Appendix B:
Air Quality, Greenhouse Gas Emissions, and Energy Analysis Report

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Air Quality, Greenhouse Gas Emissions, and Energy Analysis Report
Masson Estates Project
City of Saratoga, Santa Clara County, California

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Table of Contents

Acronyms and Abbreviations v

Section 1: Introduction 1
1.1 - Purpose and Methods of Analysis 1
1.2 - Project Summary 1
1.3 - Summary of Analysis Results 2
1.4 - Mitigation Measures Applied to the Proposed Project 3

Section 2: Air Quality 11
2.1 - Environmental Setting 11
2.2 - Regulatory Setting 18

Section 3: Global Climate Change 23
3.1 - Environmental Setting 23
3.2 - Regulatory Framework 26

Section 4: Energy 31
4.1 - Environmental Setting 31

Section 5: Methodology 39
5.1 - Model Selection, Modeling Parameters and Assumptions 39
5.2 - Air Pollutants and GHGs Assessed 39

Section 6: Air Quality Impact Analysis 41
6.1 - CEQA Guidelines 41
6.2 - Impact Analysis 42

Section 7: Greenhouse Gas Impact Analysis 59
7.1 - CEQA Guidelines 59
7.2 - Impact Analysis 60

Section 8: Energy Impact Analysis 69
8.1 - CEQA Guidelines 69
8.2 - Impact Analysis 69

Appendix A: Air Quality and Greenhouse Gas Emissions and Energy Supporting Information

List of Tables

Table 1: Ambient Air Quality Standards, Sources and Health Effects 14
Table 2: San Francisco Bay Area Air Basin Attainment Status 17
Table 3: Description of Greenhouse Gases of Concern 24
Table 4: Consistency with 2017 Clean Air Plan Control Measures 43
Table 5: Construction Emissions by Construction Year 47
Table 6: Operational Regional Pollutants 49
Table 7: Summary of Health Risks at the Maximum Exposed Individual Receptor (Unmitigated Construction) 54

Table 8: Cumulative Health Risks at the Maximally Exposed Individual Receptor 55
Table 9: BAAQMD Odor Screening-level Distances Thresholds 56
Table 10: Proposed Project Construction GHG Emissions 61
Table 11: Operational Greenhouse Gas Emissions 62
Table 12: Residential and Mixed-Use Project Attributes that Reduce GHGs 66
Table 13: Estimated Annual Project Energy Consumption (Operation) 70

List of Exhibits

Exhibit 1: Regional Location Map 5
Exhibit 2: Local Vicinity Map 7
Exhibit 3: Site Plan 9

ACRONYMS AND ABBREVIATIONS

°C	degrees Celsius (Centigrade)
°F	degrees Fahrenheit
µg/m^3	micrograms per cubic meter
AB	Assembly Bill
ABAG	Association of Bay Area Governments
ACTM	Airborne Toxics Control Measure
ADT	Average Daily Traffic
AEP	Association of Environmental Professionals
AERMOD	American Meteorological Society/EPA Regulatory Model
Air Basin	San Francisco Bay Area Air Basin
APN	Assessor's Parcel Number
AQP	Air Quality Plan
ARB	California Air Resources Board
ASF	age sensitivity factor
ATCM	Airborne Toxics Control Measure
BAAQMD	Bay Area Air Quality Management District
BACT	Best Available Control Technology
BMP	Best Management Practice
BTU	British Thermal Unit
CAAQS	California Ambient Air Quality Standards
CAFE	Corporate Average Fuel Economy
CalEEMod	California Emissions Estimator Model
Cal/EPA	California Environmental Protection Agency
CALGreen	California Green Building Standards Code
Caltrans	California Department of Transportation
CAP	Climate Action Plan
CAPCOA	California Air Pollution Control Officers Association
CARE	Community Air Risk Evaluation
CCAA	California Clean Air Act
CCR	California Code of Regulations
CEC	California Energy Commission
CEQA	California Environmental Quality Act
CH_4	methane
CO	carbon monoxide
CO_2	carbon dioxide

CO_2e	carbon dioxide equivalent
COA	Condition of Approval
CPF	cancer potency factor
CPUC	California Public Utilities Commission
DBR	daily breathing rates
DPM	diesel particulate matter
EIA	United States Energy Information
EIR	Environmental Impact Report
EISA	Energy Independence and Security Act
EMFAC	Emission Factor Model
EPA	United States Environmental Protection Agency
EV	electric vehicle
EVSE	electric vehicle supply equipment
FAR	floor area ratio
FIP	Federal Implementation Plan
FSM	Further Study Control Measures
GHG	greenhouse gas
GWh	gigawatt-hours
GWP	global warming potential
HAP	Hazardous Air Pollutant
HARP2	Hot Spots Analysis and Reporting Program Version 2
HFC	hydrofluorocarbon
HHD	heavy heavy-duty
HI	hazard index
hp	horsepower
HR	Hillside Residential
HRA	Health Risk Assessment
HVAC	heating, ventilation, and air conditioning
IOU	investor-owned utilities
IPCC	United Nations Intergovernmental Panel on Climate Change
ISO	Independent System Operator
kW	kilowatts
LCFS	Low Carbon Fuel Standard
LDA	light-duty automobile
LDT	light-duty truck
LDT1	light-duty one-axle truck
LDT2	light-duty two-axle truck
LEV	Low Emission Vehicle

LHD1	light heavy-duty one-axle truck
LHD2	light heavy-duty two-axle truck
LPG	liquefied petroleum gas
LSE	load-serving entity
MACT	Maximum Available Control Technology
MEIR	Maximally Exposed Individual Resident
MM	Mitigation Measure
MMBTU	Million Metric British Thermal Units
MMT	million metric tons
mpg	miles per gallon
mph	miles per hour
MPO	Metropolitan Planning Organization
MT	metric tons
MTC	Metropolitan Transportation Commission
MW	megawatts
MWh	megawatt-hour
N_2O	nitrous oxide
NAAQS	National Ambient Air Quality Standards
NASA	National Aeronautics and Space Administration
NF_3	nitrogen trifluoride
NHTSA	National Highway Traffic Safety Administration
NO_2	nitrogen dioxide
NO_X	nitrogen oxides
NOAA	National Oceanic and Atmospheric Administration
NSR	New Source Review
NW	Natural and Working
OEHHA	California Office of Environmental Health Hazard Assessment
OPR	California Governor's Office of Planning and Research
Pb	lead
PFC	perfluorocarbon
PG&E	Pacific Gas and Electric Company
PHEV	plug-in hybrid vehicle
PM_{10}	particulate matter less than 10 microns in diameter
$PM_{2.5}$	particulate matter less than 2.5 microns in diameter
ppm	parts per million
PRC	Public Resources Code
RAST	Risk Assessment Stand-alone Tool
REL	Reference Exposure Level

RNG	renewable natural gas
ROG	reactive organic gases
RPS	Renewables Portfolio Standard
SB	Senate Bill
SCS	Sustainable Communities Strategy
SF_6	sulfur hexafluoride
SFBAAB	San Francisco Bay Area Air Basin
SIP	State Implementation Plan
SLCP	Short-Lived Climate Pollutant
SNAP	Significant New Alternatives Policy
SORE	Small Off-Road Engines
SO_X	sulfur oxides
SO_2	sulfur dioxide
SVCE	Silicon Valley Clean Energy
TAC	toxic air contaminant
TDM	Transportation Demand Management
US-101	U.S. Highway 101
VDECS	Verified Diesel Emission Control Strategies
VMT	Vehicle Miles Traveled
VOC	volatile organic compound
WELO	Water Efficient Landscape Ordinance
ZEV	Zero-Emission Vehicle

SECTION 1: INTRODUCTION

1.1 - Purpose and Methods of Analysis

This Air Quality, Greenhouse Gas Emissions, and Energy Analysis Report was prepared to evaluate whether the estimated criteria air pollutant, ozone precursor, toxic air contaminant (TAC), and/or greenhouse gas (GHG) emissions generated from construction and/or operation of the proposed Masson Estates Project (proposed project) would cause significant impacts to air resources and/or the climate in the proposed project area. The respective analyses were conducted within the context of the California Environmental Quality Act (CEQA) (California Public Resources Code [PRC] § 21000, *et seq*.). The analysis methodology follows the Bay Area Air Quality District's (BAAQMD) recommendations for the quantification of emissions and evaluation of potential impacts on air resources and the global climate.

1.2 - Project Summary

1.2.1 - Site Location

The proposed project is located in the western portion of the City of Saratoga (City), east of The Mountain Winery, along Pierce Road (Exhibit 1). The project site is surrounded by low-density hillside residential uses to the north, east, and south and by The Mountain Winery to the west (Exhibit 2). The proposed project site is approximately 72.45 acres. Regional access to the site is available off State Route (SR) 9 from the south via Pierce Road. SR-85 also provides regional access from the north via Saratoga Sunnyvale Road. The project site consists of one parcel, Assessor's Parcel Number (APN) 503-46-005.

Existing Development and Land Use Designations

The project site is currently undeveloped and contains oak woodland. Drainage at the site is defined by sheet flow to the north, east, and west, where it is intercepted by ephemeral drainage that flows to the north. An existing single-lane road, Vintage Lane, extends through the southern portion of the proposed project site, connecting to Pierce Road. Vintage Lane is paved for the first approximately 650 feet from its intersection with Pierce Road and then becomes a dirt road that forms an approximate 800-foot loop (Exhibit 3).

The proposed project site is currently designated "Hillside Residential" (HR) by the Santa Clara County zoning map.

1.2.2 - Development Summary

The project applicant, Chateau Masson, LLC, proposes to subdivide the 72.45-acre parcel and develop 25 homes and related infrastructure. Development would be focused in the northern 18.38-acre portion of the parcel (Development Area); the southern 54.06 portion would remain undeveloped with the exception of emergency access roads (Remainder Area). Homes would consist of one to three stories, and streets would be designed to ensure the homes are located among

vegetation and placed to reduce their prominence within the landscape. The color palate would include earth tones, such as shades of brown and tan, along with shades of white and gray.

The proposed project is being processed pursuant to Senate Bill (SB) 330, the Housing Accountability Act, and the builder's remedy contained therein and would construct 17 market-rate and eight affordable single-family homes, thereby providing 20 percent of the units for lower-income households. The proposed homes would range from 2,375 to 7,091 square feet on lots ranging from 2,086 to 86,351 square feet. Lots 1–8 would be affordable 2,375-square-foot single-family homes with four bedrooms, two baths, and two-car garages. Lots 9–25 would be market-rate four-bedroom four-bath single-family houses of up to 7,091 square feet with three- to four-car garages. The proposed project would also include improvements to the existing emergency access road.

Landscaping

The proposed project would make every effort to preserve and protect native tree species around the home sites and throughout the project site. Tree removal and landscaping would be limited to areas directly adjacent to proposed residences, roadways, and stormwater detention ponds. Removed trees would be replaced primarily by coast live oak (*Quercus agrifolia*). In areas where tree canopy space is limited, removed trees would be replaced by western redbud (*Cercis occidentalis*). Proposed landscaping trees, shrubs, and ground covers are all California native species, compatible with the oak woodland ecosystem. Additionally, shrubs and ground cover along proposed roadways and driveways would be planted for erosion control. Areas within the drip lines of existing trees to be retained would be kept as natural and undisturbed as possible. Proposed landscaping would be kept 6–10 feet away from the trunks of existing trees. Pruning of existing trees would be limited to careful thinning to maintain their natural shape, removing no more than 20 percent of the foliage. Existing trees would not be topped to reduce their height.

Proposed irrigation would consist of a low-flow pressure regulated, drip irrigation system, managed with a fully automatic irrigation controller. No irrigation would be supplied to the native oaks as they seldom require supplemental irrigation to survive. Additionally, the Landscape and Irrigation Plans would conform to the Saratoga Water Efficient Landscape Ordinance (WELO), confirmed through the required submission of a Landscape Documentation Package.

1.3 - Summary of Analysis Results

Impact AIR-1 The proposed project would not conflict with or obstruct implementation of the applicable air quality plan.

Less than significant impact with mitigation incorporated.

Impact AIR-2 The proposed project would not result in a cumulatively considerable net increase of any criteria pollutant for which the project region is nonattainment under an applicable federal or State ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors).

Less than significant impact.

Impact AIR-3 The proposed project would not expose sensitive receptors to substantial pollutant concentrations.

Less than significant impact.

Impact AIR-4 The proposed project would not result in other emissions (such as those leading to odors) adversely affecting a substantial number of people.

Less than significant impact.

Impact GHG-1 The proposed project would generate direct and indirect greenhouse gas emissions; these emissions would result in a significant impact on the environment.

Significant and unavoidable impact.

Impact GHG-2 The proposed project would potentially conflict with an applicable plan, policy, or regulation of an agency adopted to reduce the emissions of GHG.

Significant and unavoidable impact.

Impact ENER-1 The proposed project would not result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during construction or operation.

Less than significant impact.

Impact ENER-2 The proposed project would not conflict with or obstruct a State or local plan for renewable energy or energy efficiency.

Less than significant impact.

1.4 - Mitigation Measures Applied to the Proposed Project

1.4.1 - Air Quality

MM AQ-1 **Implement BAAQMD Best Management Practices to Control Dust During Construction**

The following dust control measures, as recommended by the Bay Area Air Quality Management District (BAAQMD), shall be included in the design of the proposed project and implemented during construction:

- All exposed non-paved surfaces (e.g., parking areas, staging areas, soil piles, graded areas, and access roads) shall be watered at least two times per day and/or non-toxic soil stabilizers shall be applied to exposed non-paved surfaces.
- All haul trucks transporting soil, sand, or other loose material off-site shall be covered and/or shall maintain at least 2 feet of freeboard.

- All visible mud or dirt tracked out onto adjacent public roads shall be removed using wet power vacuum street sweepers at least once per day. The use of dry power sweeping is prohibited.
- All vehicle speeds on unpaved roads shall be limited to 15 miles per hour (mph).
- All roadways, driveways, and sidewalks to be paved shall be completed as soon as possible. Building pads shall be laid as soon as possible after grading unless seeding or soil binders are used.
- Idling times shall be minimized either by shutting equipment off when not in use or reducing the maximum idling time to 5 minutes, as required by the California Airborne Toxics Control Measure (ATCM) Title 13, Section 2485 of California Code of Regulations. Clear signage regarding idling restrictions shall be provided for construction workers at all access points.
- All construction equipment shall be maintained and properly tuned in accordance with the manufacturer's specifications. All equipment shall be checked by a certified mechanic and determined to be running in proper condition prior to operation.
- The prime construction contractor shall post a publicly visible sign with the telephone number and person to contact regarding dust complaints. The construction contractor shall take corrective action within 48 hours. The BAAQMD's and Santa Clara County's phone numbers shall also be visible to ensure compliance with applicable regulations.

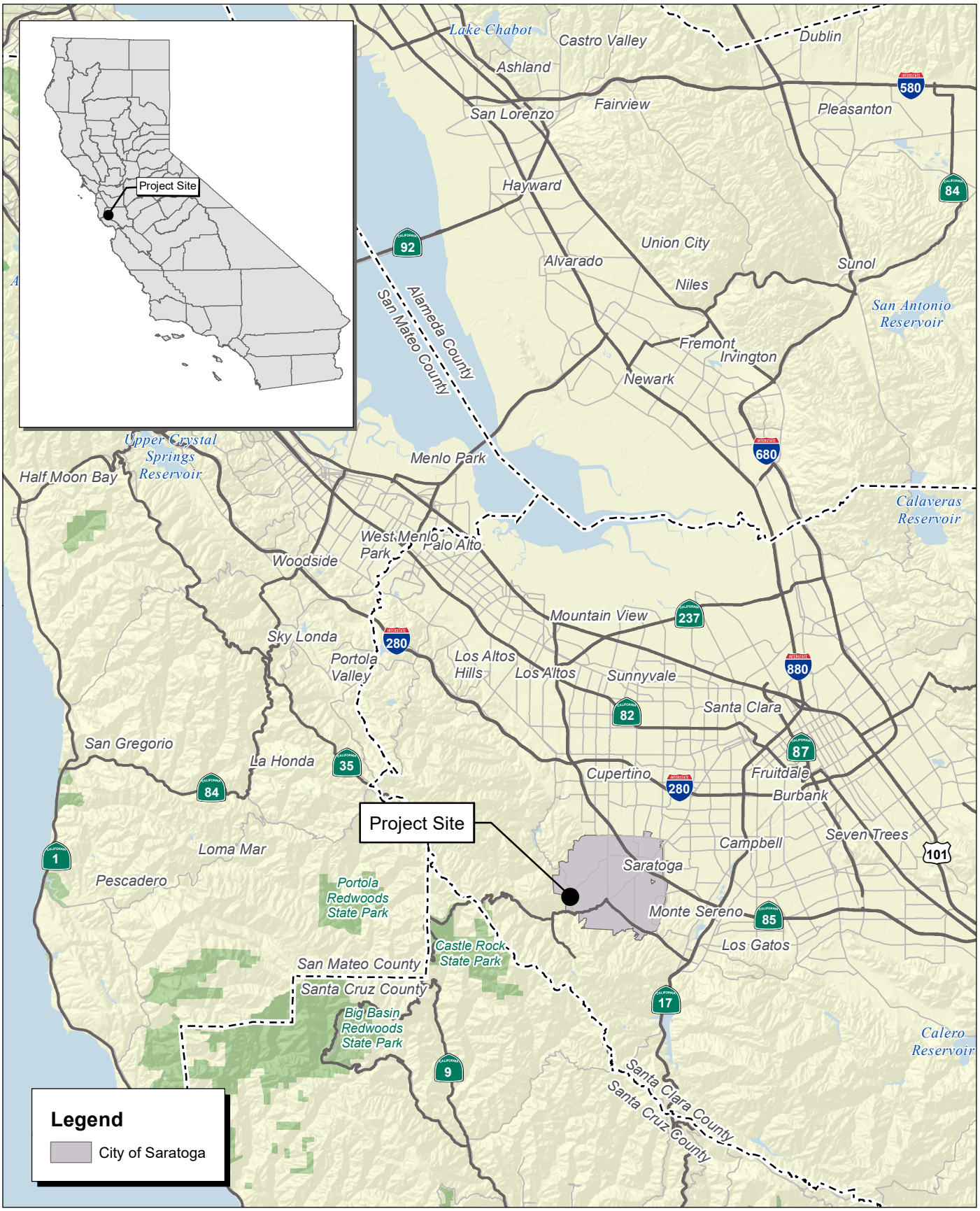
1.4.2 - Greenhouse Gas Emissions

MM GHG-1 Participation in Silicon Valley Clean Energy Program or On-site Renewable Energy

The proposed project shall enroll in the Silicon Valley Clean Energy "GreenStart" or "GreenPrime" program, which provides 100 percent greenhouse gas (GHG) emissions-free electricity to participating customers to meet 100 percent of their electricity demand through on-site renewable energy, such as solar panels. Evidence of enrollment, such as a contract agreement or evidence that the on-site renewable energy generation would meet the buildings' energy requirements, and compliance with any enrollment conditions, as appliable, shall be provided to the City of Saratoga Department of Community Development prior to occupancy of the new buildings. Evidence of continued enrollment and compliance in subsequent years shall be provided to the City on request. All exposed non-paved surfaces (e.g., parking areas, staging areas, soil piles, graded areas, and access roads) shall be watered at least two times per day and/or non-toxic soil stabilizers shall be applied to exposed non-paved surfaces.

1.4.3 - Energy

No mitigation required.



Source: Census 2000 Data, The California Spatial Information Library (CaSIL).

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Exhibit 1
Regional Location Map

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CITY OF SARATOGA
MASSON ESTATES

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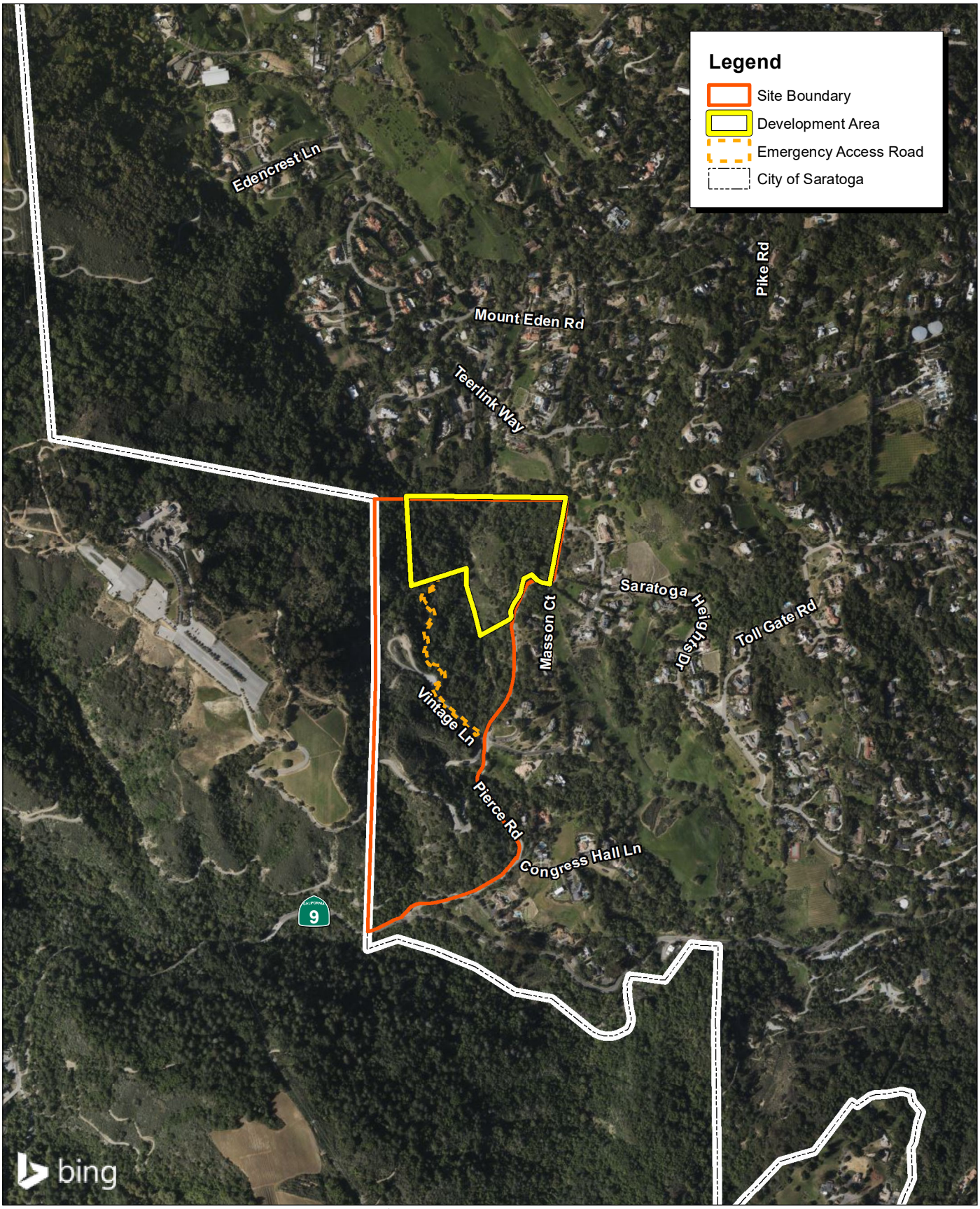

Source: Bing Aerial Imagery. Hanna-Brunetti Civil Engineers, 02/2024.

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1,000 500 0 1,000 Feet

Exhibit 2
Local Vicinity Map

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CITY OF SARATOGA
MASSON ESTATES

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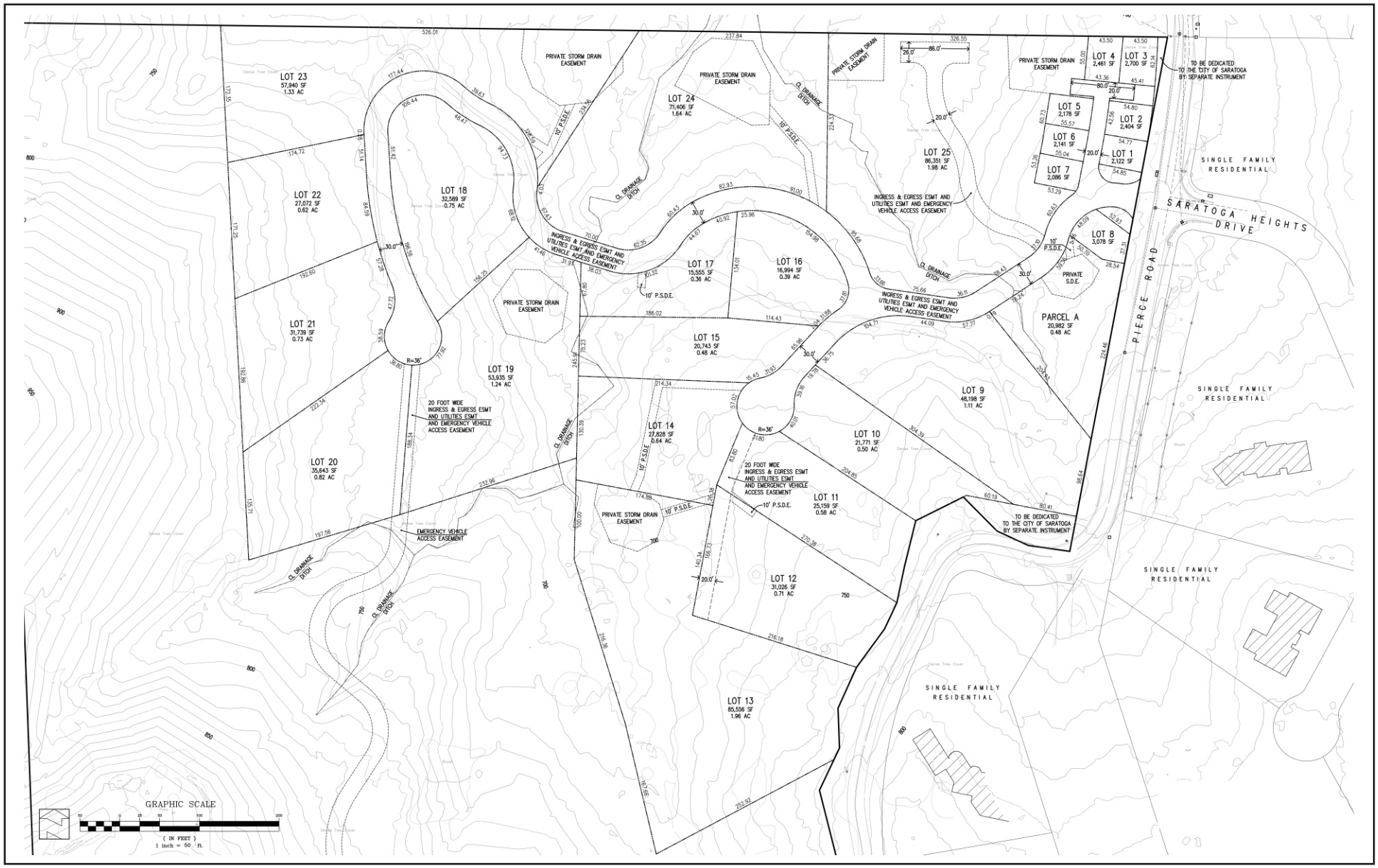

Source: Hanna-Brunetti. 12/2023.

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Exhibit 3
Site Plan

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SECTION 2: AIR QUALITY

This section describes existing air quality conditions regionally and locally as well as the relevant regulatory framework. This section also evaluates the possible impacts related to air quality that could result from implementation of the proposed project. Information included in this section is based on project-specific air quality modeling results utilizing California Emissions Estimator Model (CalEEMod) Version 2022.1.1.24, the American Meteorological Society/United States Environmental Protection Agency (EPA) AERMOD air dispersion model (Version 18081), and the California Air Resources Board (ARB) Hot Spots Analysis and Reporting Program Version 2 (HARP2). Complete modeling output is provided in Appendix A.

2.1 - Environmental Setting

The BAAQMD is the regional air quality agency for the San Francisco Bay Area Air Basin (SFBAAB), which comprises all of Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, and Santa Clara counties, the southern portion of Sonoma, and the southwestern portion of Solano County. Air quality in this area is determined by such natural factors as meteorology, terrain, and temperature, in addition to the presence of existing air pollution sources and ambient conditions. These factors, along with applicable regulations aimed at reducing air pollution, are discussed below.

2.1.1 - Existing Air Quality Conditions and Air Pollution Formation

The SFBAAB is characterized by complex terrain, consisting of coastal mountain ranges, inland valleys, and bays, which distort normal wind flow patterns and induce significant variations of air flow, mixing, and temperatures among subregions. These natural conditions strongly influence the formation of air pollution. Air quality is a function of both the rate and location of pollutant emissions under the influence of meteorological conditions and topographic features. Atmospheric conditions such as wind speed, wind direction, and air temperature inversions interact with the physical features of the landscape to determine the movement and dispersal of air pollutant emissions and, consequently, their effect on air quality.

Air Pollutant Emissions

Although air pollution potential is strongly influenced by climate and topography, the air pollution that occurs in a location also depends on the amount of air pollutant emissions in the surrounding area or transported from more distance places. Air pollutant emissions generally are highest in areas that have high population densities, high motor vehicle use, and/or industrialization. These contaminants, created by photochemical processes in the atmosphere, such as ozone, may result in high concentrations many miles downwind from the sources of their precursor chemicals.

Santa Clara Valley Climatological Subregion

All urbanized areas of the SFBAAB are included in one of 11 climatological subregions. These subregions experience varying climatological and topographic conditions, as well as major types of air pollutant sources, resulting in variations in air pollution.

The proposed project is located at the western edge of the Santa Clara Valley climatological subregion. This subregion is bounded by the Bay to the north and by mountains to the east, south, and west. Temperatures are warm on summer days and cool on summer nights, and winter temperatures are fairly mild. At the northern end of the valley, mean maximum temperatures are in the low 80°F (degrees Fahrenheit) during the summer and high 50°F during the winter, and mean minimum temperatures range from high 50°F in the summer to low 40°F in the winter. Further inland, where the moderating effect of the Bay is not as strong, temperatures extremes are greater. For example, in San Martin, located 27 miles south of the San José Airport, temperatures can be more than 10°F warmer on summer afternoons and more than 10°F cooler on winter nights.

Winds in the valley are greatly influenced by terrain, resulting in a prevailing flow that roughly parallels the valley's northwest-southeast axis. A north–northwesterly sea breeze flows through the valley during the afternoon and early evening, and a light south–southeasterly drainage flow occurs during the late evening and early morning. In the summer, the southern end of the valley sometimes becomes a "convergence zone" when air flowing from the Monterey Bay gets channeled northward into the southern end of the valley and meets with the prevailing north–northwesterly winds.

Wind speeds are greatest in the spring and summer and weakest in the fall and winter. Nighttime and early morning hours frequently have calm winds in all seasons, while summer afternoons and evenings are quite breezy. Strong winds are rare, associated mostly with the occasional winter storm.

The air pollution potential of the Santa Clara Valley is high. High summer temperatures, stable air and mountains surrounding the valley combine to promote ozone formation. In addition to the many local sources of air pollution, ozone precursors from San Francisco, San Mateo, and Alameda counties are carried by prevailing winds to the Santa Clara Valley. The valley tends to channel pollutants to the southeast. In addition, on summer days with low level inversions, ozone can be recirculated by southerly drainage flows in the late evening and early morning and by the prevailing northwesterlies in the afternoon. A similar recirculation pattern occurs in the winter, affecting levels of carbon monoxide and particulate matter. This movement of the air up and down the valley increases the impact of the pollutants significantly.

Pollution sources are plentiful and complex in this subregion. The Santa Clara Valley has a high concentration of industry at the northern end, in the Silicon Valley. Some of these industries are sources of air toxics as well as criteria air pollutants. In addition, Santa Clara Valley's large population and many work-site destinations generate some of the highest mobile source emissions of any subregion in the SFBAAB.

2.1.2 - Existing Ambient Air Quality: Criteria Air Pollutants

The ARB and the EPA currently focus on the following air pollutants, known as "criteria air pollutants," as indicators of ambient air quality: ozone, particulate matter, nitrogen dioxide (NO_2), carbon monoxide (CO), sulfur dioxide (SO_2), and lead. The attainment status of the SFBAAB for criteria air pollutants, and sources and health effects, are summarized in Table 1.

Ozone

Ozone, or smog, is not emitted directly into the environment, but is formed in the atmosphere by complex chemical reactions between ROG and NO_X in the presence of sunlight. Ozone formation is greatest on warm, windless, sunny days. The main sources of NO_X and ROG, often referred to as ozone precursors, are combustion processes (including motor vehicle engines) the evaporation of solvents, paints, and fuels, and biogenic sources. Automobiles are the single largest source of ozone precursors in the SFBAAB. Ozone levels usually build up during the day and peak in the afternoon hours.

Particulate Matter

Particulate matter refers to a wide range of solid or liquid particles in the atmosphere, including smoke, dust, aerosols, and metallic oxides. Respirable particulate matter with an aerodynamic diameter of 10 micrometers or less is referred to as PM_{10}. $PM_{2.5}$ includes a subgroup of finer particles that have an aerodynamic diameter of 2.5 micrometers or less. Some particulate matter, such as pollen, is naturally occurring. In the SFBAAB most particulate matter is caused by combustion, factories, construction, grading, demolition, agricultural activities, and motor vehicles. Extended exposure to particulate matter can increase the risk of chronic respiratory disease.

Nitrogen Dioxide

NO_2 is a reddish-brown gas that is a by-product of combustion processes. Automobiles and industrial operations are the main sources of NO_2. Aside from its contribution to ozone formation, nitrogen dioxide can increase the risk of acute and chronic respiratory disease and reduce visibility. NO_2 may be visible as a coloring component of a brown cloud on high pollution days, especially in conjunction with high ozone levels.

Carbon Monoxide

CO is an odorless, colorless gas. It is formed by the incomplete combustion of fuels. The single largest source of CO in the SFBAAB is motor vehicles. Emissions are highest during cold starts, hard acceleration, stop-and-go driving, and when a vehicle is moving at low speeds. New findings indicate that CO emissions per mile are lowest at about 45 mph for the average light-duty motor vehicle and begin to increase again at higher speeds

Sulfur Dioxide

SO_2 is a colorless acid gas with a pungent odor. It has potential to damage materials and it can have health effects at high concentrations. It is produced by the combustion of sulfur containing fuels, such as oil, coal, and diesel. SO_2 can irritate lung tissue and increase the risk of acute and chronic respiratory disease.

Lead

Lead is a metal found naturally in the environment as well as in manufactured products. The major sources of lead emissions have historically been mobile and industrial sources. As a result of the phase-out of leaded gasoline, metal processing is currently the primary source of lead emissions.

The highest levels of lead in air are generally found near lead smelters. Other stationary sources are waste incinerators, utilities, and lead-acid battery manufacturers.

Table 1 shows a summary of ambient air quality standards, their sources and health effects.

Table 1: Ambient Air Quality Standards, Sources and Health Effects

Air Pollutant	Averaging Time	California Standard[1]	Federal Standard	Most Relevant Effects from Pollutant Exposure	Sources
Ozone	1 Hour	0.09 ppm	—	Irritate respiratory system; reduce lung function; breathing pattern changes; reduction of breathing capacity; inflame and damage cells that line the lungs; make lungs more susceptible to infection; aggravate asthma; aggravate other chronic lung diseases; cause permanent lung damage; some immunological changes; increased mortality risk.	Ozone is a secondary pollutant; thus, it is not emitted directly into the lower level of the atmosphere. The primary sources of ozone precursors (VOC and NO_X) are mobile sources (on-road and off-road vehicle exhaust).
	8 Hours	0.070 ppm	0.070 ppm		
CO (carbon monoxide)	1 Hour	20 ppm	35 ppm	Ranges depend on exposure: slight headaches; nausea; aggravation of angina pectoris (chest pain) and other aspects of coronary heart disease impairment of central nervous system functions; possible increased risk to fetuses; death.	CO is produced by incomplete combustion of carbon-containing fuels (e.g., gasoline, diesel fuel, and biomass). Sources include motor vehicle exhaust, industrial processes, residential wood-burning, and natural sources.
	8 Hours	9.0 ppm	9 ppm		
NO_2 (nitrogen dioxide)	1 Hour	0.18 ppm	0.100 ppm	Potential to aggravate chronic respiratory disease and respiratory symptoms in sensitive groups; risk to public health implied by pulmonary and extra-pulmonary biochemical and cellular changes and pulmonary structural changes; contribution to atmospheric discoloration; increased visits to hospital for respiratory illnesses.	NO_X is produced in motor vehicle internal combustion engines and fossil fuel-fired electric utility and industrial boilers. NO_2 forms quickly from NO_X emissions. NO_2 concentrations near major roads can be 30 to 100 percent higher than those at monitoring stations.
	Annual	0.030 ppm	0.053 ppm		
SO_2 (sulfur dioxide)	1 Hour	0.25 ppm	0.075 ppm	Bronchoconstriction, accompanied by symptoms which may include wheezing,	Human caused sources include fossil fuel combustion, mineral ore
	3 Hours	—	0.5 ppm		

Air Pollutant	Averaging Time	California Standard[1]	Federal Standard	Most Relevant Effects from Pollutant Exposure	Sources
	24 Hours	0.04 ppm	0.14 (for certain areas)	shortness of breath, and chest tightness, during exercise or physical activity in persons with asthma. Some population-based studies indicate that the mortality and morbidity effects associated with fine particles show a similar association with ambient SO_2 levels. It is not clear whether the two pollutants act synergistically, or one pollutant alone is the predominant factor.	processing, and chemical manufacturing. Volcanic emissions are a natural source of SO_2. The gas can also be produced in the air by dimethyl sulfide and hydrogen sulfide. SO_2 is removed from the air by dissolution in water, chemical reactions, and transfer to soils and ice caps. The SO_2 levels in the State are well below the maximum standards.
	Annual	—	0.030 ppm (for certain areas)		
Particulate matter (PM_{10})	24 hours	50 µg/m^3	/m^3	Short-term exposure (hours/days): irritation of the eyes, nose, throat; coughing; phlegm; chest tightness; shortness of breath; aggravate existing lung disease, causing asthma attacks and acute bronchitis; those with heart disease can suffer heart attacks and arrhythmias. Long-term exposure: reduced lung function; chronic bronchitis; changes in lung morphology; death.	Stationary sources include fuel or wood combustion for electrical utilities, residential space heating, and industrial processes; construction and demolition; metals, minerals, and petrochemicals; wood products processing; mills and elevators used in agriculture; erosion from tilled lands; waste disposal, and recycling. Mobile or transportation-related sources are from vehicle exhaust and road dust. Secondary particles form from reactions in the atmosphere.
	Mean	20 µg/m^3	—		
Particulate matter ($PM_{2.5}$)	24 Hours	—	35 µg/m^3		
	Annual	12 µg/m^3	9 µg/m^3		
Visibility-reducing particles	8 Hours	—			
Sulfates	24 Hours	25 µg/m^3	—	Decrease in ventilatory function; aggravation of asthmatic symptoms; aggravation of cardiopulmonary disease; vegetation damage; degradation of visibility; and property damage.	Sulfates are particulates formed through the photochemical oxidation of SO_2. In California, the main source of sulfur compounds is combustion of gasoline and diesel fuel.
Lead	30 days	1.5 µg/m^3	—	Lead accumulates in bones, soft tissue, and blood and can affect the kidneys, liver, and nervous system. It can cause impairment of blood formation and nerve conduction, behavioral and	Lead ore crushing, lead ore smelting, and battery manufacturing are currently the largest sources of lead in the atmosphere in the United States. Other sources include dust from
	Quarter	—	1.5 µg/m^3		
	Rolling 3-month average	—	0.15 µg/m^3		

Air Pollutant	Averaging Time	California Standard[1]	Federal Standard	Most Relevant Effects from Pollutant Exposure	Sources
				neurological impairment, learning deficiencies, and low IQs.	soils contaminated with lead-based paint, solid waste disposal, and crustal physical weathering.
Vinyl chloride	24 Hours	0.01 ppm	—	Short-term exposure to high levels of vinyl chloride in the air causes central nervous system effects, such as dizziness, drowsiness, and headaches. 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.	Most vinyl chloride is used to make polyvinyl chloride plastic and vinyl products, including pipes, wire and cable coatings, and packaging materials. It can be formed when plastics containing these substances are left to decompose in solid waste landfills. Vinyl chloride has been detected near landfills, sewage plants, and hazardous waste sites.
Hydrogen sulfide	1 Hour	0.03 ppm	—	High levels of hydrogen sulfide can cause immediate respiratory arrest. It can irritate the eyes and respiratory tract and cause headache, nausea, vomiting, and cough. Long exposure can cause pulmonary edema.	Manure, storage tanks, ponds, anaerobic lagoons, and land application-sites are the primary sources of hydrogen sulfide. Anthropogenic sources include the combustion of sulfur containing fuels (oil and coal).

Notes:
ppm = parts per million
µg/m^3 = micrograms per cubic meter
Sources: United States Environmental Protection Agency (EPA). California Air Resources Board (ARB).

Monitoring Data

The BAAQMD operates a regional air quality monitoring network that regularly measures the concentrations of the five major criteria air pollutants. Air pollutant monitoring data is available at: https://www.arb.ca.gov/adam/. The local air quality can be evaluated by reviewing relevant air pollution concentrations near the proposed project area.

Emissions Inventory

The BAAQMD estimates emissions of criteria air pollutants from approximately 900 source categories. The estimates are based on BAAQMD permit information for stationary sources (e.g., manufacturing industries, refineries, dry-cleaning operations), plus more generalized estimates for area sources (e.g., space heating, landscaping activities, use of consumer products), and \7641 sources (e.g., trains, ships and planes, as well as on-road and off-road motor vehicles). BAAQMD

emissions inventory data are available at: https://ww2.arb.ca.gov/criteria-pollutant-emission-inventory-data.

SFBAAB Attainment Status

The EPA and the ARB designate air basins where ambient air quality standards are exceeded as "nonattainment" areas. If standards are met, the area is designated as an "attainment" area. If there is inadequate or inconclusive data to make a definitive attainment designation, they are considered "unclassified." National nonattainment areas are further designated as marginal, moderate, serious, severe, or extreme as a function of deviation from standards.

The current attainment designations for the Air Basin are shown in Table 2. Currently in the Air Basin, 8-hour average ozone (both State and national), 1-hour average ozone (State), annual arithmetic mean PM_{10} (State), 24-hour average PM_{10} (State), annual arithmetic mean $PM_{2.5}$ (State), and 24-hour average $PM_{2.5}$ (national) are still in nonattainment status.

