VEGUARD HOUSING 3378-3386 EL CAMINO REAL CONSTRUCTION COMMUNITY RISK ASSESSMENT

Santa Clara, California

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Introduction

The purpose of this report is to address the potential community risk impacts associated with the construction of a proposed residential development located at 3378-3386 El Camino Real in Santa Clara, California. The air quality impacts from this project would be associated with demolition of the existing land uses and construction of the residential building. Air pollutant emissions associated with construction of the project were predicted using appropriate computer models. In addition, the potential health risk impacts from existing toxic air contaminant (TAC) sources affecting the nearby and proposed sensitive receptors were evaluated. The analysis was conducted following guidance provided by the Bay Area Air Quality Management District (BAAQMD).[1]

Project Description

The Project proposes to demolish the existing commercial building located on the 0.88-acre project site and construct a three-story townhome community. There would be a total of 24 townhomes, with each unit having an attached two-car garage.

Setting

The project is located in Santa Clara County, which is in the San Francisco Bay Area Air Basin. Ambient air quality standards have been established at both the State and federal level. The Bay Area meets all ambient air quality standards with the exception of ground-level ozone, respirable particulate matter (PM_{10}), and fine particulate matter ($PM_{2.5}$).

Air Pollutants of Concern

High ozone levels are caused by the cumulative emissions of reactive organic gases (ROG) and nitrogen oxides (NO_X). These precursor pollutants react under certain meteorological conditions to form high ozone levels. Controlling the emissions of these precursor pollutants is the focus of the Bay Area's attempts to reduce ozone levels. The highest ozone levels in the Bay Area occur in the eastern and southern inland valleys that are downwind of air pollutant sources. High ozone levels aggravate respiratory and cardiovascular diseases, reduced lung function, and increase coughing and chest discomfort.

Particulate matter is another problematic air pollutant of the Bay Area. Particulate matter is assessed and measured in terms of respirable particulate matter or particles that have a diameter of 10 micrometers or less (PM_{10}) and fine particulate matter where particles have a diameter of 2.5 micrometers or less ($PM_{2.5}$). Elevated concentrations of PM_{10} and $PM_{2.5}$ are the result of both region-wide (or cumulative) emissions and localized emissions. High particulate matter levels aggravate respiratory and cardiovascular diseases, reduce lung function, increase mortality (e.g., lung cancer), and result in reduced lung function growth in children.

[1] Bay Area Air Quality Management District, *CEQA Air Quality Guidelines*, May 2017.

Toxic Air Contaminants

Toxic air contaminants (TAC) are a broad class of compounds known to cause morbidity or mortality, often because they cause cancer. TACs are found in ambient air, especially in urban areas, and are caused by industry, agriculture, fuel combustion, and commercial operations (e.g., dry cleaners). TACs are typically found in low concentrations, even near their source (e.g., diesel particulate matter [DPM] near a freeway). Because chronic exposure can result in adverse health effects, TACs are regulated at the regional, State, and federal level.

Diesel exhaust is the predominant TAC in urban air and is estimated to represent about three-quarters of the cancer risk from TACs (based on the Bay Area average). According to the California Air Resources Board (CARB), diesel exhaust is a complex mixture of gases, vapors, and fine particles. This makes the evaluation of health effects of diesel exhaust a complex scientific issue. Some of the chemicals in diesel exhaust, such as benzene and formaldehyde, have been previously identified as TACs by the CARB, and are listed as carcinogens either under the State's Proposition 65 or under the Federal Hazardous Air Pollutants programs. Health risks from TACs are estimated using the Office of Environmental Health Hazard Assessment (OEHHA) risk assessment guidelines, which were published in February of 2015.[2] See *Attachment 1* for a detailed description of the community risk modeling methodology used in this assessment.

Sensitive Receptors

There are groups of people more affected by air pollution than others. CARB has identified the following persons who are most likely to be affected by air pollution: children under 16, the elderly over 65, athletes, and people with cardiovascular and chronic respiratory diseases. These groups are classified as sensitive receptors. Locations that may contain a high concentration of these sensitive population groups include residential areas, hospitals, daycare facilities, elder care facilities, and elementary schools. For cancer risk assessments, children are the most sensitive receptors, since they are more susceptible to cancer causing TACs. Residential locations are assumed to include infants and small children. The closest sensitive receptors to the project site are the residents in the multi-family housing buildings adjacent to the south and west of the project site. Additional sensitive receptors are located at further distances from the site. This project would introduce new sensitive receptors (i.e., residents) to the area.

Regulatory Setting

Federal Regulations

The United States Environmental Protection Agency (EPA) sets nationwide emission standards for mobile sources, which include on-road (highway) motor vehicles such trucks, buses, and automobiles, and non-road (off-road) vehicles and equipment used in construction, agricultural, industrial, and mining activities (such as bulldozers and loaders) as well as nationwide fuel

[2] OEHHA, 2015. *Air Toxics Hot Spots Program Risk Assessment Guidelines, The Air Toxics Hot Spots Program Guidance Manual for Preparation of Health Risk Assessments*. Office of Environmental Health Hazard Assessment. February.

standards. California also has the ability to set motor vehicle emission standards and standards for fuel used in the State, as long as they are the same or more stringent than the federal standards.

In the past decade, the EPA has established a number of emission standards for on- and non-road heavy-duty diesel engines used in trucks and other equipment. This was done in part because diesel engines are a significant source of NO_X and particulate matter ($PM_{2.5}$) and because the EPA has identified DPM as a probable carcinogen. Implementation of the heavy-duty diesel on-road vehicle standards and the non-road diesel engine standards are estimated to reduce particulate matter and NO_X emissions from diesel engines up to 95 percent in 2030 when the heavy-duty vehicle fleet is completely replaced with newer heavy-duty vehicles that comply with these emission standards.[3]

In concert with the diesel engine emission standards, the EPA has substantially reduced the amount of sulfur allowed in diesel fuels. The sulfur contained in diesel fuel is a significant contributor to the formation of DPM. Current standards reduced the amount of sulfur allowed by 97 percent for highway diesel fuel (from 500 parts per million by weight [ppmw] to 15 ppmw), and by 99 percent for off-highway diesel fuel (from about 3,000 ppmw to 15 ppmw). The low sulfur highway fuel (15 ppmw sulfur), also called ultra-low sulfur diesel (ULSD), is required for use by all vehicles in the U.S.

All of the above federal diesel engine and diesel fuel requirements have been adopted by California, in some cases with modifications making the requirements more stringent or the implementation dates sooner.

State Regulations

To address the issue of diesel emissions in the state, CARB developed the *Risk Reduction Plan to Reduce Particulate Matter Emissions from Diesel-Fueled Engines and Vehicles*.[4] A significant component of the plan involves application of emission control strategies to existing diesel vehicles and equipment in addition to requiring more stringent emission standards for new on-road mobile, non-road (or off-road) mobile, and stationary diesel-fueled engine sources to reduce particulate matter emissions by 90 percent. Many Plan measures have been approved and adopted, including the federal on-road and non-road diesel engine emission standards for new engines, and adoption of regulations for low sulfur fuel in California.

CARB has adopted and implemented a number of additional regulations for stationary and mobile sources to reduce emissions of DPM. Several of these regulatory programs affect medium and heavy-duty diesel trucks that represent the bulk of DPM emissions from California highways. CARB regulations require on-road diesel trucks to be retrofitted with particulate matter controls or replaced to meet 2010 or later engine standards that have much lower DPM emissions. This regulation will substantially reduce emissions between 2013 and 2023. While

[3] USEPA, 2000. *Regulatory Announcement, Heavy-Duty Engine and Vehicle Standards and Highway Diesel Fuel Sulfur Control Requirements*. EPA420-F-00-057. December.
[4] California Air Resources Board, 2000. Risk Reduction Plan to Reduce Particulate Matter Emissions from Diesel-Fueled Engines and Vehicles. October.

new trucks and buses will meet strict federal standards, CARB's program is intended to accelerate the rate at which the fleet either turns over or at which vehicles area retrofitted, so there are cleaner vehicles on the road. With this regulation, older, more polluting trucks would be removed from the roads sooner.

CARB has also adopted and implemented regulations to reduce DPM and NO_X emissions from in-use (existing) and new off-road heavy-duty diesel vehicles (e.g., loaders, tractors, bulldozers, backhoes, off-highway trucks, etc.). The regulations apply to diesel-powered off-road vehicles with engines 25 horsepower (hp) or greater. The regulations are intended to reduce particulate matter and NO_X exhaust emissions by requiring owners to turn over their fleet (replace older equipment with newer equipment) or retrofit existing equipment in order to achieve specified fleet-averaged emission rates. Implementation of this regulation, in conjunction with stringent federal off-road equipment engine emission limits for new vehicles, will significantly reduce emissions of DPM and NO_X.

Local Regulations

Bay Area Air Quality Management District (BAAQMD)

BAAQMD has jurisdiction over an approximately 5,600-square mile area, commonly referred to as the San Francisco Bay Area (Bay Area). The District's boundary encompasses the nine San Francisco Bay Area counties, including Alameda County, Contra Costa County, Marin County, San Francisco County, San Mateo County, Santa Clara County, Napa County, southwestern Solano County, and southern Sonoma County.

BAAQMD is the lead agency in developing plans to address attainment and maintenance of the National Ambient Air Quality Standards (NAAQS) and California Ambient Air Quality Standards (CAAQS). The District also has permit authority over most types of stationary emissions sources. The BAAQMD is responsible for permitting and inspection of stationary sources, enforcement of regulations, including setting fees, levying fines, and enforcement actions, and ensuring that public nuisances are minimized.

BAAQMD's Community Air Risk Evaluation (CARE) program was initiated in 2004 to evaluate and reduce health risks associated with exposures to outdoor TACs in the Bay Area.[5] The program examines TAC emissions from point sources (i.e., stationary sources), area sources, and on-road and off-road mobile sources with an emphasis on diesel exhaust, which is a major contributor to airborne health risk in California. The CARE program is an on-going program that encourages community involvement and input. The technical analysis portion of the CARE program is implemented in three phases that includes an assessment of the sources of TAC emissions, modeling and measurement programs to estimate concentrations of TAC, and an assessment of exposures and health risks. Throughout the program, information derived from the technical analyses will be used to focus emission reduction measures in areas with high TAC exposures and high density of sensitive populations. Risk reduction activities associated with the CARE program are focused on the most at-risk communities in the Bay Area. The BAAQMD

[5] See BAAQMD: https://www.baaqmd.gov/community-health/community-health-protection-program/community-air-risk-evaluation-care-program , accessed 2/18/2021.

has identified six communities as impacted as part of the CARE program: Concord, Richmond/San Pablo, Western Alameda County, San José, Redwood City/East Palo Alto, and Eastern San Francisco. The project site is within the San José CARE area.

Additionally, BAAQMD has identified overburdened communities within its area. BAAQMD defines overburdened communities as areas located (i) within a census tract identified by the California Communities Environmental Health Screening Tool (CalEnviroScreen), Version 4.0 implemented by OEHHA, as having an overall CalEnviroScreen score at or above the 70th percentile, or (ii) within 1,000 feet of any such census tract.[6] The project site is not within a BAAQMD overburdened area as identified by CalEnviroScreen as the Project site is scored at the 30th percentile.[7]

The BAAQMD California Environmental Quality Act (*CEQA) Air Quality Guidelines*[8] were prepared to assist in the evaluation of air quality impacts of projects and plans proposed within the Bay Area. The guidelines provide recommended procedures for evaluating potential air impacts during the environmental review process consistent with California Environmental Quality Act (CEQA) requirements including thresholds of significance, mitigation measures, and background air quality information. They also include assessment methodologies for TACs, odors, and greenhouse gas (GHG) emissions.

In June 2010, BAAQMD adopted thresholds of significance to assist in the review of projects under CEQA and these significance thresholds were contained in the District's 2011 CEQA Air Quality Guidelines. These thresholds were designed to establish the level at which BAAQMD believed air pollution emissions would cause significant environmental impacts under CEQA. The thresholds were challenged through a series of court challenges and were mostly upheld. BAAQMD updated the CEQA Air Quality Guidelines in 2017 to include the latest significance thresholds, which were used in this analysis and are summarized in Table 1. Impacts above these thresholds are considered potentially significant.

City of Santa Clara 2010 – 2035 General Plan.

On November 16, 2010, the City of Santa Clara adopted the *City of Santa Clara 2010 – 2035 General Plan.*[9] The general plan includes goals, policies, and actions to reduce air pollutants and exposure to toxic air containments.

[6] See BAAQMD: https://www.baaqmd.gov/~/media/dotgov/files/rules/reg-2-permits/2021-amendments/documents/20210722_01_appendixd_mapsofoverburdenedcommunities-pdf.pdf?la=en , accessed 10/1/2021.
[7] OEHAA, CalEnviroScreen 4.0 Maps https://oehha.ca.gov/calenviroscreen/report/calenviroscreen-40
[8] Bay Area Air Quality Management District, 2017. *CEQA Air Quality Guidelines*. May.
[9] City of Santa Clara, 2010. *City of Santa Clara 2010 – 2035 General Plan*. November. Web: https://www.santaclaraca.gov/home/showdocument?id=56139

Table 1. BAAQMD CEQA Significance Thresholds

Criteria Air Pollutant	Construction Thresholds	
	Average Daily Emissions (lbs./day)	
ROG	54	
NO_x	54	
PM_{10}	82 (Exhaust)	
$PM_{2.5}$	54 (Exhaust)	
CO	Not Applicable	
Fugitive Dust	Construction Dust Ordinance or other Best Management Practices	
Health Risks and Hazards	**Single Sources Within 1,000-foot Zone of Influence**	**Combined Sources (Cumulative from all sources within 1000-foot zone of influence)**
Excess Cancer Risk	10 per one million	100 per one million
Hazard Index	1.0	10.0
Incremental annual $PM_{2.5}$	0.3 µg/m^3	0.8 µg/m^3

Note: ROG = reactive organic gases, NOx = nitrogen oxides, PM_{10} = course particulate matter or particulates with an aerodynamic diameter of 10 micrometers (µm) or less, $PM_{2.5}$ = fine particulate matter or particulates with an aerodynamic diameter of 2.5µm or less. GHG = greenhouse gases.

*BAAQMD does not have a recommended post-2020 GHG threshold.

The following goals, policies, and actions are applicable to the proposed project and this assessment:

5.10.2 Air Quality Goals

5.10.2-G1 Improved air quality in Santa Clara and the region.

5.10.2-G2 Reduced greenhouse gas emissions that meet the State and regional goals and requirements to combat climate change.

5.10.2 Air Quality Policies

5.10.2-P3 Encourage implementation of technological advances that minimize public health hazards and reduce the generation of air pollutants.

5.10.2-P4 Encourage measures to reduce greenhouse gas emissions to reach 30 percent below 1990 levels by 2020.

5.10.2-P6 Require “Best Management Practices” for construction dust abatement.

Air Quality Impacts From Construction

The Bay Area is considered a non-attainment area for ground-level O_3 and $PM_{2.5}$ under both the Federal Clean Air Act and the California Clean Air Act. The area is also considered non-attainment for PM_{10} under the California Clean Air Act, but not the federal act. The area has attained both State and Federal ambient air quality standards for carbon monoxide. As part of an effort to attain and maintain ambient air quality standards for O_3, $PM_{2.5}$ and PM_{10}, the BAAQMD has established thresholds of significance for these air pollutants and their precursors. These thresholds are for O_3 precursor pollutants (ROG and NOx), PM_{10}, and $PM_{2.5}$ and apply to construction period impacts.[10]

Construction Period Emissions

The California Emissions Estimator Model (CalEEMod) Version 2020.4.0 was used to estimate emissions from on-site construction activity, construction vehicle trips, and evaporative emissions. The project land use types and size, and anticipated construction schedule were input to CalEEMod. The CARB EMission FACtors 2021 (EMFAC2021) model was used to predict emissions from construction traffic, which includes worker travel, vendor trucks, and haul trucks.[11] The CalEEMod model output along with construction inputs are included in *Attachment 2* and EMFAC2021 vehicle emissions modeling outputs are included in *Attachment 3*.

CalEEMod Modeling

Land Use Inputs

The proposed project land uses were entered into CalEEMod as described in Table 2.

Table 2. Summary of Project Land Use Inputs

Project Land Uses	Size	Units	Square Feet (sf)	Acreage
Condo/Townhouse	24	Dwelling Unit	41,112	0.88
Enclosed Parking Structure[12]	48	Parking Space	11,837	

Construction Inputs

CalEEMod computes annual emissions for construction that are based on the project type, size, and acreage. The model provides emission estimates for both on-site and off-site construction activities. On-site activities are primarily made up of construction equipment emissions, while off-site activity includes worker, hauling, and vendor traffic. The construction build-out scenario, including equipment list and schedule, were based on CalEEMod defaults modified using project-specific construction information provided by the project applicant. (included in *Attachment 2*).

[10] Project type and size are below BAAQMD analysis thresholds for operational criteria pollutant and GHG analysis.
[11] See CARB's EMFAC2021 Emissions Inventory at https://arb.ca.gov/emfac/emissions-inventory.
[12] Represents two-car garages attached to each dwelling unit.

Within each of the CalEEMod construct phases, the quantity of equipment to be used along with the average hours per day and total number of workdays were based on CalEEMod defaults modified by the project applicant as needed. Since different equipment would have different estimates of the working days per phase, the hours per day for each phase was computed by dividing the total number of hours that the equipment would be used by the total number of days in that phase. The construction schedule assumed that the earliest possible start date would be October 2023 and would be completed over a period of approximately 21 months, or 478 construction workdays.

Construction Truck Traffic Emissions

Construction would produce traffic in the form of worker trips and truck traffic. The traffic-related emissions are based on worker and vendor trip estimates produced by CalEEMod and haul trips that were computed based on the estimate of demolition material to be exported, soil material imported and/or exported to the site, and the estimate of concrete and asphalt truck trips. CalEEMod provides daily estimates of worker and vendor trips for each applicable phase. The total trips for worker and vendor trips were computed by multiplying the daily trip rate by the number of days in that phase. Haul trips for demolition and soil import/export were estimated by CalEEMod using the provided demolition and grading volumes provided.[13] The number of concrete and asphalt deliveries were estimated for the project by the client and converted to total one-way trips, assuming two trips per delivery.

The latest version of the CalEEMod model is based on the older version of the CARB EMFAC2017 motor vehicle emission factor model. This model has been superseded by the EMFAC2021 model. However, CalEEMod has not been updated to include EMFAC2021. Therefore, the construction traffic information was combined with EMFAC2021 motor vehicle emissions factors. EMFAC2021 provides aggregate emission rates in grams per mile for each vehicle type. The vehicle mix for this study was based on CalEEMod default assumptions, where worker trips are assumed to be comprised of light-duty autos (EMFAC category LDA) and light duty trucks (EMFAC category LDT1and LDT2). Vendor trips are comprised of delivery and large trucks (EMFAC category MHDT and HHDT) and haul trips, including concrete trucks, are comprised of large trucks (EMFAC category HHDT). Travel distances are based on CalEEMod default lengths, which are 10.8 miles for worker travel, 7.3 miles for vendor trips and 20 miles for hauling (demolition and soil import/export). Since CalEEMod does not specifically address concrete/asphalt deliveries to the site, they were assumed to travel the same distance as vendors (7.3 miles). Each trip was assumed to include an idle time of 5 minutes. Emissions associated with vehicle starts were also included. On road emissions in Santa Clara County for the year 2023 - 2025 were used in these calculations. Table 3 provides the traffic inputs that were combined with the EMFAC2021 emission database to compute vehicle emissions.

[13] CalEEMod assumes each truck can carry 10 tons per load or 10 cubic yards of material.

Table 3. Construction Traffic Data Used for EMFAC2021 Model Runs

CalEEMod Run/Land Uses and Construction Phase	Trips by Trip Type			Notes
	Total Worker[1]	Total Vendor[1]	Total Haul[2]	
Vehicle mix[1]	50% LDA 25% LDT1 25% LDT2	50% MHDT 50% HHDT	100% HHDT	
Trip Length (miles)	10.8	7.3	20.0 (Demo/Soil) 7.3 (Concrete/Asphalt)	CalEEMod default distance with 5-min truck idle time.
Demolition	225	-	49	8,500-sf of existing building demolition and 50 tons of pavement demolition. CalEEMod default worker trips
Site Preparation	80	-	-	CalEEMod default worker trips.
Grading	143	-	38	150-cy soil export and 150-cy soil import. CalEEMod default worker trips.
Trenching	150	-	-	CalEEMod default worker trips.
Building Construction	4,950	1,125	240	120 concrete-truck round trips. CalEEMod default worker and vendor trips.
Architectural Coating	1,120	-	-	CalEEMod default worker trips.
Paving	442	-	-	CalEEMod default worker trips.

Notes: [1] Based on 2023 – 2025 EMFAC2021 light-duty vehicle fleet mix for Santa Clara County.
[2] Includes demolition and soil import/export trips estimated by CalEEMod based on amount of material to be removed. Concrete and asphalt trips estimated based on data provided by the applicant.

Summary of Computed Construction Period Emissions

Average daily emissions were annualized for each year of construction by dividing the annual construction emissions by the number of active construction workdays that year. Additionally, average daily construction emissions were estimated for the total duration of the project (478 days). Table 4 shows the annualized average daily construction emissions and average daily project emissions of ROG, NO_X, PM_{10} exhaust, and $PM_{2.5}$ exhaust during construction. As indicated in Table 4, predicted daily project construction emissions would not exceed the BAAQMD significance thresholds during any year of construction.

Construction activities, particularly during site preparation and grading, would temporarily generate fugitive dust in the form of PM_{10} and $PM_{2.5}$. Sources of fugitive dust would include disturbed soils at the construction site and trucks carrying uncovered loads of soils. Unless properly controlled, vehicles leaving the site would deposit mud on local streets, which could be an additional source of airborne dust after it dries. The BAAQMD CEQA Air Quality Guidelines consider these impacts to be less-than-significant if best management practices are implemented to reduce these emissions. *Mitigation Measure AQ-1 would implement BAAQMD's standard best management practices*.

Table 4. Construction Period Emissions

Year	ROG	NOx	PM_{10} Exhaust	$PM_{2.5}$ Exhaust
Construction Emissions (Tons)				
2023-2024	0.24	0.56	0.02	0.02
2025	0.16	0.31	0.02	0.02
TOTAL	0.40	0.87	0.04	0.04
Average Daily Construction Emissions (pounds/day)				
2023-2024 (326 construction workdays)	1.50	3.43	0.15	0.14
2025 (152 construction workdays)	2.10	4.09	0.25	0.24
Project Average (478 construction workdays)	1.69	3.64	0.18	0.17
BAAQMD Thresholds (pounds per day)	*54* lbs./day	*54* lbs./day	*82* lbs./day	*54* lbs./day
Exceed Threshold?	No	No	No	No

Mitigation Measure AQ-1: Implement BAAQMD-Recommended Standard Measures to Control Particulate Matter Emissions during Construction.

Measures to reduce fugitive dust (i.e., $PM_{2.5}$) emissions from construction are recommended to reduce fugitive dust emissions and ensure that health impacts to nearby sensitive receptors are minimized. During activities that create a ground disturbance, the applicant shall ensure that the project contractor implements basic measures to control dust and exhaust. Implementation of the dust control measures recommended by BAAQMD and listed below would reduce the air quality impacts associated with grading and new construction to a less-than-significant level. The contractor shall implement the following best management practices:

1. All exposed surfaces (e.g., parking areas, staging areas, soil piles, graded areas, and unpaved access roads) shall be watered two times per day.

2. All haul trucks transporting soil, sand, or other loose material off-site shall be covered.

3. All visible mud or dirt track-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.

4. All vehicle speeds on unpaved roads shall be limited to 15 miles per hour (mph).

5. 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.

6. 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 Title 13, Section 2485 of California Code of Regulations [CCR]). Clear signage shall be provided for construction workers at all access points.

7. All construction equipment shall be maintained and properly tuned in accordance with manufacturer's specifications. All equipment shall be checked by a certified mechanic and determined to be running in proper condition prior to operation.

8. Post a publicly visible sign with the telephone number and person to contact at the Lead Agency regarding dust complaints. This person shall respond and take corrective action within 48 hours. The Air District's phone number shall also be visible to ensure compliance with applicable regulations.

Effectiveness of Mitigation Measure AQ-1

Mitigation Measure AQ-1 represents standard mitigation measures that would achieve greater than a 50 percent reduction in on-site fugitive $PM_{2.5}$ emissions. These measures are consistent with recommendations in the BAAMQD CEQA Guidance for providing "best management practices" to control construction emissions.

Health Risk Impacts and Mitigation Measures

A project can have community risk impacts by either generating TAC emissions and/or by introducing a new sensitive receptor in proximity to an existing source of TACs. A community health risk assessment was prepared to address project construction impacts on the existing off-site sensitive receptors near the project site (CEQA Heath Risk Assessment) and impacts from existing sources of TACs on the new project residents (Non-CEQA Heath Risk Assessment).

Project construction activity is temporary but would generate emissions of DPM from equipment and trucks and generate dust that could affect nearby sensitive receptors. Additionally, the project would introduce new residents (i.e., sensitive receptors) who would be exposed to existing sources of TACs in the vicinity of the project. Therefore, the impact of existing sources of TAC upon the new incoming sensitive receptors was assessed.

Construction Health Risk Impacts Analysis

Construction equipment and associated heavy-duty truck traffic generates DPM and fugitive dust, a portion of which is $PM_{2.5}$.[14] Both DPM and $PM_{2.5}$ pose health risks for sensitive receptors. A health risk assessment of the project construction activities was conducted that evaluated potential health effects to nearby sensitive receptors from construction emissions of DPM and $PM_{2.5}$. Community risk impacts are addressed by predicting increased lifetime cancer risk, the increase in annual $PM_{2.5}$ concentrations, and computing the Hazard Index (HI) for non-cancer health risks. This requires dispersion modeling to predict the concentrations offsite resulting from project construction. The methodology for computing community risks impacts is contained in *Attachment 1.*

[14] DPM is identified by California as a toxic air contaminant due to the potential to cause cancer.

Construction Period Emissions

The California Emissions Estimator Model (CalEEMod) Version 2020.4.0 was used to estimate emissions from on-site construction activity and construction vehicle trips. The project land use types and size, and anticipated construction schedule were input to CalEEMod. The CARB EMission FACtors 2021 (EMFAC2021) model was used to predict emissions from construction traffic, which includes worker travel, vendor trucks, and haul trucks.[15] The CalEEMod model output along with construction inputs are included in *Attachment 2* and EMFAC2021 vehicle emissions modeling outputs are included in *Attachment 3*.

The CalEEMod model emissions provided total annual PM_{10} exhaust emissions (assumed to be DPM) for the off-road construction equipment and EMFAC2021 provided exhaust emission rates from on-road vehicles. The on-road emissions are a result of haul truck travel during grading activities, worker travel, and vendor deliveries during construction. A trip length of half a mile was used to represent vehicle travel while at or near the construction site. It was assumed that these emissions from on-road vehicles traveling at or near the site would occur at the construction site. Total uncontrolled DPM emissions from onsite construction activities was estimated to be 0.03 tons (70.6 pounds). Uncontrolled fugitive dust ($PM_{2.5}$) emissions were calculated by CalEEMod as less than 0.01 tons (11.6 pounds) for the project.

