order to reduce such emissions, the AVAQMD adopts and enforces rules and regulations concerning sources of air pollution, issues permits for stationary sources of air pollution, monitors ambient air quality and meteorological conditions, and implements programs and regulations required by the federal CAA and CAA Amendments. The AVAQMD also assists CARB in preparing the SIP by preparing Attainment Plans that demonstrate how the ambient air quality standards will be achieved. The Attainment Plans describe the rules that will be developed and other means by which the AVAQMD will manage the emissions within its jurisdiction.

A project conforms with the AVAQMD Attainment Plans if it complies with all applicable district rules and regulations, complies with all proposed control measures from the applicable plan(s), and is consistent with the growth forecasts in the applicable plan(s) (or is directly included in the applicable plan). A project is nonconforming if it conflicts with or delays implementation of any applicable attainment or maintenance plan. Conformity with growth forecasts can be established by demonstrating that the Project

is consistent with the land use plan that was used to generate the growth forecast. An example of a nonconforming project would be one that increases the gross number of dwelling units, increases the number of trips, and/or increases the overall vehicle miles traveled in an affected area; relative to the applicable land use plan.

Los Angeles County General Plan Air Quality Element

The Air Quality Element of the General Plan summarizes air quality issues and outlines goals and policies that will improve air quality. The following goals and policies are applicable to the Proposed Project.

Goal AQ 1: Protect from exposure to harmful air pollutants

- **Policy AQ 1.2**: Policy Encourage the use of low or no VOC emitting materials.
- **Policy AQ 1.3**: Reduce particulate inorganic and biological emissions from construction, grading, excavation, and demolition to the maximum extent feasible.

Goal AQ 2: The reduction of air pollution and mobile source emissions through coordinated land use, transportation and air quality planning.

- **Policy AQ 2.2**: Participate in, and effectively coordinate the development and implementation of community and regional air quality programs.
- **Policy AQ 2.4**: Coordinate with different agencies to minimize fugitive dust from different sources, activities, and uses.

2.3.2 Methodology

Air quality impacts were assessed in accordance with methodologies recommended by CARB and the AVAQMD. Where criteria air pollutant quantification was required, emissions were modeled using the California Emissions Estimator Model (CalEEMod), version 2016.3.2. CalEEMod is a statewide land use emissions computer model designed to quantify potential criteria pollutant emissions associated with both construction and operations from a variety of land use projects. Project construction-generated air pollutant emissions were calculated using CalEEMod model defaults for Los Angeles County as well as the detailed Project specifications provided by the Project proponent, such as the length of construction activities and the amount of soil movement. Additionally, the construction emissions were calculated using two separate modeling calculations to accurately account for various construction activities. The first modeling calculation predicts emissions associated with Construction Phase 1 through Construction Phase 3 and the second modeling calculation predicts emissions associated with Construction Phase 4. Emissions generated as a result of post-Project implementation was modeled in a third modeling calculation and are based on the Project site plans and the estimated traffic trip generation rates from KOA Traffic Engineers (2020).

2.3.3 Impact Analysis

Project Construction-Generated Criteria Air Quality Emissions

Construction-generated emissions are temporary and short term but have the potential to represent a significant air quality impact. Three basic sources of short-term emissions will be generated through construction of the Proposed Project: operation of the construction vehicles (i.e., excavators, trenchers, dump trucks), the creation of fugitive dust during clearing and grading, and the use of asphalt or other oil-based substances during paving activities. Construction activities such as excavation and grading operations, construction vehicle traffic, and wind blowing over exposed soils would generate exhaust emissions and fugitive particulate matter emissions that affect local air quality at various times during construction. Effects would be variable depending on the weather, soil conditions, the amount of activity taking place, and the nature of dust-control efforts.

Construction-generated emissions associated with the Proposed Project were calculated using the CARB-approved CalEEMod computer program, which is designed to model emissions for land use development projects, based on typical construction requirements. See Attachment A for more information regarding the construction assumptions, including construction equipment and duration, used in this analysis.

Predicted maximum daily and maximum annual construction-generated emissions for the Proposed Project are summarized in Table 2-5. Construction-generated emissions are short term and of temporary duration, lasting only as long as construction activities occur, but would be considered a significant air quality impact if the volume of pollutants generated exceeds the AVAQMD's thresholds of significance. Construction of the Project will occur in four phases, but as previously discussed, was modeled using two separate CaleEEMod modeling calculations.

Table 2-5. Construction-Related Criteria Pollutant Emissions

Construction Year	Pollutant					
	ROG	NO_X	CO	SO_2	PM_{10}	$PM_{2.5}$
Phase 1, Phase 2 & Phase 3 Construction						
Annual (Maximum Tons per Year)						
Construction in 2022	0.03	0.37	0.34	0.00	0.03	0.02
AVAQMD Potentially Significant Impact Annual Threshold	*25*	*25*	*100*	*25*	*15*	*12*
Exceed AVAQMD Threshold?	**n/a**	**No**	**No**	**No**	**No**	**No**
Daily (Maximum Pounds per Day)						
Construction in 2022	1.17	11.71	9.28	0.01	1,42	0.96
AVAQMD Potentially Significant Impact Daily Threshold	*137*	*137*	*548*	*137*	*82*	*65*
Exceed AVAQMD Threshold?	**n/a**	**No**	**No**	**No**	**No**	**No**
Phase 4 Construction						
Annual (Maximum Tons per Year)						
Construction in 2023	0.03	0.31	0.35	0.00	0.02	0.01
AVAQMD Potentially Significant Impact Daily Threshold	*25*	*25*	*100*	*25*	*15*	*12*
Exceed AVAQMD Threshold?	**n/a**	**No**	**No**	**No**	**No**	**No**
Daily (Maximum Pounds per Day)						
Construction in 2023	0.74	7.42	7.75	0.01	1.17	0.75
AVAQMD Potentially Significant Impact Daily Threshold	*137*	*137*	*548*	*137*	*82*	*65*
Exceed AVAQMD Threshold?	**n/a**	**No**	**No**	**No**	**No**	**No**

Source: CalEEMod version 2016.3.2. Refer to Attachment A for Model Data Outputs.