Table 2: San Francisco Bay Area Air Basin Attainment Status

Pollutant	State Status	National Status
Ozone	Nonattainment	Nonattainment
CO	Attainment	Attainment
NO_2	Attainment	Attainment
SO_2	Attainment	Attainment
PM_{10}	Nonattainment	Unclassified
$PM_{2.5}$	Nonattainment	Nonattainment
Sulfates	Attainment	N/A
Hydrogen Sulfates	Unclassified	N/A
Visibility-reducing Particles	Unclassified	N/A
Lead	N/A	Attainment

Notes:
CO = carbon monoxide
NO_2 = nitrogen dioxide
PM_{10} = particulate matter less than 10 microns in diameter
$PM_{2.5}$ = particulate matter less than 2.5 microns in diameter
SO_2 = sulfur dioxide

Source: Bay Area Air Quality Management District (BAAQMD). 2017. Air Quality Standards and Attainment Status. January. Website: https://www.baaqmd.gov/about-air-quality/research-and-data/air-quality-standards-and-attainment-status#:~:text=%E2%80%9CAttainment%E2%80%9D%20status%20for%20a%20pollutant%20means%20that%20the,ensures%20that%20these%20standards%20are%20met%20and%20maintained. Accessed July 8, 2024.

2.1.3 - Existing Ambient Air Quality: Toxic Air Contaminants

In addition to criteria air pollutants list above, another group of pollutants commonly referred to as TACs or hazardous air pollutants (HAPs), are pollutants that result in an increase in mortality, a

serious illness, or pose a present or potential hazard to human health. Health effects of TACs may include cancer, birth defects, immune system damage and neurological damage. In addition, many TACs can be toxic at very low concentrations. For some chemicals such as carcinogens, there are no thresholds below which exposure can be considered risk-free. ARB identifies over 200 compounds as TACs (also termed as HAPs by the EPA).

Toxic Air Contaminants: Sources and Health Effects

Industrial facilities and mobile sources such as cars, trucks, trains, and ships are significant sources of TACs. Other sources of TACs include gasoline stations and backup generators (commonly required in many commercial and residential buildings). More recently, diesel particulate matter (DPM) was identified as a TAC by the ARB. DPM differs from other TACs in that it is not a single substance but rather a complex mixture of hundreds of substances. According to BAAQMD, mobile source emissions of DPM, benzene, and 1,3-butadiene represent a substantial portion of the ambient background risk from TACs in the SFBAAB.

Several studies indicate that DPM poses the greatest health risk among the TACs. A 10-year research program demonstrated that DPM from diesel-fueled engines is a human carcinogen and that chronic (long-term) inhalation exposure to DPM poses a chronic health risk. In addition to increasing the risk of lung cancer, exposure to diesel exhaust can have other health effects. Diesel exhaust can irritate the eyes, nose, throat, and lungs, and it can cause coughs, headaches, lightheadedness, and nausea. Diesel exhaust is a major source of fine particulate pollution as well, and studies have linked elevated particle levels in the air to increased hospital admissions, emergency room visits, asthma attacks, and premature deaths among those suffering from respiratory problems.

2.1.4 - Existing Ambient Air Quality: Odors and Dust

Other air quality issues of concern in the SFBAAB include nuisance impacts of odors and dust. Objectionable odors may be associated with a variety of pollutants. Common sources of odors include wastewater treatment plants, landfills, composting facilities, refineries, and chemical plants. Similarly, nuisance dust may be generated by a variety of sources, including quarries, agriculture, grading, construction, and roads. Odors rarely have direct health effects among the public. Each year the BAAQMD receives thousands of citizen complaints about objectionable odors. Dust emissions can contribute to increased ambient concentrations of PM_{10} and can also contribute to reduced visibility and soiling of exposed surfaces.

2.2 - Regulatory Setting

Air quality with respect to criteria air pollutants and TACs within the SFBAAB is regulated by such agencies as BAAQMD, ARB, and EPA, along with local government agencies. Each of these agencies develops rules, regulations, policies, and/or goals to attain the goals or directives imposed through legislation. Although the EPA regulations may not be superseded, both State and local regulations may be more stringent.

2.2.1 - Criteria Air Pollutants

Federal Air Quality Regulations for Criteria Pollutants

The EPA is the governing body responsible for regulating air pollution in the United States and setting nationwide air quality and emissions standards. EPA's air quality mandates are drawn primarily from the federal Clean Air Act (Clean Air Act), which was enacted in 1963 and amended in 1970, 1977, and 1990.

The Clean Air Act required the EPA to establish primary and secondary National Ambient Air Quality Standards (NAAQS), which are available at https://www.epa.gov/criteria-air-pollutants/naaqs-table. The Clean Air Act also requires each state to prepare an air quality control plan referred to as a State Implementation Plan (SIP). The Clean Air Act Amendments of 1990 requires states with nonattainment areas to revise their SIPs to incorporate additional control measures to reduce air pollution. The SIP is periodically modified to reflect the latest emissions inventories, planning documents, and rules and regulations of the air basins as reported by their jurisdictional agencies. EPA has responsibility to review all state SIPs to determine conformation to the mandates of the Clean Air Act and determine whether implementation will achieve air quality goals. If the EPA determines a SIP to be inadequate, a Federal Implementation Plan (FIP) may be prepared for the nonattainment area that imposes additional control measures. Failure to submit an approvable SIP or to implement the plan within the mandated timeframe may result in sanctions being applied to transportation funding and stationary air pollution sources in the air basin.

In addition, the EPA issues federal emissions standards for new motor vehicles and nonroad engines, national emissions standards for categories of new industrial equipment (e.g., power plants, industrial boilers, cement manufacturing, secondary lead smelting), and technical and policy guidance for state implementation plans. In 2014, the EPA issued standards commonly known as Tier 3, which consider the vehicle and its fuel as an integrated system, setting new vehicle emissions standards and a new gasoline sulfur standard beginning in 2017. The vehicle emissions standards will reduce both tailpipe and evaporative emissions from passenger cars, light-duty trucks, medium-duty passenger vehicles, and some heavy-duty vehicles. The gasoline sulfur standard will enable more stringent vehicle emissions standards and will make emissions control systems more effective. The standards will reduce atmospheric levels of ozone, fine particles, nitrogen dioxide, and toxic pollution.[1]

State Air Quality Regulations for Criteria Pollutants

The ARB is the Statewide governing body which focuses on California's unique air quality challenges by setting the State's own, stricter, air pollutant emissions standards for a range of Statewide pollution sources, including vehicles, fuels, on- and off-road equipment, and consumer products. ARB implements the California Clean Air Act (CCAA), which was adopted in 1988 and developed to address air quality concerns not adequately addressed by the Clean Air Act. The CCAA requires that all air districts in the State endeavor to achieve and maintain the California Ambient Air Quality Standards (CAAQS) by the earliest practicable date. The CCAA specifies that air districts should focus

[1] United States Environmental Protection Agency. (EPA). May 2024. Website: https://www.epa.gov/regulatory-information-topic/regulatory-and-guidance-information-topic-air. Accessed on: June 11, 2024.

particular attention on reducing the emissions from transportation and area-wide emission sources and provides air districts with authority to regulate indirect sources. The CAAQS set standards for 10 air pollutants; the six federal pollutants listed above as well as visibility-reducing particulates, hydrogen sulfide, sulfates, and vinyl chloride.

The ARB is responsible for Statewide pollution sources and produces a major part of the SIP, including addressing transport of pollutants. Local air districts are still relied upon to provide additional strategies for sources under their jurisdiction. The ARB combines this data and submits the completed SIP to EPA. Other ARB duties include monitoring air quality (in conjunction with air monitoring networks maintained by air pollution control and air quality management districts) and updating area designations and maps.

ARB is responsible for rulemakings to adopt and amend specific regulations to reduce emissions from mobile sources such as cars, trucks, buses, on- and off-road equipment, fuels, harbor craft, locomotives, ocean-going vessels at berth, and motorcycles, as well as consumer products and select stationary sources, including gas stations. These wide-ranging air quality regulations address all major sources of smog-forming air pollution (and other forms of air pollution). As a result, cars today are 99 percent cleaner than in the 1970s, resulting in less pollution overall, shorter hospital stays, and fewer days missed from school and work due to respiratory and cardiopulmonary diseases.[2] A list of ARB rulemakings can be reviewed at https://ww2.arb.ca.gov/rulemaking-activity.

Regional Air Quality Regulations for Criteria Pollutants

The BAAQMD is one of 35 local air pollution control districts created by the California Legislature with authority to regulate air pollutant emissions from businesses and stationary facilities, ranging from oil refineries to auto body shops and dry cleaners. The BAAQMD is the primary agency responsible for ensuring that the Clean Air Act and CAAQS are attained and maintained in the SFBAAB. The air quality strategy employed by BAAQMD includes a comprehensive program of planning, regulation, enforcement, technical innovation, and promotion of the understanding of air quality issues. The BAAQMD also inspects stationary sources of air pollution and responds to citizen complaints, monitors ambient air quality and meteorological conditions, and implements program and regulations required by the Clean Air Act and CCAA.

The BAAQMD Board of Directors adopted CEQA Thresholds for Evaluating the Significance of Climate Impacts from Land Use Projects and Plans (BAAQMD CEQA Thresholds) in 2022. The BAAQMD CEQA Thresholds (and associated guidance) are intended to assist lead agencies in evaluating air quality and climate impacts from proposed land use projects in the SFBAAB during the environmental review process.

2.2.2 - Toxic Air Contaminants

TACs can be separated into carcinogens and noncarcinogens based on the nature of the physiological degradation associated with exposure to the pollutant. For regulatory purposes, carcinogens are assumed to have no safe threshold below which health impacts will not occur. Noncarcinogenic TACs

[2] California Air Resources Board (ARB). June 2024. Website: https://ww2.arb.ca.gov/about. Accessed on: June 11, 2024.

differ in that there is a safe level in which it is generally assumed that no negative health impacts would occur. These levels are determined on a pollutant-by-pollutant basis.

It is important to understand that TACs are not considered criteria air pollutants and thus are not specifically addressed through the setting of ambient air quality standards. Instead, the EPA and ARB regulate TACs (known by the EPA as HAPs) through statutes and regulations that generally require the use of Maximum Available Control Technology (MACT) or Best Available Control Technology (BACT) to limit emissions. Those, in conjunction with additional rules set forth by the BAAQMD, establish the regulatory framework for TACs.

Federal Air Quality Regulations for TACs

The Clean Air Act requires the EPA to regulate toxic air pollutants, also known as air toxics, from large industrial facilities in two phases. The first phase is "technology-based," where EPA develops standards for controlling the emissions of TACs from sources in an industry group (or "source category.") These MACT standards are based on emissions levels that are already being achieved by the controlled and low-emitting sources in an industry. The second phase is a "risk-based" approach called residual risk. Here, EPA must determine whether more health-protective standards are necessary. Within 8 years of setting the MACT standards, the Clean Air Act requires EPA to assess the remaining health risks from each source category to determine whether the MACT standards protect public health with an ample margin of safety and protect against adverse environmental effects.

Every 8 years after setting the MACT standards, the Clean Air Act also requires EPA to review and revise the standards, if necessary, to account for improvements in air pollution controls and/or prevention. The first 8-year review, when combined with the residual risk review, is called the risk and technology review.

State Air Quality Regulations for TACs

California has a comprehensive and effective air toxics program. Several pieces of legislation form the basis for ARB to identify and control air toxics from a multitude of sources, inform the public of significant toxic exposures, and provide ways to reduce risks from these exposures. The key programs outlined by legislative mandates include the Toxic Air Contaminant Identification and Control Program (Assembly Bill [AB] 1807), the Air Toxics Hot Spots Information and Assessment Act (AB 2588), the Children's Environmental Health Protection Act, and the Community Air Protection Program. ARB has identified more than 200 toxic air pollutants and has adopted and implemented 25 ATCMs. Some of the air toxics that have been identified and controlled include: benzene in gasoline, hexavalent chromium from chrome platers, perchloroethylene from dry cleaners, and diesel exhaust from cars and trucks. The Community Air Protection Program (AB 617) was signed into law to reduce exposure in communities experiencing high cumulative exposure to air pollution including air toxic chemicals, many of which occur in disadvantaged communities.[3]

ARB has adopted diesel exhaust control measures and more stringent emission standards for various on-road mobile sources including transit buses and off-road diesel equipment (e.g., tractors,

[3] California Air Resources Board (ARB). 2024. Website: https://ww2.arb.ca.gov/our-work/programs/air-toxics-program. Accessed June 12, 2024.

generators). These standards are encompassed in the Airborne Toxic Control Measures (ATCMs) aimed at reducing TACs from mobile sources (including on-road and off-road vehicles) and stationary sources. ATCMs that are relevant and applicable to the proposed project are listed below:[4]

- Diesel PM Control Measure for On-Road Heavy-Duty Diesel-Fueled Residential and Commercial Solid Waste Collection Vehicles (13 California Code of Regulations [CCR] §§ 2020, 2021)
- ATCM for Diesel PM from Portable Engines Rated at 50 Horsepower and Greater (17 CCR § 93116)
- ATCM to Limit Diesel-Fueled Commercial Motor Vehicle Idling (13 CCR § 2485)
- Asbestos ATCM for Construction, Grading, Quarrying and Surfacing Mining Operations; (17 CCR § 93105)
- ATCM to Reduce Particulate Emissions from Diesel-Fueled Engines – Standards for Nonvehicular Diesel Fuel (17 CCR § 93114)

As a result of these actions, mobile source emissions of TACs (benzene, 1,3-butadiene, DPM) and stationary sources of TACs have been reduced significantly since 1990, leading to a reduction of ambient cancer risk in California of about 80–85 percent.

Regional Air Quality Regulations for TACs

The BAAQMD has regulated TACs since the 1980s. At the local level, air pollution control or management districts may adopt and enforce ARB's control measures. Under BAAQMD Regulation 2-1 (General Permit Requirements), Regulation 2-2 (New Source Review), and Regulation 2-5 (New Source Review), all nonexempt sources that possess the potential to emit TACs are required to obtain permits from BAAQMD. Permits may be granted to these operations if they are constructed and operated in accordance with applicable regulations, including new source review standards and air toxic control measures. The BAAQMD limits emissions and public exposure to TACs through a number of programs. The BAAQMD prioritizes TAC-emitting stationary sources based on the quantity and toxicity of the TAC emissions and the proximity of the facilities to sensitive receptors. In addition, the BAAQMD has adopted Regulation 11 Rules 2 and 14, which address asbestos demolition, renovation, manufacturing, and standards for asbestos-containing serpentine.

The BAAQMD adopted Regulation 11, Rule 18 (Reduction of Risk from Air Toxic Emissions at Existing Facilities) in 2017, which requires any facility with health risks above risk action thresholds to make reasonable reductions in those health risks.

AB 617 required all air districts around the State to identify and select communities that suffer a high cumulative exposure burden from air pollution. In the Bay Area, these communities include all the Community Air Risk Evaluation (CARE) Areas, as well as areas with large sources of air pollution, areas that have been identified via Statewide screening tools as having pollution and/or health burden vulnerability, and areas that have low life expectancy. The proposed project is not located within a CARE or AB 617-identified community.

[4] California Air Resources Board (ARB). 2024. Airborne Toxic control Measures. Website: https://ww2.arb.ca.gov/resources/documents/airborne-toxic-control-measures. Accessed July 15, 2024.

SECTION 3: GLOBAL CLIMATE CHANGE

This section describes existing climate conditions as well as the relevant regulatory framework. The "Environmental Setting" provides a description of greenhouse gases and the current state of the climate. The "Regulatory Framework" provides a description of relevant federal, State and local regulatory policies that serve to reduce GHG emissions and are applicable to the proposed project.

3.1 - Environmental Setting

The earth's temperature is rising,[5] and although the global climate has varied over the long-range time scale, there is strong scientific consensus that the rapid heating in recent decades is both unusual and caused by emissions of GHGs from human activities such as the burning of fossil fuels, including coal and oil.[6] Gases that trap heat in the atmosphere are referred to as GHGs. The effect is analogous to the way a greenhouse retains heat. Prominent GHGs contributing to the greenhouse effect are carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons, chlorofluorocarbons, and sulfur hexafluoride. Atmospheric concentrations of CO_2, the most prominent GHG, have been increasing rapidly in recent decades, from approximately 280 parts per million (ppm) before the start of the Industrial Revolution in the 1760s to more than 400 ppm as of 2013.[7] According to the United Nations Intergovernmental Panel on Climate Change (IPCC), it is *extremely unlikely* that global climate change of the past 50 years can be explained without the contribution from human activities.

As the concentration of these gases continues to increase in the atmosphere, the earth's temperature has increased by about 1.2 to 1.4°F since 1900.[8] Even if GHG emissions could be reduced to zero overnight, global temperatures will continue to rise in future years due to the build-up of GHGs that have already accumulated in the atmosphere and the oceans. As future emissions increase the atmospheric concentrations of CO_2 and other GHGs, the impacts of the warming greenhouse effect are projected to steadily worsen.

Global climate change is not confined to a particular project area and is generally accepted as the consequence of global industrialization over the last 200 years. A typical project, even a very large one, does not generate enough GHG emissions on its own to influence global climate change significantly; hence, the issue of global climate change is, by definition, a cumulative environmental impact. Therefore, this section discusses the proposed project's contribution to the cumulative GHG impact.

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5 National Centers for Environmental Information, National Oceanic and Atmospheric Administration (NOAA). 2024. Website: https://www.ncei.noaa.gov/access/monitoring/climate-at-a-glance/global/time-series. Accessed April 29, 2024.

6 K. Myers et al. "Consensus revisited: quantifying scientific agreement on climate change and climate expertise among Earth scientists 10 years later." Environmental Research Letters, Vol.16 No. 10, 104030 (20 October 2021). doi: 10.1088/1748-9326/ac2774.

7 Global Monitoring Library, National Oceanic and Atmospheric Administration (NOAA). 2024. Website: https://gml.noaa.gov/ccgg/trends/. Accessed April 29, 2024.

8 National Aeronautics and Space Administration (NASA). 2024. World of Change: Global Temperatures. Website: https://earthobservatory.nasa.gov/world-of-change/global-temperatures. Accessed April 29, 2024.

3.1.1 - Greenhouse Gases

Unlike emissions of criteria and toxic air pollutants, which have local or regional impacts, emissions of GHGs that contribute to global warming or global climate change have a broader, global impact. Global warming is a process whereby GHGs accumulating in the atmosphere contribute to an increase in the temperature of the earth's atmosphere. The principal GHGs contributing to global warming are CO_2, CH_4, N_2O, and fluorinated gases. The primary GHGs of concern are summarized in Table 3. These gases allow visible and ultraviolet light from the sun to pass through the atmosphere, but they prevent heat from escaping back out into space.

Table 3: Description of Greenhouse Gases of Concern

Greenhouse Gas	Description and Sources
Carbon Dioxide (CO_2)	Carbon dioxide enters the atmosphere through burning fossil fuels (coal, natural gas, and oil), solid waste, trees and other biological materials, and also as a result of certain chemical reactions (e.g., cement production). Carbon dioxide is removed from the atmosphere (or "sequestered") when it is absorbed by plants as part of the biological carbon cycle. Carbon dioxide accounts for nearly 80 percent of GHG emissions in the United States.
Methane (CH_4)	Methane is emitted during the production and transport of coal, natural gas, and oil. Methane emissions also result from livestock and other agricultural practices land use and by the decay of organic waste in municipal solid waste landfills.
Nitrous Oxide (N_2O)	Nitrous oxide is emitted during agricultural, land use and industrial activities; combustion of fossil fuels and solid waste; as well as during treatment of wastewater.
Fluorinated Gases	Hydrofluorocarbons, perfluorocarbons, sulfur hexafluoride, and nitrogen trifluoride are synthetic, powerful greenhouse gases that are emitted from a variety of household, commercial, and industrial applications, and processes. Fluorinated gases (especially hydrofluorocarbons) are sometimes used as substitutes for stratospheric ozone-depleting substances (e.g., chlorofluorocarbons, hydrofluorocarbons, and halons). Fluorinated gases are typically emitted in smaller quantities than greenhouse gases, but they are potent greenhouse gases. With global warming potentials (GWPs) that typically range from thousands to tens of thousands, they are sometimes referred to as high-GWP gases because, for a given amount of mass, they trap substantially more heat than CO_2.
Source: United States Environmental Protection Agency (EPA). 2024. Overview of Greenhouse Gases. Website: https://www.epa.gov/ghgemissions/overview-greenhouse-gases. Accessed June 12, 2024.	

California Greenhouse Gas Emissions Inventory

Emissions of GHGs contributing to global climate change are attributable in large part to human activities associated with the transportation, industrial/manufacturing, utility, residential, commercial, and agricultural sectors. Emissions of CO_2 are byproducts of fossil fuel combustion. Methane, a highly potent GHG, results from off-gassing (the release of chemicals from nonmetallic substances under ambient or greater pressure conditions) is largely associated with agricultural practices and landfills. N_2O is also largely attributable to agricultural practices and soil management.

CO_2 sinks, or reservoirs, include vegetation and the ocean, which absorb CO_2 through sequestration and dissolution, respectively.

As the second largest emitter of GHG emissions in the United States, California contributes a large quantity (381.3 million metric tons [MMT] carbon dioxide equivalent [CO_2e] in 2021) of GHG emissions to the atmosphere.[9] Anthropogenic CO_2 are largely byproducts of fossil fuel combustion and are attributable to transportation, industry/ manufacturing, electricity generation, natural gas consumption, and agriculture processes.

Statewide Climate Impacts

Even if GHG emissions could be reduced to zero overnight, global temperatures will continue to rise in future years due to the build-up of GHGs that have already accumulated in the atmosphere and the oceans. As future emissions increase the atmospheric concentrations of CO_2 and other GHGs, the impacts of the warming greenhouse effect are projected to steadily worsen.

These impacts—including substantially higher temperatures, more extreme weather, increased wildfire events and sea level rise–are already being experienced in California today. As reported by the California Natural Resources Agency in 2009, despite annual variations in weather patterns, California has seen a trend of increased average temperatures, more extreme hot days, fewer cold nights, longer growing seasons, less winter snow, and earlier snowmelt and rainwater runoff. Statewide average temperatures increased by about 1.7°F from 1895 to 2011, and a larger proportion of total precipitation is falling as rain instead of snow. Sea level rose by as much as 7 inches along the California coast over the last century, leading to increased erosion and adding pressure to the State's infrastructure, water supplies, and natural resources. Within the past decade, California has experienced some of the most extreme climate events in its recorded history–a severe 4-year drought, a dramatic reduction in Sierra Nevada winter snowpack, five of the State's 20 largest forest fires since 1932, and two years back-to-back of the hottest recorded average temperatures.

Local and Regional Climate Impacts

The San Francisco Bay Area has experienced similar trends as California. Averaged across the region, mean annual temperature has increased nearly 1 degree Fahrenheit in the last 30 years over the previous 30-year period.

These observed trends in the San Francisco Bay Area are anticipated to continue in the future:

- **Temperatures are projected to rise substantially, and more extreme hot days will occur.** By 2050, Bay Area annual average temperatures are projected to increase by an additional 2.7°F in the absence of actions to reduce GHG emissions. The number of very hot days and severe heat waves are projected to more than double across the region by midcentury.
- **More precipitation extremes, more rain, and less snow.** The Sierra Nevada region has experienced some of the wettest and driest years in more than 100 years of record keeping. The Sierra Nevada is also the source of much of the Bay Area's water supply, which is typically

[9] California Air Resources Board (ARB). 2021. Current California GHG Emission Inventory Data. Website: https://ww2.arb.ca.gov/ghg-inventory-data. Accessed June 13, 2024.

stored as snow melt rather than water, posing challenges to water storage and distribution, particularly during the longer fire seasons.

- **Sea level rise.** Sea level at the Golden Gate Bridge has risen 8 inches over the last 100 years, creating implications on coastal flooding, erosion, and related damages.
- **Increased frequency of wildfires.** Higher temperatures, higher winds and drought are fueling wildfires across the Bay Area and California, while also lengthening the wildfire season. Wildfires can cause dramatic short-term spikes in air pollution levels and emit massive quantities of CO_2 and black carbon (a short-lived GHG), along with other pollutants.
- **Exacerbation of air quality problems and impacts on public health.** The number of days with high ozone levels correlates closely with the years when the Bay Area experiences more extreme-heat days. Higher ozone levels due may increase negative health impacts such as acute respiratory symptoms, lost school days, and even premature death. In addition, heat-related deaths and illnesses are anticipated to rise and urban heat island impacts will grow. Higher temperatures will increase vector-borne diseases and produce more plant pollen and lengthen allergy seasons.
- **Higher temperatures exacerbate pollution from cars and industry.** Higher temperatures increase the use of air conditioners in buildings and cars, which in turn requires more combustion of fossil fuels, resulting in increased levels of ozone precursors, particulates, TACs, and GHGs.

While the impacts are felt locally, climate change is a global issue because GHGs are global pollutants. Pollutants with localized air quality effects, including criteria air pollutants and TACs, have relatively short atmospheric lifetimes (approximately 1 day) and generally do not travel greatly beyond their point of emission. By contrast, GHGs have long atmospheric lifetimes, ranging from several years to several thousand years. GHGs persist in the atmosphere for a long enough time to be dispersed around the globe, cumulatively combining to cause a global climate effect.

3.2 - Regulatory Framework

The following section describes federal, State, regional, and local regulations and policies that are specific to reducing GHG emissions and are applicable to the proposed project.

3.2.1 - Federal Regulations for GHGs

The EPA is the governing body responsible for regulating air pollution in the United States and setting nationwide air quality and emissions standards. The EPA adopts and implements several regulations to reduce GHG emissions as well. These include GHG emission reduction standards for passenger cars and light-duty trucks, heavy-duty trucks (including buses), commercial aircraft and large business jets, heavy equipment (with spark-ignition engines and compression-ignition diesel engines), locomotives, marine vessels, recreational vehicles, and small equipment/tools.

California has implemented more stringent GHG emissions reduction regulations on the same sources listed above (excepting commercial aircraft and large business jets). Therefore, those regulations and their impact are discussed in greater detail below.

3.2.2 - State Regulations for GHGs

California has taken several legislative steps to reduce Statewide GHG emissions and is internationally known for its leadership on action to address climate change. In 2006, the California Legislature passed AB 32, which created a comprehensive, multi-year program to reduce GHG emissions in California and required the State (by law) to reduce GHG emissions to 1990 levels by 2020. The Legislature built upon this law by passing SB 32, which requires the State to reduce GHG emissions 40 percent below 1990 levels by 2030 and later passed AB 1279 which requires the State to achieve net-zero GHG emissions by 2045, and net-negative emissions thereafter. To achieve these State-mandated emissions reduction targets, a document known as the Scoping Plan was required to be created by the ARB beginning in 2007 and be updated at least once every 5 years to "ensure the GHG emissions reduction activities to be adopted and implemented by the state board are complementary, nonduplicative, and can be implemented in an efficient and cost-effective manner." The Scoping Plan outlines strategies across nearly all levels of California's government and economy and defines–at a granular level–the regulatory actions needed to reduce GHG emissions from all economic sectors to meet the targets.

ARB is the Statewide governing body which focuses on California's unique air quality challenges by setting the State's own, stricter, GHG and air pollutant emissions standards for a range of Statewide pollution sources including vehicles, fuels, on- and off-road equipment, and consumer products. ARB also manages the cap-and-trade program to achieve GHG emission reductions from large industrial facilities. ARB has pioneered a range of approaches in California that have set the standard for effective air and climate programs for the nation and the world. ARB regulations, based on extensive research and established science, have driven innovation, leading to significant technological developments such as the production of low- and zero-emission cars and trucks and cleaner fuels. As stated, ARB is tasked by the Legislature with updating the Scoping Plan, which was most recently adopted in 2022 (2022 Scoping Plan), to ensure the State carries out actions to meet the 2030 and 2045 GHG emissions reduction targets.

Other State agencies responsible for regulating GHGs include:

- **California Energy Commission (CEC)**: the State's energy policy and planning agency, responsible for climate change related programs including energy efficiency and leading the State to a 100 percent clean energy reality. The CEC mandates building energy efficiency standards (in new and existing buildings) and manages the Renewables Portfolio Standard (RPS).
- **California Department of Resources Recycling and Recovery (CalRecycle)**: California's recycling and waste management agency, responsible for implementation of State climate policies including landfill methane emissions reduction, waste-to-energy production, and composting requirements. CalRecycle implements food and yard waste recycling regulations, including mandates to cut organic waste disposal 75 percent by 2025.
- **California Governor's Office of Planning and Research (OPR):** California's long-range planning agency, responsible for implementing CEQA review and conducting Statewide research on all climate change policies and impacts.

As a result of these actions, California reached its 2020 GHG emissions reduction target of reducing GHG emissions back to 1990 levels four years early and is on track to meet the 2030 GHG reduction target. Below is a summary of State regulations that are applicable to the proposed project and will serve to reduce GHG emissions now and in the future to ensure California stays on the path to meeting the state-mandated 2030 and 2045 targets:

- **Advanced Clean Cars II (ACC II)**: Designed to reach 100 percent new vehicle Zero-Emission Vehicles (ZEVs) and clean plug-in hybrid-electric vehicles (PHEVs) in California by the 2035 model year.
- **Advanced Clean Fleets**: A manufacturer requirement for 100 percent of sales of medium- and heavy-duty vehicles to be ZEVs by 2036, and fleet requirements to purchase and deploy ZEVs in State and local government fleets, drayage truck operations, and high-priority federal fleets.
- **Advanced Clean Trucks Regulation**: Require fleets to transition to ZEV medium- and heavy-duty vehicles.
- **Small Off-Road Engine Regulations**: Transition 100 percent of small off-road spark-ignition engines (at or below 25.5 horsepower and used in non-stationary equipment) to zero-emission by 2035 (where feasible).
- **Low Carbon Fuel Standard**: Increase the availability and use of low carbon fuels, including renewable diesel, biodiesel, renewable, and natural gas by mandating that the fuel carbon intensity in California must achieve a 20 percent reduction by 2030.
- **Renewable Portfolio Standard**: One of California's key programs for advancing renewable energy, it sets continuously escalating renewable energy procurement requirements for the State's load-serving entities. All entities must procure 60 percent of their electricity portfolio from renewable energy resources by 2030.
- **Building Energy Efficiency Standards–Title 24, Part 6 (Energy Code**): contain energy and water efficiency requirements (and indoor air quality requirements) for newly constructed buildings; the requirements have gradually increased in efficiency and technology over the past decades. The current standard, known as the 2022 Energy Code, builds on California's technology innovations, and includes encouraging heat pumps, requiring electric-ready single-family homes, and solar / battery storage standards for various building types. The 2022 Energy Code also strengthens ventilation standards to improve indoor air quality. The next update to the Energy Code will occur in 2024 (known as the 2025 Energy Code) and will apply to newly constructed buildings effective as of January 1, 2026.
- **California Green Building Standards Code–Title 24, Part 11 (CALGreen)**: mandatory green building standards code for the State with the goal of reducing GHG emissions from buildings, including reducing energy and water consumption.

3.2.3 - Regional Regulations for GHGs

The BAAQMD regulates air pollutant emissions from businesses and stationary facilities, ranging from oil refineries to auto body shops and dry cleaners. The BAAQMD is the primary agency responsible for ensuring that the Clean Air Act and CAAQS are attained and maintained in their

jurisdiction. The BAAQMD CEQA Thresholds (and associated guidance) are intended to assist lead agencies in evaluating air quality and climate impacts from proposed land use projects in the SFBAAB during the environmental review process.

3.2.4 - Local Regulations for GHGs

City of Saratoga Climate Action Plan

The City of Saratoga adopted a Climate Action Plan (CAP) in December 2020.[10] The CAP establishes an emissions reductions target for 2030. The CAP includes a community-wide inventory, emissions reductions targets, and actions/measures that will allow the City to exceed the 2030 target and put the City on the trajectory to meet the 2050 goal. The actions to meet these targets include:

- GHG-free electricity
- Electrification of all passenger vehicles
- Electrification of all transit buses
- Continued fuel efficiency improvements in the commercial vehicle fleet and some electrification of medium and heavy-duty trucks
- Elimination of all organic waste from the landfill
- Continued reductions in natural gas consumption in residential and commercial buildings
- Electrification of all lawn and garden equipment

The CAP relies on both State and local actions to achieve the reduction targets. Many of the actions are voluntary in nature, which means the assumed reductions cannot be assured.

City of Saratoga Reach Codes

The City of Sunnyvale voted to limit the new of gas in new construction in December 2019. Known as "reach codes," this ordinance will require that newly constructed homes within the City use electricity for space heating, water heating, and clothes drying and meet electric readiness requirements for any interior gas cooking appliance.[11]

City of Saratoga Municipal Codes for EV Charging

The City's Municipal Code requires a 208/240 volt minimum installed specifically for a Level 2 Electric Charger in all new one- and two-family dwellings and townhomes with attached private garages. A second Level 1 electric vehicle (EV) dedicated branch circuit (minimum 20-amp 11v) shall also be provided.[12]

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[11] City of Saratoga, Green Building Standards Code. 2022. Website: https://library.municode.com/ca/saratoga/codes/code_of_ordinances?nodeId=CH16BURE_ART16-49GRBUSTCO_16-49.035ELVECHRE. Accessed July 8, 2024.
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SECTION 4: ENERGY

4.1 - Environmental Setting

This section describes the existing energy setting in the proposed project area as well as the relevant regulatory framework. This section also evaluates the possible impacts related to energy that could result from the implementation of the proposed project. Information in this section is based on project-specific energy calculation outputs included in Appendix A.

4.1.1 - Existing Setting

Energy Basics

Energy is generally transmitted either in the form of electricity, measured in kilowatts (kW) or megawatts (MW), or natural gas measured in British Thermal Units (BTU), or cubic feet. Fuel, such as gasoline or diesel, is measured in gallons or liters.

Electricity

Electricity is used primarily for lighting, appliances, and other uses associated with the proposed project.

Fuel

Fuel is used primarily for powering off-road equipment, trucks, and passenger vehicles. The typical fuel types used are diesel and gasoline.

Electricity Generation, Distribution, and Use

State of California

According to the CEC, in 2022, the State of California generated approximately 203,257 gigawatt-hours (GWh) of electricity. Approximately 47.46 percent of this energy generation was sourced from natural gas, 32.25 percent from renewable sources (i.e., solar, wind, and geothermal), 7.19 percent from large hydroelectric sources, and the remaining 13.1 percent was sourced from coal, nuclear, oil, and other nonrenewable sources. Additionally, California imported 83,962 GWh of electricity from other states in 2020.

According to the United States Energy Information Administration (EIA), in 2021, California ranked fourth in electricity production, fourth in the nation in conventional hydroelectric generation, and first as a producer of electricity from solar, geothermal, and biomass resources. California leads the nation in solar thermal electricity capacity and generation.

Electricity and natural gas are distributed through the various electric load-serving entities (LSEs) in California. These entities include investor-owned utilities (IOUs), publicly owned LSEs, rural electric cooperatives, community choice aggregators, and electric service providers.

City of Saratoga

Silicon Valley Clean Energy (SVCE) provides electricity to the City of Saratoga. Approximately 50 percent of the energy supplied by SVCE is procured from renewable sources.

Fuel Use

State of California

California is one of the top producers of petroleum in the nation, with drilling operations occurring throughout the State. A network of crude oil pipelines connects production areas to oil refineries in the Los Angeles area, the San Francisco Bay Area, and the Central Valley. California oil refineries also process Alaskan and foreign crude oil received in ports in Los Angeles, Long Beach, and the San Francisco Bay Area. Crude oil production in California and Alaska is in decline. According to the EIA, California's field production of crude oil has steadily declined since the mid-1980s, totaling approximately 4,103 million barrels in 2022. At the same time, California refineries have become increasingly dependent on foreign imports. Foreign suppliers provide approximately half of the crude oil refined in California.

Alternative Fuels

A variety of alternative fuels are used to reduce petroleum-based fuel demand. The use of these fuels is encouraged through various Statewide regulations and plans, such as the Low Carbon Fuel Standard (LCFS) and SB 32. Conventional gasoline and diesel may be replaced, depending on the capability of the vehicle, with transportation fuels including hydrogen, biodiesel, and electricity.

Electric Vehicles

Electricity can be used to power electric and plug-in hybrid EVs directly from the power grid. Electricity used to power vehicles is generally provided by the electricity grid and stored in the vehicle's batteries. Fuel cells are being explored to use electricity generated onboard the vehicle to power electric motors. Currently, California has 13,836 EV charging stations, including all charger types, and 35,662 EV supply equipment (EVSE) ports.

4.1.2 - Regulatory Framework

Federal

Energy Independence and Security Act

The Energy Policy Act of 2005 created the Renewable Fuel Standard Program. The Energy Independence and Security Act of 2007 expanded this program by:

- Expanding the Renewable Fuel Standard Program to include diesel in addition to gasoline.
- Increasing the volume of renewable fuel required to be blended into transportation fuel from 9 billion gallons in 2008 to 36 billion gallons by 2022.
- Establishing new categories of renewable fuel and setting separate volume requirements for each one.
- Requiring the EPA to apply lifecycle GHG performance threshold standards to ensure that each category of renewable fuel emits fewer GHGs than the petroleum fuel it replaces.

This expanded Renewable Fuel Standard Program lays the foundation for achieving substantial reductions of GHG emissions from the use of renewable fuels, reducing the use of imported petroleum, and encouraging the development and expansion of the nation's renewable fuels sector.

Signed on December 19, 2007, the Energy Independence and Security Act of 2007 (EISA) aims to:

- Move the United States toward greater energy independence and security.
- Increase the production of clean renewable fuels.
- Protect consumers.
- Increase the efficiency of products, buildings, and vehicles.
- Promote research on and deploy GHG capture and storage options.
- Improve the energy performance of the federal government.
- Increase U.S. energy security, develop renewable fuel production, and improve vehicle fuel economy.

The EISA reinforces the energy reduction goals for federal agencies put forth in Executive Order 13423, as well as introduces more aggressive requirements. The three key provisions enacted are the Corporate Average Fuel Economy (CAFE) Standards, the Renewable Fuel Standard Program, and the appliance/lighting efficiency standards.

The EPA is committed to developing, implementing, and revising both regulations and voluntary programs under the following subtitles in EISA, among others:

- Increased CAFE Standards
- Federal Vehicle Fleets
- Renewable Fuel Standard
- Biofuels Infrastructure
- Carbon Capture and Sequestration

EPA and National Highway Traffic Safety Administration Light-Duty Vehicle GHG Emission Standards and Corporate Average Fuel Economy Standards Final Rule

Congress first passed the CAFE law in 1975 to increase the fuel economy of cars and light-duty trucks. The law has become more stringent over time. On May 19, 2009, President Barack Obama put in motion a new national policy to increase fuel economy for all new cars and trucks sold in the United States. On April 1, 2010, EPA and the Department of Transportation's National Highway Traffic Safety Administration (NHTSA) announced a joint final rule establishing a national program that would reduce GHG emissions and improve fuel economy for new cars and trucks sold in the United States.

The first phase of the national program would apply to passenger cars, light-duty trucks, and medium-duty passenger vehicles, covering model years 2012 through 2016. They require these vehicles to meet an estimated combined average emissions level of 250 grams of CO_2 per mile, equivalent to 35.5 miles per gallon (mpg) if the automobile industry were to meet this CO_2 level solely through fuel economy improvements. Together, these standards would cut CO_2 emissions by

an estimated 960 million MT and 1.8 billion barrels of oil over the lifetime of the vehicles sold under the program (model years 2012-2016).

The EPA and the NHTSA issued final rules on a second phase joint rulemaking, establishing national standards for light-duty vehicles for model years 2017 through 2025 in August 2012. The standards for model years 2017 through 2025 apply to passenger cars, light-duty trucks, and medium-duty passenger vehicles. The final standards are projected to result in an average industry fleet wide level of 163 grams/mile of CO_2 in model year 2025, which is equivalent to 54.5 mpg if achieved exclusively through fuel economy improvements.

The EPA and NHTSA issued final rules for the first national standards to reduce GHG emissions and improve fuel efficiency of heavy-duty trucks and buses on September 15, 2011, which became effective November 14, 2011. For combination tractors, the agencies are proposing engine and vehicle standards that began in the 2014 model year and achieve up to a 20 percent reduction in CO_2 emissions and fuel consumption by the 2018 model year. For heavy-duty pickup trucks and vans, the agencies are proposing separate gasoline and diesel truck standards, which phase in starting in the 2014 model year and achieve up to a 10 percent reduction for gasoline vehicles, and a 15 percent reduction for diesel vehicles by 2018 model year (12 and 17 percent respectively if accounting for air conditioning leakage). Lastly, for vocational vehicles, the engine and vehicle standards would achieve up to a 10 percent reduction in fuel consumption and CO_2 emissions from the 2014 to 2018 model years.

The State of California has received a waiver from the EPA to have separate, stricter CAFE standards. Although global climate change did not become an international concern until the 1980s, efforts to reduce energy consumption began in California in response to the oil crisis in the 1970s, resulting in the incidental reduction of GHG emissions. In order to manage the State's energy needs and promote energy efficiency, AB 1575 created the CEC in 1975.

Executive Order N-79-20: Transition to 100 percent ZEV

This Executive Order issued by Governor Newsom in 2020, calls for elimination of new internal combustion passenger vehicles by 2035. It also directs the ARB to pursue a goal of 100 percent medium and heavy-duty vehicles in the State to be zero-emissions by 2045. This establishes a target for the transportation sector that helps put the State on a path to carbon neutrality by 2045.

State

California Assembly Bill 1493: Pavley Regulations and Fuel Efficiency Standards

California AB 1493, enacted on July 22, 2002, required the ARB to develop and adopt regulations that reduce GHGs emitted by passenger vehicles and light-duty trucks. Implementation of the regulation was delayed by lawsuits filed by automakers and by the EPA's denial of an implementation waiver. The EPA subsequently granted the requested waiver in 2009, which was upheld by the by the U.S. District Court for the District of Columbia in 2011. The standards applied to 2009 through 2016 model year vehicles. After adopting these initial GHG emission standards for passenger vehicles, the ARB adopted continuing standards for future model years.

