

Appendix A
Air Quality Assessment

1334 AND 1348 MILLER AVENUE SUBDIVISION RESIDENTIAL DEVELOPMENT CONSTRUCTION HEALTH RISK ASSESSMENT

San José, California

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Introduction

The purpose of this report is to address the potential health risk impacts associated with the construction of a proposed residential development located at 1334 and 1348 Miler Avenue in San José, California. The air quality impacts from this project would be associated with demolition of the existing land uses and construction of the residential buildings. 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 single-family residences and structures located on the approximately 1.07-acre project site and construct 9 residential units. There would be a total of 9 homes, made up of 7 single family dwellings and 2 condominiums. Access to the proposed subdivision would be provided via a private street.

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 (PM₁₀), 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 (PM₁₀) and fine particulate matter where particles have a diameter of 2.5 micrometers or less (PM_{2.5}). Elevated concentrations of PM₁₀ 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 health 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 single-family housing surrounding the project site. Additional sensitive receptors are located at further distances from the site.

There are several schools and daycare facilities near the project site. These include Sunshine Montessori preschool located 140 feet to the northwest of the site, Miller Middle School located 610 feet northeast of the site, and the Faith, Hope, and Love Chinese School preschool and childcare facility located 630 feet to the northwest. Additionally, John Muir Elementary School is located over 1,000 feet to the west from the site.

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.

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 and California Ambient Air Quality Standards. The District also has permit authority over most types of stationary equipment utilized for the proposed project. 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.³ The program examines TAC emissions from point 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 being 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 has identified six communities as impacted: Concord, Richmond/San Pablo, Western Alameda County, San José, Redwood City/East Palo Alto, and Eastern San Francisco.

Additionally, overburdened communities are 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 score at or above the 70th percentile, or (ii) within 1,000 feet of any such census tract.⁴ The project site is not located in the San José CARE area or within an overburdened area as identified by CalEnviroScreen as the Project site is scored at the 1st percentile.⁵

The BAAQMD California Environmental Quality Act (CEQA) *Air Quality Guidelines*⁶ 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

³ See BAAQMD: <https://www.baaqmd.gov/community-health/community-health-protection-program/community-air-risk-evaluation-care-program> , accessed 2/18/2021.

⁴ See BAAQMD: https://www.baaqmd.gov/~media/dotgov/files/rules/reg-2-permits/2021-amendments/documents/20210722_01_appendixd_mapsofverburdenedcommunities-pdf.pdf?la=en , accessed 10/1/2021.

⁵ OEHHA, CalEnviroScreen 4.0 Indicator Maps <https://oehha.ca.gov/calenviroscreen/report/calenviroscreen-40>

⁶ Bay Area Air Quality Management District, 2017. *CEQA Air Quality Guidelines*. May.

impacts during the environmental review process consistent with CEQA requirements including thresholds of significance, mitigation measures, and background air quality information. They also include assessment methodologies for air toxics, odors, and greenhouse gas emissions. *Attachment 1* includes detailed health risk modeling methodology.

San José Envision 2040 General Plan

The San José Envision 2040 General Plan includes goals, policies, and actions to reduce exposure of the City's sensitive population to exposure of air pollution and toxic air contaminants or TACs. The following goals, policies, and actions are applicable to the proposed project and this assessment:

Applicable Goals – Air Pollutant Emission Reduction

Goal MS-10 Minimize emissions from new development.

Applicable Policies – Air Pollutant Emission Reduction

- MS-10.1 Assess projected air emissions from new development in conformance with the Bay Area Air Quality Management District (BAAQMD) CEQA Guidelines and relative to state and federal standards. Identify and implement feasible air emission reduction measures.
- MS-10.2 Consider the cumulative air quality impacts from proposed developments for proposed land use designation changes and new development, consistent with the region's Clean Air Plan and State law.
- MS-10.3 Promote the expansion and improvement of public transportation services and facilities, where appropriate, to both encourage energy conservation and reduce air pollution.

Applicable Goals – Toxic Air Contaminants

Goal MS-11 Minimize exposure of people to air pollution and toxic air contaminants such as ozone, carbon monoxide, lead, and particulate matter.

