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Air Quality Impact Analysis

Project Title

Multi-family Residential Development
GPA/ZC No. TBD

Project Location

Ashe Road and Berkshire Road
County of Kern, California
APN: 539-010-08

May 3, 2022

Submitted to:

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1.0 INTRODUCTION

This Air Quality Impact Analysis (AQIA) identifies the potential impacts on air quality resulting from the proposed residential development consisting of 336 multi-family apartments located on APN 539-010-08. The proposed project occupies 19.51 gross acres. The development will also have green spaces and a community clubhouse.

The project site is located in the County of Kern east of the City of Bakersfield and is within the San Joaquin Valley Air Basin (SJVAB). The SJVAB is under the jurisdiction of the San Joaquin Valley Air Pollution Control District (SJVAPCD).

This document was prepared using methodology described in the San Joaquin Valley Unified Air Pollution Control District's (SJVUAPCD's) *Guide for Assessing and Mitigating Air Quality Impacts* (GAMAQI), March 19, 2015 Revision.

2.0 PROJECT DESCRIPTION

The Project site occupies 19.51 gross acres (APN 539-010-08) and is currently zoned R-2 (limited Multiple Family Dwelling) with a land use of HMR (high medium density residential). The proposed zone change is to zone R-3/PUD with a change in land use to HR (high density residential). The proposed development is limited to 336 multi-family apartments. The Project site is located southwest of the Berkshire Road and Ashe Road intersection in southwest Bakersfield. The Project was assessed as if it would be developed in one phase. This assessment examines the projected gross impacts to air quality posed by this Project and to the San Joaquin Valley Air Basin to determine whether or not the Project remains below established air quality thresholds of significance.

Table 2-1: Assessor's Parcel Numbers and Area for Project Site

Assessor's Parcel Number	Acreage
539-010-08	19.51
Total Acreage	**19.51**

3.0 AIR QUALITY STANDARDS

There are three categories of air pollutants that are regulated by federal, State, and/or regional governmental agencies: criteria pollutants; hazardous air pollutants (HAPs), and greenhouse gases (GHGs). These air pollutants, which are emitted as a result of everyday activities, can pose significant health and environmental risks. The following provides a discussion of each air pollutant category.

3.1 Criteria Pollutants

The Federal Clean Air Act (FCAA) of 1970, and the subsequent Federal Clean Air Act Amendments (FCAAA) of 1977 and 1990, required the establishment of National Ambient Air Quality Standards (NAAQS) for widespread pollutants considered harmful to public health and the environment. These pollutants are commonly referred to as criteria pollutants. The NAAQS establish acceptable pollutant concentrations which may be equaled continuously or exceeded only once per year. The California Ambient Air Quality Standards (CAAQS) are limits set by the California Air Resources Board (CARB) that cannot be equaled or exceeded. An air pollution

control district must prepare an Air Quality Attainment Plan if the standards are not met. The NAAQS and CAAQS are shown in Table 3-1.

The following is a summary of the characteristics of the criteria pollutants and their potential physical and health effects.

Ozone Emissions - Ozone occurs in two layers of the atmosphere. The layer surrounding the earth's surface is the troposphere. The ground level, or "bad" ozone layer, is an air pollutant that damages human health, vegetation, and many common materials. It is a key ingredient of urban smog. The troposphere extends to a level about 10 miles up where it meets the second layer, the stratosphere. The stratospheric, or "good" ozone layer, extends upward from about 10 to 30 miles and protects life on earth from the sun's harmful ultraviolet rays.

Ozone is a regional air pollutant. It is generated over a large area and is transported and spread by wind. Ozone, the primary constituent of smog, is the most complex, difficult to control, and pervasive of the criteria pollutants. Unlike other pollutants, ozone is not emitted directly into the air by specific sources. Ozone is created by sunlight acting on other air pollutants (called precursors), specifically nitrogen oxide (NO_x) and reactive organic gases (VOC). Sources of precursor gases to the photochemical reaction that form ozone number in the thousands. Common sources include consumer products, gasoline vapors, chemical solvents, and combustion products of various fuels. Originating from gas stations, motor vehicles, large industrial facilities, and small businesses such as bakeries and dry cleaners, the ozone-forming chemical reactions often take place in another location, catalyzed by sunlight and heat. High ozone concentrations can form over large regions when emissions from motor vehicles and stationary sources are carried hundreds of miles from their origins.

In 1994, approximately 50 million people lived in counties with air quality levels above the EPA's health-based national air quality standard. The highest levels of ozone were recorded in Los Angeles, closely followed by the San Joaquin Valley. High levels also persist in other heavily populated areas, including the Texas Gulf Coast and much of the northeastern United States.

While the ozone in the upper atmosphere absorbs harmful ultraviolet light, ground-level ozone is damaging to the tissues of plants, animals, and humans, as well as to a wide variety of inanimate materials such as plastics, metals, fabrics, rubber, and paints. Societal costs from ozone damage include increased medical costs, the loss of human and animal life, accelerated replacement of industrial equipment, and reduced crop yields.

Table 3-1: Ambient Air Quality Standards

Ambient Air Quality Standards

Pollutant	Averaging Time	California Standards [1]		National Standards [2]		
		Concentration [3]	Method [4]	Primary [3,5]	Secondary [3,6]	Method [7]
Ozone (O_3)[8]	1 Hour	0.09 ppm (180 µg/m³)	Ultraviolet Photometry	—	Same as Primary Standard	Ultraviolet Photometry
	8 Hour	0.070 ppm (137 µg/m³)		0.070 ppm (137 µg/m³)		
Respirable Particulate Matter (PM10)[9]	24 Hour	50 µg/m³	Gravimetric or Beta Attenuation	150 µg/m³	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	20 µg/m³		—		
Fine Particulate Matter (PM2.5)[9]	24 Hour	—	—	35 µg/m³	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	12 µg/m³	Gravimetric or Beta Attenuation	12.0 µg/m³	15 µg/m³	
Carbon Monoxide (CO)	1 Hour	20 ppm (23 mg/m³)	Non-Dispersive Infrared Photometry (NDIR)	35 ppm (40 mg/m³)	—	Non-Dispersive Infrared Photometry (NDIR)
	8 Hour	9.0 ppm (10 mg/m³)		9 ppm (10 mg/m³)	—	
	8 Hour (Lake Tahoe)	6 ppm (7 mg/m³)		—	—	
Nitrogen Dioxide (NO_2)[10]	1 Hour	0.18 ppm (339 µg/m³)	Gas Phase Chemiluminescence	100 ppb (188 µg/m³)	—	Gas Phase Chemiluminescence
	Annual Arithmetic Mean	0.030 ppm (57 µg/m³)		0.053 ppm (100 µg/m³)	Same as Primary Standard	
Sulfur Dioxide (SO_2)[11]	1 Hour	0.25 ppm (655 µg/m³)	Ultraviolet Fluorescence	75 ppb (196 µg/m³)	—	Ultraviolet Flouresecence; Spectrophotometry (Pararosaniline Method)
	3 Hour	—		—	0.5 ppm (1300 µg/m³)	
	24 Hour	0.04 ppm (105 µg/m³)		0.14 ppm (for certain areas)[11]	—	
	Annual Arithmetic Mean	—		0.030 ppm (for certain areas)[11]	—	
Lead[12,13]	30 Day Average	1.5 µg/m³	Atomic Absorption	—	—	High Volume Sampler and Atomic Absorption
	Calendar Quarter	—		1.5 µg/m³ (for certain areas)[12]	Same as Primary Standard	
	Rolling 3-Month Average	—		0.15 µg/m³		
Visibility Reducing Particles[14]	8 Hour	See footnote 14	Beta Attenuation and Transmittance through Filter Tape	No National Standards		
Sulfates	24 Hour	25 µg/m³	Ion Chromatography			
Hydrogen Sulfide	1 Hour	0.03 ppm (42 µg/m³)	Ultraviolet Fluorescence			
Vinyl Chloride[12]	24 Hour	0.01 ppm (26 µg/m³)	Gas Chromatography			

See footnotes on next page ...

For more information please call ARB-PIO at (916) 322-2990 California Air Resources Board (5/4/16)

1. California standards for ozone, carbon monoxide (except 8-hour Lake Tahoe), sulfur dioxide (1 and 24 hour), nitrogen dioxide, and particulate matter (PM10, PM2.5, and visibility reducing particles), are values that are not to be exceeded. All others are not to be equaled or exceeded. California ambient air quality standards are listed in the Table of Standards in Section 70200 of Title 17 of the California Code of Regulations.

2. National standards (other than ozone, particulate matter, and those based on annual arithmetic mean) are not to be exceeded more than once a year. The ozone standard is attained when the fourth highest 8-hour concentration measured at each site in a year, averaged over three years, is equal to or less than the standard. For PM10, the 24 hour standard is attained when the expected number of days per calendar year with a 24-hour average concentration above 150 $\mu g/m^3$ is equal to or less than one. For PM2.5, the 24 hour standard is attained when 98 percent of the daily concentrations, averaged over three years, are equal to or less than the standard. Contact the U.S. EPA for further clarification and current national policies.

3. Concentration expressed first in units in which it was promulgated. Equivalent units given in parentheses are based upon a reference temperature of 25°C and a reference pressure of 760 torr. Most measurements of air quality are to be corrected to a reference temperature of 25°C and a reference pressure of 760 torr; ppm in this table refers to ppm by volume, or micromoles of pollutant per mole of gas.

4. Any equivalent measurement method which can be shown to the satisfaction of the ARB to give equivalent results at or near the level of the air quality standard may be used.

5. National Primary Standards: The levels of air quality necessary, with an adequate margin of safety to protect the public health.

6. National Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.

7. Reference method as described by the U.S. EPA. An "equivalent method" of measurement may be used but must have a "consistent relationship to the reference method" and must be approved by the U.S. EPA.

8. On October 1, 2015, the national 8-hour ozone primary and secondary standards were lowered from 0.075 to 0.070 ppm.

9. On December 14, 2012, the national annual PM2.5 primary standard was lowered from 15 $\mu g/m^3$ to 12.0 $\mu g/m^3$. The existing national 24-hour PM2.5 standards (primary and secondary) were retained at 35 $\mu g/m^3$, as was the annual secondary standard of 15 $\mu g/m^3$. The existing 24-hour PM10 standards (primary and secondary) of 150 $\mu g/m^3$ also were retained. The form of the annual primary and secondary standards is the annual mean, averaged over 3 years.

10. To attain the 1-hour national standard, the 3-year average of the annual 98th percentile of the 1-hour daily maximum concentrations at each site must not exceed 100 ppb. Note that the national 1-hour standard is in units of parts per billion (ppb). California standards are in units of parts per million (ppm). To directly compare the national 1-hour standard to the California standards the units can be converted from ppb to ppm. In this case, the national standard of 100 ppb is identical to 0.100 ppm.

11. On June 2, 2010, a new 1-hour SO_2 standard was established and the existing 24-hour and annual primary standards were revoked. To attain the 1-hour national standard, the 3-year average of the annual 99th percentile of the 1-hour daily maximum concentrations at each site must not exceed 75 ppb. The 1971 SO_2 national standards (24-hour and annual) remain in effect until one year after an area is designated for the 2010 standard, except that in areas designated nonattainment for the 1971 standards, the 1971 standards remain in effect until implementation plans to attain or maintain the 2010 standards are approved.

    Note that the 1-hour national standard is in units of parts per billion (ppb). California standards are in units of parts per million (ppm). To directly compare the 1-hour national standard to the California standard the units can be converted to ppm. In this case, the national standard of 75 ppb is identical to 0.075 ppm.

12. The ARB has identified lead and vinyl chloride as 'toxic air contaminants' with no threshold level of exposure for adverse health effects determined. These actions allow for the implementation of control measures at levels below the ambient concentrations specified for these pollutants.

13. The national standard for lead was revised on October 15, 2008 to a rolling 3-month average. The 1978 lead standard (1.5 $\mu g/m^3$ as a quarterly average) remains in effect until one year after an area is designated for the 2008 standard, except that in areas designated nonattainment for the 1978 standard, the 1978 standard remains in effect until implementation plans to attain or maintain the 2008 standard are approved.

14. In 1989, the ARB converted both the general statewide 10-mile visibility standard and the Lake Tahoe 30-mile visibility standard to instrumental equivalents, which are "extinction of 0.23 per kilometer" and "extinction of 0.07 per kilometer" for the statewide and Lake Tahoe Air Basin standards, respectively.

For more information please call ARB-PIO at (916) 322-2990 **California Air Resources Board (5/4/16)**

Health Effects

While ozone in the upper atmosphere protects the earth from harmful ultraviolet radiation, high concentrations of ground-level ozone can adversely affect the human respiratory system. Many respiratory ailments, as well as cardiovascular disease, are aggravated by exposure to high ozone levels. Ozone also damages natural ecosystems, such as: forests and foothill communities; agricultural crops; and some man-made materials, such as rubber, paint, and plastic. High levels of ozone may negatively affect immune systems, making people more susceptible to respiratory illnesses, including bronchitis and pneumonia. Ozone accelerates aging and exacerbates pre-existing asthma and bronchitis and, in cases with high concentrations, can lead to the development of asthma in active children. Active people, both children and adults, appear to be more at risk from ozone exposure than those with a low level of activity. Additionally, the elderly and those with respiratory disease are also considered sensitive populations for ozone.

People who work or play outdoors are at a greater risk for harmful health effects from ozone. Children and adolescents are also at greater risk because they are more likely than adults to spend time engaged in vigorous activities. Research indicates that children under 12 years of age spend nearly twice as much time outdoors daily than adults. Teenagers spend at least twice as much time as adults in active sports and outdoor activities. In addition, children inhale more air per pound of body weight than adults and they breathe more rapidly than adults. Children are less likely than adults to notice their own symptoms and avoid harmful exposures.

Ozone is a powerful oxidant; it can be compared to household bleach, which can kill living cells (such as germs or human skin cells) upon contact. Ozone can damage the respiratory tract, causing inflammation and irritation, and it can induce symptoms such as coughing, chest tightness, shortness of breath, and worsening of asthmatic symptoms. Ozone in sufficient doses increases the permeability of lung cells, rendering them more susceptible to toxins and microorganisms. Exposure to levels of ozone above the current ambient air quality standard could lead to lung inflammation and lung tissue damage and a reduction in the amount of air inhaled into the lungs.

Particulate Matter (PM10 and PM2.5) - Particulate Matter: Also known as particle pollution or PM, is a complex mixture of extremely small particles and liquid droplets. In the western United States, there are sources of PM in both urban and rural areas. Because particles originate from a variety of sources, their chemical and physical compositions vary widely. The composition of PM can also vary greatly with time, location, the sources of the material and meteorological conditions. Dust, sand, salt spray, metallic and mineral particles, pollen, smoke, mist, and acid fumes are the main components of PM. EPA groups particle pollution into three categories based on their size and where they are deposited:

> "Inhalable coarse particles ($PM_{2.5-10}$)," such as those found near roadways, and dusty industries, are between 2.5 and 10 micrometers in diameter. $PM_{2.5-10}$ is deposited in the thoracic region of the lungs.
>
> "Fine particles ($PM_{2.5}$)," such as those found in smoke and haze, are 2.5 micrometers in diameter and smaller. These particles can be directly emitted from sources such as forest fires, or they can form when gases emitted from power plants, industries and automobiles react in the air. They penetrate deeply into the thoracic and alveolar regions of the lungs.
>
> “Ultrafine particles (UFP),” are very, very small particles less than 0.1 micrometers in diameter largely resulting from the combustion of fossils fuels, meat, wood and other hydrocarbons. While UFP mass is a small portion of $PM_{2.5}$, their high surface area, deep

lung penetration, and transfer into the bloodstream can result in disproportionate health impacts relative to their mass.

$PM_{2.5-10}$, $PM_{2.5}$, and UFP include primary pollutants (emitted directly to the atmosphere) as well as secondary pollutants (formed in the atmosphere by chemical reactions among precursors). Generally speaking, $PM_{2.5}$ and UFP are emitted by combustion sources like vehicles, power generation, industrial processes, and wood burning, while PM 10 sources include these same sources plus roads and farming activities. Fugitive windblown dust and other area sources also represent a source of airborne dust in the Valley.

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.

Carbon Monoxide (CO) - Carbon monoxide (CO) is emitted by mobile and stationary sources as a result of incomplete combustion of hydrocarbons or other carbon-based fuels. CO is an odorless, colorless, poisonous gas that is highly reactive. CO is a byproduct of motor vehicle exhaust that contributes more than two-thirds of all CO emissions nationwide. In urban areas, automobile exhaust can cause as much as 95 percent of all CO emissions. These emissions can result in high concentrations of CO, particularly in local areas with heavy traffic congestion. Other sources of CO emissions include industrial processes and fuel combustion in sources such as boilers and incinerators. Despite an overall downward trend in concentrations and emissions of CO, some metropolitan areas still experience high levels of CO.

Health Effects

CO enters the bloodstream and binds more readily to hemoglobin than oxygen, reducing the oxygen-carrying capacity of blood and thus reducing oxygen delivery to organs and tissues. The health threat from CO is most serious for those who suffer from cardiovascular disease. Healthy individuals are also affected, but only at higher levels of exposure. At high concentrations, CO can cause heart difficulties in people with chronic diseases and can impair mental abilities. Exposure to elevated CO levels is associated with visual impairment, reduced work capacity, reduced manual dexterity, poor learning ability, difficulty performing complex tasks, and in prolonged, enclosed exposure, death.

The adverse health effects associated with exposure to ambient and indoor concentrations of CO are related to the concentration of carboxyhemoglobin (COHb) in the blood. Health effects observed may include: an early onset of cardiovascular disease; behavioral impairment; decreased exercise performance of young, healthy men; reduced birth weight; sudden infant death syndrome (SIDS); and increased daily mortality rate.

Most of the studies evaluating adverse health effects of CO on the central nervous system examine high-level poisoning. Such poisoning results in symptoms ranging from common flu and cold symptoms (shortness of breath on mild exertion, mild headaches, and nausea) to unconsciousness and death.

Nitrogen Oxides (NO_x) - Nitrogen oxides (NO_x) is a family of highly reactive gases that are primary precursors to the formation of ground-level ozone and react in the atmosphere to form acid rain. NO_x is emitted from combustion processes in which fuel is burned at high temperatures, principally from motor vehicle exhaust and stationary sources such as electric

utilities and industrial boilers. A brownish gas, NO_x is a strong oxidizing agent that reacts in the air to form corrosive nitric acid, as well as toxic organic nitrates.

Health Effects

NO_x is an ozone precursor that combines with VOC to form ozone. Refer to the discussion of ozone above regarding the health effects of ozone.

Direct inhalation of NO_x can also cause a wide range of health effects. NO_x can irritate the lungs, cause lung damage, and lower resistance to respiratory infections such as influenza. Short-term exposures (e.g., less than 3 hours) to low levels of nitrogen dioxide (NO_2) may lead to changes in airway responsiveness and lung function in individuals with preexisting respiratory illnesses. These exposures may also increase respiratory illnesses in children. Long-term exposures to NO_2 may lead to increased susceptibility to respiratory infection and may cause irreversible alterations in lung structure. Other health effects associated with NO_x are an increase in the incidence of chronic bronchitis and lung irritation. Chronic exposure to NO_2 may lead to eye and mucus membrane aggravation, along with pulmonary dysfunction. NO_x can cause fading of textile dyes and additives, deterioration of cotton and nylon, and corrosion of metals due to production of particulate nitrates. Airborne NO_x can also impair visibility.

NO_x is a major component of acid deposition in California. NO_x may affect both terrestrial and aquatic ecosystems. NO_x in the air is a potentially significant contributor to a number of environmental effects such as acid rain and eutrophication in coastal waters. Eutrophication occurs when a body of water suffers an increase in nutrients that reduce the amount of oxygen in the water, producing an environment that is destructive to fish and other animal life.