Dispersion Modeling

The U.S. EPA AERMOD dispersion model was used to predict DPM and $PM_{2.5}$ concentrations at sensitive receptors (i.e., residences) in the vicinity of the project construction area. The AERMOD dispersion model is a BAAQMD-recommended model for use in modeling analysis of these types of emission activities for CEQA projects.[16,17] Emission sources for the construction site were grouped into two categories: exhaust emissions of DPM and fugitive $PM_{2.5}$ dust emissions.

Construction Sources

DPM emissions from equipment exhaust and on-site travel were modeled as a series of point sources with a nine-foot release height (construction equipment exhaust stack height) placed at 16 feet (5 meter) intervals throughout the construction site. This resulted in 153 individual point sources being used to represent DPM emissions from equipment exhaust throughout the project construction site. In addition, the following stack parameters were used: a vertical release, a stack diameter of 2.5 inches, an exhaust temperature of 918˚F, and an exit velocity of 309 feet per second. Point source plume rise is calculated by the AERMOD dispersion model. The locations of the point sources used for the modeling are identified in Figure 1.

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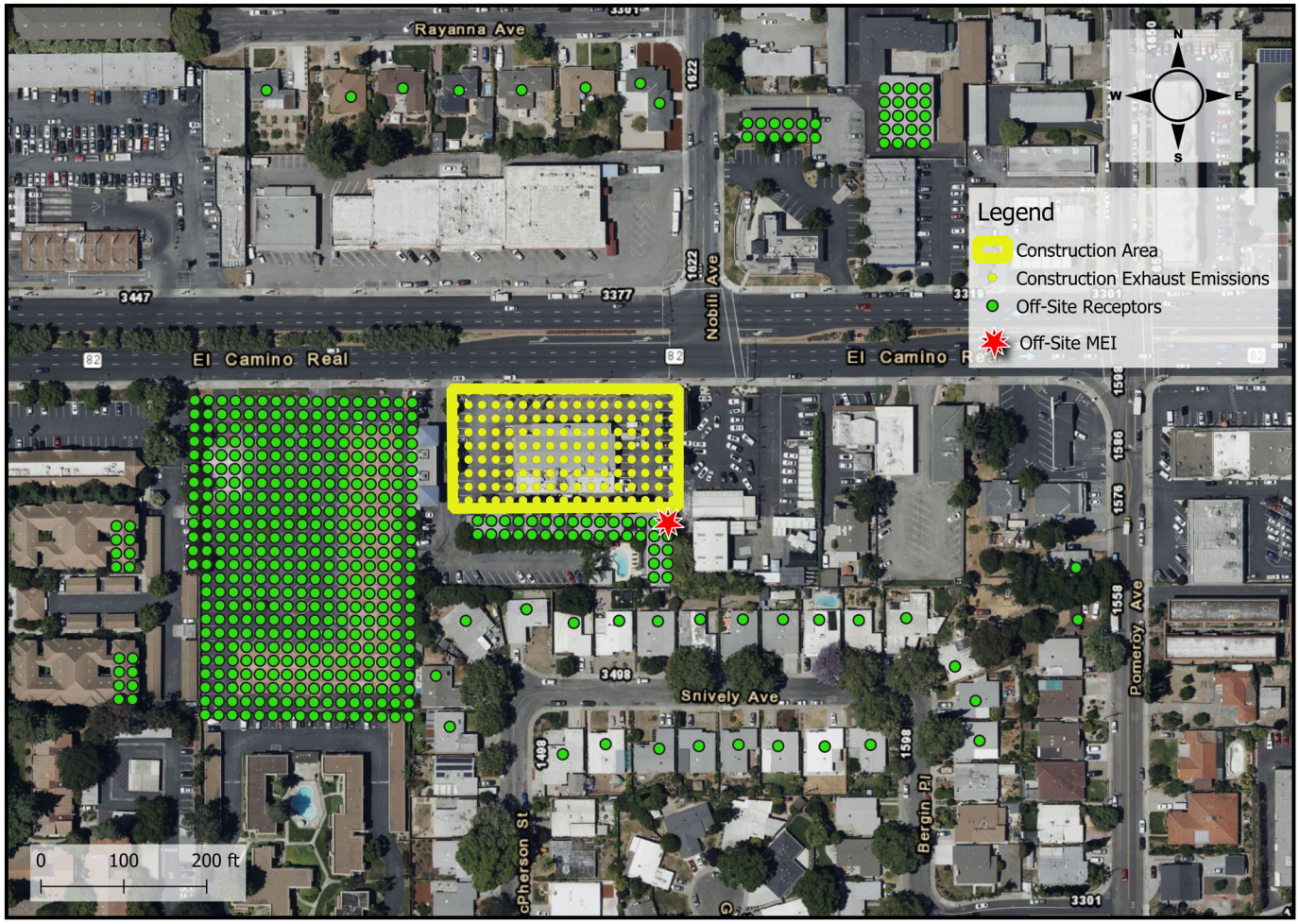
[15] See CARB's EMFAC2021 Emissions Inventory at https://arb.ca.gov/emfac/emissions-inventory.
[16] BAAQMD, 2012, *Recommended Methods for Screening and Modeling Local Risks and Hazards, Version 3.0.* May. Web: https://www.baaqmd.gov/~/media/files/planning-and-research/ceqa/risk-modeling-approach-may-2012.pdf?la=en
[17] BAAQMD, 2020, *BAAQMD Health Risk Assessment Modeling Protocol.* December. Web: https://www.baaqmd.gov/~/media/files/ab617-community-health/facility-risk-reduction/documents/baaqmd_hra_modeling_protocol-pdf.pdf?la=en

For modeling fugitive $PM_{2.5}$ emissions, a near-ground level release height of 7 feet (2 meters) was used for the area source. Fugitive dust emissions at construction sites come from a variety of sources, including truck and equipment travel, grading activities, truck loading (with loaders) and unloading (rear or bottom dumping), loaders and excavators moving and transferring soil and other materials, etc. All of these activities result in fugitive dust emissions at various heights at the point(s) of generation. Once generated, the dust plume will tend to rise as it moves downwind across the site and exit the site at a higher elevation than when it was generated. For all these reasons, a 7-foot release height was used as the average release height across the construction site. Emissions from the construction equipment and on-road vehicle travel were distributed throughout the modeled area sources. Figure 1 shows the project construction site and receptors.

Figure 1. Locations of Project Construction Site, Off-Site Sensitive Receptors, and Maximum TAC Impacts (MEI)



AERMOD Inputs and Meteorological Data

Annual DPM and $PM_{2.5}$ concentrations from construction activities between 2023 and 2025 were estimated using AERMOD. A five-year data set (2013 – 2017) of hourly meteorological

data from San José Airport prepared for use with the AERMOD model by BAAQMD was used. Construction emissions were modeled as occurring eight hours per day, between 9:00 a.m. to 5:00 p.m., when the majority of construction activity is expected to occur.[18] DPM and $PM_{2.5}$ concentrations were calculated at nearby sensitive receptors. Receptor heights of 5 feet (1.5 meters) and 15 feet (4.6 meters) were used to represent the breathing height on the first and second floors of nearby residences.[19]

Summary of Construction Community Risk Impacts at the Off-Site MEI

The maximum increased cancer risks were calculated using the modeled TAC concentrations combined with the Office of Environmental Health Hazard Assessment (OEHHA) guidance for age sensitivity factors and exposure parameters as recommended by BAAQMD (see *Attachment 1)*. Non-cancer health hazards (HI) and maximum $PM_{2.5}$ concentrations were also calculated and identified. Age-sensitivity factors reflect the greater sensitivity of infants and children to cancer causing TACs. Third-trimester, infant, child, and adult exposures were assumed to occur at all residences during the entire construction period.

The maximum modeled annual $PM_{2.5}$ concentration was calculated based on combined exhaust and fugitive concentrations. The maximum computed HI value was based on the ratio of the maximum DPM concentration modeled and the chronic inhalation reference exposure level of 5 $\mu g/m^3$.

The maximum modeled annual DPM and $PM_{2.5}$ concentrations were identified at nearby sensitive receptors (as shown in Figure 1) to find the maximally exposed individuals (MEI). Results of this assessment indicated that the construction MEI was located on the second floor in the northeast corner of the multi-family residential building located adjacent to the south side of the project site. Table 5 summarizes the maximum cancer risks, $PM_{2.5}$ concentrations, and HI for project's construction activities at the MEI. *Attachment 4* to this report includes the emission calculations used for the construction area source modeling and the cancer risk calculations.

As shown in Table 5, the maximum cancer risks from uncontrolled (i.e., unmitigated) construction activities at the MEI location would exceed the BAAQMD single-source significance threshold. However, with the incorporation of the *Mitigation Measure AQ-1 and AQ-2*, the mitigated risk values would reduce emissions such that the cancer risk associated with construction would no longer exceed the BAAQMD single-source significance threshold. The unmitigated annual $PM_{2.5}$ concentration and HI at the MEI do not exceed their respective BAAQMD single-source significance thresholds.

[18] Construction activity expected to occur between 8:30am and 4:30pm, but AERMOD uses whole hours only.
[19] Bay Area Air Quality Management District, 2012, Recommended Methods for Screening and Modeling Local Risks and Hazards, Version 3.0. May. Web: https://www.baaqmd.gov/~/media/files/planning-and-research/ceqa/risk-modeling-approach-may-2012.pdf?la=en

Table 5. Construction Risk Impacts at the Off-Site MEI

Source		Cancer Risk (per million)	Annual $PM_{2.5}$ ($\mu g/m^3$)	Hazard Index
Project Construction	Unmitigated	**33.92 (infant)**	0.13	0.02
	Mitigated	8.48 (infant)	0.02	<0.01
BAAQMD Single-Source Threshold		***10***	***0.3***	***1.0***
Exceed Threshold?	Unmitigated	***Yes***	*No*	*No*
	Mitigated	*No*	*No*	*No*

In order to meet BAAQMD single-source health risk thresholds for cancer risk, the project would require mitigating DPM emissions from construction. Therefore, *Mitigation Measure AQ-2* would be required.

Mitigation Measure AQ-2: **Selection of equipment during construction to minimize emissions.**

The project shall develop a plan demonstrating that the off-road equipment used onsite to construct the project would achieve a fleet-wide average 75-percent reduction in DPM exhaust emissions or greater. One feasible plan to achieve this reduction would include the following:

1. All diesel-powered off-road equipment, larger than 25 horsepower, operating on the site for more than two days continuously shall, at a minimum, meet U.S. EPA particulate matter emissions standards for Tier 4 engines or equivalent if feasible, otherwise,

    a. If use of Tier 4 equipment is not available, alternatively use equipment that meets U.S. EPA emission standards for Tier 3 engines and include particulate matter emissions control equivalent to CARB Level 3 verifiable diesel emission control devices that altogether achieve a 75 percent reduction in particulate matter exhaust in comparison to uncontrolled equipment; alternatively (or in combination).

    b. Use of electrical or non-diesel fueled equipment.

2. Alternatively, the applicant may develop another construction operations plan demonstrating that the construction equipment used on-site would achieve a reduction in construction diesel particulate matter emissions by 75 percent or greater. Elements of the plan could include a combination of some of the following measures:
    - Implementation of No. 1 above to use Tier 4 or alternatively fueled equipment,
    - Installation of electric power lines during early construction phases to avoid use of diesel generators and compressors,
    - Use of electrically powered equipment,
    - Forklifts and aerial lifts used for exterior and interior building construction shall be electric or propane/natural gas powered,
    - Change in construction build-out plans to lengthen phases, and
    - Implementation of different building techniques that result in less diesel equipment usage.

Such a construction operations plan would be subject to review by an air quality expert and approved by the City prior to construction.

Effectiveness of Mitigation Measure AQ-2

CalEEMod was used to compute emissions assuming that all equipment met U.S. EPA Tier 4 interim engines standards and BAAQMD BMPs for construction. The results of the health risk assessment, based on these reduced emissions, are presented in *Attachment 4*. Tier 4 interim engines did not achieve the 75 percent reduction in DPM (as PM_{10} exhaust) needed. However, with the implementation of *Mitigation Measure AQ-2*, the project cancer risk levels would be reduced such that they would not exceed the BAAQMD single-source significance thresholds.

Cumulative Community Risks of all TAC Sources at the Off-Site Project MEI

Community health risk assessments typically look at all substantial sources of TACs that can affect sensitive receptors that are located within 1,000 feet of a project site (i.e., influence area). These sources include rail lines, highways, busy surface streets, and existing stationary sources identified by BAAQMD.

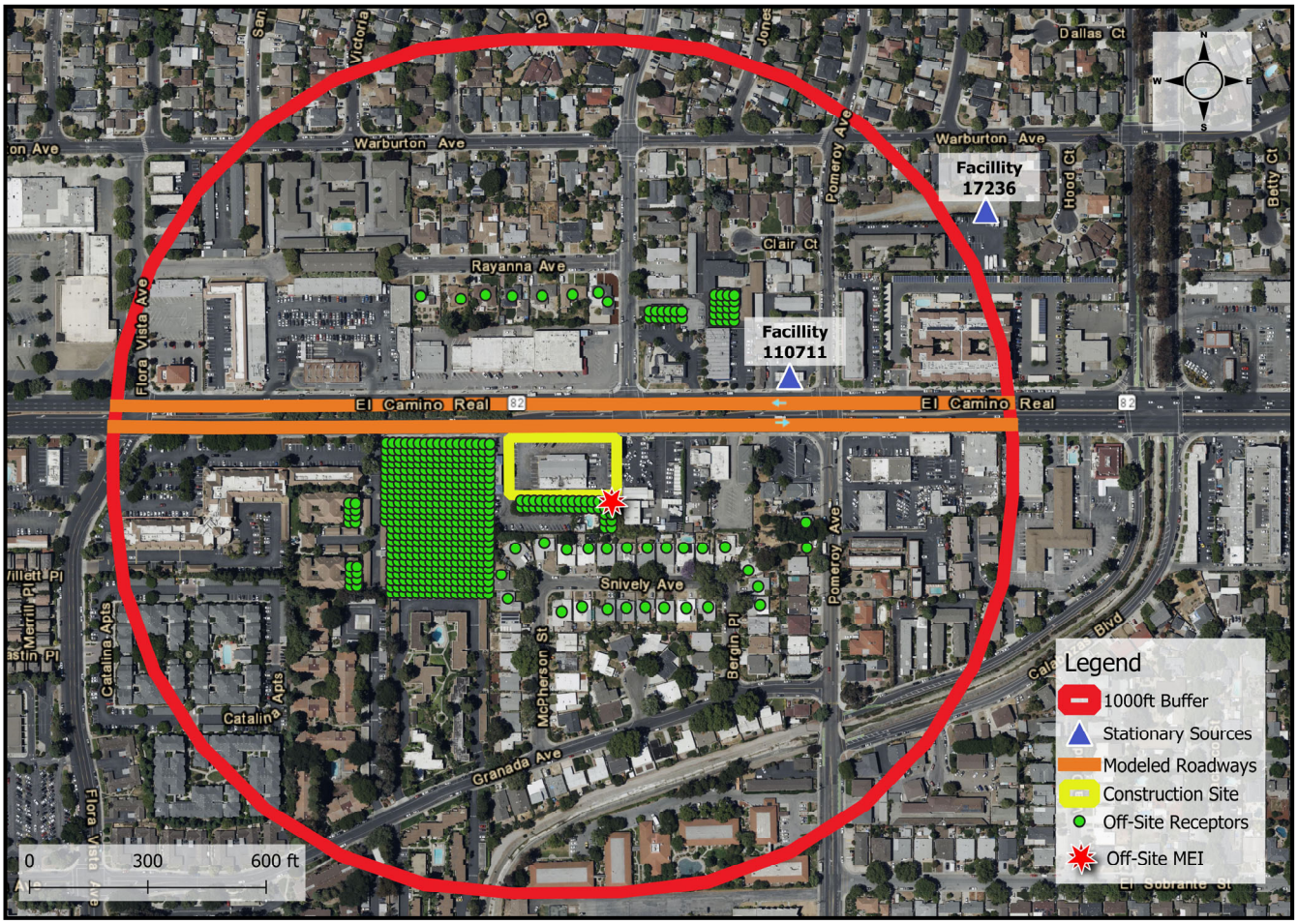
A review of the project area using traffic data collected by the City of Santa Clara indicated that one roadway within the influence area, El Camino Real, would have traffic exceeding 10,000 vehicles per day.[20] Other nearby streets would have less than 10,000 vehicles per day. A review of BAAQMD's stationary source geographic information systems (GIS) map tool identified two stationary sources with the potential to affect the project site and MEI. Figure 2 shows the region included within the influence area and the location of the existing TAC sources and the off-site MEI. Community risk impacts from these sources upon the MEIs reported in Table 6. Details of the modeling and community risk calculations are included in *Attachment 5*.

Local Roadways – El Camino Real

A refined analysis of potential health impacts from vehicle traffic on El Camino Real was conducted. This analysis involved predicting emissions for the traffic volume and mix of vehicle types on the roadway near the project site and using an atmospheric dispersion model to predict exposure to TACs. The associated cancer risks were then computed based on the modeled exposures. *Attachment 1* includes a description of how community risk impacts, including cancer risk are computed.

[20] https://www.arcgis.com/home/item.html?id=709ef12897bc42aa8e3d87f4505641c0

Figure 2. Project Site, Project MEI, and Nearby TAC Sources



The project site is adjacent to El Camino Real (or State Route 82) and the off-site MEI is located approximately 158 feet south of El Camino Real. A review of the AADT information provided by City of Santa Clara indicates this portion of El Camino Real has an estimated weekday traffic volume of approximately 41,000 vehicles per day based on counts collected in 2017.[21] These traffic volume estimates were increased one percent per year to obtain estimates for the analysis year of 2023. Caltrans data for US 101 and I-280, the closest data recorders to the project site, were used to estimate hourly traffic volume distributions. The truck percentage provided by Caltrans' traffic census program for El Camino Real (SR82) were used (average of 4.4 percent trucks), of which 1.8 percent are considered medium duty trucks and 2.6 percent are diesel heavy duty trucks.

Emission Rates

Full operation of the project is assumed to occur in 2025 or later with construction beginning in 2023. To estimate TAC and $PM_{2.5}$ emissions over a 30-year exposure period at the construction

[21] https://www.arcgis.com/home/item.html?id=709ef12897bc42aa8e3d87f4505641c0

MEI location from traffic on El Camino Real, emissions rates for DPM, $PM_{2.5}$, and organic TACs (as TOG) were needed. The latest version of CARB's EMFAC emissions model (EMFAC2021) was used to develop the emissions rates needed.[22] EMFAC2021 includes the latest data on California's car and truck fleets and travel activity. EMFAC2021 produce emissions rates for either specific vehicle categories or aggregate rates emissions rates using county-wide vehicle populations. However, the rates produced are only for criteria pollutants, not TACs or DPM. Therefore, CT-EMFAC2017 was also used to aid in the development of TAC emissions rates used in the analysis.

CT-EMFAC2017 is the Caltrans version of the CARB's EMFAC2017 emissions model and provides emission factors for mobile source criteria pollutants and TACs, including DPM, based on specific truck fractions input by the user. CT-EMFAC2017 uses the fraction of Non-Truck vehicles and trucks (i.e., Truck 1 and Truck 2) to develop aggregate emissions factors for each of 15 speed bins. The truck percentage derived from Caltrans' truck census program (4.4 percent) was input into CT-EMFAC2017 to develop emissions factors.

Next, the ratio of DMP to $PM_{2.5}$ produced by CT-EMFAC2017 was used to derive a DPM emissions rate using EMFAC2021 rates for each speed needed. Emission processes modeled for the analysis include idle emissions and running exhaust for $PM_{2.5}$, DPM, and TOG. Fugitive $PM_{2.5}$ emissions were also estimated using the road dust emissions factors provided by CT-EMFAC2017 and the tire wear and brake wear emissions rates provided by EMFAC2021. Inputs to the emissions models (both EMFAC2021 and CT-EMFAC2017) include region (i.e., Santa Clara), type of road (i.e., Major/Collector), year of analysis (i.e., 2023), and season (i.e., annual). Roadway emissions modeling outputs and calculations are included in *Attachment 5*. More details about the updates in emissions calculation methodologies and data are available in the EMFAC2021 Technical Support Document.[23]

Year 2023 emissions were conservatively assumed as being representative of future conditions over the period that cancer risks were evaluated (30 years), since vehicle fleet emissions, in particular diesel truck emissions, will decrease in the future.

Hourly traffic distributions were estimated by averaging 2019 hourly traffic volumes from nearby US 101 and I-280 using Caltrans Performance Measurement System (PeMS). PeMS data is collected in real-time from nearly 40,000 individual detectors spanning the freeway system across all major metropolitan areas of California.[24] The fraction of traffic volume each hour was calculated and applied to the traffic estimates for El Camino Real to obtain hourly traffic emission rates.

For all hours of the day, other than during peak a.m. and p.m. periods, an average speed of 35 mph was assumed for all vehicles. Traffic speeds during the peak a.m. and p.m. periods were assumed to be 10 miles per hour slower (i.e., 25 mph) to account for congestion and the amount

[22] EMFAC2017 became available for use in March 2018 and approved by the EPA in August 2019. EMFAC2021 has not yet been approved by U.S. EPA at the time this report was prepared.
[23] See CARB 2021: https://ww2.arb.ca.gov/our-work/programs/mobile-source-emissions-inventory/road-documentation/msei-modeling-tools-emfac
[24] https://dot.ca.gov/programs/traffic-operations/mpr/pems-source

of access in the area.

Hourly emissions rates were developed for DPM, organic TACs, and $PM_{2.5}$ along the applicable segments of El Camino Real within 1,000 feet of the project site. TAC and $PM_{2.5}$ concentrations at the construction MEIs location were developed using these emissions rates with an air quality dispersion model (AERMOD). Maximum increased lifetime cancer risks and maximum annual $PM_{2.5}$ concentrations for the construction MEIs receptor were then computed using modeled TAC and $PM_{2.5}$ concentrations and BAAQMD methods and exposure parameters described in *Attachment 1*.

Dispersion Modeling

Dispersion modeling of TAC and $PM_{2.5}$ emissions was conducted using the EPA AERMOD air quality dispersion model, which is recommended by the BAAQMD for this type of analysis.[25] TAC and $PM_{2.5}$ emissions from traffic on El Camino Real within 1,000 feet of the project site were evaluated. Vehicle traffic on the roadways was modeled using area sources along a line (line area sources) with line segments used for travel on the roadway. The same meteorological data and off-site sensitive receptors used in the previous dispersion modeling were used in the roadway modeling. Other inputs to the model included road geometry and elevations, hourly traffic emissions, and receptor locations and heights (4.6m at the MEI). Annual TAC and $PM_{2.5}$ concentrations using 2023 emissions from traffic on El Camino Real were calculated using the model.

Computed Cancer and Non-Cancer Health Impacts

The cancer risk, $PM_{2.5}$ concentration, and HI impacts from El Camino Real on the off-site MEI are shown in Table 6. Figure 2 shows the roadway links modeled and receptor locations where concentrations were calculated. Details of the emission calculations, dispersion modeling, and cancer risk calculations for the receptors with the maximum cancer risk from El Camino Real traffic are provided in *Attachment 5*.

BAAQMD Permitted Stationary Sources

Permitted stationary sources of air pollution near the project site were identified using BAAQMD's *Permitted Stationary Sources 2020* geographic information system (GIS) map website.[26] This mapping tool identifies the location of nearby stationary sources and their estimated risk and hazard impacts. Two sources were identified using this tool. One source is a diesel generator and the other a gas dispensing facility. The BAAQMD GIS website provided screening risks and hazards for the nearby diesel generator, but a stationary source information form (SSIF) was needed to obtain permitted fuel throughput limits for the nearby a gas dispensing facility. Therefore, a SSIF was submitted to BAAQMD and the throughput limits for

[25] BAAQMD. *Recommended Methods for Screening and Modeling Local Risks and Hazards*. May 2012
[26] BAAQMD, *Stationary Source Screening Map*, 2022. Web: https://baaqmd.maps.arcgis.com/apps/webappviewer/index.html?id=845658c19eae4594b9f4b805fb9d89a3

the gas dispensing facility were provided so that risk values could be developed using CARB's gas station screening tool.[27]

The screening level risks and hazards provided by BAAQMD for the generator were adjusted for distance using BAAQMD's *Distance Adjustment Multiplier Tool for Diesel Internal Combustion Engines*. Community risk impacts from the stationary sources upon the off-site MEI are reported in Table 6.

Summary of Cumulative Health Risk Impact at Off-Site MEI

Table 6 reports the cumulative community risk impacts at the off-site sensitive receptors most affected by construction (i.e., the off-site MEI). While construction of the project would exceed the BAAQMD single source threshold for cancer risk when unmitigated, it would not exceed the cumulative source thresholds for cancer risk. Likewise, the cumulative sources thresholds for maximum annual $PM_{2.5}$ concentration and HI would not be exceeded during construction of the project.