Notes: Summer emissions utilized for daily emissions (pounds per day). Emission reduction/credits for construction emissions are applied based on the required implementation of AVAQMD Rule 403. The specific Rule 403 measures applied in CalEEMod include the following: water exposed surfaces three times daily and limit speeds on unpaved roads to 15 miles per hour.

As shown in Table 2-5, Project construction would not exceed the regional AVAQMD threshold for construction during any construction phase. The AVAQMD's criteria pollutant significance thresholds were set at emission levels tied to the region's attainment status. Therefore, since the project's emissions do not exceed AVAQMD thresholds, no exceedance of the ambient air quality standards would occur, and no health effects from project criteria pollutants would occur.

Post-Project Implementation Criteria Air Quality Emissions

Post-Project implementation would result in low to moderate quantities of long-term emissions of criteria air pollutants. Project-generated increases in emissions would be predominantly associated with mobile emissions, specifically new trips to the Project site due to the proposed new amenities.

The AVAQMD's (2016) *California Environmental Quality Act (CEQA) And Federal Conformity Guidelines* identifies both annual and daily significance thresholds for CO, NO_X, ROG, SO_x, PM_{10}, and $PM_{2.5}$. Criteria air pollutant emissions associated with the implementation of the Proposed Project were calculated using CalEEMod. Predicted maximum annual and daily emissions of criteria air pollutants for Project implementation are summarized in Table 2-6.

Table 2-6. Post-Project Implementation-Related Emissions						
Operations	**Maximum Pollutants (pounds per day)**					
	ROG	**NO_X**	**CO**	**SO_2**	**PM_{10}**	**$PM_{2.5}$**
Annual (Maximum Tons per Year)						
Area Source	0.00	0.00	0.00	0.00	0.00	0.00
Energy Use	0.00	0.00	0.00	0.00	0.00	0.00
Mobile Source	0.00	0.02	0.06	0.00	0.01	0.00
Total	**0.00**	**0.02**	**0.06**	**0.00**	**0.01**	**0.00**
AVAQMD Annual Significance Threshold	*25*	*25*	*100*	*25*	*15*	*12*
Exceed AVAQMD Annual Threshold?	**No**	**No**	**No**	**No**	**No**	**No**
Daily (Maximum Pounds per Day)						
Area Source	0.00	0.00	0.00	0.00	0.00	0.00
Energy Use	0.00	0.00	0.00	0.00	0.00	0.00
Mobile Source	0.03	0.16	0.40	0.00	0.11	0.03
Total	**0.03**	**0.16**	**0.40**	**0.00**	**0.11**	**0.03**
AVAQMD Daily Significance Threshold	*137*	*137*	*548*	*137*	*82*	*65*
Exceed AVAQMD Daily Threshold?	**No**	**No**	**No**	**No**	**No**	**No**

Source: CalEEMod version 2016.3.2. Refer to Attachment A for Model Data Outputs.
Notes: Emissions projections account for a trip generation rate identified by KOA 2020.

As indicated in Table 2-6, emissions generated due to implementation of the Project would not exceed AVAQMD annual or daily significance thresholds. The AVAQMD's criteria pollutant significance thresholds were set at emission levels tied to the region's attainment status. Therefore, since the Project's emissions do not exceed AVAQMD thresholds, no exceedance of the ambient air quality standards would occur, and no health effects from project criteria pollutants would occur.

Conflict with AVAQMD Air Quality Attainment Plans

The AVAQMD is subject to several air quality attainment plans. As explained previously, the air basin is in nonattainment of state O_3 and PM_{10} standards and nonattainment for federal O_3 standards. As such, the air basin promulgates rules and regulations aimed at reducing emissions of O_3 and PM_{10} within the air basin. The AVAQMD has in place Reasonably Available Control Technology (RACT) requirements and emission rules for the majority of emission sources; published in several different regulatory documents.

The most recent RACT requirements were adopted in 2015. As previously described, a project conforms with the AVAQMD Attainment Plans if it complies with all applicable district rules and regulations, complies with all proposed control measures from the applicable plan(s), and is consistent with the growth forecasts in the applicable plan(s) (or is directly included in the applicable plan). A project is nonconforming if it conflicts with or delays implementation of any applicable attainment or maintenance plan. Conformity with growth forecasts can be established by demonstrating that the Project is consistent with the land use plan that was used to generate the growth forecast.

Several AVAQMD rules which have been adopted over the years apply to the Project. Rule 403 – *Fugitive Dust*, prohibits visible dust beyond the property line of the emission source, requires "every reasonable precaution" to minimize fugitive dust emissions and prevent trackout of materials onto public roadways, and prohibits greater than 100 µg/m^3 difference between upwind and downwind particulate concentrations. Rule 402 prohibits nuisance due to air quality contaminants and Rule 401 limits visibility of fugitive dust to less than No. 1 on the Ringlemann Chart (i.e., 20 percent opacity). The Project must comply with these and all other applicable rules and control measures, and as such would be consistent with the emission-reduction goals of the AVAQMD Attainment Plans.

Furthermore, the Proposed Project is consistent with the growth forecasts used to inform AVAQMD air quality planning. The Proposed Project would not result in population growth and would not cause an increase in currently established population projections. The Proposed Project does not include residential development or large local or regional employment centers, and thus would not result in significant population or employment growth. The Project is intended to expand and add amenities to the existing park facilities. As such, the Proposed Project would not conflict or obstruct implementation of the AVAPCD Attainment Plans and would be consistent with emission-reduction goals.

Exposure of Sensitive Receptors to Toxic Air Contaminants

Sensitive receptors are defined as facilities or land uses that include members of the population that are particularly sensitive to the effects of air pollutants, such as children, the elderly, and people with illnesses. Examples of these sensitive receptors are residences, schools, hospitals, and daycare centers. CARB has identified the following groups of individuals as the most likely to be affected by air pollution: the elderly over 65, children under 14, athletes, and persons with cardiovascular and chronic respiratory diseases such as asthma, emphysema, and bronchitis.