NO_2 is toxic to various animals as well as to humans. Its toxicity relates to its ability to combine with water to form nitric acid in the eye, lung, mucus membranes, and skin. Studies of the health impacts of NO_2 include experimental studies on animals, controlled laboratory studies on humans, and observational studies. In animals, long-term exposure to NO_x increases susceptibility to respiratory infections, lowering their resistance to such diseases as pneumonia and influenza. Laboratory studies show susceptible humans, such as asthmatics, exposed to high concentrations of NO_2, can suffer lung irritation and, potentially, lung damage. Epidemiological studies have also shown associations between NO_2 concentrations and daily mortality from respiratory and cardiovascular causes as well as hospital admissions for respiratory conditions.

NO_x contributes to a wide range of environmental effects both directly and when combined with other precursors in acid rain and ozone. Increased nitrogen inputs to terrestrial and wetland systems can lead to changes in plant species composition and diversity. Similarly, direct nitrogen inputs to aquatic ecosystems such as those found in estuarine and coastal waters can lead to eutrophication as discussed above. Nitrogen, alone or in acid rain, also can acidify soils and surface waters. Acidification of soils causes the loss of essential plant nutrients and increased levels of soluble aluminum, which is toxic to plants. Acidification of surface waters creates conditions of low pH and levels of aluminum that are toxic to fish and other aquatic organisms.

Sulfur Dioxide (SO_2) - The major source of sulfur dioxide (SO_2) is the combustion of high-sulfur fuels for electricity generation, petroleum refining, and shipping.

Health Effects

High concentrations of SO_2 can result in temporary breathing impairment for asthmatic children and adults who are active outdoors. Short-term exposures of asthmatic individuals to elevated SO_2 levels during moderate activity may result in breathing difficulties that can be accompanied by symptoms such as wheezing, chest tightness, or shortness of breath. Other effects that have been associated with longer-term exposures to high concentrations of SO_2, in conjunction with high levels of particulate matter, include aggravation of existing cardiovascular disease, respiratory illness, and alterations in the lungs' defenses. SO_2 also is a major precursor to $PM_{2.5}$, which is a significant health concern and a main contributor to poor visibility. In humid atmospheres, sulfur oxides can react with vapor to produce sulfuric acid, a component of acid rain.

Lead (Pb) - Lead, a naturally occurring metal, can be a constituent of air, water, and the biosphere. Lead is neither created nor destroyed in the environment, so it essentially persists forever. Lead was used until recently to increase the octane rating in automobile fuel. Since the 1980s, lead has been phased out in gasoline, reduced in drinking water, reduced in industrial air pollution, and banned or limited in consumer products. Since this has occurred, the ambient concentrations of lead have dropped dramatically.

Health Effects

Exposure to lead occurs mainly through inhalation of air and ingestion of lead in food, water, soil, or dust. It accumulates in the blood, bones, and soft tissues and can adversely affect the kidneys, liver, nervous system, and other organs. Excessive exposure to lead may cause neurological impairments such as seizures, mental retardation, and behavioral disorders. Even at low doses, lead exposure is associated with damage to the nervous systems of fetuses and young children. Effects on the nervous systems of children are one of the primary health risk concerns from lead. In high concentrations, children can even suffer irreversible brain damage and death. Children 6 years old and under are most at risk, because their bodies are growing quickly.

Visibility-Reducing Particles - This standard is a measure of visibility. The entire State of California has been labeled unclassified for visibility. CARB has not established a method for measuring visibility with the necessary accuracy or precision needed to designate areas in the State as attainment or nonattainment.

Sulfates - Sulfates are particulate products from combustion of sulfur-containing fossil fuels. When sulfur dioxide (SO_2) is exposed to oxygen, it oxidizes into sulfates (SO_3 or SO_4). Through a variety of chemical and photochemical reactions in the atmosphere, the sulfates can combine with ammonia to form ammonium sulfate particulate. Data collected in the SJVAB has demonstrated that levels of sulfates are significantly less than the applicable health standards. However, sulfates are still one of the wintertime particulate concerns due to secondary formation of ammonium sulfate.

Sulfates (SO_4) are the fully oxidized ionic form of sulfur. Sulfates occur in combination with metal and/or Hydrogen ions. In California, emissions of sulfur compounds occur primarily from the combustion of petroleum-derived fuels (e.g., gasoline and diesel fuel) that contain sulfur. This sulfur is oxidized to SO_2 during the combustion process and subsequently converted to sulfate compounds in the atmosphere. The conversion of SO_2 to sulfates takes place comparatively rapidly and completely in urban areas of California, due to regional meteorological features.

Health Effects

The health effects associated with SO_2 and sulfates more commonly known as sulfur oxides (SO_x) include respiratory illnesses, decreased pulmonary disease resistance, and aggravation of cardiovascular diseases. When acidic pollutants and particulates are also present, sulfur dioxide tends to have an even more toxic effect.

Increased particulate matter derived from sulfur dioxide emissions also contributes to impaired visibility. In addition to particulates, SO_3 and SO_4 are also precursors to acid rain. In the SJVAB, SO_x and NO_x are the leading precursors to acid rain. Acid rain can lead to corrosion of man-made structures and cause acidification of water bodies.

The State standard for SO_2 is designed to prevent aggravation of respiratory symptoms. Effects of sulfate exposure at levels above the standard include a decrease in ventilatory function, aggravation of asthmatic symptoms, and an increased risk of cardio-pulmonary disease. Sulfates are particularly effective in degrading visibility and, because they are usually acidic, can harm ecosystems and damage materials and property.

Hydrogen Sulfide - Hydrogen sulfide (H_2S) emissions are often associated with geothermal activity, oil, and gas production, refining, sewage treatment plants, and confined animal feeding operations. H_2S in the atmosphere will likely oxidize into SO_2 that can lead to acid rain.

Health Effects

Exposure to low concentrations of H_2S may cause irritation to the eyes, nose, or throat. It may also cause difficulty in breathing for some asthmatics. Exposure to higher concentrations (above 100 ppm) can cause olfactory fatigue, respiratory paralysis, and death. Brief exposures to high concentrations of H_2S (greater than 500 ppm) can cause a loss of consciousness. In most cases, the person appears to regain consciousness without any other effects. However, in many individuals, there may be permanent or long-term effects such as headaches, poor attention span, poor memory, and poor motor function. No health effects have been found in humans exposed to typical environmental concentrations of H_2S (0.00011 ppm to 0.00033 ppm). Deaths due to breathing large amounts of H_2S have been reported in a variety of different work settings, including sewers, animal processing plants, waste dumps, sludge plants, oil and gas well drilling sites, and tanks and cesspools. Occupational Safety and Health Administrations (OSHA) has the primary responsibility for regulating workplace exposure to H_2S. The entire SJVAB is unclassified for H_2S.

Vinyl Chloride - Vinyl chloride monomer is a sweet-smelling, colorless gas at ambient temperature. Landfills, publicly-owned treatment works, and polyvinyl chloride (PVC) production are the major identified sources of vinyl chloride emissions in California. PVC can be fabricated into several products, such as PVC pipes, pipe fittings, and plastics. In humans, epidemiological studies of occupationally exposed workers have linked vinyl chloride exposure to development of a rare cancer, liver angiosarcoma, and have suggested a relationship between exposure and lung and brain cancers. There are currently no adopted ambient air standards for vinyl chloride.

Health Effects

Short-term exposure to vinyl chloride has been linked with the following acute health effects (Agency for Toxic Substances and Disease Registry 2004; U.S. Department of Health and Human Services 1993):

- Acute exposure of humans to high levels of vinyl chloride via inhalation in humans has resulted in effects on the central nervous system, such as dizziness, drowsiness, headaches, and giddiness.

- Vinyl chloride is reported to be slightly irritating to the eyes and respiratory tract in humans. Acute exposure to extremely high levels of vinyl chloride has caused loss of consciousness, lung and kidney irritation, and inhibition of blood clotting in humans and cardiac arrhythmias in animals.
- Tests involving acute exposure of mice have shown vinyl chloride to have high acute toxicity from inhalation exposure.

Long-term exposure to vinyl chloride concentrations has been linked with the following chronic health effects (Agency for Toxic Substances and Disease Registry 2004; U.S. Department of Health and Human Services, Registry of Toxic Effects of Chemical Substances [RTECS, online database] 1993; U.S. Department of Health and Human Services 1993; U.S. Environmental Protection Agency 2000):

- Liver damage may result in humans from chronic exposure to vinyl chloride, through both inhalation and oral exposure.

A small percentage of individuals occupationally exposed to high levels of vinyl chloride in air have developed a set of symptoms termed “vinyl chloride disease,” which is characterized by Raynaud’s phenomenon (fingers blanched and numbness and discomfort are experienced upon exposure to the cold), changes in the bones at the end of the fingers, joint and muscle pain, and scleroderma-like skin changes (thickening of the skin, decreased elasticity, and slight edema).

Central nervous system effects (including dizziness, drowsiness, fatigue, headache, visual and/or hearing disturbances, memory loss, and sleep disturbances) as well as peripheral nervous system symptoms (peripheral neuropathy, tingling, numbness, weakness, and pain in fingers) have also been reported in workers exposed to vinyl chloride.

Reactive Organic Gases (VOC) - Reactive Organic Gases (VOC) are emitted as gases from certain solids or liquids. VOCs include a variety of chemicals, some of which may have short- and long-term adverse health effects. Concentrations of many VOCs are consistently higher indoors (up to ten times higher) than outdoors. VOCs are emitted by a wide array of products numbering in the thousands. Examples include: paints and lacquers, paint strippers, cleaning supplies, pesticides, building materials and furnishings, office equipment such as copiers and printers, correction fluids and carbonless copy paper, graphics and craft materials including glues and adhesives, permanent markers, and photographic solutions.

Organic chemicals are widely used as ingredients in household products. Paints, varnishes, and wax all contain organic solvents, as do many cleaning, disinfecting, cosmetic, degreasing, and hobby products. Fuels are made up of organic chemicals. All of these products can release organic compounds while you are using them, and, to some degree, when they are stored.

Health Effects

The ability of organic chemicals to cause health effects varies greatly from those that are highly toxic, to those with no known health effect. As with other pollutants, the extent and nature of the health effect will depend on many factors including level of exposure and length of time exposed. Eye and respiratory tract irritation, headaches, dizziness, visual disorders, and memory impairment are among the immediate symptoms that some people have experienced soon after exposure to some organics. At present, not much is known about what health effects occur from the levels of organics usually found in homes. Many organic compounds are known to cause cancer in animals; some are suspected of causing, or are known to cause, cancer in humans.

3.2 Toxic Air Contaminants

Toxic pollutants in California are identified as toxic air contaminates (TACs) and are listed in the Air Toxic "Hot Spots" and Assessment Act's "Emissions Inventory Criteria and Guideline Regulation"(AB2588). A subset of these pollutants has been listed by the Office of Environmental Health Hazard Assessment (OEHHA) as having acute, chronic, and/or carcinogenic effects, as defined by California Health and Safety Code (CH&SC) §39655.

Governor Deukmejian signed AB2588 into law in 1987. The purpose of the Act is to inventory the emissions of air toxics, determine if these emissions are high enough to expose individuals or groups to significant health risk, and to inform the public where there is a significant health risk. The SJVUAPCD has established the following levels of risk determined to be significant for purposes of AB2588:

1. A cancer risk exceeding 10 in 1 million, or
2. A ratio of the chronic or acute exposure to the reference exposure level ("hazard index") exceeding 1.0.

The requirements of AB2588 apply to facilities that use, produce, or emit toxic chemicals. Facilities that are subject to the toxic emission inventory requirements of AB 2588 must prepare and submit toxic emission inventory plans and reports and periodically update those reports.

3.3 Greenhouse Gas Emissions

For the purposes of the following discussion, greenhouse gases are considered as the cause of global climate change. Climate change is a shift in the "average weather" that a given region experiences. Regional "average weather" is measured by changes in temperature, wind patterns, precipitation, and storms. Global climate is the change in the climate of the earth as a whole.

Constituent gases of the Earth's atmosphere, called atmospheric greenhouse gases (GHG), play a critical role in the Earth's radiation amount by trapping infrared radiation emitted from the Earth's surface, which otherwise would have escaped to space. Prominent GHG contributing to this process include carbon dioxide (CO_2), methane (CH_4), ozone, water vapor, nitrous oxide (N_2O), and hydrofluorocarbons (HFCs). This phenomenon, known as the Greenhouse Effect, is responsible for maintaining a habitable climate.

Anthropogenic (caused or produced by humans) emissions of these GHG in excess of natural ambient concentrations are responsible for the enhancement of the Greenhouse Effect and have led to a trend of unnatural warming of the Earth's natural climate, known as global warming or global climate change. Emissions of gases that induce global warming are attributable to human activities associated with industrial/manufacturing, agriculture, utilities, transportation, and residential land uses. Transportation is responsible for 41 percent of the State's GHG emissions, followed by electricity generation. Emissions of CO_2 and nitrogen oxide (NO_x) are byproducts of fossil fuel combustion. Emissions of CH_4 result from off-gassing associated with agricultural practices and landfills. Sinks of CO_2 include uptake by vegetation and dissolution into the ocean.

An individual project cannot generate enough GHG emissions to effect a discernible change in the global climate. However, a proposed project may participate in this potential impact by its incremental contribution combined with the cumulative contribution combined with the cumulative increase of all other sources of GHGs which, when taken together, may influence global climate change.

The following provides a description of each of the GHGs and their global warming potential:

Water Vapor (H_2O) - Water vapor is the most abundant, important, and variable GHG in the atmosphere. Water vapor is not considered a pollutant; in the atmosphere it maintains a climate necessary for life. Changes in its concentration are primarily considered a result of climate feedbacks related to the warming of the atmosphere rather than a direct result of industrialization. The feedback loop in which water is involved in is critically important to projecting future climate change. As the temperature of the atmosphere rises, more water is evaporated from ground storage (i.e., rivers, oceans, reservoirs, soil). Because the air is warmer, the relative humidity can be higher (in essence, the air is able to "hold" more water when it is warmer), leading to more water vapor in the atmosphere. As a GHG, the higher concentration of water vapor is then able to absorb more thermal indirect energy radiated from the Earth, thus further warming the atmosphere. The warmer atmosphere can then hold more water vapor and so on and so on. This is referred to as a "positive feedback loop." The extent to which this positive feedback loop will continue is unknown as there are also dynamics that put the positive feedback loop in check. As an example, when water vapor increases in the atmosphere, more of it will eventually condense into clouds, which are more able to reflect incoming solar radiation (thus allowing less energy to reach the Earth's surface and heat it up).

Carbon Dioxide (CO_2) - The natural production and absorption of CO_2 is achieved through the terrestrial biosphere and the ocean. However, humankind has altered the natural carbon cycle by burning coal, oil, natural gas, and wood. Since the industrial revolution began in the mid 1700s, each of these activities has increased in scale and distribution. CO_2 was the first GHG demonstrated to be increasing in atmospheric concentration with the first conclusive measurements being made in the last half of the 20th century. Prior to the industrial revolution, concentrations were fairly stable at 280 parts per million (ppm). However, the Intergovernmental Panel on Climate Change (IPCC), established by the United Nations in 1988, indicates that concentrations were 379 ppm in 2005, an increase of more than 30 percent. The IPCC projects that, left unchecked, the concentration of CO_2 in the atmosphere would increase to a minimum of 540 ppm by the year 2100 as a direct result of anthropogenic sources. This could result in an average global temperature rise of at least two degrees Celsius.

Methane (CH_4) - CH_4 is an extremely effective absorber of radiation, although its atmospheric concentration is less than that of CO_2. Its lifetime in the atmosphere is brief (10 to 12 years) compared to some other GHGs such as CO_2, N_2O, and Chlorofluorocarbons (CFCs). CH_4 has both natural and anthropogenic sources. It is released as part of the biological processes in low oxygen environments, such as in swamplands or in rice production (at the roots of the plants). Over the last 50 years, human activities such as growing rice, raising cattle, using natural gas, and mining coal have added to the atmospheric concentration of methane. Other anthropocentric (man-made) sources include fossil-fuel combustion and biomass burning.

Nitrous Oxide (N_2O) - Concentrations of N_2O began to rise at the beginning of the industrial revolution. In 1998, the global concentration was 314 parts per billion (ppb). N_2O is produced by microbial processes in soil and water, including those reactions which occur in fertilizer containing nitrogen. In addition to agricultural sources, some industrial processes (fossil fuel-fired power plants, nylon production, nitric acid production, and vehicle emissions) also contribute to its atmospheric load. It is used as an aerosol spray propellant (i.e., in whipped cream bottles), in potato chip bags, in rocket engines, and in racecars.

Chlorofluorocarbons (CFCs) - CFCs are gases formed synthetically by replacing all Hydrogen atoms in CH_4 or ethane (C_2H_6) with chlorine and/or fluorine atoms. CFCs are nontoxic, nonflammable, insoluble, and chemically unreactive in the troposphere (the level of air at the earth's surface). CFCs have no natural source, but were first synthesized in 1928. It was used for refrigerants, aerosol propellants, and cleaning solvents. Due to the discovery that they are able to destroy stratospheric ozone, a global effort to halt their production was undertaken. This

effort was extremely successful and the levels of the major CFCs are now remaining level or declining. However, their long atmospheric lifetimes mean that some of the CFCs will remain in the atmosphere for over 100 years.

Hydrofluorocarbons (HFCs) - HFCs are synthetic man-made chemicals that are used as a substitute for CFCs. Out of all the GHGs, hydrofluorocarbons are one of three groups with the highest global warming potential. The HFCs with the largest measured atmospheric abundances are (in order), HFC-23 (CHF_3), HFC-134a (CF_3CH_2F), and HFC-152a (CH_3CHF_2). Prior to 1990, the only significant emissions were HFC-23. HFC-134a use is increasing due to its use as a refrigerant. Concentrations of HFC-23 and HFC-134a are now about 10 parts per trillion (ppt) each. Concentrations of HFC-152a are about 1 ppt. HFCs are manmade for applications such as automobile air conditioners and refrigerants.

Perfluorocarbons (PFCs) - Perfluorocarbons (PFCs) have stable molecular structures and do not break down through the chemical processes in the lower atmosphere. High-energy ultraviolet rays about 60 kilometers above Earth's surface are able to destroy the compounds. Because of this, PFCs have very long lifetimes, between 10,000 and 50,000 years. Two common PFCs are tetrafluoromethane (CF_4) and hexafluoroethane (C_2F_6). Concentrations of CF_4 in the atmosphere are over 70 ppt. The two main sources of PFCs are primary aluminum production and semiconductor manufacturing.

Sulfur Hexafluoride (SF_6) - SF_6 is an inorganic, odorless, colorless, nontoxic, nonflammable gas. SF_6 has the highest global warming potential of any gas evaluated; 23,900 times that of CO_2. Concentrations in the 1990s were about 4 ppt. Sulfur hexafluoride is used for insulation in electric power transmission and distribution equipment, in the magnesium industry, in semiconductor manufacturing, and as a tracer gas for leak detection.

Aerosols - Aerosols are particles emitted into the air through burning biomass (plant material) and fossil fuels. Aerosols can warm the atmosphere by absorbing and emitting heat and can cool the atmosphere by reflecting light. Cloud formation can also be affected by aerosols. Sulfate aerosols are emitted when fuel with sulfur within it is burned. Black carbon (or soot) is emitted during biomass burning due to the incomplete combustion of fossil fuels. Although particulate matter regulation has been lowering aerosol concentrations in the United States, global concentrations are likely increasing.