Table 6. Impacts from Combined Sources at Off-Site MEI

Source		Cancer Risk (per million)	Annual $PM_{2.5}$ ($\mu g/m^3$)	Hazard Index
Project Construction	Unmitigated	**33.92 (infant)**	0.13	0.02
	Mitigated	8.48 (infant)	0.02	<0.01
El Camino Real		3.8	0.33	<0.01
City of Santa Clara - Well Site: Zone 1, 7 (Facility ID #17236, Generator)		0.44	<0.01	<0.01
El Camino Valero (Facility ID #110711_1, Gas Dispensing Facility)		0.51	0.00	NA
Combined Sources	Unmitigated	38.67	<0.47	<0.05
	Mitigated	13.23	<0.36	<0.03
BAAQMD Cumulative Source Threshold		***100***	***0.8***	***10.0***
Exceed Threshold?	Unmitigated	*No*	*No*	*No*
	Mitigated	*No*	*No*	*No*

On-site Cumulative Community Risk Assessment for New Project Residences (Non-CEQA)

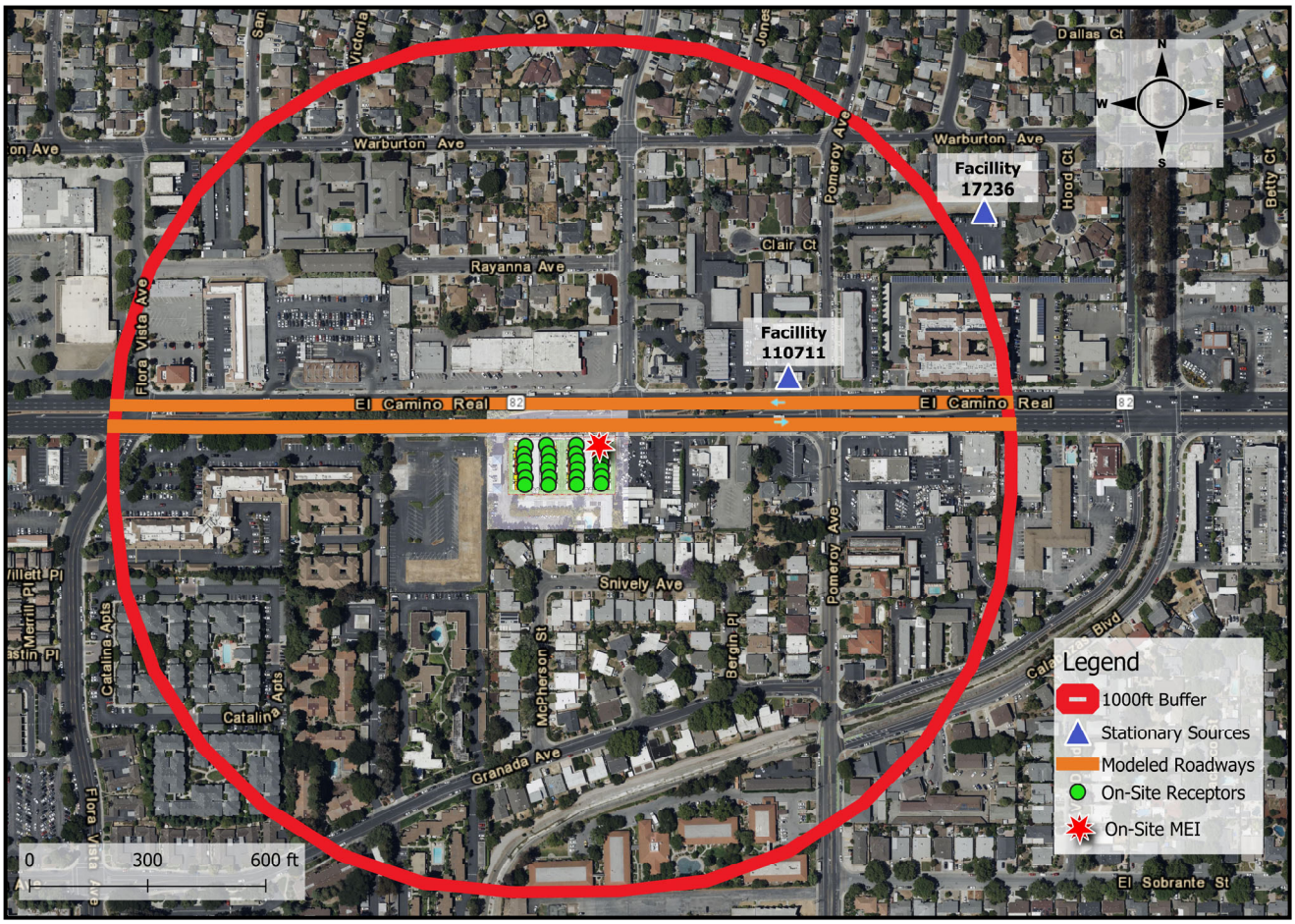
In addition to evaluating health impact from project construction, a health risk assessment was completed to assess the impact that the existing TAC sources would have on the new proposed sensitive receptors (residents) introduced by the project. The same existing TAC sources identified above in Table 6 were used.[28] Figure 3 shows the on-site sensitive receptors in relation to the nearby TAC sources. The cumulative on-site community risk assessment results are listed

[27] SSIF correspondence with BAAQMD, October 5, 2022.

[28] We note that to the extent this analysis considers *existing* air quality issues in relation to the impact on *future residents* of the Project, it does so for informational purposes only pursuant to the judicial decisions in *CBIA v. BAAQMD* (2015) 62 Cal.4th 369, 386 and *Ballona Wetlands Land Trust v. City of Los Angeles* (2011) 201 Cal.App.4th 455, 473, which confirm that the impacts of the environment on a project are excluded from CEQA unless the project itself "exacerbates" such impacts.

in Table 7. *Attachment 6* includes risk calculations for TAC source impacts upon the proposed on-site sensitive receptors.

Figure 3. Locations of New On-Site Residential Receptors, Existing Sources of TACs, and Location of Maximum TAC Impacts



Local Roadways – El Camino Real

The roadway analysis for the project residents was conducted in the same manner as described above for the off-site MEI. Emissions from 2023 (construction year) were conservatively assumed as being representative of Year 2025 conditions. On-site receptors were placed throughout the project site representing each of the proposed townhouses. Roadway impacts were modeled at receptor heights of 5 feet (1.5 meters), 14 feet (4.3 meters), and 24.6 feet (7.5 meters) representing sensitive receptors on the first, second, and third floors of each unit. The portion of the roadway included in the modeling are shown in Figure 3 along with the project site and receptor locations where impacts were modeled.

The roadway community risk impacts to the on-site MEI are shown in Table 7. Details of the emission calculations, dispersion modeling, and cancer risk calculations are contained in *Attachment 6.*

Maximum increased cancer risks were calculated for the residents at the project site using the maximum modeled TAC concentrations. A 30-year exposure period was used in calculating cancer risks assuming the residents would include third trimester pregnancy and infants/children and were assumed to be in the new homes for 24 hours per day for 350 days per year. The highest impacts from El Camino Real occurred at a receptor on the first floor in the northeast corner of the project site, closest to the roadway. Health risks associated with TAC emissions from the roadway are greatest closest to the roadway and decrease with distance.

Stationary Sources

The stationary source screening analysis for the new on-site sensitive receptors was conducted in the same manner as described above for the construction MEI. Table 7 includes the health risk assessment results from the stationary sources.

Summary of Cumulative Community Risks at the Project Site

Cumulative community risk impacts from the existing TAC sources upon the on-site MEI are reported in Table 7. For informational purposes, risks from each TAC source are also compared against the BAAQMD single-source thresholds. As shown, the cumulative source thresholds are not exceeded. However, annual $PM_{2.5}$ concentrations from El Camino Real do exceed the BAAQMD single source threshold at the on-site MEI. This is primarily due to fugitive road dust emissions and particulates from tire wear and break wear.

Table 7. Impacts from Combined Sources to Project Site Receptors

Source	Cancer Risk (per million)	Annual $PM_{2.5}$ ($\mu g/m^3$)	Hazard Index
El Camino Real	7.0	0.51	<0.01
City of Santa Clara - Well Site: Zone 1, 7 (Facility ID #17236, Generator)	0.44	<0.01	<0.01
El Camino Valero (Facility ID # 110711_1, Gas Dispensing Facility)	0.51	NA	NA
BAAQMD Single-Source Threshold	***10***	***0.3***	***1.0***
Exceed Threshold?	*No*	***Yes***	*No*
Cumulative Total	7.95	<0.52	<0.02
BAAQMD Cumulative Source Threshold	***100***	***0.8***	***10.0***
Exceed Threshold?	*No*	*No*	*No*

Recommended Design Features to Reduce Project Receptor Exposure

Ventilation system filtration at the residential units is recommended to reduce the level of $PM_{2.5}$ concentrations to below the thresholds. Annual concentrations of $PM_{2.5}$ exceed BAAQMD single-source thresholds due to emissions attributable to El Camino Real, specifically the truck and auto exhaust, the wearing of brakes and tires, and re-entrainment of roadway dust from vehicles traveling over pavement. Reducing particulate matter exposure would reduce both annual $PM_{2.5}$ exposures and cancer risk, although cancer risks from El Camino Real are below the BAAQMD single source threshold.

The project shall include the following measures to minimize annual $PM_{2.5}$ exposure for new project occupants:

1. Install air filtration for the residential units. Air filtration devices shall be rated MERV13 or higher. To ensure adequate health protection to sensitive receptors (i.e., residents), this ventilation system, whether mechanical or passive, shall filter all fresh air that would be circulated into the dwelling units.

2. The ventilation system shall be designed to keep the building at positive pressure when doors and windows are closed to reduce the intrusion of unfiltered outside air into the building

3. As part of implementing this measure, an ongoing maintenance plan for the buildings' heating, ventilation, and air conditioning (HVAC) air filtration system shall be required that includes regular filter replacement.

4. Ensure that the use agreement and other property documents: (1) require cleaning, maintenance, and monitoring of the affected buildings for air flow leaks, (2) include assurance that new owners or tenants are provided information on the ventilation system, and (3) include provisions that fees associated with owning or leasing a unit(s) in the building include funds for cleaning, maintenance, monitoring, and replacements of the filters, as needed.

Effectiveness of Recommended Design Features

A professionally installed and operated ventilation system with MERV13 would achieve a 90-percent reduction for small particulates.[29] The overall effectiveness calculations consider the amount of time spent outdoors at the project site but not time spent away from home. Assuming that the filtration system is 80-percent effective, and the individual is being exposed to 21 hours of indoor filtered air and three hours of outdoor unfiltered air at the site, then the overall effectiveness of a MERV13 filtration system would be about 70-percent for $PM_{2.5}$ exposure. This would reduce the maximum annual $PM_{2.5}$ concentrations to 0.15 $\mu g/m^3$ from El Camino Real, below BAAQMD's single-source threshold for annual $PM_{2.5}$ concentrations.

[29] Bay Area Air Quality Management District (2016). Appendix B: Best Practices to Reduce Exposure to Local Air Pollution, *Planning Healthy Places A Guidebook for Addressing Local Sources of Air Pollutants in Community Planning* (p. 38). http://www.baaqmd.gov/~/media/files/planning-and-research/planning-healthy-places/php_may20_2016-pdf.pdf?la=en

Supporting Documentation

Attachment 1 is the methodology used to compute community risk impacts, including the methods to compute lifetime cancer risk from exposure to project emissions.

Attachment 2 includes the CalEEMod output for project construction emissions. Also included are any modeling assumptions.

Attachment 3 includes the EMFAC2021 emissions modeling. The input files for these calculations are voluminous and are available upon request in digital format.

Attachment 4 is the construction health risk assessment calculations. AERMOD dispersion modeling files for this assessment, which are quite voluminous, are available upon request and would be provided in digital format

Attachment 5 includes the emissions analysis and cumulative community risk calculations from sources affecting the construction MEI.

Attachment 6 includes the emissions analysis and cumulative community risk calculations from sources affecting the On-site MEI.

Attachment 1: Health Risk Calculation Methodology

A health risk assessment (HRA) for exposure to Toxic Air Contaminates (TACs) requires the application of a risk characterization model to the results from the air dispersion model to estimate potential health risk at each sensitive receptor location. The State of California Office of Environmental Health Hazard Assessment (OEHHA) and California Air Resources Board (CARB) develop recommended methods for conducting health risk assessments. The most recent OEHHA risk assessment guidelines were published in February of 2015.[30] These guidelines incorporate substantial changes designed to provide for enhanced protection of children, as required by State law, compared to previous published risk assessment guidelines. CARB has provided additional guidance on implementing OEHHA's recommended methods.[31] This HRA used the 2015 OEHHA risk assessment guidelines and CARB guidance. The BAAQMD has adopted recommended procedures for applying the newest OEHHA guidelines as part of Regulation 2, Rule 5: New Source Review of Toxic Air Contaminants.[32] Exposure parameters from the OEHHA guidelines and the recent BAAQMD HRA Guidelines were used in this evaluation.

Cancer Risk

Potential increased cancer risk from inhalation of TACs is calculated based on the TAC concentration over the period of exposure, inhalation dose, the TAC cancer potency factor, and an age sensitivity factor to reflect the greater sensitivity of infants and children to cancer causing TACs. The inhalation dose depends on a person's breathing rate, exposure time and frequency and duration of exposure. These parameters vary depending on the age, or age range, of the persons being exposed and whether the exposure is considered to occur at a residential location or other sensitive receptor location.

The current OEHHA guidance recommends that cancer risk be calculated by age groups to account for different breathing rates and sensitivity to TACs. Specifically, they recommend evaluating risks for the third trimester of pregnancy to age zero, ages zero to less than two (infant exposure), ages two to less than 16 (child exposure), and ages 16 to 70 (adult exposure). Age sensitivity factors (ASFs) associated with the different types of exposure are an ASF of 10 for the third trimester and infant exposures, an ASF of 3 for a child exposure, and an ASF of 1 for an adult exposure. Also associated with each exposure type are different breathing rates, expressed as liters per kilogram of body weight per day (L/kg-day) or liters per kilogram of body weight per 8-hour period for the case of worker or school child exposures. As recommended by the BAAQMD for residential exposures, 95th percentile breathing rates are used for the third trimester and infant exposures, and 80th percentile breathing rates for child and adult exposures. For children at schools and daycare facilities, BAAQMD recommends using the 95th percentile 8-hour breathing rates. Additionally, CARB and the BAAQMD recommend the use of a

[30] OEHHA, 2015. *Air Toxics Hot Spots Program Risk Assessment Guidelines, The Air Toxics Hot Spots Program Guidance Manual for Preparation of Health Risk Assessments*. Office of Environmental Health Hazard Assessment. February.
[31] CARB, 2015. *Risk Management Guidance for Stationary Sources of Air Toxics*. July 23.
[32] BAAQMD, 2016. *BAAQMD Air Toxics NSR Program Health Risk Assessment (HRA) Guidelines*. December 2016.

residential exposure duration of 30 years for sources with long-term emissions (e.g., roadways). For workers, assumed to be adults, a 25-year exposure period is recommended by the BAAQMD. For school children a 9-year exposure period is recommended by the BAAQMD.

Under previous OEHHA and BAAQMD HRA guidance, residential receptors are assumed to be at their home 24 hours a day, or 100 percent of the time. In the 2015 Risk Assessment Guidance, OEHHA includes adjustments to exposure duration to account for the fraction of time at home (FAH), which can be less than 100 percent of the time, based on updated population and activity statistics. The FAH factors are age-specific and are: 0.85 for third trimester of pregnancy to less than 2 years old, 0.72 for ages 2 to less than 16 years, and 0.73 for ages 16 to 70 years. Use of the FAH factors is allowed by the BAAQMD if there are no schools in the project vicinity have a cancer risk of one in a million or greater assuming 100 percent exposure (FAH = 1.0).

Functionally, cancer risk is calculated using the following parameters and formulas:

Cancer Risk (per million) = $CPF \times Inhalation\ Dose \times ASF \times ED/AT \times FAH \times 10^6$

Where:

CPF = Cancer potency factor $(mg/kg\text{-}day)^{-1}$
ASF = Age sensitivity factor for specified age group
ED = Exposure duration (years)
AT = Averaging time for lifetime cancer risk (years)
FAH = Fraction of time spent at home (unitless)

Inhalation Dose = $C_{air} \times DBR^* \times A \times (EF/365) \times 10^{-6}$

Where:

C_{air} = concentration in air ($\mu g/m^3$)
DBR = daily breathing rate (L/kg body weight-day)
8HrBR = 8-hour breathing rate (L/kg body weight-8 hours)
A = Inhalation absorption factor
EF = Exposure frequency (days/year)
10^{-6} = Conversion factor

The health risk parameters used in this evaluation are summarized as follows:

Parameter	*Exposure Type* →	Infant		Child	Adult
	Age Range →	3rd Trimester	0<2	2 < 16	16 - 30
DPM Cancer Potency Factor $(mg/kg\text{-}day)^{-1}$		1.10E+00	1.10E+00	1.10E+00	1.10E+00
Daily Breathing Rate (L/kg-day) 80th Percentile Rate		273	758	572	261
Daily Breathing Rate (L/kg-day) 95th Percentile Rate		361	1,090	745	335
8-hour Breathing Rate (L/kg-8 hours) 95th Percentile Rate		-	1,200	520	240
Inhalation Absorption Factor		1	1	1	1
Averaging Time (years)		70	70	70	70
Exposure Duration (years)		0.25	2	14	14*
Exposure Frequency (days/year)		350	350	350	350*
Age Sensitivity Factor		10	10	3	1
Fraction of Time at Home (FAH)		0.85-1.0	0.85-1.0	0.72-1.0	0.73*
* An 8-hour breathing rate (8HrBR) is used for worker and school child exposures.					

Non-Cancer Hazards

Non-cancer health risk is usually determined by comparing the predicted level of exposure to a chemical to the level of exposure that is not expected to cause any adverse effects (reference exposure level), even to the most susceptible people. Potential non-cancer health hazards from TAC exposure are expressed in terms of a hazard index (HI), which is the ratio of the TAC concentration to a reference exposure level (REL). OEHHA has defined acceptable concentration levels for contaminants that pose non-cancer health hazards. TAC concentrations below the REL are not expected to cause adverse health impacts, even for sensitive individuals. The total HI is calculated as the sum of the HIs for each TAC evaluated and the total HI is compared to the BAAQMD significance thresholds to determine whether a significant non-cancer health impact from a project would occur.

Typically, for residential projects located near roadways with substantial TAC emissions, the primary TAC of concern with non-cancer health effects is diesel particulate matter (DPM). For DPM, the chronic inhalation REL is 5 micrograms per cubic meter ($\mu g/m^3$).

Annual $PM_{2.5}$ Concentrations

While not a TAC, fine particulate matter ($PM_{2.5}$) has been identified by the BAAQMD as a pollutant with potential non-cancer health effects that should be included when evaluating potential community health impacts under the California Environmental Quality Act (CEQA). The thresholds of significance for $PM_{2.5}$ (project level and cumulative) are in terms of an increase in the annual average concentration. When considering $PM_{2.5}$ impacts, the contribution from all sources of $PM_{2.5}$ emissions should be included. For projects with potential impacts from nearby local roadways, the $PM_{2.5}$ impacts should include those from vehicle exhaust emissions, $PM_{2.5}$ generated from vehicle tire and brake wear, and fugitive emissions from re-suspended dust on the roads.

Attachment 2: CalEEMod Modeling Inputs and Outputs

Air Quality/Noise Construction Information Data Request

Project Name:

Complete ALL Portions in Yellow

See Equipment Type TAB for type, horsepower and load factor

Project Size 24 Dwelling Units 0.88 total project acres disturbed

41112 s.f. residential

s.f. retail

s.f. office/commercial

s.f. other, specify:

11837 s.f. parking garage 48 spaces

s.f. parking lot spaces

Construction Days 390 to 468

Construction Hours 8:30 am to 4:30 pm

Pile Driving? Y/N? No

Project include on-site GENERATOR OR FIRE PUMP during project OPERATION (not construction)? Y/N? __No__

IF YES (if BOTH separate values) -->

Kilowatts/Horsepower: _____

Fuel Type: _____

Location in project (Plans Desired if Available):

DO NOT MULTIPLY EQUIPMENT HOURS/DAY BY THE QUANTITY OF EQUIPMENT

Quantity	Description	HP	Load Factor	Hours/day	Total Work Days	Avg. Hours per day	HP Annual Hours	Comments
	Demolition	**Start Date:**	**10/3/2023**	**Total phase:**	**15**			**Overall Import/Export Volumes**
		End Date:	**10/23/2023**					
2	Concrete/Industrial Saws	81	0.73	8	10	5.33333333	9461	**Demolition Volume**
1	Excavators	158	0.38	8	10	5.33333333	4803	Square footage of buildings to be demolished
2	Rubber-Tired Dozers	247	0.4	8	5	2.66666667	7904	(*or* total tons to be hauled)
1	Tractors/Loaders/Backhoes	97	0.37	8	15	8	4307	**8500** square feet *or*
	Other Equipment?							**50** Hauling volume (tons)
								Any pavement demolished and hauled? **50 tons**
	Site Preparation	**Start Date:**	**10/30/2023**	**Total phase:**	**10**			
		End Date:	**11/10/2023**					
1	Graders	187	0.41	8	8	6.4	4907	
1	Rubber Tired Dozers	247	0.4	8	0	0	0	
1	Tractors/Loaders/Backhoes	97	0.37	8	10	8	2871	
	Other Equipment?							
	Grading / Excavation	**Start Date:**	**1/5/2024**	**Total phase:**	**10**			
		End Date:	**1/19/2024**					**Soil Hauling Volume**
1	Excavators	158	0.38	8	10	8	4803	Export volume = **150** cubic yards?
1	Graders	187	0.41	8	10	8	6134	Import volume = **150** cubic yards?
1	Rubber Tired Dozers	247	0.4	8	0	0	0	
1	Concrete/Industrial Saws	81	0.73	8	0	0	0	
1	Tractors/Loaders/Backhoes	97	0.37	8	10	8	2871	
	Other Equipment?							
	Trenching/Foundation	**Start Date:**	**1/22/2024**	**Total phase:**	**30**			
		End Date:	**3/1/2024**					
1	Tractor/Loader/Backhoe	97	0.37	8	10	2.66666667	2871	
1	Excavators	158	0.38	8	20	5.33333333	9606	
	Other Equipment?							
	Building - Exterior	**Start Date:**	**3/4/2024**	**Total phase:**	**120**			**Cement Trucks? 120 Total Round-Trips**
		End Date:	**1/10/2025**					
0	Cranes	231	0.29	8	0	0	0	Electric? (Y/N) _Y__ Otherwise assumed diesel
2	Forklifts	89	0.2	8	5	0.33333333	1424	Liquid Propane (LPG)? (Y/N) _Yes__ Otherwise Assumed diesel
0	Generator Sets	84	0.74	8	0	0	0	Or temporary line power? (Y/N) _yes__
1	Tractors/Loaders/Backhoes	97	0.37	8	0	0	0	
0	Welders	46	0.45	8	15	1	0	
	Other Equipment?							
Building - Interior/Architectural Coating		**Start Date:**	**5/8/2024**	**Total phase:**	**175**			
		End Date:	**6/13/2025**					
2	Air Compressors	78	0.48	8	150	6.85714286	89856	
1	Aerial Lift	62	0.31	8	280	12.8	43053	
	Other Equipment?							
	Paving	**Start Date:**	**6/16/2025**	**Total phase:**	**30**			
		End Date:	**7/31/2025**					
0	Cement and Mortar Mixers	9	0.56	8	30	8	0	
0	Pavers	130	0.42	8	30	8	0	**Asphalt? ___ cubic yards or ____ round trips?(no asphalt)**
1	Paving Equipment	132	0.36	8	30	8	11405	
1	Rollers	80	0.38	8	20	5.33333333	4864	
1	Tractors/Loaders/Backhoes	97	0.37	8	30	8	8614	
	Other Equipment?							
	Additional Phases	**Start Date:**		**Total phase:**				
		Start Date:						
						#DIV/0!	0	
						#DIV/0!	0	
						#DIV/0!	0	
						#DIV/0!	0	
						#DIV/0!	0	

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

VeGuard Housing, Santa Clara - Construction

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1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Enclosed Parking Structure	48.00	Space	0.00	11,837.00	0
Condo/Townhouse	24.00	Dwelling Unit	0.88	41,112.00	69

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	58
Climate Zone	4			**Operational Year**	2026
Utility Company	Silicon Valley Power				
CO2 Intensity (lb/MWhr)	307.98	**CH4 Intensity (lb/MWhr)**	0.033	**N2O Intensity (lb/MWhr)**	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Total lot acreage and square footage provided by construction sheet.

Construction Phase - Provided in construction sheet.

Off-road Equipment - Provided in construction sheet.

Off-road Equipment - Provided in construction sheet.

Off-road Equipment - Provided in construction sheet.

Off-road Equipment - Provided in construction sheet.

Off-road Equipment - Provided in construction sheet.

Off-road Equipment - Provided in construction sheet.

Off-road Equipment - Provided in construction sheet.

Trips and VMT - EMFAC2021 adjustment 0 trips, pavement demo = 50 tons, building const = 120 concrete truck round trips.

Demolition - Existing building demo = 8,500 sqft.

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Grading - Grading = 150-cy imported and 150-cy exported.

Woodstoves - No hearths.

Energy Use - Santa Clara Reach Code - no natural gas - convert to electricity.

Water And Wastewater - Wastewater treatment 100% aerobic - no septic tanks or lagoons.

Construction Off-road Equipment Mitigation - BMPs, Tier 4 interim mitigation.