The second phase of the implementation for the Pavley Bill was incorporated into amendments to the Low Emission Vehicle (LEV) Program referred to as LEV III or the Advanced Clean Cars program. The Advanced Clean Car program combines the control of smog-causing pollutants and GHG emissions into a single coordinated package of requirements for model years 2017 through 2025. The regulation aims to reduce GHGs from new cars by 34 percent from 2016 levels by 2025. The new rules reduce pollutants from gasoline and diesel-powered cars, and deliver increasing numbers of zero-emission technologies, such as full battery electric cars, newly emerging PHEVs and hydrogen fuel cell cars. The regulations also ensure adequate fueling infrastructure is available for the increasing numbers of hydrogen fuel cell vehicles planned for deployment in California.

California Code of Regulations Title 13: Motor Vehicles

California Code of Regulations, Title 13: Division 3, Chapter 10, Article 1, Section 2485: Airborne Toxic Control Measure to Limit Diesel-Fueled Commercial Motor Vehicle Idling. This measure seeks to reduce public exposure to DPM and other air contaminants by establishing idling restrictions, emission standards, and other requirements for heavy-duty diesel engines and alternative idle reduction technologies to limit the idling of diesel-fueled commercial motor vehicles. Any person that owns, operates, or causes to operate any diesel-fueled commercial motor vehicle must not allow a vehicle to idle for more than 5 consecutive minutes at any location, or operate a diesel-fueled auxiliary power system for greater than 5 minutes at any location when within 100 feet of a restricted area.

California Code of Regulations, Title 13: Division 3, Chapter 9, Article 4.8, Section 2449: General Requirements for In-Use Off-Road Diesel-Fueled Fleets

This measure regulates NO_X, DPM, and other criteria pollutant emissions from in-use off-road diesel-fueled vehicles. This measure also requires each fleet to meet fleet average requirements or demonstrate that it has met "best available control technology" requirements. Additionally, this measure requires medium and large fleets to have a written idling policy that is made available to operators of the vehicles informing them that idling is limited to 5 consecutive minutes or less.

California Senate Bill 1078: Renewable Electricity Standards

On September 12, 2002, former Governor Gray Davis signed SB 1078, requiring California to generate 20 percent of its electricity from renewable energy by 2017. SB 107 changed the due date to 2010 instead of 2017. On November 17, 2008, Governor Arnold Schwarzenegger signed Executive Order S-14-08, which established an RPS target for California requiring that all retail sellers of electricity serve 33 percent of their load with renewable energy by 2020. Former Governor Schwarzenegger also directed the ARB (Executive Order S-21-09) to adopt a regulation by July 31, 2010, requiring the State's LSEs to meet a 33 percent renewable energy target by 2020. The ARB Board approved the Renewable Electricity Standard on September 23, 2010, by Resolution 10-23.

California SB 350: Clean Energy and Pollution Reduction Act

In 2015, the State Legislature approved, and the Governor signed SB 350 which reaffirms California's commitment to reducing its GHG emissions and addressing climate change. Key provisions include an increase in the RPS, higher energy efficiency requirements for buildings, initial strategies toward a regional electricity grid, and improved infrastructure for EV charging stations. Provisions for a 50

percent reduction in the use of petroleum Statewide were removed from the Bill due to opposition and concern that it would prevent the Bill's passage. Specifically, SB 350 requires the following to reduce Statewide GHG emissions:

- Increase the amount of electricity procured from renewable energy sources from 33 percent to 50 percent by 2030, with interim targets of 40 percent by 2024, and 25 percent by 2027.
- Double the energy efficiency in existing buildings by 2030. This target will be achieved through the California Public Utility Commission, the CEC, and local publicly owned utilities.
- Reorganize the Independent System Operator (ISO) to develop more regional electrify transmission markets and to improve accessibility in these markets, which will facilitate the growth of renewable energy markets in the western United States.

California Code of Regulations Title 24

Part 6 (Energy Efficiency Standards for Residential and Nonresidential Buildings)

California Code of Regulations Title 24 Part 6 (California's Energy Efficiency Standards for Residential and Nonresidential Buildings) was first adopted in 1978 in response to a legislative mandate to reduce California's energy consumption. The standards are updated periodically to allow consideration and possible incorporation of new energy efficient technologies and methods. Energy efficient buildings require less electricity; therefore, increased energy efficiency reduces fossil fuel consumption and decreases GHG emissions. The 2019 Building Energy Efficiency Standards went into effect on January 1, 2020. The 2022 Building Energy Efficiency Standards became effective on January 1, 2023.

Part 11 (California Green Building Standards Code)

CALGreen, is a comprehensive and uniform regulatory code for all residential, commercial, and school buildings that went in effect January 1, 2011. The Code is updated on a regular basis, with the most recent update consisting of the 2022 California Green Building Code Standards that became effective January 1, 2023. Local jurisdictions are permitted to adopt more stringent requirements as State Law provides methods for local enhancements. The Code recognizes that many jurisdictions have developed existing construction and demolition ordinances and defers to them as the ruling guidance, provided they include a minimum 50 percent diversion requirement. The Code also provides exemptions for areas not served by construction and demolition recycling infrastructure. State Building Code provides the minimum standard that buildings need to meet in order to be certified for occupancy, which is generally enforced by the local building official.

California Public Utilities Code

The California Public Utilities Commission (CPUC) regulates privately owned telecommunication, electric, natural gas, water, railroad, rail transit, and passenger transportation companies. It is the responsibility of the CPUC to (1) assure California utility customers safe, reliable utility service at reasonable rates; (2) protect utility customers from fraud; and (3) promote a healthy California economy. The Public Utilities Code, adopted by the Legislature, defines the jurisdiction of the CPUC.

Local

City of Saratoga Climate Action Plan

As previously discussed, the City of Saratoga adopted a CAP in December 2020, which contains the following measures:[13]

- GHG-free electricity
- Electrification of all passenger vehicles
- Electrification of all transit buses
- Continued fuel efficiency improvements in the commercial vehicle fleet and some electrification of medium and heavy-duty trucks
- Elimination of all organic waste from the landfill
- Continued reductions in natural gas consumption in residential and commercial buildings
- Electrification of all lawn and garden equipment

The CAP relies on both State and local actions to achieve the reduction targets. Many of the actions are voluntary in nature, which means the assumed reductions cannot be assured.

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The City of Sunnyvale voted to limit gas in new construction in December 2019. Known as "reach codes," this ordinance will require that newly constructed homes within the City use electricity for space heating, water heating, and clothes drying, and meet electric readiness requirements for any interior gas cooking appliance.[14]

City of Saratoga Municipal Codes for EV Charging

The City's Municipal Code requires a 208/240 volt minimum installed specifically for a Level 2 Electric Charger in all new one- and two-family dwellings and townhomes with attached private garages. A second Level 1 EV dedicated branch circuit (minimum 20-amp 11v) shall also be provided.[15]

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SECTION 5: METHODOLOGY

5.1 - Model Selection, Modeling Parameters and Assumptions

CalEEMod is used to calculate and assess criteria air pollutant (including ozone precursors), TAC and GHG emissions, which are comprised of those on-site and off-site construction and operational emissions generated from all facets of the proposed project. CalEEMod provides a uniform platform for government agencies, land use planners, and environmental professionals to emissions from land use development and linear projects in California.

Criteria air pollutant, TAC, and GHG emissions can be estimated by using emission factors and a level of activity. Emission factors represent the emission rate of a pollutant over a given time or activity, for example, grams of NO_X per vehicle mile traveled or grams of NOX per horsepower hour of equipment operation. The activity factor is a measure of how active a piece of equipment is and can be represented as the amount of material processed, elapsed time that a piece of equipment is in operation, horsepower of a piece of equipment used, the fuel consumption rate, or Vehicle Miles Traveled (VMT) per day. The ARB has published emission factors for on-road mobile vehicles/trucks in the Emission Factor (EMFAC) mobile source emissions model and emission factors for off-road equipment and vehicles in the OFF-ROAD emissions model. An air emissions model (or calculator) combines the emission factors and the levels of activity and outputs the emissions for the various pieces of equipment.

Construction and operational emissions reported in this analysis were modeled using CalEEMod Version 2022.1.1.24.

5.2 - Air Pollutants and GHGs Assessed

5.2.1 - Criteria Pollutants Assessed

The following air pollutants are assessed in this analysis:

- Reactive organic gases (ROG)
- NO_X
- CO
- PM_{10}
- $PM_{2.5}$

Note that the proposed project would emit ozone precursors ROG and NO_X. However, the proposed project would not directly emit ozone since it is formed in the atmosphere during the photochemical reaction of ozone precursors.

5.2.2 - Toxic Air Contaminants Assessed

The following TACs are assessed in this analysis:

- DPM
- $PM_{2.5}$

5.2.3 - Greenhouse Gases Assessed

This analysis is restricted to GHGs identified by AB 32, which include CO_2, CH_4, N_2O, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride.

Certain GHGs defined by AB 32 would not be emitted by the proposed project. Perfluorocarbons and sulfur hexafluoride are typically used in industrial applications, none of which would be used by the proposed project.

SECTION 6: AIR QUALITY IMPACT ANALYSIS

This section estimates expected emissions from project construction and operation as a necessary requisite for assessing the significance of project emissions on a regional and local level. The methodology follows the BAAQMD CEQA Guidelines, which set forth recommended thresholds of significance and analysis methodologies and provide guidance on mitigating significant impacts.

6.1 - CEQA Guidelines

The CEQA Guidelines define a significant effect on the environment as "a substantial, or potentially substantial, adverse change in the environment." To determine whether a project would have a significant impact on air quality, the type, level, and impact of emissions generated by the proposed project must be evaluated.

While the BAAQMD recommends that its quantitative air pollution thresholds be used to determine the significance of project emissions, the final determination of whether a project is significant is within the purview of the lead agency pursuant to Section 15064(b) of the CEQA Guidelines. If the lead agency finds that the proposed project has the potential to exceed identified air pollution thresholds, the proposed project would be considered to have significant air quality impacts.

6.1.1 - Thresholds of Significance

Appendix G to the CEQA Guidelines is a sample Initial Study Checklist that includes questions for determining whether impacts to air quality are significant. These questions reflect the input of planning and environmental professionals at the OPR and the California Natural Resources Agency, based on input from stakeholder groups and experts in various other governmental agencies, nonprofits, and leading environmental consulting firms.

Additional guidance on the significance of air quality impacts is found in CEQA Guidelines Section 15065 (a)(4), which provides that a lead agency shall find that a project may have a significant effect on the environment if "the environmental effects of a project will cause substantial adverse effects on human beings, either directly or indirectly." According to the California Supreme Court, this "mandatory finding of significance" applies to potential effects on public health from environmental impacts such as those associated with air pollutant emissions from projects. (*California Business Industry Association v. Bay Area Air Quality Management District* (2015) 62 Cal.4th 369, 386-392.)

Additionally, where available, significance criteria established by the applicable air quality management or air pollution control district may be relied upon to assist in making significance determinations. As explained earlier, BAAQMD's 2022 CEQA Air Quality Guidelines were prepared to assist in evaluating air quality impacts of projects and plans proposed within the Bay Area. The BAAQMD CEQA Guidelines provide recommended procedures for evaluating potential air quality impacts during the environmental review process, consistent with State CEQA requirements and include recommended thresholds of significance, mitigation measures, and background air quality information. They also include recommended assessment methodologies for air toxics, odors, and GHGs. While the final determination of whether a project is significant is within the purview of the

lead agency pursuant to Section 15064(b) of the CEQA Guidelines, the BAAQMD recommends that its quantitative air pollution thresholds be used to determine the significance of project emissions. If a lead agency finds that a project has the potential to exceed these air pollution thresholds, the proposed project should be considered to have significant air quality impacts. The applicable BAAQMD thresholds and methodologies are contained under each impact statement below.

Accordingly, many lead agencies derive their significance criteria from the questions posed in Appendix G and recommendations from the air district. For purposes of the criteria air pollutant analysis, the BAAQMD quantitative air pollution thresholds were utilized.

While the BAAQMD recommends that its quantitative air pollution thresholds be used to determine the significance of project emissions, the final determination of whether a project is significant is within the purview of Santa Clara County, as lead agency pursuant to Section 15064(b) of the CEQA Guidelines.

Therefore, if the City finds that a project has the potential to exceed these air pollution thresholds, the proposed project should be considered to have significant air quality impacts:

a) Conflict with or obstruct implementation of the applicable air quality plan.

b) Result in cumulative considerable net increase of any criteria pollutant for which the project region is nonattainment under an applicable federal or State ambient air quality standard.

c) Exposure sensitive receptor to substantial pollutant concentrations.

d) Create objectionable odors affecting a substantial number of people.

6.2 - Impact Analysis

6.2.1 - Consistency with Air Quality Management Plan

Impact AIR-1:	**The proposed project could conflict with or obstruct implementation of the applicable air quality plan.**

Impact Analysis

Table 4 identifies the control measures in the 2017 Clean Air Plan. The BAAQMD is responsible for reducing emissions from area, stationary, and mobile sources in the Air Basin to achieve NAAQS and CAAQS. The BAAQMD 2017 Clean Air Plan is a regional effort to reduce air pollution in the SFBAAB. A consistency determination with the Air Quality Management Plan (AQP) plays an important role in local agency project review by linking local planning and individual projects to the 2017 Clean Air Plan. It fulfills the CEQA goal of informing decision-makers of the proposed project's environmental effects under consideration early enough to ensure that air quality concerns are fully addressed. It also provides the local agency with ongoing information as to whether they are contributing to the clean air goals in the 2017 Clean Air Plan.

The BAAQMD completes the regional emissions inventory for the SFBAAB. In part, the regional population, housing, and employment projections developed by the Association of Bay Area

Governments (ABAG) are based on cities' and counties' general plan land use designations. These projections form the foundation for the emissions inventory of the 2017 Clean Air Plan. These demographic trends are incorporated into Plan Bay Area, compiled by ABAG and the MTC, to determine priority transportation projects and VMT in the Bay Area. Projects consistent with the local general plan are considered consistent with the regional air quality plan. Large projects that exceed regional employment, population, and housing planning projections have the potential to be inconsistent with the regional inventory compiled as part of the 2017 Clean Air Plan.

The proposed project would build 25 single-family homes on 18.38 acres of a larger 72.45-acre parcel. The remaining 54.07 acres would remain undeveloped. As described in the Project Description, the proposed project site is designated as "Residential Hillside Conservation," which allows for single-family dwellings.

The proposed project is therefore consistent with the underlying general plan land use designation and would not have the potential to substantially affect housing, employment, and population projections in the region that are the basis of the 2017 Clean Air Plan projections.

The 2017 Clean Air Plan sets forth control measures to reduce emissions for a wide range of stationary and mobile sources. The control measures that are relevant to the proposed project are summarized in Table 4 below; the proposed project would not conflict with the applicable control measures of the 2017 Clean Air Plan.

Table 4: Consistency with 2017 Clean Air Plan Control Measures

Control Measure	Project Consistency
Buildings Control Measures	
BL1: Green Buildings	**Consistent.** The proposed project would not conflict with the implementation of this measure. The proposed project would comply with the latest energy efficiency standards and incorporate applicable energy efficiency features designed to reduce project energy consumption.
BL4: Urban Heat Island Mitigation	**Consistent.** The proposed project includes over 50 acres of undisturbed open space which will serve to minimize any potential urban heat island effect.
Energy Control Measures	
EN1: Decarbonize Electricity Generation	**Consistent.** The project applicant would, at a minimum, be required to conform to the energy efficiency requirements of the California Building Standards Code, also known as Title 24. The 2022 Title 24 Standards are the current State building regulations, which went into effect on January 1, 2023. Proposed buildings that would receive building permits after January 1, 2023, would be subject to the 2022 Title 24 Standards, including the proposed project.
EN2: Decrease Electricity Demand	

Control Measure	Project Consistency
Natural and Working Lands Control Measures	
NW2: Urban Tree Planting	**Consistent.** The proposed project site would maintain over 50 acres of undisturbed natural lands. In addition, any removed trees would be re-planted, maintaining tree canopy and coverage.
Waste Management Control Measures	
WA3: Green Waste Diversion	**Consistent.** The waste service provider for the proposed project would be required to meet the Assembly Bill (AB) 341 and Senate Bill (SB) 939 and SB 1374 requirements that require waste service providers to divert green waste. In addition, AB 1383 went into effect on January 1, 2022, which aims to reduce organic waste disposal by 75 percent by 2025 and to secure 20 percent of surplus edible food for the food insecure by 2025.
WA4: Recycling and Waste Reduction	**Consistent:** The waste service provider for the proposed project would be required to meet the AB 341, SB 939 and SB 1374 requirements that require recyclable waste to be recycled and remove 75 percent from the landfill waste stream by 2020.
Stationary Control Measures	
SS36: Particulate Matter from Track out	**Consistent with mitigation**. Mitigation Measure (MM) AIR 1 will ensure that BAAQMD's recommended mitigation measures for construction fugitive dust control would be implemented to reduce fugitive dust and trackout during project construction. In addition, mud and dirt that may be tracked out onto the nearby public roads during construction activities shall be removed promptly by the contractor based on BAAQMD's requirements. Therefore, the proposed project would be consistent with this measure.
Transportation Control Measures	
TR9: Bicycle and Pedestrian Access and Facilities	**Consistent.** The proposed project would include improvements to an approximately 1,600-foot-long emergency access road, primarily in the Remainder Area which would connect the western end of the proposed Masson Estates Way to the intersection of Pierce Road and Vintage Lane to the south, providing additional bicycle and/or pedestrian access throughout the site.
Source: Bay Area Air Quality Management District (BAAQMD). 2017. Final 2017 Clean Air Plan.	

As shown in Table 4, the proposed project would not conflict with the clean air measures contained in the Clean Air Plan. As discussed under Impact AIR-2, the proposed project would not generate emissions which would exceed the BAAQMD's significance thresholds. Additionally, the proposed project would implement dust control measures as required by Mitigation Measure (MM) AQ-1.

Therefore, the proposed project would not conflict with the applicable air quality plan and impacts would be less than significant.

Level of Significance

Less than significant impact.

Mitigation Measures

MM AQ-1 Implement BAAQMD Best Management Practices to Control Dust During Construction

The following dust control measures, as recommended by the Bay Area Air Quality Management District (BAAQMD), shall be included in the design of the proposed project and implemented during construction:

- All exposed non-paved surfaces (e.g., parking areas, staging areas, soil piles, graded areas, and access roads) shall be watered at least two times per day and/or non-toxic soil stabilizers shall be applied to exposed non-paved surfaces.
- All haul trucks transporting soil, sand, or other loose material off-site shall be covered and/or shall maintain at least 2 feet of freeboard.
- All visible mud or dirt tracked out onto adjacent public roads shall be removed using wet power vacuum street sweepers at least once per day. The use of dry power sweeping is prohibited.
- All vehicle speeds on unpaved roads shall be limited to 15 miles per hour (mph).
- All roadways, driveways, and sidewalks to be paved shall be completed as soon as possible. Building pads shall be laid as soon as possible after grading unless seeding or soil binders are used.
- Idling times shall be minimized either by shutting equipment off when not in use or reducing the maximum idling time to 5 minutes, as required by the California Airborne Toxics Control Measure (ACTM) Title 13, Section 2485 of California Code of Regulations. Clear signage regarding idling restrictions shall be provided for construction workers at all access points.
- All construction equipment shall be maintained and properly tuned in accordance with the manufacturer's specifications. All equipment shall be checked by a certified mechanic and determined to be running in proper condition prior to operation.
- The prime construction contractor shall post a publicly visible sign with the telephone number and person to contact regarding dust complaints. The construction contractor shall take corrective action within 48 hours. The BAAQMD's and santaClara County's phone numbers shall also be visible to ensure compliance with applicable regulations.

6.2.2 - Cumulative Impacts

Impact AIR-2:	**The proposed project would not result in a cumulatively considerable net increase of any criteria pollutant for which the project region is nonattainment under an applicable federal or State ambient air quality (including releasing emissions which exceed quantitative thresholds for ozone precursors).**

Impact Analysis

This impact is related to the cumulative effect of a project's regional criteria pollutant emissions. By its nature, air pollution is largely a cumulative impact resulting from emissions generated over a large geographic region. The nonattainment status of regional pollutants results from past and present development within the SFBAAB, and this regional impact is a cumulative impact. Therefore, new development projects (such as the proposed project) within the SFBAAB would contribute to this impact only on a cumulative basis. No single project would be sufficient in size, by itself, to result in nonattainment of regional air quality standards. Instead, a project's emissions may be individually limited, but cumulatively considerable when evaluated in combination with past, present, and future development projects.

Potential localized and regional impacts would result in exceedances of State or federal standards for NO_X, ROG, particulate matter (PM_{10} and $PM_{2.5}$), or CO. NO_X emissions are of concern because of potential health impacts from exposure to NO_X and ROG emissions during both construction and operation and as a precursor in the formation of airborne ozone. PM_{10} and $PM_{2.5}$ are of concern during construction because of the potential to emit exhaust emissions from the operation of off-road construction equipment and fugitive dust during earth-disturbing activities (construction fugitive dust). CO emissions are of concern during project operation because operational CO hotspots are related to increases in on-road vehicle congestion and potential health effects.

The cumulative analysis focuses on whether a specific project would result in cumulatively considerable emissions. According to Section 15064(h)(4) of the CEQA Guidelines, the existence of significant cumulative impacts caused by other projects alone does not constitute substantial evidence that the proposed project's incremental effects would be cumulatively considerable. Rather, the determination of cumulative air quality impacts for construction and operational emissions is based on whether the proposed project would result in regional emissions that exceed the BAAQMD regional thresholds of significance for construction and operations on a project level. The significance thresholds represent the allowable amount of emissions each project can generate without generating a cumulatively considerable contribution to regional air quality impacts. Therefore, a project that would not exceed the BAAQMD thresholds of significance on the project level also would not be considered to result in a cumulatively considerable contribution to these regional air quality impacts. Construction and operational emissions are discussed separately below.

Construction

During construction, fugitive dust would be generated from site grading and other earthmoving activities. The majority of this fugitive dust would remain localized and deposited near the project site; however, fugitive dust's potential impacts exist unless control measures are implemented to

reduce this source's emissions. Exhaust emissions would also be generated from the operation of the off-road construction equipment and on-road construction vehicles.

Construction Fugitive Dust

For a project to have a less than significant criteria air pollutant impact related to construction-related fugitive dust emissions, it must implement all of the Air District's basic Best Management Practices (BMPs) listed in the Guidelines.[16] The proposed project would be required to include all construction BMPs as part of compliance with construction permits and would implement dust control measures as COA AQ-1. Therefore, impacts related to fugitive dust would be less than significant.

Construction Air Pollutant Emissions: ROG, NO_X, PM_{10}, and $PM_{2.5}$

CalEEMod was used to estimate the proposed project's construction emissions. CalEEMod provides a consistent platform for estimating construction and operational emissions from various land use projects and is the model recommended by the BAAQMD for estimating project emissions. Estimated construction emissions are compared with the applicable thresholds of significance established by the BAAQMD to assess ROG, NO_X, exhaust PM_{10}, and exhaust $PM_{2.5}$ construction emissions to determine significance for this impact.

At the time of this analysis, the construction of the proposed project was anticipated to begin mid-2025 and last approximately 18 months. If the construction schedule moves to later years, construction emissions would likely decrease because of improvements in technology and more stringent regulatory requirements.

Construction activities such as demolition (of trees), site preparation, grading, excavation, and travel on unpaved surfaces would generate dust and may lead to elevated concentrations of PM_{10} and $PM_{2.5}$. As the BAAQMD dust control measures would be required to ensure fugitive dust impacts are less than significant, the emission estimates shown below account for the implementation of these dust control measures. The operation of construction equipment results in exhaust emissions, which include ROG and NO_X.

Table 5 presents construction-period emissions that would result from the development of the proposed project. Complete CalEEMod output files are included as part of Appendix A.

Table 5: Construction Emissions by Construction Year

Construction Activity	Criteria Pollutant Emissions (tons)			
	ROG	NO_X	PM_{10} (Exhaust)	$PM_{2.5}$ (Exhaust)
Site Preparation (2025)	0.017	0.1650	0.007	0.006
Grading	0.049	0.451	0.019	0.017
Building Construction (2025)	0.065	0.592	0.024	0.022

[16] Bay Area Air Quality Management District (BAAQMD). 2022. Project-Level Air Quality Impacts, Table 5-2, California Environmental Quality Act Air Quality Guidelines.

Construction Activity	Criteria Pollutant Emissions (tons)			
	ROG	NO_X	PM_{10} (Exhaust)	$PM_{2.5}$ (Exhaust)
Building Construction (2026)	0.102	0.929	0.035	0.033
Paving (2026)	0.012	0.082	0.003	0.003
Architectural Coating (2026)	0.855	0.009	0.000	0.000
Total Emissions (tons)	1.10	2.22	0.09	0.08
Total Emissions (lbs)	2201.4	4445.8	177.3	163.1
Average Daily Emissions (lbs/day)	**5.79**	**11.70**	**0.47**	**0.433**
BAAQMD Significance Thresholds	54	54	82	54
Significant Impact?	No	No	No	No

Notes:
BAAQMD = Bay Area Air Quality Management District
NO_X = nitrogen oxides
PM_{10} = particulate matter less than 10 microns in diameter
$PM_{2.5}$ = particulate matter less than 2.5 microns in diameter
ROG = reactive organic gases

This analysis relies on a 263-day construction schedule, consistent with the construction schedule and modeling results contained in Appendix A. The total working days are 380 days and some construction activities may overlap. The analysis includes dust-reduction measures. Tree demolition is included in the site preparation phase.

The average daily emissions are calculated using 380 construction working days for the proposed project.
Source: Appendix A.

As shown above in Table 5, the proposed project's construction emissions would not exceed any of the applicable significance thresholds. Therefore, the proposed project would have a less than significant impact related to air quality during project construction.

Cumulative Operational Emissions

Operational Air Pollutant Emissions: ROG, NO_X, PM_{10}, and $PM_{2.5}$

Following project construction, long-term operational emissions would be generated resulting from daily operations. Operational emissions would include area, energy, and mobile sources. Area sources would include emissions from architectural coatings, consumer products, and landscape equipment. Energy sources include emissions from the combustion of natural gas for water heaters and other heat sources. Mobile sources include exhaust and road dust emissions from the automobiles that would travel to and from the proposed project site. Stationary sources include emissions from stationary source equipment, such as backup generators, which would require a permit issued by the BAAQMD (and are not applicable for the proposed project). Pollutants of concern include ROG, NO_X, PM_{10}, and $PM_{2.5}$.

Proposed project operations were analyzed at full buildout immediately following the completion of construction in 2026 and are compared against the BAAQMD quantitative threshold in Table 6.

Table 6: Operational Regional Pollutants

Emissions Source	ROG	NO_X	PM_{10} Total	$PM_{2.5}$ Total
Mobile	0.13	0.13	0.30	0.08
Area	0.56	0.00	0.00	0.00
Energy	0.00	0.05	0.00	0.00
Total (tons/year)	0.70	0.18	0.30	0.08
Total (lbs/year)	1,398	356	601	162
Average Daily (lbs/day)				
Significance Threshold (tons/year)	10	10	15	10
Exceeds Significance Threshold?	**No**	**No**	**No**	**No**
Average Daily Emissions				
Daily Average (lbs/day)[1]	3.83	0.97	1.65	0.44
Significance Threshold (tons/year)	54	54	82	54
Exceeds Significance Threshold?	**No**	**No**	**No**	**No**

Notes:
BAAQMD = Bay Area Air Quality Management District
lbs = pounds
NO_X = nitrogen oxides
PM_{10} = particulate matterless than 10 microns in diameter
$PM_{2.5}$ = particulate matterless than 10 microns in diameter
ROG = reactive organic gases
[1] The average daily emissions are calculated using 365 operational days in 2027.
Source: Appendix A.

As shown in Table 6, the proposed project's regional daily operational emissions would not exceed any of the BAAQMD thresholds of significance. Therefore, the proposed project would not result in a considerable net increase of any criteria pollutant for which the project region is nonattainment during operation or construction.

Operational Carbon Monoxide Hotspot

The CO emissions from traffic generated by the proposed project are a concern at the local level. Congested intersections can result in high, localized concentrations of CO.

The BAAQMD recommends a screening analysis[17] to determine whether a project has the potential to contribute to a CO hotspot. The screening criteria identify when site-specific CO dispersion modeling is necessary. The proposed project would result in a less than significant impact to air quality for local CO if all the following screening criteria are met:

[17] Bay Area Air Quality Management District (BAAQMD). 2022. CEQA Air Quality Guidelines. April. Website: https://www.baaqmd.gov/~/media/files/planning-and-research/ceqa/ceqa-guidelines-2022/ceqa-guidelines-chapter-3-thresholds_final_v2-pdf.pdf?la=en. Accessed May 4, 2024.

- The project is consistent with an applicable congestion management program established by the county congestion management agency for designated roads or highways, regional transportation plan, and local congestion management agency plans; and
- The project traffic would not increase traffic volumes at affected intersections to more than 44,000 vehicles per hour; and
- The project traffic would not increase traffic volumes at affected intersections to more than 24,000 vehicles per hour where vertical and/or horizontal mixing is substantially limited (e.g., tunnel, parking garage, bridge underpass, natural or urban street canyon, below-grade roadway).

Consistency with an Applicable Congestion Management Program

In accordance with SB 743, transportation analysis in accordance with CEQA no longer uses delay-based metrics such as congestion to analyze project impacts. The proposed project is consistent with the land use designation defined in the City's General Plan, which is therefore consistent with the applicable congestion management program.

Increase Traffic Volumes at Affected Intersections to no More Than 44,000 Vehicles Per Hour

The California Department of Transportation (Caltrans) Traffic Census Program[18] provides traffic volume data for the State highway system. SR-9 is the nearest highway which would experience the most traffic compared to other nearby roadways. According to the Traffic Census Program, the sections of U.S. Highway 101 (US-101)near the project site (at Pierce Road) receive a peak-hour traffic volume of 1,100 vehicles, respectively. Trip generation rates were calculated in CalEEMod (Appendix A); the proposed project is anticipated to add approximately 238 daily trips (according to the peak day, Saturday). Therefore, even with the addition of daily trips generated by the proposed project, no nearby intersections impacted by the proposed project would experience traffic volumes of 44,000 vehicles per hour. Therefore, the proposed project would not result in any nearby intersection having peak-hour traffic volumes exceeding 44,000 vehicles per hour.

Increase Traffic Volumes Where Vertical and/or Horizontal Mixing is Substantially Limited

Nonetheless, CO hotspots can occur when a transportation facility's design or orientation prevents the adequate dispersion of CO emissions from vehicles, resulting in the accumulation of local CO concentrations. The design or orientation of a transportation facility that may prevent the dispersion of CO emissions include tunnels, parking garages, bridge underpasses, natural or urban canyons, below-grade roadways, or other features where vertical or horizontal atmospheric mixing is substantially limited. Adjacent roadways that would receive new vehicle trips generated by the proposed project do not include roadway segments where vertical or horizontal atmospheric mixing is substantially limited.

Therefore, based on the above criteria, the proposed project would not exceed the CO screening criteria and would have a less than significant impact related to CO.

[18] California Department of Transportation (Caltrans). Traffic Census Program. Website: https://dot.ca.gov/programs/traffic-operations/census. Accessed June 2, 2024.

Level of Significance

Less than significant impact.

Mitigation Measures

None required.

6.2.3 - Sensitive Receptors

Impact AIR-3:	**The proposed project would not expose sensitive receptors to substantial pollutant concentrations.**

Impact Analysis

The proposed project could expose sensitive receptors to elevated pollutant concentrations if it causes or contributes significantly to elevated pollutant concentration levels. The closest sensitive receptors include single-family residences within 1,000 feet to the east of the proposed project site. Unlike regional emissions, localized emissions are typically evaluated in terms of air concentration rather than mass so they can be more readily correlated to potential health effects. As the proposed project would constitute the development of approximately 25 single-family homes–which are not associated with ongoing emissions of elevated pollutant concentrations–a construction Health Risk Assessment (HRA) only was prepared for the proposed project and are contained in Appendix A. The results of the HRA is summarized below.

Construction

Diesel Particulate Matter and Cancer Risks

The proposed project could accommodate the construction and operation of 25 single-family homes. During construction, the proposed project would result in emissions of several TACs that could potentially impact nearby sensitive receptors. The BAAQMD has defined health risk significance thresholds. These thresholds are represented as a cancer risk to the public and a non-cancer hazard from exposures to TACs. Cancer risk represents the probability (in terms of risk per million individuals) that an individual would contract cancer resulting from exposure to TACs continuously over a period of several years. The principal TAC emission analyzed in this assessment was DPM from operation of off-road equipment and diesel fuel delivery and worker vehicles during construction and operation. DPM has been identified by the ARB as a carcinogenic substance. For purposes of this analysis, DPM is represented as exhaust emissions of PM_{10}.

Cancer risks are estimated as the upper-bound incremental probability that an individual will develop cancer as a direct result of exposure to potential carcinogens over a specified exposure duration. The cancer risk attributed to a chemical is calculated by multiplying the chemical intake or dose at the human exchange boundaries (e.g., lungs) by the chemical-specific cancer potency factor (CPF). A risk level of 10 in a million implies a likelihood (or risk) that up to 10 persons out of 1 million equally exposed people would contract cancer if exposed continuously (24 hours per day) to the levels of TACs over a specified duration of time. This risk would be an excess cancer risk that is in addition to any environmental cancer risk borne by a person not exposed to these air toxins.

Health Risk Assessment Calculations

The HRA was conducted utilizing the ARB's HARP2 to automatically calculate risks for projects using California Office of Environmental Health Hazard Assessment (OEHHA) promulgated cancer potency and reference exposure levels. HARP2 is the recommended model for calculating and presenting HRA results because it follows the BAAQMD risk assessment guidance methodology and is consistent with BAAQMD Regulation 2-5. Since AERMOD was run with project emission rates to directly calculate potential DPM and $PM_{2.5}$ concentrations, the Health Risk Assessment Stand-alone Tool (RAST) version of HARP2 was used.

The HRA follows BAAQMD CEQA Guidelines based on OEHHA guidance. This risk assessment intake methodology addresses children's greater sensitivity and health impacts from early exposure to carcinogenic compounds. The chemical intake or dose describing the frequency and duration of the exposure is estimated using receptor's breathing rates, exposure duration, and exposure frequency. The calculations include the use of age-specific weighting factors, breathing rates, fraction of time at home, and reduced exposure durations.

These factors are described below, followed by a summary of the HARP2 HRA inputs and cancer and non-cancer risk results for selected for each receptor group (i.e., resident, off-site worker, and student).

Age Sensitivity Factors–Studies have shown that young animals are more sensitive than adult animals to exposure to many carcinogens (OEHHA, 2009). Therefore, OEHHA developed age sensitivity factors (ASFs) to account for the increased sensitivity to carcinogens during early-in-life exposures. Accordingly, the cancer risk methodology applies different ASFs by age groups. The ASFs utilized a 10-fold multiplier in sensitivity for the third trimester and infants less than age 2, a 3-fold increase in sensitivity for children ages 2 to 16 years old, and a sensitivity factor of 1 for ages 16 and older.

Daily breathing rates (age-specific daily air intake)–For residential receptors, the HRA utilizes the 95th percentile breathing rates for the most sensitive age groups (less than 2 years of age) and 80th percentile for all other age groups. This approach jointly developed by ARB and the California Air Pollution Control Officers Association (CAPCOA) and adopted by BAAQMD is referred to as the "Risk Management Policy" and was developed to consider the new science in risk assessment while providing a reasonable estimate of potential cancer risk for risk management decisions. and used in this HRA. The HRA uses 95th percentile 8-hour breathing rates for moderate intensity activities for worker and student exposure.

Time at home–The time at home applies only applies to residential receptors. Residents are assumed to be at home 350 days per year, which assumes individuals are away for approximately 2 weeks of vacation. The fraction of time at home refers to the estimated amount of time residents stay at home during these 350 days. The HRA uses the OEHHA and BAAQMD recommended values of 73percent time at home for 16-year-olds and above based on population and activity statistics. The HRA also assumes 100 percent time at home for receptors under age 16 to address exposures at local schools close to emitting sources. Even though infants and children may not be at their

residence all the time, they are likely to remain in the neighborhood (at schools or neighbors) and would be exposed to similar levels of the pollutants.

Exposure Duration–OEHHA 2015 guidelines specify a 30-year residential exposure duration for estimating cancer risk at the Maximally Exposed Individual Resident (MEIR). This is based on studies showing that 30 years is a reasonable estimate of the 90th to 95th percentile of residency duration in the population. A 25-year standard exposure duration is the default to estimate cancer risk for off-site workers. However, risk assessors can use other exposure durations with proper justification and documentation. For example, short-term projects (e.g., construction projects) can now be evaluated for as short a duration as 6 months. This project is evaluated based on the construction schedule from 6/2/2025–11/13/2026, over a period of 1.45 years.

Residential Cancer Risk–Cancer risk for individual resident receptors exposed to "Diesel Particulate Exhaust" (DPM) were calculated utilizing the "Risk Management Policy" option for inhalation, specifying that residents spend 100 percent time at home for ages less than 16 years old. Consistent with OEHHA guidance, the start of residential exposure was assumed to occur in the third trimester (-0.25 years) to accommodate the increased susceptibility of exposures in early life. Since the construction is anticipated to occur for 1.45 years, the residential exposure starts with the unborn child at the third trimester (when construction begins) and continues until the child is 1.2 years of age. Because there are no significant sources of TAC emissions during operations, the exposure assessment is limited to the duration of the proposed project construction or 1.45 years.

Non-cancer Chronic Health Risks–Chronic Reference Exposure Levels (RELs) are used to assess not only residential health impacts.

Worker Cancer Risk–No notable commercial, office or industrial workplaces were identified within the 1,000 feet buffer area. The cancer and non-cancer risk at the MEIR represent the maximum impact. Any workers within the 1,000-foot modeling radius would be exposed at levels lower than the MEIR.

HARP2 Inputs and Results–HARP2 Output files are included in Appendix A to document the HRA exposure parameters and risk results.

Toxic Air Contaminant Construction Analysis

Major sources of DPM during construction include off-road construction equipment and heavy-duty delivery truck activities. The results of the HRA prepared for project construction for cancer risk and long-term chronic health risk are summarized below. Air dispersion modeling was utilized to assess the proposed project's potential health risks using AERMOD Version 22112, which is the air dispersion model accepted by the EPA and the BAAQMD for preparing HRAs. Exhaust emissions of DPM (as PM_{10} exhaust) were estimated using CalEEMod Version 2022.1.1.24. The health risk exposure assessment was conducted using the ARB HARP2 model. The construction emissions were assumed to be distributed over the project area with a working schedule of eight hours per day and 5 days per week. Emissions were adjusted by a factor of 4.2 to convert an 8-hour-per-day, 5-day-a-week construction scenario for use with a 24-hour-per-day, 365-day-per-year averaging period. Detailed parameters, a description of methodology, and calculations are contained in Appendix A.

The closest sensitive receptors include single-family homes to the north and northeast of the proposed project site. Grid receptors were placed in a grid out to a distance of 1,000 of the proposed project area. No notable commercial, office, or industrial workplaces were identified within the 1,000-foot buffer area. The cancer and non-cancer risk at the MEIR represent the maximum impact. Any workers within the 1,000-foot modeling radius would be exposed at levels lower than the MEIR. The estimated health and hazard impacts at the residential MEIR are provided in Table 7.

Table 7: Summary of Health Risks at the Maximum Exposed Individual Receptor (Unmitigated Construction)

Impact Scenario	Cancer Risk[1] (risk per million)	Chronic Non-Cancer Hazard Index[2]	$PM_{2.5}$ Concentration ($\mu g/m^3$)
Residential MEIR (Located near the southern border of the proposed project site)			
Unmitigated Project Construction	8.7	0.008	0.0414
Thresholds of Significance	10	1	0.3
Exceeds Individual Source Threshold?	**No**	**No**	**No**

Notes:
MEIR = Maximally Exposed Individual Resident
$PM_{2.5}$ = particulate matter 2.5 micrometers or less in diameter
$\mu g/m^3$ = micrograms per cubic meter
[1] Cancer risk is identified by multiplying the risk sum from HARP2 by 1,000,000.
[2] Chronic non-cancer hazard index was estimated using HARP2.
[3] The 0.3 ($\mu g/m^3$) is $PM_{2.5}$ concentration threshold. PM_{10} concentration is calculated in HARP2. If the PM_{10} does not exceed the threshold, then $PM_{2.5}$ would not exceed the threshold.
Source of Thresholds: Bay Area Air Quality Management District (BAAQMD). 2022. California Environmental Quality Act Air Quality Guidelines.
Sources of Project-specific Data: Appendix A.

As shown in Table 7, the proposed project's construction DPM emissions would not result in health risks exceeding the cancer risk significance threshold or non-cancer hazard index significance threshold at the residential MEIR. Therefore, the proposed project would not result in a significant impact on nearby receptors from TACs during construction.

Cumulative Health Risk Assessment

A community HRA was conducted in accordance with BAAQMD guidance. The cumulative health risk values were determined by adding the health risk values from refined modeling of the proposed project to the screening-level health risk values from stationary and mobile sources within a 1,000-foot radius of the site. It should be noted that there is one stationary source identified within 1,000 feet of the project boundary. The BAAQMD stationary sources are added to the MEIR because there are no school or worker sensitive receptors as defined by BAAQMD within 1,000 feet of the proposed project. The analysis results of the HRA are shown in Table 8. The health risks to off-site receptors would not exceed the BAAQMD cumulative health risk significance thresholds. Emissions from the proposed project would not result in a potentially significant impact and the proposed project's impacts would not be cumulatively considerable. Therefore, this impact would be less than significant.

Table 8: Cumulative Health Risks at the Maximally Exposed Individual Receptor

Source	Cancer Risk (per million)	Chronic HI	$PM_{2.5}$ Concentration ($\mu g/m^3$)
***Residential MEIR* (Located at southern border of proposed project site)**			
Project Source–Unmitigated Construction	8.700	0.008	0.0414
Air Basin Roadways	0.571	0.003	0.027
Air Basin Railways	0.000	0.000	0.000
BAAQMD Permitted Stationary Source: Verizon Wireless (Facility ID 21425)	1.236	0.002	0.002
Cumulative Health Risks at MEIR	10.507	0.013	0.0704
BAAQMD's Cumulative Thresholds of Significance	100	10	0.8
Threshold Exceeded in Any Scenario?	**No**	**No**	**No**

Notes:
BAAQMD = Bay Area Air Quality Management District
DPM = diesel particulate matter
HI = hazard index
MEIR = Maximally Exposed Individual Receptor
ND = No Data
$PM_{2.5}$ = particulate matter, including dust, 2.5 micrometers or less in diameter
$\mu g/m^3$ = micrograms per cubic meter
The health risks and concentrations from railway, roadway and stationary sources are based on BAAQMD screening tools.