Construction-Generated Air Contaminants

Construction-related activities would result in temporary, short-term Proposed Project-generated emissions of diesel particulate matter (DPM), ROG, NOx, CO, and PM_{10} from the exhaust of off-road, heavy-duty diesel equipment for site preparation (e.g., clearing, grading); soil hauling truck traffic; paving; and other miscellaneous activities. However, as shown in Table 2-5, the Project would not exceed the AVAQMD emission thresholds. The portion of the MDAB which encompasses the Project area is designated as a nonattainment area for state O_3 and PM_{10} standards and nonattainment for federal O_3 standards (CARB 2018). Thus, existing O_3 and PM_{10} levels in the MDAB are at unhealthy levels during certain periods.

The health effects associated with O_3 are generally associated with reduced lung function. Because the Project would not involve construction activities that would result in O_3 precursor emissions (ROG or NO_x) in excess of the AVAQMD thresholds. The Project is not anticipated to substantially contribute to regional O_3 concentrations and the associated health impacts.

CO tends to be a localized impact associated with congested intersections. In terms of adverse health effects, CO competes with oxygen, often replacing it in the blood, reducing the blood's ability to transport oxygen to vital organs. The results of excess CO exposure can include dizziness, fatigue, and impairment of central nervous system functions. The Project would not involve construction activities that would result in CO emissions in excess of the AVAQMD thresholds. Thus, the Project's CO emissions would not contribute to the health effects associated with this pollutant.

Particulate matter (PM_{10} and $PM_{2.5}$) contains microscopic solids or liquid droplets that are so small that they can get deep into the lungs and cause serious health problems. Particulate matter exposure has been linked to a variety of problems, including premature death in people with heart or lung disease, nonfatal heart attacks, irregular heartbeat, aggravated asthma, decreased lung function, and increased respiratory symptoms such as irritation of the airways, coughing, or difficulty breathing. For construction activity, DPM is the primary toxic air contaminant (TAC) of concern. Particulate exhaust emissions from diesel-fueled engines (i.e., DPM) were identified as a TAC by the CARB in 1998. The potential cancer risk from the inhalation of DPM, as discussed below, outweighs the potential for all other health impacts (i.e., non-cancer chronic risk, short-term acute risk) and health impacts from other TACs. Based on the emission modeling conducted, the maximum onsite construction-related daily emissions of exhaust $PM_{2.5}$, considered a surrogate for DPM, would be of 0.51 pounds per day during 2022 construction and 0.34 pounds/day during 2023 construction (see Attachment A). ($PM_{2.5}$ exhaust is considered a surrogate for DPM because more than 90 percent of DPM is less than 1 microgram in diameter and therefore is a subset of particulate matter under 2.5 microns in diameter (i.e., $PM_{2.5}$). Most $PM_{2.5}$ derives from combustion, such as use of gasoline and diesel fuels by motor vehicles.) As with O_3 and NO_x, the Project would not generate emissions of PM_{10} or $PM_{2.5}$ that would exceed the AVAQMD's thresholds. Additionally, the Project would be required to comply with AVAQMD Rule 403 described above, which limits the amount of fugitive dust generated during construction. Accordingly, the Project's PM_{10} and $PM_{2.5}$ emissions are not expected to cause any increase in related regional health effects for these pollutants.

In summary, the Project would not result in a potentially significant contribution to regional concentrations of nonattainment pollutants and would not result in a significant contribution to the adverse health impacts associated with those pollutants.

Post-Project Implementation Related Air Contaminants

Implementation of the Proposed Project would not result in the development of any substantial sources of air toxics. There are no stationary sources associated with the implementation of the Project. The Project would not attract heavy-duty trucks, a substantial source of DPM emissions, that spend long periods queuing and idling at the site. Therefore, the Project would not be a significant source of TACs after implementation.

Carbon Monoxide Hot Spots

It has long been recognized that CO exceedances are caused by vehicular emissions, primarily when idling at intersections. Concentrations of CO are a direct function of the number of vehicles, length of delay, and traffic flow conditions. Under certain meteorological conditions, CO concentrations close to congested intersections that experience high levels of traffic and elevated background concentrations may reach unhealthy levels, affecting nearby sensitive receptors. Given the high traffic volume potential, areas of high CO concentrations, or "hot spots," are typically associated with intersections that are projected to operate at unacceptable levels of service during the peak commute hours. It has long been recognized that CO hotspots are caused by vehicular emissions, primarily when idling at congested intersections. However, transport of this criteria pollutant is extremely limited, and CO disperses rapidly with distance from the source under normal meteorological conditions. Furthermore, vehicle emissions standards have become increasingly more stringent in the last 20 years. In 1993, much of the state was designated nonattainment under the CAAQS and NAAQS for CO. Currently, the allowable CO emissions standard in California is a maximum of 3.4 grams/mile for passenger cars (there are requirements for certain vehicles that are more stringent). With the turnover of older vehicles, introduction of cleaner fuels, and implementation of increasingly sophisticated and efficient emissions control technologies, CO concentration across the entire state is now designated as attainment. Detailed modeling of Project-specific CO "hot spots" is not necessary and thus this potential impact is addressed qualitatively.

A CO "hot spot" would occur if an exceedance of the state one-hour standard of 20 parts per million (ppm) or the eight-hour standard of 9 ppm were to occur. A study conducted in Los Angeles County by the South Coast Air Quality Management District (SCAQMD) is helpful in showing the amount of traffic necessary to result in a CO Hotspot. The SCAQMD analysis prepared for CO attainment in the SCAQMD's *1992 Federal Attainment Plan for Carbon Monoxide* in Los Angeles County and a Modeling and Attainment Demonstration prepared by the SCAQMD as part of the 2003 Air Quality Management Plan can be used to demonstrate the potential for CO exceedances of these standards. The SCAQMD conducted a CO hot spot analysis as part of the 1992 CO Federal Attainment Plan at four busy intersections in Los Angeles County during the peak morning and afternoon time periods. The intersections evaluated included Long Beach Boulevard and Imperial Highway (Lynwood), Wilshire Boulevard and Veteran Avenue (Westwood), Sunset Boulevard and Highland Avenue (Hollywood), and La Cienega Boulevard and Century Boulevard (Inglewood). The busiest intersection evaluated was at Wilshire Boulevard and Veteran Avenue, which has a traffic volume of approximately 100,000 vehicles per day. Despite this level of traffic, the CO analysis concluded that there was no violation of CO standards (SCAQMD 1992). To establish a more accurate record of baseline CO concentrations, a CO "hot spot" analysis was conducted in 2003 at the same four busy intersections in Los Angeles at the peak morning and afternoon time periods. This "hot spot" analysis did not predict any violation of CO standards. The highest one-hour concentration was measured at 4.6 ppm at Wilshire Boulevard and Veteran Avenue and the highest eight-hour concentration was measured at 8.4 ppm at Long Beach Boulevard and Imperial Highway.