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	3.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	3.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	6.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim

Date: 9/30/2022 1:56 PM

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tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstructionPhase	NumDays	5.00	288.00
tblConstructionPhase	NumDays	100.00	225.00
tblConstructionPhase	NumDays	10.00	15.00
tblConstructionPhase	NumDays	2.00	11.00
tblConstructionPhase	NumDays	5.00	34.00
tblConstructionPhase	NumDays	1.00	10.00
tblEnergyUse	NT24E	3,795.01	4,719.65
tblEnergyUse	NT24NG	3,155.00	0.00
tblEnergyUse	T24E	52.36	4,186.02
tblEnergyUse	T24NG	14,104.62	0.00
tblFireplaces	FireplaceDayYear	11.14	0.00
tblFireplaces	FireplaceHourDay	3.50	0.00
tblFireplaces	FireplaceWoodMass	228.80	0.00
tblFireplaces	NumberGas	3.60	0.00
tblFireplaces	NumberNoFireplace	0.96	0.00
tblFireplaces	NumberWood	4.08	0.00
tblGrading	MaterialExported	0.00	150.00
tblGrading	MaterialImported	0.00	150.00
tblLandUse	LandUseSquareFeet	19,200.00	11,837.00
tblLandUse	LandUseSquareFeet	24,000.00	41,112.00
tblLandUse	LotAcreage	0.43	0.00
tblLandUse	LotAcreage	1.50	0.88
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00

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tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	UsageHours	6.00	6.90
tblOffRoadEquipment	UsageHours	6.00	8.00
tblOffRoadEquipment	UsageHours	8.00	5.30
tblOffRoadEquipment	UsageHours	4.00	0.00
tblOffRoadEquipment	UsageHours	6.00	0.30
tblOffRoadEquipment	UsageHours	6.00	8.00
tblOffRoadEquipment	UsageHours	8.00	6.40
tblOffRoadEquipment	UsageHours	7.00	8.00
tblOffRoadEquipment	UsageHours	7.00	5.30
tblOffRoadEquipment	UsageHours	1.00	2.70
tblOffRoadEquipment	UsageHours	6.00	1.00
tblOffRoadEquipment	UsageHours	8.00	1.00
tblOffRoadEquipment	UsageHours	6.00	8.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblTripsAndVMT	HaulingTripNumber	39.00	0.00
tblTripsAndVMT	HaulingTripNumber	38.00	0.00
tblTripsAndVMT	VendorTripNumber	5.00	0.00
tblTripsAndVMT	WorkerTripNumber	15.00	0.00
tblTripsAndVMT	WorkerTripNumber	8.00	0.00
tblTripsAndVMT	WorkerTripNumber	13.00	0.00
tblTripsAndVMT	WorkerTripNumber	5.00	0.00
tblTripsAndVMT	WorkerTripNumber	22.00	0.00
tblTripsAndVMT	WorkerTripNumber	4.00	0.00
tblTripsAndVMT	WorkerTripNumber	13.00	0.00
tblWater	AerobicPercent	87.46	100.00
tblWater	AerobicPercent	87.46	100.00

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tblWater	AnaerobicandFacultativeLagoonsPercent	2.21	0.00
tblWater	AnaerobicandFacultativeLagoonsPercent	2.21	0.00
tblWater	SepticTankPercent	10.33	0.00
tblWater	SepticTankPercent	10.33	0.00
tblWoodstoves	NumberCatalytic	0.48	0.00
tblWoodstoves	NumberNoncatalytic	0.48	0.00
tblWoodstoves	WoodstoveDayYear	14.12	0.00
tblWoodstoves	WoodstoveWoodMass	582.40	0.00

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2023	0.0116	0.1117	0.1049	2.0000e-004	0.0104	5.0300e-003	0.0154	2.9700e-003	4.7300e-003	7.6900e-003	0.0000	17.6096	17.6096	4.2300e-003	0.0000	17.7153
2024	0.2252	0.4218	0.6524	1.0600e-003	7.4400e-003	0.0179	0.0254	2.6300e-003	0.0175	0.0201	0.0000	91.3169	91.3169	0.0155	0.0000	91.7053
2025	0.1564	0.2998	0.5072	8.1000e-004	0.0000	0.0122	0.0122	0.0000	0.0118	0.0118	0.0000	69.9769	69.9769	0.0131	0.0000	70.3050
Maximum	**0.2252**	**0.4218**	**0.6524**	**1.0600e-003**	**0.0104**	**0.0179**	**0.0254**	**2.9700e-003**	**0.0175**	**0.0201**	**0.0000**	**91.3169**	**91.3169**	**0.0155**	**0.0000**	**91.7053**

Mitigated Construction

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2023	3.5500e-003	0.0702	0.1269	2.0000e-004	4.6800e-003	3.1000e-004	4.9900e-003	1.3400e-003	3.1000e-004	1.6500e-003	0.0000	17.6095	17.6095	4.2300e-003	0.0000	17.7153
2024	0.1929	0.4441	0.7034	1.0600e-003	3.3500e-003	7.0000e-003	0.0104	1.1800e-003	7.0000e-003	8.1900e-003	0.0000	91.3168	91.3168	0.0155	0.0000	91.7052
2025	0.1346	0.3364	0.5467	8.1000e-004	0.0000	4.5900e-003	4.5900e-003	0.0000	4.5900e-003	4.5900e-003	0.0000	69.9769	69.9769	0.0131	0.0000	70.3049
Maximum	**0.1929**	**0.4441**	**0.7034**	**1.0600e-003**	**4.6800e-003**	**7.0000e-003**	**0.0104**	**1.3400e-003**	**7.0000e-003**	**8.1900e-003**	**0.0000**	**91.3168**	**91.3168**	**0.0155**	**0.0000**	**91.7052**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**15.81**	**-2.08**	**-8.89**	**0.00**	**54.99**	**66.14**	**62.38**	**55.00**	**65.02**	**63.58**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	10-3-2023	1-2-2024	0.1185	0.0714
2	1-3-2024	4-2-2024	0.0760	0.0670
3	4-3-2024	7-2-2024	0.1383	0.1378
4	7-3-2024	10-2-2024	0.2174	0.2172
5	10-3-2024	1-2-2025	0.2173	0.2172
6	1-3-2025	4-2-2025	0.1923	0.1995
7	4-3-2025	7-2-2025	0.1899	0.1962
8	7-3-2025	9-30-2025	0.0633	0.0643
		Highest	0.2174	0.2172

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	10/3/2023	10/23/2023	5	15	

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2	Site Preparation	Site Preparation	10/30/2023	11/10/2023	5	10	
3	Grading	Grading	1/5/2024	1/19/2024	5	11	
4	Trenching	Trenching	1/22/2024	3/1/2024	5	30	
5	Building Construction	Building Construction	3/4/2024	1/10/2025	5	225	
6	Architectural Coating	Architectural Coating	5/8/2024	6/13/2025	5	288	
7	Paving	Paving	6/16/2025	7/31/2025	5	34	

Acres of Grading (Site Preparation Phase): 4.63

Acres of Grading (Grading Phase): 6.19

Acres of Paving: 0

Residential Indoor: 83,252; Residential Outdoor: 27,751; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 710

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	2	5.30	81	0.73
Demolition	Excavators	1	5.30	158	0.38
Demolition	Rubber Tired Dozers	2	2.70	247	0.40
Demolition	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Site Preparation	Graders	1	6.40	187	0.41
Site Preparation	Rubber Tired Dozers	1	1.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Grading	Concrete/Industrial Saws	1	1.00	81	0.73
Grading	Excavators	1	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	1.00	247	0.40
Grading	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Trenching	Excavators	1	5.30	158	0.38
Trenching	Tractors/Loaders/Backhoes	1	2.70	97	0.37
Building Construction	Cranes	0	0.00	231	0.29
Building Construction	Forklifts	2	0.30	89	0.20

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Building Construction	Tractors/Loaders/Backhoes	1	1.00	97	0.37
Building Construction	Welders	1	1.00	46	0.45
Architectural Coating	Aerial Lifts	1	12.80	63	0.31
Architectural Coating	Air Compressors	2	6.90	78	0.48
Paving	Cement and Mortar Mixers	1	8.00	9	0.56
Paving	Pavers	1	8.00	130	0.42
Paving	Paving Equipment	1	8.00	132	0.36
Paving	Rollers	1	5.30	80	0.38
Paving	Tractors/Loaders/Backhoes	1	8.00	97	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	6	0.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	3	0.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	5	0.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Trenching	2	0.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	4	0.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	3	0.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	5	0.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

3.2 Demolition - 2023

Unmitigated Construction On-Site

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					4.1800e-003	0.0000	4.1800e-003	6.3000e-004	0.0000	6.3000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	8.8600e-003	0.0810	0.0850	1.5000e-004		3.8400e-003	3.8400e-003		3.6400e-003	3.6400e-003	0.0000	13.4472	13.4472	2.8800e-003	0.0000	13.5193
Total	**8.8600e-003**	**0.0810**	**0.0850**	**1.5000e-004**	**4.1800e-003**	**3.8400e-003**	**8.0200e-003**	**6.3000e-004**	**3.6400e-003**	**4.2700e-003**	**0.0000**	**13.4472**	**13.4472**	**2.8800e-003**	**0.0000**	**13.5193**

Unmitigated Construction Off-Site

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

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

VeGuard Housing, Santa Clara - Santa Clara County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Category	tons/yr										MT/yr					
Fugitive Dust					1.8800e-003	0.0000	1.8800e-003	2.9000e-004	0.0000	2.9000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.6800e-003	0.0550	0.0983	1.5000e-004		2.3000e-004	2.3000e-004		2.3000e-004	2.3000e-004	0.0000	13.4472	13.4472	2.8800e-003	0.0000	13.5193
Total	**2.6800e-003**	**0.0550**	**0.0983**	**1.5000e-004**	**1.8800e-003**	**2.3000e-004**	**2.1100e-003**	**2.9000e-004**	**2.3000e-004**	**5.2000e-004**	**0.0000**	**13.4472**	**13.4472**	**2.8800e-003**	**0.0000**	**13.5193**

Mitigated Construction Off-Site

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

3.3 Site Preparation - 2023

Unmitigated Construction On-Site

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

VeGuard Housing, Santa Clara - Santa Clara County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Fugitive Dust					6.2200e-003	0.0000	6.2200e-003	2.3300e-003	0.0000	2.3300e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.7200e-003	0.0308	0.0199	5.0000e-005		1.1800e-003	1.1800e-003		1.0900e-003	1.0900e-003	0.0000	4.1623	4.1623	1.3500e-003	0.0000	4.1960
Total	**2.7200e-003**	**0.0308**	**0.0199**	**5.0000e-005**	**6.2200e-003**	**1.1800e-003**	**7.4000e-003**	**2.3300e-003**	**1.0900e-003**	**3.4200e-003**	**0.0000**	**4.1623**	**4.1623**	**1.3500e-003**	**0.0000**	**4.1960**

Unmitigated Construction Off-Site

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

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					2.8000e-003	0.0000	2.8000e-003	1.0500e-003	0.0000	1.0500e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

VeGuard Housing, Santa Clara - Santa Clara County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Off-Road	8.7000e-004	0.0152	0.0286	5.0000e-005		8.0000e-005	8.0000e-005		8.0000e-005	8.0000e-005	0.0000	4.1623	4.1623	1.3500e-003	0.0000	4.1960
Total	**8.7000e-004**	**0.0152**	**0.0286**	**5.0000e-005**	**2.8000e-003**	**8.0000e-005**	**2.8800e-003**	**1.0500e-003**	**8.0000e-005**	**1.1300e-003**	**0.0000**	**4.1623**	**4.1623**	**1.3500e-003**	**0.0000**	**4.1960**

Mitigated Construction Off-Site

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

3.4 Grading - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					7.4400e-003	0.0000	7.4400e-003	2.6300e-003	0.0000	2.6300e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	4.4300e-003	0.0451	0.0440	9.0000e-005		1.7800e-003	1.7800e-003		1.6500e-003	1.6500e-003	0.0000	8.0830	8.0830	2.5100e-003	0.0000	8.1458

VeGuard Housing, Santa Clara - Santa Clara County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Total	**4.4300e-003**	**0.0451**	**0.0440**	**9.0000e-005**	**7.4400e-003**	**1.7800e-003**	**9.2200e-003**	**2.6300e-003**	**1.6500e-003**	**4.2800e-003**	**0.0000**	**8.0830**	**8.0830**	**2.5100e-003**	**0.0000**	**8.1458**

Unmitigated Construction Off-Site

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

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					3.3500e-003	0.0000	3.3500e-003	1.1800e-003	0.0000	1.1800e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.5000e-003	0.0327	0.0595	9.0000e-005		1.5000e-004	1.5000e-004		1.5000e-004	1.5000e-004	0.0000	8.0830	8.0830	2.5100e-003	0.0000	8.1458
Total	**1.5000e-003**	**0.0327**	**0.0595**	**9.0000e-005**	**3.3500e-003**	**1.5000e-004**	**3.5000e-003**	**1.1800e-003**	**1.5000e-004**	**1.3300e-003**	**0.0000**	**8.0830**	**8.0830**	**2.5100e-003**	**0.0000**	**8.1458**

VeGuard Housing, Santa Clara - Santa Clara County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Mitigated Construction Off-Site

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

3.5 Trenching - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	2.5200e-003	0.0213	0.0438	7.0000e-005		1.0200e-003	1.0200e-003		9.4000e-004	9.4000e-004	0.0000	5.8959	5.8959	1.9100e-003	0.0000	5.9435
Total	**2.5200e-003**	**0.0213**	**0.0438**	**7.0000e-005**		**1.0200e-003**	**1.0200e-003**		**9.4000e-004**	**9.4000e-004**	**0.0000**	**5.8959**	**5.8959**	**1.9100e-003**	**0.0000**	**5.9435**

VeGuard Housing, Santa Clara - Santa Clara County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Unmitigated Construction Off-Site

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

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	9.8000e-004	0.0295	0.0508	7.0000e-005		1.1000e-004	1.1000e-004		1.1000e-004	1.1000e-004	0.0000	5.8959	5.8959	1.9100e-003	0.0000	5.9435
Total	**9.8000e-004**	**0.0295**	**0.0508**	**7.0000e-005**		**1.1000e-004**	**1.1000e-004**		**1.1000e-004**	**1.1000e-004**	**0.0000**	**5.8959**	**5.8959**	**1.9100e-003**	**0.0000**	**5.9435**

Mitigated Construction Off-Site

VeGuard Housing, Santa Clara - Santa Clara County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

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

3.6 Building Construction - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	5.9200e-003	0.0456	0.0622	9.0000e-005		1.9600e-003	1.9600e-003		1.8500e-003	1.8500e-003	0.0000	7.3584	7.3584	1.8100e-003	0.0000	7.4038
Total	**5.9200e-003**	**0.0456**	**0.0622**	**9.0000e-005**		**1.9600e-003**	**1.9600e-003**		**1.8500e-003**	**1.8500e-003**	**0.0000**	**7.3584**	**7.3584**	**1.8100e-003**	**0.0000**	**7.4038**

Unmitigated Construction Off-Site

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

VeGuard Housing, Santa Clara - Santa Clara County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	1.8200e-003	0.0464	0.0615	9.0000e-005		7.2000e-004	7.2000e-004		7.2000e-004	7.2000e-004	0.0000	7.3584	7.3584	1.8100e-003	0.0000	7.4037
Total	**1.8200e-003**	**0.0464**	**0.0615**	**9.0000e-005**		**7.2000e-004**	**7.2000e-004**		**7.2000e-004**	**7.2000e-004**	**0.0000**	**7.3584**	**7.3584**	**1.8100e-003**	**0.0000**	**7.4037**

Mitigated Construction Off-Site

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

VeGuard Housing, Santa Clara - Santa Clara County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.6 Building Construction - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	2.0000e-004	1.5800e-003	2.2800e-003	0.0000		6.0000e-005	6.0000e-005		6.0000e-005	6.0000e-005	0.0000	0.2714	0.2714	7.0000e-005	0.0000	0.2731
Total	**2.0000e-004**	**1.5800e-003**	**2.2800e-003**	**0.0000**		**6.0000e-005**	**6.0000e-005**		**6.0000e-005**	**6.0000e-005**	**0.0000**	**0.2714**	**0.2714**	**7.0000e-005**	**0.0000**	**0.2731**

Unmitigated Construction Off-Site

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

VeGuard Housing, Santa Clara - Santa Clara County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	7.0000e-005	1.7100e-003	2.2700e-003	0.0000		3.0000e-005	3.0000e-005		3.0000e-005	3.0000e-005	0.0000	0.2714	0.2714	7.0000e-005	0.0000	0.2731
Total	**7.0000e-005**	**1.7100e-003**	**2.2700e-003**	**0.0000**		**3.0000e-005**	**3.0000e-005**		**3.0000e-005**	**3.0000e-005**	**0.0000**	**0.2714**	**0.2714**	**7.0000e-005**	**0.0000**	**0.2731**

Mitigated Construction Off-Site

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

3.7 Architectural Coating - 2024

Date: 9/30/2022 1:56 PM

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.1723					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0401	0.3099	0.5025	8.1000e-004		0.0132	0.0132		0.0131	0.0131	0.0000	69.9797	69.9797	9.3000e-003	0.0000	70.2122
Total	**0.2123**	**0.3099**	**0.5025**	**8.1000e-004**		**0.0132**	**0.0132**		**0.0131**	**0.0131**	**0.0000**	**69.9797**	**69.9797**	**9.3000e-003**	**0.0000**	**70.2122**

Unmitigated Construction Off-Site

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

Mitigated Construction On-Site

VeGuard Housing, Santa Clara - Santa Clara County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.1723					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0163	0.3356	0.5316	8.1000e-004		6.0200e-003	6.0200e-003		6.0200e-003	6.0200e-003	0.0000	69.9796	69.9796	9.3000e-003	0.0000	70.2121
Total	**0.1886**	**0.3356**	**0.5316**	**8.1000e-004**		**6.0200e-003**	**6.0200e-003**		**6.0200e-003**	**6.0200e-003**	**0.0000**	**69.9796**	**69.9796**	**9.3000e-003**	**0.0000**	**70.2121**

Mitigated Construction Off-Site

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

3.7 Architectural Coating - 2025

Unmitigated Construction On-Site

VeGuard Housing, Santa Clara - Santa Clara County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.1196					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0264	0.2046	0.3485	5.6000e-004		7.8300e-003	7.8300e-003		7.7600e-003	7.7600e-003	0.0000	48.5741	48.5741	6.3900e-003	0.0000	48.7340
Total	**0.1460**	**0.2046**	**0.3485**	**5.6000e-004**		**7.8300e-003**	**7.8300e-003**		**7.7600e-003**	**7.7600e-003**	**0.0000**	**48.5741**	**48.5741**	**6.3900e-003**	**0.0000**	**48.7340**

Unmitigated Construction Off-Site

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

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

VeGuard Housing, Santa Clara - Santa Clara County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Category	tons/yr										MT/yr					
Archit. Coating	0.1196					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0113	0.2329	0.3690	5.6000e-004		4.1800e-003	4.1800e-003		4.1800e-003	4.1800e-003	0.0000	48.5741	48.5741	6.3900e-003	0.0000	48.7339
Total	**0.1309**	**0.2329**	**0.3690**	**5.6000e-004**		**4.1800e-003**	**4.1800e-003**		**4.1800e-003**	**4.1800e-003**	**0.0000**	**48.5741**	**48.5741**	**6.3900e-003**	**0.0000**	**48.7339**

Mitigated Construction Off-Site

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

3.8 Paving - 2025

Unmitigated Construction On-Site

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

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Off-Road	0.0102	0.0936	0.1565	2.4000e-004		4.3000e-003	4.3000e-003		3.9800e-003	3.9800e-003	0.0000	21.1314	21.1314	6.6600e-003	0.0000	21.2980
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0102**	**0.0936**	**0.1565**	**2.4000e-004**		**4.3000e-003**	**4.3000e-003**		**3.9800e-003**	**3.9800e-003**	**0.0000**	**21.1314**	**21.1314**	**6.6600e-003**	**0.0000**	**21.2980**

Unmitigated Construction Off-Site

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

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	3.6900e-003	0.1018	0.1755	2.4000e-004		3.8000e-004	3.8000e-004		3.8000e-004	3.8000e-004	0.0000	21.1314	21.1314	6.6600e-003	0.0000	21.2980

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**3.6900e-003**	**0.1018**	**0.1755**	**2.4000e-004**		**3.8000e-004**	**3.8000e-004**		**3.8000e-004**	**3.8000e-004**	**0.0000**	**21.1314**	**21.1314**	**6.6600e-003**	**0.0000**	**21.2980**

Mitigated Construction Off-Site

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

Attachment 3: EMFAC2021 Calculations

CalEEMod EMFAC2021 Emission Factors Input — Year 2024

Season	EmissionType	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
A	CH4_IDLEX	0	0	0	0	0.005369	0.003158	0.013383	0.232934116	0.007458	0	0	0.074531	0
A	CH4_RUNEX	0.002053	0.006222	0.002818	0.00375	0.008195	0.006967	0.009658	0.121678903	0.009275	0.353982676	0.162609	0.091035	0.012488
A	CH4_STREX	0.06472	0.104817	0.081929	0.09875	0.022831	0.012442	0.008773	8.02769E-08	0.017671	0.00373411	0.181972	0.0048	0.026745
A	CO_IDLEX	0	0	0	0	0.196553	0.142433	0.671381	5.195559849	0.514566	0	0	1.654918	0
A	CO_RUNEX	0.649736	1.418728	0.829336	0.94329	0.900659	0.571321	0.346173	0.774886828	0.491534	4.169725719	12.6697	0.884386	1.294901
A	CO_STREX	2.891746	5.224818	3.623598	3.897928	2.161459	1.21759	1.07433	0.000626211	1.960551	0.531545824	8.002987	0.664389	2.491606
A	CO2_NBIO_IDLEX	0	0	0	0	8.718619	13.77168	160.2598	832.3166934	85.70845	0	0	189.3786	0
A	CO2_NBIO_RUNEX	245.0824	325.3768	336.518	405.8146	782.6209	827.3106	1229.181	1617.129696	1388.863	1098.799805	187.743	1027.722	1686.59
A	CO2_NBIO_STREX	63.50921	85.97601	86.38427	103.3242	17.83745	9.92491	8.529312	0.019573043	15.49228	3.203569186	48.37697	3.726088	22.54937
A	NOX_IDLEX	0	0	0	0	0.048387	0.092995	0.892859	4.075118036	0.365684	0	0	1.387931	0
A	NOX_RUNEX	0.037369	0.127832	0.068032	0.098516	0.66417	0.895916	1.112922	1.850604526	1.007061	0.328284112	0.571344	2.57268	1.5351
A	NOX_STREX	0.230953	0.379266	0.329632	0.414782	0.44074	0.241786	1.407896	2.731408381	0.979918	0.039644426	0.135477	0.480958	0.299202
A	PM10_IDLEX	0	0	0	0	0.000681	0.001371	0.002128	0.002182492	0.000423	0	0	0.001309	0
A	PM10_PMBW	0.007168	0.009226	0.008866	0.009	0.077823	0.090794	0.045399	0.08129752	0.049798	0.11066361	0.012	0.044858	0.044947
A	PM10_PMTW	0.008	0.008	0.008	0.008	0.009414	0.010658	0.012	0.035125425	0.012	0.032683644	0.004	0.0106	0.013206
A	PM10_RUNEX	0.001171	0.001927	0.001333	0.001373	0.014027	0.022761	0.012985	0.025474433	0.015841	0.006229362	0.001902	0.013303	0.03019
A	PM10_STREX	0.00191	0.002898	0.002108	0.002161	0.000227	0.000101	0.000107	6.09682E-07	0.000134	1.21066E-05	0.003456	3.95E-05	0.000313
A	PM25_IDLEX	0	0	0	0	0.000651	0.001311	0.002035	0.002082052	0.000405	0	0	0.001252	0
A	PM25_PMBW	0.002509	0.003229	0.003103	0.00315	0.027238	0.031778	0.01589	0.028454132	0.017429	0.038732263	0.0042	0.0157	0.015732
A	PM25_PMTW	0.002	0.002	0.002	0.002	0.002354	0.002664	0.003	0.008781356	0.003	0.008170911	0.001	0.00265	0.003301
A	PM25_RUNEX	0.001078	0.001774	0.001226	0.001266	0.01338	0.021758	0.012415	0.0243688	0.015147	0.005956092	0.001779	0.012712	0.028836
A	PM25_STREX	0.001756	0.002665	0.001938	0.001987	0.000209	9.28E-05	9.82E-05	5.6058E-07	0.000124	1.11315E-05	0.003248	3.63E-05	0.000288
A	ROG_DIURN	0.273594	0.595257	0.288173	0.350288	0.128573	0.066802	0.025795	0.000195977	0.069031	0.00989389	3.900294	0.027017	32.73442
A	ROG_HTSK	0.08102	0.164422	0.0806	0.094021	0.032798	0.017191	0.00626	5.82846E-05	0.0166	0.00330336	3.559276	0.007301	8.700008
A	ROG_IDLEX	0	0	0	0	0.021942	0.01599	0.026359	0.329789936	0.040067	0	0	0.181581	0
A	ROG_RESTL	0	0	0	0	0	0	0	0	0	0	0	0	0
A	ROG_RUNEX	0.007886	0.027617	0.0111	0.015872	0.087722	0.115408	0.038113	0.018605536	0.047576	0.063024567	1.062175	0.055863	0.083758
A	ROG_RUNLS	0.204737	0.46982	0.214357	0.266704	0.182065	0.092651	0.050964	0.000525006	0.075921	0.007986926	3.75283	0.017605	0.204308
A	ROG_STREX	0.295072	0.536464	0.379183	0.493019	0.113203	0.061169	0.048943	4.36152E-07	0.093584	0.013264046	1.345317	0.027327	0.113367
A	SO2_IDLEX	0	0	0	0	8.49E-05	0.000132	0.00149	0.007280347	0.000811	0	0	0.001723	0
A	SO2_RUNEX	0.002423	0.003217	0.003326	0.004009	0.007645	0.007972	0.011664	0.014635772	0.013275	0.009424712	0.001856	0.009553	0.01654
A	SO2_STREX	0.000628	0.00085	0.000854	0.001021	0.000176	9.81E-05	8.43E-05	1.93499E-07	0.000153	3.16705E-05	0.000478	3.68E-05	0.000223
A	TOG_DIURN	0.273594	0.595257	0.288173	0.350288	0.128573	0.066802	0.025795	0.000195977	0.069031	0.00989389	0.086215	0.027017	32.73442
A	TOG_HTSK	0.08102	0.164422	0.0806	0.094021	0.032798	0.017191	0.00626	5.82846E-05	0.0166	0.00330336	3.559276	0.007301	8.700008
A	TOG_IDLEX	0	0	0	0	0.031162	0.021623	0.043266	0.594148623	0.053137	0	0	0.296054	0
A	TOG_RESTL	0	0	0	0	0	0	0	0	0	0	0	0	0
A	TOG_RUNEX	0.011489	0.040276	0.016182	0.023096	0.108455	0.134423	0.053054	0.142671417	0.063874	0.424552446	1.276951	0.155502	0.11065
A	TOG_RUNLS	0.204737	0.46982	0.214357	0.266704	0.182065	0.092651	0.050964	0.000525006	0.075921	0.007986926	3.75283	0.017605	0.204308
A	TOG_STREX	0.323066	0.58736	0.415158	0.539792	0.123943	0.066973	0.053586	4.77531E-07	0.102462	0.014522461	1.462608	0.029919	0.124122
A	N2O_IDLEX	0	0	0	0	0.00064	0.00168	0.024689	0.134071724	0.012191	0	0	0.02511	0
A	N2O_RUNEX	0.004162	0.009375	0.006016	0.008341	0.04145	0.08248	0.15825	0.258076714	0.157784	0.166507004	0.039558	0.128269	0.069357
A	N2O_STREX	0.029881	0.038494	0.03679	0.03974	0.035265	0.019211	0.006032	1.94763E-05	0.015206	0.006218272	0.00802	0.004225	0.031398

CalEEMod Construction Inputs

Phase	CalEEMod WORKER TRIPS	CalEEMod VENDOR TRIPS	Total Worker Trips	Total Vendor Trips	CalEEMod HAULING TRIPS	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class	*Worker VMT*	*Vendor VMT*	*Hauling VMT*
Demolition	15	0	225	0	49	10.8	7.3	20	LD_Mix	HDT_Mix	HHDT	2430	0	980
Site Preparation	8	0	80	0	0	10.8	7.3	20	LD_Mix	HDT_Mix	HHDT	864	0	0
Grading	13	0	143	0	38	10.8	7.3	20	LD_Mix	HDT_Mix	HHDT	1544.4	0	760
Trenching	5	0	150	0	0	10.8	7.3	20	LD_Mix	HDT_Mix	HHDT	1620	0	0
Building Construction	22	5	4950	1125	240	10.8	7.3	7.3	LD_Mix	HDT_Mix	HHDT	53460	8212.5	1752
Architectural Coating	4	0	1120	0	0	10.8	7.3	20	LD_Mix	HDT_Mix	HHDT	12096	0	0
Paving	13	0	442	0	0	10.8	7.3	7.3	LD_Mix	HDT_Mix	HHDT	4773.6	0	0

Number of Days Per Year					
2023-2024	10/3/23	12/31/24	456	326	
2025	1/1/25	7/31/25	212	152	
			668	**478**	***Total Workdays***

Phase	Start Date	End Date	Days/Week	Workdays
Demolition	10/3/2023	10/23/2023	5	15
Site Preparation	10/30/2023	11/10/2023	5	10
Grading	1/5/2024	1/19/2024	5	11
Trenching	1/22/2024	3/1/2024	5	30
Building Construction	3/4/2024	1/10/2025	5	225
Architectural Coating	5/18/2024	6/13/2025	5	280
Paving	6/16/2025	7/31/2025	5	34

Summary of Construction Traffic Emissions (EMFAC2021)

CATEGORY	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	NBio- CO2	CH4	N2O	CO2e
						Grams								
Hauling	169.33	8391.27	4334.69	52.43	1044.11	494.39	1538.50	157.11	214.21	371.31	5807397.87	484.19	927.45	6095883.04
Vendor	472.42	16461.62	8176.37	111.05	2455.54	863.83	3319.37	369.48	374.52	744.00	12051198.22	661.89	1771.65	12595697.45
Worker	8410.91	6624.50	87728.37	218.07	22959.61	1353.11	24312.72	3454.69	479.29	3933.99	22060065.26	754.54	655.21	22274182.55
Total (g)	9052.67	31477.38	100239.44	381.55	26459.26	2711.34	29170.59	3981.28	1068.02	5049.30	39918661.35	1900.62	3354.32	40965763.03
Total (lbs)	19.96	69.40	220.99	0.84	58.33	5.98	64.31	8.78	2.35	11.13	88005.58	4.19	7.40	90314.05
Total (tons)	0.01	0.03	0.11	0.00	0.03	0.00	0.03	0.00	0.00	0.01	44.00	0.00	0.00	45.16
Total (MT)											39.92	0.00	0.00	40.97

YEAR														
							Tons							
2023-2024	0.0068	0.0237	0.0754	0.0003	0.0199	0.0020	0.0220	0.0030	0.0008	0.0038	27.2499	0.0013	0.0023	27.9647
2025	0.0032	0.0110	0.0351	0.0001	0.0093	0.0009	0.0102	0.0014	0.0004	0.0018	12.6688	0.0006	0.0011	13.0011