Applicable Policies – Toxic Air Contaminants

- MS-11.2 For projects that emit toxic air contaminants, require project proponents to prepare health risk assessments in accordance with BAAQMD-recommended procedures as part of environmental review and employ effective mitigation to reduce possible health risks to a less than significant level. Alternatively, require new projects (such as, but not limited to, industrial, manufacturing, and processing facilities) that are sources of TACs to be located an adequate distance from residential areas and other sensitive receptors.
- MS-11.4 Encourage the installation of appropriate air filtration at existing schools, residences, and other sensitive receptor uses adversely affected by pollution sources.

MS-11.5 Encourage the use of pollution absorbing trees and vegetation in buffer areas between substantial sources of TACs and sensitive land uses.

Actions – Toxic Air Contaminants

MS-11.7 Consult with BAAQMD to identify stationary and mobile TAC sources and determine the need for and requirements of a health risk assessment for proposed developments.

MS-11.8 For new projects that generate truck traffic, require signage which reminds drivers that the State truck idling law limits truck idling to five minutes.

Applicable Goals – Construction Air Emissions

Goal MS-13 Minimize air pollutant emissions during demolition and construction activities

Applicable Policies – Construction Air Emissions

MS-13.1 Include dust, particulate matter, and construction equipment exhaust control measures as conditions of approval for subdivision maps, site development and planned development permits, grading permits, and demolition permits. At minimum, conditions shall conform to construction mitigation measures recommended in the current BAAQMD CEQA Guidelines for the relevant project size and type.

Applicable Actions – Construction Air Emissions

MS-13.4 Adopt and periodically update dust, particulate, and exhaust control standard measures for demolition and grading activities to include on project plans as conditions of approval based upon construction mitigation measures in the BAAQMD CEQA Guidelines.

Significance Thresholds

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.

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, NO _x = nitrogen oxides, PM ₁₀ = coarse 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.		

Construction Health Risk Impacts and Mitigation Measures

Project impacts related to increased health risk can occur either by generating emissions of TACs and air pollutants and by introducing a new sensitive receptor in proximity to an existing source of TACs. Temporary project construction activity would generate emissions of DPM from equipment and trucks and also generate dust on a temporary basis that could affect nearby sensitive receptors. A construction community health risk assessment was prepared to address project construction impacts on the surrounding off-site sensitive receptors.

Additionally, the project could introduce new residents that are sensitive receptors, who would be exposed to existing sources of TACs and localized air pollutants in the vicinity of the project. Therefore, the impact of the existing sources of TAC upon the existing sensitive receptors and new incoming sensitive receptors was assessed.

Health 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. Construction equipment and associated heavy-duty truck traffic generates diesel exhaust, which is a known TAC. These exhaust emissions pose health risks for sensitive receptors such as surrounding residents. The primary health risk impact issues associated with construction emissions are cancer risk and exposure to PM_{2.5}. 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}.⁷ This assessment included dispersion

⁷ DPM is identified by California as a toxic air contaminant due to the potential to cause cancer.

modeling to predict the offsite and onsite concentrations resulting from project construction, so that lifetime cancer risks and non-cancer health effects could be evaluated. The methodology for computing health risks impacts is contained in *Attachment 1*.

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.⁸ 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	2.00	Dwelling Unit	2,179	1.07
Single Family Housing	7.00	Dwelling Unit	37,699	
Other Asphalt Surfaces	7.30	1,000-sf	7,304	

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 information generated using CalEEMod defaults for a project of this type and size.

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. The construction schedule assumed that the earliest possible start date would be June 2023 and would be completed over a period of approximately 11 months, or 246 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

⁸ See CARB's EMFAC2021 Emissions Inventory at <https://arb.ca.gov/emfac/emissions-inventory>.

haul trips that were computed based on the estimate of demolition material to be exported, estimate of 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 estimated demolition and grading volumes provided.⁹ 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 LDT1 and 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 2023-2024 were used in these calculations. Table 3 provides the traffic inputs that were combined with the EMFAC2021 emission database to compute vehicle emissions.