Global Warming Potential

GHGs have varying global warming potentials (GWPs) and are one type of simplified index, based upon radiative properties that can be used to estimate the potential future impacts of emissions of different gases on the climate in a relative sense. GWP is based on a number of factors, including radiative efficiency (heat-absorbing ability) of each gas relative to that of CO_2, as well as the decay rate of each gas (the amount removed from the atmosphere over a given number of years) relative to that of CO_2.

The EPA defies GWP as "the cumulative radiative forcing effects of a gas over a specified time horizon resulting from the emission of a unit mass of gas relative to a reference gas," the reference gas in this case being CO_2. One ton of CO_2 equivalent (or CO_2e) is essentially the emissions of the gas multiplied by the GWP. The CO_2 equivalent is a good way to assess emissions because it gives weight to the GWP of the gas. A summary of the atmospheric lifetime and the GWP of selected gases are summarized in Table 3-2. As shown in Table 3-2, the GWP of GHGs ranges from 1 to 23,900.

Data compiled by the United Nations Framework Convention on Climate Change (UNFCCC) indicates that, in 2006, total worldwide GHG emissions were 22,170 million metric tons of carbon

dioxide equivalent ($MMTCO_2e$), emissions in the U.S. were 7054.2 $MMTCO_2e$, and emissions in California were 483.9 $MMTCO_2e$ (source: United Nations Framework Convention on Climate Change 2009 and California Air Resources Board 2009).

Table 3-2: Global Warming Potentials and Atmospheric Lifetimes

Gas	Atmospheric Lifetime	Global Warming Potential (100-Year Horizon)
Carbon Dioxide (CO_2)		1
Methane (CH_4)	12	25
Nitrous Oxide (N_2O)	114	298
HFC-23	270	14,800
HFC-134a	14	1,430
HFC-152a	1	124
PFC: Tetrafluoromethane	50,000	7,390
PFC: Hexafluoroethane	10,000	12,200
Sulfur Hexafluoride	3,200	22,800

Source: California Air Resources Board based on the Intergovernmental Panel on Climate Change fourth assessment report (AR4). June 22, 2018.

HFC = Hydrofluorocarbons

PFC = Perfluorocarbons

4.0 ENVIRONMENTAL SETTING AND CLIMATE

4.1 Project Location and Setting

The project site is located in the County of Kern east of the City of Bakersfield and is within the San Joaquin Valley Air Basin (SJVAB). The SJVAB is under the jurisdiction of the San Joaquin Valley Air Pollution Control District (SJVAPCD).

This AQIA identifies the potential impacts on air quality resulting from the proposed commercial development consisting of general industrial. The proposed project occupies 19.51 gross acres.

The project site is located in central Kern County and southwest of the City of Bakersfield. The elevation is approximately 359 ft above sea level. (Exhibit F)

4.2 Climate

According to US Climate Data, average temperatures in Bakersfield range from 69 degrees Fahrenheit (F) to 97 degrees F in July to 39 degrees F to 56 degrees F in January. The wet season is generally from December to March, with an annual average of 6.45 inches of rainfall.

4.3 San Joaquin Valley Air Basin

The California Air Resources Board (CARB) has divided California into 15 regional air basins according to topographic features. The project site is located within the south-western portion of the San Joaquin Valley Air Basin (SJVAB). The SJVAB is the southern half of California's Central Valley and is approximately 250 miles long and averages 35 miles wide. The SJV is bordered by the Sierra Nevada Mountains in the east (8,000 to 14,491 feet in elevation), the Coast Ranges in the west (averaging 3,000 feet in elevation), and the Tehachapi mountains in the south (6,000 to 7,981 feet in elevation). The SJVAB is under the jurisdictional authority of San Joaquin Valley Unified Air Pollution Control District (SJVUAPCD).

Table 4-1 contains the ambient air quality classifications for the SJVUAPCD. The CCAA requires that all reasonable stationary and mobile source control measures be implemented in nonattainment areas to help achieve a mandated five-percent per year reduction in ozone precursors and to reduce population exposures.

Table 4-1: Ambient Air Quality Classifications

Pollutant	Designation/Classification	
	Federal Standards	State Standards
Ozone - One hour	Revoked in 2005	Nonattainment/Severe
Ozone - Eight hour	Nonattainment/Extreme	Nonattainment
PM 10	Attainment	Nonattainment
PM 2.5	Nonattainment	Nonattainment
Carbon Monoxide	Attainment/Unclassified	Attainment/Unclassified
Nitrogen Dioxide	Attainment/Unclassified	Attainment
Sulfur Dioxide	Attainment/Unclassified	Attainment
Lead (Particulate)	No Designation/Classification	Attainment

Pollutant	Designation/Classification	
	Federal Standards	State Standards
Hydrogen Sulfide	No Federal Standard	Unclassified
Sulfates	No Federal Standard	Attainment
Visibility Reducing Particles	No Federal Standard	Unclassified
Vinyl Chloride	No Federal Standard	Attainment

Source: www.valleyair.org (04/30/2021)

Notes:

National Designation Categories

Nonattainment Area: Any area that does not meet (or that contributes to ambient air quality in a nearby area that does not meet) the national primary or secondary ambient air quality standard for the pollutant.

Unclassified/Attainment Area: Any area that cannot be classified on the basis of available information as meeting or not meeting the national primary or secondary ambient air quality standard for the pollutant or meets the national primary or secondary ambient air quality standard for the pollutant.

State Designation Categories

Unclassified: A pollutant is designated unclassified if the data are incomplete and do not support a designation of attainment or nonattainment.

Attainment: A pollutant is designated attainment if the State standard for that pollutant was not violated at any site in the area during a three-year period.

Nonattainment: A pollutant is designated nonattainment if there was at least one violation of a State standard for that pollutant in the area.

Nonattainment/Transitional: A subcategory of the nonattainment designation. An area is designated nonattainment/transitional to signify that the area is close to attaining the standard for the pollutant.

4.4 Existing Air Quality

CARB has established and maintains, in conjunction with the local air districts, a network of sampling stations (called the State and Local Air Monitoring Stations Network [SLAMS]), which monitor ambient pollutant levels. The SLAMS network has 38 stations within the SJVAB that monitor various pollutant concentrations. (Exhibit E)

The closest active monitoring station is located at 410 E. Planz Road (Site# 15258 – Bakersfield Municipal Airport) in Bakersfield, approximately 9.7 miles east of the site. Due to the close proximity to the site, this station provides the most applicable air quality monitoring data available for NOx and PM2.5. For the PM10 monitoring data, the monitoring station located at 5558 California Avenue (Site #15255) in Bakersfield, which is about 5.9 miles to the west of the site, provides the most applicable data.

Table 4-2 provides a summary of the maximum pollutant levels detected at this monitoring stations during 2017 through 2019. Exhibit G contains copies of reports for each monitoring station.

Table 4-2: Maximum Pollutant Levels

Pollutant	Averaging Time	Units	Maximums			Standards	
			2017	2018	2019	State	National
Nitrogen Dioxide (NO_2)	1 hour	ppb	66 (CA) 66 (Fed)	61.5 (CA) 61 (Fed)	67.1 (CA) 67 (Fed)	70	54
	Annual Average	ppb	12 (CA) 12 (Fed)	12 (CA) 12 (Fed)	11 (CA) 11 (Fed)	12	12
Particulates (PM10)	24 hour	µg/m^3	143.6 (CA) 138.0 (Fed)	142.0 (CA) 136.1 (Fed)	125.9 (CA) 116.3 (Fed)	50	150
	Annual Average	µg/m^3	42.6 (CA) 42.6 (Fed)	--- (CA) 42.1 (Fed)	39.0 (CA) 38.8 (Fed)	20	—
Particulates (PM2.5)	24 hour	µg/m^3	80.1 (CA) 80.1 (Fed)	100.9 (CA) 100.9 (Fed)	83.7 (CA) 83.7 (Fed)	—	35
	Annual Average	µg/m^3	— (CA) 18.2 (Fed)	— (CA) 19.4 (Fed)	13.0 (CA) 13.0 (Fed)	12	12

Source: CARB Website, (04/30/2021)
Notes: ppm = parts per million
µg/m^3 = micrograms per cubic meter
— = not reported

4.5 Sensitive Receptors

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

The proposed project has identified sensitive receptors including residential areas in the development adjacent to the proposed project and an elementary school 0.35 miles northeast.

The majority of the potential ambient air quality emissions from this proposed project are related to increases in mobile source emissions. The proposed project is not expected to result in localized impacts, such as CO “Hot Spots”, and therefore, is not expected to impact nearby sensitive receptors. Therefore, the impact to sensitive receptors is considered less than significant with mitigation. The mitigation measures are detailed in the Traffic Report (Exhibit I).

5.0 REGULATORY SETTING

5.1 Air Quality Regulations

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

Federal

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

State

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 in California. In this capacity, the CARB conducts research, sets CAAQS, compiles emission inventories, develops suggested control measures, and prepares the SIP. For example, the CARB establishes emissions standards for motor vehicles sold in California, consumer products (e.g., hair spray, aerosol paints, and barbeque lighter fluid), and various types of commercial equipment. In addition, CARB oversees the functions of the local air pollution control districts and the air quality management districts, which in turn administer air quality at the regional and county level.

Regional

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

Local

Local jurisdictions, including Kern County and the Kern Council of Governments (KernCOG), have the authority and responsibility to reduce air pollution through its policies and decision-making authority. Specifically, Kern County is responsible for the assessment and mitigation of air emissions resulting from its land use decisions. As a result, the currently adopted Kern County General Plan and other planning documents identify goals, policies, and implementation measures that help Kern County contribute to efforts to improve regional air quality.

It should be noted that the City has developed a General Plan dated September 2009 containing a Conservation Element which includes applicable goals, objectives, or policies that directly address air quality in the City. The Conservation Element contains objectives that promote the conservation of natural and energy resources as well as energy efficiency and the use of renewable energy resources which would have beneficial effects on the City's air quality.

5.2 Greenhouse Gas Emissions

The regulatory setting related to GHG emissions and global climate change includes international, federal, state, regional, and local governmental agencies and organizations and their respective regulations as discussed below.

International

In 1988, the United Nations established the Intergovernmental Panel on Climate Change (IPCC) to evaluate the impacts of global warming and to develop strategies that nations could implement to curtail global climate change. In 1992, the United States joined other countries around the world in signing the United Nations' Framework Convention on Climate Change agreement with the goal of controlling GHG emissions. As a result, the Climate Change Action Plan was developed to address the reduction of GHG in the United States. The plan consists of more than 50 voluntary programs.

Additionally, the Montreal Protocol was originally signed in 1987 and substantially amended in 1990 and 1992. The Montreal Protocol stipulates that the production and consumption of compounds that deplete ozone in the stratosphere, consisting of CFCs, halons, carbon tetrachloride, and methyl chloroform, were to be phased out, with the first three by the year 2000 and methyl chloroform by the year 2005.

Federal

The EPA is responsible for implementing federal policy to address global climate change. The federal government administers a wide array of public-private partnerships to reduce GHG intensity generated by the United States. These programs focus on energy efficiency, renewable energy, CH_4, and other non-CO_2 gases, agricultural practices, and implementation of technologies to achieve GHG reductions. The EPA implements several voluntary programs that substantially contribute to the reduction of GHG emissions.

In February 2002, the federal government announced a strategy to reduce the GHG intensity of the American economy by 18 percent over the 10-year period from 2002 to 2012. GHG intensity measures the ratio of GHG emissions to economic output. Meeting this commitment will prevent the release of more than 100 million metric tons of carbon-equivalent emissions to the atmosphere (annually) by 2012 and more than 500 million metric tons (cumulatively) between 2002 and 2012. This strategy has three basic objectives: slowing the growth of emissions; strengthening science, technology, and institutions; and enhancing international cooperation.

As discussed above, the EPA is responsible for setting and enforcing the NAAQS for atmospheric pollutants. It regulates emission sources that are under the exclusive authority of the federal government, such as aircraft, ships, and certain locomotives.

In Massachusetts v. Environmental Protection Agency (Docket No. 05–1120), argued November 29, 2006 and decided April 2, 2007, the U.S. Supreme Court held that not only did the EPA have authority to regulate GHG emissions, but the EPA's reasons for not regulating this area did not fit the statutory requirements. As such, the U.S. Supreme Court ruled that the EPA should be required to regulate CO_2 and other GHGs as pollutants under the Section 202(a) of the federal Clean Air Act (CAA). The U.S. Supreme Court decision resulted from a petition for rulemaking under Section 202(a) filed by more environmental, renewable energy, and other organizations.

On April 17, 2009, the EPA Administrator signed a proposed endangerment finding that GHGs contribute to air pollution that may endanger public health or welfare. The EPA held a 60-day public comment period during the review of the proposed finding that ended June 23, 2009. During the public comment period, over 380,000 comments were received in the form of written comments and through testimony provided at two public hearings. The EPA reviewed, considered, and incorporated the public comments into the final findings that were issued January 14, 2010.

The EPA's proposed endangerment finding stated that, "In both magnitude and probability, climate change is an enormous problem. The greenhouse gases that are responsible for it endanger both the health and public welfare within the meaning of the Clean Air Act." These findings were based on careful consideration of the full weight of scientific evidence and the public comments that were received.

The specific GHG regulations that have been adopted by the EPA are:

- 40 CFR Part 98. Mandatory Reporting of Greenhouse Gases Rule. This rule requires mandatory reporting of GHG emissions for facilities that emit more than 25,000 metric tons of CO_2e emissions per year. In addition, the reporting of emissions is required of owners of SF6 and PFC-insulated equipment when the total nameplate capacity of these insulating gases is above 17,280 pounds.
- 40 CFR Part 52. Proposed Prevention of Significant Deterioration and Title V Greenhouse Gas Tailoring Rule. This rule was mandated to apply Prevention of Significant Deterioration (PSD) requirements to facilities whose CO_2e emissions exceed 75,000 tons per year.

These rules are not applicable to the proposed project.

State

Assembly Bill 1493

Assembly Bill (AB) 1493 is the successor bill to AB 1058 and was enacted on July 22, 2002 by Governor Gray Davis. AB 1493 mandates that CARB develop and implement GHG limits for vehicles beginning in model Year 2009. Subsequently, as directed by AB 1493, on September 24, 2004, CARB approved regulations limiting the amount of GHG that may be released from new passenger cars, sport utility vehicles, and pickup trucks sold in California in model Year 2009. The automobile industry subsequently sued and claimed AB 1493 was a measure designed to impose gas mileage standards on automobiles. A federal district court ruled on December 12, 2007 that the State and federal laws could co-exist. However, on December 19, 2007, the EPA denied California's request for the necessary waiver to implement its law, claiming that local emissions had little effect on global climate change and that the conditions in California were not "compelling and extraordinary" as required by law. California intends to sue the EPA to force reconsideration, given the precedent of Massachusetts v. EPA[1], which as discussed above, ruled that CO_2 was an air pollutant that the EPA had authority to regulate. Arizona, Colorado, Connecticut, Florida, Maine, Maryland, Massachusetts, New Jersey, New Mexico, New York, Oregon, Pennsylvania, Rhode Island, Utah, Vermont, and Washington are also interested in adopting California's automobile emissions standards.

Executive Order S-20-04

In December 2004, Governor Schwarzenegger signed Executive Order S-20-04 (The California Green Building Initiative) establishing the State's priority for energy and resource-efficient high performance buildings. The Executive Order sets a goal of reducing energy use in State-owned and private commercial buildings by 20 percent in 2015 using non-residential Title 20 and 24 standards adopted in 2003 as the baseline. The California Green Building Initiative also

[1] Massachusetts v. Environmental Protection Agency, 549 U.S.; 127 S. Ct. 1438 (2007).

encourages private commercial buildings to be retrofitted, constructed, and operated in compliance with the State's Green Building Action Plan.

Executive Order S-3-05

In June 2005, Governor Schwarzenegger issued Executive Order S-3-05 that established California's GHG emissions reduction targets. The Executive Order established the following goals: GHG emissions should be reduced to 2000 levels by 2010; GHG emissions should be reduced to 1990 levels by 2020; and GHG emissions should be reduced to 80 percent below 1990 levels by 2050. In addition, to meet these reduction targets, the Executive Order directed the Secretary of the California Environmental Protection Agency (CalEPA) to coordinate with the Secretary of the Business, Transportation and Housing Agency, the Secretary of the Department of Food and Agriculture, the Secretary of the Natural Resources Agency, the Chairperson of CARB, the Chairperson of the Energy Commission, and the President of the Public Utilities Commission. The Secretary of CalEPA leads this Climate Action Team (CAT) made up of representatives from these agencies as well as numerous other Boards and Departments. The CAT members work to coordinate statewide efforts to implement global warming emission reduction programs and the State's Climate Reduction Strategy. The CAT is also responsible for reporting on the progress made toward meeting the statewide GHG targets that were established in the Executive Order and further defined under the Global Warming Solutions Act of 2006 (Assembly Bill 32).

The first Climate Action Team (CAT) Assessment Report to the Governor and the Legislature was released in March 2006 and will be updated and issued every two years. The 2006 CAT Assessment Report has been followed by the release of the 2008 CAT Assessment Report. The 2008 CAT Assessment Report expands on the policy oriented 2006 CAT Assessment Report and provides new information and scientific findings. A discussion of the GHG emission reduction strategies provided in the 2006 CAT Assessment Report is provided further below.

Assembly Bill 32

The Legislature enacted AB 32, the California Global Warming Solutions Act of 2006 (Nunez, 2006), which Governor Schwarzenegger signed on September 27, 2006 to further the goals of Executive Order S-3-05. AB 32 represents the first enforceable statewide program to limit greenhouse gas emissions from all major industries with penalties for noncompliance. CARB has been assigned to carry out and develop the programs and requirements necessary to achieve the goals of AB 32. The foremost objective of CARB is to adopt regulations that require the reporting and verification of statewide GHG emissions. This program will be used to monitor and enforce compliance with the established standards. The first GHG emissions limit is equivalent to the 1990 levels, which are to be achieved by 2020 (a reduction of approximately 25 percent from forecast emission levels). CARB is also required to adopt rules and regulations to achieve the maximum technologically feasible and cost effective GHG emission reductions by updating with scoping plans. Since 2008, there have been two updates to the Scoping Plan in 2013 and 2017. AB 32 allows CARB to adopt market based compliance mechanisms to meet the specified requirements. Finally, CARB is ultimately responsible for monitoring compliance and enforcing any rule, regulation, order, emission limitation, emission reduction measure, or market based compliance mechanism adopted. In order to advise CARB, it must convene an Environmental Justice Advisory Committee and an Economic and Technology Advancement Advisory Committee. CARB has approved a 2020 emissions limit of 427 metric tons of CO_2 equivalent and has updated, through the 2017 scoping plan, which has a 2030 target of 40% emission reduction below 1990 levels.

Executive Order S-1-07

Under the AB 32 Scoping Plan, the Board identified the Low Carbon Fuel Standard (LCFS) as one of the nine discrete early action measures to reduce California's greenhouse gas (GHG) emissions that cause climate change. The LCFS is a key part of a comprehensive set of programs in California to cut GHG emissions and other smog-forming and toxic air pollutants by improving vehicle technology, reducing fuel consumption, and increasing transportation mobility options. The LCFS is designed to decrease the carbon intensity of California's transportation fuel pool and provide an increasing range of low-carbon and renewable alternatives, which reduce petroleum dependency and achieve air quality benefits.

The Board approved the LCFS regulation in 2009 and began implementation on January 1, 2011. CARB approved some amendments to the LCFS in December 2011, which were implemented on January 1, 2013. In September 2015, the Board approved the re-adoption of the LCFS, which became effective on January 1, 2016, to address procedural deficiencies in the way the original regulation was adopted. In 2018, the Board approved amendments to the regulation, which included strengthening and smoothing the carbon intensity benchmarks through 2030 in-line with California's 2030 GHG emission reduction target enacted through SB 32, adding new crediting opportunities to promote zero emission vehicle adoption, alternative jet fuel, carbon capture and sequestration, and advanced technologies to achieve deep decarbonization in the transportation sector.