Similar considerations are also employed by other Air Districts when evaluating potential CO concentration impacts. More specifically, the Bay Area Air Quality Management District (BAAQMD) concludes that under existing and future vehicle emission rates, a given project would have to increase

traffic volumes at a single intersection by more than 44,000 vehicles per hour or 24,000 vehicles per hour where vertical and/or horizontal air does not mix—in order to generate a significant CO impact.

The proposed amenities are anticipated to generate 24 new trips a day during the week and 16 new trips a day on the weekend (KOA 2020). Because the Proposed Project would not result in traffic volumes at any intersection of more than 100,000 vehicles per day, or even 44,000 vehicles per day there is no likelihood of the Project traffic exceeding CO values.

Odors

Typically, odors are 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).

With respect to odors, the human nose is the sole sensing device. The ability to detect odors varies considerably among the population and overall is quite subjective. Some individuals have the ability to smell minute quantities of specific substances; others may not have the same sensitivity but may have sensitivities to odors of other substances. In addition, people may have different reactions to the same odor; in fact, an odor that is offensive to one person (e.g., from a fast-food restaurant) may be perfectly acceptable to another. It is also important to note that an unfamiliar odor is more easily detected and is more likely to cause complaints than a familiar one. This is because of the phenomenon known as odor fatigue, in which a person can become desensitized to almost any odor and recognition only occurs with an alteration in the intensity.

Quality and intensity are two properties present in any odor. The quality of an odor indicates the nature of the smell experience. For instance, if a person describes an odor as flowery or sweet, then the person is describing the quality of the odor. Intensity refers to the strength of the odor. For example, a person may use the word "strong" to describe the intensity of an odor. Odor intensity depends on the odorant concentration in the air. When an odorous sample is progressively diluted, the odorant concentration decreases. As this occurs, the odor intensity weakens and eventually becomes so low that the detection or recognition of the odor is quite difficult. At some point during dilution, the concentration of the odorant reaches a detection threshold. An odorant concentration below the detection threshold means that the concentration in the air is not detectable by the average human.

Construction

During construction, the Proposed Project presents the potential for generation of objectionable odors in the form of diesel exhaust in the immediate vicinity of the site. However, these emissions are short-term in nature and will rapidly dissipate and be diluted by the atmosphere downwind of the emission sources. Additionally, odors would be localized and generally confined to the construction area. Given that there are no natural topographic features (e.g., canyon walls) or manmade structures (e.g., tall buildings) that would potential trap such emissions, construction-related odors would occur at magnitudes that would not affect substantial numbers of people.

Post-Project Implementation

CARB's *Air Quality and Land Use Handbook* (2005) identifies the sources of the most common operational odor complaints received by local air districts. Typical sources include facilities such as sewage treatment plants, landfills, recycling facilities, petroleum refineries, and livestock operations. The Project does not contain any of the land uses identified as typically associated with emissions of objectionable odors.

Cumulative Air Quality Impacts

The cumulative setting for air quality includes Los Angeles County and the MDAB. The region is designated as a nonattainment area for state O_3 and PM_{10} standards and nonattainment for federal O_3 standards (CARB 2018). Cumulative growth in population, vehicle use, and industrial activity could inhibit efforts to improve regional air quality and attain the ambient air quality standards. Thus, the setting for this cumulative analysis consists of the MDAB and associated growth and development anticipated in the air basin.

The AVAQMD's approach to assessing cumulative impacts is based on whether a proposed project will result in an increase in the frequency or severity of existing air quality violations or cause or contribute to new violations. In other words, the AVAQMD considers the impact of a project to be less than cumulatively considerable if it does not exceed significance thresholds under project-level conditions and does not conflict with the AVAQMD's air quality plans. As identified above in Table 2-5 and Table 2-6, the Project would not exceed AVAQMD annual or daily significance thresholds. Additionally, as previously described the Project would not conflict with any AVAQMD air quality plans. Thus, the Project would not result in a cumulative air quality impact.

3.0 GREENHOUSE GAS EMISSIONS

3.1 Greenhouse Gas Setting

Certain gases in the earth's atmosphere, classified as GHGs, play a critical role in determining the earth's surface temperature. Solar radiation enters the earth's atmosphere from space. A portion of the radiation is absorbed by the earth's surface and a smaller portion of this radiation is reflected back toward space. This absorbed radiation is then emitted from the earth as low-frequency infrared radiation. The frequencies at which bodies emit radiation are proportional to temperature. Because the earth has a much lower temperature than the sun, it emits lower-frequency radiation. Most solar radiation passes through GHGs; however, infrared radiation is absorbed by these gases. As a result, radiation that otherwise would have escaped back into space is instead "trapped," resulting in a warming of the atmosphere. This phenomenon, known as the greenhouse effect, is responsible for maintaining a habitable climate on earth. Without the greenhouse effect, the earth would not be able to support life as we know it.