Carbon Monoxide Hotspot

As discussed in Impact AIR-2, the proposed project would not generate sufficient vehicle traffic during project operation to create a CO hotspot. Therefore, this impact would be less than significant with regard to exposing sensitive receptors to substantial concentrations of CO emissions. As such, the proposed project would result in less than significant impacts related to exposing sensitive receptors to substantial CO concentrations.

Level of Significance

Less than significant impact.

Mitigation Measures

None required.

6.2.4 - Objectionable Odors

Impact AIR-4: **The proposed project would not result in other emissions (such as those leading to odors) adversely affecting a substantial number of people.**

Impact Analysis

Odor impacts on residential areas and other sensitive receptors, such as hospitals, daycare centers, schools, etc., warrant the closest scrutiny, but consideration should also be given to other land uses where people may congregate, such as recreational facilities, worksites, and commercial areas.

According to BAAQMD 2022 CEQA Guidelines, odor impacts could occur if the proposed project proposes a new odor source near existing receptors. The presence of odor impacts is dependent on several variables, including the nature of the odor source (e.g., wastewater treatment plant, food processing plant), frequency of the odor, intensity of the odor, distance of the odor to sensitive receptors, wind direction, and sensitivity of the sensitive receptor.

Table 9 demonstrates the BAAQMD list of recommended odor screening distances for specific odor-generating facilities. Notably, single-family residential homes are not considered odor-generating facilities.

Table 9: BAAQMD Odor Screening-level Distances Thresholds

Land Use/Type of Operation	Project Screening Distance
Wastewater Treatment Plant	2 miles
Wastewater Pumping Facilities	1 mile
Sanitary Landfill	2 miles
Transfer Station	1 mile
Composting Facility	1 mile
Petroleum Refinery	2 miles
Asphalt Batch Plant	2 miles
Chemical Manufacturing	2 miles
Fiberglass Manufacturing	1 mile
Painting/Coating Operations	1 mile
Rendering Plant	2 miles
Coffee Roaster	1 mile
Food Processing Facility	1 mile
Confined Animal Facility/Feed Lot/Dairy	1 mile
Green Waste and Recycling Operations	1 mile
Metal Smelting Plants	2 miles
Source: Bay Area Air Quality Management District (BAAQMD). 2022. 2022 CEQA Guidelines.	

Construction-Related Odors

Potential sources that may emit odors during construction activities include exhaust from diesel construction equipment. However, because of the temporary nature of these emissions, the intermittent nature of construction activities, and the highly diffusive properties of diesel PM exhaust, nearby receptors would not be affected by diesel exhaust odors associated with project construction. Odors from these sources would be localized and generally confined to the immediate area surrounding the proposed project site. The proposed project would utilize typical construction techniques, and the odors would be typical of most construction sites and temporary in nature.

Operational-Related Odors

The proposed project includes the construction of 25 single-family residential homes. As previously stated, land uses that are typically identified as sources of objectionable odors include those outlined in Table 9. The proposed project would not involve any of the uses in Table 9. Minor sources of odors, such as exhaust from mobile sources, are not typically associated with numerous odor complaints but are known to have temporary and not significant odors.

Level of Significance

Less than significant impact.

Mitigation Measures

None required.

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SECTION 7: GREENHOUSE GAS IMPACT ANALYSIS

7.1 - CEQA Guidelines

The CEQA Guidelines define a significant effect on the environment as "a substantial, or potentially substantial, adverse change in the environment." To determine whether a project would have a significant impact on GHGs, the type, level, and impact of emissions generated by the proposed project must be evaluated.

7.1.1 - Thresholds of Significance for the Proposed Project

The BAAQMD's 2022 CEQA Air Quality Guidelines provide recommended significance thresholds for GHGs for land use development projects and plans. The new thresholds state that, if a project would contribute its "fair share" of what will be required to achieve California's long-term climate goal of carbon neutrality by 2045, then a reviewing agency can find that the impact will not be significant because the project will help to solve the problem of global climate change. The thresholds for new land use projects require projects to meet either one of two enumerated Criteria "A" or "B" as shown below. If a land use development project cannot demonstrate consistency with Criterion A or Criterion B, then that project would result in a potentially significant impact related to the generation of direct and indirect GHG emissions.

BAAQMD Thresholds for Land Use Projects (Must Include A or B)

A. Projects must include, at a minimum, the following project design elements:

1. Buildings
   a. The project will not include natural gas appliances or natural gas plumbing (in both residential and nonresidential development).
   b. The project will not result in any wasteful, inefficient, or unnecessary energy usage as determined by the analysis required under CEQA Section 21100(b)(3) and Section 15126.2(b) of the State CEQA Guidelines.
2. Transportation
   a. Achieve a reduction in project-generated Vehicle Miles Traveled (VMT) below the regional average consistent with the current version of the California Climate Change Scoping Plan (currently 15 percent) or meet a locally adopted Senate Bill 743 VMT target, reflecting the recommendations provided in the Governor's Office of Planning and Research's Technical Advisory on Evaluating Transportation Impacts in CEQA:
      i. Residential projects: 15 percent below the existing VMT per capita
      ii. Office projects: 15 percent below the existing VMT per employee
      iii. Retail projects: no net increase in existing VMT
   b. Achieve compliance with off-street electric vehicle requirements in the most recently adopted version of CALGreen Tier 2.

B. Projects must be consistent with a local GHG reduction strategy that meets the criteria under State CEQA Guidelines Section 15183.5(b).

Source: Bay Area Air Quality Management District (BAAQMD). 2022. CEQA Guidelines. April 20.

Project consistency with Criteria A is based on incorporating project design criteria based on key attributes consistent with the 2022 Scoping Plan and states long-term carbon neutrality goals.

Projects incorporating these elements would be contributing their "fair share" of what will be required to achieve California's long-term climate goal of carbon neutrality by 2045. These include criteria for building energy design (elimination of natural gas) as well as criteria related to reduction in transportation emissions via VMT reductions and installation of EV charging infrastructure.

Project consistency with Criterion B involves demonstrating compliance with a local "qualified" GHG plan. CEQA Guidelines Section 15183.5(b) allows projects and plans to be analyzed through a streamlined or tiered approach utilizing an adopted Greenhouse Gas Reduction Plan. A "qualified" reduction strategy capable of being utilized for a streamlined or tiered analysis under CEQA must meet the following requirements:

- Quantify GHG emissions, both existing and projected over a specified time period, resulting from activities within a defined geographic area;
- Establish a level, based on substantial evidence, below which the contribution to GHG emissions from activities covered by the plan would not be cumulatively considerable;
- Identify and analyze the GHG emissions resulting from specific actions or categories of actions anticipated within the geographic area;
- Specify measures or a group of measures, including performance standards, that substantial evidence demonstrates, if implemented on a project-by-project basis, would collectively achieve the specified emissions level;
- Establish a mechanism to monitor the plan's progress toward achieving the level and to require amendments if the plan is not achieving specified levels; and
- Be adopted in a public process following environmental review.

Because of the lack of enforceable measures in the CAP, the City does not have a GHG reduction plan or Climate Action Plan that meets all of the aforementioned criteria. Therefore, the applicable threshold of significance under BAAQMD guidance is to evaluate the proposed project against the BAAQMD design elements.

7.2 - Impact Analysis

7.2.1 - Greenhouse Gas Inventory

Impact GHG-1:	**The proposed project would generate direct and indirect greenhouse gas emissions, and these emissions would result in a significant impact on the environment.**

Impact Analysis

Both construction and operational activities have the potential to generate GHG emissions. The proposed project would generate GHG emissions during temporary (short-term) construction activities such as removal of trees, site grading, operation of construction equipment, operation of on-site heavy-duty construction vehicles, hauling of materials to and from the project site, asphalt paving, and construction worker vehicle trips. On-site construction activities would vary depending on the level of construction activity.

Long-term, operational GHG emissions would result from project-generated vehicular traffic, operation of any landscaping equipment, off-site generation of electrical power over the life of the proposed project, the energy required to convey water to and wastewater from the project site, the emissions associated with the hauling and disposal of solid waste from the project site, any fugitive refrigerants from air conditioning or refrigerators, and the operation of any proposed stationary sources such as backup generators or fire pumps.

Global climate change is not confined to a particular project area and is generally accepted as the consequence of global industrialization over the last 200 years. A typical project, even a very large one, does not generate enough GHG emissions on its own to influence global climate change significantly; hence, the issue of global climate change is, by definition, a cumulative environmental impact. Therefore, this section measures the proposed project's incremental contribution to the cumulative environmental impact. The following is a discussion of the proposed project's contribution to GHG emissions during both the construction and operation phases. The proposed project's GHG emissions are quantified for informational purposes only.

Project Emissions (for Informational Purposes)

Construction

The proposed project's construction emissions are presented in Table 10. It should be noted that the analysis conservatively assumes that construction would begin mid-2025. As vehicle and equipment fuel efficiencies and emission control standards continue to incrementally improve with each year, project construction emissions are likely to decrease nominally from what is shown in Table 10 should the construction schedule move to later years. Therefore, the construction GHG emissions contained in Table 10 represent a conservative assessment of project construction emissions.

Table 10: Proposed Project Construction GHG Emissions

Construction Activity	Total GHG Emissions (MT CO_2e per year)
Site Preparation (2025)	25.60
Grading (2025)	96.14
Building Construction (2025)	129.94
Building Construction (2026)	215.76
Paving (2026)	22.64
Architectural Coating (2026)	1.35
Total Construction Emissions	491.43
Emissions Amortized Over 30 Years[1]	16.38

Notes:
GHG = greenhouse gas
MT CO_2e = metric tons carbon dioxide equivalent
Totals may not appear to sum exactly due to rounding.
[1] Construction GHG emissions are amortized over the 30-year lifetime of the project.
Source: Appendix A.

As shown above, the proposed project would generate approximately 491.43 MT CO_2e during construction. There is no proposed construction-related climate impact threshold at this time. GHG emissions from construction represent a very small portion of a project's lifetime GHG emissions. The proposed thresholds for land use projects are designed to address operational GHG emissions which represent the vast majority of project GHG emissions. Furthermore, construction GHG emissions are amortized over 30 years and accounted for as part of operational GHG emissions. Operational GHG impact is discussed below. As demonstrated below, the proposed project (construction and operation) would have less than significant GHG impacts with incorporation of MMs GHG-1.

Operation

Operational or long-term emissions occur over the life of the project. Project operations were modeled for the 2026 operational year, immediately following the completion of construction. Sources for operational emissions are summarized below and are described in more detail in Section 4-Modeling Parameters and Assumptions. Sources for operational GHG emissions include:

- **Motor Vehicles:** These emissions refer to GHG emissions contained in the exhaust from the cars and trucks that would travel to and from the project site.
- **Natural Gas:** These emissions refer to the GHG emissions that occur when natural gas is burned on the project site. Pursuant to the City's reach code, the proposed project would be required to be all-electric for water heating, electricity and clothes drying; natural gas for cooking is permissible however the construction must include pre-wiring for future conversion to all-electric.
- **Indirect Electricity:** These emissions refer to those generated by off-site power plants to supply electricity required for the project.
- **Area Sources:** These emissions refer to those produced during activities such as landscape maintenance.
- **Water Transport:** These emissions refer to those generated by the electricity required to transport and treat the water to be used on the project site.
- **Waste:** These emissions refer to the GHG emissions produced by decomposing waste generated by the project.

Table 11 presents the estimated annual GHG emissions from the proposed project's operational activities. As shown in Table 11, the proposed project would generate approximately 384.41 MT CO_2e per year after the inclusion of 16.38 MT CO_2e per year from project construction.

Table 11: Operational Greenhouse Gas Emissions

GHG Emissions Source	GHG Emissions (MT CO_2e per year)
Area	0.74
Energy	75.93

GHG Emissions Source	GHG Emissions (MT CO_2e per year)
Mobile	281.31
Waste	6.11
Water	3.79
Amortized Construction Emissions	16.38
Total Annual Project Emissions	384.41
Notes: MT CO_2e = metric tons carbon dioxide equivalent Totals were summed using unrounded numbers and may not appear to sum exactly due to rounding. Source: Appendix A.	

The proposed project's consistency with applicable plans, policy, or regulations of an agency adopted to reduce the emissions of greenhouse gases is discussed below.

7.2.2 - Project Impact

Construction

BAAQMD does not have thresholds of significance for construction-related GHG emissions. GHG emissions from construction activities are one-time, short-term emissions and therefore would not significantly contribute to long-term cumulative GHG emissions impacts of the proposed project. Therefore, construction emissions would be less than significant.

Operation

As previously discussed, the BAAQMD's proposed 2022 GHG significance thresholds represent a method for determining whether the proposed project would be cumulatively considerable or whether the proposed project contributes to solving the cumulative problem of climate change, taking into consideration the State's long-term climate goal of carbon neutrality by 2045.

As previously stated, the City does not have a CAP that meets the criteria set forth in State CEQA Guidelines Section 15183.5(b) and the BAAQMD CEQA Air Quality Guidelines. Therefore, the proposed project is evaluated against the design elements in Criterion A of BAAQMD's 2022 GHG Significance Thresholds:

- **All-electric design**: The City requires that all new construction in the City include building electrification and EV infrastructure. All new construction must use electricity for water heating, space heating, and clothes drying. However, it is permissible for projects to include natural gas for cooking, although the project construction must also include pre-wiring for possible transition to all-electric. Therefore, the proposed project would be inconsistent with this design element.
- **Energy efficiency**: As noted below, electricity providers supplying electricity to the proposed project are required to comply with both the RPS and SB 350 and will meet these standards.

SVCE is ahead of the SB 350 target with 50 percent of its base energy supply presently coming from renewable sources. Furthermore, the proposed project complies with all relevant Energy Code and CALGreen requirements which would ensure energy efficiency. Therefore, the proposed project is consistent with this design element.

- **VMT impact**: According to the technical memorandum prepared by Hexagon (Appendix A), the proposed project would have significant and unavoidable impacts related to VMT. Therefore, the proposed project is inconsistent with this design element.
- **Tier 2 EV Charging Infrastructure**: The last design element relates to implementation of CALGreen Tier 2 level of EV charging infrastructure, which is beyond the mandatory CALGreen requirement of EV charging spaces. The City's adopted reach code complies with 2022 CALGreen Tier 2 Voluntary Provisions and requires each dwelling unit (in one- and two-family homes and townhomes with private garages) to have a dedicated 208/240V branch circuit installed. In addition, the City's reach code requires a second Level 1 EV dedicated branch circuit (minimum 20-amp 110 v) to be provided in each unit as well. Therefore, the proposed project is consistent with this design element.

The proposed project would be inconsistent with two of the design elements (related to all-electric design and VMT). Therefore, the proposed project's contribution to the significant cumulative GHG emission impact would be potentially significant.

MM GHG-1 is recommended to reduce this potentially significant impact. However, even with implementation of MM GHG-1, the proposed project would remain inconsistent with the BAAQMD design features and would, therefore, have significant and unavoidable impacts related to global climate change.

Level of Significance

Potentially significant impact.

Mitigation Measures

MM GHG-1 is recommended to reduce this potentially significant impact. MM GHG-1 would require the proposed project to enroll in the SVCE "GreenStart" or "GreenPrime" program, which provides 100 percent GHG emissions-free electricity to participating customers to meet 100 percent of their electricity demand through on-site renewable energy, such as solar panels. Evidence of enrollment, such as a contract agreement or evidence that the on-site renewable energy generation would meet the buildings' energy requirements, and compliance with any enrollment conditions, as appliable, shall be provided to the City of Saratoga Department of Community Development prior to occupancy of the new buildings. Evidence of continued enrollment and compliance in subsequent years shall be provided to the City on request.

MM GHG-1 Participation in Silicon Valley Clean Energy Program or On-Site Renewable Energy

The proposed project shall enroll in the Silicon Valley Clean Energy (SVCE) "GreenStart" or "GreenPrime" program, which provides 100 percent GHG emissions-free electricity to participating customers to meet 100 percent of their electricity

demand through on-site renewable energy, such as solar panels. Evidence of enrollment, such as a contract agreement or evidence that the on-site renewable energy generation would meet the buildings' energy requirements, and compliance with any enrollment conditions, as appliable, shall be provided to the City of Saratoga Department of Community Development prior to occupancy of the new buildings. Evidence of continued enrollment and compliance in subsequent years shall be provided to the City on request. All exposed non-paved surfaces (e.g., parking areas, staging areas, soil piles, graded areas, and access roads) shall be watered at least two times per day and/or non-toxic soil stabilizers shall be applied to exposed non-paved surfaces.

Level of Significance with Mitigation

Significant and unavoidable impact.

Impact GHG-2: The proposed project would conflict with any applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?

The following discusses project consistency with applicable plans adopted for the purpose of reducing GHG emissions, which include ARB's 2022 Scoping Plan and the Metropolitan Transportation Commission/Association of Bay Area Governments (MTC/ABAG) Plan Bay Area 2050.

2022 Scoping Plan Update

The principal State plan and policy for GHG emission reduction targets are set forth in Executive Order S-03-05, AB 32, and the subsequent SB 32. The quantitative goal of AB 32 was to reduce GHG emissions to 1990 levels by 2020. AB 32 required the ARB to develop a Scoping Plan that described California's approach to reducing GHGs to achieve the 2020 emission target. This target was ultimately achieved four years earlier than mandated. SB 32 then accelerated the GHG emission reduction goals of AB 32. The 2022 Scoping Plan, the most recent update to the ARB Scoping Plan, reflects the 2030 target of a 40 percent reduction below 1990 levels as set by Executive Order B-30-15 and codified by SB 32. It is applicable to State agencies but is not directly applicable to Cities/Counties and individual projects (i.e., the Scoping Plan does not require the City to adopt policies, programs, or regulations to reduce GHG emissions). However, new regulations adopted by the State agencies outlined in the Scoping Plan result in GHG emissions reductions at the local level, for example, through Statewide building codes. As a result, local jurisdictions benefit from reductions in transportation emissions, increases in water efficiency in the building and landscape codes, and other Statewide actions that affect a local jurisdiction's emissions inventory from the top down.

The 2022 Scoping Plan provides guidance for evaluating a project's consistency with the State's goals for CEQA GHG analyses of residential projects. According to the 2022 Scoping Plan, residential projects that incorporate all of the project attributes shown in Table 12 will be considered consistent with the Scoping Plan and, therefore, may result in less than significant GHG impacts under CEQA.

Table 12 provides an analysis of the proposed project's consistency with the relevant 2022 Scoping Plan measures. Measures that are not directly applicable to the proposed project are not shown.

Table 12: Residential and Mixed-Use Project Attributes that Reduce GHGs

2022 Scoping Plan GHG Reduction Measure	Project Consistency
Transportation Electrification: Provides electric vehicle (EV) charging infrastructure that, at minimum, meets the most ambitious voluntary standard in the California Green Building Standards Code at the time of project approval.	**Consistent.** The proposed project would meet and exceed the CALGreen Building Standards by providing one Tier 2 Level EV-ready outlet per residence, and one Tier 1 Level EV-ready outlet per residence.
VMT Reduction 1: Is located on infill sites that are surrounded by existing urban uses and reuses or redevelops previously undeveloped or underutilized land that is presently served by existing utilities and essential public services (e.g., transit, streets, water, sewer).	**Consistent.** The proposed project is located within the jurisdictional boundary of the City of Saratoga and is presently served by existing utilities and essential services including streets, water, and sewer. The proposed project would provide additional housing, including affordable housing, in compliance with the General Plan Land Use designation.
VMT Reduction 2: Does not result in the loss or conversion of natural and working lands.	**Not consistent.** While the proposed project would preserve 54.06 acres of the overall 72.45-acre project site and replace demolished trees with new plantings of similar species, there will be a net loss of natural lands as a result of implementation of the proposed project. Therefore, the proposed project would be inconsistent with this measure.
VMT Reduction 3: Consists of transit-supportive densities (minimum of 20 residential dwelling units per acre) OR is in proximity to existing transit stops (within a half mile) OR satisfies more detailed and stringent criteria specified in the region's Sustainable Communities Strategy (SCS).	**Not consistent.** According to the traffic analysis study conducted for the proposed project, the proposed project would have a significant and unavoidable Vehicle Miles Traveled (VMT) impact because the VMT exceeds the applicable threshold and maximum VMT reduction measures would not reduce the impact to less than significant. Therefore, the proposed project is inconsistent with inconsistent with this measure.
VMT Reduction 4: Reduces parking requirements by: eliminating parking requirements or including maximum parking ratios (i.e., the ratio of parking spaces to residential units or square feet); OR providing residential parking supply at a ratio of less than one parking space per dwelling unit; OR for multifamily residential development, requiring parking costs to be unbundled from costs to rent or own a residential unit.	**Not consistent.** According to the traffic analysis study conducted for the proposed project, the project would have a significant and unavoidable VMT impact because the VMT exceeds the applicable threshold and maximum VMT reduction measures would not reduce the impact to less than significant. Therefore, the proposed project is inconsistent with this measure.
VMT Reduction 5: At least 20 percent of units included are affordable to lower-income residents.	**Consistent.** At least 20 percent of the dwelling units will be classified as affordable.
VMT Reduction 6: Results in no net loss of existing affordable units.	**Consistent.** There is no existing housing on the parcel. The proposed project would include 20 percent affordable units.
Building Decarbonization: uses all-electric appliances without any natural gas connections and does not use propane or other fossil fuels for space heating, water heating, or indoor cooking.	**Not consistent.** The proposed project would be required to comply with City's reach code, which requires single-family residential buildings to be "electric-ready" for heat pump space heaters; water

2022 Scoping Plan GHG Reduction Measure	Project Consistency
	heaters and electric clothes dryers. However, natural gas for cooking is permissible. Therefore, the proposed project is inconsistent with this measure.
Source of ARB 2022 Scoping Plan Appendix D, Local Actions: California Air Resource Board (ARB). 2022. 2022 Scoping Plan for Achieving Carbon Neutrality, Appendix D. December. Website: https://ww2.arb.ca.gov/sites/default/files/2022-11/2022-sp-appendix-d-local-actions.pdf. Accessed April 23, 2024.	

As shown in Table 12, implementation of the proposed project would not be consistent with all measures in the 2022 Scoping Plan related to residential projects.

Metropolitan Transportation Commission Plan Bay Area

As part of the implementing framework for Plan Bay Area 2050, local governments have identified planned development areas to focus growth. The proposed project site is within the planning area of the City of Saratoga's General Plan and is consistent with applicable land use designations. Thus, the proposed project would be consistent with the overall goals of Plan Bay Area, which include reducing VMT and concentrating new investment in infill areas with existing urban and transportation infrastructure. Given these considerations, the proposed project would not conflict with the land use and transportation concept plan in Plan Bay Area 2050.

While the proposed project is consistent with Plan Bay Area 2050, it is not consistent with the 2022 Scoping Plan measures for new residential construction, nor is it consistent with the BAAQMD thresholds of significance for evaluating project-level GHG impacts. Therefore, the proposed project's contribution to the significant cumulative GHG emission impact would be potentially significant.

The proposed project is single-family homes, and therefore Transportation Demand Management (TDM) measures to reduce VMT are not practical. Therefore, the proposed project would have significant and unavoidable impacts related to global climate change.

Level of Significance

Potentially significant impact.

Mitigation Measures

None identified.

Level of Significance with Mitigation

Significant and unavoidable impact.

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SECTION 8: ENERGY IMPACT ANALYSIS

8.1 - CEQA Guidelines

CEQA Guidelines define a significant effect on the environment as "a substantial, or potentially substantial, adverse change in the environment." To determine whether a project would have a significant impact on energy, the type, level, and impact of emissions generated by the proposed project must be evaluated.

The following energy significance thresholds are contained in Appendix G of the CEQA Guidelines. A significant impact would occur if the proposed project would:

- Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation; or
- Conflict with or obstruct a State or local plan for renewable energy or energy efficiency.

8.2 - Impact Analysis

8.2.1 - Project Energy Consumption

Impact ENER-1:	**The proposed project would not result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during construction or operation.**

Impact Analysis

A discussion of the proposed project's anticipated energy usage is presented below. SVCE provides electricity service to the project site. Energy use consumed by the proposed project was estimated and includes electricity and fuel consumption for project construction and operation. Energy calculations are included as part of Appendix A.

Construction Impacts

The proposed project's construction was assumed to begin in June 2025 and last approximately 13 months based on project applicant provided information. If the construction schedule moves to later years, construction emissions would likely decrease because of improvements in technology and more stringent regulatory requirements as older, less efficient equipment is replaced by newer and cleaner equipment. The proposed project would require site preparation, grading, building construction, architectural coating, and paving, in addition to the removal of approximately 367 trees. The construction phase would require energy for the manufacture and transportation of building materials, preparation of the site (e.g., site clearing and grading), and the actual construction of the buildings. Petroleum-based fuels such as diesel fuel and gasoline would be the primary sources of energy for these tasks.

The types of on-site equipment used during construction of the proposed project could include gasoline- and diesel-powered construction and transportation equipment, including trucks, excavators, forklifts, and pavers. Construction equipment is estimated to consume a total of 49,977 gallons of diesel fuel over the entire construction duration (Appendix A).

Fuel use associated with construction vehicle trips generated by the proposed project was also estimated; trips include construction worker trips, haul truck trips for material transport, and vendor trips for construction material deliveries. Fuel use from these vehicles traveling to the project site was based on (1) the projected number of trips the proposed project would generate during construction, (2) average trip distances by trip type, and (3) fuel efficiencies estimated in the ARB EMFAC mobile source emission model. The specific parameters used to estimate fuel usage are included in Appendix A. In total, the proposed project is estimated to generate 59,271 VMT and 3,888 gallons of combined gasoline and diesel for vehicle travel during construction.

The overall construction schedule and process is already designed to be efficient in order to avoid excess monetary costs. For example, equipment and fuel are not typically used wastefully due to the added expense associated with renting the equipment, maintaining it, and fueling it. Therefore, the opportunities for future efficiency gains during construction are limited. Thus, it is anticipated that the construction phase of the proposed project would not result in wasteful, inefficient, and unnecessary consumption of energy. Construction-related energy impacts would be less than significant.

Operational Impacts

The proposed project would consume energy as part of building operations and transportation activities. Project energy consumption is summarized in Table 13.

Table 13: Estimated Annual Project Energy Consumption (Operation)

Energy Consumption Activity	Annual Consumption
Operation Vehicle Fuel Consumption	28,860 gallons of gasoline 2,769 gallons of diesel 129 gallons of natural gas 20,770 kWh of electricity
Building Energy Consumption	1,155,548 MMBTU of natural gas 154,621 kWh of electricity
Notes: kWh = kilowatt-hour MMBTU = Million Metric British Thermal Units Source: Appendix A	

As previously discussed, the proposed project would be considered to result in a potentially significant impact if it would result in wasteful, inefficient, or unnecessary consumption of energy resources. Considering the guidance provided by Appendix F of the CEQA Guidelines and the

Appellate Court decision in *League to Save Lake Tahoe Mountain etc. v. County of Placer* (2022) 75 Cal.App.5th 63, 164-168, the proposed project would be considered to result in wasteful, inefficient, or unnecessary consumption of energy resources if it would conflict with the following energy conservation goals:

- Decreasing overall per capita energy consumption;
- Decreasing reliance on fossil fuels such as coal, natural gas, or oil; and
- Increasing reliance on renewable energy sources.

Decreasing Overall Per Capita Energy Consumption

The proposed project's buildings would be designed and constructed in accordance with CALGreen energy efficiency standards of Title 24. Title 24 standards include a broad set of energy conservation requirements that apply to the structural, mechanical, electrical, and plumbing systems in a building. For example, the Title 24 Lighting Power Density requirements define the maximum wattage of lighting that can be used in a building based on its square footage. Title 24 standards, widely regarded as the most advanced energy efficiency standards, would help to reduce the amount of energy required for lighting, water heating, and heating and air conditioning in buildings and would promote energy conservation. Moreover, the proposed project would use energy efficient models and systems whenever possible and would incorporate new technologies as they become available. Therefore, the proposed project would be consistent with this criterion. The decreasing reliance on fossil fuels and increasing use of renewable energy discussed below would also reduce per capita energy consumption for the proposed project.

Decreasing Reliance on Fossil Fuels

The proposed project would incorporate elements from CALGreen, which would include water efficient landscaping, heat reflecting roof membranes, and roofing structures to support the installation of solar panels. The proposed project would comply with the City's reach code ordinance, which requires that water heaters, home heating and clothes drying are all-electric. Natural gas for cooking, if installed, must also be pre-wired for conversion to electric at a future date. Increasing the number of electric appliances and mechanisms associated with the proposed project would decrease natural gas use, thereby reducing reliance on fossil fuels as well. Thus, would have decreasing reliance on gasoline fuel.

Increasing Reliance on Renewable Energy Sources

As previously discussed, the proposed project would include the installation of one Tier 2 EV charger in each home and one Tier 1 EV charger in each home. EV charging infrastructure would accelerate both the region's and the proposed project's adoption of EVs and allow the future transportation energy supply necessary for residents and visitors to utilize renewable energy sources. As such, the proposed project would facilitate a greater dependence on renewable energy sources for building and transportation energy demands. Therefore, the proposed project would be consistent with this criterion.

Overall

As discussed above, the proposed project's energy consumption would not result in the wasteful, inefficient, or unnecessary consumption of energy resources, consistent with the guidance derived from Appendix F of the CEQA Guidelines and the Appellate Court decision in *League to Save Lake Tahoe Mountain etc. v. County of Placer* (2022) 75 Cal.App.5th 63, 164-168. The construction-related and operation-related impacts related to electricity, natural gas, and fuel consumption would be less than significant. Therefore, the proposed project would not introduce new significant environmental impacts or substantially increase the severity of previously analyzed significant effects under any scenario. No additional analysis is required, and impacts would remain less than significant.

Level of Significance

Less than significant impact.

Mitigation Measures

None required.

8.2.2 - Energy Plan Consistency

Impact ENER-2:	**The proposed project would not conflict with or obstruct a State or local plan for renewable energy or energy efficiency.**

Impact Analysis

The proposed project would utilize electricity and natural gas from SVCE. According to SVCE, approximately 50 percent of its electricity is currently obtained from renewable energy sources.[19] Therefore, the proposed project's electricity provider meets the State's current objective of 33 percent renewable energy. The proposed project's electricity provider would also be required to meet the State's future objective of 60 percent of in-State electricity sales being generated from renewable energy sources by 2030.

The proposed buildings would also be compliant with Title 24 Standards and would adhere to the energy efficiency, water efficiency, and material conservation requirements, as well as the City's reach code for all-electric and electric-ready requirements, as previously discussed. Therefore, the proposed project would be consistent with all applicable energy policies and plans, and this impact would be less than significant.

Level of Significance

Less than significant impact.

Mitigation Measures

None required.

[19] Silicon Valley Clean Energy. 2024. Website: https://svcleanenergy.org/power-sources/. Accessed June 21, 2024.

Appendix A: Air Quality and Greenhouse Gas Emissions and Energy Supporting Information

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Air Quality, Greenhouse Gas Emissions, and Energy Supporting Information

Table of Contents

CalEEMod Input Assumptions 1

CalEEMod Construction and Operations Emissions Report 4

CalEEMod Supporting Calculations..... 76

HRA Emissions..... 77

AERMOD Emissions and Source Parameters.....122

AERMOD Source Figure 125

AERMOD WindRose Figure 138

AERMOD MEIR and MEIW Figure..... 76

AERMOD Report.....141

HARP Approach.....144

HARP Report 144

BAAQMD Screening Report 144

BAAQMD Raster and MEIR and MEIW 144

BAAQMD Raster at MEIR.....144

Energy Calculations 144

GHG Consistency Checklist (Delete if not needed) 144

Project Number:	**1966.0002**		
Official Project Name	**Masson Estates**	**Construction Start Date:**	6/2/2025
Address	**APN 503-46-005 (east of The Mountain Winery along Pierce Road)**		
City	**Saratoga**	**Working Days per Week:**	5
County	**Santa Clara**		
		Demolition?	No
CEC Electricity Demand Forecast Zone (EDFZ)	1	**Soil Import/Export?**	Yes
Electric Utility Provider:	PG&E		
		Operational Start Date/Year	
Air District	Bay Area AQMD	**Emergency Generator?**	No
Air Basin	San Francisco Bay Area	**All-Electric Project?**	No

< > June 2025

Su	Mo	Tu	We	Th	Fr	Sa
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	1	2	3	4	5
6	7	8	9			

1966.0002 Masson Estates

Land use	Subtype	Unit	Number or Size	Lot Acreage	Building SF	Landscaping (sq ft)	Special Landscaping (sqft)	Description
Residential	Single Family Housing	Dwelling Units	25	15.33	118,670.00	333,887	0	25 single family homes on 18.38 acres (per the PD). Building SF from site plan (total all homes). Assumed half of the lot sizes are landscape with irrigation.
Parking	Other Asphalt Surfaces	Acre	3.050	3.05				(Impervious - Footprint) in acres from Site Plan
Open Space of 54.86 acres not included in Modeling since it is undisturbed during construction and has no operations		Total		18.38	118,670	333,887	-	

Construction Starts 2025 lasts approx 1.5 years

Changes to Default

Construction — Construction Phases

Phase Name	Phase Type	Start Date	End Date	Acres <= 20 Days Per Week	Cal EEMod Default Work Days	Modeled Work Days	Override Default / Notes
Site Preparation	Site Preparation	6/2/2025	6/13/2025	5	10	10	
Grading	Grading	6/16/2025	7/25/2025	5	30	30	
Building Construction	Building Construction	7/28/2025	9/18/2026	5	300	300	
Paving	Paving	9/21/2026	10/16/2026	5	20	20	
Architectural Coating	Architectural Coating	10/19/2026	11/13/2026	5	20	20	
			on				

Changes to Default

Construction — Material Movement

Water Disturbed Area: Activate

Phase Type	Size Metric	times per day Import	times per day Export	
Site Preparation	tons	0	245	367 trees, 15 trees = 40 CY per FEMA, hardwoods = 4 CY per ton
Grading	CY	0	829	

Changes to Default

Construction — Trips and VMT (Edits only)

Construction Activity	Add'l One-Way Trips/Day	Trip Type	Trip Length	Vehicle Class
Paving	31	Vendor	default	HHDT

Default

Construction — Paved Area

Construction Activity	Paved Area Acres	% Asphalt	VOC Off-gassing Emisson Factor
Single Family Housing	default	default	default
Other Asphalt Surfaces	default	default	default

Default

Construction — Electricity

Construction Year	GHG Intensity Factor lb/MWhr CO2	CH4	N2O	Construction Electricity kWhr
2025	default	default	default	0
2026	default	default	default	0
2027	default	default	default	
2028	default	default	default	

Default

Operations — GHG Emission Factors

PG&E	GHG Intensity Factor CO2	CH4	N2O
Forecasted	CalEEMod	CalEEMod	CalEEMod
2019 Reported	default	default	default

TRUE

Changes to Default

Operations — Vehicle Data — Rates and Lengths

Land Use Subtype	Size	Units	Weekday Trip Rate (size/day)	Saturday Trip Rate (size/day)	Sunday Trip Rate (size/day)	Res H-W Trip Length (miles)	Res H-S Trip Length (miles)	Res H-O Trip Length (miles)	Non Res H-W Trip Length (miles)	Non Res W-O Trip Length (miles)	Non Res O-O Trip Length (miles)
Single Family Housing	25	Dwelling Units	default	default	default	default	default	default	default	default	default
Other Asphalt Surfaces	3.050	Acre	default	default	default	default	default	default	default	default	default

Operations — Vehicle Data — Purposes and Percentages

Land Use Subtype	Size	Size	Weekday Primary Trip %	Weekday Divert Trip %	Weekday Pass-by Trip %	Saturday Primary Trip %	Saturday Divert Trip %	Saturday Pass-by Trip %	Sunday Primary Trip %	Sunday Divert Trip %	Sunday Pass-by Trip %
Single Family Housing	25	Dwelling Units	default	default	default	default	default	default	default	default	default
Other Asphalt Surfaces	3.050	Acre	default	default	default	default	default	default	default	default	default

Default

Operations — Fleet Mix

Land Use Subtype	Season	HHDT	LDA	LDT1	LDT2	LHDT1	LHDT2	MCY	MDV	MH	MHDT	OBUS	SBUS	UBUS
Single Family Housing	A,S,W	default	default	default	default	default	default	default	default	default	default	default	default	default
Other Asphalt Surfaces	A,S,W	default	default	default	default	default	default	default	default	default	default	default	default	default

Changes to Default

Operations — Hearths

Fireplaces

Land Use Subtype	# Wood	# Gas	# Propane	# Electric	# Without	Hours/ Day	Days/ Yr	Wood mass/ yr
Zero Wood Mass	0	default	default	default	default	default	default	0

Woodstoves

Land Use Subtype	# Wood	# Gas	# Propane	# Electric	# Without	Hours/ Day	Days/ Yr	Wood mass/ yr
Zero This	0	0	0	0	0	0	0	0

Default

Operations — Consumer Products

Emission Factors (lb VOC/sqft/day)	
General Category	default
City Park/Golf Course, Pesticide/Fertilizers	default
Parking Degreaser	default

Default

Operations — Energy Use

Land Use Subtype	Electricity (kWhr/yr)	NG (kBTU/yr)
Single Family Housing	default	default
Other Asphalt Surfaces	default	default

Default

Operations — Water and Wastewater

Land Use Subtype	Indoor Use (gal/yr)	Outdoor Use (gal/yr)	% of Total WS by Process Septic	Aerobic	Lagoons	% of WW Solids by Process Comust	Cogen
Single Family Housing	default	default	default	default	default	default	default
Other Asphalt Surfaces	default	default	default	default	default	default	default

Default

Operations — Solid Waste

Land Use Subtype	Unit	Size	Generation Rate ton/yr/Unit	ton/yr	Landfill Gas Treatment No Cap%	Cap %	Recovery%
Single Family Housing	Dwelling Units	25	default	default	default	default	default
Other Asphalt Surfaces	Acre	3.050	default	default	default	default	default

Default

Operations — Emergency Generators and Fire Pumps

Equipment Type	Fuel	#	Hrs/day	Hrs/Yr	HP	Load	Description

Default

Generators and Fire Pumps Emission Factors

Equipment Type	TOG	ROG	NOx	CO	SO2	PM10e	PM2.5e	CO2	CH4	N2O

Masson Estates
Asphalt Paving Construction Trips Calculation

Paved area (sf)	132,858
Asphalt volume (cube feet) assume 6 inch pavement	66,429
Asphalt volume (cy)	2,460
Capacity per vendor truck (CY per truck)	16
Trips	**307.54**
Days in paving phase	**20**
One-way Vendor Trips per day	31

Concrete area (sf)	
Concrete volume (cube feet) assume 4 inch thick sidewalks	-
Concrete volume (cy)	-
Capacity per concrete mixer truck (CY per truck)	8
Trips	**-**
Days in paving phase	**20**
One-way Vendor Trips per day	-

Total Trips during Paving Phase	**31**

Masson Estates - con + ops Custom Report

Table of Contents

1. Basic Project Information

1.1. Basic Project Information

1.2. Land Use Types

1.3. User-Selected Emission Reduction Measures by Emissions Sector

2. Emissions Summary

2.1. Construction Emissions Compared Against Thresholds

2.2. Construction Emissions by Year, Unmitigated

2.4. Operations Emissions Compared Against Thresholds

2.5. Operations Emissions by Sector, Unmitigated

3. Construction Emissions Details

3.1. Site Preparation (2025) - Unmitigated

3.3. Grading (2025) - Unmitigated

3.5. Building Construction (2025) - Unmitigated

3.7. Building Construction (2026) - Unmitigated

3.9. Paving (2026) - Unmitigated

3.11. Architectural Coating (2026) - Unmitigated

4. Operations Emissions Details

4.1. Mobile Emissions by Land Use

4.1.1. Unmitigated

4.2. Energy

4.2.1. Electricity Emissions By Land Use - Unmitigated

4.2.3. Natural Gas Emissions By Land Use - Unmitigated

4.3. Area Emissions by Source

4.3.1. Unmitigated

4.4. Water Emissions by Land Use

4.4.1. Unmitigated

4.5. Waste Emissions by Land Use

4.5.1. Unmitigated

4.6. Refrigerant Emissions by Land Use

4.6.1. Unmitigated

4.7. Offroad Emissions By Equipment Type

4.7.1. Unmitigated

4.8. Stationary Emissions By Equipment Type

4.8.1. Unmitigated

4.9. User Defined Emissions By Equipment Type

4.9.1. Unmitigated

4.10. Soil Carbon Accumulation By Vegetation Type

4.10.1. Soil Carbon Accumulation By Vegetation Type - Unmitigated

4.10.2. Above and Belowground Carbon Accumulation by Land Use Type - Unmitigated

4.10.3. Avoided and Sequestered Emissions by Species - Unmitigated

5. Activity Data

5.1. Construction Schedule

5.2. Off-Road Equipment

5.2.1. Unmitigated

5.3. Construction Vehicles

5.3.1. Unmitigated

5.4. Vehicles

5.4.1. Construction Vehicle Control Strategies

5.5. Architectural Coatings

5.6. Dust Mitigation

5.6.1. Construction Earthmoving Activities

5.6.2. Construction Earthmoving Control Strategies

5.7. Construction Paving

5.8. Construction Electricity Consumption and Emissions Factors

5.9. Operational Mobile Sources

5.9.1. Unmitigated

5.10. Operational Area Sources

5.10.1. Hearths

5.10.1.1. Unmitigated

5.10.2. Architectural Coatings

5.10.3. Landscape Equipment

5.11. Operational Energy Consumption

5.11.1. Unmitigated

5.12. Operational Water and Wastewater Consumption

5.12.1. Unmitigated

5.13. Operational Waste Generation

5.13.1. Unmitigated

5.14. Operational Refrigeration and Air Conditioning Equipment

5.14.1. Unmitigated

5.15. Operational Off-Road Equipment

5.15.1. Unmitigated

5.16. Stationary Sources

5.16.1. Emergency Generators and Fire Pumps

5.16.2. Process Boilers

5.17. User Defined

5.18. Vegetation

5.18.1. Land Use Change

5.18.1.1. Unmitigated

5.18.1. Biomass Cover Type

5.18.1.1. Unmitigated

5.18.2. Sequestration

5.18.2.1. Unmitigated

1. Basic Project Information

1.1. Basic Project Information

Data Field	Value
Project Name	Masson Estates - con + ops
Construction Start Date	6/2/2025
Operational Year	2026
Lead Agency	—
Land Use Scale	Project/site
Analysis Level for Defaults	County
Windspeed (m/s)	2.70
Precipitation (days)	25.6
Location	14831 Pierce Rd, Saratoga, CA 95070, USA
County	Santa Clara
City	Unincorporated
Air District	Bay Area AQMD
Air Basin	San Francisco Bay Area
TAZ	1788
EDFZ	1
Electric Utility	Pacific Gas & Electric Company
Gas Utility	Pacific Gas & Electric
App Version	2022.1.1.22

1.2. Land Use Types

Land Use Subtype	Size	Unit	Lot Acreage	Building Area (sq ft)	Landscape Area (sq ft)	Special Landscape Area (sq ft)	Population	Description

Single Family Housing	25.0	Dwelling Unit	15.3	118,670	333,887	0.00	75.0	25 single family homes
Other Asphalt Surfaces	3.05	Acre	3.05	0.00	0.00	0.00	—	Impervious surfaces per the site plan.