CalEEMod Construction Inputs

Phase	CalEEMod WORKER TRIPS	CalEEMod VENDOR TRIPS	Total Worker Trips	Total Vendor Trips	CalEEMod HAULING TRIPS	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class	*Worker VMT*	*Vendor VMT*	*Hauling VMT*
Demolition	15	0	225	0	49	0.5	0.5	0.5	LD_Mix	HDT_Mix	HHDT	112.5	0	24.5
Site Preparation	8	0	80	0	0	0.5	0.5	0.5	LD_Mix	HDT_Mix	HHDT	40	0	0
Grading	13	0	143	0	38	0.5	0.5	0.5	LD_Mix	HDT_Mix	HHDT	71.5	0	19
Trenching	5	0	150	0	0	0.5	0.5	0.5	LD_Mix	HDT_Mix	HHDT	75	0	0
Building Construction	22	5	4950	1125	240	0.5	0.5	0.5	LD_Mix	HDT_Mix	HHDT	2475	562.5	120
Architectural Coating	4	0	1120	0	0	0.5	0.5	0.5	LD_Mix	HDT_Mix	HHDT	560	0	0
Paving	13	0	442	0	0	0.5	0.5	0.5	LD_Mix	HDT_Mix	HHDT	221	0	0

Number of Days Per Year					
2023-2024	10/3/23	12/31/24	456	326	
2025	1/1/25	7/31/25	212	152	
			668	**478**	***Total Workdays***

Phase	Start Date	End Date	Days/Week	Workdays
Demolition	10/3/2023	10/23/2023	5	15
Site Preparation	10/30/2023	11/10/2023	5	10
Grading	1/5/2024	1/19/2024	5	11
Trenching	1/22/2024	3/1/2024	5	30
Building Construction	3/4/2024	1/10/2025	5	225
Architectural Coating	5/18/2024	6/13/2025	5	280
Paving	6/16/2025	7/31/2025	5	34

Summary of Construction Traffic Emissions (EMFAC2021)

CATEGORY	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	NBio- CO2	CH4	N2O	CO2e
						Grams								
Hauling	111.14	2528.31	1825.85	4.77	48.89	23.91	72.80	7.36	10.75	18.11	536574.66	96.06	86.04	564617.19
Vendor	290.95	5956.34	4220.11	12.38	168.19	62.19	230.38	25.31	28.50	53.81	1363657.83	180.43	209.80	1430688.42
Worker	7935.41	2321.60	29161.09	15.38	1062.95	77.93	1140.87	159.94	36.20	196.14	1556038.63	573.70	261.12	1648195.29
Total (g)	8337.50	10806.25	35207.05	32.53	1280.02	164.03	1444.05	192.60	75.46	268.06	3456271.12	850.19	556.96	3643500.90
Total (lbs)	18.38	23.82	77.62	0.07	2.82	0.36	3.18	0.42	0.17	0.59	7619.77	1.87	1.23	8032.54
Total (tons)	0.01	0.01	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.81	0.00	0.00	4.02
Total (MT)											3.46	0.00	0.00	3.64

YEAR														
							Tons							
2023-2024	0.0063	0.0081	0.0265	0.0000	0.0010	0.000123	0.0011	0.000145	0.0001	0.0002	2.3594	0.0006	0.0004	2.4872
2025	0.0029	0.0038	0.0123	0.0000	0.0004	0.000057	0.0005	0.000067	0.0000	0.0001	1.0969	0.0003	0.0002	1.1563

CalEEMod EMFAC2021 Emission Factors Input — Year 2025

Season	EmissionType	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
A	CH4_IDLEX	0	0	0	0	0.005194	0.003023	0.013842	0.229861003	0.007514	0	0	0.076044	0
A	CH4_RUNEX	0.001841	0.005577	0.002592	0.003307	0.007222	0.006455	0.009536	0.117132109	0.009593	0.497756349	0.158292	0.090769	0.011159
A	CH4_STREX	0.060617	0.097956	0.077312	0.090898	0.021636	0.011648	0.008314	7.74759E-08	0.016852	0.003733046	0.177199	0.004898	0.025922
A	CO_IDLEX	0	0	0	0	0.195049	0.141036	0.668176	5.176290252	0.524506	0	0	1.692209	0
A	CO_RUNEX	0.606604	1.307107	0.781421	0.865797	0.821777	0.532869	0.296939	0.756535609	0.44406	5.878094388	12.31202	0.85843	1.105311
A	CO_STREX	2.711494	4.855262	3.417927	3.621729	2.164208	1.195973	1.000247	0.000684691	1.872658	0.515229574	7.965438	0.66885	2.373596
A	CO2_NBIO_IDLEX	0	0	0	0	8.602925	13.6884	158.593	813.9732577	87.04447	0	0	189.0522	0
A	CO2_NBIO_RUNEX	237.6743	319.1813	327.6236	394.2305	764.972	810.9955	1213.655	1586.833625	1366.1	1082.148951	187.2679	1017.838	1680.132
A	CO2_NBIO_STREX	61.73081	84.00027	84.00689	100.2571	17.59535	9.640849	8.205073	0.017114195	14.85767	3.177121883	47.30784	3.779827	22.06858
A	NOX_IDLEX	0	0	0	0	0.046413	0.089605	0.847928	3.965211308	0.364367	0	0	1.342517	0
A	NOX_RUNEX	0.033383	0.114688	0.061427	0.085138	0.585978	0.806102	1.006394	1.774057666	0.968278	0.301158242	0.557882	2.407715	1.487818
A	NOX_STREX	0.218516	0.357478	0.309231	0.377914	0.420652	0.228874	1.403485	2.751173324	0.987981	0.039008099	0.129146	0.492123	0.298831
A	PM10_IDLEX	0	0	0	0	0.000685	0.001389	0.001762	0.002096665	0.000404	0	0	0.001209	0
A	PM10_PMBW	0.007137	0.009219	0.00886	0.008972	0.077556	0.090487	0.04526	0.081222471	0.04982	0.123663808	0.012	0.044786	0.044946
A	PM10_PMTW	0.008	0.008	0.008	0.008	0.00942	0.010665	0.012	0.035128275	0.012	0.042521858	0.004	0.010572	0.013235
A	PM10_RUNEX	0.00112	0.001813	0.001292	0.00131	0.01302	0.021567	0.011186	0.025031341	0.015263	0.005684616	0.001925	0.012423	0.028992
A	PM10_STREX	0.001849	0.00275	0.002061	0.002069	0.000206	9.12E-05	0.000101	5.20395E-07	0.000131	1.2108E-05	0.003464	4.08E-05	0.000296
A	PM25_IDLEX	0	0	0	0	0.000656	0.001329	0.001685	0.001999711	0.000387	0	0	0.001155	0
A	PM25_PMBW	0.002498	0.003227	0.003101	0.00314	0.027145	0.03167	0.015841	0.028427865	0.017437	0.043282333	0.0042	0.015675	0.015731
A	PM25_PMTW	0.002	0.002	0.002	0.002	0.002355	0.002666	0.003	0.008782069	0.003	0.010630465	0.001	0.002643	0.003309
A	PM25_RUNEX	0.001031	0.001669	0.001189	0.001207	0.012419	0.020616	0.010694	0.023944936	0.014593	0.005434911	0.001799	0.01187	0.027693
A	PM25_STREX	0.0017	0.002528	0.001895	0.001902	0.000189	8.39E-05	9.28E-05	4.78484E-07	0.000121	1.11329E-05	0.003253	3.76E-05	0.000272
A	ROG_DIURN	0.264632	0.562584	0.283569	0.336782	0.120201	0.063181	0.023118	0.000161301	0.068202	0.010220489	3.860886	0.029457	30.55965
A	ROG_HTSK	0.077597	0.155938	0.078131	0.089235	0.030304	0.015991	0.005603	4.7964E-05	0.016021	0.003785535	3.558651	0.007775	7.988502
A	ROG_IDLEX	0	0	0	0	0.021187	0.015503	0.025251	0.32711902	0.04025	0	0	0.185349	0
A	ROG_RESTL	0	0	0	0	0	0	0	0	0	0	0	0	0
A	ROG_RUNEX	0.006942	0.024558	0.010089	0.013778	0.079612	0.109106	0.032483	0.017799596	0.044456	0.059943987	1.024683	0.053481	0.077128
A	ROG_RUNLS	0.197921	0.439329	0.211003	0.255197	0.16959	0.087065	0.045291	0.000432041	0.075038	0.007986552	3.760078	0.019152	0.188623
A	ROG_STREX	0.273326	0.495732	0.354505	0.447416	0.106693	0.056928	0.045776	4.20633E-07	0.089311	0.013239776	1.305157	0.027862	0.108247
A	SO2_IDLEX	0	0	0	0	8.37E-05	0.000131	0.001472	0.007098942	0.000823	0	0	0.001718	0
A	SO2_RUNEX	0.002349	0.003155	0.003238	0.003895	0.007471	0.007812	0.011512	0.014348163	0.013043	0.00885381	0.001851	0.009458	0.016473
A	SO2_STREX	0.00061	0.00083	0.00083	0.000991	0.000174	9.53E-05	8.11E-05	1.69191E-07	0.000147	3.14091E-05	0.000468	3.74E-05	0.000218
A	TOG_DIURN	0.264632	0.562584	0.283569	0.336782	0.120201	0.063181	0.023118	0.000161301	0.068202	0.010220489	0.08531	0.029457	30.55965
A	TOG_HTSK	0.077597	0.155938	0.078131	0.089235	0.030304	0.015991	0.005603	4.7964E-05	0.016021	0.003785535	3.558651	0.007775	7.988502
A	TOG_IDLEX	0	0	0	0	0.03005	0.020889	0.042478	0.588143126	0.05333	0	0	0.302207	0
A	TOG_RESTL	0	0	0	0	0	0	0	0	0	0	0	0	0
A	TOG_RUNEX	0.010114	0.035818	0.014707	0.020053	0.097862	0.126808	0.046457	0.137213337	0.060464	0.565677917	1.236542	0.152507	0.100988
A	TOG_RUNLS	0.197921	0.439329	0.211003	0.255197	0.16959	0.087065	0.045291	0.000432041	0.075038	0.007986552	3.760078	0.019152	0.188623
A	TOG_STREX	0.299257	0.542764	0.388138	0.489864	0.116815	0.062329	0.050119	4.6054E-07	0.097784	0.014495888	1.419098	0.030505	0.118517
A	N2O_IDLEX	0	0	0	0	0.000637	0.00168	0.024457	0.131219379	0.012456	0	0	0.024955	0
A	N2O_RUNEX	0.003885	0.008627	0.005647	0.007583	0.040583	0.081593	0.156018	0.253304032	0.157183	0.165902975	0.038984	0.126174	0.069141
A	N2O_STREX	0.028873	0.037292	0.035503	0.037751	0.034174	0.018376	0.005858	1.42154E-05	0.01459	0.006142466	0.007691	0.004354	0.031786

CalEEMod EMFAC2021 Fleet Mix Input — Year 2025

FleetMixLandUseSubType	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
	0.528224	0.040364	0.230108	0.128589	0.023276	0.00574	0.009425	0.00744	0.001057	0.000413	0.022096	0.000684	0.002585

Attachment 4: Project Construction Emissions and Health Risk Calculations

VeGaurd Housing, Santa Clara, CA

DPM Construction Emissions and Modeling Emission Rates - Uncontrolled

Construction Year	Activity	DPM (ton/year)	Source Type	No. Sources	DPM Emissions (lb/yr)	DPM Emissions (lb/hr)	DPM Emissions (g/s)	Emissions per Point Source (g/s)
2023-2024	Construction	0.0231	Point	153	46.1	0.01264	1.59E-03	1.04E-05
2025	Construction	0.0123	Point	153	24.5	0.01445	1.82E-03	1.19E-05
Total		***0.0353***			***70.6***	***0.0271***	***0.0034***	

Emissions assumed to be evenly distributed over each construction areas

hr/day = 8 (8:30am - 4:30pm)
days/yr = Varies
hours/year = Varies

DPM Construction Emissions and Modeling Emission Rates - With T4i

Construction Year	Activity	DPM (ton/year)	Source Type	No. Sources	DPM Emissions (lb/yr)	DPM Emissions (lb/hr)	DPM Emissions (g/s)	Emissions per Point Source (g/s)
2023-2024	Construction	0.0019	Point	153	3.7	0.00102	1.28E-04	8.39E-07
2025	Construction	0.0012	Point	153	2.3	0.00137	1.73E-04	1.13E-06
Total		***0.0030***			***6.0***	***0.0024***	***0.0003***	

Emissions assumed to be evenly distributed over each construction areas

hr/day = 8 (8:30am - 4:30pm)
days/yr = Varies
hours/year = Varies

VeGaurd Housing, Santa Clara, CA

PM2.5 Fugitive Dust Construction Emissions for Modeling - Uncontrolled

Construction Year	Activity	Area Source	PM2.5 Emissions (ton/year)	PM2.5 Emissions (lb/yr)	PM2.5 Emissions (lb/hr)	PM2.5 Emissions (g/s)	Modeled Area (m^2)	DPM Emission Rate $g/s/m^2$
2023-2024	Construction	CON_FUG	0.0057	11.5	0.00315	3.97E-04	3632.6	1.09E-07
2025	Construction	CON_FUG	0.0001	0.1	0.00008	1.00E-05	3632.6	2.76E-09
Total			***0.0058***	***11.6***	***0.0032***	***0.0004***		

Emissions assumed to be evenly distributed over each construction areas

hr/day = 8 (8:30am - 4:30pm)
days/yr = Varies
hours/year = Varies

PM2.5 Fugitive Dust Construction Emissions for Modeling - With T4i

Construction Year	Activity	Area Source	PM2.5 Emissions (ton/year)	PM2.5 Emissions (lb/yr)	PM2.5 Emissions (lb/hr)	PM2.5 Emissions (g/s)	Modeled Area (m^2)	DPM Emission Rate $g/s/m^2$
2023-2024	Construction	CON_FUG	0.0027	5.3	0.00146	1.84E-04	3632.6	5.07E-08
2025	Construction	CON_FUG	0.0001	0.1	0.00008	1.00E-05	3632.6	2.76E-09
Total			***0.0027***	***5.5***	***0.0015***	***0.0002***		

Emissions assumed to be evenly distributed over each construction areas

hr/day = 8 (8:30am - 4:30pm)
days/yr = Varies
hours/year = Varies

VeGaurd Housing, Santa Clara, CA - Construction Impacts - Without Mitigation
Maximum DPM Cancer Risk and PM2.5 Calculations From Construction
Impacts at Off-Site MEI Location - 1.5 meter receptor height (1st Floor Level)

Cancer Risk (per million) = CPF x Inhalation Dose x ASF x ED/AT x FAH x 1.0E6

Where: CPF = Cancer potency factor $(mg/kg\text{-}day)^{-1}$
ASF = Age sensitivity factor for specified age group
ED = Exposure duration (years)
AT = Averaging time for lifetime cancer risk (years)
FAH = Fraction of time spent at home (unitless)

Inhalation Dose = C_{air} x DBR x A x (EF/365) x 10^{-6}

Where: C_{air} = concentration in air $(\mu g/m^3)$
DBR = daily breathing rate (L/kg body weight-day)
A = Inhalation absorption factor
EF = Exposure frequency (days/year)
10^{-6} = Conversion factor

Values

	Infant/Child			Adult
Age -->	**3rd Trimester**	**0 - 2**	**2 - 16**	**16 - 30**
Parameter				
ASF =	10	10	3	1
CPF =	1.10E+00	1.10E+00	1.10E+00	1.10E+00
DBR* =	361	1090	572	261
A =	1	1	1	1
EF =	350	350	350	350
AT =	70	70	70	70
FAH =	1.00	1.00	1.00	0.73

* 95th percentile breathing rates for infants and 80th percentile for children and adults

Construction Cancer Risk by Year - Maximum Impact Receptor Location

			Infant/Child - Exposure Information			Infant/Child	Adult - Exposure Information			Adult	Maximum		
			DPM Conc (ug/m3)		Age	Cancer	Modeled DPM Conc (ug/m3)		Age	Cancer			
Exposure Year	**Exposure Duration (years)**	**Age**	**Year**	**Annual**	**Sensitivity Factor**	**Risk (per million)**	**Year**	**Annual**	**Sensitivity Factor**	**Risk (per million)**	**Hazard Index**	**Fugitive PM2.5**	**Total PM2.5**
0	0.25	-0.25 - 0*	2024	0.0442	10	0.60	2024	0.0442	-	-			
1	1	0 - 1	2024	0.0442	10	7.25	2024	0.0442	1	0.13	0.01	0.08	0.12
2	1	1 - 2	2025	0.0505	10	8.29	2025	0.0505	1	0.14	0.01	0.002	0.05
3	1	2 - 3		0.0000	3	0.00		0.0000	1	0.00			
4	1	3 - 4		0.0000	3	0.00		0.0000	1	0.00			
5	1	4 - 5		0.0000	3	0.00		0.0000	1	0.00			
6	1	5 - 6		0.0000	3	0.00		0.0000	1	0.00			
7	1	6 - 7		0.0000	3	0.00		0.0000	1	0.00			
8	1	7 - 8		0.0000	3	0.00		0.0000	1	0.00			
9	1	8 - 9		0.0000	3	0.00		0.0000	1	0.00			
10	1	9 - 10		0.0000	3	0.00		0.0000	1	0.00			
11	1	10 - 11		0.0000	3	0.00		0.0000	1	0.00			
12	1	11 - 12		0.0000	3	0.00		0.0000	1	0.00			
13	1	12 - 13		0.0000	3	0.00		0.0000	1	0.00			
14	1	13 - 14		0.0000	3	0.00		0.0000	1	0.00			
15	1	14 - 15		0.0000	3	0.00		0.0000	1	0.00			
16	1	15 - 16		0.0000	3	0.00		0.0000	1	0.00			
17	1	16-17		0.0000	1	0.00		0.0000	1	0.00			
18	1	17-18		0.0000	1	0.00		0.0000	1	0.00			
19	1	18-19		0.0000	1	0.00		0.0000	1	0.00			
20	1	19-20		0.0000	1	0.00		0.0000	1	0.00			
21	1	20-21		0.0000	1	0.00		0.0000	1	0.00			
22	1	21-22		0.0000	1	0.00		0.0000	1	0.00			
23	1	22-23		0.0000	1	0.00		0.0000	1	0.00			
24	1	23-24		0.0000	1	0.00		0.0000	1	0.00			
25	1	24-25		0.0000	1	0.00		0.0000	1	0.00			
26	1	25-26		0.0000	1	0.00		0.0000	1	0.00			
27	1	26-27		0.0000	1	0.00		0.0000	1	0.00			
28	1	27-28		0.0000	1	0.00		0.0000	1	0.00			
29	1	28-29		0.0000	1	0.00		0.0000	1	0.00			
30	1	29-30		0.0000	1	0.00		0.0000	1	0.00			
Total Increased Cancer Risk						**16.15**				**0.27**			

* Third trimester of pregnancy

VeGaurd Housing, Santa Clara, CA - Construction Impacts - Without Mitigation
Maximum DPM Cancer Risk and PM2.5 Calculations From Construction
Impacts at Off-Site MEI Location - 4.6 meter receptor height (2nd Floor Level)

Cancer Risk (per million) = CPF x Inhalation Dose x ASF x ED/AT x FAH x 1.0E6

Where: CPF = Cancer potency factor $(mg/kg\text{-}day)^{-1}$
ASF = Age sensitivity factor for specified age group
ED = Exposure duration (years)
AT = Averaging time for lifetime cancer risk (years)
FAH = Fraction of time spent at home (unitless)

Inhalation Dose = C_{air} x DBR x A x (EF/365) x 10^{-6}

Where: C_{air} = concentration in air $(\mu g/m^3)$
DBR = daily breathing rate (L/kg body weight-day)
A = Inhalation absorption factor
EF = Exposure frequency (days/year)
10^{-6} = Conversion factor

Values

	Infant/Child			Adult
Age -->	**3rd Trimester**	**0 - 2**	**2 - 16**	**16 - 30**
Parameter				
ASF =	10	10	3	1
CPF =	1.10E+00	1.10E+00	1.10E+00	1.10E+00
DBR* =	361	1090	572	261
A =	1	1	1	1
EF =	350	350	350	350
AT =	70	70	70	70
FAH =	1.00	1.00	1.00	0.73

* 95th percentile breathing rates for infants and 80th percentile for children and adults

Construction Cancer Risk by Year - Maximum Impact Receptor Location

			Infant/Child - Exposure Information			Infant/Child	Adult - Exposure Information			Adult	Maximum		
			DPM Conc (ug/m3)		Age	Cancer	Modeled DPM Conc (ug/m3)		Age	Cancer			
Exposure Year	**Exposure Duration (years)**	**Age**	**Year**	**Annual**	**Sensitivity Factor**	**Risk (per million)**	**Year**	**Annual**	**Sensitivity Factor**	**Risk (per million)**	**Hazard Index**	**Fugitive PM2.5**	**Total PM2.5**
0	0.25	-0.25 - 0*	2024	0.0928	10	1.26	2024	0.0928	-	-			
1	1	0 - 1	2024	0.0928	10	15.23	2024	0.0928	1	0.27	0.02	0.04	0.13
2	1	1 - 2	2025	0.1061	10	17.42	2025	0.1061	1	0.30	0.02	0.00	0.11
3	1	2 - 3		0.0000	3	0.00		0.0000	1	0.00			
4	1	3 - 4		0.0000	3	0.00		0.0000	1	0.00			
5	1	4 - 5		0.0000	3	0.00		0.0000	1	0.00			
6	1	5 - 6		0.0000	3	0.00		0.0000	1	0.00			
7	1	6 - 7		0.0000	3	0.00		0.0000	1	0.00			
8	1	7 - 8		0.0000	3	0.00		0.0000	1	0.00			
9	1	8 - 9		0.0000	3	0.00		0.0000	1	0.00			
10	1	9 - 10		0.0000	3	0.00		0.0000	1	0.00			
11	1	10 - 11		0.0000	3	0.00		0.0000	1	0.00			
12	1	11 - 12		0.0000	3	0.00		0.0000	1	0.00			
13	1	12 - 13		0.0000	3	0.00		0.0000	1	0.00			
14	1	13 - 14		0.0000	3	0.00		0.0000	1	0.00			
15	1	14 - 15		0.0000	3	0.00		0.0000	1	0.00			
16	1	15 - 16		0.0000	3	0.00		0.0000	1	0.00			
17	1	16-17		0.0000	1	0.00		0.0000	1	0.00			
18	1	17-18		0.0000	1	0.00		0.0000	1	0.00			
19	1	18-19		0.0000	1	0.00		0.0000	1	0.00			
20	1	19-20		0.0000	1	0.00		0.0000	1	0.00			
21	1	20-21		0.0000	1	0.00		0.0000	1	0.00			
22	1	21-22		0.0000	1	0.00		0.0000	1	0.00			
23	1	22-23		0.0000	1	0.00		0.0000	1	0.00			
24	1	23-24		0.0000	1	0.00		0.0000	1	0.00			
25	1	24-25		0.0000	1	0.00		0.0000	1	0.00			
26	1	25-26		0.0000	1	0.00		0.0000	1	0.00			
27	1	26-27		0.0000	1	0.00		0.0000	1	0.00			
28	1	27-28		0.0000	1	0.00		0.0000	1	0.00			
29	1	28-29		0.0000	1	0.00		0.0000	1	0.00			
30	1	29-30		0.0000	1	0.00		0.0000	1	0.00			
Total Increased Cancer Risk						**33.92**				**0.57**			

* Third trimester of pregnancy

VeGaurd Housing, Santa Clara, CA - Construction Impacts - Construction Impacts - With T4i Mitigation
Maximum DPM Cancer Risk and PM2.5 Calculations From Construction
Impacts at Off-Site MEI Location - 1.5 meter receptor height (1st Floor Level)

Cancer Risk (per million) = CPF x Inhalation Dose x ASF x ED/AT x FAH x 1.0E6

Where: CPF = Cancer potency factor $(mg/kg\text{-}day)^{-1}$
ASF = Age sensitivity factor for specified age group
ED = Exposure duration (years)
AT = Averaging time for lifetime cancer risk (years)
FAH = Fraction of time spent at home (unitless)

Inhalation Dose = C_{air} x DBR x A x (EF/365) x 10^{-6}

Where: C_{air} = concentration in air $(\mu g/m^3)$
DBR = daily breathing rate (L/kg body weight-day)
A = Inhalation absorption factor
EF = Exposure frequency (days/year)
10^{-6} = Conversion factor

Values

	Infant/Child			Adult
Age -->	**3rd Trimester**	**0 - 2**	**2 - 16**	**16 - 30**
Parameter				
ASF =	10	10	3	1
CPF =	1.10E+00	1.10E+00	1.10E+00	1.10E+00
DBR* =	361	1090	572	261
A =	1	1	1	1
EF =	350	350	350	350
AT =	70	70	70	70
FAH =	1.00	1.00	1.00	0.73

* 95th percentile breathing rates for infants and 80th percentile for children and adults

Construction Cancer Risk by Year - Maximum Impact Receptor Location

			Infant/Child - Exposure Information			Infant/Child	Adult - Exposure Information			Adult	Maximum		
			DPM Conc (ug/m3)		Age	Cancer	Modeled DPM Conc (ug/m3)		Age	Cancer			
Exposure Year	**Exposure Duration (years)**	**Age**	**Year**	**Annual**	**Sensitivity Factor**	**Risk (per million)**	**Year**	**Annual**	**Sensitivity Factor**	**Risk (per million)**	**Hazard Index**	**Fugitive PM2.5**	**Total PM2.5**
0	0.25	-0.25 - 0*	2023-24	0.0142	10	0.19	2023-24	0.0142	-	-			
1	1	0 - 1	2023-24	0.0142	10	2.34	2023-24	0.0142	1	0.04	0.003	0.04	0.05
2	1	1 - 2	2025	0.0192	10	3.15	2025	0.0192	1	0.05	0.004	0.00	0.03
3	1	2 - 3		0.0000	3	0.00		0.0000	1	0.00			
4	1	3 - 4		0.0000	3	0.00		0.0000	1	0.00			
5	1	4 - 5		0.0000	3	0.00		0.0000	1	0.00			
6	1	5 - 6		0.0000	3	0.00		0.0000	1	0.00			
7	1	6 - 7		0.0000	3	0.00		0.0000	1	0.00			
8	1	7 - 8		0.0000	3	0.00		0.0000	1	0.00			
9	1	8 - 9		0.0000	3	0.00		0.0000	1	0.00			
10	1	9 - 10		0.0000	3	0.00		0.0000	1	0.00			
11	1	10 - 11		0.0000	3	0.00		0.0000	1	0.00			
12	1	11 - 12		0.0000	3	0.00		0.0000	1	0.00			
13	1	12 - 13		0.0000	3	0.00		0.0000	1	0.00			
14	1	13 - 14		0.0000	3	0.00		0.0000	1	0.00			
15	1	14 - 15		0.0000	3	0.00		0.0000	1	0.00			
16	1	15 - 16		0.0000	3	0.00		0.0000	1	0.00			
17	1	16-17		0.0000	1	0.00		0.0000	1	0.00			
18	1	17-18		0.0000	1	0.00		0.0000	1	0.00			
19	1	18-19		0.0000	1	0.00		0.0000	1	0.00			
20	1	19-20		0.0000	1	0.00		0.0000	1	0.00			
21	1	20-21		0.0000	1	0.00		0.0000	1	0.00			
22	1	21-22		0.0000	1	0.00		0.0000	1	0.00			
23	1	22-23		0.0000	1	0.00		0.0000	1	0.00			
24	1	23-24		0.0000	1	0.00		0.0000	1	0.00			
25	1	24-25		0.0000	1	0.00		0.0000	1	0.00			
26	1	25-26		0.0000	1	0.00		0.0000	1	0.00			
27	1	26-27		0.0000	1	0.00		0.0000	1	0.00			
28	1	27-28		0.0000	1	0.00		0.0000	1	0.00			
29	1	28-29		0.0000	1	0.00		0.0000	1	0.00			
30	1	29-30		0.0000	1	0.00		0.0000	1	0.00			
Total Increased Cancer Risk						**5.68**				**0.10**			