Prominent GHGs contributing to the greenhouse effect are CO_2, methane (CH_4), and nitrous oxide (N_2O). Fluorinated gases also make up a small fraction of the GHGs that contribute to climate change. Fluorinated gases include chlorofluorocarbons, hydrofluorocarbons, perfluorocarbons, sulfur hexafluoride, and nitrogen trifluoride; however, it is noted that these gases are not associated with typical land use development. Human-caused emissions of these GHGs in excess of natural ambient concentrations are

believed to be responsible for intensifying the greenhouse effect and leading to a trend of unnatural warming of the earth's climate, known as global climate change or global warming. It is "extremely likely" that more than half of the observed increase in global average surface temperature from 1951 to 2010 was caused by the anthropogenic increase in GHG concentrations and other anthropogenic factors together (Intergovernmental Panel on Climate Change [IPCC] 2014).

Table 3-1 describes the primary GHGs attributed to global climate change, including their physical properties, primary sources, and contributions to the greenhouse effect.

Each GHG differs in its ability to absorb heat in the atmosphere based on the lifetime, or persistence, of the gas molecule in the atmosphere. CH_4 traps over 25 times more heat per molecule than CO_2, and N_2O absorbs 298 times more heat per molecule than CO_2 (IPCC 2014). Often, estimates of GHG emissions are presented in CO_2 equivalents (CO_2e), which weight each gas by its global warming potential. Expressing GHG emissions in CO_2e takes the contribution of all GHG emissions to the greenhouse effect and converts them to a single unit equivalent to the effect that would occur if only CO_2 were being emitted.

Climate change is a global problem. GHGs are global pollutants, unlike criteria air pollutants and TACs, which are pollutants of regional and local concern. Whereas pollutants with localized air quality effects have relatively short atmospheric lifetimes (about one day), GHGs have long atmospheric lifetimes (one to several thousand years). GHGs persist in the atmosphere long enough to be dispersed around the globe. Although the exact lifetime of any particular GHG molecule is dependent on multiple variables and cannot be pinpointed, it is understood that more CO_2 is emitted into the atmosphere than is sequestered by ocean uptake, vegetation, or other forms. Of the total annual human-caused CO_2 emissions, approximately 55 percent is sequestered through ocean and land uptakes every year, averaged over the last 50 years, whereas the remaining 45 percent of human-caused CO_2 emissions remains stored in the atmosphere (IPCC 2013).

The quantity of GHGs that it takes to ultimately result in climate change is not precisely known; suffice it to say the quantity is enormous, and no single project alone would measurably contribute to a noticeable incremental change in the global average temperature or to global, local, or microclimates. From the standpoint of CEQA, GHG impacts to global climate change are inherently cumulative.

Table 3-1. Greenhouse Gases	
Greenhouse Gas	**Description**
CO_2	CO_2 is a colorless, odorless gas. CO_2 is emitted in a number of ways, both naturally and through human activities. The largest source of CO_2 emissions globally is the combustion of fossil fuels such as coal, oil, and gas in power plants, automobiles, industrial facilities, and other sources. A number of specialized industrial production processes and product uses such as mineral production, metal production, and the use of petroleum-based products can also lead to CO_2 emissions. The atmospheric lifetime of CO_2 is variable because it is so readily exchanged in the atmosphere.[1]
CH_4	CH_4 is a colorless, odorless gas and is the major component of natural gas, about 87 percent by volume. It is also formed and released to the atmosphere by biological processes occurring in anaerobic environments. CH_4 is emitted from a variety of both human-related and natural sources. Human-related sources include fossil fuel production, animal husbandry (intestinal fermentation in livestock and manure management), rice cultivation, biomass burning, and waste management. These activities release significant quantities of CH_4 to the atmosphere. Natural sources of CH_4 include wetlands, gas hydrates, permafrost, termites, oceans, freshwater bodies, non-wetland soils, and other sources such as wildfires. The atmospheric lifetime of CH_4 is about 12 years.[2]
N_2O	N_2O is a clear, colorless gas with a slightly sweet odor. N_2O is produced by both natural and human-related sources. Primary human-related sources of N_2O are agricultural soil management, animal manure management, sewage treatment, mobile and stationary combustion of fossil fuels, adipic acid production, and nitric acid production. N_2O is also produced naturally from a wide variety of biological sources in soil and water, particularly microbial action in wet tropical forests. The atmospheric lifetime of N_2O is approximately 120 years.[3]

Sources: [1] USEPA 2016a, [2] USEPA 2016b, [3] USEPA 2016c

3.1.1 Sources of Greenhouse Gas Emissions

In 2019, CARB released the 2019 edition of the California GHG inventory covering calendar year 2017 emissions. In 2017, California emitted 424.1 million gross metric tons of CO_2e including from imported electricity. Combustion of fossil fuel in the transportation sector was the single largest source of California's GHG emissions in 2017, accounting for approximately 41 percent of total GHG emissions in the state. This sector was followed by the industrial sector (24 percent) and the electric power sector including both in-state and out-of-state sources (15 percent) (CARB 2019b).

Emissions of CO_2 are by-products of fossil fuel combustion. CH_4, a highly potent GHG, primarily results from off-gassing (the release of chemicals from nonmetallic substances under ambient or greater pressure conditions) and is largely associated with agricultural practices and landfills. N_2O is also largely attributable to agricultural practices and soil management. CO_2 sinks, or reservoirs, include vegetation and the ocean, which absorb CO_2 through sequestration and dissolution (CO_2 dissolving into the water), respectively, two of the most common processes for removing CO_2 from the atmosphere.

3.2 Regulatory Framework

3.2.1 State

Executive Order S-3-05

Executive Order (EO) S-3-05, signed by Governor Arnold Schwarzenegger in 2005, proclaims that California is vulnerable to the impacts of climate change. It declares that increased temperatures could reduce the Sierra Nevada snowpack, further exacerbate California's air quality problems, and potentially cause a rise in sea levels. To combat those concerns, the EO established total GHG emission targets for the

state. Specifically, emissions are to be reduced to the 2000 level by 2010, the 1990 level by 2020, and to 80 percent below the 1990 level by 2050.