1.3. User-Selected Emission Reduction Measures by Emissions Sector

No measures selected

2. Emissions Summary

2.1. Construction Emissions Compared Against Thresholds

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Un/Mit.	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	4.02	3.37	31.9	31.0	0.06	1.37	7.86	9.23	1.26	3.99	5.25	—	7,038	7,038	0.29	0.14	2.46	7,077
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	1.38	85.5	10.6	13.4	0.02	0.43	0.34	0.67	0.40	0.09	0.42	—	2,541	2,541	0.11	0.14	0.06	2,554
Average Daily (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	0.86	5.31	6.59	7.46	0.01	0.27	0.56	0.83	0.25	0.24	0.49	—	1,512	1,512	0.06	0.02	0.16	1,520
Annual (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	0.16	0.97	1.20	1.36	< 0.005	0.05	0.10	0.15	0.05	0.04	0.09	—	250	250	0.01	< 0.005	0.03	252

2.2. Construction Emissions by Year, Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Year	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily - Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2025	4.02	3.37	31.9	31.0	0.06	1.37	7.86	9.23	1.26	3.99	5.25	—	7,038	7,038	0.29	0.10	1.26	7,077
2026	1.32	1.23	9.96	13.4	0.02	0.38	0.34	0.67	0.35	0.09	0.40	—	2,544	2,544	0.11	0.14	2.46	2,557
Daily - Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2025	1.38	1.16	10.6	13.4	0.02	0.43	0.09	0.53	0.40	0.02	0.42	—	2,541	2,541	0.10	0.03	0.01	2,554
2026	1.31	85.5	9.97	13.3	0.02	0.38	0.34	0.67	0.35	0.09	0.40	—	2,538	2,538	0.11	0.14	0.06	2,551
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2025	0.86	0.72	6.59	7.36	0.01	0.27	0.56	0.83	0.25	0.24	0.49	—	1,512	1,512	0.06	0.02	0.12	1,520
2026	0.74	5.31	5.59	7.46	0.01	0.21	0.07	0.28	0.20	0.02	0.21	—	1,439	1,439	0.06	0.02	0.16	1,448
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2025	0.16	0.13	1.20	1.34	< 0.005	0.05	0.10	0.15	0.05	0.04	0.09	—	250	250	0.01	< 0.005	0.02	252
2026	0.13	0.97	1.02	1.36	< 0.005	0.04	0.01	0.05	0.04	< 0.005	0.04	—	238	238	0.01	< 0.005	0.03	240

2.4. Operations Emissions Compared Against Thresholds

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Un/Mit.	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	1.04	3.96	1.01	8.74	0.02	0.04	1.68	1.72	0.04	0.42	0.47	12.3	2,387	2,399	1.35	0.07	7.32	2,463
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	0.87	3.80	1.11	6.74	0.02	0.04	1.68	1.72	0.04	0.42	0.47	12.3	2,274	2,287	1.36	0.08	1.02	2,346

Average Daily (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	0.90	3.83	0.97	7.11	0.02	0.03	1.61	1.65	0.03	0.41	0.44	12.3	2,150	2,163	1.35	0.08	3.58	2,223
Annual (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	0.16	0.70	0.18	1.30	< 0.005	0.01	0.29	0.30	0.01	0.07	0.08	2.04	356	358	0.22	0.01	0.59	368

2.5. Operations Emissions by Sector, Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Sector	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	0.86	0.79	0.63	7.17	0.02	0.01	1.68	1.69	0.01	0.42	0.44	—	1,806	1,806	0.07	0.07	6.47	1,834
Area	0.14	3.15	0.10	1.45	< 0.005	0.01	—	0.01	0.01	—	0.01	0.00	109	109	< 0.005	< 0.005	—	109
Energy	0.03	0.02	0.29	0.12	< 0.005	0.02	—	0.02	0.02	—	0.02	—	457	457	0.05	< 0.005	—	459
Water	—	—	—	—	—	—	—	—	—	—	—	1.74	15.3	17.0	0.18	< 0.005	—	22.9
Waste	—	—	—	—	—	—	—	—	—	—	—	10.6	0.00	10.6	1.06	0.00	—	36.9
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.85	0.85
Total	1.04	3.96	1.01	8.74	0.02	0.04	1.68	1.72	0.04	0.42	0.47	12.3	2,387	2,399	1.35	0.07	7.32	2,463
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	0.83	0.76	0.73	6.59	0.02	0.01	1.68	1.69	0.01	0.42	0.44	—	1,697	1,697	0.08	0.07	0.17	1,721
Area	0.01	3.02	0.08	0.04	< 0.005	0.01	—	0.01	0.01	—	0.01	0.00	105	105	< 0.005	< 0.005	—	105
Energy	0.03	0.02	0.29	0.12	< 0.005	0.02	—	0.02	0.02	—	0.02	—	457	457	0.05	< 0.005	—	459
Water	—	—	—	—	—	—	—	—	—	—	—	1.74	15.3	17.0	0.18	< 0.005	—	22.9
Waste	—	—	—	—	—	—	—	—	—	—	—	10.6	0.00	10.6	1.06	0.00	—	36.9
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.85	0.85

Total	0.87	3.80	1.11	6.74	0.02	0.04	1.68	1.72	0.04	0.42	0.47	12.3	2,274	2,287	1.36	0.08	1.02	2,346
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	0.80	0.73	0.67	6.29	0.02	0.01	1.61	1.62	0.01	0.41	0.42	—	1,674	1,674	0.07	0.07	2.73	1,699
Area	0.07	3.08	0.01	0.70	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	0.00	4.47	4.47	< 0.005	< 0.005	—	4.48
Energy	0.03	0.02	0.29	0.12	< 0.005	0.02	—	0.02	0.02	—	0.02	—	457	457	0.05	< 0.005	—	459
Water	—	—	—	—	—	—	—	—	—	—	—	1.74	15.3	17.0	0.18	< 0.005	—	22.9
Waste	—	—	—	—	—	—	—	—	—	—	—	10.6	0.00	10.6	1.06	0.00	—	36.9
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.85	0.85
Total	0.90	3.83	0.97	7.11	0.02	0.03	1.61	1.65	0.03	0.41	0.44	12.3	2,150	2,163	1.35	0.08	3.58	2,223
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	0.15	0.13	0.12	1.15	< 0.005	< 0.005	0.29	0.30	< 0.005	0.07	0.08	—	277	277	0.01	0.01	0.45	281
Area	0.01	0.56	< 0.005	0.13	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	0.00	0.74	0.74	< 0.005	< 0.005	—	0.74
Energy	0.01	< 0.005	0.05	0.02	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	75.6	75.6	0.01	< 0.005	—	75.9
Water	—	—	—	—	—	—	—	—	—	—	—	0.29	2.53	2.82	0.03	< 0.005	—	3.79
Waste	—	—	—	—	—	—	—	—	—	—	—	1.75	0.00	1.75	0.17	0.00	—	6.11
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.14	0.14
Total	0.16	0.70	0.18	1.30	< 0.005	0.01	0.29	0.30	0.01	0.07	0.08	2.04	356	358	0.22	0.01	0.59	368

3. Construction Emissions Details

3.1. Site Preparation (2025) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Road Equipment	3.94	3.31	31.6	30.2	0.05	1.37	—	1.37	1.26	—	1.26	—	5,295	5,295	0.21	0.04	—	5,314
Dust From Material Movement	—	—	—	—	—	—	7.67	7.67	—	3.94	3.94	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.11	0.09	0.87	0.83	< 0.005	0.04	—	0.04	0.03	—	0.03	—	145	145	0.01	< 0.005	—	146
Dust From Material Movement	—	—	—	—	—	—	0.21	0.21	—	0.11	0.11	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.02	0.02	0.16	0.15	< 0.005	0.01	—	0.01	0.01	—	0.01	—	24.0	24.0	< 0.005	< 0.005	—	24.1
Dust From Material Movement	—	—	—	—	—	—	0.04	0.04	—	0.02	0.02	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.06	0.06	0.04	0.72	0.00	0.00	0.14	0.14	0.00	0.03	0.03	—	150	150	< 0.005	0.01	0.59	152

Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.02	< 0.005	0.22	0.11	< 0.005	< 0.005	0.05	0.05	< 0.005	0.01	0.01	—	179	179	0.02	0.03	0.39	188
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.02	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	3.85	3.85	< 0.005	< 0.005	0.01	3.90
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	< 0.005	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	4.91	4.91	< 0.005	< 0.005	< 0.005	5.15
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.64	0.64	< 0.005	< 0.005	< 0.005	0.65
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	0.81	0.81	< 0.005	< 0.005	< 0.005	0.85

3.3. Grading (2025) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	3.80	3.20	29.7	28.3	0.06	1.23	—	1.23	1.14	—	1.14	—	6,599	6,599	0.27	0.05	—	6,622
Dust From Material Movement	—	—	—	—	—	—	3.59	3.59	—	1.43	1.43	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.31	0.26	2.44	2.33	0.01	0.10	—	0.10	0.09	—	0.09	—	542	542	0.02	< 0.005	—	544
Dust From Material Movement	—	—	—	—	—	—	0.30	0.30	—	0.12	0.12	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.06	0.05	0.45	0.42	< 0.005	0.02	—	0.02	0.02	—	0.02	—	89.8	89.8	< 0.005	< 0.005	—	90.1
Dust From Material Movement	—	—	—	—	—	—	0.05	0.05	—	0.02	0.02	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.07	0.07	0.05	0.82	0.00	0.00	0.17	0.17	0.00	0.04	0.04	—	171	171	< 0.005	0.01	0.68	174
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.03	0.01	0.33	0.16	< 0.005	< 0.005	0.07	0.07	< 0.005	0.02	0.02	—	267	267	0.02	0.04	0.58	281
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Worker	0.01	0.01	< 0.005	0.06	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	13.2	13.2	< 0.005	< 0.005	0.02	13.4
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	< 0.005	< 0.005	0.03	0.01	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	22.0	22.0	< 0.005	< 0.005	0.02	23.1
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.01	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	2.18	2.18	< 0.005	< 0.005	< 0.005	2.22
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	< 0.005	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	3.64	3.64	< 0.005	< 0.005	< 0.005	3.82

3.5. Building Construction (2025) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.35	1.13	10.4	13.0	0.02	0.43	—	0.43	0.40	—	0.40	—	2,398	2,398	0.10	0.02	—	2,406
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.35	1.13	10.4	13.0	0.02	0.43	—	0.43	0.40	—	0.40	—	2,398	2,398	0.10	0.02	—	2,406
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.41	0.35	3.21	4.01	0.01	0.13	—	0.13	0.12	—	0.12	—	737	737	0.03	0.01	—	739

Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.08	0.06	0.59	0.73	< 0.005	0.02	—	0.02	0.02	—	0.02	—	122	122	< 0.005	< 0.005	—	122
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.03	0.03	0.02	0.37	0.00	0.00	0.07	0.07	0.00	0.02	0.02	—	77.1	77.1	< 0.005	< 0.005	0.30	78.3
Vendor	0.01	< 0.005	0.09	0.04	< 0.005	< 0.005	0.02	0.02	< 0.005	0.01	0.01	—	72.1	72.1	< 0.005	0.01	0.19	75.5
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.03	0.03	0.03	0.32	0.00	0.00	0.07	0.07	0.00	0.02	0.02	—	71.4	71.4	< 0.005	< 0.005	0.01	72.4
Vendor	0.01	< 0.005	0.10	0.05	< 0.005	< 0.005	0.02	0.02	< 0.005	0.01	0.01	—	72.1	72.1	< 0.005	0.01	< 0.005	75.3
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.01	0.10	0.00	0.00	0.02	0.02	0.00	0.01	0.01	—	22.2	22.2	< 0.005	< 0.005	0.04	22.5
Vendor	< 0.005	< 0.005	0.03	0.01	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	22.2	22.2	< 0.005	< 0.005	0.03	23.2
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.02	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	3.67	3.67	< 0.005	< 0.005	0.01	3.73
Vendor	< 0.005	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	3.67	3.67	< 0.005	< 0.005	< 0.005	3.83
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.7. Building Construction (2026) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.28	1.07	9.85	13.0	0.02	0.38	—	0.38	0.35	—	0.35	—	2,397	2,397	0.10	0.02	—	2,405
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.28	1.07	9.85	13.0	0.02	0.38	—	0.38	0.35	—	0.35	—	2,397	2,397	0.10	0.02	—	2,405
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.65	0.55	5.03	6.62	0.01	0.19	—	0.19	0.18	—	0.18	—	1,224	1,224	0.05	0.01	—	1,229
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.12	0.10	0.92	1.21	< 0.005	0.04	—	0.04	0.03	—	0.03	—	203	203	0.01	< 0.005	—	203
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.03	0.03	0.02	0.34	0.00	0.00	0.07	0.07	0.00	0.02	0.02	—	75.7	75.7	< 0.005	< 0.005	0.28	76.9
Vendor	0.01	< 0.005	0.09	0.04	< 0.005	< 0.005	0.02	0.02	< 0.005	0.01	0.01	—	70.9	70.9	< 0.005	0.01	0.17	74.2
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.03	0.03	0.02	0.29	0.00	0.00	0.07	0.07	0.00	0.02	0.02	—	70.1	70.1	< 0.005	< 0.005	0.01	71.1
Vendor	0.01	< 0.005	0.09	0.04	< 0.005	< 0.005	0.02	0.02	< 0.005	0.01	0.01	—	70.9	70.9	< 0.005	0.01	< 0.005	74.1
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.01	0.15	0.00	0.00	0.04	0.04	0.00	0.01	0.01	—	36.2	36.2	< 0.005	< 0.005	0.06	36.7
Vendor	< 0.005	< 0.005	0.05	0.02	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	36.2	36.2	< 0.005	0.01	0.04	37.9
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.03	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	5.99	5.99	< 0.005	< 0.005	0.01	6.08
Vendor	< 0.005	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	5.99	5.99	< 0.005	< 0.005	0.01	6.27
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.9. Paving (2026) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Road Equipment	0.91	0.76	7.12	9.94	0.01	0.32	—	0.32	0.29	—	0.29	—	1,511	1,511	0.06	0.01	—	1,516
Paving	—	0.40	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.91	0.76	7.12	9.94	0.01	0.32	—	0.32	0.29	—	0.29	—	1,511	1,511	0.06	0.01	—	1,516
Paving	—	0.40	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.05	0.04	0.39	0.54	< 0.005	0.02	—	0.02	0.02	—	0.02	—	82.8	82.8	< 0.005	< 0.005	—	83.1
Paving	—	0.02	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.01	0.07	0.10	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	13.7	13.7	< 0.005	< 0.005	—	13.8
Paving	—	< 0.005	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.05	0.05	0.03	0.57	0.00	0.00	0.12	0.12	0.00	0.03	0.03	—	126	126	< 0.005	< 0.005	0.46	128
Vendor	0.08	0.03	1.02	0.50	0.01	0.01	0.22	0.23	0.01	0.06	0.07	—	822	822	0.05	0.12	2.00	861

Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.05	0.04	0.04	0.49	0.00	0.00	0.12	0.12	0.00	0.03	0.03	—	117	117	< 0.005	0.01	0.01	118
Vendor	0.08	0.02	1.08	0.51	0.01	0.01	0.22	0.23	0.01	0.06	0.07	—	822	822	0.05	0.12	0.05	859
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.03	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	6.47	6.47	< 0.005	< 0.005	0.01	6.57
Vendor	< 0.005	< 0.005	0.06	0.03	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	45.0	45.0	< 0.005	0.01	0.05	47.1
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	1.07	1.07	< 0.005	< 0.005	< 0.005	1.09
Vendor	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	7.46	7.46	< 0.005	< 0.005	0.01	7.80
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.11. Architectural Coating (2026) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.15	0.12	0.86	1.13	< 0.005	0.02	—	0.02	0.02	—	0.02	—	134	134	0.01	< 0.005	—	134

Architectural	—	85.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.01	0.05	0.06	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	7.32	7.32	< 0.005	< 0.005	—	7.34
Architectural Coatings	—	4.68	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	1.21	1.21	< 0.005	< 0.005	—	1.22
Architectural Coatings	—	0.85	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	< 0.005	0.06	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	14.0	14.0	< 0.005	< 0.005	< 0.005	14.2
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.78	0.78	< 0.005	< 0.005	< 0.005	0.79
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.13	0.13	< 0.005	< 0.005	< 0.005	0.13
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

4. Operations Emissions Details

4.1. Mobile Emissions by Land Use

4.1.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	0.86	0.79	0.63	7.17	0.02	0.01	1.68	1.69	0.01	0.42	0.44	—	1,806	1,806	0.07	0.07	6.47	1,834
Other Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Total	0.86	0.79	0.63	7.17	0.02	0.01	1.68	1.69	0.01	0.42	0.44	—	1,806	1,806	0.07	0.07	6.47	1,834
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	0.83	0.76	0.73	6.59	0.02	0.01	1.68	1.69	0.01	0.42	0.44	—	1,697	1,697	0.08	0.07	0.17	1,721

Other Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Total	0.83	0.76	0.73	6.59	0.02	0.01	1.68	1.69	0.01	0.42	0.44	—	1,697	1,697	0.08	0.07	0.17	1,721
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	0.15	0.13	0.12	1.15	< 0.005	< 0.005	0.29	0.30	< 0.005	0.07	0.08	—	277	277	0.01	0.01	0.45	281
Other Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Total	0.15	0.13	0.12	1.15	< 0.005	< 0.005	0.29	0.30	< 0.005	0.07	0.08	—	277	277	0.01	0.01	0.45	281

4.2. Energy

4.2.1. Electricity Emissions By Land Use - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	—	86.4	86.4	0.01	< 0.005	—	87.3
Other Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	—	86.4	86.4	0.01	< 0.005	—	87.3
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	—	86.4	86.4	0.01	< 0.005	—	87.3
Other Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	—	86.4	86.4	0.01	< 0.005	—	87.3
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	—	14.3	14.3	< 0.005	< 0.005	—	14.4
Other Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	—	14.3	14.3	< 0.005	< 0.005	—	14.4

4.2.3. Natural Gas Emissions By Land Use - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	0.03	0.02	0.29	0.12	< 0.005	0.02	—	0.02	0.02	—	0.02	—	370	370	0.03	< 0.005	—	371
Other Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Total	0.03	0.02	0.29	0.12	< 0.005	0.02	—	0.02	0.02	—	0.02	—	370	370	0.03	< 0.005	—	371
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Single Family Housing	0.03	0.02	0.29	0.12	< 0.005	0.02	—	0.02	0.02	—	0.02	—	370	370	0.03	< 0.005	—	371
Other Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Total	0.03	0.02	0.29	0.12	< 0.005	0.02	—	0.02	0.02	—	0.02	—	370	370	0.03	< 0.005	—	371
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	0.01	< 0.005	0.05	0.02	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	61.3	61.3	0.01	< 0.005	—	61.5
Other Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Total	0.01	< 0.005	0.05	0.02	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	61.3	61.3	0.01	< 0.005	—	61.5

4.3. Area Emissions by Source

4.3.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Source	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Hearths	0.01	< 0.005	0.08	0.04	< 0.005	0.01	—	0.01	0.01	—	0.01	0.00	105	105	< 0.005	< 0.005	—	105
Consumer Products	—	2.55	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	—	0.47	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Landscape Equipme	0.13	0.13	0.01	1.42	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	3.79	3.79	< 0.005	< 0.005	—	3.81
Total	0.14	3.15	0.10	1.45	< 0.005	0.01	—	0.01	0.01	—	0.01	0.00	109	109	< 0.005	< 0.005	—	109
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Hearths	0.01	< 0.005	0.08	0.04	< 0.005	0.01	—	0.01	0.01	—	0.01	0.00	105	105	< 0.005	< 0.005	—	105
Consumer Products	—	2.55	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	—	0.47	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	0.01	3.02	0.08	0.04	< 0.005	0.01	—	0.01	0.01	—	0.01	0.00	105	105	< 0.005	< 0.005	—	105
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Hearths	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	0.00	0.43	0.43	< 0.005	< 0.005	—	0.43
Consumer Products	—	0.47	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	—	0.09	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Landscape Equipment	0.01	0.01	< 0.005	0.13	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	0.31	0.31	< 0.005	< 0.005	—	0.31
Total	0.01	0.56	< 0.005	0.13	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	0.00	0.74	0.74	< 0.005	< 0.005	—	0.74

4.4. Water Emissions by Land Use

4.4.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	1.74	15.3	17.0	0.18	< 0.005	—	22.9
Other Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	1.74	15.3	17.0	0.18	< 0.005	—	22.9
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	1.74	15.3	17.0	0.18	< 0.005	—	22.9
Other Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	1.74	15.3	17.0	0.18	< 0.005	—	22.9
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	0.29	2.53	2.82	0.03	< 0.005	—	3.79
Other Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	0.29	2.53	2.82	0.03	< 0.005	—	3.79

4.5. Waste Emissions by Land Use

4.5.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	10.6	0.00	10.6	1.06	0.00	—	36.9
Other Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	10.6	0.00	10.6	1.06	0.00	—	36.9
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	10.6	0.00	10.6	1.06	0.00	—	36.9
Other Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	10.6	0.00	10.6	1.06	0.00	—	36.9
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	1.75	0.00	1.75	0.17	0.00	—	6.11
Other Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	1.75	0.00	1.75	0.17	0.00	—	6.11

4.6. Refrigerant Emissions by Land Use

4.6.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.85	0.85
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.85	0.85
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.85	0.85
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.85	0.85
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.14	0.14
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.14	0.14

4.7. Offroad Emissions By Equipment Type

4.7.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.8. Stationary Emissions By Equipment Type

4.8.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.9. User Defined Emissions By Equipment Type

4.9.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10. Soil Carbon Accumulation By Vegetation Type

4.10.1. Soil Carbon Accumulation By Vegetation Type - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Vegetation	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.2. Above and Belowground Carbon Accumulation by Land Use Type - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.3. Avoided and Sequestered Emissions by Species - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Species	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

5. Activity Data

5.1. Construction Schedule

Phase Name	Phase Type	Start Date	End Date	Days Per Week	Work Days per Phase	Phase Description

Site Preparation	Site Preparation	6/2/2025	6/13/2025	5.00	10.0	—
Grading	Grading	6/16/2025	7/25/2025	5.00	30.0	—
Building Construction	Building Construction	7/28/2025	9/18/2026	5.00	300	—
Paving	Paving	9/21/2026	10/16/2026	5.00	20.0	—
Architectural Coating	Architectural Coating	10/19/2026	11/13/2026	5.00	20.0	—

5.2. Off-Road Equipment

5.2.1. Unmitigated

Phase Name	Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor
Site Preparation	Rubber Tired Dozers	Diesel	Average	3.00	8.00	367	0.40
Site Preparation	Tractors/Loaders/Backhoes	Diesel	Average	4.00	8.00	84.0	0.37
Grading	Rubber Tired Dozers	Diesel	Average	1.00	8.00	367	0.40
Grading	Tractors/Loaders/Backhoes	Diesel	Average	2.00	8.00	84.0	0.37
Grading	Excavators	Diesel	Average	2.00	8.00	36.0	0.38
Grading	Graders	Diesel	Average	1.00	8.00	148	0.41
Grading	Scrapers	Diesel	Average	2.00	8.00	423	0.48
Building Construction	Tractors/Loaders/Backhoes	Diesel	Average	3.00	7.00	84.0	0.37
Building Construction	Cranes	Diesel	Average	1.00	7.00	367	0.29
Building Construction	Forklifts	Diesel	Average	3.00	8.00	82.0	0.20
Building Construction	Generator Sets	Diesel	Average	1.00	8.00	14.0	0.74
Building Construction	Welders	Diesel	Average	1.00	8.00	46.0	0.45
Paving	Pavers	Diesel	Average	2.00	8.00	81.0	0.42
Paving	Paving Equipment	Diesel	Average	2.00	8.00	89.0	0.36
Paving	Rollers	Diesel	Average	2.00	8.00	36.0	0.38

Architectural Coating	Air Compressors	Diesel	Average	1.00	6.00	37.0	0.48

5.3. Construction Vehicles

5.3.1. Unmitigated

Phase Name	Trip Type	One-Way Trips per Day	Miles per Trip	Vehicle Mix
Site Preparation	—	—	—	—
Site Preparation	Worker	17.5	11.7	LDA,LDT1,LDT2
Site Preparation	Vendor	—	8.40	HHDT,MHDT
Site Preparation	Hauling	2.50	20.0	HHDT
Site Preparation	Onsite truck	—	—	HHDT
Grading	—	—	—	—
Grading	Worker	20.0	11.7	LDA,LDT1,LDT2
Grading	Vendor	—	8.40	HHDT,MHDT
Grading	Hauling	3.73	20.0	HHDT
Grading	Onsite truck	—	—	HHDT
Building Construction	—	—	—	—
Building Construction	Worker	9.00	11.7	LDA,LDT1,LDT2
Building Construction	Vendor	2.67	8.40	HHDT,MHDT
Building Construction	Hauling	0.00	20.0	HHDT
Building Construction	Onsite truck	—	—	HHDT
Paving	—	—	—	—
Paving	Worker	15.0	11.7	LDA,LDT1,LDT2
Paving	Vendor	31.0	8.40	HHDT,MHDT
Paving	Hauling	0.00	20.0	HHDT
Paving	Onsite truck	—	—	HHDT
Architectural Coating	—	—	—	—

Architectural Coating	Worker	1.80	11.7	LDA,LDT1,LDT2
Architectural Coating	Vendor	—	8.40	HHDT,MHDT
Architectural Coating	Hauling	0.00	20.0	HHDT
Architectural Coating	Onsite truck	—	—	HHDT

5.4. Vehicles

5.4.1. Construction Vehicle Control Strategies

Control Strategies Applied	PM10 Reduction	PM2.5 Reduction
Water unpaved roads twice daily	55%	55%
Limit vehicle speeds on unpaved roads to 25 mph	44%	44%

5.5. Architectural Coatings

Phase Name	Residential Interior Area Coated (sq ft)	Residential Exterior Area Coated (sq ft)	Non-Residential Interior Area Coated (sq ft)	Non-Residential Exterior Area Coated (sq ft)	Parking Area Coated (sq ft)
Architectural Coating	240,307	80,102	0.00	0.00	7,971

5.6. Dust Mitigation

5.6.1. Construction Earthmoving Activities

Phase Name	Material Imported (Cubic Yards)	Material Exported (Cubic Yards)	Acres Graded (acres)	Material Demolished (sq. ft.)	Acres Paved (acres)
Site Preparation	0.00	245	15.0	0.00	—
Grading	0.00	892	90.0	0.00	—
Paving	0.00	0.00	0.00	0.00	3.33

5.6.2. Construction Earthmoving Control Strategies

Control Strategies Applied	Frequency (per day)	PM10 Reduction	PM2.5 Reduction

Water Exposed Area	2	61%	61%

5.7. Construction Paving

Land Use	Area Paved (acres)	% Asphalt
Single Family Housing	0.28	0%
Other Asphalt Surfaces	3.05	100%

5.8. Construction Electricity Consumption and Emissions Factors

kWh per Year and Emission Factor (lb/MWh)

Year	kWh per Year	CO2	CH4	N2O
2025	0.00	204	0.03	< 0.005
2026	0.00	204	0.03	< 0.005

5.9. Operational Mobile Sources

5.9.1. Unmitigated

Land Use Type	Trips/Weekday	Trips/Saturday	Trips/Sunday	Trips/Year	VMT/Weekday	VMT/Saturday	VMT/Sunday	VMT/Year
Single Family Housing	236	238	214	85,110	2,352	2,377	2,130	848,120
Other Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

5.10. Operational Area Sources

5.10.1. Hearths

5.10.1.1. Unmitigated

Hearth Type	Unmitigated (number)
Single Family Housing	—
Wood Fireplaces	0
Gas Fireplaces	5
Propane Fireplaces	0
Electric Fireplaces	0
No Fireplaces	20
Conventional Wood Stoves	0
Catalytic Wood Stoves	0
Non-Catalytic Wood Stoves	0
Pellet Wood Stoves	0

5.10.2. Architectural Coatings

Residential Interior Area Coated (sq ft)	Residential Exterior Area Coated (sq ft)	Non-Residential Interior Area Coated (sq ft)	Non-Residential Exterior Area Coated (sq ft)	Parking Area Coated (sq ft)
240306.75	80,102	0.00	0.00	7,971

5.10.3. Landscape Equipment

Season	Unit	Value
Snow Days	day/yr	0.00
Summer Days	day/yr	180

5.11. Operational Energy Consumption

5.11.1. Unmitigated

Electricity (kWh/yr) and CO2 and CH4 and N2O and Natural Gas (kBTU/yr)

Land Use	Electricity (kWh/yr)	CO2	CH4	N2O	Natural Gas (kBTU/yr)

Single Family Housing	154,621	204	0.0330	0.0040	1,155,548
Other Asphalt Surfaces	0.00	204	0.0330	0.0040	0.00

5.12. Operational Water and Wastewater Consumption

5.12.1. Unmitigated

Land Use	Indoor Water (gal/year)	Outdoor Water (gal/year)
Single Family Housing	906,660	4,362,594
Other Asphalt Surfaces	0.00	0.00

5.13. Operational Waste Generation

5.13.1. Unmitigated

Land Use	Waste (ton/year)	Cogeneration (kWh/year)
Single Family Housing	19.6	—
Other Asphalt Surfaces	0.00	—

5.14. Operational Refrigeration and Air Conditioning Equipment

5.14.1. Unmitigated

Land Use Type	Equipment Type	Refrigerant	GWP	Quantity (kg)	Operations Leak Rate	Service Leak Rate	Times Serviced
Single Family Housing	Average room A/C & Other residential A/C and heat pumps	R-410A	2,088	< 0.005	2.50	2.50	10.0
Single Family Housing	Household refrigerators and/or freezers	R-134a	1,430	0.12	0.60	0.00	1.00

5.15. Operational Off-Road Equipment

5.15.1. Unmitigated

Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor

5.16. Stationary Sources

5.16.1. Emergency Generators and Fire Pumps

Equipment Type	Fuel Type	Number per Day	Hours per Day	Hours per Year	Horsepower	Load Factor

5.16.2. Process Boilers

Equipment Type	Fuel Type	Number	Boiler Rating (MMBtu/hr)	Daily Heat Input (MMBtu/day)	Annual Heat Input (MMBtu/yr)

5.17. User Defined

Equipment Type	Fuel Type

5.18. Vegetation

5.18.1. Land Use Change

5.18.1.1. Unmitigated

Vegetation Land Use Type	Vegetation Soil Type	Initial Acres	Final Acres

5.18.1. Biomass Cover Type

5.18.1.1. Unmitigated

Biomass Cover Type	Initial Acres	Final Acres

5.18.2. Sequestration

5.18.2.1. Unmitigated

Tree Type	Number	Electricity Saved (kWh/year)	Natural Gas Saved (btu/year)

Control Pathway

Dispersion Options

Titles

Masson Estates - Construction HRA

Dispersion Options

☑ Regulatory Default ☐ Non-Default Options

Dispersion Coefficient

Rural

Output Type

☑ Concentration
☐ Total Deposition (Dry & Wet)
☐ Dry Deposition
☐ Wet Deposition

Plume Depletion

☐ Dry Removal
☐ Wet Removal

Output Warnings

☐ No Output Warnings
☐ Non-fatal Warnings for Non-sequential Met Data

Pollutant / Averaging Time / Terrain Options

Pollutant Type

PM10

Averaging Time Options

Hours ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 6 ☐ 8 ☐ 12 ☐ 24

☐ Month ☑ Period ☐ Annual

Exponential Decay

Option not available

Terrain Height Options

☐ Flat ☑ Elevated

SO: Meters
RE: Meters
TG: Meters

Flagpole Receptors

☐ Yes ☑ No

Default Height = 0.00 m

Control Pathway

Optional Files

Re-Start File	Init File	Multi-Year Analyses	Event Input File	Error Listing File
☐	☐	☐	☐	■

Detailed Error Listing File

Filename: ConHRA.err

Source Pathway - Source Inputs

AERMOD

Source Pathway - Source Inputs

Polygon Area Sources

Source Type: AREA POLY

Source: SITE_DPM (SIte Construction)

Base Elevation (Optional)	Release Height [m]	Emission Rate [g/ (s-m^2)]	Initial Vertical Dim. [m]	Number of Vertices (or sides)	X Coordinate for Vertices [m]	Y Coordinate for Vertices [m]
239.59	5.00	9.96E-8	1.40	19	583509.87	4124048.83
		9.96E-8			583506.53	4124046.61
		9.96E-8			583631.27	4124090.04
		9.96E-8			583630.43	4124049.08
		9.96E-8			583648.75	4123995.49
		9.96E-8			583663.71	4123938.34
		9.96E-8			583730.68	4123975.80
		9.96E-8			583732.93	4123979.86
		9.96E-8			583732.02	4123996.10
		9.96E-8			583738.90	4124013.23
		9.96E-8			583752.66	4124033.24
		9.96E-8			583759.62	4124068.13
		9.96E-8			583777.25	4124076.86
		9.96E-8			583791.43	4124064.70
		9.96E-8			583804.03	4124059.45
		9.96E-8			583819.11	4124057.89
		9.96E-8			583850.25	4124254.93
		9.96E-8			583488.80	4124248.74
		9.96E-8			583505.41	4124052.17

Source Pathway - Source Inputs

Source Type: AREA POLY
Source: SITE_PM2.5 (SIte Construction - PM2.5)

Base Elevation (Optional)	Release Height [m]	Emission Rate [g/ (s-m^2)]	Initial Vertical Dim. [m]	Number of Vertices (or sides)	X Coordinate for Vertices [m]	Y Coordinate for Vertices [m]
239.59	5.00	1.74E-7	1.40	19	583509.87	4124048.83
		1.74E-7			583506.53	4124046.61
		1.74E-7			583631.27	4124090.04
		1.74E-7			583630.43	4124049.08
		1.74E-7			583648.75	4123995.49
		1.74E-7			583663.71	4123938.34
		1.74E-7			583730.68	4123975.80
		1.74E-7			583732.93	4123979.86
		1.74E-7			583732.02	4123996.10
		1.74E-7			583738.90	4124013.23
		1.74E-7			583752.66	4124033.24
		1.74E-7			583759.62	4124068.13
		1.74E-7			583777.25	4124076.86
		1.74E-7			583791.43	4124064.70
		1.74E-7			583804.03	4124059.45
		1.74E-7			583819.11	4124057.89
		1.74E-7			583850.25	4124254.93
		1.74E-7			583488.80	4124248.74
		1.74E-7			583505.41	4124052.17

Source Pathway - Source Inputs

Line Volume Sources

Source Type: LINE VOLUME

Source: HAUL_DPM

Length of Side [m]	Emission Rate [g/ s]	Building Height [m]	X Coordinate for Points [m]	Y Coordinate for points [m]	Base Elevation [m]	Release Height [m]
15.00	2.33E-6		583886.37	4124561.58	183.39	3.40
			583850.91	4124498.38	192.50	3.40
			583858.62	4124256.37	214.57	3.40
			583833.96	4124103.77	221.93	3.40
			583830.88	4124066.77	225.96	3.40
			583815.46	4124051.36	228.02	3.40
			583783.09	4124057.53	231.87	3.40
			583773.84	4124055.98	232.72	3.40
			583761.51	4124034.40	235.19	3.40
			583741.47	4123975.83	241.96	3.40
			583750.72	4123854.05	252.73	3.40
			583746.10	4123817.06	254.15	3.40
			583707.56	4123760.03	257.14	3.40
			583687.52	4123718.41	262.17	3.40
			583684.44	4123666.00	261.81	3.40
			583679.81	4123635.17	259.30	3.40
			583672.11	4123613.59	257.43	3.40
			583730.68	4123528.81	254.68	3.40
			583766.13	4123474.86	250.13	3.40
			583773.84	4123454.82	247.93	3.40
			583753.80	4123423.99	246.26	3.40

Source Pathway - Source Inputs

Source Type: LINE VOLUME
Source: HAUL_PM25 (Haul - PM2.5)

Length of Side [m]	Emission Rate [g/ s]	Building Height [m]	X Coordinate for Points [m]	Y Coordinate for points [m]	Base Elevation [m]	Release Height [m]
15.00	0.00003	Surface-Based	583886.37	4124561.58	183.39	3.40
			583850.91	4124498.38	192.50	3.40
			583858.62	4124256.37	214.57	3.40
			583833.96	4124103.77	221.93	3.40
			583830.88	4124066.77	225.96	3.40
			583815.46	4124051.36	228.02	3.40
			583783.09	4124057.53	231.87	3.40
			583773.84	4124055.98	232.72	3.40
			583761.51	4124034.40	235.19	3.40
			583741.47	4123975.83	241.96	3.40
			583750.72	4123854.05	252.73	3.40
			583746.10	4123817.06	254.15	3.40
			583707.56	4123760.03	257.14	3.40
			583687.52	4123718.41	262.17	3.40
			583684.44	4123666.00	261.81	3.40
			583679.81	4123635.17	259.30	3.40
			583672.11	4123613.59	257.43	3.40
			583730.68	4123528.81	254.68	3.40
			583766.13	4123474.86	250.13	3.40
			583773.84	4123454.82	247.93	3.40
			583753.80	4123423.99	246.26	3.40

Source Pathway - Source Inputs

Volume Sources Generated from Line Sources

Line Source ID	Volume Source ID	X Coordinate [m]	Y Coordinate [m]	Base Elevation [m]	Release Height [m[	Emission Rate [g/s]	Length of Side [m]	Building Height [m]	Initial Lateral Dimencion [m]	Initial Vertical Dimencion [m]
HAUL_PM25	L0000085	583882.70	4124555.04	184.42	3.40	3.60E-7	15.00	Surface-Based	6.98	3.16
	L0000086	583875.36	4124541.96	186.40	3.40	3.60E-7	15.00	Surface-Based	6.98	3.16
	L0000087	583868.02	4124528.88	188.26	3.40	3.60E-7	15.00	Surface-Based	6.98	3.16
	L0000088	583860.68	4124515.79	189.88	3.40	3.60E-7	15.00	Surface-Based	6.98	3.16
	L0000089	583853.34	4124502.71	191.97	3.40	3.60E-7	15.00	Surface-Based	6.98	3.16
	L0000090	583851.23	4124488.35	193.55	3.40	3.60E-7	15.00	Surface-Based	6.98	3.16
	L0000091	583851.71	4124473.36	195.30	3.40	3.60E-7	15.00	Surface-Based	6.98	3.16
	L0000092	583852.18	4124458.37	197.39	3.40	3.60E-7	15.00	Surface-Based	6.98	3.16
	L0000093	583852.66	4124443.38	199.43	3.40	3.60E-7	15.00	Surface-Based	6.98	3.16
	L0000094	583853.14	4124428.38	201.55	3.40	3.60E-7	15.00	Surface-Based	6.98	3.16
	L0000095	583853.62	4124413.39	203.58	3.40	3.60E-7	15.00	Surface-Based	6.98	3.16
	L0000096	583854.10	4124398.40	205.49	3.40	3.60E-7	15.00	Surface-Based	6.98	3.16
	L0000097	583854.57	4124383.41	207.42	3.40	3.60E-7	15.00	Surface-Based	6.98	3.16
	L0000098	583855.05	4124368.41	208.88	3.40	3.60E-7	15.00	Surface-Based	6.98	3.16
	L0000099	583855.53	4124353.42	210.02	3.40	3.60E-7	15.00	Surface-Based	6.98	3.16
	L0000100	583856.01	4124338.43	211.11	3.40	3.60E-7	15.00	Surface-Based	6.98	3.16
	L0000101	583856.48	4124323.44	212.18	3.40	3.60E-7	15.00	Surface-Based	6.98	3.16
	L0000102	583856.96	4124308.44	213.08	3.40	3.60E-7	15.00	Surface-Based	6.98	3.16
	L0000103	583857.44	4124293.45	213.78	3.40	3.60E-7	15.00	Surface-Based	6.98	3.16
	L0000104	583857.92	4124278.46	214.03	3.40	3.60E-7	15.00	Surface-Based	6.98	3.16
	L0000105	583858.39	4124263.47	214.29	3.40	3.60E-7	15.00	Surface-Based	6.98	3.16
	L0000106	583857.36	4124248.57	214.62	3.40	3.60E-7	15.00	Surface-Based	6.98	3.16
	L0000107	583854.97	4124233.76	215.08	3.40	3.60E-7	15.00	Surface-Based	6.98	3.16
	L0000108	583852.57	4124218.96	215.70	3.40	3.60E-7	15.00	Surface-Based	6.98	3.16