The LCFS is designed to encourage the use of cleaner low-carbon transportation fuels in California, encourage the production of those fuels, and therefore, reduce GHG emissions and decrease petroleum dependence in the transportation sector. The LCFS standards are expressed in terms of the "carbon intensity" (CI) of gasoline and diesel fuel and their respective substitutes. The program is based on the principle that each fuel has "life cycle" greenhouse gas emissions that include CO_2, CH_4, N_2O, and other GHG contributors. This life cycle assessment examines the GHG emissions associated with the production, transportation, and use of a given fuel. The life cycle assessment includes direct emissions associated with producing, transporting, and using the fuels, as well as significant indirect effects on GHG emissions, such as changes in land use for some biofuels. The carbon intensity scores assessed for each fuel are compared to a declining CI benchmark for each year. Low carbon fuels below the benchmark generate credits, while fuels above the CI benchmark generate deficits. Credits and deficits are denominated in metric tons of GHG emissions. Providers of transportation fuels must demonstrate that the mix of fuels they supply for use in California meets the LCFS carbon intensity standards, or benchmarks, for each annual compliance period.

California Air Pollution Control Officers Association “White Paper”

In January 2008, the California Air Pollution Control Officers Association (CAPCOA) issued a “white paper” (CEQA and Climate Change) on evaluating GHG emissions under CEQA. The CAPCOA “white paper” strategies serve as guidelines and have not been adopted by any regulatory agency. The “white paper” serves as a resource to assist lead agencies in evaluating GHG emissions in environmental information documents. The methodologies used in this GHG emissions analysis are consistent with the CAPOCA guidelines.

The CAPCOA “white paper” specifically includes a disclaimer on the first page that states:

> This paper is intended to serve as a resource, not a guidance document. It is not intended and should not be interpreted, to dictate the manner in which an air district or Lead agency chooses to address GHG emissions in the context of its review of projects under CEQA. This paper has been prepared at a time when California law has been recently amended by the Global Warming Solutions Act of 2006 (AB 32) and the full programmatic implications of this new law are not yet fully understood.

In addition, page 33 of the CAPCOA "white paper" provides the following statement:

> This threshold approach would require a project to meet a percent reduction target based on the average reductions needed from business-as-usual emissions for all GHG sources. Using the 2020 target, this approach would require all discretionary projects to achieve a 33 percent reduction from the projected business-as-usual emission from all GHG sources in order to be considered less than significant.

While significance was not determined based on a hypothetical "business as usual" standards, any mitigation measures identified in a project-specific CEQA analyses will utilize the 29 percent GHG standards identified in AB 32 which establishes a target reduction of GHG emissions to 1990 levels by the year 2020. State and federal regulations are constantly changing as more and more information is made available regarding GHG emissions and their impact on global climate change. Additionally, SB 375 which requires the development of a GHG emission reduction target for specific metropolitan areas have not been identified.

Senate Bill 97

Senate Bill (SB) 97 enacted in 2007 required the California Office of Planning and Research (OPR) to develop amendments to the California Environmental Quality Act (CEQA) Guidelines to address the effects of GHG emissions. OPR was required to prepare and transmit the recommended amendments to the Natural Resources Agency by July 1, 2009. On April 13, 2009, OPR submitted to the Secretary for Natural Resources its recommended amendments to the CEQA Guidelines for addressing GHG emissions as required by SB 97. The recommended amendments were developed to provide guidance to public agencies regarding the analysis of the effects of GHG emissions and mitigation provided in draft CEQA documents.

On July 3, 2009, the Natural Resources Agency commenced the Administrative Procedure Act rulemaking process for certifying and adopting these amendments pursuant to Public Resources Code Section 21083.05. Following a 55-day public review period, including two public hearings and responses to comments, the Natural Resources Agency proposed revisions to the text of the proposed amendments to the CEQA Guidelines.

On December 31, 2009, the Natural Resources Agency transmitted the adopted amendments and the entire rulemaking file to the Office of Administrative Law. The Office of Administrative Law approved the amendments on February 16, 2010 and filed them with the Secretary of State for inclusion into the California Code of Regulations. The amendments became effective on March 18, 2010.

Assembly Bill 1358

In October 2008, Governor Schwarzenegger signed Assembly Bill 1358 (AB 1358 or the California Complete Streets Act of 2008). AB 1358 requires a city or county's general plan to identify how they will accommodate the circulation of all users of the roadway, including motorists, pedestrians, bicyclists, children, seniors, individuals with disabilities, and users of public transportation. The new general plan provisions would be required when the local government revises their circulation element. The accommodations under AB 1358 may include, but not be limited to, sidewalks, bike lanes, crosswalks, wide shoulders, medians, bus pullouts, and audible pedestrian signals.

Senate Bill 375

Senate Bill 375 (SB 375) enacted in August 2008 requires metropolitan planning organizations

In order to determine whether or not a proposed project would cause an incremental contribution resulting in a significant effect on global climate change, the incremental contribution of the proposed project must be determined quantitatively and qualitatively by examining the types and levels of GHG emissions that would be generated directly and indirectly and address whether the proposed project would comply with the provisions of an adopted greenhouse reduction plan or strategy. If no such plan or strategy is applicable or has been adopted, the analysis must determine if the proposed project would significantly hinder or delay California's ability to meet the reduction targets contained in Assembly Bill 32 (AB 32). The 2017 AB 32 update sets target emissions and requires that GHG emitted in California be reduced to 40% below 1990 levels by the year 2030, which is 256 million metric tons of carbon dioxide equivalent ($MMTCO_2e$).

6.2 Model Assumptions

Short-term construction emissions and long-term operational emissions were determined utilizing the latest version of the CalEEMod version 2016.3.2 model based on the assumptions summarized below.

Short-term Construction Assumptions

- Construction of the residential community would take place over two years (2022 to 2023).
- 336 multi-family housing units with a total of 335,943 square feet will be constructed per the tentative site plan (Exhibit C).
- A community clubhouse with 6,035 square feet is included in the project (Exhibit C).
- Enclosed Garage spaces with 23,350 square feet will be constructed.
- The other paved surfaces consist of residential streets and parking.
- The number and type of construction equipment was determined by the CalEEMod defaults based on the size of the proposed project and mitigation is provided by using Tier 4 diesel equipment.
- The VOC g/l content of the paint was updated to 50 VOC g/L to match the SJVUAPCD Rule 4601 requirements.
- The residences will only have natural gas fired fireplaces, if any. The houses will not be constructed with woodstoves.

Long-term Operational Assumptions

- Operation of the proposed project would begin in 2024.
- Operational emissions were determined for vehicle traffic in and out the site. Maximum operational emissions will occur in 2024, which is the first operational year, and are equivalent to the emissions calculated using CalEEMod for vehicle traffic in and out of the site for 2024.
- The vehicle mix was updated to reduce HHD by 10% and increase LDT1 by 10% to match the expected traffic of the residential neighborhood.
- The traffic analysis was prepared for the CO emissions. The preliminary 6.63 vehicle trips/dwelling unit for multi-person housing was based on engineering calculations using *Institute of Transportation Engineers (ITE) Trip Generation Manual, 11th Edition.*

6.0 IMPACTS OF THE PROPOSED PROJECT

This document was prepared using methodology described in the San Joaquin Valley Unified Air Pollution Control District's (SJVUAPCD's) *Guide for Assessing and Mitigating Air Quality Impacts* (GAMAQI), March 19, 2015 Revision.

6.1 Thresholds of Significance

Criteria Pollutants

The SJVUAPCD has established the following significance thresholds for criteria pollutants. A proposed project does not have a significant air quality impact unless emissions of criteria pollutants exceed the following thresholds (Table 6-1).

Table 6-1: Significance Thresholds Criteria Pollutants

Pollutant / Precursor	Construction Emissions Emissions (tons/year)	Operational Emissions	
		Permitted Equipment and Activities Emissions (tons/year)	Non-Permitted Equipment and Activities Emissions (tons/year)
CO	100	100	100
NOx	10	10	10
VOC	10	10	10
SOx	27	27	27
PM_{10}	15	15	15
$PM_{2.5}$	15	15	15

Odors

The proposed project is not a source of odors. A sewer lift station will be installed to serve the development. The sewer lift station is enclosed and designed to prevent any atmospheric release of odors.

CEQA Thresholds of Significance for GHG Emissions and Global Climate Change

There are no thresholds of significance that have been established by the SJVUAPCD for GHG emissions and global climate change. Based on the March 2010 amendments to the *Guidelines for the Implementation of the California Environmental Quality Act* (State CEQA Guidelines), the proposed project could potentially have a significant impact related to GHG and global climate change if it would:

- Generate GHGs, 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 emission of GHGs.

In order to determine whether or not a proposed project would cause an incremental contribution resulting in a significant effect on global climate change, the incremental contribution of the proposed project must be determined quantitatively and qualitatively by examining the types and levels of GHG emissions that would be generated directly and indirectly and address whether the proposed project would comply with the provisions of an adopted greenhouse reduction plan or strategy. If no such plan or strategy is applicable or has been adopted, the analysis must determine if the proposed project would significantly hinder or delay California's ability to meet the reduction targets contained in Assembly Bill 32 (AB 32). The 2017 AB 32 update sets target emissions and requires that GHG emitted in California be reduced to 40% below 1990 levels by the year 2030, which is 256 million metric tons of carbon dioxide equivalent ($MMTCO_2e$).

6.2 Model Assumptions

Short-term construction emissions and long-term operational emissions were determined utilizing the latest version of the CalEEMod version 2016.3.2 model based on the assumptions summarized below.

Short-term Construction Assumptions

- Construction of the residential community would take place over two years (2022 to 2023).
- 288 multi-family housing units with a total of 335,943 square feet will be constructed per the tentative tract site plan (Exhibit C).
- A community clubhouse with 6,035 square feet is included in the project (Exhibit C).
- 93 Enclosed Garage spaces with 23,350 square feet will be constructed.
- The other paved surfaces consist of residential streets and parking.
- The number and type of construction equipment was determined by the CalEEMod defaults based on the size of the proposed project and mitigation is provided by using Tier 4 diesel equipment.
- The VOC g/l content of the paint was updated to 50 VOC g/L to match the SJVUAPCD Rule 4601 requirements.
- The residences will only have natural gas fired fireplaces, if any. The houses will not be constructed with woodstoves.

Long-term Operational Assumptions

- Operation of the proposed project would begin in 2024.
- Operational emissions were determined for vehicle traffic in and out the site. Maximum operational emissions will occur in 2024, which is the first operational year, and are equivalent to the emissions calculated using CalEEMod for vehicle traffic in and out of the site for 2024.
- The vehicle mix was updated to reduce HHD by 10% and increase LDT1 by 10% to match the expected traffic of the residential neighborhood.
- The traffic analysis was prepared for the CO emissions. The preliminary 6.63 vehicle trips/dwelling unit for multi-person housing was based on engineering calculations using *Institute of Transportation Engineers (ITE) Trip Generation Manual, 11th Edition.*

6.3 Short-Term Construction Air Emissions

The implementation of the proposed project would generate short-term increases in air emissions from construction activities that would occur as a result of the proposed project. These construction activities have the potential to result in air emissions that could exceed the SJVUAPCD's thresholds of significance.

The major construction activities that would occur are the following:

- Demolition – demolition activities will not be required for this project.
- Site Preparation/Grading – these activities will occur prior to construction and will be completed in 2022.
- Building Construction/Paving/Architectural Coatings – Each of these activities will occur over a two year period (2022 to 2023).

The construction activities would generate emissions that primarily consist of: fugitive dust (PM10 and PM2.5) from soil disturbance; exhaust emissions (including NOx, SOx, CO, VOC, PM10, and PM2.5) from construction equipment and motor vehicle operation; and the release of VOC emissions during the finishing phase including paving and the application of architectural coatings.

The construction activities that would occur off-site could include: delivery of building materials and supplies to the sites; and the transport of construction employees to and from the sites. The off-site activities would generate emissions that primary consist of VOC, NOx, PM10, PM2.5, and CO from motor vehicle exhaust. The construction emissions would vary substantially from day to day, depending on the level of activity, the specific type of operation, and the climatic conditions.

Table 6-2 provides the annual short-term construction emissions generated by the construction activities. The construction equipment used in the CalEEMod model and the CalEEMod model outputs are included in Exhibit H. As seen in Table 6-2, the annual emissions from the construction activities would not exceed the SJVUAPCD thresholds of significance in any construction year. Therefore, the short-term impacts to regional air quality as a result of the construction will be *less than significant*. Sections 8.1 and 8.2 below provide mitigation set forth in the GAMAQI guidance document and SJVUAPCD's Rules that would further reduce the construction equipment exhaust and PM10 and PM2.5 emission levels.

Table 6-2: Annual Short-term Construction Emissions (2024 – max year) After Mitigation

Source	Pollutant (tons/year)						
	VOC	NO_x	CO	PM10	PM2.5	SO_x	CO_{2e}
2024 (highest year)	0.73	0.74	3.46	0.46	0.15	0.00	718.51
SJVUAPCD Threshold	10	10	100	15	15	27	NA
Is Threshold Exceeded After Mitigation?	No	No	No	No	No	No	NA

Notes: VOC = Reactive Organic Gases
CO = Carbon Monoxide
NO_x = Nitrogen Oxides
PM_{10} = Particulate Matter < 10 microns
$PM_{2.5}$ = Particulate Matter < 2.5 microns
SO_x = Sulfur Oxides
Refer to Exhibits for a printout of the computer model used in this analysis.

6.4 Long-Term Operational Air Emissions

The implementation of the proposed project would generate long-term emissions caused by mobile sources (vehicle emissions), from energy consumption (related to heating and cooling), landscape maintenance, and consumer products. The following provides a discussion of the long-term operational emissions of the proposed project.

The predicted emissions associated with vehicular traffic (mobile sources) are not subject to the SJVUAPCD's permit requirements. However, the SJVUAPCD is responsible for overseeing efforts to improve air quality within the SJVAB. The SJVUAPCD reviews land use changes to evaluate the potential impact on air quality. The SJVUAPCD has established a CEQA significance level for criteria pollutants as shown in Table 6-1.

Operational emissions have been estimated using the CalEEMod.2016.3.2 computer model. CalEEMod predicts operational emissions of CO, VOC, NO_x, SO_x, PM10, PM2.5 and CO2e associated with new or modified land uses. CalEEMod modeling results are contained in Exhibit H and summarized in Table 6-3 below.

Table 6-3: Annual Long-term Operational Emissions

Source	Pollutant (tons/year)						
	VOC	NO_x	CO	PM10	PM2.5	SO_x	CO_{2e}
2024 (highest year)	2.12	2.35	9.71	2.45	0.70	0.03	3,224.62
SJVUAPCD Threshold	10	10	100	15	15	27	NA
Is Threshold Exceeded After Mitigation?	No	No	No	No	No	No	NA

As seen in Table 6-3, the annual total long-term emissions from the operation of the proposed project will not exceed the SJVUAPCD thresholds of significance for VOC and NOx. The highest operational emissions occur in 2023, the first year after the development's construction has been completed. Therefore, the long-term impacts to regional air quality from operation of the proposed project will be *less than significant.*

Mobile Source - Carbon Monoxide Local Emissions

CO emissions are a function of vehicle idling time and, thus, under normal meteorological conditions, depend on traffic flow conditions. CO transport is extremely limited; it disperses rapidly with distance from the source. Under certain extreme meteorological conditions, however, CO concentrations close to a congested roadway or intersection may reach unhealthful levels affecting sensitive receptors (residents, school children, hospital patients, the elderly, etc.). Typically, high CO concentrations are associated with roadways or intersections operating at an unacceptable Level of Service (LOS). CO "Hot Spot" modeling is required if a traffic study reveals that the proposed project will reduce the LOS on one or more streets to E or F; or, if the proposed project will worsen an existing LOS F.

A traffic study is required if the project either exceeds 50-trip threshold in either the AM or PM peak hours or if the VMT exceeds the significance threshold for the greater Bakersfield area. The *Trip Generation and VMT Analysis* (Exhibit I) was prepared and shows that both the 50-trip threshold and the VMT significance threshold were not exceeded. Therefore, the project is not anticipated to result in a significant impact under CEQA and the long-term impacts to local air quality due to CO concentrations will be ***less than significant***.

6.5 Potential Effect on Sensitive Receptors

The air quality impact of the proposed project is not likely to affect sensitive receptors. Sensitive receptors are areas where young children, chronically ill individuals, or other individuals more sensitive than the general population are located. Examples of sensitive receptors are schools, day care centers, and hospitals. Some residents in nearby residential areas may also be considered sensitive.

The majority of the potential ambient air quality emissions from this proposed project are related to increases in traffic. As discussed above, the proposed project is not expected to result in localized impacts such as CO "Hot Spots" and, therefore, is not expected to impact nearby sensitive receptors. Therefore, the potential impacts to sensitive receptors will **be *less than significant***.

6.6 Odors

The generation of odors may be associated with certain types of small industrial sources, which are regulated by the SJVUAPCD. The incidence of odors from this facility is expected to be less than significant.

6.7 Hazardous Air Pollutants

The proposed project is not a significant source of hazardous air pollutants (HAPS). This facility has the potential to emit HAPs from the operation of stationary source equipment. The SJVUAPCD has established rules that limit the emissions of HAPs from stationary sources such that the excess cancer risk to the nearest receptor is less than 10 in one million, and the non-carcinogenic Hazard Index is less than 1, therefore the risk to the nearest receptor is expected to be *less than significant*.

6.8 Greenhouse Gas Emissions

In order to determine whether or not a proposed project would cause an incremental contribution resulting in a significant effect on global climate change, the incremental contribution of the proposed project must be determined quantitatively and qualitatively by examining the types and levels of GHG emissions that would be generated directly and indirectly and addressing whether the proposed project would comply with the provisions of an adopted greenhouse reduction plan or strategy. If no such plan or strategy is applicable or has been adopted, the analysis must determine if the proposed project would significantly hinder or delay California's ability to meet the reduction targets contained in AB 32. As discussed above, AB 32 sets target emissions and requires that GHG emitted in California be reduced to 1990 levels by the year 2020, which is 427 million metric tons of carbon dioxide equivalent emissions ($MMTCO_2e$).[2] The year 2020 reduction target equates to a decrease of approximately 29 percent in GHG emissions below year 2020 "business as usual" (BAU) emissions (or approximately 15 percent below the current GHG emissions).

"Business as usual" (BAU) conditions are defined based on the year 2005 building energy efficiency, average vehicle emissions, and electricity energy conditions. The BAU conditions assume no improvements in energy efficiency, fuel efficiency, or renewable energy generation beyond that existing today. Specifically, BAU conditions do not include future General Plan goals, policies, or implementation measures that address GHG emissions, GHG reduction strategies included in the 2006 CAT assessment Report, CARB's expanded list of Early Action

[2] GHG emissions other than CO_2 are commonly converted into CO_2 equivalents that take into account the differing GWP of different gases.

Measures to Reduce GHG Emissions in California, or mitigation provided by the California Attorney General's Office.

Short-Term Construction GHG Emissions

The implementation of the proposed project would generate short-term increases in air emissions from construction activities that would occur as a result of the proposed development. These construction activities have the potential to generate GHG Emissions of CO_2, CH_4, and N_2O primarily from vehicle and construction equipment. The other GHG emissions defined under AB 32, which include HFCs, PFCs, and SF_6, would only consist of trace emissions, if any, during construction associated with the proposed project.