* Third trimester of pregnancy

VeGaurd Housing, Santa Clara, CA - Construction Impacts - With T4i Mitigation
Maximum DPM Cancer Risk and PM2.5 Calculations From Construction
Impacts at Off-Site MEI Location - 4.6 meter receptor height (2nd Floor Level)

Cancer Risk (per million) = CPF x Inhalation Dose x ASF x ED/AT x FAH x 1.0E6

Where: CPF = Cancer potency factor $(mg/kg\text{-}day)^{-1}$
ASF = Age sensitivity factor for specified age group
ED = Exposure duration (years)
AT = Averaging time for lifetime cancer risk (years)
FAH = Fraction of time spent at home (unitless)

Inhalation Dose = C_{air} x DBR x A x (EF/365) x 10^{-6}

Where: C_{air} = concentration in air $(\mu g/m^3)$
DBR = daily breathing rate (L/kg body weight-day)
A = Inhalation absorption factor
EF = Exposure frequency (days/year)
10^{-6} = Conversion factor

Values

	Infant/Child			Adult
Age -->	**3rd Trimester**	**0 - 2**	**2 - 16**	**16 - 30**
Parameter				
ASF =	10	10	3	1
CPF =	1.10E+00	1.10E+00	1.10E+00	1.10E+00
DBR* =	361	1090	572	261
A =	1	1	1	1
EF =	350	350	350	350
AT =	70	70	70	70
FAH =	1.00	1.00	1.00	0.73

* 95th percentile breathing rates for infants and 80th percentile for children and adults

Construction Cancer Risk by Year - Maximum Impact Receptor Location

			Infant/Child - Exposure Information			Infant/Child	Adult - Exposure Information			Adult	Maximum		
			DPM Conc (ug/m3)		Age	Cancer	Modeled DPM Conc (ug/m3)		Age	Cancer			
Exposure Year	**Exposure Duration (years)**	**Age**	**Year**	**Annual**	**Sensitivity Factor**	**Risk (per million)**	**Year**	**Annual**	**Sensitivity Factor**	**Risk (per million)**	**Hazard Index**	**Fugitive PM2.5**	**Total PM2.5**
0	0.25	-0.25 - 0*	2023-2024	0.0299	10	0.41	2023-2024	0.0299	-	-			
1	1	0 - 1	2023-2024	0.0299	10	4.91	2023-2024	0.0299	1	0.09	0.006	0.02	0.05
2	1	1 - 2	2025	0.0402	10	6.61	2025	0.0402	1	0.12	0.01	0.00	0.04
3	1	2 - 3		0.0000	3	0.00		0.0000	1	0.00			
4	1	3 - 4		0.0000	3	0.00		0.0000	1	0.00			
5	1	4 - 5		0.0000	3	0.00		0.0000	1	0.00			
6	1	5 - 6		0.0000	3	0.00		0.0000	1	0.00			
7	1	6 - 7		0.0000	3	0.00		0.0000	1	0.00			
8	1	7 - 8		0.0000	3	0.00		0.0000	1	0.00			
9	1	8 - 9		0.0000	3	0.00		0.0000	1	0.00			
10	1	9 - 10		0.0000	3	0.00		0.0000	1	0.00			
11	1	10 - 11		0.0000	3	0.00		0.0000	1	0.00			
12	1	11 - 12		0.0000	3	0.00		0.0000	1	0.00			
13	1	12 - 13		0.0000	3	0.00		0.0000	1	0.00			
14	1	13 - 14		0.0000	3	0.00		0.0000	1	0.00			
15	1	14 - 15		0.0000	3	0.00		0.0000	1	0.00			
16	1	15 - 16		0.0000	3	0.00		0.0000	1	0.00			
17	1	16-17		0.0000	1	0.00		0.0000	1	0.00			
18	1	17-18		0.0000	1	0.00		0.0000	1	0.00			
19	1	18-19		0.0000	1	0.00		0.0000	1	0.00			
20	1	19-20		0.0000	1	0.00		0.0000	1	0.00			
21	1	20-21		0.0000	1	0.00		0.0000	1	0.00			
22	1	21-22		0.0000	1	0.00		0.0000	1	0.00			
23	1	22-23		0.0000	1	0.00		0.0000	1	0.00			
24	1	23-24		0.0000	1	0.00		0.0000	1	0.00			
25	1	24-25		0.0000	1	0.00		0.0000	1	0.00			
26	1	25-26		0.0000	1	0.00		0.0000	1	0.00			
27	1	26-27		0.0000	1	0.00		0.0000	1	0.00			
28	1	27-28		0.0000	1	0.00		0.0000	1	0.00			
29	1	28-29		0.0000	1	0.00		0.0000	1	0.00			
30	1	29-30		0.0000	1	0.00		0.0000	1	0.00			
Total Increased Cancer Risk						**11.93**				**0.20**			

* Third trimester of pregnancy

VeGaurd Housing, Santa Clara, CA - Construction Impacts - With Mitigation
Maximum DPM Cancer Risk and PM2.5 Calculations From Construction
Impacts at Off-Site MEI Location - 4.6 meter receptor height (2nd Floor Level)

Cancer Risk (per million) = CPF x Inhalation Dose x ASF x ED/AT x FAH x 1.0E6

Where: CPF = Cancer potency factor $(mg/kg\text{-}day)^{-1}$
ASF = Age sensitivity factor for specified age group
ED = Exposure duration (years)
AT = Averaging time for lifetime cancer risk (years)
FAH = Fraction of time spent at home (unitless)

Inhalation Dose = C_{air} x DBR x A x (EF/365) x 10^{-6}

Where: C_{air} = concentration in air ($\mu g/m^3$)
DBR = daily breathing rate (L/kg body weight-day)
A = Inhalation absorption factor
EF = Exposure frequency (days/year)
10^{-6} = Conversion factor

Values

	Infant/Child			Adult
Age -->	**3rd Trimester**	**0 - 2**	**2 - 16**	**16 - 30**
Parameter				
ASF =	10	10	3	1
CPF =	1.10E+00	1.10E+00	1.10E+00	1.10E+00
DBR* =	361	1090	572	261
A =	1	1	1	1
EF =	350	350	350	350
AT =	70	70	70	70
FAH =	1.00	1.00	1.00	0.73

* 95th percentile breathing rates for infants and 80th percentile for children and adults

Construction Cancer Risk by Year - Maximum Impact Receptor Location

			Infant/Child - Exposure Information			Infant/Child	Adult - Exposure Information			Adult
			DPM Conc (ug/m3)		Age	Cancer	Modeled DPM Conc (ug/m3)		Age	Cancer
Exposure Year	**Exposure Duration (years)**	**Age**	**Year**	**Annual**	**Sensitivity Factor**	**Risk (per million)**	**Year**	**Annual**	**Sensitivity Factor**	**Risk (per million)**
0	0.25	-0.25 - 0*	2024	0.0232	10	0.32	2024	0.0232	-	-
1	1	0 - 1	2024	0.0232	10	3.81	2024	0.0232	1	0.07
2	1	1 - 2	2025	0.0265	10	4.36	2025	0.0265	1	0.08
3	1	2 - 3		0.0000	3	0.00		0.0000	1	0.00
4	1	3 - 4		0.0000	3	0.00		0.0000	1	0.00
5	1	4 - 5		0.0000	3	0.00		0.0000	1	0.00
6	1	5 - 6		0.0000	3	0.00		0.0000	1	0.00
7	1	6 - 7		0.0000	3	0.00		0.0000	1	0.00
8	1	7 - 8		0.0000	3	0.00		0.0000	1	0.00
9	1	8 - 9		0.0000	3	0.00		0.0000	1	0.00
10	1	9 - 10		0.0000	3	0.00		0.0000	1	0.00
11	1	10 - 11		0.0000	3	0.00		0.0000	1	0.00
12	1	11 - 12		0.0000	3	0.00		0.0000	1	0.00
13	1	12 - 13		0.0000	3	0.00		0.0000	1	0.00
14	1	13 - 14		0.0000	3	0.00		0.0000	1	0.00
15	1	14 - 15		0.0000	3	0.00		0.0000	1	0.00
16	1	15 - 16		0.0000	3	0.00		0.0000	1	0.00
17	1	16-17		0.0000	1	0.00		0.0000	1	0.00
18	1	17-18		0.0000	1	0.00		0.0000	1	0.00
19	1	18-19		0.0000	1	0.00		0.0000	1	0.00
20	1	19-20		0.0000	1	0.00		0.0000	1	0.00
21	1	20-21		0.0000	1	0.00		0.0000	1	0.00
22	1	21-22		0.0000	1	0.00		0.0000	1	0.00
23	1	22-23		0.0000	1	0.00		0.0000	1	0.00
24	1	23-24		0.0000	1	0.00		0.0000	1	0.00
25	1	24-25		0.0000	1	0.00		0.0000	1	0.00
26	1	25-26		0.0000	1	0.00		0.0000	1	0.00
27	1	26-27		0.0000	1	0.00		0.0000	1	0.00
28	1	27-28		0.0000	1	0.00		0.0000	1	0.00
29	1	28-29		0.0000	1	0.00		0.0000	1	0.00
30	1	29-30		0.0000	1	0.00		0.0000	1	0.00
Total Increased Cancer Risk						**8.48**				**0.14**

Maximum		
Hazard Index	**Fugitive PM2.5**	**Total PM2.5**
0.00	0.02	0.04
0.01	0.001	0.03

* Third trimester of pregnancy

Attachment 5: Community Risk Modeling Information and Calculations For Off-Site MEI

Vehicle Category	VMT Fraction Across Category	Diesel VMT Fraction Within Category	Gas VMT Fraction Within Category
Truck 1	0.018	0.487	0.513
Truck 2	0.026	0.938	0.047
Non-Truck	0.956	0.014	0.958

	<= 5 mph	10 mph	15 mph	20 mph	25 mph	30 mph	35 mph	40 mph	45 mph	50 mph	55 mph	60 mph	65 mph	70 mph	75 mph
PM2_5 Ex															
Dsl															
NonTruck	0.000567164	0.000453112	0.000333628	0.000251142	0.00020782	0.00018265	0.000168114	0.000163	0.000165	0.000176	0.000194	0.000218	0.000246	0.000259	0
Truck1	0.041211483	0.033437209	0.02738826	0.022551478	0.01863755	0.01547939	0.012979115	0.01108	0.009749	0.008974	0.008755	0.009105	0.010058	0.011355	0
Truck2	0.026774296	0.022133232	0.015273372	0.010838851	0.00892043	0.00827373	0.00845326	0.009459	0.011293	0.013958	0.017459	0.021496	0.025906	0.025906	0
Gas															
NonTruck	0.008697374	0.005490012	0.003655391	0.002566925	0.00190088	0.00148425	0.001221888	0.00106	0.00097	0.000936	0.000952	0.001021	0.001154	0.001252	0
Truck1	0.002105005	0.001483143	0.001096873	0.00084561	0.00067697	0.00056277	0.000487393	0.000442	0.000422	0.000424	0.000449	0.000496	0.000568	0.000646	0
Truck2	0.000335998	0.00021192	0.000141011	9.89836E-05	7.3297E-05	5.7253E-05	4.71728E-05	4.1E-05	3.76E-05	3.63E-05	3.7E-05	3.98E-05	4.52E-05	4.91E-05	0
PM2.5 Running Exh	**0.010341463**	**0.006891167**	**0.004727008**	**0.003399603**	**0.00259741**	**0.00209892**	**0.001792249**	**0.001624**	**0.001563**	**0.001596**	**0.001716**	**0.001917**	**0.002205**	**0.002336**	**0**
DPM Running Exha	**0.00115499**	**0.000958563**	**0.000744311**	**0.000594902**	**0.00051298**	**0.00047634**	**0.000471886**	**0.000497**	**0.00055**	**0.000632**	**0.000743**	**0.000875**	**0.001023**	**0.00103**	**0**
TOG Ex															
Dsl															
NonTruck	0.004542001	0.003352729	0.001833874	0.000970294	0.00070523	0.00057657	0.000487047	0.000424	0.000383	0.000358	0.000348	0.000353	0.000367	0.00038	0
Truck1	0.220093799	0.180029326	0.149390348	0.125043662	0.10522275	0.08890749	0.075500205	0.064652	0.056171	0.04997	0.046052	0.044507	0.045533	0.047543	0
Truck2	0.198668165	0.130716656	0.067212891	0.036991664	0.02704901	0.02169875	0.017685322	0.014972	0.013529	0.013328	0.014341	0.016086	0.018111	0.018142	0
Gas															
NonTruck	0.156096987	0.09972046	0.067170572	0.047685015	0.03566185	0.02808529	0.023284928	0.020319	0.018659	0.018033	0.018342	0.019638	0.022138	0.023966	0
Truck1	0.102773701	0.068913699	0.048449798	0.035606212	0.0273029	0.02184466	0.018275623	0.016052	0.01487	0.014586	0.015168	0.016692	0.019361	0.021523	0
Truck2	0.032185423	0.020407196	0.01365091	0.009632569	0.00716917	0.00562708	0.004657268	0.004064	0.003739	0.003625	0.003705	0.003991	0.004531	0.004923	0
TOG Running Exha	**0.16538468**	**0.106948163**	**0.071631832**	**0.050618404**	**0.03804206**	**0.03010474**	**0.02499488**	**0.021778**	**0.019932**	**0.019184**	**0.019439**	**0.020735**	**0.023272**	**0.025118**	**0**
DEOG Running Exh	**0.011487632**	**0.008155358**	**0.004383971**	**0.002297837**	**0.00162413**	**0.00128874**	**0.001061724**	**0.000911**	**0.00082**	**0.000779**	**0.000785**	**0.000823**	**0.000886**	**0.000949**	**0**
PM2_5 BW															
Dsl															
NonTruck	0.000200789	0.000205936	0.000210763	0.000214374	0.00020399	0.00019753	0.000190799	0.000184	0.000173	0.000162	0.000156	0.000154	0.000151	0.000151	0
Truck1	0.013993489	0.013993489	0.013993489	0.013993489	0.01399349	0.01399349	0.013993489	0.013993	0.013993	0.013993	0.013993	0.013993	0.013993	0.013993	0
Truck2	0.037241428	0.037241428	0.036840351	0.0361082	0.03439564	0.03346173	0.028864969	0.025735	0.022605	0.020351	0.020351	0.020351	0.020351	0.020351	0
Gas															
NonTruck	0.00236672	0.002924771	0.003482767	0.004040442	0.00437445	0.00449306	0.004611277	0.004152	0.003114	0.002075	0.0014	0.001087	0.000774	0.000774	0
Truck1	0.014269185	0.014269185	0.014269185	0.014269185	0.01426919	0.01426919	0.014269185	0.014269	0.014269	0.014269	0.014269	0.014269	0.014269	0.014269	0
Truck2	0.001014146	0.001014146	0.00101409	0.000999783	0.00082198	0.00073306	0.000686259	0.000686	0.000685	0.000685	0.000685	0.000685	0.000685	0.000685	0
PM2.5 BW (grams/	**0.003957912**	**0.00449633**	**0.005023959**	**0.00554114**	**0.00580137**	**0.005882**	**0.005867845**	**0.005341**	**0.004257**	**0.003195**	**0.002543**	**0.002241**	**0.001939**	**0.001939**	**0**

TOG Running Loss Emissions Factor (grams/veh-hour)	
Gas	
NonTruck	1.10205622
Truck1	0.045710315
Truck2	0.069734382
TOG Running Loss	**1.217500917**
HFC Running Loss	**0.018257976**
CH4 Running Loss	**0.181573743**

ROG Running Loss Emissions Factor (grams/veh-hour)	
Gas	
NonTruck	0
Truck1	0
Truck2	0
ROG Running	**0**

PM2_5 TW	
Dsl	
NonTruck	4.5898E-05
Truck1	0.001461
Truck2	0.006604177
Gas	
NonTruck	0.001913078
Truck1	0.001026
Truck2	0.000141152
PM2_5 TW	**0.002092925**

PM10 TW	
Dsl	
NonTruck	0
Truck1	0
Truck2	0
Gas	
NonTruck	0
Truck1	0
Truck2	0
PM10 TW	**0**

File Name: Santa Clara (SF) - 2023 - Annual.EF
CT-EMFAC2017 Version: 1.0.2.27401
Run Date: 10/21/2022 14:15
Area: Santa Clara (SF)
Analysis Year: 2023
Season: Annual

==========

Vehicle Category	VMT Fraction Across Category	Diesel VMT Within Cat	Gas VMT Fraction Within Category
Truck 1	0.018	0.487	0.513
Truck 2	0.026	0.938	0.047
Non-Truck	0.956	0.014	0.958

==========

Road Type: Major/Collector
Silt Loading Factor: CARB 0.032 g/m2
Precipitation Correction: CARB P = 64 days N = 365 days

==========

Fleet Average Running Exhaust Emission Factors (grams/veh-mile)

Pollutant Name	<= 5 mph	10 mph	15 mph	20 mph	25 mph	30 mph	35 mph	40 mph	45 mph	50 mph	55 mph	60 mph	65 mph	70 mph	75 mph
PM2.5	0.009294	0.006046	0.004109	0.002943	0.002238	0.001811	0.001561	0.001435	0.001402	0.001446	0.001563	0.001753	0.002028	0.002134	0.002134
PM10	0.010065	0.00654	0.004442	0.003179	0.002416	0.001952	0.001681	0.001542	0.001504	0.001549	0.001672	0.001874	0.002166	0.002281	0.002281
NOx	0.410218	0.326656	0.249091	0.20785	0.17542	0.147743	0.126322	0.110922	0.1014	0.097681	0.099747	0.10759	0.121253	0.123254	0.123254
CO	1.564655	1.351271	1.175066	1.043078	0.943092	0.86134	0.79294	0.735687	0.68826	0.650046	0.621145	0.602693	0.596978	0.600357	0.601289
HC	0.179862	0.117609	0.079349	0.056411	0.042702	0.034066	0.028534	0.025081	0.023132	0.022391	0.022757	0.024318	0.027318	0.029499	0.029572
TOG	0.19725	0.129119	0.08673	0.061372	0.046401	0.037002	0.030981	0.027224	0.025106	0.024306	0.024712	0.026423	0.029701	0.032092	0.032197
ROG	0.143561	0.09349	0.062343	0.043766	0.032922	0.026167	0.021873	0.019227	0.017777	0.01729	0.017693	0.019055	0.021583	0.023433	0.023525
1,3-Butadiene	0.001011	0.000654	0.000442	0.000315	0.000238	0.000189	0.000158	0.000139	0.000129	0.000125	0.000128	0.000138	0.000156	0.000157	0.000157
Acetaldehyde	0.001761	0.001213	0.000724	0.000444	0.000327	0.000261	0.000218	0.000191	0.000175	0.00017	0.000173	0.000185	0.000206	0.000211	0.000218
Acrolein	0.000227	0.000147	0.0001	0.000071	0.000054	0.000043	0.000036	0.000032	0.000029	0.000028	0.000029	0.000031	0.000035	0.000035	0.000035
Benzene	0.004576	0.002971	0.001992	0.001407	0.00106	0.000842	0.000704	0.000619	0.000573	0.000557	0.00057	0.000614	0.000694	0.000695	0.000697
Diesel PM	0.001038	0.000841	0.000647	0.000515	0.000442	0.000411	0.000411	0.000439	0.000493	0.000573	0.000677	0.0008	0.000941	0.000941	0.000941
Ethylbenzene	0.001919	0.001241	0.000839	0.000598	0.000451	0.000359	0.0003	0.000264	0.000244	0.000238	0.000244	0.000263	0.000297	0.000297	0.000297
Formaldehyde	0.00514	0.003466	0.002154	0.001395	0.001036	0.000825	0.00069	0.000605	0.000557	0.00054	0.000551	0.000591	0.00066	0.000672	0.000686
Naphthalene	0.000128	0.000085	0.000057	0.00004	0.00003	0.000024	0.000021	0.000018	0.000017	0.000016	0.000016	0.000018	0.00002	0.000019	0.000019
POM	0.000176	0.000115	0.000076	0.000052	0.000039	0.000031	0.000026	0.000023	0.000021	0.00002	0.000021	0.000022	0.000025	0.000025	0.000025
DEOG	0.013701	0.009846	0.005308	0.002786	0.001981	0.001584	0.001316	0.001139	0.001033	0.000987	0.000998	0.001049	0.001131	0.001212	0.001305
CO2	735.065845	598.9767	486.626	405.856	348.0215	308.6184	285.2404	274.4613	273.5667	280.3021	291.3535	303.7134	315.0155	317.717	317.717
N2O	0.024949	0.021207	0.017322	0.015142	0.0135	0.01219	0.01128	0.010621	0.010219	0.010129	0.010312	0.010772	0.011452	0.011452	0.011452
CH4	0.029907	0.021178	0.015287	0.011565	0.009193	0.007608	0.006532	0.005813	0.005361	0.005126	0.005084	0.005257	0.005665	0.00595	0.005954
BC	0.002302	0.00149	0.001011	0.000723	0.000547	0.000439	0.000374	0.000338	0.000323	0.000326	0.000345	0.00038	0.000434	0.000433	0.000433

Fleet Average Fuel Consumption (gallons/veh-mile)

Fuel Type	<= 5 mph	10 mph	15 mph	20 mph	25 mph	30 mph	35 mph	40 mph	45 mph	50 mph	55 mph	60 mph	65 mph	70 mph	75 mph
Gasoline	0.075883	0.061364	0.050212	0.041772	0.035709	0.031696	0.029356	0.028402	0.028516	0.029332	0.03056	0.031705	0.032667	0.032667	0.032667
Diesel	0.009651	0.008045	0.006257	0.005368	0.004695	0.004146	0.003762	0.003481	0.003315	0.00329	0.003384	0.003574	0.003879	0.003879	0.003879

==========

Fleet Average Running Loss Emission Factors (grams/veh-hour)

Pollutant Name	Emission Factor
HC	1.271194
TOG	1.359071
ROG	1.359071
1,3-Butadiene	0
Benzene	0.013591
Ethylbenzene	0.022289
Naphthalene	0.001903
CH4	0.202687
HFC	0.020381

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Fleet Average Tire Wear Factors (grams/veh-mile)

Pollutant Name	Emission Factor
PM2.5	0.002138
PM10	0.00855

==========

Fleet Average Brake Wear Factors (grams/veh-mile)

Pollutant Name	Emission Factor
PM2.5	0.016991
PM10	0.039645

==========

Fleet Average Road Dust Factors (grams/veh-mile)

Pollutant Name	Emission Factor
PM2.5	0.015571
PM10	0.103806

==========END==========

File Name: Santa Clara (SF) - 2023 - Annual.EF
EMFAC2021/CT-EMFAC2017:
Run Date: 10/21/2022 14:15
Area: Santa Clara (SF)
Analysis Year: 2023
Season: Annual

==========

Vehicle Category	VMT Fraction Across Category	Diesel VMT Within Cat	Gas VMT Fraction Within Category
Truck 1	0.018	0.487	0.513
Truck 2	0.026	0.938	0.047
Non-Truck	0.956	0.014	0.958

==========

Road Type: Major/Collector
Silt Loading Factor: CARB 0.032 g/m2
Precipitation Correction: CARB P = 64 days N = 365 days

==========

Fleet Average Running Exhaust Emission Factors (grams/veh-mile)

Pollutant Name	<= 5 mph	10 mph	15 mph	20 mph	25 mph	30 mph	35 mph	40 mph	45 mph	50 mph	55 mph	60 mph	65 mph	70 mph	75 mph
PM2.5	0.010341463	0.006891	0.004727	0.0034	0.002597	0.002099	0.001792	0.001624	0.001563	0.001596	0.001716	0.001917	0.002205	0.002336	0
PM10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NOx	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CO															
HC															
TOG	0.16538468	0.106948	0.071632	0.050618	0.038042	0.030105	0.024995	0.021778	0.019932	0.019184	0.019439	0.020735	0.023272	0.025118	0
ROG	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1,3-Butadiene															
Acetaldehyde															
Acrolein															
Benzene															
Diesel PM	0.001154986	0.000959	0.000744	0.000595	0.000513	0.000476	0.000472	0.000497	0.00055	0.000632	0.000743	0.000875	0.001023	0.00103	0
Ethylbenzene															
Formaldehyde															
Naphthalene															
POM															
DEOG	0.011487632	0.008155	0.004384	0.002298	0.001624	0.001289	0.001062	0.000911	0.00082	0.000779	0.000785	0.000823	0.000886	0.000949	0
CO2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
N2O	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
CH4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BC															

Fleet Average Fuel Consumption (gallons/veh-mile)

Fuel Type	<= 5 mph	10 mph	15 mph	20 mph	25 mph	30 mph	35 mph	40 mph	45 mph	50 mph	55 mph	60 mph	65 mph	70 mph	75 mph
Gasoline	0.078365	0.063375	0.051858	0.043141	0.03688	0.032735	0.030318	0.029332	0.02945	0.030293	0.03156	0.032722	0.033699	0.033699	0.033699
Diesel	0.012738	0.010694	0.008327	0.007164	0.006295	0.005592	0.005108	0.004746	0.004522	0.004479	0.004579	0.004792	0.005144	0.005144	0.005144

==========

Fleet Average Running Loss Emission Factors (grams/veh-hour)

Pollutant Name	Emission Factor
HC	
TOG	1.217500917
ROG	0
1,3-Butadiene	
Benzene	
Ethylbenzene	
Naphthalene	
CH4	0.181573743
HFC	0.018257976

==========

Fleet Average Tire Wear Factors (grams/veh-mile)

Pollutant Name	
PM2.5	0.002092925
PM10	0

==========

Fleet Average Brake Wear Factors (grams/veh-mile)

Pollutant Name	<= 5 mph	10 mph	15 mph	20 mph	25 mph	30 mph	35 mph	40 mph	45 mph	50 mph	55 mph	60 mph	65 mph	70 mph	75 mph
PM2.5	0.003957912	0.004496	0.005024	0.005541	0.005801	0.005882	0.005868	0.005341	0.004257	0.003195	0.002543	0.002241	0.001939	0.001939	0
PM10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

==========

Fleet Average Road Dust Factors, Major/Collector (grams/veh-mile)