While dated, this executive order remains relevant because a more recent California Appellate Court decision, *Cleveland National Forest Foundation v. San Diego Association of Governments* (November 24, 2014) 231 Cal.App.4th 1056, examined whether it should be viewed as having the equivalent force of a legislative mandate for specific emissions reductions. While the California Supreme Court ruled that the San Diego Association of Governments did not abuse its discretion by declining "to adopt the 2050 goal as a measure of significance in light of the fact that the EO does not specify any plan or implementation measures to achieve its goal", the decision also recognized that the goal of a 40-percent reduction in 1990 GHG levels by 2030 is "widely acknowledged" as a "necessary interim target to ensure that California meets its longer-range goal of reducing greenhouse gas emissions 80 percent below 1990 levels by the year 2050."

Assembly Bill 32 Climate Change Scoping Plan and Updates

In 2006, the California legislature passed Assembly Bill (AB) 32 (Health and Safety Code § 38500 et seq., or AB 32), also known as the Global Warming Solutions Act. AB 32 requires CARB to design and implement feasible and cost-effective emission limits, regulations, and other measures, such that statewide GHG emissions are reduced to 1990 levels by 2020 (representing a 25-percent reduction in emissions). AB 32 anticipates that the GHG reduction goals will be met, in part, through local government actions. CARB has identified a GHG reduction target of 15 percent from current levels for local governments and notes that successful implementation relies on local governments' land use planning and urban growth decisions.

Pursuant to AB 32, CARB adopted a Scoping Plan in December 2008, which was re-approved by CARB on August 24, 2011, that outlines measures to meet the 2020 GHG reduction goals. To meet these goals, California must reduce its GHG emissions by 30 percent below projected 2020 business-as-usual emissions levels or about 15 percent from today's levels. The Scoping Plan recommends measures for further study and possible State implementation, such as new fuel regulations. It estimates that a reduction of 174 million metric tons of CO_2e (about 191 million U.S. tons) from the transportation, energy, agriculture, and forestry sectors and other sources could be achieved should the State implement all of the measures in the Scoping Plan.

The Scoping Plan is required by AB 32 to be updated at least every five years. The first update to the AB 32 Scoping Plan was approved on May 22, 2014 by CARB. The 2017 Scoping Plan Update was adopted on December 14, 2017. The Scoping Plan Update addresses the 2030 target established by Senate Bill (SB) 32 as discussed below and establishes a proposed framework of action for California to meet a 40-percent reduction in GHG emissions by 2030 compared to 1990 levels. The key programs that the Scoping Plan Update builds on include: increasing the use of renewable energy in the state, the Cap-and-Trade Regulation, the Low Carbon Fuel Standard, and reduction of CH_4 emissions from agricultural and other wastes.

Executive Order B-30-15

On April 20, 2015 Governor Brown signed EO B-30-15 to establish a California GHG reduction target of 40 percent below 1990 levels by 2030. The Governor's EO aligns California's GHG reduction targets with those of leading international governments such as the 28-nation European Union, which adopted the same target in October 2014. California is on track to meet or exceed the target of reducing GHG emissions to 1990 levels by 2020, as established in the California Global Warming Solutions Act of 2006 (AB 32, discussed above). California's new emission reduction target of 40 percent below 1990 levels by 2030 will make it possible to reach the ultimate goal of reducing emissions 80 percent below 1990 levels by 2050. This is in line with the scientifically established levels needed in the U.S. to limit global warming below 2 degrees Celsius, the warming threshold at which major climate disruptions are projected, such as super droughts and rising sea levels.

Senate Bill 32 and Assembly Bill 197 of 2016

In August 2016, Governor Brown signed SB 32 and AB 197, which serve to extend California's GHG reduction programs beyond 2020. SB 32 amended the Health and Safety Code to include Section 38566, which contains language to authorize CARB to achieve a statewide GHG emission reduction of at least 40 percent below 1990 levels by no later than December 31, 2030. SB 32 codified the targets established by EO B-30-15 for 2030, which set the next interim step in the State's continuing efforts to pursue the long-term target expressed in EOs S-3-05 and B-30-15 of 80 percent below 1990 emissions levels by 2050.

Senate Bill X1-2 of 2011, Senate Bill 350 of 2015, and Senate Bill 100 of 2018

SB X1-2 of 2011 requires all California utilities to generate 33 percent of their electricity from renewables by 2020. SB X1-2 sets a three-stage compliance period requiring all California utilities, including independently owned utilities, energy service providers, and community choice aggregators, to generate 20 percent of their electricity from renewables by December 31, 2013; 25 percent by December 31, 2016; and 33 percent by December 31, 2020. SB X1-2 also requires the renewable electricity standard to be met increasingly with renewable energy that is supplied to the California grid from sources within, or directly proximate to, California.

In October 2015, SB 350 was signed by Governor Brown, which requires retail sellers and publicly owned utilities to procure 50 percent of their electricity from renewable resources by 2030. In 2018, SB 100 was signed by Governor Brown, codifying a goal of 60-percent renewable procurement by 2030 and 100 percent by 2045 Renewal Portfolio Standards.

Executive Order B-55-18

Governor Jerry Brown Signed Executive B-55-18 into law in September 2018. Order Executive Order B-55-18 sets a goal for the state to reach carbon neutrality no later than the year 2045, and to maintain negative net emissions thereafter. Carbo neutrality refers to achieving a net zero carbon dioxide emissions. This can be achieved by reducing or eliminating carbon emissions, balancing carbon emissions with carbon removal, or a combination of the two. This goal is in addition to existing statewide targets for GHG emission reduction.

3.2.2 Local

Antelope Valley Air Quality Management District

The AVAQMD is an expert commenting agency on air quality and related matters within its jurisdiction or impacting on its jurisdiction. The AVAQMD provides guidelines to assessing the significance of project specific GHG emissions and offers both daily and annual thresholds for GHG emissions.

Los Angeles County Community Climate Action Plan

The Los Angeles County Community Climate Action Plan (CCAP) was adopted in 2015 and provides policy guidance from reducing GHG emissions generated within the unincorporated areas. To reduce the impacts of climate change, the County has set a target to reduce GHG emissions from community activities within the unincorporated areas by at least 11 percent below 2010 by 2020. The CCAP ensures that the County will be able to reduce its emissions to 1990 levels by 2020. The CCAP includes an emission inventory for the unincorporated areas and an analysis of the reduction needed to achieve County goals. It analyzes specific actions that result in reduced emissions and lays out a plan for their use and implementation. It also provides a mechanism for tracking and evaluating the County's progress in achieving its climate change goals. The CCAP supports sustainable design and energy efficiency, as well as active and multimodal transportation strategies to reduce vehicle miles traveled (VMT). The CCAP is a component of the Los Angeles County General Plan.