The major construction activities that would occur are the following:

- Site preparation and grading
- Excavation, earthmoving, and grading for construction of utilities, on-site and off-site roads, parking areas, residence foundations, and landscaping.
- Housing construction
- Asphalt paving of on-site roadways
- Application of architectural coatings

The construction activities would generate dust emissions primarily from soil disturbance; exhaust emissions from construction equipment and motor vehicle operation; and the release of emissions during the finishing phase including paving and the application of architectural coatings.

The construction activities that would occur off-site could include delivery of building materials and supplies to the sites and the transport of construction employees to and from the sites. The construction emissions would vary substantially from day to day, depending on the level of activity, the specific type of operation, and the climatic conditions.

It is anticipated that future construction activities associated with the proposed project would have the potential to result in short-term increases in air emissions during construction activities that would generate GHG emissions that could contribute to global climate change.

The CalEEMod model was used to estimate the GHG emissions due to construction activities as a result of the proposed project with "business as usual" conditions. The CalEEMod outputs are included in Exhibit H for reference and summarized in Table 6-2 above. The construction activities for the proposed project would generate a maximum of 1,065 metric tons per year of CO_2e of GHG emissions. This represents 0.00017 percent of the 2016 GHG emissions in the State of California (which is 429,400,000 metric tons of CO_2e). Therefore, the GHG emissions as a result of the proposed project will be *less than significant.*

Long-Term Operational GHG Emissions

It is anticipated that the operation of the proposed project would have the potential to result in long-term increases in air emissions that would generate GHGs that could contribute to global climate change. The majority of the long-term GHG emissions would be generated by motor vehicles traveling to and from the project site. Area source emissions would result from fuel

combustion, landscape maintenance equipment, and consumer products. The daily operational activities as a result of the proposed project would have the potential to generate GHG emissions of CO_2, CH_4, N_2O, HFCs, PFCs, and SF_6. Since there is an international ban on CFCs, it is not anticipated that this GHG would occur. SF_6 is primarily used in electronics manufacturing and as an insulation medium in large electrical transformers. It is not anticipated that there will be SF_6 emissions from the proposed project.

The CalEEMod model was used to estimate the GHG emissions due to mobile source emissions and area source emissions as a result of the proposed project with "business as usual" conditions. The outputs are included in Exhibit H and summarized in Table 6-3 above. The operation of the proposed project based on "business as usual" conditions" would result in 5,835 metric tons per year of CO_2e of GHG emissions. This represents 0.00075 percent of the CO_2e of 2016 GHG emissions in the State of California (which is 429,400,000 metric tons of CO_2e).[3] Therefore, the GHG emissions as a result of the proposed project will be *less than significant*.

Mitigation from the California Attorney General's Office

The Office of the California Attorney General maintains a list of "CEQA Mitigations for Global Warming Impacts" on their website. This list, which is not intended to be exhaustive, includes examples of types of mitigation measures and policies that local agencies may consider offsetting or reducing impacts related to global climate change. The Attorney General's Office acknowledges that the measures cited may not be appropriate for every project and that the lead agency undertaking a CEQA analysis should use its own informed judgment in deciding which measures it would analyze and which measure it would require for a given project. These include measures that are "Generally Applicable" in the areas of energy efficiency, renewable energy, water conservation and efficiency, solid waste measures, land use measures, transportation and motor vehicles, and carbon offsets.

The proposed project would incorporate the applicable measures and policies provided by the Attorney General's Office. This includes energy efficiency, water conservation and efficiency, solid waste recycling, and access to transit. Therefore, the proposed project would comply with the applicable mitigation provided by the Attorney General's Office and impacts are considered to be *less than significant*.

7.0 CUMULATIVE IMPACTS

The GAMAQI, under CEQA, defines cumulative impacts as two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts. The document also states that *"if a project is significant based on the thresholds of significance for criteria pollutants, then it is also cumulatively significant. If the combined impacts of such projects cause or worsen an exceedance of the concentration standards, the project would have a cumulatively significant impact under CEQA."*

Regionally, the SJUAPCD has annual VOC emissions of 302,200 tons and annual NO_x emissions of 223,800 tons from all sources. The proposed project represents approximately 0.002% of the VOC and 0.003% of the NO_x emissions in the SJVUAPCD. These amounts are not individually considerable because emissions within the SJVUAPCD Air Basin will be essentially the same regardless of whether or not the proposed project is built.

[3] California Air Resources Board, 2016 GHG Inventory, *California Greenhouse Gas Inventory (millions of metric tonnes of CO2 equivalent) — By IPCC Category,* Updated July 11, 2018

As stated in page 22 of the SJVUAPCD CEQA Guidelines, “a project’s potential contribution to cumulative impacts shall be assessed utilizing the same significance criteria as those for project specific impacts.” Since the proposed project would not have a significant long-term air quality impact, the proposed project would not have a significant cumulative impact to regional air quality. Therefore, the cumulative impacts to the regional air quality with implementation of the proposed project would be *less than significant.*

Hazardous Air Pollutants (HAPs)

The GAMAQI also states that when evaluating potential impacts related to HAPs, *“impacts of local pollutants (CO, HAPs) are cumulatively significant when modeling shows that the combined emissions from the project and other existing and planned projects will exceed air quality standards.”* The proposed project does not have significant sources of HAPs. Therefore, the cumulative impact as a result of HAPs would be *less than significant*.

Carbon Monoxide (CO) from Mobile Sources

Based on the CO Protocol Analysis developed by the California Department of Transportation (CalTrans), and due to the fact that increased CO concentrations are usually associated with roadways that are congested and with heavy traffic volume, the District has established that preliminary screening can be used to determine with fair certainty that the effect a project has on any given intersection would not result in a CO hotspot with proposed mitigation. Therefore, the District has established that if neither of the following criteria are met at all intersections affected by the developmental project, the project will result in no potential to create a violation of the CO standard:

A. A traffic study for the project indicates that the Level of Service (LOS) on one or more streets or at one or more intersections in the project vicinity will be reduced to LOS E or F; or

B. A traffic study indicates that the project will substantially worsen an already existing LOS F on one or more streets or at more or more intersections in the project vicinity.

If either of the above criteria can be associated with any intersection affected by the project, the applicant/consultant would need to conduct a CO analysis to determine a project’s significance or provide mitigation to maintain LOS C or above.

As noted in section 6.4, the proposed project will not have a significant impact on the LOS at any intersection or road segment with mitigation. **Therefore, the cumulative impact as a result of CO emissions is *less than significant***.

8.0 EMISSION REDUCTION MEASURES

The proposed project generates air pollutant emissions associated with the construction and operation of the proposed project. Based on the analysis provided above, the potential impacts of the proposed project would be less than significant. However, to further reduce the emissions associated with the construction of the proposed project, the project will implement the following reduction measures.

8.1 Reduction Measures for Construction Equipment Exhaust

The construction activities for the proposed project shall incorporate the following measures stated in the GAMAQI guidance document as approved mitigation to reduce exhaust emissions from construction equipment:

- Properly and routinely maintain all construction equipment, as recommended by manufacturer manuals, to control exhaust emissions.
- Shut down equipment when not in use for extended periods of time to reduce emissions associated with idling engines.
- Encourage ride sharing and use of transit transportation for construction employee commuting to the project sites.
- Use electric equipment for construction whenever possible in lieu of fossil fuel-fired equipment.

8.2 Reduction Measures for Fugitive Dust Emissions

The construction activities for the proposed project shall incorporate the following measures set forth by the SJVUAPCD Fugitive Dust rules to reduce fugitive dust emissions during grading and construction:

- All disturbed areas, including storage piles, which are not being actively utilized for construction purposes, shall be effectively stabilized of dust emissions using water, chemical stabilizer/suppressant, covered with a tarp or other suitable cover, or vegetative ground cover.
- All onsite unpaved roads and offsite-unpaved access roads shall be effectively stabilized of dust emissions using water or chemical stabilizer/suppressant.
- All land clearing, grubbing, scraping, excavation, land leveling, grading, cut & fill, and demolition activities shall be effectively controlled of fugitive dust emissions utilizing application of water or by presoaking.
- When materials are transported offsite, all material shall be covered, or effectively wetted to limit visible dust emissions, and at least six inches of freeboard space from the top of the container shall be maintained. No material is expected to be transported offsite.
- All operations shall limit or expeditiously remove the accumulation of mud or dirt from adjacent public streets at the end of each workday. (The use of dry rotary brushes is expressly prohibited except where preceded or accompanied by sufficient wetting to limit the visible dust emissions. Use of blower devices is expressly forbidden.)
- Following the addition of materials to, or the removal of materials from, the surface of outdoor storage piles, said piles shall be effectively stabilized of fugitive dust emissions utilizing sufficient water or chemical stabilizer/suppressant.

9.0 REFERENCES

California Air Resources Board (CARB), website for background information, http://www.arb.ca.gov/

California Department of Transportation (Caltrans), *Transportation Project-Level Carbon Monoxide Protocol,* December 1997.

Caltrans, *Caltrans Interim Guidance: Project-Level PM_{10} Hot-Spot Analysis,* February 2000.

County of Kern, Planning Department, *County of Kern Housing Element 2002-2007*, Adopted September 10, 2002.

Kern Council of Governments (KernCOG), *Final Conformity Analysis for the 2006 Federal Transportation Improvement Program (TIP) and 2004 Regional Transportation Plan (RTP),* July 20, 2006

KernCOG, *2000 Regional Housing Allocation Plan*, Adopted May 17, 2001

San Joaquin Valley Unified APCD, *Guidelines for Implementation of the California Environmental Quality Act (CEQA) of 1970*, as amended, July 1, 1999

SJVUAPCD, *Guide for Assessing and Mitigating Air Quality Impacts,* March 19, 2015.

EXHIBIT A

LOCATION MAP

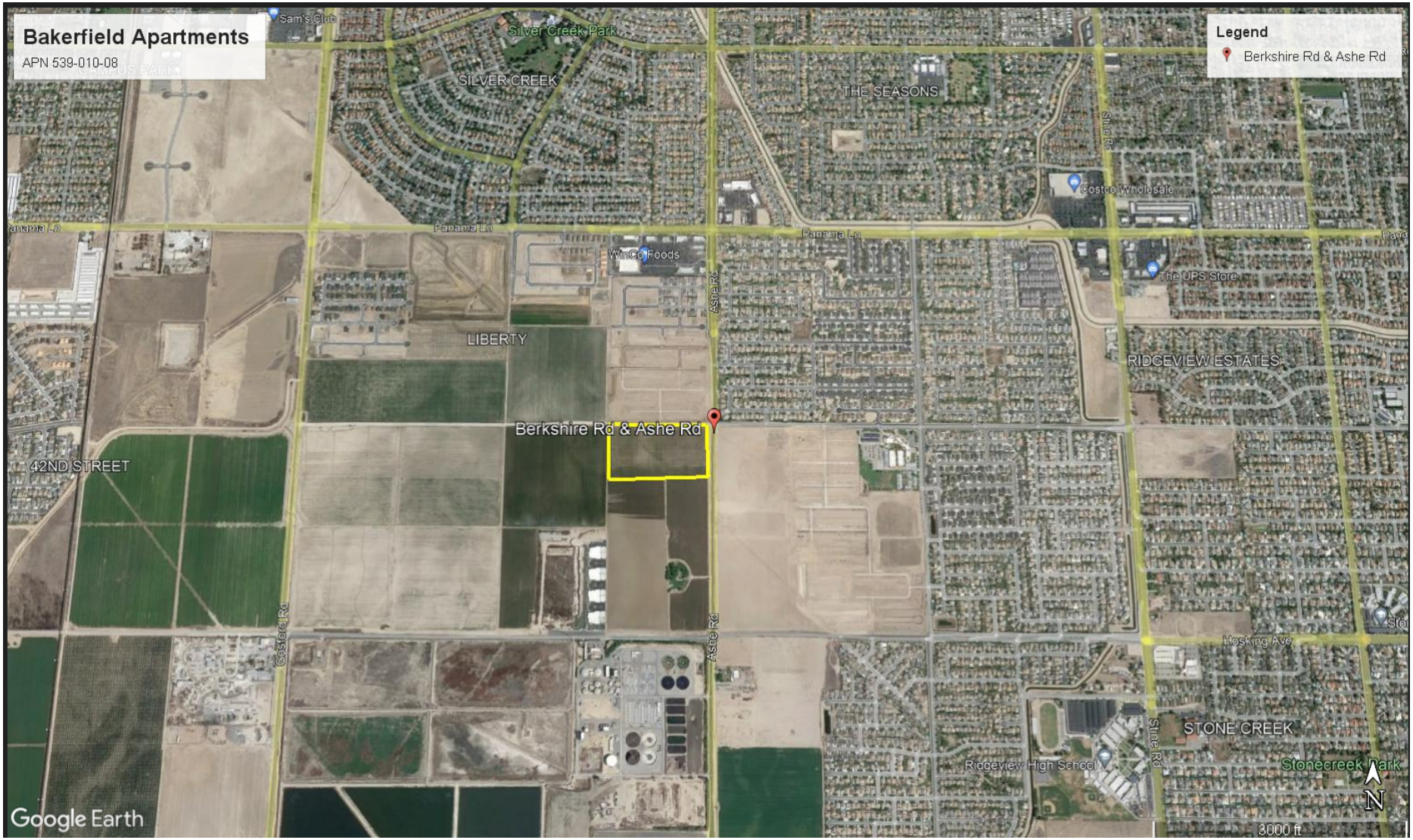

Bakerfield Apartments
APN 539-010-08
Legend
Berkshire Rd & Ashe Rd
Sam's Club
Silver Creek Park
SILVER CREEK
THE SEASONS
Costco Wholesale
Panama Ln
WinCo Foods
The UPS Store
Ashe Rd
LIBERTY
RIDGEVIEW ESTATES
Berkshire Rd & Ashe Rd
42ND STREET
Costero Rd
Hosking Ave
STONE CREEK
Stine Rd
Ridgeview High School
Stonecreek Park
N
3000 ft
Google Earth

EXHIBIT B

PROJECT LOCATION MAP

SWC Ashe Road & Berkshire Road

2/2/2022, 11:38:12 AM

Parcel Boundary

1:9,028

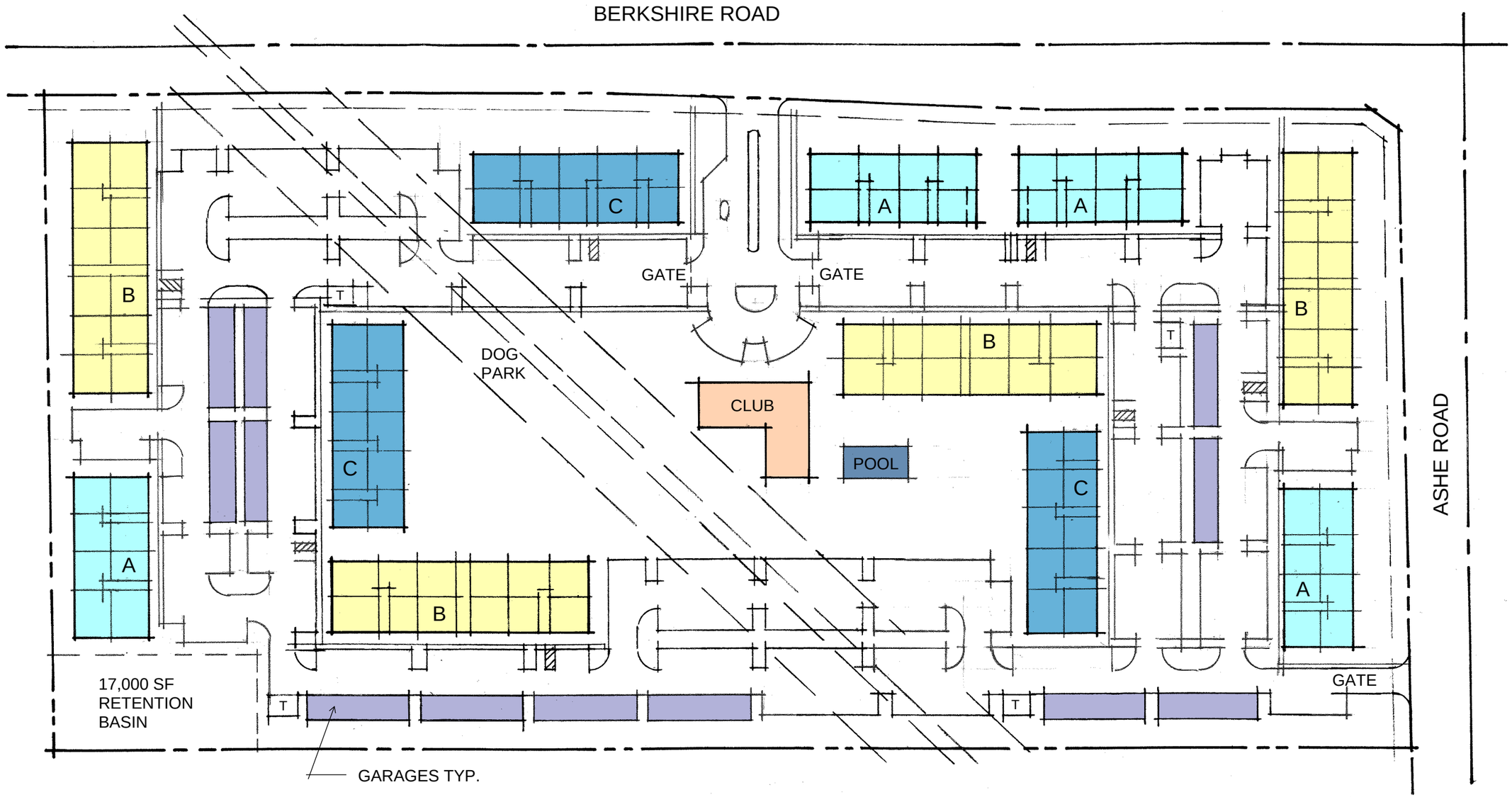
0 0.05 0.1 0.2 mi

0 0.1 0.2 0.4 km

City of Bakersfield, Bureau of Land Management, Esri, HERE, Garmin, INCREMENT P, Intermap, USGS, METI/NASA, EPA, USDA

EXHIBIT C

PROJECT SITE PLAN



LPAS
Architecture + Design

YIELD STUDY 3

GRUPE CO. BAKERSFIELD | Bakersfield, CA

01

PROJECT NO. 1387-0002

December 15th, 2021

GRUPE BAKERSFIELD — 12/15/2021

Berkshire Road — SCHEME 3

LPAS

					BLDG. 1	BLDG. 2	BLDG. 3	TOTAL	%	TOTAL NET SF
SITE AREA:				19.51 ACRES	849,856 SF					
NUMBER MIX:					BUILDING TYPE AND NUMBER:			PROJECT TOTALS		
UNIT TYPE AND SIZE:			Rentable		3	4	4			
1 BDR	A1	26' X 32'	770	SF	7	7	10	89 UNITS	26.5%	68,530 GSF
	A2		-	SF	0	0	0	- UNITS	0.0%	- GSF
2 BDR	B1	35' X 32'	1,060	SF	6	18	6	114 UNITS	33.9%	120,840 GSF
	B2	36' X 32'	1,100	SF	11	5	8	85 UNITS	25.3%	93,500 GSF
3 BDR	C1	42' X 26'	1,280	SF	0	6	6	48 UNITS	14.3%	61,440 GSF
TOTAL UNITS:			1,025	AVE SF	24	36	30	336 UNITS	100%	344,310 GSF
CIRCULATION AND SUPPORT (SF):					1320	2640	2640			25,080 SF
AMENITIES (SF):					0	0	0			6,000 SF
TOTAL AREA:										375,390 SF

PARKING SUMMARY:				
PARKING REQUIRED:				
	1 BEDROOM:	1.10	SPACES / UNIT	98 SPACES
	2 BEDROOM:	2.10	SPACES / UNIT	418 SPACES
	3 BEDROOM:	2.10	SPACES / UNIT	101 SPACES
		1.84	**SPACES / UNIT**	**617 SPACES**
PARKING PROVIDED:				
	FREE-STANDING GARAGES:			95 SPACES
	CARPORTS:			240 SPACES
	SURFACE			305 SPACES
		1.90	**SPACES / UNIT**	**640 SPACES**
				23 Surplus Spaces

EXHIBIT D

ASSESSOR’S PARCEL MAP

SEC. 28 T.30S. R.27E.