⁹ 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	260	-	73	Est. 6,750-sf of existing building demolition and est. 5,150-sf of pavement demolition. CalEEMod default worker trips
Site Preparation	16	-	-	CalEEMod default worker trips.
Grading	40	-	250	Est. 1,000-cy soil export and 1,000-cy soil import. CalEEMod default worker trips.
Trenching	20	-	-	CalEEMod default worker trips.
Building Construction	1,400	400	200	Est. 100 concrete-truck round trips. CalEEMod default worker and vendor trips.
Architectural Coating	10	-	-	CalEEMod default worker trips.
Paving	130	-	62	Est. 31 asphalt truck round trips. CalEEMod default worker trips.
Notes: ¹ Based on 2023-2024 EMFAC2021 light-duty vehicle fleet mix for Santa Clara County.				
² Includes demolition and soil import/export trips estimated by CalEEMod based on estimated amount of material to be removed. Concrete and asphalt trips estimated based on estimated 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. Table 4 shows the unmitigated annualized average daily construction emissions of ROG, NO_x, PM₁₀ exhaust, and PM_{2.5} exhaust during construction. As indicated in Table 4, predicted unmitigated annualized project construction emissions would not exceed the BAAQMD significance thresholds during any year of construction.

Table 4. Construction Period Emissions

Year	ROG	NO _x	PM ₁₀ Exhaust	PM _{2.5} Exhaust
<i>Construction Emissions (Tons)</i>				
2023	0.12	0.95	0.04	0.04
2024	0.34	0.46	0.02	0.02
<i>Average Daily Construction Emissions (pounds/day)</i>				
2023 (153 construction workdays)	1.53	12.39	0.56	0.52
2024 (93 construction workdays)	7.31	9.81	0.41	0.39
<i>BAAQMD Thresholds (pounds per day)</i>	54 lbs./day	54 lbs./day	82 lbs./day	54 lbs./day
Exceed Threshold?	No	No	No	No

Construction activities, particularly during site preparation and grading, would temporarily generate fugitive dust in the form of PM₁₀ 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. San Jose General Policy MS-10.1 specifies that projects should assess projected air emissions from new development in conformance with the BAAQMD CEQA Guidelines, relative to state and federal standards and identify and implement feasible air emission reduction measures. Thus, San Jose General Policy MS-10.1 requires construction projects implement BAAQMD-Recommended Standard Measures to control PM₁₀ and PM_{2.5} emissions. *Mitigation Measure AQ-1 would implement BAAQMD's standard measures.*

Mitigation Measure AQ-1: Include measures to control dust and exhaust during construction.

During any construction period ground disturbance, the applicant shall ensure that the project contractor implement measures to control dust and exhaust. Implementation of the 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. Additional measures are identified to reduce construction equipment exhaust emissions. The contractor shall implement the following best management practices that are required of all projects:

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. The measures above are consistent with BAAQMD-recommended "best management practices" for reducing fugitive particulate matter that are contained in the BAAQMD CEQA Air Quality Guidelines.

Health Risk from Project Construction

Construction Emissions

The CalEEMod model emissions provided total annual PM₁₀ 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 0.06 tons (119.4 pounds). Uncontrolled fugitive dust (PM_{2.5}) emissions were calculated by CalEEMod as 0.01 tons (20.9 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.^{10,11} Emission sources for the construction site were grouped into two categories: exhaust emissions of DPM and fugitive PM_{2.5} dust emissions.

Construction Sources

Combustion equipment DPM exhaust emissions were modeled as an array of point sources to reflect construction equipment and trucks operating at the site. These sources included nine-foot release heights (construction equipment exhaust stack height) that were placed at 23 feet (7 meter) intervals throughout the construction site. This resulted in 88 individual point sources being used to represent mobile equipment DPM exhaust emissions in the construction area. The total DPM emissions were divided into each of the point sources that were spread throughout the project construction site. In addition, the following stack parameters were used for each point source: stack diameter of 2.5 inches, an exhaust temperature of 918°F, and an exit velocity of 309 feet per second. Since these are point sources, plume rise is calculated by the AERMOD dispersion model. Emissions from vehicle travel on- and off-site were also distributed among the point sources throughout the site. The locations of the point sources used for the modeling are identified in Figure 1.

For modeling fugitive PM_{2.5} emissions, an area source was used with a near-ground level release. 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 2-meter (7 feet) 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.