The purpose of the CCAP is to (1) establish a baseline emissions inventory and reduction needed to meet County goals, (2) identify specific actions that will measurably reduce GHG emissions, (3) implement state and local level measures, and (4) provide a mechanism for ongoing tracking and updates to the CCAP. There are 26 local actions included in the CCAP. The local actions are grouped into five strategy areas: green building and energy; land use and transportation; water conservation and wastewater; waste reduction, reuse, and recycling; and land conservation and tree planting.

Los Angeles County General Plan Air Quality Element

The Air Quality Element of the General Plan summarizes air quality issues and outlines goals and policies that will reduce GHG emissions. The following goals and policies are applicable to the Proposed Project.

Goal AQ 3: Implementation of plans and programs to address the impacts of climate change.

- **Policy AQ 3.1**: Facilitate the implementation and maintenance of the Community Climate Action Plan to ensure that the County reaches its climate change and greenhouse gas emission reduction goals.

3.3 Greenhouse Gas Emissions Impact Assessment

3.3.1 Thresholds of Significance

The impact analysis provided below is based on the following CEQA Guidelines Appendix G thresholds of significance. The Project would result in a significant impact to greenhouse gas emissions if it would:

1) Generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment, or

2) Conflict with any applicable plan, policy, or regulation of an agency adopted for the purpose of reducing the emissions of greenhouse gases.

Antelope Valley Air Quality Management District Thresholds

The AVAQMD's (2016) California Environmental Quality Act (CEQA) And Federal Conformity Guidelines identifies both annual and daily construction significance thresholds for GHG emissions. The Proposed Project is compared to the AVAQMD annual threshold of 100,000 metric tons of CO_2e annually as well as the AVAQMD daily threshold of 548,000 pounds of CO_2e daily.

In *Center for Biological Diversity v. Department of Fish and Wildlife* (2015) 62 Cal. 4th 2014, 213, 221, 227, following its review of various potential GHG thresholds proposed in an academic study [Crockett, *Addressing the Significance of Greenhouse Gas Emissions: California's Search for Regulatory Certainty in an Uncertain World* (July 2011), 4 Golden Gate U. Envtl. L. J. 203], the California Supreme Court identified the use of numeric bright-line thresholds as a potential pathway for compliance with CEQA GHG requirements. The study found numeric bright line thresholds designed to determine when small projects were so small as to not cause a cumulatively considerable impact on global climate change was consistent with CEQA. Specifically, Public Resources Code section 21003(f) provides it is a policy of the state that "[a]ll persons and public agencies involved in the environmental review process be responsible for carrying out the process in the most efficient, expeditious manner in order to conserve the available financial, governmental, physical and social resources with the objective that those resources may be better applied toward the mitigation of actual significant effects on the environment." The Supreme Court-reviewed study noted, "[s]ubjecting the smallest projects to the full panoply of CEQA requirements, even though the public benefit would be minimal, would not be consistent with implementing the statute in the most efficient, expeditious manner. Nor would it be consistent with applying lead agencies' scarce resources toward mitigating actual significant climate change impacts." (Crockett, *Addressing the Significance of Greenhouse Gas Emissions: California's Search for Regulatory Certainty in an Uncertain World* (July 2011), 4 Golden Gate U. Envtl. L. J. 203, 221, 227.)

The significance of the Project's GHG emissions is evaluated consistent with CEQA Guidelines Section 15064.4(b)(2) by considering whether the Project complies with applicable plans, policies, regulations and requirements adopted to implement a statewide, regional, or local plan for the reduction or mitigation of GHG emissions. The County of Los Angles may set a project-specific threshold based on the context of each particular project, including using the AVAQMD expert recommendations. For the Proposed Project, the AVAQMD's numeric thresholds are used as the significance threshold in addition to the qualitative

thresholds of significance set forth below from Section VII of CEQA Guidelines Appendix G. As noted in the academic study, the fact that small projects below a numeric bright line threshold are not subject to CEQA-based mitigation, does not mean such small projects do not help the state achieve its climate change goals because even small projects participate in or comply with non-CEQA-based GHG reduction programs, such constructing development in accordance with statewide GHG-reducing energy efficiency building standards, called Cal Green or Title 24 energy-efficiency building standards (Crockett 2011).

Los Angeles County Community Climate Action Plan

The CCAP establishes a GHG emissions reduction target for the year 2020 that is 11 percent below year 2010 emission levels. The GHG Plan is consistent with AB 32 and sets the County on a path to achieve a more substantial long-term reduction in the post-2020 period. Achieving this level of emissions would ensure that the contribution to GHG emissions from activities covered by the Climate Action Plan would not be cumulatively considerable.

3.3.2 Methodology

GHG-related impacts were assessed in accordance with methodologies recommended by CARB and the AVAQMD. Where GHG emission quantification was required, emissions were modeled using the CalEEMod, version 2016.3.2. CalEEMod is a statewide land use emissions computer model designed to quantify potential GHG emissions associated with both construction and operations from a variety of land use projects. Project construction-generated GHG emissions were calculated using CalEEMod model defaults for Los Angeles County as well as the detailed Project specifications provided by the Project proponent, such as the length of construction activities and the amount of soil movement. Additionally, the construction emissions were calculated using two modeling calculations to accurately account for various construction activities. The first modeling calculation predicts emissions associated with Construction Phase 1 through Phase 3 and the second modeling calculation estimates emissions associated with Construction Phase 4. GHG emissions related to the implementation of the Project were based on the Project site plans and the estimated traffic trip generation rates from KOA Traffic Engineers (2020).