539-01

MAP BOOK INDEX

BK. 498

BK. 540

BK. 538

BK. 532

PG. 02

PG. 03

PG. 04

010

PANAMA LN.

L.L.A. 17-0064

52 1 7.86 ac.

53 2 8 ac.

553.19

553.23

629.15

629.79

46 1 23.48 ac.

733.05

183.99

42.24

289.38

480.02

TRACT 7261

BANDELIER DR.

1050.01

CREEK BEND DR.

PHASE 1

59 Ptn. 2 19.12 ac.

P.M.W.

1103.14

48 2 25.85 ac.

P.M.W. 17-0157

1302.42

1277.40

17-0089

55

44 1 25.28 ac.

47 3 25.15 ac.

BERKSHIRE

RELIANCE DR.

42 A 23.85 ac.

L.L.A. 16-0038

564.59

55

60

1292±

634.49

TRACT 6663

TULIA LN.

EVAN PL.

BANGOR PL.

UNIT 1

632.95

435

709

Ptn. 1

57 14.98 ac.

Drainage Easement

273±

RD.

183.14

22.22

49 2 23.13 ac.

P.M.W. 17-0158

1437.25

1363.87

205

135

110

986.37

Ptn. 2

39 P.M.W. 14-0179

709.21

Ptn. 2

40 31.11 ac.

50 1 27.41 ac.

93.8

76.84

135.02

133.76

70.92

RD.

1321.47

1291.06

30

08 1 19.51 ac.

658.22

658.05

1291.68

1258.16

09 2 19.52 ac.

658.21

658.05

1292.31

P.M. 3096

10 3 19.53 ac.

658.22

658.05

1292.93

1319.84

07 4 19.08 ac.

628.21

628.05

1293.56

ASHE RD.

489.31

45

54 37.38 ac.

769.08

1277.37

P.M. 12023

55 1 38.38 ac.

795.94

298.26

180.31

PH. 1

49

55

71

67

GOSFORD RD.

05 94.67 ac.

06 58.61 ac.

MC CUTCHEN RD.

20

30

This map is for assessment purposes only. It is not to be construed as portraying legal ownership or divisions of land for purposes of zoning or subdivision law.

1" = 600'

Assessor Map No. 539-01

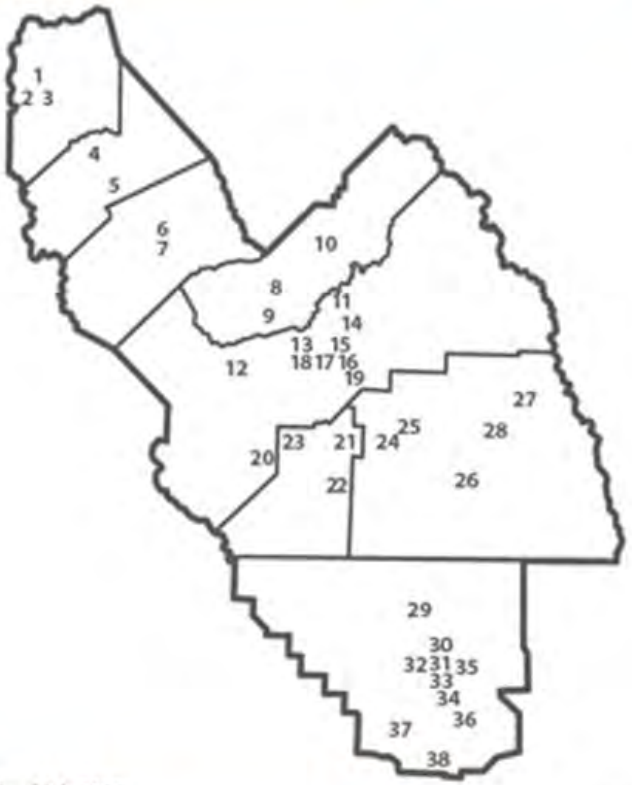
County of Kern, California

Revised: 02 / 19 / 2020

EXHIBIT E

AIR BASIN MONITORING STATIONS

Air Monitoring Sites in Operation



As of July 2018

SAN JOAQUIN COUNTY
- ■ 1 Stockton-Hazelton: G, M, P, F, T
- ★ 2 Tracy-Airport: G, M, P, F
- ★ 3 Manteca: P, F, M

STANISLAUS COUNTY
- ■ 4 Modesto-14th St: G, M, P, F
- ★ 5 Turlock: G, M, P, F

MERCED COUNTY
- ★ 6 Merced-M St: P, F
- ★ 7 Merced-Coffee: G, F, M

MADERA COUNTY
- ★ 8 Madera City: G, P, F, M
- ★ 9 Madera-Pump Yard: G, M

Other[1]:
Chukchansi Indians
- ▲ 10 Picayune Rancheria: G, F, P, M

FRESNO COUNTY
Other[1]:
Monache Tribe/Foothill Yokut Indians
- ▲ 11 Table Mountain AMS*: G, F, P, M
- ★ 12 Tranquillity: G, F, M
- ★ 13 Fresno-Sky Park: G, M
- ★ 14 Clovis: G, M, P, F
- ■ 15 Fresno-Garland: G, M, P, F, T, N, L
- ★ 16 Fresno-Pacific: F
- ★ 17 Fresno-Drummond: G, P, M
- ★ 18 Fresno-Foundry Park Ave: G, M
- ★ 19 Parlier: G, M
- ★ 20 Huron: F, M

KINGS COUNTY
- ★ 21 Hanford: G, F, M, P
- ★ 22 Corcoran: F, M, P

Other[1]:
Tachi Yokut Tribe
- ▲ 23 Santa Rosa Rancheria: G, M, P

TULARE COUNTY
- ★ 24 Visalia Airport: M
- ■ 25 Visalia-Church St: G, F, M, P
- ★ 26 Porterville: G, F, M

Other[2]:
- ▲ 27 Lower Kaweah: A, G, M
- ▲ 28 Ash Mountain: A, G, M, F

KERN COUNTY
- ● 29 Shafter: G, M
- ■ 30 Oildale: G, M, P
- ★ 31 Bakersfield-Golden/M St: F, P
- ■ 32 Bakersfield-Calif Ave: A, G, M, P, F, T
- ★ 33 Bakersfield-Muni: G, M
- ■ 34 Bakersfield-Airport (Planz): F
- ■ 35 Edison: G, M
- ■ 36 Arvin-Di-Giorgio: G, M
- ★ 38 Lebec: F, M

MONITORING DESIGNATIONS

A	Acid Deposition	P	Particulate (PM10)
F	Fine Particulate (PM2.5)	N	National Core
G	Gaseous	T	Toxins
M	Meteorological	L	Lead

MONITORING OPERATION
- ★ Sites operated by the District
- ● Sites operated by the District & CARB
- ■ Sites operated by CARB
- ▲ Sites operated by other agencies
  - Other[1] Tribal
  - Other[2] National Park Service
- * Air Monitoring Station (AMS)

San Joaquin Valley
AIR POLLUTION CONTROL DISTRICT

Source: http://www.valleyair.org/aqinfo/MonitoringSites.htm, 07/2018

EXHIBIT F

TOPOGRAPHIC MAP

Bakersfield Apartments

APN 539-010-080

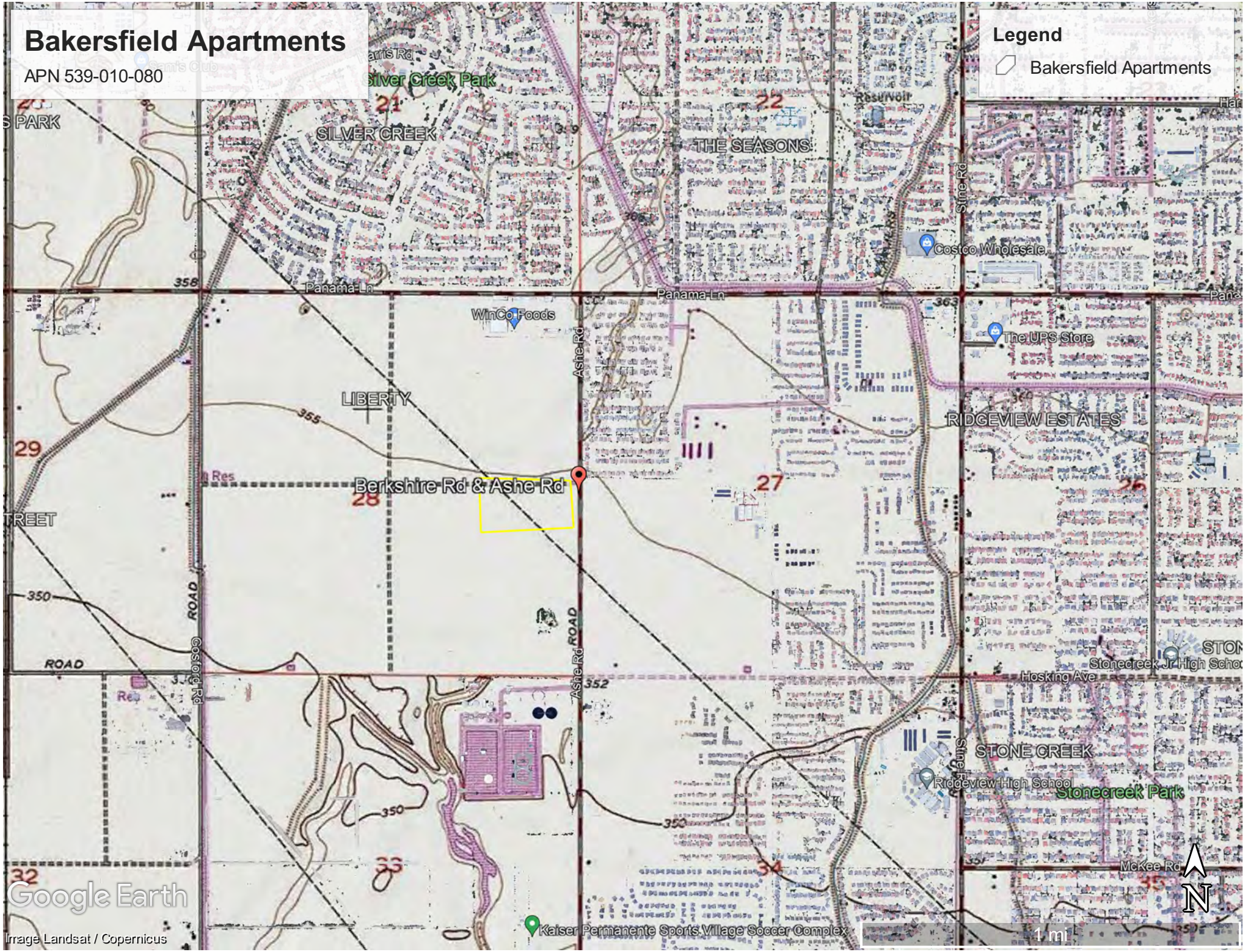


EXHIBIT G

AIR MONITORING STATION DATA

Top 4 Summary: Highest 4 Daily Maximum Hourly Nitrogen Dioxide Measurements

at Bakersfield-5558 California Avenue

iADAM

	2017		2018		2019	
	Date	Measurement	Date	Measurement	Date	Measurement
National:						
First High:	Dec 15	66.0	Nov 16	61.5	Nov 8	67.1
Second High:	Dec 14	63.1	Nov 15	58.0	Nov 12	63.8
Third High:	Nov 22	61.5	Sep 28	56.3	Nov 13	62.6
Fourth High:	Dec 29	61.1	Nov 14	56.1	Nov 4	60.4
California:						
First High:	Dec 15	66	Nov 16	61	Nov 8	67
Second High:	Dec 14	63	Nov 15	58	Nov 12	63
Third High:	Nov 22	61	Sep 28	56	Nov 13	62
Fourth High:	Dec 12	61	Nov 14	56	Nov 4	60
National:						
1-Hour Standard Design Value:		52		53		54
1-Hour Standard 98th Percentile:		58.1		51.0		53.9
# Days Above the Standard:		0		0		0
Annual Standard Design Value:		13		13		12
California:						
1-Hour Std Designation Value:		60		70		70
Expected Peak Day Concentration:		63		65		66
# Days Above the Standard:		0		0		0
Annual Std Designation Value:		12		12		12
Annual Average:		12		12		11
Year Coverage:		97		97		99

◄ Shift Backward 1 year Shift Forward ►

Notes:

Hourly nitrogen dioxide measurements and related statistics are available at Bakersfield-5558 California Avenue between 1994 and 2019. Some years in this range may not be represented.

All concentrations expressed in parts per billion.

yellow exceeds a California ambient air quality standard. orange exceeds a national ambient air quality standard.

An exceedance of a standard is not necessarily related to a violation of the standard.

Year Coverage indicates the extent to which available monitoring data represent the time of the year when concentrations are expected to be highest. 0 means that data represent none of the high period; 100 means that data represent the entire high period. A high Year Coverage does not mean that there was sufficient data for annual statistics to be considered valid.

* means there was insufficient data available to determine the value.

Trends Summary: PM2.5 Statistics

at Bakersfield-410 E Planz Road

iADAM

Year	Est. Days > Natl '06 Std	Annual Average		Natl Ann Std D.V.[1]	State Ann Std D.V.[2]	Natl '06 Std 98th Pctile	Natl '06 24-Hr Std D.V.[1]	High 24-Hr Average		Year Coverage
		Natl	State					Natl	State	
2019	10.0	13.0	13.0	16.9	13	46.7	59	83.7	83.7	92
2018	*	19.4	*	17.8	*	60.8	60	100.9	100.9	79
2017	32.2	18.2	*	17.3	18	69.7	59	80.1	80.1	86
Graph	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Info:
Click on a column header for more information about the statistic in that column.

Area:
Kern County; San Joaquin Valley Air Basin;
San Joaquin Valley 8-Hour Ozone Planning Area

District:
San Joaquin Valley Unified APCD

Years:
Annual PM2.5 statistics are available for this site from 2000 through 2019.

Notes:
All concentrations expressed in micrograms per cubic meter.
yellow exceeds a California ambient air quality standard. orange exceeds a national ambient air quality standard.
State and national statistics may differ for the following reasons:
State statistics are based on California approved samplers, whereas national statistics are based on samplers using federal reference or equivalent methods. State and national statistics may therefore be based on different samplers.
State criteria for ensuring that data are sufficiently complete for calculating valid annual averages are more stringent than the national criteria.
D.V.[1] = National Design Value
D.V.[2] = State Designation Value
* means there was insufficient data available to determine the value.

Trends Summary: PM10 Statistics

at Bakersfield-5558 California Avenue

iADAM

Year	Est Days > Std		Annual Average		3-Year Average		High 24-Hr Average		Year Coverage
	Natl	State	*Natl*	State	*Natl*	State	Natl	State	
2019	0.0	108.1	*38.8*	39.0	*41*	43	116.3	125.9	94
2018	0.0	*	*42.1*	*	*42*	43	136.1	142.0	95
2017	0.0	98.7	*42.6*	42.6	*43*	44	138.0	143.6	98
Graph	☐	☐	☐	☐	☐	☐	☐	☐	☐

Info:
Click on a column header for more information about the statistic in that column.

Area:
Kern County; San Joaquin Valley Air Basin;
San Joaquin Valley 8-Hour Ozone Planning Area

District:
San Joaquin Valley Unified APCD

Years:
Annual PM10 statistics are available for this site from 1994 through 2019.

Notes:
All concentrations expressed in micrograms per cubic meter.
All values listed above represent midnight-to-midnight 24-hour averages and may be related to an exceptional event.
The national annual average PM10 standard was revoked in December 2006 and is no longer in effect. Statistics related to the revoked standard are shown in *italics* or *italics*.
yellow exceeds a California ambient air quality standard. orange exceeds a national ambient air quality standard.
An exceedance of a standard is not necessarily related to a violation of the standard.
State and national statistics may differ for the following reasons:
State statistics are based on California approved samplers, whereas national statistics are based on samplers using federal reference or equivalent methods. State and national statistics may therefore be based on different samplers.
State statistics for 1998 and later are based on local conditions (except for sites in the South Coast Air Basin, where State statistics for 2002 and later are based on local conditions). National statistics are based on standard conditions.
State criteria for ensuring that data are sufficiently complete for calculating valid annual averages are more stringent than the national criteria.
* means there was insufficient data available to determine the value.

EXHIBIT H

CALEEMOD EMISSION MODELING
- CONSTRUCTION EMISSIONS (2023-2024)
- OPERATIONAL EMISSIONS (2024)

Bakersfield Apts APN 539-010-08 - Grupe

San Joaquin Valley Unified APCD Air District, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Apartments Low Rise	336.00	Dwelling Unit	19.96	336,000.00	1066

1.2 Other Project Characteristics

Urbanization	Rural	**Wind Speed (m/s)**	2.7	**Precipitation Freq (Days)**	45
Climate Zone	2			**Operational Year**	2024
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	641.35	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Bakersfield Apts APN 539-010-08 - Grupe - San Joaquin Valley Unified APCD Air District, Annual

Project Characteristics -

Land Use - Lot Acreage adjusted to actual

Construction Phase - Demo not required. Default values for construction.

Grading - Acres adjusted to project size

Architectural Coating - g/L adjusted to current SJVAPCD Rule 4601. Residential sqft matches actual plan.

Road Dust - Unpaved speed limit of 15 mph

Woodstoves - Wood willnot be used. Default for gas fireplaces.

Area Coating - g/L adjusted to current SJVAPCD Rule 4601. Residential sqft matches actual plan.

Construction Off-road Equipment Mitigation - Water truck used for exposed area. Speed limited to 15 mph on unpaved. Tier 4F used as available.

Mobile Land Use Mitigation - 6.5 miles from city center.

Area Mitigation - g/L adjusted to current SJVAPCD Rule 4601. 3% to match current APCD default average.

Water Mitigation - Low-flow faucets/toilet/shower standard.