Pollutant Name	Emission Factor
PM2.5	0.015571
PM10	0.103806

==========END==========

Road Link	Description	Direction	No. Lanes	Link Length (miles)	Link Width (ft)	Link Width (m)	Release Height (ft)	Release Height (m)	Initial Vertical Dimention (m)	Initial Vertical Dispersion (m)	Average Speed (mph)	Average Vehicles per Day
EB_ECR_DPM	Eastbound El Camino Real	East	3	0.43	33	10.06	11.15	3.4	6.8	3.16	35mph off peak, 25mph AM Peak,25mph PM peak period	21,730
WB_ECR_DPM	Westbound El Camino Real	West	3	0.43	33	10.06	11.15	3.4	6.8	3.16	35mph off peak, 25mph AM Peak, 25mph PM peak period	21,730
EB_ECR__XXX	Eastbound El Camino Real	East	3	0.43	33	10.06	4.27	1.3	2.78	1.30	35mph off peak, 25mph AM Peak, 25mph PM peak period	21,730
WB_ECR_XXX	Westbound El Camino Real	West	3	0.43	33	10.06	4.27	1.3	2.78	1.30	35mph off peak, 25mph AM Peak, 25mph PM peak period	21,730

Emission Factors

	Speed Category	1	2
	Travel Speed (mph)	25	35
Emisions per vehicle (g/VMT)	DPM	0.000513	0.00047
	PM2.5	0.002597	0.00179
	TOG Exhaust	0.036418	0.02393
	TOG Evap	0.0487	0.03479
	Fugitive PM2.5	0.023465	0.02353

		El Comino Real							
Vehicle Type	Truck 1 (MDT)	782			-	-	0		
	Truck 2 (HDT)	1,130			-	-	0		
	Non-Truck	41,548			-	-	0		
Total	2023 AADT			43,460					
		WB		EB					
	Directional Volume	**21,730**		**21,730**	**-**	**-**	**0**	**0**	**0**	**0**
		0.5		0.5					

2023 Hourly Traffic Volumes and DPM Emisssions - Eastbound El Camino Real

DPM

Hour	Fraction Per Hour	VPH	g/s
0	0.01116267	243	0.000014
1	0.00811354	176	0.000010
2	0.00832982	181	0.000010
3	0.00654341	142	0.000008
4	0.00879102	191	0.000011
5	0.0152743	332	0.000019
6	0.02603781	566	0.000032
7	0.04363435	948	0.000058
8	0.0563705	1225	7.52488E-05
9	0.0516037	1121	6.33671E-05
10	0.0498205	1083	6.11773E-05
11	0.0532284	1157	6.53621E-05
12	0.0567745	1234	6.97166E-05
13	0.0617102	1341	7.57774E-05
14	0.0715449	1555	8.7854E-05
15	0.0724629	1575	8.89813E-05
16	0.07413187	1611	9.89585E-05
17	0.07483436	1626	9.98962E-05
18	0.06874169	1494	8.44117E-05
19	0.0556245	1209	6.83044E-05
20	0.04318658	938	5.30312E-05
21	0.03518256	765	4.32026E-05
22	0.02775141	603	3.40775E-05
23	0.0191445	416	2.35086E-05
	TOTAL	21,730	

2023 Hourly Traffic Volumes and DPM Emisssions - Westbound El Camino Real

Hour	Fraction Per Hour	VPH	g/s
0	0.00599851	130	0.000007
1	0.00408617	89	0.000005
2	0.00378957	82	0.000005
3	0.00568807	124	0.000007
4	0.01445454	314	0.000018
5	0.0385926	839	0.000047
6	0.06134857	1333	0.000075
7	0.0831522	1807	0.000110
8	0.0818631	1779	0.000108554
9	0.0742263	1613	9.05417E-05
10	0.0606901	1319	7.40302E-05
11	0.0546809	1188	6.67001E-05
12	0.0531881	1156	6.48792E-05
13	0.0520636	1131	6.35075E-05
14	0.05328	1158	6.49913E-05
15	0.0528008	1147	6.44068E-05
16	0.05556024	1207	7.3675E-05
17	0.06262911	1361	8.30486E-05
18	0.05187125	1127	6.32729E-05
19	0.0397978	865	4.85456E-05
20	0.03209105	697	3.91449E-05
21	0.02761566	600	3.36858E-05
22	0.01927489	419	2.35116E-05
23	0.01125693	245	1.37313E-05
	TOTAL	21,730	

2023 Hourly Traffic Volumes and PM2.5 Emisssions - Eastbound El Camino Real

Hour	Fraction Per Hour	VPH	g/s
0	0.01116267	243	0.000052
1	0.00811354	176	3.784E-05
2	0.00832982	181	3.885E-05
3	0.00654341	142	3.052E-05
4	0.00879102	191	4.1E-05
5	0.0152743	332	7.124E-05
6	0.02603781	566	0.0001214
7	0.04363435	948	0.0002949
8	0.0563705	1225	0.000381011
9	0.0516037	1121	0.000240671
10	0.0498205	1083	0.000232355
11	0.0532284	1157	0.000248249
12	0.0567745	1234	0.000264787
13	0.0617102	1341	0.000287807
14	0.0715449	1555	0.000333674
15	0.0724629	1575	0.000337956
16	0.07413187	1611	0.000501061
17	0.07483436	1626	0.000505809
18	0.06874169	1494	0.0003206
19	0.0556245	1209	0.000259424
20	0.04318658	938	0.000201415
21	0.03518256	765	0.000164086
22	0.02775141	603	0.000129428
23	0.0191445	416	8.92869E-05
	TOTAL	21,730	

2023 Hourly Traffic Volumes and PM2.5 Emisssions - Westbound El Camino Real

Hour	Fraction Per Hour	VPH	g/s
0	0.00599851	130	2.779E-05
1	0.00408617	89	1.893E-05
2	0.00378957	82	1.756E-05
3	0.00568807	124	2.635E-05
4	0.01445454	314	6.697E-05
5	0.0385926	839	0.0001788
6	0.06134857	1333	0.0002842
7	0.0831522	1807	0.0005583
8	0.0818631	1779	0.000549645
9	0.0742263	1613	0.000343882
10	0.0606901	1319	0.000281171
11	0.0546809	1188	0.000253331
12	0.0531881	1156	0.000246415
13	0.0520636	1131	0.000241205
14	0.05328	1158	0.00024684
15	0.0528008	1147	0.00024462
16	0.05556024	1207	0.000373042
17	0.06262911	1361	0.000420504
18	0.05187125	1127	0.000240314
19	0.0397978	865	0.000184379
20	0.03209105	697	0.000148674
21	0.02761566	600	0.00012794
22	0.01927489	419	8.92985E-05
23	0.01125693	245	5.21521E-05
	TOTAL	21,730	

2023 Hourly Traffic Volumes and TOG Exhaust Emisssi Eastbound El Camino Real

Hour	Fraction Per Hour	VPH	g/s	Hour	Fraction Per Hour	VPH	g/s	Hour	Fraction Per Hour	VPH	g/s
0	0.01116267	243	0.000695	8	0.0563705	1225	0.005342103	16	0.07413187	1611	0.007025311
1	0.00811354	176	0.0005053	9	0.0516037	1121	0.003213854	17	0.07483436	1626	0.007091884
2	0.00832982	181	0.0005188	10	0.0498205	1083	0.003102795	18	0.06874169	1494	0.0042812
3	0.00654341	142	0.0004075	11	0.0532284	1157	0.003315039	19	0.0556245	1209	0.003464267
4	0.00879102	191	0.0005475	12	0.0567745	1234	0.003535892	20	0.04318658	938	0.00268964
5	0.0152743	332	0.0009513	13	0.0617102	1341	0.003843285	21	0.03518256	765	0.002191153
6	0.02603781	566	0.0016216	14	0.0715449	1555	0.004455782	22	0.02775141	603	0.001728344
7	0.04363435	948	0.0041351	15	0.0724629	1575	0.004512956	23	0.0191445	416	0.00119231
									TOTAL	21,730	

2023 Hourly Traffic Volumes and TOG Exhaust Emisssi Westbound El Camino Real

Hour	Fraction Per Hour	VPH	g/s	Hour	Fraction Per Hour	VPH	g/s	Hour	Fraction Per Hour	VPH	g/s
0	0.00599851	130	0.0003711	8	0.0818631	1779	0.007706497	16	0.05556024	1207	0.005230377
1	0.00408617	89	0.0002528	9	0.0742263	1613	0.004592099	17	0.06262911	1361	0.005895832
2	0.00378957	82	0.0002344	10	0.0606901	1319	0.003754668	18	0.05187125	1127	0.003209078
3	0.00568807	124	0.0003519	11	0.0546809	1188	0.003382899	19	0.0397978	865	0.00246214
4	0.01445454	314	0.0008942	12	0.0531881	1156	0.003290546	20	0.03209105	697	0.001985352
5	0.0385926	839	0.0023876	13	0.0520636	1131	0.003220978	21	0.02761566	600	0.001708476
6	0.06134857	1333	0.0037954	14	0.05328	1158	0.003296231	22	0.01927489	419	0.001192465
7	0.0831522	1807	0.0078279	15	0.0528008	1147	0.003266587	23	0.01125693	245	0.000696424
									TOTAL	21,730	

2023 Hourly Traffic Volumes and TOG Evaporative Emi Eastbound El Camino Real

Hour	Fraction Per Hour	VPH	g/s	Hour	Fraction Per Hour	VPH	g/s	Hour	Fraction Per Hour	VPH	g/s
0	0.01116267	243	0.001010	8	0.0563705	1225	0.007143749	16	0.07413187	1611	0.009394628
1	0.00811354	176	0.0007344	9	0.0516037	1121	0.004671189	17	0.07483436	1626	0.009483653
2	0.00832982	181	0.000754	10	0.0498205	1083	0.004509769	18	0.06874169	1494	0.006222527
3	0.00654341	142	0.0005923	11	0.0532284	1157	0.004818256	19	0.0556245	1209	0.005035153
4	0.00879102	191	0.0007958	12	0.0567745	1234	0.005139256	20	0.04318658	938	0.003909267
5	0.0152743	332	0.0013826	13	0.0617102	1341	0.005586037	21	0.03518256	765	0.003184741
6	0.02603781	566	0.002357	14	0.0715449	1555	0.006476274	22	0.02775141	603	0.002512069
7	0.04363435	948	0.0055297	15	0.0724629	1575	0.006559374	23	0.0191445	416	0.001732968
									TOTAL	21,730	

2023 Hourly Traffic Volumes and TOG Evaporative Emi Westbound El Camino Real

Hour	Fraction Per Hour	VPH	g/s	Hour	Fraction Per Hour	VPH	g/s	Hour	Fraction Per Hour	VPH	g/s
0	0.00599851	130	0.0005394	8	0.0818631	1779	0.010305546	16	0.05556024	1207	0.006994343
1	0.00408617	89	0.0003674	9	0.0742263	1613	0.006674404	17	0.06262911	1361	0.007884226
2	0.00378957	82	0.0003408	10	0.0606901	1319	0.005457237	18	0.05187125	1127	0.004664247
3	0.00568807	124	0.0005115	11	0.0546809	1188	0.004916888	19	0.0397978	865	0.003578606
4	0.01445454	314	0.0012997	12	0.0531881	1156	0.004782658	20	0.03209105	697	0.002885617
5	0.0385926	839	0.0034702	13	0.0520636	1131	0.004681544	21	0.02761566	600	0.002483192
6	0.06134857	1333	0.0055164	14	0.05328	1158	0.004790919	22	0.01927489	419	0.001733193
7	0.0831522	1807	0.0104678	15	0.0528008	1147	0.004747834	23	0.01125693	245	0.00101222
									TOTAL	21,730	

2023 Hourly Traffic Volumes and Fugitive PM2.5 Emiss Eastbound El Camino Real

Hour	Fraction Per Hour	VPH	g/s	Hour	Fraction Per Hour	VPH	g/s	Hour	Fraction Per Hour	VPH	g/s
0	0.01116267	243	0.000684	8	0.0563705	1225	0.003442096	16	0.07413187	1611	0.004526644
1	0.00811354	176	0.0004968	9	0.0516037	1121	0.003159954	17	0.07483436	1626	0.00456954
2	0.00832982	181	0.0005101	10	0.0498205	1083	0.003050757	18	0.06874169	1494	0.004209399
3	0.00654341	142	0.0004007	11	0.0532284	1157	0.003259442	19	0.0556245	1209	0.003406168
4	0.00879102	191	0.0005383	12	0.0567745	1234	0.003476591	20	0.04318658	938	0.002644531
5	0.0152743	332	0.0009353	13	0.0617102	1341	0.003778828	21	0.03518256	765	0.002154405
6	0.02603781	566	0.0015944	14	0.0715449	1555	0.004381054	22	0.02775141	603	0.001699358
7	0.04363435	948	0.0026644	15	0.0724629	1575	0.004437269	23	0.0191445	416	0.001172314
									TOTAL	21,730	

2023 Hourly Traffic Volumes and Fugitive PM2.5 Emiss Westbound El Camino Real

Hour	Fraction Per Hour	VPH	g/s	Hour	Fraction Per Hour	VPH	g/s	Hour	Fraction Per Hour	VPH	g/s
0	0.00599851	130	0.0003649	8	0.0818631	1779	0.004965555	16	0.05556024	1207	0.003370107
1	0.00408617	89	0.0002486	9	0.0742263	1613	0.004515084	17	0.06262911	1361	0.003798883
2	0.00378957	82	0.0002305	10	0.0606901	1319	0.003691698	18	0.05187125	1127	0.003155258
3	0.00568807	124	0.000346	11	0.0546809	1188	0.003326164	19	0.0397978	865	0.002420847
4	0.01445454	314	0.0008793	12	0.0531881	1156	0.00323536	20	0.03209105	697	0.001952055
5	0.0385926	839	0.0023475	13	0.0520636	1131	0.003166959	21	0.02761566	600	0.001679823
6	0.06134857	1333	0.0037318	14	0.05328	1158	0.003240949	22	0.01927489	419	0.001172466
7	0.0831522	1807	0.0050437	15	0.0528008	1147	0.003211802	23	0.01125693	245	0.000684744
									TOTAL	21,730	

VeGaurd Housing, Santa Clara, CA - El Camino Real Impacts to Construction MEI
Maximum DPM Cancer Risk and PM2.5 Calculations
4.5 meter receptor height

Cancer Risk Calculation Method

Cancer Risk (per million) = CPF x Inhalation Dose x ASF x ED/AT x FAH x 1.0E6

Where: CPF = Cancer potency factor (mg/kg-day)^{1}
ASF = Age sensitivity factor for specified age group
ED = Exposure duration (years)
AT = Averaging time for lifetime cancer risk (years)
FAH = Fraction of time spent at home (unitless)

Inhalation Dose = C_{air} x DBR x A x (EF/365) x 10^{-6}

Where: C_{air} = concentration in air (µg/m^{3})
DBR = daily breathing rate (L/kg body weight-day)
A = Inhalation absorption factor
EF = Exposure frequency (days/year)
10^{-6} = Conversion factor

Cancer Potency Factors (mg/kg-day)$^{-1}$

TAC	CPF
DPM	1.10E+00
Vehicle TOG Exhaust	6.28E-03
Vehicle TOG Evaporative	3.70E-04

Values

	Infant/Child			Adult
Age -->	**3rd Trimester**	**0 - 2**	**2 - 16**	**16 - 30**
Parameter				
ASF =	10	10	3	1
DBR* =	361	1090	572	261
A =	1	1	1	1
EF =	350	350	350	350
AT =	70	70	70	70
FAH =	1.00	1.00	1.00	0.73

* 95th percentile breathing rates for infants and 80th percentile for children and adults

Construction Cancer Risk by Year - Maximum Impact Receptor Location

Maximum - Exposure Information					Concentration (ug/m3)			Cancer Risk (per million)			TOTAL
Exposure Year	**Exposure Duration (years)**	**Age**	**Year**	**Age Sensitivity Factor**	**DPM**	**Exhaust TOG**	**Evaporative TOG**	**DPM**	**Exhaust TOG**	**Evaporative TOG**	
0	0.25	-0.25 - 0*	2023	10	0.0030	0.3666	0.3509	0.040	0.028	0.0016	0.07
1	1	0 - 1	2023	10	0.0030	0.3666	0.3509	0.486	0.344	0.0194	0.85
2	1	1 - 2	2024	10	0.0030	0.3666	0.3509	0.486	0.344	0.0194	0.85
3	1	2 - 3	2025	3	0.0030	0.3666	0.3509	0.077	0.054	0.0031	0.13
4	1	3 - 4	2026	3	0.0030	0.3666	0.3509	0.077	0.054	0.0031	0.13
5	1	4 - 5	2027	3	0.0030	0.3666	0.3509	0.077	0.054	0.0031	0.13
6	1	5 - 6	2028	3	0.0030	0.3666	0.3509	0.077	0.054	0.0031	0.13
7	1	6 - 7	2029	3	0.0030	0.3666	0.3509	0.077	0.054	0.0031	0.13
8	1	7 - 8	2030	3	0.0030	0.3666	0.3509	0.077	0.054	0.0031	0.13
9	1	8 - 9	2031	3	0.0030	0.3666	0.3509	0.077	0.054	0.0031	0.13
10	1	9 - 10	2032	3	0.0030	0.3666	0.3509	0.077	0.054	0.0031	0.13
11	1	10 - 11	2033	3	0.0030	0.3666	0.3509	0.077	0.054	0.0031	0.13
12	1	11 - 12	2034	3	0.0030	0.3666	0.3509	0.077	0.054	0.0031	0.13
13	1	12 - 13	2035	3	0.0030	0.3666	0.3509	0.077	0.054	0.0031	0.13
14	1	13 - 14	2036	3	0.0030	0.3666	0.3509	0.077	0.054	0.0031	0.13
15	1	14 - 15	2037	3	0.0030	0.3666	0.3509	0.077	0.054	0.0031	0.13
16	1	15 - 16	2038	3	0.0030	0.3666	0.3509	0.077	0.054	0.0031	0.13
17	1	16-17	2039	1	0.0030	0.3666	0.3509	0.008	0.006	0.0003	0.015
18	1	17-18	2040	1	0.0030	0.3666	0.3509	0.008	0.006	0.0003	0.015
19	1	18-19	2041	1	0.0030	0.3666	0.3509	0.008	0.006	0.0003	0.015
20	1	19-20	2042	1	0.0030	0.3666	0.3509	0.008	0.006	0.0003	0.015
21	1	20-21	2043	1	0.0030	0.3666	0.3509	0.008	0.006	0.0003	0.015
22	1	21-22	2044	1	0.0030	0.3666	0.3509	0.008	0.006	0.0003	0.015
23	1	22-23	2045	1	0.0030	0.3666	0.3509	0.008	0.006	0.0003	0.015
24	1	23-24	2046	1	0.0030	0.3666	0.3509	0.008	0.006	0.0003	0.015
25	1	24-25	2047	1	0.0030	0.3666	0.3509	0.008	0.006	0.0003	0.015
26	1	25-26	2048	1	0.0030	0.3666	0.3509	0.008	0.006	0.0003	0.015
27	1	26-27	2049	1	0.0030	0.3666	0.3509	0.008	0.006	0.0003	0.015
28	1	27-28	2050	1	0.0030	0.3666	0.3509	0.008	0.006	0.0003	0.015
29	1	28-29	2051	1	0.0030	0.3666	0.3509	0.008	0.006	0.0003	0.015
30	1	29-30	2052	1	0.0030	0.3666	0.3509	0.008	0.006	0.0003	0.015
Total Increased Cancer Risk								2.20	1.558	0.088	**3.8**

Maximum	
Hazard Index	**Total PM2.5 (µg/m3)**
0.0006	0.326

* Third trimester of pregnancy

BAY AREA AIR QUALITY MANAGEMENT DISTRICT

Risk & Hazard Stationary Source Inquiry Form

This form is required when users request stationary source data from BAAQMD

This form is to be used with the BAAQMD's Google Earth stationary source screening tables.

Click here for guidance on coducting risk & hazard screening, including roadways & freeways, refer to the District's Risk & Hazard Analysis flow chart.

Click here for District's Recommended Methods for Screening and Modeling Local Risks and Hazards document.

Table A: Requester Contact Information

Date of Request	**NA**
Contact Name	NA
Affiliation	Illingworth & Rodkin, Inc.
Phone	NA
Email	NA
Project Name	VeGaurd Housing
Address	3378-3386 El Camino Real
City	Santa Clara
County	Santa Clara
Type (residential, commercial, mixed use, industrial, etc.)	Residential
Project Size (# of units or building square feet)	24

Comments: Information obtained from 2020 GIS database. No SSIF required.

For Air District assistance, the following steps must be completed:

1. Complete all the contact and project information requested in Table A. Incomplete forms will not be processed. Please include a project site map.

2. Download and install the free program Google Earth, **http://www.google.com/earth/download/ge/**, and then download the county specific Google Earth stationary source application files from the District's website, **http://www.baaqmd.gov/Divisions/Planning-and-Research/CEQA-GUIDELINES/Tools-and-Methodology.aspx.** The small points on the map represent stationary sources permitted by the District (Map A on right). These permitted sources include diesel back-up generators, gas stations, dry cleaners, boilers, printers, auto spray booths, etc. Click on a point to view the source's Information Table, including the name, location, and preliminary estimated cancer risk, hazard index, and PM2.5 concentration.

3. Find the project site in Google Earth by inputting the site's address in the Google Earth search box.

4. Identify stationary sources within at least a 1000ft radius of project site. Verify that the location of the source on the map matches with the source's address in the Information Table, by using the Google Earth address search box to confirm the source's address location. Please report any mapping errors to the District.

5. List the stationary source information in Table B section only.

6. Note that a small percentage of the stationary sources have Health Risk Screening Assessment (HRSA) data INSTEAD of screening level data. These sources will be noted by an asterisk next to the Plant Name (Map B on right). If HRSA values are presented, these values have already been modeled and cannot be adjusted further.

7. Email this completed form to District staff. District staff will provide the most recent risk, hazard, and PM2.5 data that are available for the source(s). If this information or data are not available, source emissions data will be provided. Staff will respond to inquiries within three weeks.

Note that a public records request received for the same stationary source information will cancel the processing of your SSIF request.

Submit forms, maps, and questions to Matthew Hanson at 415-749-8733, or mhanson@baaqmd.gov

Table B: Google Earth data

Distance from Receptor (feet) or MEI[1]	Plant No.	Facility Name	Address	Cancer Risk[2]	Hazard Risk[2]	$PM_{2.5}$[2]	Source No.[3]	Type of Source[4]	Fuel Code[5]	Status/Comments	Construction MEI: Adjustment Multiplier to MEI	Adjusted Cancer Risk Estimate	Adjusted Hazard Risk	Adjusted PM2.5
1,193	16184	Sprint United Management Co	2270 Apollo Way	10.94	0.017	0.01		Generator	98	2020 Dataset	0.04	0.44	0.0007	0.001
												0.00	0.000	0.000

Footnotes:

1. Maximally exposed individual
2. These Cancer Risk, Hazard Index, and PM2.5 columns represent the values in the Google Earth Plant Information Table.
3. Each plant may have multiple permits and sources.
4. Permitted sources include diesel back-up generators, gas stations, dry cleaners, boilers, printers, auto spray booths, etc.
5. Fuel codes: 98 = diesel, 189 = Natural Gas.
6. If a Health Risk Screening Assessment (HRSA) was completed for the source, the application number will be listed here.
7. The date that the HRSA was completed.
8. Engineer who completed the HRSA. For District purposes only.
9. All HRSA completed before 1/5/2010 need to be multiplied by an age sensitivity factor of 1.7.
10. The HRSA "Chronic Health" number represents the Hazard Index.
11. Further information about common sources:
    a. Sources that only include diesel internal combustion engines can be adjusted using the BAAQMD's Diesel Multiplier worksheet.
    b. The risk from natural gas boilers used for space heating when <25 MM BTU/hr would have an estimated cancer risk of one in a million or less, and a chronic hazard index of 0.003
    c. BAAQMD Reg 11 Rule 16 required that all co-residential (sharing a wall, floor, ceiling or is in the same building as a residential unit) dry cleaners cease use of perc on July 1, 2010. Therefore, there is no cancer risk, hazard or PM2.5 concentrations from co-residential dry cleaning businesses in the BAAQMD.
    d. Non co-residential dry cleaners must phase out use of perc by Jan. 1, 2023. Therefore, the risk from these dry cleaners does not need to be factored in over a 70-year period, but instead should
    e. Gas stations can be adjusted using BAAQMD's Gas Station Distance Mulitplier worksheet.
    f. Unless otherwise noted, exempt sources are considered insignificant. See BAAQMD Reg 2 Rule 1 for a list of exempt sources.
    g. This spray booth is considered to be insignificant.

2022 CARB & CAPCOA Gasoline Service Station Industrywide Risk Assessment Look-up Tool
Version 1.0 - February 18, 2022

Required Value	User Defined Input	Instructions
Annual Throughput (gallons/year)	1700000	Enter your gas station's annual throughput in gallons of gasoline dispensed per year.
Hourly Dispensing Throughput (gallons/hour)	700	The tool will calculate the maximum hourly vehicle fueling throughput based on annual throughput as defined by Table 10 of the 2020 Gasoline Service Station Industrywide Risk Assessment Technical Guidance Document (Technical Guidance). If a different value is desired please enter it into cell L4.
Hourly Loading Throughput (gallons/hour)	8800	The tool will calculate the maximum hourly loading throughput based on annual throughput as defined by Table 10 of the Technical Guidance. If a different value is desired please enter it into cell L5.
Meteorological Data	San Jose	Select appropriate meteorological data. Met sets provided include 2 rural (Redding and Lancaster) and 4 urban (Fresno, Ontario, San Diego, and San Jose) locations. Use whichever best correlates to your location. If you would like to use site-specific meteorological data please refer to the Variable Met Tool.
Distance to Nearest Resident (meters)	166	Enter the distance to the nearest residential receptor in meters as measured from the edge of the station canopy. Please note that the value must be between 10 and 1000 meters. The distance you input will round down to the nearest receptor distance used in the Technical Guidance (e.g., 19m will return value at 10m distance).
Distance to Nearest Business (meters)		Enter the distance to the nearest worker receptor in meters as measured from the edge of the station canopy. Please note that the value must be between 10 and 1000 meters. The distance you input will round down to the nearest receptor distance used in the Technical Guidance (e.g., 19m will return value at 10m distance).
Distance to Acute Receptor (meters)	166	Enter the distance where acute impacts are expected in meters as measured from the edge of the station canopy. This can be the distance to the property boundary, nearest resident, nearest worker, or any other user defined location. Please note that the value must be between 10 and 1000 meters. The distance you input will round down to the nearest receptor distance used in the Technical Guidance (e.g., 19m will return value at 10m distance).
Control Scenario	EVR Phase I & EVR Phase II	Select the appropriate control scenario for your gas station. Please refer to technical Guidance for an explanation of the different control scenarios. Almost all gas stations in California are equipped with EVR Phase I and EVR Phase II controls.
Include Building Downwash Adjustments		Building downwash may over estimate risk results. High results should be investigated further through site-specific health risk assessment.