3.3.3 Impact Analysis

Contribution of Greenhouse Gas Emissions

The AVAQMD's (2016) *California Environmental Quality Act (CEQA) And Federal Conformity Guidelines* identifies both annual and daily significance thresholds for GHG emissions. The Proposed Project is compared to the AVAQMD annual threshold of 100,000 metric tons of CO_2e annually as well as the AVAQMD daily threshold of 548,000 pounds of CO_2e daily.

Project Construction

Construction-related activities that would generate GHGs include worker commute trips, haul trucks carrying supplies and materials to and from the Project site, and off-road construction equipment (e.g.,

dozers, loaders, excavators). Table 3-2 illustrates the specific construction-generated GHG emissions that would result from construction of the Project.

Table 3-2. Construction-Related Greenhouse Gas Emissions	
Emissions Source	**CO_2e (Metric Tons/ Year)**
Annual (Maximum Tons per Year)	
Phase 1, Phase 2 and Phase 3 Construction	
Construction in 2022	51
Phase 4 Construction	
Construction in 2023	53
AVAQMD Annual Threshold	*100,000 metric tons/year*
Exceed Annual Threshold?	**No**
Daily (Maximum Pounds per Day)	
Phase 1, Phase 2 and Phase 3 Construction	
Construction in 2022	1,746
Phase 4 Construction	
Construction in 2023	1,316
AVAQMD Daily Threshold	*548,000 pounds/day*
Exceed Daily Threshold?	**No**

Source: CalEEMod version 2016.3.2. Refer to Attachment A for Model Data Outputs.

As shown in Table 3-2, construction-generated emissions would not exceed AVAQMD significance thresholds.

Project Implementation

Implementation of the Project would result in GHG emissions associated with vehicle trips generated by patrons visiting the new amenities proposed by the Project. Table 3-3 illustrates the specific GHG emissions that would result from implementation of the Project.

Table 3-3. Operational Greenhouse Gas Emissions	
Emissions Source	**CO_2e (Metric Tons/ Year)**
Annual (Maximum Tons per Year)	
Area Source	0.00
Energy	0.00
Mobile	20.72
Waste	0.05
Water	4.21
Total	**24.98**
AVAQMD Annual Threshold	*100,000 metric tons/year*
Exceed Annual Threshold?	**No**
Summer Daily (Maximum Pounds per Day)	
Area Source	0.00
Energy	0.00
Mobile	143.93
Total	**143.93**
AVAQMD Daily Threshold	*548,000 pounds/day*
Exceed Daily Threshold?	**No**
Winter Daily (Maximum Pounds per Day)	
Area Source	0.00
Energy	0.00
Mobile	136.81
Total	**136.81**
AVAQMD Daily Threshold	*548,000 pounds/day*
Exceed Daily Threshold?	**No**

Source: CalEEMod version 2016.3.2. Refer to Attachment A for Model Data Outputs.

Notes: Emissions projections account for a trip generation rate identified by KOA 2020.

As shown in Table 3-3, emissions generated due to Project implementation would not exceed AVAQMD significance thresholds.

Conflict with any Applicable Plan, Policy, or Regulation of an Agency Adopted for the Purpose of Reducing the Emissions of Greenhouse Gases

As explained previously, the Los Angeles County CCAP establishes a GHG emissions reduction target for the year 2020 that is 11 percent below 2010 emission levels. The GHG Plan is consistent with AB 32 and sets the County on a path to achieve a more substantial long-term GHG reductions consistent with

statewide post-2020 GHG reduction targets. Achieving this level of emissions would ensure that the contribution to GHG emissions from activities covered by the CCAP would not be cumulatively considerable. The CCAP addresses ways to mitigate and avoid GHG emissions associated with community activities in unincorporated Los Angeles County. The measures and actions outlined in the CCAP establish a GHG reduction target consistent with AB 32.

The CCAP is used to comply with project-level review requirements pursuant to CEQA. The CEQA Guidelines specify that CEQA project evaluation of GHG emissions can tier from a programmatic analysis of GHG emissions, such as the CCAP. The reduction measures proposed in the CCAP build on GHG emissions inventory results and key opportunities prioritized by the County of Los Angeles. The CCAP strategies consist of measures that identify the steps the County will take to support reductions in GHG emissions. The County will achieve these reductions in GHG emissions through a mix of voluntary programs and new strategic standards. All standards presented in the CCAP respond to the needs of development, avoiding unnecessary regulation, streamlining new development, and achieving more efficient use of resources.

The Proposed Project is consistent with the GHG inventory and forecast in the CCAP. Both the existing and the projected GHG inventories in the CCAP were derived based on the land use designations and associated densities defined in the County's General Plan. As previously stated, the Proposed Project does not include residential development or large local or regional employment centers, and thus would not result in significant population or employment growth. The Project is intended to expand and add amenities to the existing park facilities thus, increasing usable park space. The Proposed Project is consistent with the land use designation and is thereby consistent with the GHG inventory and forecasts in the CCAP. As a result, the Proposed Project would not conflict with the CCAP.

Cumulative Greenhouse Gas Impacts

Climate change is a global problem. And GHGs are global pollutants, unlike criteria air pollutants and toxic air contaminants, which are pollutants of regional and local concern. Whereas pollutants with localized air quality effects have relatively short atmospheric lifetimes (about 1 day), GHGs have much longer atmospheric lifetimes of 1 year to several thousand years that allow them to be dispersed around the globe.

It is generally the case that an individual project of this size and nature is of insufficient magnitude by itself to influence climate change or result in a substantial contribution to the global GHG inventory. GHG impacts are recognized as exclusively cumulative impacts; there are no non-cumulative GHG emission impacts from a climate change perspective. The additive effect of Project-related GHGs would not result in a reasonably foreseeable cumulatively considerable contribution to global climate change. In addition, the Proposed Project as well as other cumulative related projects would also be subject to all applicable regulatory requirements, which would further reduce GHG emissions. As previously discussed, the Proposed Project would not exceed AVAQMD significance thresholds and would actually assist to reduce GHG emissions. Therefore, the Project would not result in a cumulative impact.

4.0 REFERENCES

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LIST OF ATTACHMENTS

Attachment A - CalEEMod Output Files

ATTACHMENT A

CalEEMod Output Files