Vehicle Trips - Updated per traffic analysis - 2,229 ADT/336 units

Fleet Mix - 10% HHD moved to LDT1

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	ConstArea_Residential_Interior	680,400.00	335,943.00
tblArchitecturalCoating	EF_Residential_Exterior	150.00	50.00
tblArchitecturalCoating	EF_Residential_Interior	150.00	50.00
tblAreaCoating	Area_EF_Residential_Exterior	150	50
tblAreaCoating	Area_EF_Residential_Interior	150	50
tblAreaCoating	Area_Residential_Interior	680400	335943
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstEquipMitigation	DPF	No Change	Level 1
tblConstEquipMitigation	DPF	No Change	Level 1
tblConstEquipMitigation	DPF	No Change	Level 1
tblConstEquipMitigation	DPF	No Change	Level 1

tblConstEquipMitigation	DPF	No Change	Level 1
tblConstEquipMitigation	DPF	No Change	Level 1
tblConstEquipMitigation	DPF	No Change	Level 1
tblConstEquipMitigation	DPF	No Change	Level 1
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tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	6.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	9.00
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
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tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final

tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstructionPhase	NumDays	20.00	0.00
tblFireplaces	FireplaceWoodMass	3,078.40	0.00
tblFleetMix	HHD	0.11	0.01
tblFleetMix	LDT1	0.03	0.13
tblGrading	AcresOfGrading	75.00	19.96
tblLandUse	LotAcreage	21.00	19.96
tblProjectCharacteristics	UrbanizationLevel	Urban	Rural
tblVehicleTrips	HO_TL	7.90	6.40
tblVehicleTrips	HS_TL	7.10	6.40
tblVehicleTrips	HW_TL	16.80	12.80
tblVehicleTrips	ST_TR	7.16	6.63
tblVehicleTrips	SU_TR	6.07	6.63
tblVehicleTrips	WD_TR	6.59	6.63
tblWoodstoves	NumberCatalytic	19.96	0.00
tblWoodstoves	NumberNoncatalytic	19.96	0.00
tblWoodstoves	WoodstoveDayYear	82.00	0.00
tblWoodstoves	WoodstoveWoodMass	3,019.20	0.00

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2023	0.3705	2.6298	3.2197	8.0400e-003	0.5508	0.1070	0.6578	0.1965	0.1001	0.2966	0.0000	715.9201	715.9201	0.1037	0.0000	718.5124
2024	0.7706	0.7853	1.1352	2.7800e-003	0.1368	0.0307	0.1675	0.0366	0.0288	0.0654	0.0000	247.7850	247.7850	0.0325	0.0000	248.5981
Maximum	**0.7706**	**2.6298**	**3.2197**	**8.0400e-003**	**0.5508**	**0.1070**	**0.6578**	**0.1965**	**0.1001**	**0.2966**	**0.0000**	**715.9201**	**715.9201**	**0.1037**	**0.0000**	**718.5124**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2023	0.2074	0.7434	3.4607	8.0400e-003	0.4456	0.0129	0.4585	0.1413	0.0128	0.1540	0.0000	715.9197	715.9197	0.1037	0.0000	718.5120
2024	0.7255	0.2689	1.2203	2.7800e-003	0.1368	4.8100e-003	0.1416	0.0366	4.7400e-003	0.0413	0.0000	247.7849	247.7849	0.0325	0.0000	248.5980
Maximum	**0.7255**	**0.7434**	**3.4607**	**8.0400e-003**	**0.4456**	**0.0129**	**0.4585**	**0.1413**	**0.0128**	**0.1540**	**0.0000**	**715.9197**	**715.9197**	**0.1037**	**0.0000**	**718.5120**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**18.25**	**70.36**	**-7.49**	**0.00**	**15.30**	**87.11**	**27.29**	**23.70**	**86.42**	**46.04**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	1-2-2023	4-1-2023	0.9685	0.1790
2	4-2-2023	7-1-2023	0.6742	0.2593
3	7-2-2023	10-1-2023	0.6817	0.2622
4	10-2-2023	1-1-2024	0.6857	0.2665
5	1-2-2024	4-1-2024	0.6388	0.2558
6	4-2-2024	7-1-2024	0.9014	0.7354
		Highest	0.9685	0.7354

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	1.4672	0.1544	2.5473	9.3000e-004		0.0240	0.0240		0.0240	0.0240	0.0000	149.6330	149.6330	6.7000e-003	2.6700e-003	150.5957
Energy	0.0219	0.1873	0.0797	1.2000e-003		0.0151	0.0151		0.0151	0.0151	0.0000	656.2281	656.2281	0.0240	8.0900e-003	659.2385
Mobile	0.6386	2.0668	7.3952	0.0261	2.5176	0.0202	2.5379	0.6743	0.0188	0.6931	0.0000	2,383.0638	2,383.0638	0.0857	0.0000	2,385.2053
Waste						0.0000	0.0000		0.0000	0.0000	31.3743	0.0000	31.3743	1.8542	0.0000	77.7285
Water						0.0000	0.0000		0.0000	0.0000	6.9452	48.5127	55.4579	0.7155	0.0173	78.5010
Total	**2.1277**	**2.4086**	**10.0222**	**0.0282**	**2.5176**	**0.0594**	**2.5770**	**0.6743**	**0.0580**	**0.7322**	**38.3195**	**3,237.4374**	**3,275.7570**	**2.6861**	**0.0281**	**3,351.2689**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	1.4661	0.1542	2.5293	9.3000e-004		0.0239	0.0239		0.0239	0.0239	0.0000	149.5963	149.5963	6.6400e-003	2.6700e-003	150.5576
Energy	0.0219	0.1873	0.0797	1.2000e-003		0.0151	0.0151		0.0151	0.0151	0.0000	656.2281	656.2281	0.0240	8.0900e-003	659.2385
Mobile	0.6275	2.0046	7.1014	0.0248	2.3918	0.0193	2.4111	0.6406	0.0180	0.6586	0.0000	2,269.4165	2,269.4165	0.0824	0.0000	2,271.4765
Waste						0.0000	0.0000		0.0000	0.0000	31.3743	0.0000	31.3743	1.8542	0.0000	77.7285
Water						0.0000	0.0000		0.0000	0.0000	5.5562	41.6206	47.1768	0.5726	0.0139	65.6223
Total	**2.1155**	**2.3461**	**9.7104**	**0.0270**	**2.3918**	**0.0584**	**2.4501**	**0.6406**	**0.0570**	**0.6976**	**36.9305**	**3,116.8614**	**3,153.7919**	**2.5398**	**0.0246**	**3,224.6232**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.57**	**2.59**	**3.11**	**4.40**	**5.00**	**1.70**	**4.92**	**5.00**	**1.62**	**4.73**	**3.62**	**3.72**	**3.72**	**5.45**	**12.26**	**3.78**

3.0 Construction Detail

Construction Phase

Bakersfield Apts APN 539-010-08 - Grupe - San Joaquin Valley Unified APCD Air District, Annual

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	1/2/2023	1/1/2023	5	0	
2	Site Preparation	Site Preparation	1/2/2023	1/13/2023	5	10	
3	Grading	Grading	1/14/2023	2/24/2023	5	30	
4	Building Construction	Building Construction	2/25/2023	4/19/2024	5	300	
5	Paving	Paving	4/20/2024	5/17/2024	5	20	
6	Architectural Coating	Architectural Coating	5/18/2024	6/14/2024	5	20	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 19.96

Acres of Paving: 0

Residential Indoor: 335,943; Residential Outdoor: 226,800; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Excavators	3	8.00	158	0.38
Demolition	Rubber Tired Dozers	2	8.00	247	0.40
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	2	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Architectural Coating	Air Compressors	1	6.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	6	15.00	0.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	7	18.00	0.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	242.00	36.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	48.00	0.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

Use DPF for Construction Equipment

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

3.2 Demolition - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.2 Demolition - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.2 Demolition - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.3 Site Preparation - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0903	0.0000	0.0903	0.0497	0.0000	0.0497	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0133	0.1376	0.0912	1.9000e-004		6.3300e-003	6.3300e-003		5.8200e-003	5.8200e-003	0.0000	16.7254	16.7254	5.4100e-003	0.0000	16.8606
Total	**0.0133**	**0.1376**	**0.0912**	**1.9000e-004**	**0.0903**	**6.3300e-003**	**0.0967**	**0.0497**	**5.8200e-003**	**0.0555**	**0.0000**	**16.7254**	**16.7254**	**5.4100e-003**	**0.0000**	**16.8606**

3.3 Site Preparation - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.2000e-004	2.7000e-004	2.8800e-003	1.0000e-005	1.1200e-003	1.0000e-005	1.1300e-003	3.0000e-004	1.0000e-005	3.0000e-004	0.0000	0.8913	0.8913	2.0000e-005	0.0000	0.8918
Total	**4.2000e-004**	**2.7000e-004**	**2.8800e-003**	**1.0000e-005**	**1.1200e-003**	**1.0000e-005**	**1.1300e-003**	**3.0000e-004**	**1.0000e-005**	**3.0000e-004**	**0.0000**	**0.8913**	**0.8913**	**2.0000e-005**	**0.0000**	**0.8918**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0407	0.0000	0.0407	0.0223	0.0000	0.0223	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.3300e-003	0.0101	0.1043	1.9000e-004		2.3000e-004	2.3000e-004		2.3000e-004	2.3000e-004	0.0000	16.7253	16.7253	5.4100e-003	0.0000	16.8606
Total	**2.3300e-003**	**0.0101**	**0.1043**	**1.9000e-004**	**0.0407**	**2.3000e-004**	**0.0409**	**0.0223**	**2.3000e-004**	**0.0226**	**0.0000**	**16.7253**	**16.7253**	**5.4100e-003**	**0.0000**	**16.8606**

3.3 Site Preparation - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.2000e-004	2.7000e-004	2.8800e-003	1.0000e-005	1.1200e-003	1.0000e-005	1.1300e-003	3.0000e-004	1.0000e-005	3.0000e-004	0.0000	0.8913	0.8913	2.0000e-005	0.0000	0.8918
Total	**4.2000e-004**	**2.7000e-004**	**2.8800e-003**	**1.0000e-005**	**1.1200e-003**	**1.0000e-005**	**1.1300e-003**	**3.0000e-004**	**1.0000e-005**	**3.0000e-004**	**0.0000**	**0.8913**	**0.8913**	**2.0000e-005**	**0.0000**	**0.8918**

3.4 Grading - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1009	0.0000	0.1009	0.0508	0.0000	0.0508	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0498	0.5177	0.4208	9.3000e-004		0.0214	0.0214		0.0197	0.0197	0.0000	81.8028	81.8028	0.0265	0.0000	82.4642
Total	**0.0498**	**0.5177**	**0.4208**	**9.3000e-004**	**0.1009**	**0.0214**	**0.1223**	**0.0508**	**0.0197**	**0.0705**	**0.0000**	**81.8028**	**81.8028**	**0.0265**	**0.0000**	**82.4642**

3.4 Grading - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.4100e-003	9.1000e-004	9.5800e-003	3.0000e-005	3.7300e-003	2.0000e-005	3.7500e-003	9.9000e-004	2.0000e-005	1.0100e-003	0.0000	2.9709	2.9709	6.0000e-005	0.0000	2.9725
Total	**1.4100e-003**	**9.1000e-004**	**9.5800e-003**	**3.0000e-005**	**3.7300e-003**	**2.0000e-005**	**3.7500e-003**	**9.9000e-004**	**2.0000e-005**	**1.0100e-003**	**0.0000**	**2.9709**	**2.9709**	**6.0000e-005**	**0.0000**	**2.9725**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0454	0.0000	0.0454	0.0229	0.0000	0.0229	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0114	0.0495	0.4950	9.3000e-004		1.1400e-003	1.1400e-003		1.1400e-003	1.1400e-003	0.0000	81.8027	81.8027	0.0265	0.0000	82.4641
Total	**0.0114**	**0.0495**	**0.4950**	**9.3000e-004**	**0.0454**	**1.1400e-003**	**0.0466**	**0.0229**	**1.1400e-003**	**0.0240**	**0.0000**	**81.8027**	**81.8027**	**0.0265**	**0.0000**	**82.4641**

3.4 Grading - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.4100e-003	9.1000e-004	9.5800e-003	3.0000e-005	3.7300e-003	2.0000e-005	3.7500e-003	9.9000e-004	2.0000e-005	1.0100e-003	0.0000	2.9709	2.9709	6.0000e-005	0.0000	2.9725
Total	**1.4100e-003**	**9.1000e-004**	**9.5800e-003**	**3.0000e-005**	**3.7300e-003**	**2.0000e-005**	**3.7500e-003**	**9.9000e-004**	**2.0000e-005**	**1.0100e-003**	**0.0000**	**2.9709**	**2.9709**	**6.0000e-005**	**0.0000**	**2.9725**

3.5 Building Construction - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1730	1.5823	1.7868	2.9600e-003		0.0770	0.0770		0.0724	0.0724	0.0000	254.9852	254.9852	0.0607	0.0000	256.5017
Total	**0.1730**	**1.5823**	**1.7868**	**2.9600e-003**		**0.0770**	**0.0770**		**0.0724**	**0.0724**	**0.0000**	**254.9852**	**254.9852**	**0.0607**	**0.0000**	**256.5017**

3.5 Building Construction - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	7.8000e-003	0.3104	0.0580	1.0000e-003	0.0237	2.9000e-004	0.0240	6.8600e-003	2.8000e-004	7.1400e-003	0.0000	94.9276	94.9276	5.3200e-003	0.0000	95.0606
Worker	0.1248	0.0806	0.8504	2.9100e-003	0.3309	2.0500e-003	0.3330	0.0879	1.8900e-003	0.0898	0.0000	263.6169	263.6169	5.7700e-003	0.0000	263.7611
Total	**0.1326**	**0.3910**	**0.9084**	**3.9100e-003**	**0.3547**	**2.3400e-003**	**0.3570**	**0.0948**	**2.1700e-003**	**0.0970**	**0.0000**	**358.5446**	**358.5446**	**0.0111**	**0.0000**	**358.8217**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0592	0.2916	1.9405	2.9600e-003		9.1900e-003	9.1900e-003		9.1900e-003	9.1900e-003	0.0000	254.9849	254.9849	0.0607	0.0000	256.5013
Total	**0.0592**	**0.2916**	**1.9405**	**2.9600e-003**		**9.1900e-003**	**9.1900e-003**		**9.1900e-003**	**9.1900e-003**	**0.0000**	**254.9849**	**254.9849**	**0.0607**	**0.0000**	**256.5013**

3.5 Building Construction - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	7.8000e-003	0.3104	0.0580	1.0000e-003	0.0237	2.9000e-004	0.0240	6.8600e-003	2.8000e-004	7.1400e-003	0.0000	94.9276	94.9276	5.3200e-003	0.0000	95.0606
Worker	0.1248	0.0806	0.8504	2.9100e-003	0.3309	2.0500e-003	0.3330	0.0879	1.8900e-003	0.0898	0.0000	263.6169	263.6169	5.7700e-003	0.0000	263.7611
Total	**0.1326**	**0.3910**	**0.9084**	**3.9100e-003**	**0.3547**	**2.3400e-003**	**0.3570**	**0.0948**	**2.1700e-003**	**0.0970**	**0.0000**	**358.5446**	**358.5446**	**0.0111**	**0.0000**	**358.8217**

3.5 Building Construction - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0589	0.5378	0.6467	1.0800e-003		0.0245	0.0245		0.0231	0.0231	0.0000	92.7396	92.7396	0.0219	0.0000	93.2879
Total	**0.0589**	**0.5378**	**0.6467**	**1.0800e-003**		**0.0245**	**0.0245**		**0.0231**	**0.0231**	**0.0000**	**92.7396**	**92.7396**	**0.0219**	**0.0000**	**93.2879**

3.5 Building Construction - 2024

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	2.7500e-003	0.1120	0.0199	3.6000e-004	8.6300e-003	1.0000e-004	8.7400e-003	2.4900e-003	1.0000e-004	2.5900e-003	0.0000	34.2497	34.2497	1.9600e-003	0.0000	34.2987
Worker	0.0425	0.0264	0.2857	1.0200e-003	0.1203	7.3000e-004	0.1211	0.0320	6.7000e-004	0.0327	0.0000	92.2144	92.2144	1.8900e-003	0.0000	92.2616
Total	**0.0452**	**0.1384**	**0.3056**	**1.3800e-003**	**0.1290**	**8.3000e-004**	**0.1298**	**0.0345**	**7.7000e-004**	**0.0352**	**0.0000**	**126.4640**	**126.4640**	**3.8500e-003**	**0.0000**	**126.5603**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0208	0.1045	0.7051	1.0800e-003		3.0300e-003	3.0300e-003		3.0300e-003	3.0300e-003	0.0000	92.7395	92.7395	0.0219	0.0000	93.2878
Total	**0.0208**	**0.1045**	**0.7051**	**1.0800e-003**		**3.0300e-003**	**3.0300e-003**		**3.0300e-003**	**3.0300e-003**	**0.0000**	**92.7395**	**92.7395**	**0.0219**	**0.0000**	**93.2878**

3.5 Building Construction - 2024

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	2.7500e-003	0.1120	0.0199	3.6000e-004	8.6300e-003	1.0000e-004	8.7400e-003	2.4900e-003	1.0000e-004	2.5900e-003	0.0000	34.2497	34.2497	1.9600e-003	0.0000	34.2987
Worker	0.0425	0.0264	0.2857	1.0200e-003	0.1203	7.3000e-004	0.1211	0.0320	6.7000e-004	0.0327	0.0000	92.2144	92.2144	1.8900e-003	0.0000	92.2616
Total	**0.0452**	**0.1384**	**0.3056**	**1.3800e-003**	**0.1290**	**8.3000e-004**	**0.1298**	**0.0345**	**7.7000e-004**	**0.0352**	**0.0000**	**126.4640**	**126.4640**	**3.8500e-003**	**0.0000**	**126.5603**

3.6 Paving - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	9.8800e-003	0.0953	0.1463	2.3000e-004		4.6900e-003	4.6900e-003		4.3100e-003	4.3100e-003	0.0000	20.0265	20.0265	6.4800e-003	0.0000	20.1885
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**9.8800e-003**	**0.0953**	**0.1463**	**2.3000e-004**		**4.6900e-003**	**4.6900e-003**		**4.3100e-003**	**4.3100e-003**	**0.0000**	**20.0265**	**20.0265**	**6.4800e-003**	**0.0000**	**20.1885**

3.6 Paving - 2024

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.6000e-004	4.1000e-004	4.4300e-003	2.0000e-005	1.8600e-003	1.0000e-005	1.8800e-003	5.0000e-004	1.0000e-005	5.1000e-004	0.0000	1.4289	1.4289	3.0000e-005	0.0000	1.4297
Total	**6.6000e-004**	**4.1000e-004**	**4.4300e-003**	**2.0000e-005**	**1.8600e-003**	**1.0000e-005**	**1.8800e-003**	**5.0000e-004**	**1.0000e-005**	**5.1000e-004**	**0.0000**	**1.4289**	**1.4289**	**3.0000e-005**	**0.0000**	**1.4297**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	2.8000e-003	0.0122	0.1730	2.3000e-004		2.8000e-004	2.8000e-004		2.8000e-004	2.8000e-004	0.0000	20.0265	20.0265	6.4800e-003	0.0000	20.1884
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**2.8000e-003**	**0.0122**	**0.1730**	**2.3000e-004**		**2.8000e-004**	**2.8000e-004**		**2.8000e-004**	**2.8000e-004**	**0.0000**	**20.0265**	**20.0265**	**6.4800e-003**	**0.0000**	**20.1884**

3.6 Paving - 2024

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.6000e-004	4.1000e-004	4.4300e-003	2.0000e-005	1.8600e-003	1.0000e-005	1.8800e-003	5.0000e-004	1.0000e-005	5.1000e-004	0.0000	1.4289	1.4289	3.0000e-005	0.0000	1.4297
Total	**6.6000e-004**	**4.1000e-004**	**4.4300e-003**	**2.0000e-005**	**1.8600e-003**	**1.0000e-005**	**1.8800e-003**	**5.0000e-004**	**1.0000e-005**	**5.1000e-004**	**0.0000**	**1.4289**	**1.4289**	**3.0000e-005**	**0.0000**	**1.4297**

3.7 Architectural Coating - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.6521					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.8100e-003	0.0122	0.0181	3.0000e-005		6.1000e-004	6.1000e-004		6.1000e-004	6.1000e-004	0.0000	2.5533	2.5533	1.4000e-004	0.0000	2.5569
Total	**0.6539**	**0.0122**	**0.0181**	**3.0000e-005**		**6.1000e-004**	**6.1000e-004**		**6.1000e-004**	**6.1000e-004**	**0.0000**	**2.5533**	**2.5533**	**1.4000e-004**	**0.0000**	**2.5569**