Source Pathway - Source Inputs

AERMOD

Line Source ID	Volume Source ID	X Coordinate [m]	Y Coordinate [m]	Base Elevation [m]	Release Height [m[	Emission Rate [g/s]	Length of Side [m]	Building Height [m]	Initial Lateral Dimencion [m]	Initial Vertical Dimencion [m]
HAUL_PM25	L0000109	583850.18	4124204.15	216.26	3.40	3.60E-7	15.00	Surface-Based	6.98	3.16
	L0000110	583847.79	4124189.34	216.75	3.40	3.60E-7	15.00	Surface-Based	6.98	3.16
	L0000111	583845.40	4124174.53	216.87	3.40	3.60E-7	15.00	Surface-Based	6.98	3.16
	L0000112	583843.00	4124159.72	217.63	3.40	3.60E-7	15.00	Surface-Based	6.98	3.16
	L0000113	583840.61	4124144.92	218.47	3.40	3.60E-7	15.00	Surface-Based	6.98	3.16
	L0000114	583838.22	4124130.11	219.48	3.40	3.60E-7	15.00	Surface-Based	6.98	3.16
	L0000115	583835.82	4124115.30	220.91	3.40	3.60E-7	15.00	Surface-Based	6.98	3.16
	L0000116	583833.68	4124100.46	222.57	3.40	3.60E-7	15.00	Surface-Based	6.98	3.16
	L0000117	583832.44	4124085.51	223.82	3.40	3.60E-7	15.00	Surface-Based	6.98	3.16
	L0000118	583831.20	4124070.57	225.35	3.40	3.60E-7	15.00	Surface-Based	6.98	3.16
	L0000119	583822.96	4124058.86	226.81	3.40	3.60E-7	15.00	Surface-Based	6.98	3.16
	L0000120	583811.15	4124052.18	228.62	3.40	3.60E-7	15.00	Surface-Based	6.98	3.16
	L0000121	583796.41	4124054.99	230.04	3.40	3.60E-7	15.00	Surface-Based	6.98	3.16
	L0000122	583781.67	4124057.29	232.11	3.40	3.60E-7	15.00	Surface-Based	6.98	3.16
	L0000123	583770.34	4124049.85	233.81	3.40	3.60E-7	15.00	Surface-Based	6.98	3.16
	L0000124	583762.90	4124036.83	234.87	3.40	3.60E-7	15.00	Surface-Based	6.98	3.16
	L0000125	583757.56	4124022.85	236.60	3.40	3.60E-7	15.00	Surface-Based	6.98	3.16
	L0000126	583752.70	4124008.66	238.50	3.40	3.60E-7	15.00	Surface-Based	6.98	3.16
	L0000127	583747.85	4123994.47	240.33	3.40	3.60E-7	15.00	Surface-Based	6.98	3.16
	L0000128	583742.99	4123980.28	240.81	3.40	3.60E-7	15.00	Surface-Based	6.98	3.16
	L0000129	583742.25	4123965.56	242.75	3.40	3.60E-7	15.00	Surface-Based	6.98	3.16
	L0000130	583743.39	4123950.60	243.46	3.40	3.60E-7	15.00	Surface-Based	6.98	3.16
	L0000131	583744.52	4123935.64	244.04	3.40	3.60E-7	15.00	Surface-Based	6.98	3.16
	L0000132	583745.66	4123920.69	245.50	3.40	3.60E-7	15.00	Surface-Based	6.98	3.16
	L0000133	583746.79	4123905.73	247.33	3.40	3.60E-7	15.00	Surface-Based	6.98	3.16

Source Pathway - Source Inputs

AERMOD

Line Source ID	Volume Source ID	X Coordinate [m]	Y Coordinate [m]	Base Elevation [m]	Release Height [m[	Emission Rate [g/s]	Length of Side [m]	Building Height [m]	Initial Lateral Dimencion [m]	Initial Vertical Dimencion [m]
HAUL_PM25	L0000134	583747.93	4123890.77	248.80	3.40	3.60E-7	15.00	Surface-Based	6.98	3.16
	L0000135	583749.07	4123875.82	249.76	3.40	3.60E-7	15.00	Surface-Based	6.98	3.16
	L0000136	583750.20	4123860.86	250.96	3.40	3.60E-7	15.00	Surface-Based	6.98	3.16
	L0000137	583749.71	4123845.94	252.25	3.40	3.60E-7	15.00	Surface-Based	6.98	3.16
	L0000138	583747.85	4123831.06	252.97	3.40	3.60E-7	15.00	Surface-Based	6.98	3.16
	L0000139	583745.60	4123816.32	253.88	3.40	3.60E-7	15.00	Surface-Based	6.98	3.16
	L0000140	583737.20	4123803.89	254.05	3.40	3.60E-7	15.00	Surface-Based	6.98	3.16
	L0000141	583728.80	4123791.46	254.39	3.40	3.60E-7	15.00	Surface-Based	6.98	3.16
	L0000142	583720.40	4123779.03	255.57	3.40	3.60E-7	15.00	Surface-Based	6.98	3.16
	L0000143	583712.00	4123766.61	256.93	3.40	3.60E-7	15.00	Surface-Based	6.98	3.16
	L0000144	583704.50	4123753.67	258.33	3.40	3.60E-7	15.00	Surface-Based	6.98	3.16
	L0000145	583697.99	4123740.15	259.99	3.40	3.60E-7	15.00	Surface-Based	6.98	3.16
	L0000146	583691.48	4123726.64	261.24	3.40	3.60E-7	15.00	Surface-Based	6.98	3.16
	L0000147	583687.18	4123712.55	262.23	3.40	3.60E-7	15.00	Surface-Based	6.98	3.16
	L0000148	583686.30	4123697.58	262.65	3.40	3.60E-7	15.00	Surface-Based	6.98	3.16
	L0000149	583685.42	4123682.60	262.19	3.40	3.60E-7	15.00	Surface-Based	6.98	3.16
	L0000150	583684.54	4123667.63	261.53	3.40	3.60E-7	15.00	Surface-Based	6.98	3.16
	L0000151	583682.45	4123652.78	260.81	3.40	3.60E-7	15.00	Surface-Based	6.98	3.16
	L0000152	583680.23	4123637.95	259.73	3.40	3.60E-7	15.00	Surface-Based	6.98	3.16
	L0000153	583675.71	4123623.69	257.89	3.40	3.60E-7	15.00	Surface-Based	6.98	3.16
	L0000154	583674.54	4123610.07	257.48	3.40	3.60E-7	15.00	Surface-Based	6.98	3.16
	L0000155	583683.07	4123597.73	256.97	3.40	3.60E-7	15.00	Surface-Based	6.98	3.16
	L0000156	583691.59	4123585.39	256.96	3.40	3.60E-7	15.00	Surface-Based	6.98	3.16
	L0000157	583700.12	4123573.04	256.70	3.40	3.60E-7	15.00	Surface-Based	6.98	3.16
	L0000158	583708.65	4123560.70	255.42	3.40	3.60E-7	15.00	Surface-Based	6.98	3.16

Source Pathway - Source Inputs

AERMOD

Line Source ID	Volume Source ID	X Coordinate [m]	Y Coordinate [m]	Base Elevation [m]	Release Height [m[	Emission Rate [g/s]	Length of Side [m]	Building Height [m]	Initial Lateral Dimencion [m]	Initial Vertical Dimencion [m]
HAUL_PM25	L0000159	583717.17	4123548.36	254.36	3.40	3.60E-7	15.00	Surface-Based	6.98	3.16
	L0000160	583725.70	4123536.02	253.66	3.40	3.60E-7	15.00	Surface-Based	6.98	3.16
	L0000161	583734.10	4123523.60	252.93	3.40	3.60E-7	15.00	Surface-Based	6.98	3.16
	L0000162	583742.34	4123511.06	252.09	3.40	3.60E-7	15.00	Surface-Based	6.98	3.16
	L0000163	583750.58	4123498.53	251.43	3.40	3.60E-7	15.00	Surface-Based	6.98	3.16
	L0000164	583758.82	4123485.99	251.11	3.40	3.60E-7	15.00	Surface-Based	6.98	3.16
	L0000165	583766.73	4123473.29	249.82	3.40	3.60E-7	15.00	Surface-Based	6.98	3.16
	L0000166	583772.12	4123459.29	248.73	3.40	3.60E-7	15.00	Surface-Based	6.98	3.16
	L0000167	583768.28	4123446.26	247.83	3.40	3.60E-7	15.00	Surface-Based	6.98	3.16
	L0000168	583760.10	4123433.68	247.05	3.40	3.60E-7	15.00	Surface-Based	6.98	3.16

Line Source ID	Volume Source ID	X Coordinate [m]	Y Coordinate [m]	Base Elevation [m]	Release Height [m[	Emission Rate [g/s]	Length of Side [m]	Building Height [m]	Initial Lateral Dimencion [m]	Initial Vertical Dimencion [m]
HAUL_DPM	L0000169	583882.70	4124555.04	184.42	3.40	2.77E-8	15.00		6.98	3.16
	L0000170	583875.36	4124541.96	186.40	3.40	2.77E-8	15.00		6.98	3.16
	L0000171	583868.02	4124528.87	188.26	3.40	2.77E-8	15.00		6.98	3.16
	L0000172	583860.68	4124515.79	189.88	3.40	2.77E-8	15.00		6.98	3.16
	L0000173	583853.34	4124502.71	191.97	3.40	2.77E-8	15.00		6.98	3.16
	L0000174	583851.23	4124488.35	193.55	3.40	2.77E-8	15.00		6.98	3.16
	L0000175	583851.71	4124473.36	195.30	3.40	2.77E-8	15.00		6.98	3.16
	L0000176	583852.19	4124458.36	197.39	3.40	2.77E-8	15.00		6.98	3.16
	L0000177	583852.67	4124443.37	199.43	3.40	2.77E-8	15.00		6.98	3.16
	L0000178	583853.14	4124428.38	201.55	3.40	2.77E-8	15.00		6.98	3.16
	L0000179	583853.62	4124413.39	203.58	3.40	2.77E-8	15.00		6.98	3.16
	L0000180	583854.10	4124398.39	205.49	3.40	2.77E-8	15.00		6.98	3.16
	L0000181	583854.58	4124383.40	207.42	3.40	2.77E-8	15.00		6.98	3.16

Source Pathway - Source Inputs

AERMOD

Line Source ID	Volume Source ID	X Coordinate [m]	Y Coordinate [m]	Base Elevation [m]	Release Height [m[	Emission Rate [g/s]	Length of Side [m]	Building Height [m]	Initial Lateral Dimencion [m]	Initial Vertical Dimencion [m]
HAUL_DPM	L0000182	583855.05	4124368.41	208.88	3.40	2.77E-8	15.00		6.98	3.16
	L0000183	583855.53	4124353.42	210.02	3.40	2.77E-8	15.00		6.98	3.16
	L0000184	583856.01	4124338.42	211.11	3.40	2.77E-8	15.00		6.98	3.16
	L0000185	583856.49	4124323.43	212.18	3.40	2.77E-8	15.00		6.98	3.16
	L0000186	583856.96	4124308.44	213.09	3.40	2.77E-8	15.00		6.98	3.16
	L0000187	583857.44	4124293.45	213.78	3.40	2.77E-8	15.00		6.98	3.16
	L0000188	583857.92	4124278.46	214.03	3.40	2.77E-8	15.00		6.98	3.16
	L0000189	583858.40	4124263.46	214.29	3.40	2.77E-8	15.00		6.98	3.16
	L0000190	583857.36	4124248.57	214.62	3.40	2.77E-8	15.00		6.98	3.16
	L0000191	583854.97	4124233.76	215.08	3.40	2.77E-8	15.00		6.98	3.16
	L0000192	583852.57	4124218.95	215.70	3.40	2.77E-8	15.00		6.98	3.16
	L0000193	583850.18	4124204.14	216.26	3.40	2.77E-8	15.00		6.98	3.16
	L0000194	583847.79	4124189.34	216.75	3.40	2.77E-8	15.00		6.98	3.16
	L0000195	583845.39	4124174.53	216.87	3.40	2.77E-8	15.00		6.98	3.16
	L0000196	583843.00	4124159.72	217.63	3.40	2.77E-8	15.00		6.98	3.16
	L0000197	583840.61	4124144.91	218.47	3.40	2.77E-8	15.00		6.98	3.16
	L0000198	583838.21	4124130.10	219.48	3.40	2.77E-8	15.00		6.98	3.16
	L0000199	583835.82	4124115.30	220.91	3.40	2.77E-8	15.00		6.98	3.16
	L0000200	583833.68	4124100.46	222.57	3.40	2.77E-8	15.00		6.98	3.16
	L0000201	583832.44	4124085.51	223.82	3.40	2.77E-8	15.00		6.98	3.16
	L0000202	583831.19	4124070.56	225.35	3.40	2.77E-8	15.00		6.98	3.16
	L0000203	583822.96	4124058.85	226.81	3.40	2.77E-8	15.00		6.98	3.16
	L0000204	583811.14	4124052.18	228.62	3.40	2.77E-8	15.00		6.98	3.16
	L0000205	583796.40	4124054.99	230.05	3.40	2.77E-8	15.00		6.98	3.16
	L0000206	583781.66	4124057.29	232.12	3.40	2.77E-8	15.00		6.98	3.16

Source Pathway - Source Inputs

AERMOD

Line Source ID	Volume Source ID	X Coordinate [m]	Y Coordinate [m]	Base Elevation [m]	Release Height [m[	Emission Rate [g/s]	Length of Side [m]	Building Height [m]	Initial Lateral Dimencion [m]	Initial Vertical Dimencion [m]
HAUL_DPM	L0000207	583770.33	4124049.84	233.81	3.40	2.77E-8	15.00		6.98	3.16
	L0000208	583762.89	4124036.82	234.87	3.40	2.77E-8	15.00		6.98	3.16
	L0000209	583757.56	4124022.85	236.60	3.40	2.77E-8	15.00		6.98	3.16
	L0000210	583752.70	4124008.65	238.50	3.40	2.77E-8	15.00		6.98	3.16
	L0000211	583747.85	4123994.46	240.33	3.40	2.77E-8	15.00		6.98	3.16
	L0000212	583742.99	4123980.27	240.81	3.40	2.77E-8	15.00		6.98	3.16
	L0000213	583742.25	4123965.55	242.75	3.40	2.77E-8	15.00		6.98	3.16
	L0000214	583743.39	4123950.59	243.46	3.40	2.77E-8	15.00		6.98	3.16
	L0000215	583744.52	4123935.64	244.04	3.40	2.77E-8	15.00		6.98	3.16
	L0000216	583745.66	4123920.68	245.51	3.40	2.77E-8	15.00		6.98	3.16
	L0000217	583746.80	4123905.72	247.33	3.40	2.77E-8	15.00		6.98	3.16
	L0000218	583747.93	4123890.77	248.80	3.40	2.77E-8	15.00		6.98	3.16
	L0000219	583749.07	4123875.81	249.76	3.40	2.77E-8	15.00		6.98	3.16
	L0000220	583750.20	4123860.85	250.96	3.40	2.77E-8	15.00		6.98	3.16
	L0000221	583749.70	4123845.93	252.25	3.40	2.77E-8	15.00		6.98	3.16
	L0000222	583747.84	4123831.05	252.97	3.40	2.77E-8	15.00		6.98	3.16
	L0000223	583745.59	4123816.31	253.88	3.40	2.77E-8	15.00		6.98	3.16
	L0000224	583737.19	4123803.88	254.05	3.40	2.77E-8	15.00		6.98	3.16
	L0000225	583728.80	4123791.46	254.39	3.40	2.77E-8	15.00		6.98	3.16
	L0000226	583720.40	4123779.03	255.57	3.40	2.77E-8	15.00		6.98	3.16
	L0000227	583712.00	4123766.60	256.93	3.40	2.77E-8	15.00		6.98	3.16
	L0000228	583704.49	4123753.66	258.33	3.40	2.77E-8	15.00		6.98	3.16
	L0000229	583697.99	4123740.14	259.99	3.40	2.77E-8	15.00		6.98	3.16
	L0000230	583691.48	4123726.63	261.24	3.40	2.77E-8	15.00		6.98	3.16
	L0000231	583687.18	4123712.54	262.23	3.40	2.77E-8	15.00		6.98	3.16

Source Pathway - Source Inputs

AERMOD

Line Source ID	Volume Source ID	X Coordinate [m]	Y Coordinate [m]	Base Elevation [m]	Release Height [m[	Emission Rate [g/s]	Length of Side [m]	Building Height [m]	Initial Lateral Dimencion [m]	Initial Vertical Dimencion [m]
HAUL_DPM	L0000232	583686.29	4123697.57	262.65	3.40	2.77E-8	15.00		6.98	3.16
	L0000233	583685.41	4123682.59	262.19	3.40	2.77E-8	15.00		6.98	3.16
	L0000234	583684.53	4123667.62	261.53	3.40	2.77E-8	15.00		6.98	3.16
	L0000235	583682.45	4123652.77	260.81	3.40	2.77E-8	15.00		6.98	3.16
	L0000236	583680.23	4123637.93	259.73	3.40	2.77E-8	15.00		6.98	3.16
	L0000237	583675.71	4123623.68	257.89	3.40	2.77E-8	15.00		6.98	3.16
	L0000238	583674.54	4123610.06	257.48	3.40	2.77E-8	15.00		6.98	3.16
	L0000239	583683.07	4123597.72	256.97	3.40	2.77E-8	15.00		6.98	3.16
	L0000240	583691.60	4123585.38	256.96	3.40	2.77E-8	15.00		6.98	3.16
	L0000241	583700.12	4123573.04	256.70	3.40	2.77E-8	15.00		6.98	3.16
	L0000242	583708.65	4123560.70	255.42	3.40	2.77E-8	15.00		6.98	3.16
	L0000243	583717.18	4123548.36	254.36	3.40	2.77E-8	15.00		6.98	3.16
	L0000244	583725.70	4123536.02	253.66	3.40	2.77E-8	15.00		6.98	3.16
	L0000245	583734.11	4123523.59	252.93	3.40	2.77E-8	15.00		6.98	3.16
	L0000246	583742.35	4123511.06	252.09	3.40	2.77E-8	15.00		6.98	3.16
	L0000247	583750.58	4123498.52	251.43	3.40	2.77E-8	15.00		6.98	3.16
	L0000248	583758.82	4123485.99	251.11	3.40	2.77E-8	15.00		6.98	3.16
	L0000249	583766.74	4123473.29	249.82	3.40	2.77E-8	15.00		6.98	3.16
	L0000250	583772.12	4123459.29	248.72	3.40	2.77E-8	15.00		6.98	3.16
	L0000251	583768.28	4123446.26	247.83	3.40	2.77E-8	15.00		6.98	3.16
	L0000252	583760.10	4123433.68	247.05	3.40	2.77E-8	15.00		6.98	3.16

Source Pathway

Building Downwash Information

Option not in use

Emission Rate Units for Output

For Concentration

Unit Factor:	1E6
Emission Unit Label:	GRAMS/SEC
Concentration Unit Label:	MICROGRAMS/M**3

Source Groups

Source Group ID: **PM2.5**	List of Sources in Group (Source Range or Single Sources)
	HAUL_PM25
	SITE_PM2.5

Source Group ID: **DPM**	List of Sources in Group (Source Range or Single Sources)
	HAUL_DPM
	SITE_DPM

Variable Emissions

Hour-of-Day / Day-of-Week Emission Rate Variation

Scenario: Scenario 1

Source ID: HAUL_DPM

Weekdays							
Hour of Day	1 - 6	0.00	0.00	0.00	0.00	0.00	0.00
	7 - 12	0.00	0.00	1.00	1.00	1.00	1.00
	13 - 18	0.00	1.00	1.00	1.00	1.00	0.00
	19 - 24	0.00	0.00	0.00	0.00	0.00	0.00
Saturday							
Hour of Day	1 - 6	0.00	0.00	0.00	0.00	0.00	0.00
	7 - 12	0.00	0.00	0.00	0.00	0.00	0.00
	13 - 18	0.00	0.00	0.00	0.00	0.00	0.00
	19 - 24	0.00	0.00	0.00	0.00	0.00	0.00
Sunday							
Hour of Day	1 - 6	0.00	0.00	0.00	0.00	0.00	0.00
	7 - 12	0.00	0.00	0.00	0.00	0.00	0.00
	13 - 18	0.00	0.00	0.00	0.00	0.00	0.00
	19 - 24	0.00	0.00	0.00	0.00	0.00	0.00

Source ID: SITE_DPM

Weekdays							
Hour of Day	1 - 6	0.00	0.00	0.00	0.00	0.00	0.00
	7 - 12	0.00	0.00	1.00	1.00	1.00	1.00
	13 - 18	0.00	1.00	1.00	1.00	1.00	0.00
	19 - 24	0.00	0.00	0.00	0.00	0.00	0.00
Saturday							
Hour of Day	1 - 6	0.00	0.00	0.00	0.00	0.00	0.00
	7 - 12	0.00	0.00	0.00	0.00	0.00	0.00
	13 - 18	0.00	0.00	0.00	0.00	0.00	0.00
	19 - 24	0.00	0.00	0.00	0.00	0.00	0.00
Sunday							
Hour of Day	1 - 6	0.00	0.00	0.00	0.00	0.00	0.00
	7 - 12	0.00	0.00	0.00	0.00	0.00	0.00
	13 - 18	0.00	0.00	0.00	0.00	0.00	0.00
	19 - 24	0.00	0.00	0.00	0.00	0.00	0.00

Source ID: HAUL_PM25

Weekdays							
Hour of Day	1 - 6	0.00	0.00	0.00	0.00	0.00	0.00
	7 - 12	0.00	0.00	1.00	1.00	1.00	1.00
	13 - 18	0.00	1.00	1.00	1.00	1.00	0.00
	19 - 24	0.00	0.00	0.00	0.00	0.00	0.00
Saturday							
Hour of Day	1 - 6	0.00	0.00	0.00	0.00	0.00	0.00
	7 - 12	0.00	0.00	0.00	0.00	0.00	0.00
	13 - 18	0.00	0.00	0.00	0.00	0.00	0.00
	19 - 24	0.00	0.00	0.00	0.00	0.00	0.00
Sunday							
Hour of Day	1 - 6	0.00	0.00	0.00	0.00	0.00	0.00
	7 - 12	0.00	0.00	0.00	0.00	0.00	0.00
	13 - 18	0.00	0.00	0.00	0.00	0.00	0.00
	19 - 24	0.00	0.00	0.00	0.00	0.00	0.00

Source ID: SITE_PM2.5

Weekdays							
Hour of Day	1 - 6	0.00	0.00	0.00	0.00	0.00	0.00
	7 - 12	0.00	0.00	1.00	1.00	1.00	1.00
	13 - 18	0.00	1.00	1.00	1.00	1.00	0.00

Source Pathway

Scenario: Scenario 1

Source ID: **SITE_PM2.5**

	19 - 24	0.00	0.00	0.00	0.00	0.00	0.00
Saturday							
Hour	1 - 6	0.00	0.00	0.00	0.00	0.00	0.00
of	7 - 12	0.00	0.00	0.00	0.00	0.00	0.00
Day	13 - 18	0.00	0.00	0.00	0.00	0.00	0.00
	19 - 24	0.00	0.00	0.00	0.00	0.00	0.00
Sunday							
Hour	1 - 6	0.00	0.00	0.00	0.00	0.00	0.00
of	7 - 12	0.00	0.00	0.00	0.00	0.00	0.00
Day	13 - 18	0.00	0.00	0.00	0.00	0.00	0.00
	19 - 24	0.00	0.00	0.00	0.00	0.00	0.00

Receptor Pathway

Receptor Networks

Note: Terrain Elavations and Flagpole Heights for Network Grids are in Page RE2 - 1 (If applicable)
Generated Discrete Receptors for Multi-Tier (Risk) Grid and Receptor Locations for Fenceline Grid are in Page RE3 - 1 (If applicable)

Discrete Receptors

Discrete Cartesian Receptors

Record Number	X-Coordinate [m]	Y-Coordinate [m]	Group Name (Optional)	Terrain Elevations	Flagpole Heights [m] (Optional)
1	583819.62	4124032.01	FENCEGRD	230.79	
2	583837.70	4124041.10	FENCEGRD	230.31	
3	583793.37	4124039.78	FENCEGRD	232.63	
4	583811.93	4124009.78	FENCEGRD	235.26	
5	583851.18	4124021.82	FENCEGRD	235.32	
6	583781.89	4124017.57	FENCEGRD	238.03	
7	583798.93	4123987.59	FENCEGRD	239.91	
8	583826.19	4123987.43	FENCEGRD	239.12	
9	583861.52	4123998.27	FENCEGRD	238.96	
10	583877.65	4124020.25	FENCEGRD	241.60	
11	583770.40	4123995.37	FENCEGRD	243.25	
12	583788.95	4123965.37	FENCEGRD	244.11	
13	583819.25	4123965.20	FENCEGRD	242.06	
14	583849.54	4123965.03	FENCEGRD	243.84	
15	583873.65	4123977.16	FENCEGRD	243.02	
16	583891.57	4124001.58	FENCEGRD	245.61	
17	583909.49	4124026.00	FENCEGRD	245.28	
18	583769.01	4123974.12	RES	246.45	
19	583768.93	4123953.33	FENCEGRD	249.88	
20	583791.29	4123942.14	FENCEGRD	248.13	
21	583813.65	4123930.96	FENCEGRD	247.69	
22	583736.99	4123954.20	FENCEGRD	241.93	
23	583708.48	4123937.25	FENCEGRD	228.36	
24	583679.98	4123920.30	FENCEGRD	221.85	
25	583749.76	4123932.71	FENCEGRD	246.54	
26	583721.26	4123915.76	FENCEGRD	235.59	
27	583692.75	4123898.81	FENCEGRD	228.77	
28	583772.12	4123921.53	FENCEGRD	253.52	
29	583748.29	4123902.75	FENCEGRD	248.26	
30	583719.78	4123885.80	FENCEGRD	237.03	

31	583784.90	4123900.04	FENCEGRD	254.12
32	583761.07	4123881.26	FENCEGRD	255.40
33	583732.56	4123864.31	FENCEGRD	243.85
34	583650.67	4123926.58	FENCEGRD	223.49
35	583637.85	4123952.76	FENCEGRD	220.63
36	583632.45	4123970.87	FENCEGRD	218.26
37	583627.06	4123988.97	FENCEGRD	216.38
38	583621.67	4124007.08	FENCEGRD	215.18
39	583616.27	4124025.18	FENCEGRD	214.25
40	583610.88	4124043.29	FENCEGRD	216.82
41	583605.48	4124061.40	FENCEGRD	216.51
42	583629.19	4123916.75	FENCEGRD	236.84
43	583663.59	4123896.42	FENCEGRD	229.17
44	583613.89	4123945.62	FENCEGRD	233.25
45	583608.49	4123963.73	FENCEGRD	230.01
46	583603.10	4123981.83	FENCEGRD	223.49
47	583592.31	4124018.05	FENCEGRD	223.89
48	583586.92	4124036.15	FENCEGRD	225.55
49	583581.52	4124054.26	FENCEGRD	217.88
50	583606.47	4123908.27	FENCEGRD	248.11
51	583628.76	4123884.04	FENCEGRD	243.80
52	583656.32	4123873.28	FENCEGRD	234.48
53	583689.13	4123875.98	FENCEGRD	233.51
54	583589.93	4123938.48	FENCEGRD	231.92
55	583584.53	4123956.59	FENCEGRD	229.64
56	583579.14	4123974.70	FENCEGRD	231.07
57	583573.75	4123992.80	FENCEGRD	233.26
58	583568.35	4124010.91	FENCEGRD	232.22
59	583562.96	4124029.02	FENCEGRD	227.25
60	583557.57	4124047.12	FENCEGRD	223.35
61	583583.25	4123900.32	FENCEGRD	250.51
62	583607.03	4123874.48	FENCEGRD	253.92
63	583648.31	4123850.08	FENCEGRD	239.22
64	583683.31	4123852.96	FENCEGRD	236.81
65	583565.97	4123931.35	FENCEGRD	243.69
66	583560.57	4123949.45	FENCEGRD	243.59
67	583555.18	4123967.56	FENCEGRD	243.14
68	583549.79	4123985.67	FENCEGRD	240.52

69	583544.39	4124003.77	FENCEGRD	233.29
70	583539.00	4124021.88	FENCEGRD	231.65
71	583533.61	4124039.98	FENCEGRD	228.82
72	583515.03	4124022.92	FENCEGRD	235.25
73	583523.13	4123999.26	FENCEGRD	242.91
74	583531.22	4123975.61	FENCEGRD	246.40
75	583539.31	4123951.96	FENCEGRD	247.77
76	583487.69	4124034.95	FENCEGRD	242.99
77	583480.36	4124062.80	FENCEGRD	258.29
78	583478.68	4124081.29	FENCEGRD	258.04
79	583477.00	4124099.78	FENCEGRD	256.27
80	583475.32	4124118.27	FENCEGRD	254.87
81	583473.64	4124136.76	FENCEGRD	254.27
82	583471.96	4124155.25	FENCEGRD	253.74
83	583470.28	4124173.74	FENCEGRD	252.54
84	583468.60	4124192.23	FENCEGRD	243.32
85	583466.91	4124210.72	FENCEGRD	229.34
86	583465.23	4124229.22	FENCEGRD	228.13
87	583463.55	4124247.71	FENCEGRD	230.89
88	583464.68	4124029.57	FENCEGRD	257.64
89	583494.20	4124002.83	FENCEGRD	255.30
90	583455.46	4124060.53	FENCEGRD	276.73
91	583453.78	4124079.03	FENCEGRD	276.79
92	583452.10	4124097.52	FENCEGRD	274.10
93	583450.42	4124116.01	FENCEGRD	273.38
94	583448.74	4124134.50	FENCEGRD	272.72
95	583447.06	4124152.99	FENCEGRD	270.25
96	583445.38	4124171.48	FENCEGRD	260.90
97	583443.70	4124189.97	FENCEGRD	247.31
98	583442.02	4124208.46	FENCEGRD	233.50
99	583440.34	4124226.95	FENCEGRD	233.79
100	583438.66	4124245.44	FENCEGRD	242.67
101	583440.72	4124025.75	FENCEGRD	263.94
102	583457.67	4123997.68	FENCEGRD	250.90
103	583482.41	4123981.63	FENCEGRD	272.39
104	583430.57	4124058.27	FENCEGRD	283.69
105	583428.89	4124076.76	FENCEGRD	291.01
106	583427.21	4124095.25	FENCEGRD	292.80

107	583425.52	4124113.74	FENCEGRD	290.60
108	583423.84	4124132.23	FENCEGRD	282.94
109	583422.16	4124150.73	FENCEGRD	273.88
110	583420.48	4124169.22	FENCEGRD	262.24
111	583418.80	4124187.71	FENCEGRD	249.63
112	583417.12	4124206.20	FENCEGRD	237.26
113	583415.44	4124224.69	FENCEGRD	241.55
114	583413.76	4124243.18	FENCEGRD	250.18
115	583416.39	4124022.55	FENCEGRD	273.13
116	583434.46	4123992.60	FENCEGRD	259.31
117	583469.89	4123960.52	FENCEGRD	279.48
118	583504.60	4123956.24	FENCEGRD	269.25
119	583405.67	4124056.01	FENCEGRD	294.93
120	583403.99	4124074.50	FENCEGRD	300.00
121	583402.31	4124092.99	FENCEGRD	301.27
122	583400.63	4124111.48	FENCEGRD	293.00
123	583398.95	4124129.97	FENCEGRD	279.70
124	583397.27	4124148.46	FENCEGRD	266.95
125	583395.58	4124166.95	FENCEGRD	262.06
126	583393.90	4124185.44	FENCEGRD	255.90
127	583392.22	4124203.94	FENCEGRD	244.20
128	583390.54	4124222.43	FENCEGRD	247.50
129	583388.86	4124240.92	FENCEGRD	260.64
130	583479.08	4124270.86	FENCEGRD	219.10
131	583507.38	4124275.13	FENCEGRD	211.39
132	583526.52	4124275.29	FENCEGRD	208.52
133	583545.66	4124275.46	FENCEGRD	207.42
134	583564.80	4124275.62	FENCEGRD	208.87
135	583583.94	4124275.78	FENCEGRD	208.40
136	583603.08	4124275.94	FENCEGRD	205.51
137	583622.22	4124276.11	FENCEGRD	201.34
138	583641.36	4124276.27	FENCEGRD	195.57
139	583660.50	4124276.43	FENCEGRD	191.64
140	583679.64	4124276.60	FENCEGRD	187.78
141	583698.78	4124276.76	FENCEGRD	187.66
142	583717.92	4124276.92	FENCEGRD	191.37
143	583737.06	4124277.08	FENCEGRD	193.31
144	583756.20	4124277.25	FENCEGRD	194.65

145	583775.34	4124277.41	FENCEGRD	197.14
146	583794.48	4124277.57	FENCEGRD	200.86
147	583813.62	4124277.73	FENCEGRD	207.88
148	583832.76	4124277.90	FENCEGRD	210.41
149	583851.90	4124278.06	FENCEGRD	213.01
150	583475.81	4124294.49	FENCEGRD	215.64
151	583447.14	4124270.83	FENCEGRD	235.01
152	583507.17	4124300.13	FENCEGRD	210.51
153	583526.31	4124300.29	FENCEGRD	208.70
154	583545.45	4124300.46	FENCEGRD	204.75
155	583564.59	4124300.62	FENCEGRD	199.56
156	583583.73	4124300.78	FENCEGRD	201.79
157	583602.87	4124300.94	FENCEGRD	204.86
158	583622.01	4124301.11	FENCEGRD	202.64
159	583641.15	4124301.27	FENCEGRD	196.46
160	583660.29	4124301.43	FENCEGRD	190.39
161	583697.12	4124301.59	FENCEGRD	186.07
162	583717.71	4124301.92	FENCEGRD	189.91
163	583736.85	4124302.08	FENCEGRD	192.97
164	583755.99	4124302.25	FENCEGRD	195.46
165	583775.13	4124302.41	FENCEGRD	198.30
166	583794.27	4124302.57	FENCEGRD	202.61
167	583813.41	4124302.73	FENCEGRD	206.01
168	583832.55	4124302.90	FENCEGRD	206.70
169	583851.69	4124303.06	FENCEGRD	212.12
170	583474.07	4124318.80	FENCEGRD	216.84
171	583446.59	4124306.47	FENCEGRD	222.51
172	583428.08	4124286.03	FENCEGRD	239.83
173	583506.95	4124325.13	FENCEGRD	211.61
174	583526.09	4124325.29	FENCEGRD	207.18
175	583545.23	4124325.46	FENCEGRD	203.64
176	583564.37	4124325.62	FENCEGRD	199.56
177	583583.51	4124325.78	FENCEGRD	195.37
178	583602.65	4124325.94	FENCEGRD	200.13
179	583621.79	4124326.11	FENCEGRD	199.83
180	583640.93	4124326.27	FENCEGRD	196.06
181	583660.07	4124326.43	FENCEGRD	187.76
182	583679.21	4124326.59	FENCEGRD	184.57

183	583698.35	4124326.76	FENCEGRD	185.50
184	583717.49	4124326.92	FENCEGRD	188.66
185	583736.63	4124327.08	FENCEGRD	191.98
186	583755.77	4124327.24	FENCEGRD	194.77
187	583774.91	4124327.41	FENCEGRD	198.00
188	583794.05	4124327.57	FENCEGRD	201.31
189	583813.19	4124327.73	FENCEGRD	203.00
190	583832.33	4124327.89	FENCEGRD	204.44
191	583851.47	4124328.06	FENCEGRD	210.90
192	583472.94	4124343.39	FENCEGRD	217.66
193	583443.63	4124330.24	FENCEGRD	221.16
194	583409.23	4124301.86	FENCEGRD	239.65
195	583399.05	4124271.39	FENCEGRD	259.34
196	583506.74	4124350.13	FENCEGRD	209.25
197	583525.88	4124350.29	FENCEGRD	203.57
198	583545.02	4124350.45	FENCEGRD	198.59
199	583564.16	4124350.62	FENCEGRD	194.55
200	583583.30	4124350.78	FENCEGRD	190.93
201	583602.44	4124350.94	FENCEGRD	191.39
202	583621.58	4124351.10	FENCEGRD	191.13
203	583640.72	4124351.27	FENCEGRD	189.43
204	583659.86	4124351.43	FENCEGRD	185.13
205	583679.00	4124351.59	FENCEGRD	182.55
206	583717.28	4124351.92	FENCEGRD	185.74
207	583736.42	4124352.08	FENCEGRD	187.49
208	583755.56	4124352.24	FENCEGRD	190.27
209	583774.70	4124352.41	FENCEGRD	194.19
210	583793.84	4124352.57	FENCEGRD	196.86
211	583812.98	4124352.73	FENCEGRD	198.70
212	583832.12	4124352.89	FENCEGRD	202.88
213	583851.26	4124353.06	FENCEGRD	209.53
214	583873.94	4124259.19	FENCEGRD	216.22
215	583873.84	4124230.97	FENCEGRD	216.58
216	583870.90	4124212.90	FENCEGRD	217.09
217	583867.96	4124194.83	FENCEGRD	217.74
218	583865.02	4124176.76	FENCEGRD	218.82
219	583862.08	4124158.69	FENCEGRD	219.58
220	583859.13	4124140.62	FENCEGRD	220.67

221	583856.19	4124122.55	FENCEGRD	222.45
222	583853.25	4124104.48	FENCEGRD	224.99
223	583850.31	4124086.40	FENCEGRD	227.19
224	583847.37	4124068.33	FENCEGRD	228.70
225	583897.66	4124258.55	FENCEGRD	221.74
226	583877.27	4124291.43	FENCEGRD	219.48
227	583898.52	4124226.96	FENCEGRD	220.42
228	583895.58	4124208.88	FENCEGRD	219.93
229	583892.63	4124190.81	FENCEGRD	219.87
230	583889.69	4124172.74	FENCEGRD	220.63
231	583886.75	4124154.67	FENCEGRD	221.80
232	583883.81	4124136.60	FENCEGRD	223.77
233	583880.87	4124118.53	FENCEGRD	227.68
234	583877.93	4124100.46	FENCEGRD	231.02
235	583874.98	4124082.39	FENCEGRD	233.12
236	583872.04	4124064.32	FENCEGRD	236.14
237	583869.10	4124046.25	FENCEGRD	237.83
238	583921.86	4124256.23	FENCEGRD	228.02
239	583913.31	4124286.67	FENCEGRD	229.18
240	583894.65	4124308.43	FENCEGRD	226.62
241	583923.19	4124222.94	FENCEGRD	228.36
242	583920.25	4124204.87	FENCEGRD	227.65
243	583917.31	4124186.80	FENCEGRD	225.21
244	583914.37	4124168.73	FENCEGRD	223.68
245	583911.43	4124150.65	FENCEGRD	225.48
246	583908.48	4124132.58	FENCEGRD	227.67
247	583905.54	4124114.51	FENCEGRD	231.11
248	583902.60	4124096.44	FENCEGRD	232.74
249	583899.66	4124078.37	FENCEGRD	235.90
250	583896.72	4124060.30	FENCEGRD	240.65
251	583893.78	4124042.23	FENCEGRD	244.15
252	583946.25	4124253.23	FENCEGRD	236.65
253	583937.13	4124285.70	FENCEGRD	237.28
254	583912.66	4124325.14	FENCEGRD	227.21
255	583881.96	4124339.10	FENCEGRD	220.38
256	583947.87	4124218.92	FENCEGRD	232.22
257	583944.93	4124200.85	FENCEGRD	230.13
258	583941.99	4124182.78	FENCEGRD	229.80

259	583939.04	4124164.71	FENCEGRD	227.61
260	583936.10	4124146.64	FENCEGRD	228.31
261	583933.16	4124128.57	FENCEGRD	230.30
262	583930.22	4124110.50	FENCEGRD	232.77
263	583927.28	4124092.42	FENCEGRD	234.90
264	583924.33	4124074.35	FENCEGRD	237.72
265	583921.39	4124056.28	FENCEGRD	241.51
266	583550.00	4123450.00	P-OS	267.92
267	583600.00	4123450.00	P-OS	280.36
268	583650.00	4123450.00	P-OS	266.20
269	583700.00	4123450.00	UCART1	272.12
270	583750.00	4123450.00	UCART1	252.94
271	583800.00	4123450.00	UCART1	246.77
272	583450.00	4123500.00	P-OS	308.31
273	583500.00	4123500.00	P-OS	269.39
274	583550.00	4123500.00	P-OS	292.67
275	583600.00	4123500.00	P-OS	303.77
276	583650.00	4123500.00	P-OS	295.33
277	583700.00	4123500.00	UCART1	274.59
278	583750.00	4123500.00	UCART1	251.35
279	583800.00	4123500.00	UCART1	240.69
280	583850.00	4123500.00	UCART1	236.04
281	583400.00	4123550.00	P-OS	342.38
282	583450.00	4123550.00	P-OS	309.55
283	583500.00	4123550.00	P-OS	284.98
284	583550.00	4123550.00	P-OS	314.40
285	583600.00	4123550.00	P-OS	304.62
286	583650.00	4123550.00	P-OS	284.56
287	583700.00	4123550.00	UCART1	260.15
288	583750.00	4123550.00	UCART1	244.87
289	583800.00	4123550.00	UCART1	237.65
290	583850.00	4123550.00	UCART1	233.44
291	583900.00	4123550.00	UCART1	228.92
292	583350.00	4123600.00	P-OS	365.75
293	583400.00	4123600.00	P-OS	335.61
294	583450.00	4123600.00	P-OS	306.32
295	583500.00	4123600.00	P-OS	313.21
296	583550.00	4123600.00	P-OS	301.23

297	583600.00	4123600.00	P-OS	287.70
298	583650.00	4123600.00	P-OS	267.44
299	583700.00	4123600.00	UCART1	250.07
300	583750.00	4123600.00	UCART1	243.60
301	583800.00	4123600.00	UCART1	236.77
302	583850.00	4123600.00	UCART1	233.17
303	583900.00	4123600.00	UCART1	226.17
304	583950.00	4123600.00	UCART1	212.95
305	583350.00	4123650.00	P-OS	370.24
306	583400.00	4123650.00	P-OS	342.35
307	583450.00	4123650.00	P-OS	323.98
308	583500.00	4123650.00	P-OS	335.01
309	583550.00	4123650.00	P-OS	309.17
310	583600.00	4123650.00	P-OS	275.59
311	583650.00	4123650.00	P-OS	269.19
312	583700.00	4123650.00	UCART1	257.29
313	583750.00	4123650.00	UCART1	249.22
314	583800.00	4123650.00	UCART1	245.21
315	583850.00	4123650.00	UCART1	238.52
316	583900.00	4123650.00	UCART1	226.82
317	583950.00	4123650.00	UCART1	224.77
318	583300.00	4123700.00	P-OS	378.15
319	583350.00	4123700.00	P-OS	367.32
320	583400.00	4123700.00	P-OS	344.39
321	583450.00	4123700.00	P-OS	334.43
322	583500.00	4123700.00	P-OS	325.09
323	583550.00	4123700.00	P-OS	299.60
324	583600.00	4123700.00	P-OS	291.17
325	583650.00	4123700.00	P-OS	272.29
326	583700.00	4123700.00	UCART1	262.36
327	583750.00	4123700.00	UCART1	260.90
328	583800.00	4123700.00	UCART1	252.73
329	583850.00	4123700.00	UCART1	246.28
330	583900.00	4123700.00	UCART1	238.89
331	583950.00	4123700.00	UCART1	224.91
332	583300.00	4123750.00	P-OS	365.31
333	583350.00	4123750.00	P-OS	354.69
334	583400.00	4123750.00	P-OS	336.02