Risk Value	Results
Max Residential Cancer Risk (chances/million)	0.51
Max Worker Cancer Risk (chances/million)	
Chronic HI	#N/A
Acute HI	0.12

Attachment 6: Community Risk Modeling Information and Calculations For Onsite MEI

VeGaurd Housing, Santa Clara, CA - El Camino Real Maximum Impacts Onsite
AERMOD Risk Modeling Parameters and Maximum Concentrations
1st Floor Receptors

Emissions Years	2023
Receptor Information	
Number of Receptors	
Receptor Height (in m) =	1.5 (1st Floor)
Receptor Distances =	Onsite
Meteorological Conditions	
BAAQMD San Jose International Airport Met Data	2013 - 2017
Land Use Classification	urban
Wind Speed =	variable
Wind Direction =	variable

El Camino Real - Maximum Onsite Concentrations - Floor 1

Meteorological Data Years	TAC Concentrations (µg/m^3)		
	DPM	Exhaust TOG	Evaporative TOG
2013 - 2017	0.00609	0.53925	0.7644

Meteorological Data Years	PM2.5 Concentrations (µg/m^3)		
	Total PM2.5	Fugitive PM2.5	Vehicle PM2.5
2013 - 2017	0.5135	0.47371	0.03979

VeGaurd Housing, Santa Clara, CA - El Camino Real Maximum Impacts Onsite
Maximum DPM Cancer Risk and PM2.5 Calculations
1.5 meter receptor height

Cancer Risk Calculation Method

Cancer Risk (per million) = CPF x Inhalation Dose x ASF x ED/AT x FAH x 1.0E6

Where: CPF = Cancer potency factor $(mg/kg\text{-}day)^{1}$
ASF = Age sensitivity factor for specified age group
ED = Exposure duration (years)
AT = Averaging time for lifetime cancer risk (years)
FAH = Fraction of time spent at home (unitless)

Inhalation Dose = C_{air} x DBR x A x (EF/365) x 10^{-6}

Where: C_{air} = concentration in air $(\mu g/m^3)$
DBR = daily breathing rate (L/kg body weight-day)
A = Inhalation absorption factor
EF = Exposure frequency (days/year)
10^{-6} = Conversion factor

Cancer Potency Factors $(mg/kg\text{-}day)^{-1}$

TAC	CPF
DPM	1.10E+00
Vehicle TOG Exhaust	6.28E-03
Vehicle TOG Evaporative	3.70E-04

Values

	Infant/Child			Adult
Age -->	3rd Trimester	0 - 2	2 - 16	16 - 30
Parameter				
ASF =	10	10	3	1
DBR* =	361	1090	572	261
A =	1	1	1	1
EF =	350	350	350	350
AT =	70	70	70	70
FAH =	1.00	1.00	1.00	0.73

* 95th percentile breathing rates for infants and 80th percentile for children and adults

Cancer Risk by Year - Maximum Impact Receptor Location

Maximum - Exposure Information					Concentration (ug/m3)			Cancer Risk (per million)			TOTAL
Exposure Year	Exposure Duration (years)	Age	Year	Age Sensitivity Factor	DPM	Exhaust TOG	Evaporative TOG	DPM	Exhaust TOG	Evaporative TOG	
0	0.25	-0.25 - 0*	2025	10	0.0061	0.5393	0.7644	0.083	0.042	0.0035	0.13
1	1	0 - 1	2025	10	0.0061	0.5393	0.7644	1.000	0.506	0.0422	1.55
2	1	1 - 2	2026	10	0.0061	0.5393	0.7644	1.000	0.506	0.0422	1.55
3	1	2 - 3	2027	3	0.0061	0.5393	0.7644	0.157	0.080	0.0066	0.24
4	1	3 - 4	2028	3	0.0061	0.5393	0.7644	0.157	0.080	0.0066	0.24
5	1	4 - 5	2029	3	0.0061	0.5393	0.7644	0.157	0.080	0.0066	0.24
6	1	5 - 6	2030	3	0.0061	0.5393	0.7644	0.157	0.080	0.0066	0.24
7	1	6 - 7	2031	3	0.0061	0.5393	0.7644	0.157	0.080	0.0066	0.24
8	1	7 - 8	2032	3	0.0061	0.5393	0.7644	0.157	0.080	0.0066	0.24
9	1	8 - 9	2033	3	0.0061	0.5393	0.7644	0.157	0.080	0.0066	0.24
10	1	9 - 10	2034	3	0.0061	0.5393	0.7644	0.157	0.080	0.0066	0.24
11	1	10 - 11	2035	3	0.0061	0.5393	0.7644	0.157	0.080	0.0066	0.24
12	1	11 - 12	2036	3	0.0061	0.5393	0.7644	0.157	0.080	0.0066	0.24
13	1	12 - 13	2037	3	0.0061	0.5393	0.7644	0.157	0.080	0.0066	0.24
14	1	13 - 14	2038	3	0.0061	0.5393	0.7644	0.157	0.080	0.0066	0.24
15	1	14 - 15	2039	3	0.0061	0.5393	0.7644	0.157	0.080	0.0066	0.24
16	1	15 - 16	2040	3	0.0061	0.5393	0.7644	0.157	0.080	0.0066	0.24
17	1	16-17	2041	1	0.0061	0.5393	0.7644	0.017	0.009	0.0007	0.027
18	1	17-18	2042	1	0.0061	0.5393	0.7644	0.017	0.009	0.0007	0.027
19	1	18-19	2043	1	0.0061	0.5393	0.7644	0.017	0.009	0.0007	0.027
20	1	19-20	2044	1	0.0061	0.5393	0.7644	0.017	0.009	0.0007	0.027
21	1	20-21	2045	1	0.0061	0.5393	0.7644	0.017	0.009	0.0007	0.027
22	1	21-22	2046	1	0.0061	0.5393	0.7644	0.017	0.009	0.0007	0.027
23	1	22-23	2047	1	0.0061	0.5393	0.7644	0.017	0.009	0.0007	0.027
24	1	23-24	2048	1	0.0061	0.5393	0.7644	0.017	0.009	0.0007	0.027
25	1	24-25	2049	1	0.0061	0.5393	0.7644	0.017	0.009	0.0007	0.027
26	1	25-26	2050	1	0.0061	0.5393	0.7644	0.017	0.009	0.0007	0.027
27	1	26-27	2051	1	0.0061	0.5393	0.7644	0.017	0.009	0.0007	0.027
28	1	27-28	2052	1	0.0061	0.5393	0.7644	0.017	0.009	0.0007	0.027
29	1	28-29	2053	1	0.0061	0.5393	0.7644	0.017	0.009	0.0007	0.027
30	1	29-30	2054	1	0.0061	0.5393	0.7644	0.017	0.009	0.0007	0.027
Total Increased Cancer Risk								4.53	2.291	0.191	**7.0**

Maximum	
Hazard Index	**Total PM2.5 (µg/m3)**
0.0012	0.514

* Third trimester of pregnancy

VeGaurd Housing, Santa Clara, CA - El Camino Real Maximum Impacts Onsite
AERMOD Risk Modeling Parameters and Maximum Concentrations
2nd Floor Receptors

Emissions Years	2023
Receptor Information	
Number of Receptors	
Receptor Height (in m) =	4.3 (2nd Floor)
Receptor Distances =	Onsite
Meteorological Conditions	
BAAQMD San Jose International Airport Met Data	2013 - 2017
Land Use Classification	urban
Wind Speed =	variable
Wind Direction =	variable

El Camino Real - Construction MEI Maximum Concentrations - Floor 2

Meteorological Data Years	TAC Concentrations (µg/m^3)		
	DPM	Exhaust TOG	Evaporative TOG
2013 - 2017	0.00545	0.38643	0.54774

Meteorological Data Years	PM2.5 Concentrations (µg/m^3)		
	Total PM2.5	Fugitive PM2.5	Vehicle PM2.5
2013 - 2017	0.36785	0.33934	0.02851

VeGaurd Housing, Santa Clara, CA - El Camino Real Maximum Impacts Onsite
Maximum DPM Cancer Risk and PM2.5 Calculations
4.3 meter receptor height

Cancer Risk Calculation Method

Cancer Risk (per million) = CPF x Inhalation Dose x ASF x ED/AT x FAH x 1.0E6

Where: CPF = Cancer potency factor (mg/kg-day)^{1}
ASF = Age sensitivity factor for specified age group
ED = Exposure duration (years)
AT = Averaging time for lifetime cancer risk (years)
FAH = Fraction of time spent at home (unitless)

Inhalation Dose = C_{air} x DBR x A x (EF/365) x 10^{-6}

Where: C_{air} = concentration in air (µg/m^{3})
DBR = daily breathing rate (L/kg body weight-day)
A = Inhalation absorption factor
EF = Exposure frequency (days/year)
10^{-6} = Conversion factor

Cancer Potency Factors (mg/kg-day)$^{-1}$

TAC	CPF
DPM	1.10E+00
Vehicle TOG Exhaust	6.28E-03
Vehicle TOG Evaporative	3.70E-04

Values

	Infant/Child			Adult
Age -->	**3rd Trimester**	**0 - 2**	**2 - 16**	**16 - 30**
Parameter				
ASF =	10	10	3	1
DBR* =	361	1090	572	261
A =	1	1	1	1
EF =	350	350	350	350
AT =	70	70	70	70
FAH =	1.00	1.00	1.00	0.73

* 95th percentile breathing rates for infants and 80th percentile for children and adults

Cancer Risk by Year - Maximum Impact Receptor Location

Maximum - Exposure Information					Concentration (ug/m3)			Cancer Risk (per million)			TOTAL
Exposure Year	**Exposure Duration (years)**	**Age**	**Year**	**Age Sensitivity Factor**	**DPM**	**Exhaust TOG**	**Evaporative TOG**	**DPM**	**Exhaust TOG**	**Evaporative TOG**	
0	0.25	-0.25 - 0*	2025	10	0.0055	0.3864	0.5477	0.074	0.030	0.0025	0.11
1	1	0 - 1	2025	10	0.0055	0.3864	0.5477	0.895	0.362	0.0303	1.29
2	1	1 - 2	2026	10	0.0055	0.3864	0.5477	0.895	0.362	0.0303	1.29
3	1	2 - 3	2027	3	0.0055	0.3864	0.5477	0.141	0.057	0.0048	0.20
4	1	3 - 4	2028	3	0.0055	0.3864	0.5477	0.141	0.057	0.0048	0.20
5	1	4 - 5	2029	3	0.0055	0.3864	0.5477	0.141	0.057	0.0048	0.20
6	1	5 - 6	2030	3	0.0055	0.3864	0.5477	0.141	0.057	0.0048	0.20
7	1	6 - 7	2031	3	0.0055	0.3864	0.5477	0.141	0.057	0.0048	0.20
8	1	7 - 8	2032	3	0.0055	0.3864	0.5477	0.141	0.057	0.0048	0.20
9	1	8 - 9	2033	3	0.0055	0.3864	0.5477	0.141	0.057	0.0048	0.20
10	1	9 - 10	2034	3	0.0055	0.3864	0.5477	0.141	0.057	0.0048	0.20
11	1	10 - 11	2035	3	0.0055	0.3864	0.5477	0.141	0.057	0.0048	0.20
12	1	11 - 12	2036	3	0.0055	0.3864	0.5477	0.141	0.057	0.0048	0.20
13	1	12 - 13	2037	3	0.0055	0.3864	0.5477	0.141	0.057	0.0048	0.20
14	1	13 - 14	2038	3	0.0055	0.3864	0.5477	0.141	0.057	0.0048	0.20
15	1	14 - 15	2039	3	0.0055	0.3864	0.5477	0.141	0.057	0.0048	0.20
16	1	15 - 16	2040	3	0.0055	0.3864	0.5477	0.141	0.057	0.0048	0.20
17	1	16-17	2041	1	0.0055	0.3864	0.5477	0.016	0.006	0.0005	0.023
18	1	17-18	2042	1	0.0055	0.3864	0.5477	0.016	0.006	0.0005	0.023
19	1	18-19	2043	1	0.0055	0.3864	0.5477	0.016	0.006	0.0005	0.023
20	1	19-20	2044	1	0.0055	0.3864	0.5477	0.016	0.006	0.0005	0.023
21	1	20-21	2045	1	0.0055	0.3864	0.5477	0.016	0.006	0.0005	0.023
22	1	21-22	2046	1	0.0055	0.3864	0.5477	0.016	0.006	0.0005	0.023
23	1	22-23	2047	1	0.0055	0.3864	0.5477	0.016	0.006	0.0005	0.023
24	1	23-24	2048	1	0.0055	0.3864	0.5477	0.016	0.006	0.0005	0.023
25	1	24-25	2049	1	0.0055	0.3864	0.5477	0.016	0.006	0.0005	0.023
26	1	25-26	2050	1	0.0055	0.3864	0.5477	0.016	0.006	0.0005	0.023
27	1	26-27	2051	1	0.0055	0.3864	0.5477	0.016	0.006	0.0005	0.023
28	1	27-28	2052	1	0.0055	0.3864	0.5477	0.016	0.006	0.0005	0.023
29	1	28-29	2053	1	0.0055	0.3864	0.5477	0.016	0.006	0.0005	0.023
30	1	29-30	2054	1	0.0055	0.3864	0.5477	0.016	0.006	0.0005	0.023
Total Increased Cancer Risk								4.06	1.642	0.137	**5.8**

Maximum	
Hazard Index	**Total PM2.5 (µg/m3)**
0.0011	0.368

* Third trimester of pregnancy

VeGaurd Housing, Santa Clara, CA - El Camino Real Maximum Impacts Onsite
AERMOD Risk Modeling Parameters and Maximum Concentrations
3rd Floor Receptors

Emissions Years	2023
Receptor Information	
Number of Receptors	
Receptor Height (in m) =	7.5 (3rd Floor)
Receptor Distances =	Onsite
Meteorological Conditions	
BAAQMD San Jose International Airport Met Data	2013 - 2017
Land Use Classification	urban
Wind Speed =	variable
Wind Direction =	variable

El Camino Real - Construction MEI Maximum Concentrations - Floor 2

Meteorological Data Years	TAC Concentrations (µg/m^3)		
	DPM	Exhaust TOG	Evaporative TOG
2013 - 2017	0.00399	0.19532	0.27687

Meteorological Data Years	PM2.5 Concentrations (µg/m^3)		
	Total PM2.5	Fugitive PM2.5	Vehicle PM2.5
2013 - 2017	0.186	0.17159	0.01441

VeGaurd Housing, Santa Clara, CA - El Camino Real Maximum Impacts Onsite
Maximum DPM Cancer Risk and PM2.5 Calculations
7.5 meter receptor height

Cancer Risk Calculation Method

Cancer Risk (per million) = CPF x Inhalation Dose x ASF x ED/AT x FAH x 1.0E6

Where: CPF = Cancer potency factor (mg/kg-day)$^{-1}$
ASF = Age sensitivity factor for specified age group
ED = Exposure duration (years)
AT = Averaging time for lifetime cancer risk (years)
FAH = Fraction of time spent at home (unitless)

Inhalation Dose = C_{air} x DBR x A x (EF/365) x 10^{-6}

Where: C_{air} = concentration in air ($\mu g/m^3$)
DBR = daily breathing rate (L/kg body weight-day)
A = Inhalation absorption factor
EF = Exposure frequency (days/year)
10^{-6} = Conversion factor

Cancer Potency Factors (mg/kg-day)$^{-1}$

TAC	CPF
DPM	1.10E+00
Vehicle TOG Exhaust	6.28E-03
Vehicle TOG Evaporative	3.70E-04

Values

	Infant/Child			Adult
Age -->	**3rd Trimester**	**0 - 2**	**2 - 16**	**16 - 30**
Parameter				
ASF =	10	10	3	1
DBR* =	361	1090	572	261
A =	1	1	1	1
EF =	350	350	350	350
AT =	70	70	70	70
FAH =	1.00	1.00	1.00	0.73

* 95th percentile breathing rates for infants and 80th percentile for children and adults

Cancer Risk by Year - Maximum Impact Receptor Location

Maximum - Exposure Information					Concentration (ug/m3)			Cancer Risk (per million)			TOTAL
Exposure Year	**Exposure Duration (years)**	**Age**	**Year**	**Age Sensitivity Factor**	**DPM**	**Exhaust TOG**	**Evaporative TOG**	**DPM**	**Exhaust TOG**	**Evaporative TOG**	
0	0.25	-0.25 - 0*	2025	10	0.0040	0.1953	0.2769	0.054	0.015	0.0013	0.07
1	1	0 - 1	2025	10	0.0040	0.1953	0.2769	0.655	0.183	0.0153	0.85
2	1	1 - 2	2026	10	0.0040	0.1953	0.2769	0.655	0.183	0.0153	0.85
3	1	2 - 3	2027	3	0.0040	0.1953	0.2769	0.103	0.029	0.0024	0.13
4	1	3 - 4	2028	3	0.0040	0.1953	0.2769	0.103	0.029	0.0024	0.13
5	1	4 - 5	2029	3	0.0040	0.1953	0.2769	0.103	0.029	0.0024	0.13
6	1	5 - 6	2030	3	0.0040	0.1953	0.2769	0.103	0.029	0.0024	0.13
7	1	6 - 7	2031	3	0.0040	0.1953	0.2769	0.103	0.029	0.0024	0.13
8	1	7 - 8	2032	3	0.0040	0.1953	0.2769	0.103	0.029	0.0024	0.13
9	1	8 - 9	2033	3	0.0040	0.1953	0.2769	0.103	0.029	0.0024	0.13
10	1	9 - 10	2034	3	0.0040	0.1953	0.2769	0.103	0.029	0.0024	0.13
11	1	10 - 11	2035	3	0.0040	0.1953	0.2769	0.103	0.029	0.0024	0.13
12	1	11 - 12	2036	3	0.0040	0.1953	0.2769	0.103	0.029	0.0024	0.13
13	1	12 - 13	2037	3	0.0040	0.1953	0.2769	0.103	0.029	0.0024	0.13
14	1	13 - 14	2038	3	0.0040	0.1953	0.2769	0.103	0.029	0.0024	0.13
15	1	14 - 15	2039	3	0.0040	0.1953	0.2769	0.103	0.029	0.0024	0.13
16	1	15 - 16	2040	3	0.0040	0.1953	0.2769	0.103	0.029	0.0024	0.13
17	1	16-17	2041	1	0.0040	0.1953	0.2769	0.011	0.003	0.0003	0.015
18	1	17-18	2042	1	0.0040	0.1953	0.2769	0.011	0.003	0.0003	0.015
19	1	18-19	2043	1	0.0040	0.1953	0.2769	0.011	0.003	0.0003	0.015
20	1	19-20	2044	1	0.0040	0.1953	0.2769	0.011	0.003	0.0003	0.015
21	1	20-21	2045	1	0.0040	0.1953	0.2769	0.011	0.003	0.0003	0.015
22	1	21-22	2046	1	0.0040	0.1953	0.2769	0.011	0.003	0.0003	0.015
23	1	22-23	2047	1	0.0040	0.1953	0.2769	0.011	0.003	0.0003	0.015
24	1	23-24	2048	1	0.0040	0.1953	0.2769	0.011	0.003	0.0003	0.015
25	1	24-25	2049	1	0.0040	0.1953	0.2769	0.011	0.003	0.0003	0.015
26	1	25-26	2050	1	0.0040	0.1953	0.2769	0.011	0.003	0.0003	0.015
27	1	26-27	2051	1	0.0040	0.1953	0.2769	0.011	0.003	0.0003	0.015
28	1	27-28	2052	1	0.0040	0.1953	0.2769	0.011	0.003	0.0003	0.015
29	1	28-29	2053	1	0.0040	0.1953	0.2769	0.011	0.003	0.0003	0.015
30	1	29-30	2054	1	0.0040	0.1953	0.2769	0.011	0.003	0.0003	0.015
Total Increased Cancer Risk								2.97	0.830	0.069	**3.9**

Maximum	
Hazard Index	**Total PM2.5 (µg/m3)**
0.0008	0.186

* Third trimester of pregnancy

BAY AREA AIR QUALITY MANAGEMENT DISTRICT

Risk & Hazard Stationary Source Inquiry Form

This form is required when users request stationary source data from BAAQMD

This form is to be used with the BAAQMD's Google Earth stationary source screening tables.

Click here for guidance on coducting risk & hazard screening, including roadways & freeways, refer to the District's Risk & Hazard Analysis flow chart.

Click here for District's Recommended Methods for Screening and Modeling Local Risks and Hazards document.

Table A: Requester Contact Information

Date of Request	**NA**
Contact Name	NA
Affiliation	Illingworth & Rodkin, Inc.
Phone	NA
Email	NA
Project Name	VeGaurd Housing
Address	3378-3386 El Camino Real
City	Santa Clara
County	Santa Clara
Type (residential, commercial, mixed use, industrial, etc.)	Residential
Project Size (# of units or building square feet)	24

Comments: Information obtained from 2020 GIS database. No SSIF required.

For Air District assistance, the following steps must be completed:

1. Complete all the contact and project information requested in Table A. Incomplete forms will not be processed. Please include a project site map.

2. Download and install the free program Google Earth, **http://www.google.com/earth/download/ge/**, and then download the county specific Google Earth stationary source application files from the District's website, **http://www.baaqmd.gov/Divisions/Planning-and-Research/CEQA-GUIDELINES/Tools-and-Methodology.aspx.** The small points on the map represent stationary sources permitted by the District (Map A on right). These permitted sources include diesel back-up generators, gas stations, dry cleaners, boilers, printers, auto spray booths, etc. Click on a point to view the source's Information Table, including the name, location, and preliminary estimated cancer risk, hazard index, and PM2.5 concentration.

3. Find the project site in Google Earth by inputting the site's address in the Google Earth search box.

4. Identify stationary sources within at least a 1000ft radius of project site. Verify that the location of the source on the map matches with the source's address in the Information Table, by using the Google Earth address search box to confirm the source's address location. Please report any mapping errors to the District.

5. List the stationary source information in Table B section only.

6. Note that a small percentage of the stationary sources have Health Risk Screening Assessment (HRSA) data INSTEAD of screening level data. These sources will be noted by an asterisk next to the Plant Name (Map B on right). If HRSA values are presented, these values have already been modeled and cannot be adjusted further.

7. Email this completed form to District staff. District staff will provide the most recent risk, hazard, and PM2.5 data that are available for the source(s). If this information or data are not available, source emissions data will be provided. Staff will respond to inquiries within three weeks.

Note that a public records request received for the same stationary source information will cancel the processing of your SSIF request.

Submit forms, maps, and questions to Matthew Hanson at 415-749-8733, or mhanson@baaqmd.gov

Table B: Google Earth data

Distance from Receptor (feet) or MEI[1]	Plant No.	Facility Name	Address	Cancer Risk[2]	Hazard Risk[2]	$PM_{2.5}$[2]	Source No.[3]	Type of Source[4]	Fuel Code[5]	Status/Comments	Construction MEI: Adjustment Multiplier to MEI	Adjusted Cancer Risk Estimate	Adjusted Hazard Risk	Adjusted PM2.5
1,148	16184	Sprint United Management Co	2270 Apollo Way	10.94	0.017	0.01		Generator	98	2020 Dataset	0.04	0.44	0.0007	0.001
												0.00	0.000	0.000

Footnotes:

1. Maximally exposed individual
2. These Cancer Risk, Hazard Index, and PM2.5 columns represent the values in the Google Earth Plant Information Table.
3. Each plant may have multiple permits and sources.
4. Permitted sources include diesel back-up generators, gas stations, dry cleaners, boilers, printers, auto spray booths, etc.
5. Fuel codes: 98 = diesel, 189 = Natural Gas.
6. If a Health Risk Screening Assessment (HRSA) was completed for the source, the application number will be listed here.
7. The date that the HRSA was completed.
8. Engineer who completed the HRSA. For District purposes only.
9. All HRSA completed before 1/5/2010 need to be multiplied by an age sensitivity factor of 1.7.
10. The HRSA "Chronic Health" number represents the Hazard Index.
11. Further information about common sources:
    a. Sources that only include diesel internal combustion engines can be adjusted using the BAAQMD's Diesel Multiplier worksheet.
    b. The risk from natural gas boilers used for space heating when <25 MM BTU/hr would have an estimated cancer risk of one in a million or less, and a chronic hazard index of 0.003
    c. BAAQMD Reg 11 Rule 16 required that all co-residential (sharing a wall, floor, ceiling or is in the same building as a residential unit) dry cleaners cease use of perc on July 1, 2010. Therefore, there is no cancer risk, hazard or PM2.5 concentrations from co-residential dry cleaning businesses in the BAAQMD.
    d. Non co-residential dry cleaners must phase out use of perc by Jan. 1, 2023. Therefore, the risk from these dry cleaners does not need to be factored in over a 70-year period, but instead should
    e. Gas stations can be adjusted using BAAQMD's Gas Station Distance Mulitplier worksheet.
    f. Unless otherwise noted, exempt sources are considered insignificant. See BAAQMD Reg 2 Rule 1 for a list of exempt sources.
    g. This spray booth is considered to be insignificant.

2022 CARB & CAPCOA Gasoline Service Station Industrywide Risk Assessment Look-up Tool
Version 1.0 - February 18, 2022

Required Value	User Defined Input	Instructions
Annual Throughput (gallons/year)	1700000	Enter your gas station's annual throughput in gallons of gasoline dispensed per year.
Hourly Dispensing Throughput (gallons/hour)	700	The tool will calculate the maximum hourly vehicle fueling throughput based on annual throughput as defined by Table 10 of the 2020 Gasoline Service Station Industrywide Risk Assessment Technical Guidance Document (Technical Guidance). If a different value is desired please enter it into cell L4.
Hourly Loading Throughput (gallons/hour)	8800	The tool will calculate the maximum hourly loading throughput based on annual throughput as defined by Table 10 of the Technical Guidance. If a different value is desired please enter it into cell L5.
Meteorological Data	San Jose	Select appropriate meteorological data. Met sets provided include 2 rural (Redding and Lancaster) and 4 urban (Fresno, Ontario, San Diego, and San Jose) locations. Use whichever best correlates to your location. If you would like to use site-specific meteorological data please refer to the Variable Met Tool.
Distance to Nearest Resident (meters)	166	Enter the distance to the nearest residential receptor in meters as measured from the edge of the station canopy. Please note that the value must be between 10 and 1000 meters. The distance you input will round down to the nearest receptor distance used in the Technical Guidance (e.g., 19m will return value at 10m distance).
Distance to Nearest Business (meters)		Enter the distance to the nearest worker receptor in meters as measured from the edge of the station canopy. Please note that the value must be between 10 and 1000 meters. The distance you input will round down to the nearest receptor distance used in the Technical Guidance (e.g., 19m will return value at 10m distance).
Distance to Acute Receptor (meters)	153.6	Enter the distance where acute impacts are expected in meters as measured from the edge of the station canopy. This can be the distance to the property boundary, nearest resident, nearest worker, or any other user defined location. Please note that the value must be between 10 and 1000 meters. The distance you input will round down to the nearest receptor distance used in the Technical Guidance (e.g., 19m will return value at 10m distance).
Control Scenario	EVR Phase I & EVR Phase II	Select the appropriate control scenario for your gas station. Please refer to technical Guidance for an explanation of the different control scenarios. Almost all gas stations in California are equipped with EVR Phase I and EVR Phase II controls.
Include Building Downwash Adjustments		Building downwash may over estimate risk results. High results should be investigated further through site-specific health risk assessment.
Risk Value	**Results**	
Max Residential Cancer Risk (chances/million)	0.51	
Max Worker Cancer Risk (chances/million)		
Chronic HI	#N/A	
Acute HI	0.14	