AERMOD Inputs and Meteorological Data

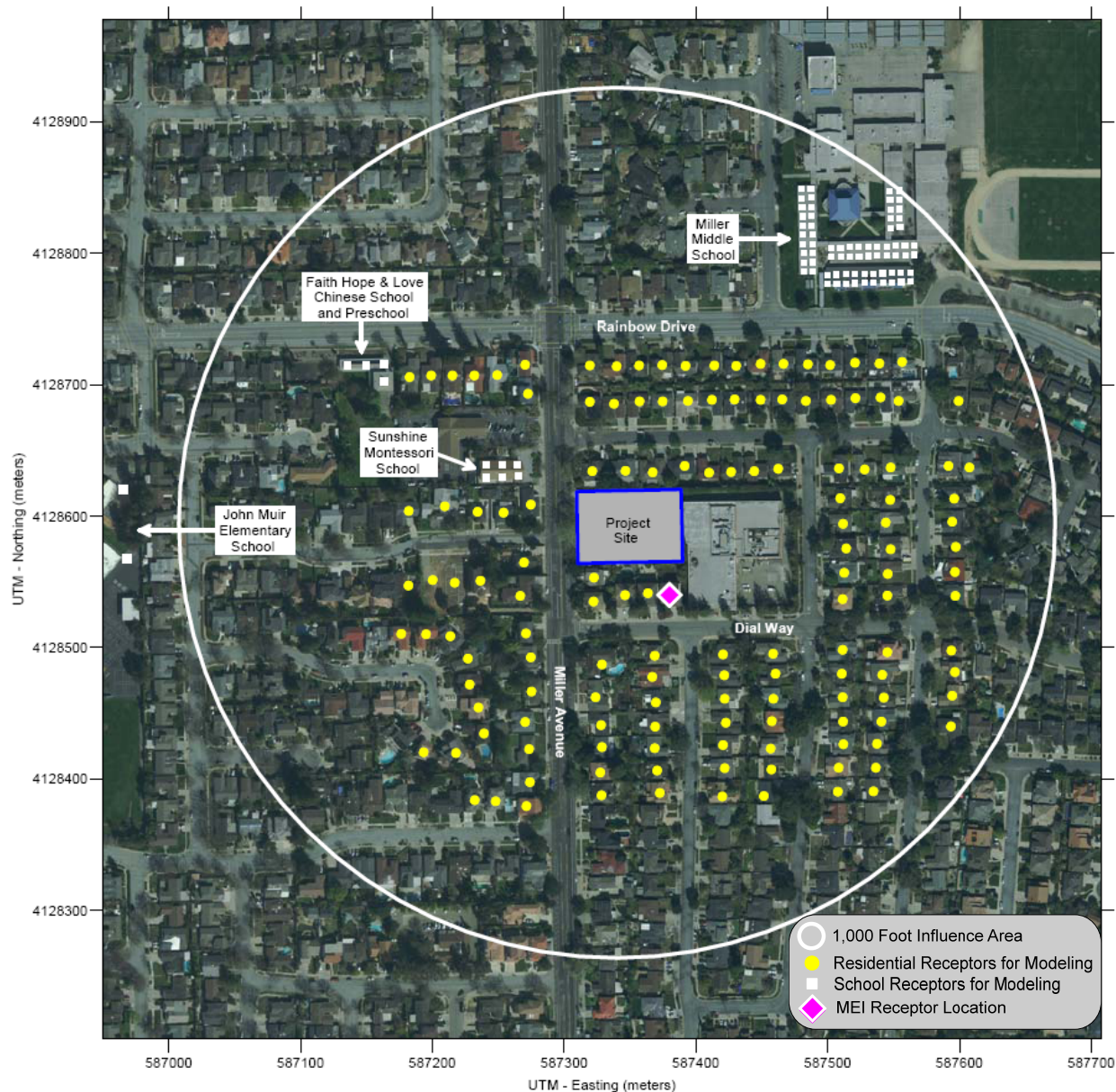
The modeling used a five-year data set (2013 - 2017) of hourly meteorological data from the San Jose Airport prepared for use with the AERMOD model by BAAQMD. Construction emissions were modeled as occurring daily between 7:00 a.m. to 4:00 p.m. when the majority of construction activity is expected to occur. Annual DPM and PM_{2.5} concentrations from construction activities during the 2023 and 2024 period were calculated using the model. DPM and PM_{2.5} concentrations were calculated at nearby sensitive receptors. Receptor heights of 5 feet (1.5 meters) were used to represent the breathing height of residences in nearby single-

¹⁰ 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>

¹¹ 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

family residences.¹² A receptor height of 3 feet (1 meter) was used to represent the breathing height of children at the nearby schools and daycare facilities.