335	583450.00	4123750.00	P-OS	317.75
336	583500.00	4123750.00	P-OS	316.21
337	583550.00	4123750.00	P-OS	298.12
338	583600.00	4123750.00	P-OS	275.39
339	583650.00	4123750.00	P-OS	258.72
340	583700.00	4123750.00	UCART1	258.39
341	583750.00	4123750.00	UCART1	266.52
342	583800.00	4123750.00	UCART1	261.85
343	583850.00	4123750.00	UCART1	251.16
344	583900.00	4123750.00	UCART1	238.31
345	583950.00	4123750.00	UCART1	221.66
346	583250.00	4123800.00	P-OS	380.20
347	583300.00	4123800.00	P-OS	361.67
348	583350.00	4123800.00	P-OS	352.75
349	583400.00	4123800.00	P-OS	323.07
350	583450.00	4123800.00	P-OS	295.99
351	583500.00	4123800.00	P-OS	293.98
352	583550.00	4123800.00	P-OS	281.93
353	583600.00	4123800.00	P-OS	258.62
354	583650.00	4123800.00	P-OS	249.89
355	583700.00	4123800.00	P-OS	248.04
356	583750.00	4123800.00	UCART1	258.93
357	583800.00	4123800.00	UCART1	260.13
358	583850.00	4123800.00	UCART1	249.11
359	583900.00	4123800.00	UCART1	233.54
360	583950.00	4123800.00	UCART1	223.77
361	583250.00	4123850.00	P-OS	374.49
362	583300.00	4123850.00	P-OS	350.47
363	583350.00	4123850.00	P-OS	332.16
364	583400.00	4123850.00	P-OS	306.90
365	583450.00	4123850.00	P-OS	287.01
366	583500.00	4123850.00	P-OS	278.92
367	583550.00	4123850.00	P-OS	270.48
368	583600.00	4123850.00	P-OS	256.75
369	583700.00	4123850.00	P-OS	240.58
370	583750.00	4123850.00	UCART1	252.05
371	583800.00	4123850.00	UCART1	259.13
372	583850.00	4123850.00	UCART1	247.19

373	583900.00	4123850.00	UCART1	233.87
374	583950.00	4123850.00	UCART1	229.28
375	584000.00	4123850.00	UCART1	215.51
376	583250.00	4123900.00	P-OS	360.61
377	583300.00	4123900.00	P-OS	336.34
378	583350.00	4123900.00	P-OS	304.57
379	583400.00	4123900.00	P-OS	290.96
380	583450.00	4123900.00	P-OS	282.04
381	583500.00	4123900.00	P-OS	275.56
382	583550.00	4123900.00	P-OS	248.23
383	583800.00	4123900.00	UCART1	252.95
384	583850.00	4123900.00	UCART1	250.18
385	583900.00	4123900.00	UCART1	244.85
386	583950.00	4123900.00	UCART1	240.89
387	584000.00	4123900.00	UCART1	222.84
388	584050.00	4123900.00	UCART1	222.32
389	583250.00	4123950.00	P-OS	356.28
390	583300.00	4123950.00	P-OS	333.97
391	583350.00	4123950.00	P-OS	310.62
392	583400.00	4123950.00	P-OS	281.41
393	583450.00	4123950.00	P-OS	281.67
394	583500.00	4123950.00	P-OS	274.27
395	583850.00	4123950.00	UCART1	246.66
396	583900.00	4123950.00	UCART1	249.00
397	583950.00	4123950.00	UCART1	242.18
398	584000.00	4123950.00	UCART1	232.07
399	584050.00	4123950.00	UCART1	228.06
400	584100.00	4123950.00	UCART1	230.93
401	583250.00	4124000.00	P-OS	356.19
402	583300.00	4124000.00	P-OS	342.17
403	583350.00	4124000.00	P-OS	318.01
404	583400.00	4124000.00	P-OS	288.17
405	583950.00	4124000.00	UCART1	244.30
406	584000.00	4124000.00	UCART1	240.57
407	584050.00	4124000.00	UCART1	244.13
408	584100.00	4124000.00	UCART1	242.56
409	583250.00	4124050.00	P-OS	346.49
410	583300.00	4124050.00	P-OS	338.93

411	583350.00	4124050.00	P-OS	321.46
412	583950.00	4124050.00	UCART1	242.35
413	584000.00	4124050.00	UCART1	248.99
414	584050.00	4124050.00	UCART1	253.29
415	584100.00	4124050.00	UCART1	253.98
416	583200.00	4124100.00	P-OS	314.94
417	583250.00	4124100.00	P-OS	327.73
418	583300.00	4124100.00	P-OS	328.53
419	583350.00	4124100.00	P-OS	302.88
420	583950.00	4124100.00	UCART1	235.77
421	584000.00	4124100.00	UCART1	246.04
422	584050.00	4124100.00	UCART1	263.39
423	584100.00	4124100.00	UCART1	270.93
424	583200.00	4124150.00	P-OS	306.45
425	583250.00	4124150.00	P-OS	301.92
426	583300.00	4124150.00	P-OS	306.44
427	583350.00	4124150.00	P-OS	291.15
428	583950.00	4124150.00	UCART1	229.85
429	584000.00	4124150.00	UCART1	243.48
430	584050.00	4124150.00	UCART1	265.95
431	584100.00	4124150.00	UCART1	289.79
432	583200.00	4124200.00	P-OS	302.70
433	583250.00	4124200.00	P-OS	282.28
434	583300.00	4124200.00	P-OS	271.14
435	583350.00	4124200.00	P-OS	259.75
436	584000.00	4124200.00	UCART1	247.97
437	584050.00	4124200.00	UCART1	270.60
438	584100.00	4124200.00	UCART1	299.83
439	584150.00	4124200.00	UCART1	312.83
440	583200.00	4124250.00	P-OS	329.76
441	583250.00	4124250.00	P-OS	302.79
442	583300.00	4124250.00	P-OS	285.50
443	583350.00	4124250.00	P-OS	274.58
444	584000.00	4124250.00	UCART1	258.61
445	584050.00	4124250.00	UCART1	280.02
446	584100.00	4124250.00	UCART1	292.44
447	584150.00	4124250.00	UCART1	300.23
448	583200.00	4124300.00	P-OS	321.76

449	583250.00	4124300.00	P-OS	312.73
450	583300.00	4124300.00	P-OS	285.93
451	583350.00	4124300.00	P-OS	268.06
452	583950.00	4124300.00	UCART1	239.36
453	584000.00	4124300.00	UCART1	246.40
454	584050.00	4124300.00	UCART1	259.62
455	584100.00	4124300.00	UCART1	285.46
456	584150.00	4124300.00	UCART1	295.51
457	583250.00	4124350.00	P-OS	287.91
458	583300.00	4124350.00	P-OS	276.04
459	583350.00	4124350.00	P-OS	251.53
460	583900.00	4124350.00	UCART1	222.31
461	583950.00	4124350.00	UCART1	227.72
462	584000.00	4124350.00	UCART1	233.13
463	584050.00	4124350.00	UCART1	258.04
464	584100.00	4124350.00	UCART1	276.52
465	583250.00	4124400.00	P-OS	269.70
466	583300.00	4124400.00	P-OS	261.00
467	583350.00	4124400.00	P-OS	242.76
468	583400.00	4124400.00	UCART1	224.46
469	583500.00	4124400.00	UCART1	208.58
470	583550.00	4124400.00	UCART1	202.80
471	583850.00	4124400.00	UCART1	205.18
472	583300.00	4124450.00	P-OS	239.42
473	583350.00	4124450.00	P-OS	229.93
474	583400.00	4124450.00	UCART1	217.39
475	583677.13	4124300.06	FENCEGRD	186.94
476	583699.84	4124351.29	FENCEGRD	184.06
477	583789.86	4123907.80	RES	252.55
478	583808.79	4123873.28	RES	255.32
479	583818.81	4123857.69	RES	254.54
480	583782.07	4123781.98	RES	266.31
481	583832.18	4123739.67	RES	254.51
482	583894.53	4123688.45	RES	238.76
483	583897.87	4123715.17	RES	239.22
484	583768.71	4123641.68	RES	247.94
485	583848.88	4123623.87	RES	234.99
486	583893.42	4123589.35	RES	224.89

487	583940.30	4123967.23	RES	245.24
488	583946.23	4123979.58	RES	244.14
489	583970.44	4124017.13	RES	243.08
490	583967.47	4124069.00	RES	242.73
491	583984.27	4124074.93	RES	245.64
492	583883.98	4124090.74	RES	232.06
493	583895.84	4124093.21	RES	232.75
494	583946.23	4124170.78	RES	229.55
495	583935.85	4124187.08	RES	229.39
496	584071.72	4124022.07	RES	249.79
497	584087.53	4124017.13	RES	248.75
498	583953.15	4124273.54	RES	241.55
499	583905.22	4124312.08	RES	227.27
500	583998.10	4124385.20	RES	228.35
501	583899.79	4124441.52	RES	204.83
502	584034.66	4124483.02	RES	216.84
503	583963.52	4124473.63	RES	205.07
504	583959.57	4124508.71	RES	200.98
505	583807.40	4124547.25	RES	195.62
506	583796.04	4124507.72	RES	202.13
507	583794.06	4124462.76	RES	205.48
508	583779.24	4124423.73	RES	203.67
509	583678.95	4124432.63	RES	180.21
510	583623.61	4124391.62	RES	187.49
511	583730.82	4124380.26	RES	186.19
512	583613.24	4124458.81	RES	184.07
513	583658.69	4124526.50	RES	174.08
514	583648.32	4124545.27	RES	174.07
515	583664.13	4124544.28	RES	173.43
516	583543.08	4124517.60	RES	198.16
517	583521.35	4124429.17	RES	208.07
518	583448.23	4124435.10	RES	221.13
519	583454.15	4124394.58	RES	224.40
520	583360.28	4124480.06	RES	217.01
521	583475.89	4124505.75	RES	204.64
522	583403.76	4124371.36	RES	227.60
523	583898.56	4124027.30	RES	245.06
524	583909.05	4123945.26	RES	248.99

525	583964.51	4124317.02	RES	236.59	
526	583698.68	4124506.39	RES	180.39	
527	583707.03	4124528.99	RES	179.07	
528	583562.07	4124390.91	RES	200.75	
529	583567.97	4124414.01	RES	201.22	
530	583515.36	4124503.41	RES	202.65	
531	584021.58	4124428.49	RES	223.70	
532	584115.74	4124392.14	RES	273.39	
533	584080.80	4123911.77	RES	230.84	
534	583778.30	4123711.26	RES	259.79	
535	583772.18	4123523.24	RES	242.59	
536	583815.21	4123529.93	RES	237.72	
537	583809.78	4123463.08	RES	245.05	
538	583920.24	4124535.44	RES	191.52	

Plant Boundary Receptors

Receptor Groups

Record Number	Group ID	Group Description
1	FENCEPRI	Cartesian plant boundary Primary Receptors
2	FENCEGRD	Receptors generated from Fenceline Grid
3	UCART1	Receptors generated from Uniform Cartesian Grid
4	RES	Residential
5	P-OS	Park - Open Space
6	NEW-RES	New Onsite Residence

Meteorology Pathway

Met Input Data

Surface Met Data

Filename: ..\MET\SANJOSE13_17.SFC
Format Type: Default AERMET format

Profile Met Data

Filename: ..\MET\SANJOSE13_17.PFL
Format Type: Default AERMET format

Wind Speed

☐ Wind Speeds are Vector Mean (Not Scalar Means)

Wind Direction

Rotation Adjustment [deg]:

Potential Temperature Profile

Base Elevation above MSL (for Primary Met Tower): 15.50 [m]

Meteorological Station Data

Stations	Station No.	Year	X Coordinate [m]	Y Coordinate [m]	Station Name
Surface		2013			San Jose International Airport (KSJC)
Upper Air		2013			OAKLAND/WSO AP

Data Period

Data Period to Process

Start Date: 1/1/2013 Start Hour: 1 End Date: 12/31/2017 End Hour: 24

Wind Speed Categories

Stability Category	Wind Speed [m/s]	Stability Category	Wind Speed [m/s]
A	1.54	D	8.23
B	3.09	E	10.8
C	5.14	F	No Upper Bound

Results Summary

Masson Estates - Construction HRA

PM10 - Concentration - Source Group: DPM

Averaging Period	Rank	Peak	Units	X (m)	Y (m)	ZELEV (m)	ZFLAG (m)	ZHILL (m)	Peak Date, Start Hour
PERIOD		0.05848	ug/m^3	583781.89	4124017.57	238.03	0.00	440.16	

PM10 - Concentration - Source Group: PM2.5

Averaging Period	Rank	Peak	Units	X (m)	Y (m)	ZELEV (m)	ZFLAG (m)	ZHILL (m)	Peak Date, Start Hour
PERIOD		0.10203	ug/m^3	583781.89	4124017.57	238.03	0.00	440.16	

Sensitive Receptor Summary

Masson Estates - Construction HRA

PM10 - Concentration - Source Group: DPM

Averaging Period	Rank	Peak	Units	Receptor ID	X (m)	Y (m)	ZELEV (m)	ZFLAG (m)	ZHILL (m)	Peak Date, Start Hour
PERIOD		0.04146	ug/m^3	MEIR	583769.01	4123974.12	246.45	0.00	440.16	

PM10 - Concentration - Source Group: PM2.5

Averaging Period	Rank	Peak	Units	Receptor ID	X (m)	Y (m)	ZELEV (m)	ZFLAG (m)	ZHILL (m)	Peak Date, Start Hour
PERIOD		0.07236	ug/m^3	MEIR	583769.01	4123974.12	246.45	0.00	440.16	

Masson Estates Residential
Modeling Parameters for Construction HRA
Diesel Particulate Matter Emission Sources

Source ID	Modeled Source	Location Description	AERMOD Source Type	Size		Initial Source Release Parameters (m) Release Height	Initial Lateral Dimension	Initial Vertical Dimension	Emissions[4] (lb/hr)	AERMOD Source Emission Rate	
SITE_DPM	Site - Off-Road Diesel Exhaust[1]	Project Site - Construction Area	Area	73,472	m2	5	—	1.4	0.0581	9.96E-08	g/m2-sec
HAUL1_DPM	Haul Road - On-Road Diesel Exhaust[2,3]	Truck Route - Pierce Road	Line-Volume	1264.1	meters	3.40	6.98	3.16	1.85E-05	2.33E-06	g/s
SITE_PM25	Site[5] - PM2.5 Total	Project Site - Construction Area	Area	73472	m2	5	—	1.4	0.1012	1.74E-07	g/m2-sec
HAUL1_PM25	Haul Road[5] - PM2.5 Total	Truck Route - Pierce Road	Line-Volume	1264.1	meters	3.40	6.98	3.16	2.4E-04	3.02E-05	g/s

1 Construction exhaust modeled as an area source. Release parameters for construction equipment DPM exhaust modeling from SCAQMD (2008) for gaseous exhaust from construction equipment.

2 Emissions for On-Road Mobile Sources (Vendor and Haul Diesel Exhaust) modeled only for roadways within 1,000 feet of the site within the modeling domain.

3 Parameters calculated as per US EPA Haul Road Workgroup Final Report released on March 2, 2012 which suggests the use of Adjacent Volume Sources to represent the haul road.

4 Emissions from CalEEModeling for Construction modeled during construction hours as included in Attachment A. See Note 2 above regarding roadway emission portion modeled. PM2.5 Emissions are for the maximum year.

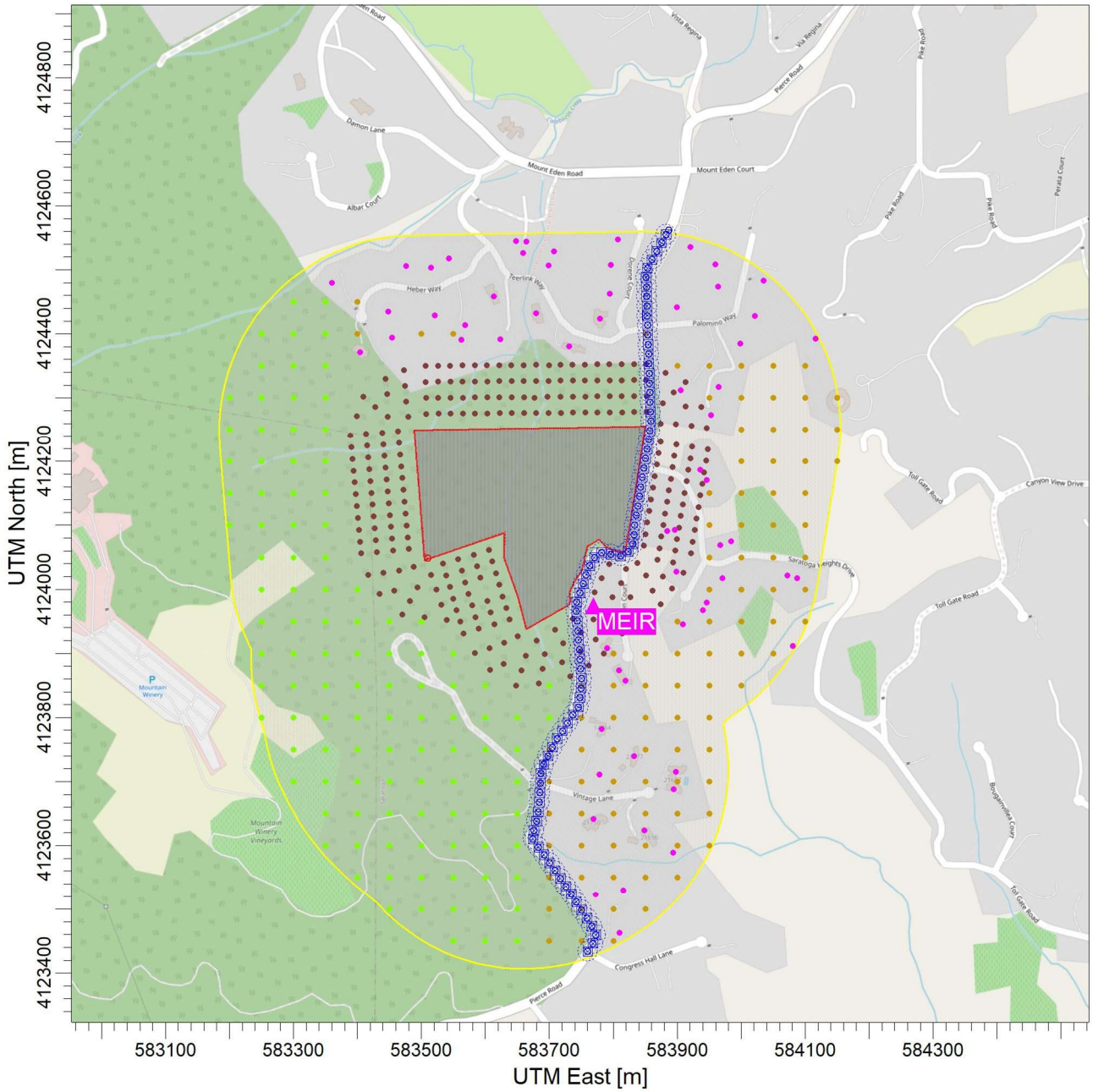
5 Construction exhaust modeled as an area source. Modeled as per BAAQMD 2022 CEQA Guidelines which permits PM2.5 Dust to be modeled along with PM2.5Exhaust.

Variable Emission Factors: ALL Sources

Monday - Friday							
1-6	0	0	0	0	0	0
7-12	0	0	1	1	1	1
13-18	0	1	1	1	1	0
19-24	0	0	0	0	0	0
Saturday						
1-6	0	0	0	0	0	0
7-12	0	0	0	0	0	0
13-18	0	0	0	0	0	0
19-24	0	0	0	0	0	0
Sunday						
1-6	0	0	0	0	0	0
7-12	0	0	0	0	0	0
13-18	0	0	0	0	0	0
19-24	0	0	0	0	0	0

PROJECT TITLE:

Masson Estates Project
AERMOD Modeling - Sources and Receptors



SOURCE LEGEND:

- Site Boundary
- Site
- Site Buffer (1,000 sq. ft)

RECEPTOR LEGEND:

- Residential
- Open Space
- Grid (350 ft)
- Grid (1,000 ft)

SENSITIVE RECEPTOR LEGEND:

- MEIR = Maximally Exposed Individual Resident

SCALE: 1:10,000

0 0.3 km

SOURCES: **2**

RECEPTORS: **538**

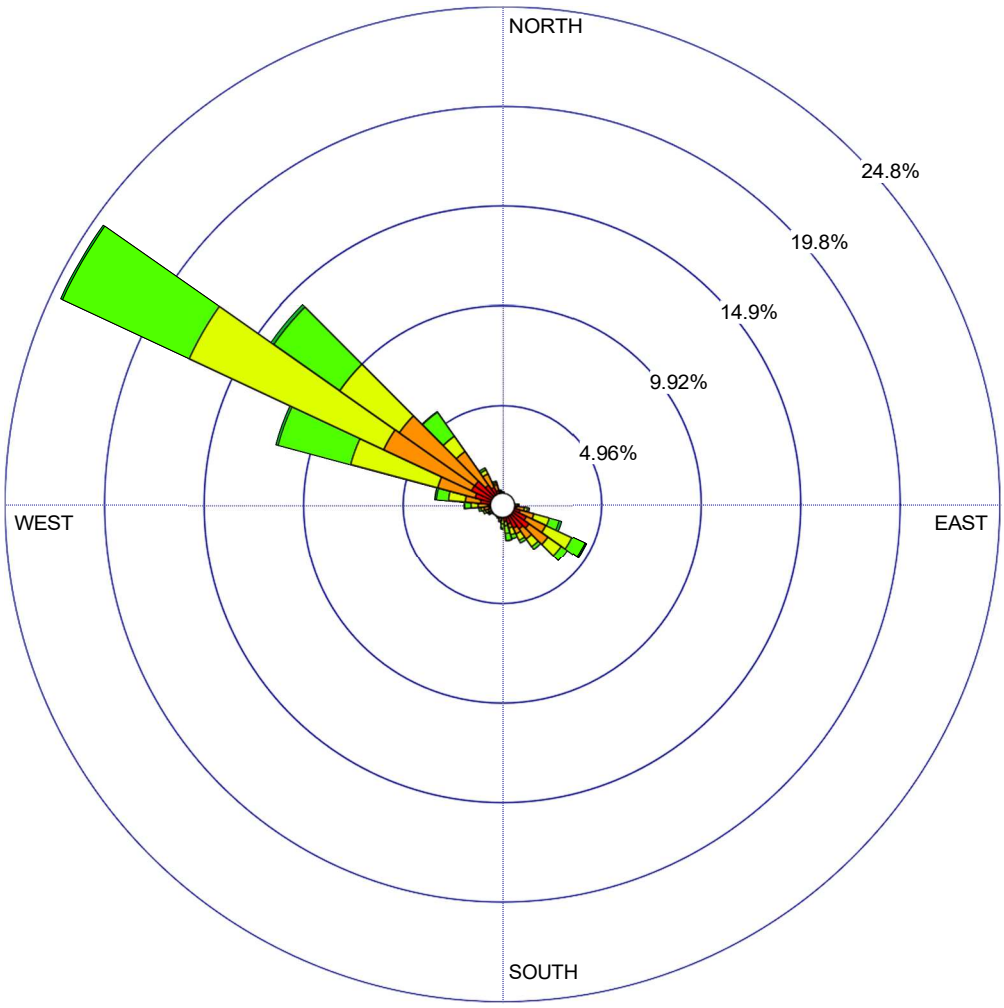
DATE: **6/3/2024**

WIND ROSE PLOT:

San Jose International Airport - KSJC
Wind Direction during Construction Hours

DISPLAY:

Wind Speed
Direction (blowing from)



WIND SPEED
(m/s)

- >= 11.10
- 8.80 - 11.10
- 5.70 - 8.80
- 3.60 - 5.70
- 2.10 - 3.60
- 0.50 - 2.10

Calms: 0.90%

COMMENTS:

Wind Rose is generated just for the hours with emissions when construction would occur or from 8 AM – 5 PM. This corresponds to the modeling hours in AERMOD.

DATA PERIOD:

Start Date: 1/1/2013 - 08:00
End Date: 12/31/2017 - 17:00

CALM WINDS:

0.90%

AVG. WIND SPEED:

3.77 m/s

How to Read a Wind Rose Diagram

The wind rose above shows the general wind direction and speed for the meteorological data set used in the AERMOD modeling for the project.'

The circular format of the wind rose shows the direction the winds blew from and the length of each "spoke" around the circle shows how often the wind blew from that direction.

*HARP - HRACalc v22118 6/5/2024 1:28:59 PM -
Cancer Risk - Input File: F:\Jobs\19660002\ConHRA\HARP\MEIR_CancerHRAInput.hra

UTME	UTMN	Pollutant	Conc (ug/m3)	Risk	Scenario	Inhalation Risk
583769.01	4123974.12	DieselExhPM	0.04146	8.7354e-06	1.2YrCancerRMP_Inh_FAH16to70	8.7354e-06

HARP2 - HRACalc (dated 22118) 6/5/2024 1:29:33 PM - Output Log

GLCs loaded successfully
Pollutants loaded successfully
****
RISK SCENARIO SETTINGS

Receptor Type: Resident
Scenario: NCChronic
Calculation Method: HighEnd

****
EXPOSURE DURATION PARAMETERS FOR CANCER
Exposure duration are only adjusted for cancer assessments

****
PATHWAYS ENABLED

NOTE: Inhalation is always enabled and used for all assessments. The remaining pathways are only used for cancer and noncancer chronic assessments.

Inhalation: True
Soil: False
Dermal: False
Mother's milk: False
Water: False
Fish: False
Homegrown crops: False
Beef: False
Dairy: False
Pig: False
Chicken: False
Egg: False

****
INHALATION

Daily breathing rate: RMP

Worker Adjustment Factors
Worker adjustment factors enabled: NO

Fraction at time at home
NOTE: Exposure duration (i.e., start age, end age, ED, & FAH) are only adjusted for cancer assessments.

****
TIER 2 SETTINGS

Tier2 adjustments were used in this assessment. Please see the input file for details.
Tier2 - What was changed: ED or start age changed|
Calculating chronic risk
Chronic risk saved to: F:\Jobs\19660002\ConHRA\HARP\MEIR_ChronicNCChronicRisk.csv
HRA ran successfully

*HARP - HRACalc v22118 6/5/2024 1:29:33 PM -
Chronic Risk - Input File: F:\Jobs\19660002\ConHRA\HARP\MEIR_ChronicHRAInput.hra

UTME	UTMN	Pollutant	Conc (ug/m3)	CV	CNS	IMMUN	KIDNEY	GILV	REPRO	RESP	SKIN	EYE	B/T	ENDO	BLOOD	ODOR	GEN
583769.01	4123974.12	DieselExhPM	0.04146	0.0	0.0	0.0	0.0	0.0	0.0	0.008292	0.0	0.0	0.0	0.0	0.0	0.0	0.0

HEALTH RISK ASSESSMENT CALCULATIONS

The HRA was conducted utilizing the CARB's Hot Spots Analysis and Reporting Program Version 2 (HARP2) to automatically calculate risks for the projects using OEHHA promulgated cancer potency and reference exposure levels. (HARP2) is the recommended model for calculating and presenting HRA results because it follows the district's risk assessment guidance methodology and is consistent with the Air District's Regulation 2-5. Since AERMOD was run with project emission rates to directly calculate potential DPM and PM2.5 concentrations, the Health Risk Assessment Standalone Tool (RAST) version of HARP2 was used.

The HRA follows BAAQMD CEQA Guidelines based on OEHHA Guidance. This risk assessment intake methodology addresses children's greater sensitivity and health impacts from early exposure to carcinogenic compounds. The chemical intake or dose describing the frequency and duration of the exposure is estimated using receptor's breathing rates, exposure duration, and exposure frequency. The calculations include the use of age-specific weighting factors, breathing rates, fraction of time at home, and reduced exposure durations.

These factors are described below, followed by a summary of the HARP2 HRA inputs and cancer and noncancer risk results for selected for each receptor group (i.e., resident, off-site worker, and student).

Age Sensitivity Factors – Studies have shown that young animals are more sensitive than adult animals to exposure to many carcinogens (OEHHA, 2009). Therefore, OEHHA developed age sensitivity factors (ASFs) to account for the increased sensitivity to carcinogens during early-in-life exposures. Accordingly, the cancer risk methodology applies different ASFs by age groups. The ASFs utilized a 10-fold multiplier in sensitivity for the third trimester and infants less than age 2, a 3-fold increase in sensitivity for children ages 2 to 16 years old, and a sensitivity factor of 1 for ages 16 and older.

Daily breathing rates (age-specific daily air intake) – For residential receptors, the HRA utilizes the 95th percentile breathing rates for the most sensitive age groups (less than 2 years of age) and 80th percentile for all other age groups. This approach jointly developed by ARB and CAPCOA [1] and adopted by BAAQMD[2] is referred to as the "Risk Management Policy" and was developed to consider the new science in risk assessment while providing a reasonable estimate of potential cancer risk for risk management decisions. and used in this HRA. The HRA uses 95th percentile 8-hour breathing rates for moderate intensity activities for worker and student exposure.[3]

Time at home – The time at home applies only applies to residential receptors. Residents are assumed to be at home 350 days per year, which assumes individuals are away for approximately 2 weeks of

---

[1] California Air Resources Board (ARB) and California Air Pollution Control Officers Association (CAPCOA). 2015. Risk Management Guidance for Stationary Sources of Air Toxics. July 23. Website: https://ww2.arb.ca.gov/sites/default/files/classic/toxics/rma/rmgssat.pdf. Accessed April 8, 2024.

[2] Bay Area Air Quality Management District (BAAQMD). 2022. California Environmental Quality Act – Air Quality Guidelines Appendix E: Recommended Methods for Screening and Modeling Local Risks and Hazards. Website: https://www.baaqmd.gov/~/media/files/planning-and-research/ceqa/ceqa-guidelines-2022/appendix-e-recommended-methods-for-screening-and-modeling-local-risks-and-hazards_final-pdf.pdf?rev=b8917a27345a4a629fc18fc8650951e4&sc_lang=en. Accessed March 7, 2024.

[3] Office of Environmental Health Hazard Assessment (OEHHA). 2015. The Air Toxics Hot Spots Program Guidance Manual for Preparation of Health Risk Assessments. Website: https://oehha.ca.gov/media/downloads/crnr/2015guidancemanual.pdf. Accessed March 29, 2024.

vacation. The fraction of time at home refers to the estimated amount of time residents stay at home during these 350 days. The HRA uses the OEHHA and BAAQMD recommended values of 73% time at home for 16-year-olds and above based on based on population and activity statistics. The HRA also assumes 100 percent time at home for receptors under age 16 to address exposures at local schools close to emitting sources. Even though infants and children may not be at their residence all the time, they are likely to remain in the neighborhood (at schools or neighbors) and would be exposed to similar levels of the pollutants.

Exposure Duration - OEHHA 2015 guidelines specify a 30-year residential exposure duration for estimating cancer risk at the maximum exposed individual resident (MEIR). This is based on studies showing that 30 years is a reasonable estimate of the 90th to 95th percentile of residency duration in the population. A 25-year standard exposure duration is the default to estimate cancer risk for off-site workers. However, risk assessors can use other exposure durations with proper justification and documentation. For example, short-term projects (e.g., construction projects) can now be evaluated for as short a duration as 6 months. This project is evaluated based on the construction schedule from 6/2/2025 - 11/13/2026, over a period of 1.45 years.

Residential Cancer Risk

Cancer risk for individual resident receptors exposed to "Diesel Particulate Exhaust" (DPM) were calculated utilizing the "Risk Management Policy" option for inhalation, specifying that residents spend 100% time at home for ages less than 16 years old. Consistent with OEHHA guidance, the start of residential exposure was assumed to occur in the third trimester (-0.25 years) to accommodate the increased susceptibility of exposures in early life. Since the construction is anticipated to occur for 1.45 years, the residential exposure starts with the unborn child at the third trimester (when construction begins) and continues until the child is 1.2 years of age. Because there are no significant sources of TAC emissions during operations, the exposure assessment is limited to the duration of the proposed project construction or 1.45 years.

Noncancer Chronic Health Risks

Chronic RELs are used to assess not only residential health impacts.

Worker Cancer Risk

No notable commercial, office or industrial workplaces were identified within the 1,000 feet buffer area. The cancer and non-cancer risk at the maximally exposed individual resident (MEIR) represent the maximum impact. Any workers within the 1,000 ft modeling radius would be exposed at levels lower than the MEIR.

HARP2 Inputs and Results

HARP2 Output files are included to document the HRA exposure parameters and risk results.

HARP2 - HRACalc (dated 22118) 6/5/2024 1:28:59 PM - Output Log

GLCs loaded successfully
Pollutants loaded successfully
****
RISK SCENARIO SETTINGS

Receptor Type: Resident
Scenario: Cancer
Calculation Method: HighEnd

****
EXPOSURE DURATION PARAMETERS FOR CANCER

Start Age: -0.25
Total Exposure Duration: 1.2

Exposure Duration Bin Distribution
3rd Trimester Bin: 0.25
0<2 Years Bin: 1.2
2<9 Years Bin: 0
2<16 Years Bin: 0
16<30 Years Bin: 0
16 to 70 Years Bin: 0

****
PATHWAYS ENABLED

NOTE: Inhalation is always enabled and used for all assessments. The remaining pathways are only used for cancer and noncancer chronic assessments.

Inhalation: True
Soil: False
Dermal: False
Mother's milk: False
Water: False
Fish: False
Homegrown crops: False
Beef: False
Dairy: False
Pig: False
Chicken: False
Egg: False

****
INHALATION

Daily breathing rate: RMP

Worker Adjustment Factors
Worker adjustment factors enabled: NO

Fraction at time at home
3rd Trimester to 16 years: OFF
16 years to 70 years: ON

****
TIER 2 SETTINGS

Tier2 adjustments were used in this assessment. Please see the input file for details.
Tier2 - What was changed: ED or start age changed|
Calculating cancer risk
Cancer risk saved to: F:\Jobs\19660002\ConHRA\HARP\MEIR_CancerCancerRisk.csv
HRA ran successfully

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UTME	UTMN	Pollutant	Conc (ug/m3)	Risk	Scenario	Inhalation Risk
583769.01	4123974.12	DieselExhPM	0.04146	8.7354e-06	1.2YrCancerRMP_Inh_FAH16to70	8.7354e-06

HARP2 - HRACalc (dated 22118) 6/5/2024 1:29:33 PM - Output Log

GLCs loaded successfully
Pollutants loaded successfully
****
RISK SCENARIO SETTINGS

Receptor Type: Resident
Scenario: NCChronic
Calculation Method: HighEnd

****
EXPOSURE DURATION PARAMETERS FOR CANCER
Exposure duration are only adjusted for cancer assessments

****
PATHWAYS ENABLED

NOTE: Inhalation is always enabled and used for all assessments. The remaining pathways are only used for cancer and noncancer chronic assessments.

Inhalation: True
Soil: False
Dermal: False
Mother's milk: False
Water: False
Fish: False
Homegrown crops: False
Beef: False
Dairy: False
Pig: False
Chicken: False
Egg: False

****
INHALATION

Daily breathing rate: RMP

Worker Adjustment Factors
Worker adjustment factors enabled: NO

Fraction at time at home
NOTE: Exposure duration (i.e., start age, end age, ED, & FAH) are only adjusted for cancer assessments.

****
TIER 2 SETTINGS

Tier2 adjustments were used in this assessment. Please see the input file for details.
Tier2 - What was changed: ED or start age changed|
Calculating chronic risk
Chronic risk saved to: F:\Jobs\19660002\ConHRA\HARP\MEIR_ChronicNCChronicRisk.csv
HRA ran successfully

*HARP - HRACalc v22118 6/5/2024 1:29:33 PM -
Chronic Risk - Input File: F:\Jobs\19660002\ConHRA\HARP\MEIR_ChronicHRAInput.hra

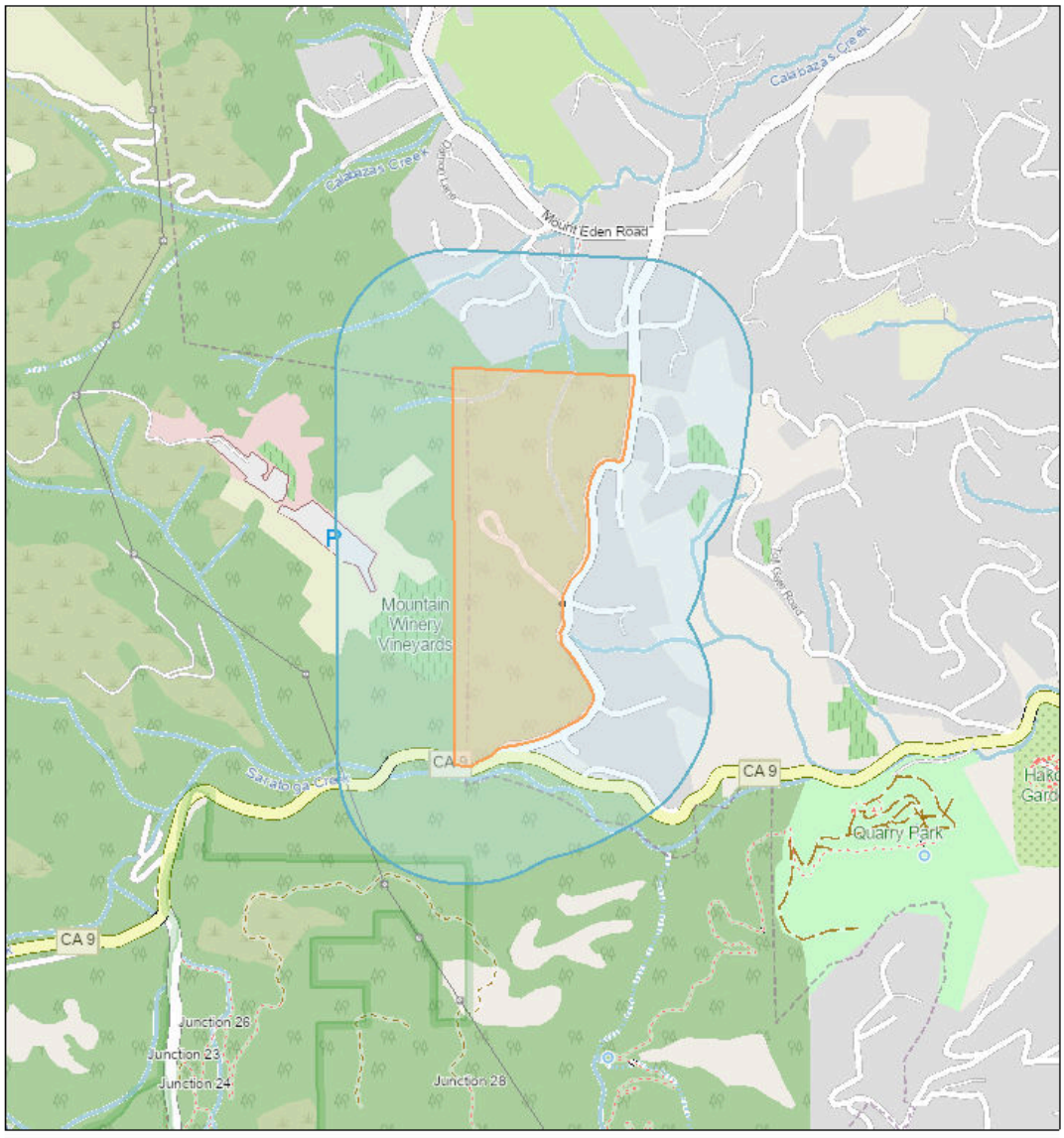
UTME	UTMN	Pollutant	Conc (ug/m3)	CV	CNS	IMMUN	KIDNEY	GILV	REPRO	RESP	SKIN	EYE	B/T	ENDO	BLOOD	ODOR	GEN
583769.01	4123974.12	DieselExhPM	0.04146	0.0	0.0	0.0	0.0	0.0	0.0	0.008292	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Screening Report - Masson Estates

Area of Interest (AOI) Information

Area : 16,173,425.19 ft²

May 1 2024 9:16:48 Pacific Daylight Time



Permitted Stationary Sources

1:18,056

0 0.1 0.2 0.4 mi

0 0.17 0.35 0.7 km

Map data © OpenStreetMap contributors, Microsoft, Facebook, Inc. and its affiliates, Esri Community Maps contributors, Map layer by Esri

Summary

Name	Count	Area(ft²)	Length(ft)
Permitted Stationary Sources	1	N/A	N/A

Permitted Stationary Sources

#	Facility_I	Facility_N	Address	City	State
1	21425	Verizon Wireless (Hwy 9 & Pierce)	14831 Pierce Road	Saratoga	CA

#	Zip	County	Latitude	Longitude	Details
1	95070	Santa Clara	37.256020	-122.056459	Generator

#	NAICS	NAICS_Sect	NAICS_Subs	NAICS_Indu	Cancer_Ris
1	517210	Information	Telecommunications	Wireless Telecommunications Carriers (except Satellite)	1.236000

#	Chronic_Ha	PM25	Count
1	0.002000	0.002000	1

NOTE: A larger buffer than 1000 feet may be warranted depending on proximity to significant sources.