3.7 Architectural Coating - 2024

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.1000e-003	1.3100e-003	0.0142	5.0000e-005	5.9700e-003	4.0000e-005	6.0000e-003	1.5900e-003	3.0000e-005	1.6200e-003	0.0000	4.5726	4.5726	9.0000e-005	0.0000	4.5750
Total	**2.1000e-003**	**1.3100e-003**	**0.0142**	**5.0000e-005**	**5.9700e-003**	**4.0000e-005**	**6.0000e-003**	**1.5900e-003**	**3.0000e-005**	**1.6200e-003**	**0.0000**	**4.5726**	**4.5726**	**9.0000e-005**	**0.0000**	**4.5750**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.6521					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.8100e-003	0.0122	0.0181	3.0000e-005		6.1000e-004	6.1000e-004		6.1000e-004	6.1000e-004	0.0000	2.5533	2.5533	1.4000e-004	0.0000	2.5568
Total	**0.6539**	**0.0122**	**0.0181**	**3.0000e-005**		**6.1000e-004**	**6.1000e-004**		**6.1000e-004**	**6.1000e-004**	**0.0000**	**2.5533**	**2.5533**	**1.4000e-004**	**0.0000**	**2.5568**

3.7 Architectural Coating - 2024

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.1000e-003	1.3100e-003	0.0142	5.0000e-005	5.9700e-003	4.0000e-005	6.0000e-003	1.5900e-003	3.0000e-005	1.6200e-003	0.0000	4.5726	4.5726	9.0000e-005	0.0000	4.5750
Total	**2.1000e-003**	**1.3100e-003**	**0.0142**	**5.0000e-005**	**5.9700e-003**	**4.0000e-005**	**6.0000e-003**	**1.5900e-003**	**3.0000e-005**	**1.6200e-003**	**0.0000**	**4.5726**	**4.5726**	**9.0000e-005**	**0.0000**	**4.5750**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

Improve Destination Accessibility

Improve Pedestrian Network

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.6275	2.0046	7.1014	0.0248	2.3918	0.0193	2.4111	0.6406	0.0180	0.6586	0.0000	2,269.4165	2,269.4165	0.0824	0.0000	2,271.4765
Unmitigated	0.6386	2.0668	7.3952	0.0261	2.5176	0.0202	2.5379	0.6743	0.0188	0.6931	0.0000	2,383.0638	2,383.0638	0.0857	0.0000	2,385.2053

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Low Rise	2,227.68	2,227.68	2227.68	6,708,438	6,373,016
Total	2,227.68	2,227.68	2,227.68	6,708,438	6,373,016

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Apartments Low Rise	12.80	6.40	6.40	45.60	19.00	35.40	86	11	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Apartments Low Rise	0.522559	0.130865	0.172639	0.110355	0.015767	0.004611	0.021261	0.012052	0.001779	0.001458	0.005075	0.000925	0.000654

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	439.2951	439.2951	0.0199	4.1100e-003	441.0164
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	439.2951	439.2951	0.0199	4.1100e-003	441.0164
NaturalGas Mitigated	0.0219	0.1873	0.0797	1.2000e-003		0.0151	0.0151		0.0151	0.0151	0.0000	216.9330	216.9330	4.1600e-003	3.9800e-003	218.2221
NaturalGas Unmitigated	0.0219	0.1873	0.0797	1.2000e-003		0.0151	0.0151		0.0151	0.0151	0.0000	216.9330	216.9330	4.1600e-003	3.9800e-003	218.2221

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Apartments Low Rise	4.06517e+006	0.0219	0.1873	0.0797	1.2000e-003		0.0151	0.0151		0.0151	0.0151	0.0000	216.9330	216.9330	4.1600e-003	3.9800e-003	218.2221
Total		**0.0219**	**0.1873**	**0.0797**	**1.2000e-003**		**0.0151**	**0.0151**		**0.0151**	**0.0151**	**0.0000**	**216.9330**	**216.9330**	**4.1600e-003**	**3.9800e-003**	**218.2221**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Apartments Low Rise	4.06517e+006	0.0219	0.1873	0.0797	1.2000e-003		0.0151	0.0151		0.0151	0.0151	0.0000	216.9330	216.9330	4.1600e-003	3.9800e-003	218.2221
Total		**0.0219**	**0.1873**	**0.0797**	**1.2000e-003**		**0.0151**	**0.0151**		**0.0151**	**0.0151**	**0.0000**	**216.9330**	**216.9330**	**4.1600e-003**	**3.9800e-003**	**218.2221**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Apartments Low Rise	1.51006e+006	439.2951	0.0199	4.1100e-003	441.0164
Total		**439.2951**	**0.0199**	**4.1100e-003**	**441.0164**

5.3 Energy by Land Use - Electricity

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Apartments Low Rise	1.51006e+006	439.2951	0.0199	4.1100e-003	441.0164
Total		**439.2951**	**0.0199**	**4.1100e-003**	**441.0164**

6.0 Area Detail

6.1 Mitigation Measures Area

Use Electric Lawnmower

Use Electric Leafblower

Use Electric Chainsaw

Use Low VOC Paint - Residential Interior

Use Low VOC Paint - Residential Exterior

Use only Natural Gas Hearths

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	1.4661	0.1542	2.5293	9.3000e-004		0.0239	0.0239		0.0239	0.0239	0.0000	149.5963	149.5963	6.6400e-003	2.6700e-003	150.5576
Unmitigated	1.4672	0.1544	2.5473	9.3000e-004		0.0240	0.0240		0.0240	0.0240	0.0000	149.6330	149.6330	6.7000e-003	2.6700e-003	150.5957

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0652					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	1.3123					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	0.0147	0.1257	0.0535	8.0000e-004		0.0102	0.0102		0.0102	0.0102	0.0000	145.5577	145.5577	2.7900e-003	2.6700e-003	146.4227
Landscaping	0.0750	0.0287	2.4938	1.3000e-004		0.0138	0.0138		0.0138	0.0138	0.0000	4.0753	4.0753	3.9100e-003	0.0000	4.1730
Total	**1.4672**	**0.1544**	**2.5473**	**9.3000e-004**		**0.0240**	**0.0240**		**0.0240**	**0.0240**	**0.0000**	**149.6330**	**149.6330**	**6.7000e-003**	**2.6700e-003**	**150.5957**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0652					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	1.3123					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	0.0147	0.1257	0.0535	8.0000e-004		0.0102	0.0102		0.0102	0.0102	0.0000	145.5577	145.5577	2.7900e-003	2.6700e-003	146.4227
Landscaping	0.0739	0.0286	2.4758	1.3000e-004		0.0137	0.0137		0.0137	0.0137	0.0000	4.0386	4.0386	3.8500e-003	0.0000	4.1349
Total	**1.4661**	**0.1542**	**2.5293**	**9.3000e-004**		**0.0239**	**0.0239**		**0.0239**	**0.0239**	**0.0000**	**149.5963**	**149.5963**	**6.6400e-003**	**2.6700e-003**	**150.5576**

7.0 Water Detail

7.1 Mitigation Measures Water

Install Low Flow Bathroom Faucet

Install Low Flow Kitchen Faucet

Install Low Flow Toilet

Install Low Flow Shower

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	47.1768	0.5726	0.0139	65.6223
Unmitigated	55.4579	0.7155	0.0173	78.5010

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Apartments Low Rise	21.8918 / 13.8013	55.4579	0.7155	0.0173	78.5010
Total		**55.4579**	**0.7155**	**0.0173**	**78.5010**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Apartments Low Rise	17.5134 / 13.8013	47.1768	0.5726	0.0139	65.6223
Total		**47.1768**	**0.5726**	**0.0139**	**65.6223**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	31.3743	1.8542	0.0000	77.7285
Unmitigated	31.3743	1.8542	0.0000	77.7285

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Apartments Low Rise	154.56	31.3743	1.8542	0.0000	77.7285
Total		**31.3743**	**1.8542**	**0.0000**	**77.7285**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Apartments Low Rise	154.56	31.3743	1.8542	0.0000	77.7285
Total		**31.3743**	**1.8542**	**0.0000**	**77.7285**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

EXHIBIT I

TRAFFIC REPORT (Trip Generation and VMT Analysis)

RUETTGERS & SCHULER CIVIL ENGINEERS

1800 30th Street, Suite 260
Bakersfield, California 93301
Phone (661) 327-1969
Fax (661) 327-1993

April 8, 2022

239-24
Electronic Mail

Ms. Patricia Newquist
Cornerstone Engineering
5509 Young Street
Bakersfield, CA 93311

REF: Trip Generation and VMT Analysis for Proposed General Plan Amendment and Zone Change (GPA/ZC) on APN 539-010-08 on the Southwest Corner of Berkshire Road & Ashe Road

Dear Ms. Newquist:

It is our understanding that it is desired to complete a GPA/ZC on the above referenced property to increase the number of multi-family dwelling units. A map showing the limits and designations for the GPA/ZC are attached to this letter. Pursuant to your request, we are preparing this letter to address whether there will be impacts due to the proposed increase in dwelling units for the project. In order to determine if impacts will occur, a comparison of the project generated trips was prepared with the findings presented below. Following is a summary of the current and proposed zoning:

Approved Zoning	Proposed Zoning
Multi-Family Housing – 306 dwelling units	Multi-Family Housing – 336 dwelling units

Trip generation and design hour volumes for the proposed project were calculated using the Institute of Transportation Engineers (ITE) Trip Generation, 11th Edition. The trip generations for the approved and proposed zoning are shown in Tables 1 and 2, respectively. Table 3 shows a comparison of the approved trip generation and the trip generation for the proposed project.

Table 1
Approved Zoning Project Trip Generation

General Information			Daily Trips		AM Peak Hour Trips			PM Peak Hour Trips		
ITE Code	Development Type	Variable	ADT RATE	ADT	Rate	In % Split/ Trips	Out % Split/ Trips	Rate	In % Split/ Trips	Out % Split/ Trips
220	Multifamily Housing (Low Rise)	306 Dwelling Units	eq	2037	eq	24% 28	76% 89	eq	62% 101	38% 62

Table 2
Proposed Zoning Project Trip Generation

General Information			Daily Trips		AM Peak Hour Trips			PM Peak Hour Trips		
ITE Code	Development Type	Variable	ADT RATE	ADT	Rate	In % Split/ Trips	Out % Split/ Trips	Rate	In % Split/ Trips	Out % Split/ Trips
220	Multifamily Housing (Low Rise)	336 Dwelling Units	eq	2229	eq	24% 30	76% 97	eq	62% 109	38% 67

Table 3
Approved & Proposed Project Trip Generation
ADT & AM/PM Peak Hours

Scenario	Total Traffic		
	ADT	AM PH	PM PH
Approved (306 units)	2037	117	163
Proposed (336 units)	2229	127	176
Difference	**192**	**10**	**13**

As shown in Table 3, the proposed zoning increases the daily trip generation by 192 trips, and the AM and PM peak hour trips are increased by 10 and 13 trips, respectively. The City of Bakersfield's threshold for requiring a traffic impact study is whether a project adds 50 or more vehicular trips to an intersection during the peak hour. As shown on Table 3, the project does not reach the 50-trip threshold in either the AM or PM peak hours. Therefore, intersection analysis would not be required.

VEHICLE MILES TRAVELED (VMT) EVALUATION

The VMT analysis involved comparing an estimate of VMT attributable to the project to a baseline VMT and assessing whether project VMT would result in a significant transportation

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impact under CEQA. Project VMT was estimated by distributing and assigning project traffic to the street network and calculating the average miles traveled per project trip. The project traffic as shown in Table 2 was used to calculate the proposed project VMT. VMT analysis results are summarized in Table 4 below. The baseline VMT for the greater Bakersfield area was provided by KernCOG. OPR guidelines recommend a 15 percent reduction in baseline VMT as the significance threshold for residential projects.

Table 4
VMT Impact Analysis

Project VMT	Baseline VMT	Significance Threshold	Significant Impact
6.4	9.76	8.3	No

Source: KernCOG. Significance threshold was determine by reducing the average VMT by 15%.

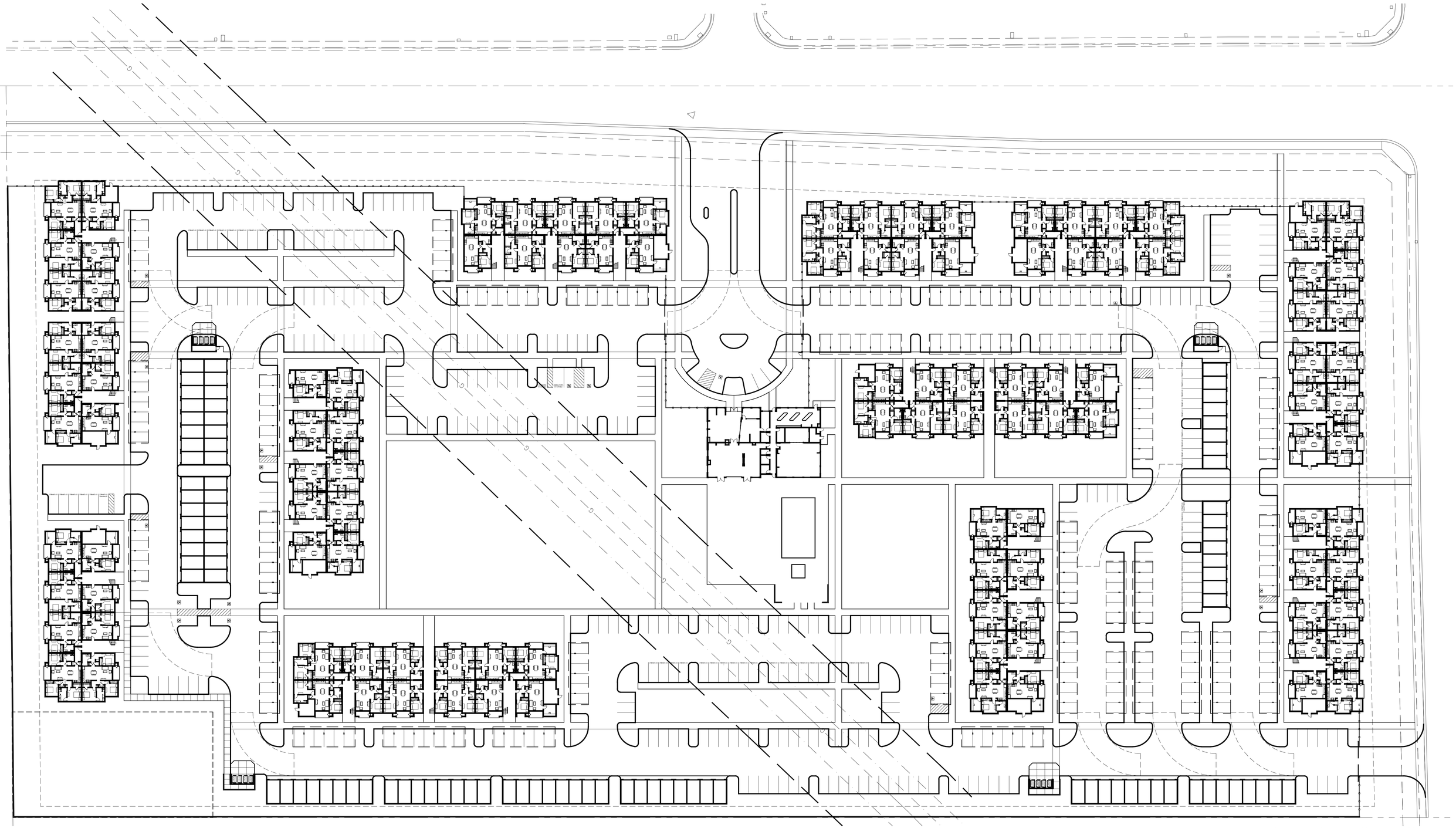
As shown in Table 4 above, project VMT is below the significance threshold. Therefore, the project is not anticipated to result in a significant transportation impact under CEQA.

Please contact me should you have any questions.

Very truly yours,

Ian Parks

IJP/SSH



LPAS
Architecture + Design

BAKERSFIELD APTS | BAKERSFIELD, CA

PROJECT NO. 1387-0002

03/14/2022

The average internal trip length is 279.52/59 = 4.74 Miles

The number of external trips is 104 and they left the map at an average distance of 394.2/104 = 3.79 Miles

Using an average external trip distance of 7.34 miles per external trip we get:
(763.4 + 279.52) / (104 + 59)
==========

6.4 miles is the combined average trip length

==========

Everything was accounted for :-)

- 163=163 trips total :-)

- No remnants remaining :-)

Trip Length Interval Table

Miles	# of Internal Trips	# of External Trips
0.00-0.50		
0.50-1.00		
1.00-1.50	8	
1.50-2.00	2	
2.00-2.50	15	
2.50-3.00		
3.00-3.50		
3.50-4.00		
4.00-4.50		10
4.50-5.00		2
5.00-5.50		10
5.50-6.00	10	33
6.00-6.50		7
6.50-7.00		4
7.00-7.50	24	4
7.50-8.00		
8.00-8.50		
8.50-9.00		8
9.00-9.50		
9.50-10.0		10
10.0-10.5		

10.5-11.0
11.0-11.5
11.5-12.0
12.0-12.5
12.5-13.0 16

Trip Path Report
================

16 = 12.5 N E=>
4001,2429,82,83,84,85,589,1352,1357,1351,1337,1344,1330,1327,1331,1334,1122,
1121,1130,1041,1043,1298
15 = 7.13 W I=> 4001,2429,82,81,80,268,79,77
14 = 5.64 E E=> 4001,2429,216,176,177
10 = 4.14 N E=> 4001,2429,82
10 = 9.97 N E=>
4001,2429,82,83,84,85,589,1352,1361,1362,1366,1355,1343,1335,1347,1323,1322
9 = 7.13 W I=> 4001,2429,82,81,80,268,79,77
8 = 5.64 E E=> 4001,2429,216,176,177
5 = 1.34 N I=> 4001,2429,82,81
5 = 5.96 S E=> 4001,2430,153,155
5 = 8.96 S E=> 4001,2430,153,152,151,968
4 = 5.14 N E=> 4001,2429,82,83,84
4 = 6.14 N E=> 4001,2429,82,83,84,85,589
4 = 2.37 N I=> 4001,2429,82,413,415,230
4 = 2.27 N I=> 4001,2429,82,413,415,230
3 = 5.94 E I=> 4001,2430,114,115,116,119,390,752,757
3 = 5.94 E I=> 4001,2430,114,115,116,119,390,752,757
3 = 2.33 N I=> 4001,2429,82,81,80,268
3 = 2.24 N I=> 4001,2429,82,413,415,230
3 = 7.46 S E=> 4001,2430,153,155,156,157,762
3 = 1.34 N I=> 4001,2429,82,81
3 = 6.14 N E=> 4001,2429,82,83,84,85,589
3 = 5.96 S E=> 4001,2430,153,155
3 = 8.96 S E=> 4001,2430,153,152,151,968
2 = 1.84 N I=> 4001,2429,82,81,80
2 = 5.64 N E=> 4001,2429,82,83,84,85
2 = 6.96 S E=> 4001,2430,153,155,156,157
2 = 5.94 E I=> 4001,2430,114,115,116,119,390,752,757
2 = 5.94 E I=> 4001,2430,114,115,116,119,390,752,757
2 = 5.14 N E=> 4001,2429,82,81,80
2 = 5.14 N E=> 4001,2429,82,83,84
2 = 6.96 S E=> 4001,2430,153,155,156,157
1 = 4.64 N E=> 4001,2429,82,413
1 = 4.64 N E=> 4001,2429,82,413
1 = 5.31 N E=> 4001,2429,82,413,415

```
 1 = 5.31  N E=> 4001,2429,82,413,415
 1 = 5.64  N E=> 4001,2429,82,83,84,85
 1 = 2.33  N I=> 4001,2429,82,81,80,268
 1 = 7.46  S E=> 4001,2430,153,155,156,157,762
152 had 163 total trips
```