UTMX	UTMY	Road Canc	Road Chro	Road PM2.	Rail Cance	Rail Chroni	Rail PM2.5
583769	4123974	0.570953	0.002938	0.026738	0	0	0

Data Provided By: BAAQMD as raster file (.tif) datasets
Roadway Screening Tool - Cancer Risk Last Updated December 8 2022
Roadway Screening Tool - Chronic Hazard Last Updated December 8 2022
Roadway Screening Tool - PM2.5 Last Updated December 8 2022
Rail Screening Tool - Cancer Risk Last Updated May 9 2024
Rail Screening Tool - Chronic Hazard Last Updated May 9 2024
Rail Screening Tool - PM2.5 Last Updated May 9 2024

UTMX	UTMY	Road Canc	Road Chro	Road PM2.	Rail Cance	Rail Chroni	Rail PM2.5
583834.2	4124211	0.643315	0.003267	0.02974	0	0	0
583835.6	4124223	0.643315	0.003267	0.02974	0	0	0
583838.7	4124245	0.643315	0.003267	0.02974	0	0	0
583827.1	4124244	0.643315	0.003267	0.02974	0	0	0
583817.4	4124226	0.643315	0.003267	0.02974	0	0	0
583814.3	4124212	0.643315	0.003267	0.02974	0	0	0
583811.6	4124201	0.582774	0.003227	0.030639	0	0	0
583825.8	4124180	0.582774	0.003227	0.030639	0	0	0
583757	4124112	0.424824	0.002423	0.02348	0	0	0
583739.7	4124092	0.403497	0.002247	0.021577	0	0	0
583725.6	4124073	0.403497	0.002247	0.021577	0	0	0
583707.4	4124043	0.462426	0.002432	0.022728	0	0	0
583698.1	4123996	0.539598	0.002668	0.023985	0	0	0
583672.8	4124097	0.358836	0.002039	0.019744	0	0	0
583683.9	4124128	0.355091	0.002044	0.019907	0	0	0
583701.2	4124158	0.383041	0.002187	0.021214	0	0	0
583675.4	4124155	0.355091	0.002044	0.019907	0	0	0
583691.4	4124206	0.360065	0.002097	0.020526	0	0	0
583573.9	4124197	0.294978	0.001741	0.017123	0	0	0
583522	4124217	0.256018	0.001531	0.015136	0	0	0
583529.5	4124181	0.255809	0.001516	0.014935	0	0	0
583529.5	4124148	0.254239	0.001498	0.014713	0	0	0
583541.9	4124105	0.244082	0.001435	0.014077	0	0	0
583577.4	4124104	0.281457	0.001641	0.016044	0	0	0
583781.2	4124233	0.482113	0.002695	0.025895	0	0	0

Data Provided By: BAAQMD as raster file (.tif) datasets
Roadway Screening Tool - Cancer Risk Last Updated December 8 2022
Roadway Screening Tool - Chronic Hazard Last Updated December 8 2022
Roadway Screening Tool - PM2.5 Last Updated December 8 2022
Rail Screening Tool - Cancer Risk Last Updated May 9 2024
Rail Screening Tool - Chronic Hazard Last Updated May 9 2024
Rail Screening Tool - PM2.5 Last Updated May 9 2024

Masson Estates - con + ops

Summary of Fossil Fuel Energy Use During Construction

Construction equipment fuel	46,089	gallons (diesel)
Construction vehicle fuel	3,888	gallons (gasoline, diesel)
Total construction fuel	**49,977**	**gallons (gasoline, diesel)**

Summary of Energy Use During Construction - Electricity

Year	kWh per Year
2025	0
2026	0

Off-Road Construction Equipment
Fuel Consumption

Masson Estates - con + ops
Energy Calculations - Construction Vehicle Fuel
Source: AQ/GHG Appendix, CalEEMod Output, EMFAC2021 v1.0.2

Vehicle Type	Total VMT (mi)	mi/gal	gal	Vehicle Cat
Worker	44,589	26.90	1,657	LDA,LDT1,LDT2
Vendor	11,943	6.76	1,765	HHDT,MHDT
Hauling	2,740	5.89	465	HHDT
Onsite truck	0	5.89	0	HHDT
	59,271		**3,888**	**gallons**
	Combined VMT			

Note: Fuel Economy Factors are from EMFAC2021 for: Santa Clara

Masson Estates - con + ops
Energy Calculations - Building Electricity Consumption

Operational Year	**2026**
County	**Santa Clara**

Building Energy Fuel		**Electricity (kWh/yr)**	**Natural Gas (MMBTU/yr)**
Single Family Housing		154621	1,155,548
Other Asphalt Surfaces		0	-
	0	0	-
	0	0	-
0		0	-
Total Building Energy		154,621	1,155,548

Masson Estates - con + ops
Energy Calculations
Onroad Mobile Sources

Operational Year	**2026**	
County	**Santa Clara**	
Gasoline	**28,860**	**gallons**
Diesel	**2,769**	**gallons**
Natural Gas	**129**	**gallons**
Electricity	**20,770**	**kw-hr**

Masson Estates - con + ops
Energy Calculations - Operations Fuel Use from Mobile Sources

Santa Clara	Annual VMT	HHDT	LDA	LDT1	LDT2	LHDT1	LHDT2	MCY	MDV	MH	MHDT	OBUS	SBUS	UBUS	
2026	848,120	0.75%	52.54%	3.92%	23.23%	2.34%	0.58%	2.21%	13.01%	0.25%	0.95%	0.11%	0.07%	0.04%	100%

Total Operational FUEL Consumption for ALL LAND USES (gallons for fuels, Kw-hr for electricity)

Fuel	All Vehicles	HHDT	LDA	LDT1	LDT2	LHD1	LHD2	MCY	MDV	MH	MHDT	OBUS	SBUS	UBUS
Gasoline	**28,860**	**0**	**12567**	**1257**	**7540**	**1264**	**183**	**441**	**5017**	**333**	**187**	**55**	**12**	**3**
Diesel	**2,769**	**956**	**22**	**0**	**20**	**428**	**240**		**61**	**70**	**813**	**77**	**53**	**28**
Natural Gas	**129**	**109**									**10**	**1**	**3**	**7**
Electricity	**20,770**	**133**	**18304**	**81**	**990**	**161**	**40**		**902**		**119**	**3**	**5**	**32**

Fuel Consumption by Vehicle Category

Fuel Consumption for CVMT	Units	HHDT	LDA	LDT1	LDT2	LHD1	LHD2	MCY	MDV	MH	MHDT	OBUS	SBUS	UBUS
Gasoline	**gal**	0	12354	1255	7510	1264	183	441	4999	333	187	55	12	3
Diesel	**gal**	956	22	0	20	428	240		61	70	813	77	53	28
Natural Gas	**gal**	109									10	1	3	7
Plug-in Hybrid (Gasoline)	**gal**		213	1	30				19					
Fuel Consumption for EVMT	**Units**	**HHDT**	**LDA**	**LDT1**	**LDT2**	**LHD1**	**LHD2**	**MCY**	**MDV**	**MH**	**MHDT**	**OBUS**	**SBUS**	**UBUS**
Electricity	**kwhr**	**133**	**15691**	**63**	**614**	**161**	**40**		**669**		**119**	**3**	**5**	**32**
Plug-in Hybrid (Electricity)	**kwhr**		**2613**	**18**	**375**				**233**					

Fuel Consumption Factors	Units	HHDT	LDA	LDT1	LDT2	LHDT1	LHDT2	MCY	MDV	MH	MHDT	OBUS	SBUS	UBUS
Gasoline	mi/gal	4.2	31.5	26.3	25.6	10.1	8.9	42.4	21.1	4.4	4.9	4.9	10.0	9.3
Diesel	mi/gal	6.0	44.7	24.5	34.4	16.2	13.5		25.8	9.4	8.5	8.0	8.2	9.1
Natural Gas	mi/gal	5.1									7.2	7.9	5.6	5.9
Plug-in Hybrid	mi/gal		29.5	29.3	29.2				28.8					

Fuel Consumption Factors	Units	HHDT	LDA	LDT1	LDT2	LHDT1	LHDT2	MCY	MDV	MH	MHDT	OBUS	SBUS	UBUS
Electricity	kwhr/mi	1.84	0.37	0.37	0.35	0.65	0.65		0.36		1.10	1.11	1.05	1.74
Plug-in Hybrid	kwhr/mi	1.84	0.37	0.37	0.35	0.65	0.65		0.36		1.10	1.11	1.05	1.74

Total VMT Fraction by Fuel and Vehicle Category

Fuel	HHDT	LDA	LDT1	LDT2	LHDT1	LHDT2	MCY	MDV	MH	MHDT	OBUS	SBUS	UBUS
Gasoline	0.0%	87.4%	99.2%	97.8%	64.0%	33.1%	100.0%	95.8%	69.1%	11.4%	30.3%	20.6%	8.7%
Diesel	90.1%	0.2%	0.0%	0.4%	34.8%	65.7%		1.4%	30.9%	86.4%	68.7%	75.6%	74.2%
Natural Gas	8.8%									0.9%	0.7%	2.9%	11.8%
Electricity	1.1%	9.4%	0.5%	0.9%	1.2%	1.3%		1.7%		1.4%	0.3%	0.9%	5.4%
Plug-in Hybrid		3.0%	0.3%	1.0%				1.1%					
totals	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

CVMT by EMFAC Vehicle Type

Fuel	HHDT	LDA	LDT1	LDT2	LHDT1	LHDT2	MCY	MDV	MH	MHDT	OBUS	SBUS	UBUS
Plug-in Hybrid		47%	43%	45%				45%					

EVMT by EMFAC Vehicle Type

Fuel	HHDT	LDA	LDT1	LDT2	LHDT1	LHDT2	MCY	MDV	MH	MHDT	OBUS	SBUS	UBUS
Electricity	100%	100%	100%	100%	100%	100%		100%		100%	100%	100%	100%
Plug-in Hybrid		53%	57%	55%				55%					

Masson Estates - con + ops
Energy Calculations - Operations Fuel Use from Mobile Sources

Santa Clara	Annual VMT	HHDT	LDA	LDT1	LDT2	LHDT1	LHDT2	MCY	MDV	MH	MHDT	OBUS	SBUS	UBUS	
2026	-	0.75%	52.54%	3.92%	23.23%	2.34%	0.58%	2.21%	13.01%	0.25%	0.95%	0.11%	0.07%	0.04%	100.0%

CO2 Emissions	CO2e (MT/yr)
Gasoline	
Diesel	
Natural Gas	
Electricity	
Fossil Fuel & Electricity Generation	-

COe emissions from Fuel Consumption and Electricity Generation

Fuel	Emission Factor	Units
Gasoline	8.89	kg/gal
Diesel	10.18	kg/gal
Natural Gas	6.89	kg/gal
Electricity	91.63	kg/MWhr
Electricity	202.00	lb/MWhr
Electricity	0.09	MT/MWhr

Total Operational FUEL Consumption for ALL LAND USES (gallons for fuels, Kw-hr for electricity)

Fuel	All Vehicles	HHDT	LDA	LDT1	LDT2	LHD1	LHD2	MCY	MDV	MH	MHDT	OBUS	SBUS	UBUS
Gasoline														
Diesel														
Natural Gas														
Electricity														

Fuel Consumption by Vehicle Category

Fuel Consumption for CVMT	Units	HHDT	LDA	LDT1	LDT2	LHD1	LHD2	MCY	MDV	MH	MHDT	OBUS	SBUS	UBUS
Gasoline	gal													
Diesel	gal													
Natural Gas	gal													
Electricity	gal													
Plug-in Hybrid (Gasoline)	gal													
Fuel Consumption for EVMT	**Units**	**HHDT**	**LDA**	**LDT1**	**LDT2**	**LHD1**	**LHD2**	**MCY**	**MDV**	**MH**	**MHDT**	**OBUS**	**SBUS**	**UBUS**
Gasoline	kwhr													
Diesel	kwhr													
Natural Gas	kwhr													
Electricity	kwhr													
Plug-in Hybrid (Electricity)	kwhr													

Fuel Consumption Factors	Units	HHDT	LDA	LDT1	LDT2	LHDT1	LHDT2	MCY	MDV	MH	MHDT	OBUS	SBUS	UBUS
Gasoline	mi/gal	4.2	31.5	26.3	25.6	10.1	8.9	42.4	21.1	4.4	4.9	4.9	10.0	9.3
Diesel	mi/gal	6.0	44.7	24.5	34.4	16.2	13.5		25.8	9.4	8.5	8.0	8.2	9.1
Natural Gas	mi/gal	5.1									7.2	7.9	5.6	5.9
Electricity	mi/gal													
Plug-in Hybrid	mi/gal		29.5	29.3	29.2				28.8					

Fuel Consumption Factors	Units	HHDT	LDA	LDT1	LDT2	LHDT1	LHDT2	MCY	MDV	MH	MHDT	OBUS	SBUS	UBUS
Gasoline	kwhr/mi													
Diesel	kwhr/mi													
Natural Gas	kwhr/mi													
Electricity	kwhr/mi	1.84	0.37	0.37	0.35	0.65	0.65		0.36		1.10	1.11	1.05	1.74
Plug-in Hybrid	kwhr/mi	1.84	0.37	0.37	0.35	0.65	0.65		0.36		1.10	1.11	1.05	1.74

Total VMT Fraction by Fuel and Vehicle Category

Fuel	HHDT	LDA	LDT1	LDT2	LHDT1	LHDT2	MCY	MDV	MH	MHDT	OBUS	SBUS	UBUS
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Natural Gas	8.8%									0.9%	0.7%	2.9%	11.8%
Electricity	1.1%	9.4%	0.5%	0.9%	1.2%	1.3%		1.7%		1.4%	0.3%	0.9%	5.4%
Plug-in Hybrid		3.0%	0.3%	1.0%				1.1%					
totals	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

CVMT by EMFAC Vehicle Type

Fuel	HHDT	LDA	LDT1	LDT2	LHDT1	LHDT2	MCY	MDV	MH	MHDT	OBUS	SBUS	UBUS
Gasoline	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Diesel	100%	100%	100%	100%	100%	100%		100%	100%	100%	100%	100%	100%
Natural Gas	100%									100%	100%	100%	100%
Electricity													
Plug-in Hybrid		47%	43%	45%				45%					

EVMT by EMFAC Vehicle Type

Fuel	HHDT	LDA	LDT1	LDT2	LHDT1	LHDT2	MCY	MDV	MH	MHDT	OBUS	SBUS	UBUS
Gasoline													
Diesel													
Natural Gas													
Electricity	100%	100%	100%	100%	100%	100%		100%		100%	100%	100%	100%
Plug-in Hybrid		53%	57%	55%				55%					

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Masson Estates - con + ops
Energy Calculations - Operations Fuel Use from Mobile Sources

Santa Clara	Annual VMT	HHDT	LDA	LDT1	LDT2	LHDT1	LHDT2	MCY	MDV	MH	MHDT	OBUS	SBUS	UBUS	
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CO2 Emissions	CO2e (MT/yr)
Gasoline	
Diesel	
Natural Gas	
Electricity	
Fossil Fuel & Electricity Generation	-

COe emissions from Fuel Consumption and Electricity Generation

Fuel	Emission Factor	Units
Gasoline	8.89	kg/gal
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Total Operational FUEL Consumption for ALL LAND USES (gallons for fuels, Kw-hr for electricity)

Fuel	All Vehicles	HHDT	LDA	LDT1	LDT2	LHD1	LHD2	MCY	MDV	MH	MHDT	OBUS	SBUS	UBUS
Gasoline														
Diesel														
Natural Gas														
Electricity														

Fuel Consumption by Vehicle Category

Fuel Consumption for CVMT	Units	HHDT	LDA	LDT1	LDT2	LHD1	LHD2	MCY	MDV	MH	MHDT	OBUS	SBUS	UBUS
Gasoline	gal													
Diesel	gal													
Natural Gas	gal													
Electricity	gal													
Plug-in Hybrid (Gasoline)	gal													
Fuel Consumption for EVMT	**Units**	**HHDT**	**LDA**	**LDT1**	**LDT2**	**LHD1**	**LHD2**	**MCY**	**MDV**	**MH**	**MHDT**	**OBUS**	**SBUS**	**UBUS**
Gasoline	kwhr													
Diesel	kwhr													
Natural Gas	kwhr													
Electricity	kwhr													
Plug-in Hybrid (Electricity)	kwhr													

Fuel Consumption Factors	Units	HHDT	LDA	LDT1	LDT2	LHDT1	LHDT2	MCY	MDV	MH	MHDT	OBUS	SBUS	UBUS
Gasoline	mi/gal	4.2	31.5	26.3	25.6	10.1	8.9	42.4	21.1	4.4	4.9	4.9	10.0	9.3
Diesel	mi/gal	6.0	44.7	24.5	34.4	16.2	13.5		25.8	9.4	8.5	8.0	8.2	9.1
Natural Gas	mi/gal	5.1									7.2	7.9	5.6	5.9
Electricity	mi/gal													
Plug-in Hybrid	mi/gal		29.5	29.3	29.2				28.8					

Fuel Consumption Factors	Units	HHDT	LDA	LDT1	LDT2	LHDT1	LHDT2	MCY	MDV	MH	MHDT	OBUS	SBUS	UBUS
Gasoline	kwhr/mi													
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Natural Gas	kwhr/mi													
Electricity	kwhr/mi	1.84	0.37	0.37	0.35	0.65	0.65		0.36		1.10	1.11	1.05	1.74
Plug-in Hybrid	kwhr/mi	1.84	0.37	0.37	0.35	0.65	0.65		0.36		1.10	1.11	1.05	1.74

Total VMT Fraction by Fuel and Vehicle Category

Fuel	HHDT	LDA	LDT1	LDT2	LHDT1	LHDT2	MCY	MDV	MH	MHDT	OBUS	SBUS	UBUS
Gasoline	0.0%	87.4%	99.2%	97.8%	64.0%	33.1%	100.0%	95.8%	69.1%	11.4%	30.3%	20.6%	8.7%
Diesel	90.1%	0.2%	0.0%	0.4%	34.8%	65.7%		1.4%	30.9%	86.4%	68.7%	75.6%	74.2%
Natural Gas	8.8%									0.9%	0.7%	2.9%	11.8%
Electricity	1.1%	9.4%	0.5%	0.9%	1.2%	1.3%		1.7%		1.4%	0.3%	0.9%	5.4%
Plug-in Hybrid		3.0%	0.3%	1.0%				1.1%					
totals	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

CVMT by EMFAC Vehicle Type

Fuel	HHDT	LDA	LDT1	LDT2	LHDT1	LHDT2	MCY	MDV	MH	MHDT	OBUS	SBUS	UBUS
Gasoline	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Diesel	100%	100%	100%	100%	100%	100%		100%	100%	100%	100%	100%	100%
Natural Gas	100%									100%	100%	100%	100%
Electricity													
Plug-in Hybrid		47%	43%	45%				45%					

EVMT by EMFAC Vehicle Type

Fuel	HHDT	LDA	LDT1	LDT2	LHDT1	LHDT2	MCY	MDV	MH	MHDT	OBUS	SBUS	UBUS
Gasoline													
Diesel													
Natural Gas													
Electricity	100%	100%	100%	100%	100%	100%		100%		100%	100%	100%	100%
Plug-in Hybrid		53%	57%	55%				55%					

Hexagon Transportation Consultants, Inc.

Memorandum

Date: May 20, 2024

To: Jason Brandman, First Carbon Solutions

From: Gary K. Black, Nivedha Baskarapandian

Subject: CEQA Transportation Study for the Proposed Pierce Road Homes in Saratoga, California

Hexagon Transportation Consultants, Inc. has completed a CEQA transportation study for the proposed residential development on Pierce Road in Saratoga, California. The proposed project site is located west of the intersection of Pierce Road and Saratoga Heights Drive (see Figure 1). The project would build 25 single family homes (see Figure 2). Access to the project site would be provided by a new street (Masson Estates Way).

The purpose of this study is to meet the CEQA requirements to evaluate vehicle miles traveled (VMT), consistency with pedestrian, bicycle, and transit plans, safety, and emergency vehicle access. The methodology and results of the study are discussed below.

VMT Analysis

VMT Requirements and Screening

Pursuant to Senate Bill (SB) 743, the California Environmental Quality Act (CEQA) 2019 Update Guidelines Section 15064.3, subdivision (b) states that VMT will be the metric in analyzing transportation impacts for land use projects for CEQA purposes. VMT is the total miles of travel by personal motorized vehicles a project is expected to generate in a day. VMT measures the full distance of personal motorized vehicle trips with one end within the project.

The City of Saratoga has not yet adopted any thresholds or guidelines related to VMT. However, the Governor's Office of Planning and Research (OPR)'s provides recommendations for screening criteria. The following types of projects may be presumed to have a less than significant VMT impact:

- projects near transit (i.e., within a ½ mile walkshed of major transit stop),
- small projects (i.e., fewer than 110 trips per day),
- residential or work-related projects located in a traffic analysis zone (TAZ) or TAZ group with similar land uses and the VMT is equal to or less than the citywide mean. The policy outlines additional criteria for this screening criteria however these are not used as part of this study,
- neighborhood serving retail projects that are less than 50,000 square feet (s.f.)

The project would generate 282 daily trips (see Table 1), is located over five miles from a major transit stop. Therefore, the proposed project does not meet the screening criteria outlined above and VMT analysis is required.

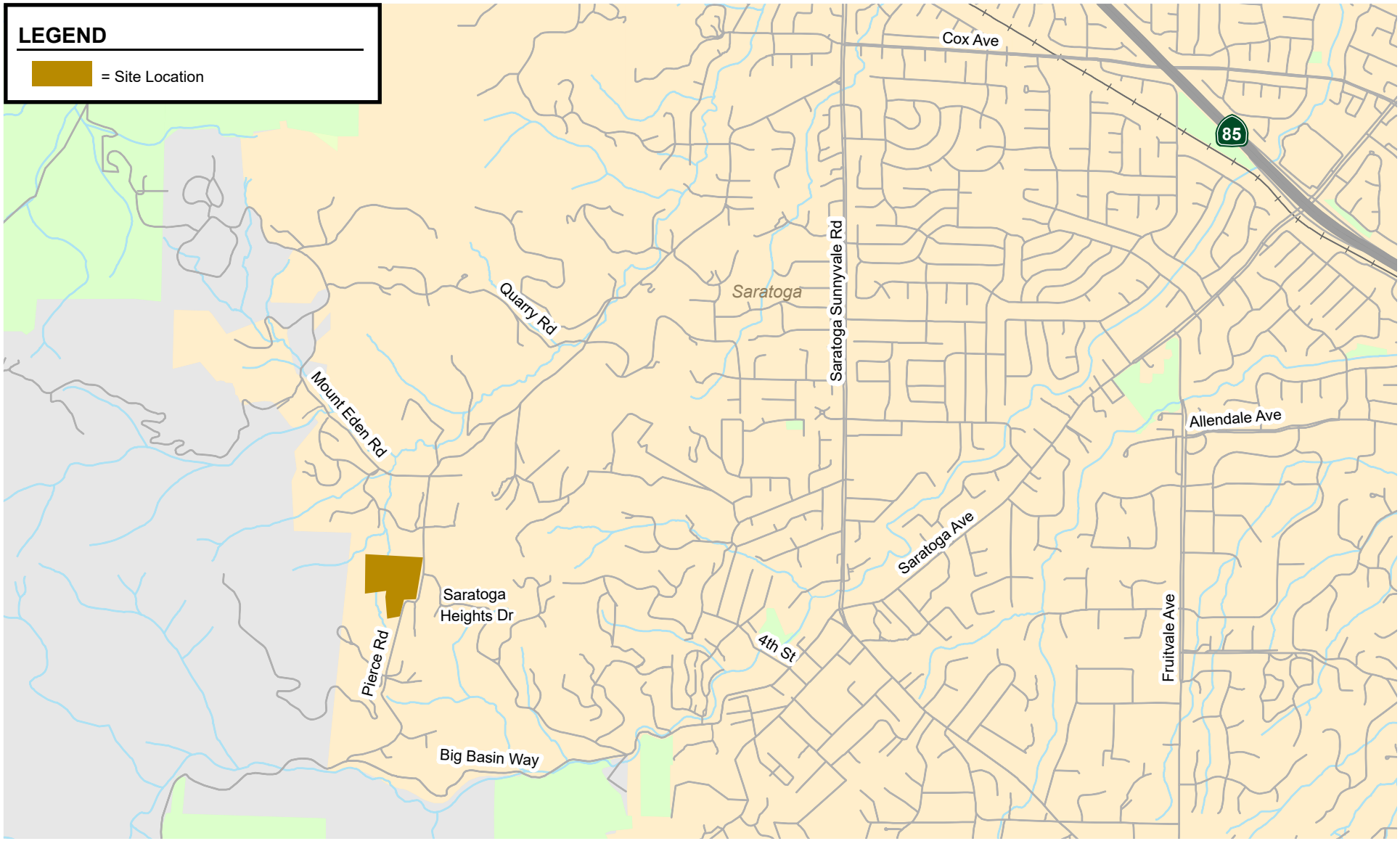

Figure 1
Project Site Location and Surrounding Area

NORTH
Not to Scale

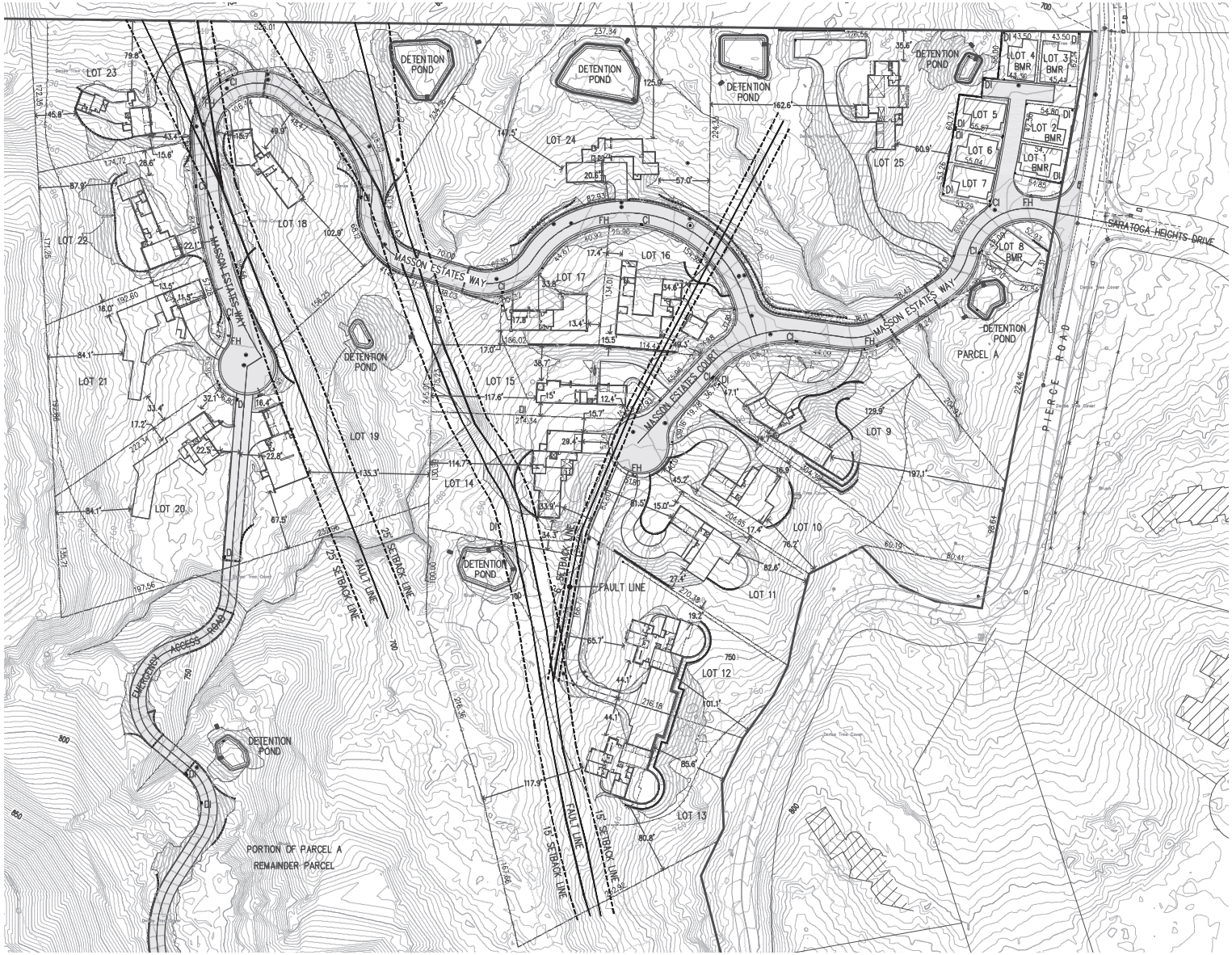

Figure 2
Site Plan

NORTH
Not to Scale

Table 1
Trip Generation Summary

Land Use	Size	Units	Daily Trips	AM Peak-Hour Trips In	AM Peak-Hour Trips Out	AM Peak-Hour Trips Total	PM Peak-Hour Trips In	PM Peak-Hour Trips Out	PM Peak-Hour Trips Total
Proposed									
Single-Family Detached Housing [1]	25	du	282	5	16	21	17	10	27

Notes:
du = dwelling units

[1] Single-family housing trip generation is based on the fitted curve equations published in the ITE Trip Generation online database for Single-Family Detached Housing (Land Use Code 210).

VMT Analysis Methodology and Findings

Typically, to determine whether a project would result in CEQA transportation impacts related to VMT, the Santa Clara Countywide VMT Evaluation Tool (VMT Tool) is used. The City does not have adopted VMT thresholds. However, the Housing Element adopted in March 2024 uses a countywide VMT threshold for its VMT assessment. The VMT tool shows that the project VMT would exceed the threshold (see Table 1). The tool also shows that the maximum VMT reduction possible would be to a value of 20.7 which is still above the threshold. Therefore, the project would have a significant VMT impact.

Table 2
VMT Screening Results

Project Type	Significance Criteria	Threshold [1]	Project Parcel VMT [2]
Residential	Project exceeds existing countywide home-based VMT per Capita by 15%	11.33	25.45

Notes:
[1] The threshold for project generated VMT per capita is 15% below the Santa Clara County average per the City's Housing Element.

[2] VMT With Project per the Santa Clara County VMT Evaluation Tool.

The proposed project is included in the proposed Saratoga Housing Element. The Housing Element EIR identifies a significant VMT impact. The EIR describes the following VMT mitigation measures:

- Transportation Demand Management (TDM) Plan
- Citywide VMT impact fee program

Even with these measures, the EIR identifies the VMT impact as significant and unavoidable. Since the project comprises single-family homes, typical TDM measures are not practical. Also, the city has not adopted a citywide VMT impact fee program.

Pierce Road Traffic Volume Analysis

Based on count data collected on May 14, 2024, there are 708 vehicles in the northbound direction and 907 vehicles in the southbound direction for a total of 1,615 vehicles on Pierce Road near the project site. The project would add 282 daily vehicle trips. This would be a 9% increase in volumes on Pierce Road. The City's Circulation Element dated November 17, 2010, states that the projected

2030 volumes on Pierce Road would be 3,800 vehicles, and Pierce Road would operate at an acceptable level of service.

Site Access and Circulation

The site access and on-site circulation evaluation is based on the site plan prepared by Hanna-Brunetti dated December 2023 (see Figure 2). Site access was evaluated to determine the adequacy of the site's access roads with regard to the following: geometric design and stopping sight distance. On-site vehicular circulation was reviewed in accordance with generally accepted traffic engineering standards and transportation planning principles.

Site Access

The site plan shows that vehicular access to the project would be provided by a new roadway connected to the intersection of Pierce Road and Saratoga Heights Drive. This new roadway would be called Masson Estates Way and would be the west leg of the intersection.

Sight Distance

Sight distance was checked at Masson Estates Way at the intersection of Pierce Road. The Masson Estates Way leg would be stop controlled. Sight distance recommendations vary depending on the roadway speeds. The posted speed limit on Pierce Road is 25 mph. The sight distance at Masson Estates Way is approximately 180 feet looking to the left and over 200 feet looking to the right (see Figure 3). Based on the Caltrans' recommended stopping sight distances, a sight distance of 150 feet and 200 feet is sufficient for a design speed of 25 and 30 mph respectively. Thus, the existing sight distance is adequate.

Under the City of Saratoga's *Local Roadway Safety Plan* (LRSP), the City proposes safety improvements along Pierce Road. Some improvements proposed are speed feedback signs, intersection lighting, "headlights on" signs, "curve ahead" signs, chevrons along curves, and a median rumble strip. The project should coordinate with the City about constructing and implementing the proposed necessary safety improvements at the intersection of Pierce Road and Masson Estates Way.

Vertical and Corner Sight Distance

The corner sight distance at Masson Estates Way and Masson Estates Court was checked against the City's Standard Detail 502 for Sight Distance across a Street Corner. The vertical sight distance was also checked. Figure 4 shows that the City's standard of 50 feet sight triangles will be met and that vehicles would have adequate sight distance, given the roadway's slopes.

Proposed On-Site Circulation

Masson Estates Way would be the main project roadway that connects Masson Estates Court and the residential driveways. The site plan shows that the roadway would be 30 feet wide with a maximum slope of 11.9%. This is adequate for two-way access, and the slope is typical for hilly areas like the project area.

The site plan shows that to continue on Masson Estates Way vehicles would need to turn right at the intersection with Masson Estates Court. Hexagon recommends renaming the east leg of the intersection as Masson Estates Way and the north leg as Masson Estates Court or redesigning the roadway so that continuation on Masson Estates Way would be a through movement. This would aid passenger, loading, and emergency vehicles.

Looking Left



Looking Right



Figure 3
Sight Distances

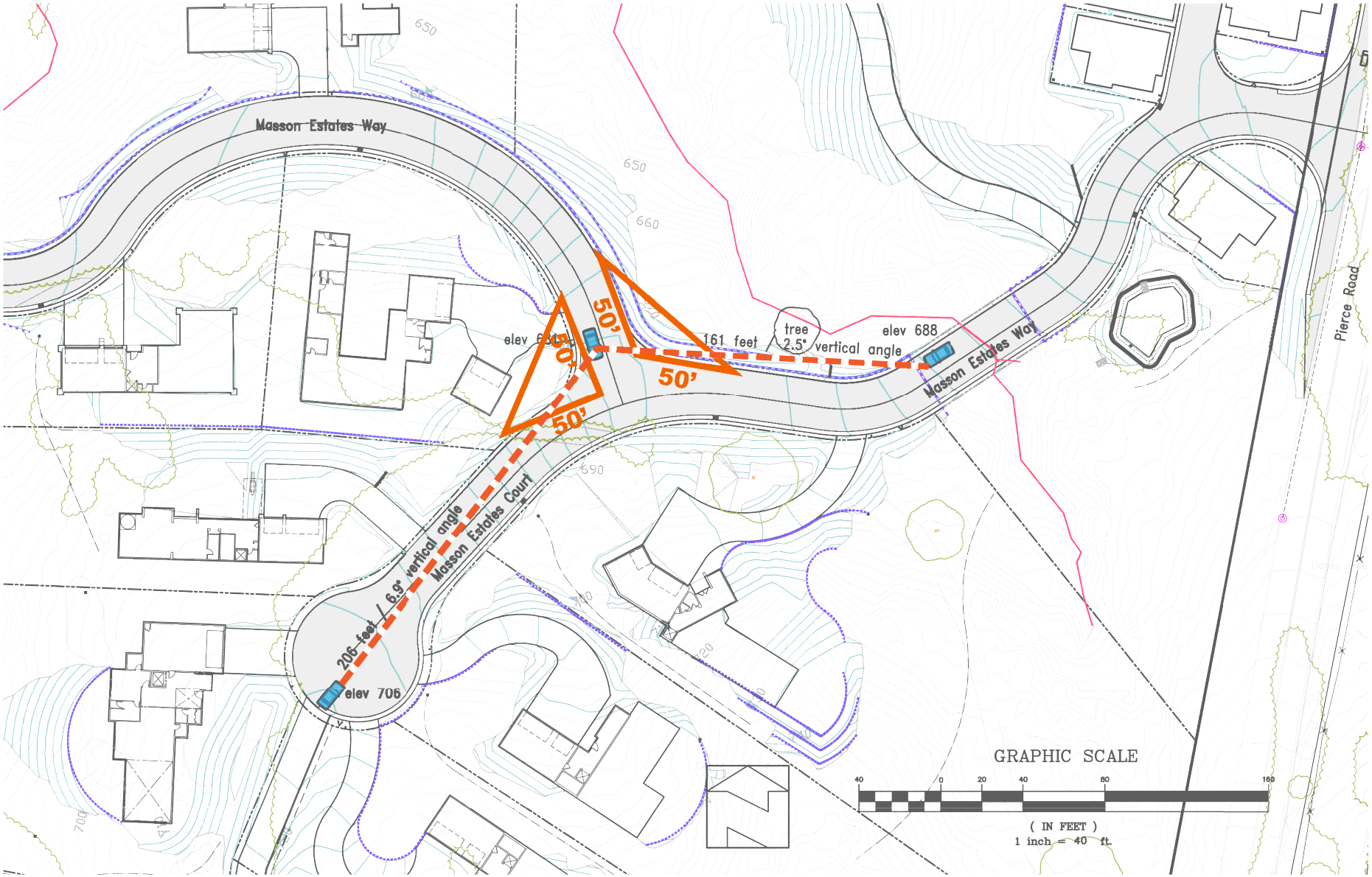

Figure 4
Horizontal and Corner Sight Distance

NORTH
Not to Scale

Loading and Emergency Vehicle Access

Delivery vehicles and garbage trucks would follow the same circulation routes as passenger vehicles. The project's site plan shows that emergency vehicles would be able to access the project site via Masson Estates Way and a secondary emergency vehicle access road. The emergency access road is proposed to connect the cul-de-sac of Masson Estates Court to the intersection of Pierce Road and Vintage Lane. This access road would be 20 feet wide. Street parking would not be permitted along Masson Estates Way and Masson Estates Court. The project proposes to design specific areas for guest parking which meet the required turn around area required by the fire department. The project shows adequate circulation for loading and emergency vehicles.

Pedestrian Access and Circulation

The project site is far removed from typical pedestrian destinations such as schools, stores, and bus stops. There are no sidewalks along Pierce Road. The project site is located in a rural hillside area. Therefore, building the on-site roads to include sidewalks and be American Disabilities Association (ADA) compliant would involve extensive grading, which is not justified. The project site plan does not show sidewalks along the project roads, and due to the project adding a small number of homes there would be almost no pedestrian travel demand.

Transit Services in the Project Vicinity

The project site is not considered transit accessible, which is typically defined as within ¼ mile of a bus stop. The closest bus stops are located over two miles from the site.

Bicycle Access and Circulation

The project site is far removed from typical destinations for bicyclists such as schools, stores, and bus stops. There are no existing bicycle facilities within two miles of the project site. The project does not propose bicycle facilities on site. However, the internal roads would have very little traffic volume so would be conducive to cycling. The City of Saratoga *General Plan 2040* shows proposed bicycle facilities in Saratoga. The proposed bicycle facilities are listed below and shown in Figure 5:

Pierce Road

- Class I Path from Big Basin Way to Mt Eden Road
- Class III path from Mt Eden Road to Surrey Lane

Big Basin Way

- Class I path from Pierce Road to driveway of Hakone Gardens
- Class III path from Hakon Gardens driveway to 4th Street

Under the *Open Space and Conservation Element* of the City's *2040 General Plan*, the City proposes a trail (Segment 57) adjacent to the project site. The project should coordinate with the City about constructing and implementing the proposed Class I bicycle path and trail as part of the project.

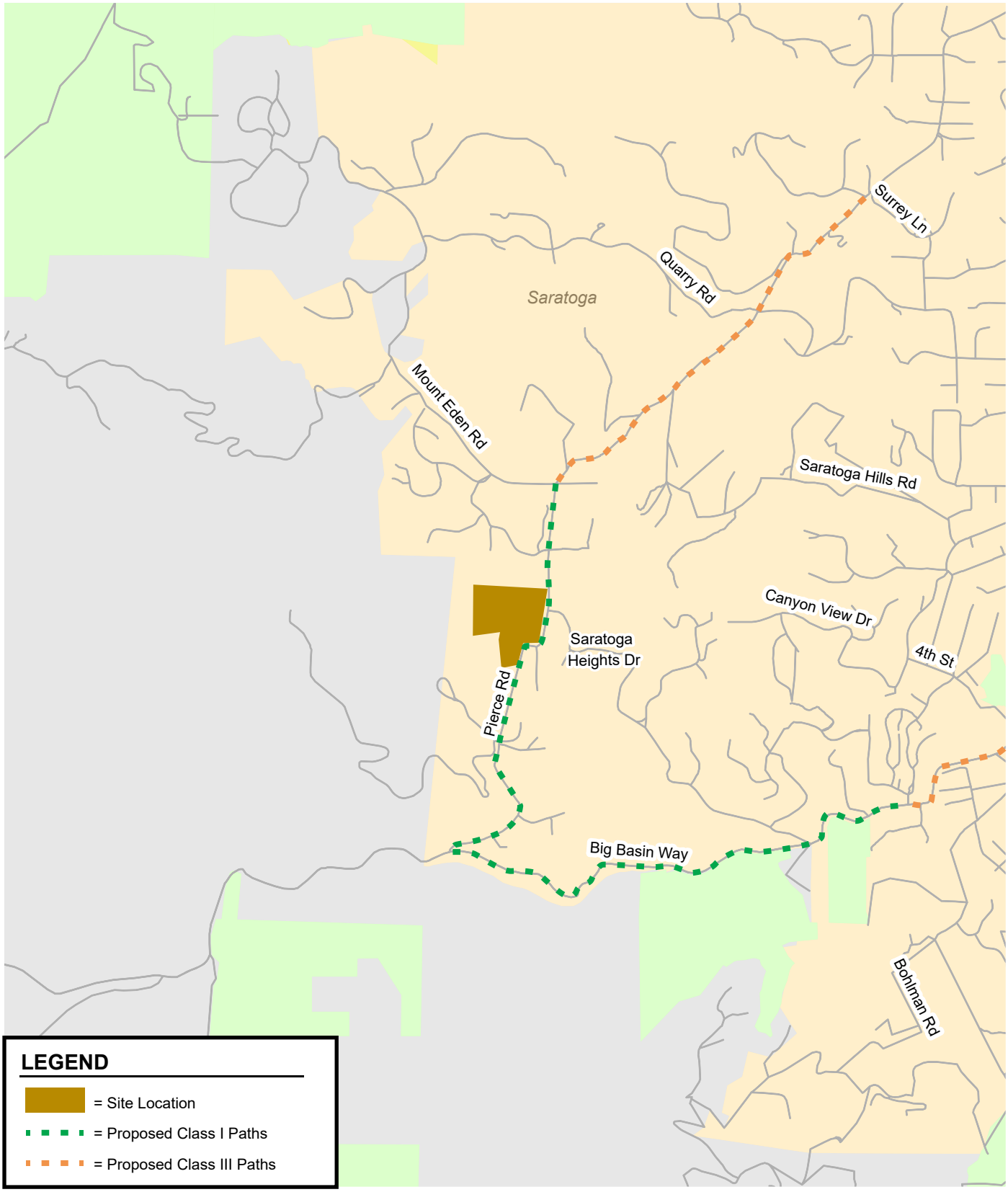

Figure 5
Proposed Bicycle Facilities

Conclusions

The results of the transportation study for the Pierce Road Homes project are summarized below.

- The project would have a significant impact on VMT. However, the project is included in the City's Housing Element for which an EIR has been prepared that identifies a significant and unavoidable VMT impact.
- The project shows adequate site access and circulation for residents, loading, and emergency vehicles.
- Hexagon recommends renaming the east leg of the intersection as Masson Estates Way and the north leg as Masson Estates Court or redesigning the roadway so that Masson Estates Way would be a through movement.
- The project should coordinate with the City about implementation of safety improvements along Pierce Road and implementation of proposed bicycle facilities.

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