Figure 1. Locations of Project Construction Site, Off-Site Sensitive Receptors, and Maximum TAC Impact



Summary of Construction Health Risk Impacts

The maximum increased cancer risks were calculated using the modeled TAC concentrations combined with the OEHHA guidance for age sensitivity factors and exposure parameters as

¹² 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>

recommended by BAAQMD (see *Attachment 1*). Non-cancer health hazards (HI) and maximum PM_{2.5} concentrations were also calculated and identified. Recommended age-sensitivity factors that reflect the greater sensitivity of infants and small children to cancer causing TACs were used in calculating increased cancer risks. Third-trimester, infant, child, and adult exposures were assumed to occur at all residences during the entire construction period, while child exposures were assumed to occur at the daycares and schools.

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 µg/m³.

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 individual (MEI) for cancer risk and PM_{2.5} concentration. Results of this assessment indicated that the construction MEI for cancer risk and PM_{2.5} concentration occurred at a single-family home south of the project site. Table 5 summarizes the maximum cancer risks, PM_{2.5} concentrations, and health hazard indexes for project related construction activities affecting the construction MEI. *Attachment 4* to this report includes the emission calculations used for the construction area source modeling and the cancer risk calculations.

Additionally, modeling was conducted to predict the cancer risks, non-cancer health hazards, and maximum PM_{2.5} concentrations associated with construction activities at the nearby schools and daycare facilities. These include the Sunshine Montessori preschool, Miller Middle School, the Faith, Hope, and Love Chinese School preschool and childcare facility, and John Muir Elementary School. The maximum increased cancer risks were adjusted using child exposure parameters. The maximum school child uncontrolled cancer risk and PM_{2.5} concentration occurred at Sunshine Montessori preschool. The maximum cancer risk, PM_{2.5} concentrations and HIs at all nearby schools and daycare facilities would not exceed their respective BAAQMD single-source significance thresholds, as shown in Table 5. Details of the construction health risk impact calculations for the schools and daycares are included in *Attachment 4*.

As shown in Table 5, the maximum cancer risk exceeds its respective BAAQMD single-source threshold due to project construction. However, with the implementation of *Mitigation Measure AQ-1 and AQ-2*, the maximum cancer risk would no longer exceed its single-source threshold. The annual PM_{2.5} concentration and HI from uncontrolled (i.e., unmitigated) construction activities at the MEI location would not exceed the BAAQMD single-source thresholds.

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

Source		Cancer Risk (per million)	Annual PM _{2.5} (µg/m ³)	Hazard Index
Project Impact				
Project Construction	Unmitigated	15.8 (infant)	0.12	0.01
	Mitigated*	4.4 (infant)	0.07	>0.01
BAAQMD Single-Source Threshold		10	0.3	1.0
Exceed Threshold?	Unmitigated	Yes	<i>No</i>	<i>No</i>
	Mitigated*	<i>No</i>	<i>No</i>	<i>No</i>
Sunshine Montessori Preschool				
Project Construction	Unmitigated	2.8 (child)	0.05	>0.01
	Mitigated*	0.08 (child)	0.03	>0.01
BAAQMD Single-Source Threshold		10	0.3	1.0
Exceed Threshold?	Unmitigated	<i>No</i>	<i>No</i>	<i>No</i>
	Mitigated*	<i>No</i>	<i>No</i>	<i>No</i>

* Construction equipment with Tier 4 interim engines and BMPs as Mitigation Measures.

Mitigation Measure AQ-2: Use construction equipment that has low diesel particulate matter exhaust to minimize emissions and limit use of diesel-powered stationary equipment

Implement a feasible plan to reduce DPM emissions by 40 percent such that increased cancer risk and annual PM_{2.5} concentrations from construction would be reduced below TAC significance levels as follows:

1. All construction equipment larger than 25 horsepower used at the site for more than two continuous days or 20 hours total shall meet U.S. EPA Tier 4 emission standards for particulate matter (PM₁₀ and PM_{2.5}), 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 40 percent reduction in particulate matter exhaust in comparison to uncontrolled equipment; alternatively (or in combination).
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 40 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 engines 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-1 and AQ-2

CalEEMod was used to compute emissions associated with this mitigation measure assuming that all equipment met U.S. EPA Tier 4 Interim engine standards and BAAQMD best management practices for construction were included. With these measures implemented, the project's construction cancer risk impact, assuming infant exposure, would be reduced by 72 percent to 4.4 per million at the residential MEI and to 0.8 per million at the school MEI. A plan that reduces DPM emissions by 40 percent would reduce cancer risk to below the single-source threshold. As a result, the project's construction cancer risk would be reduced below the BAAQMD single-source threshold.

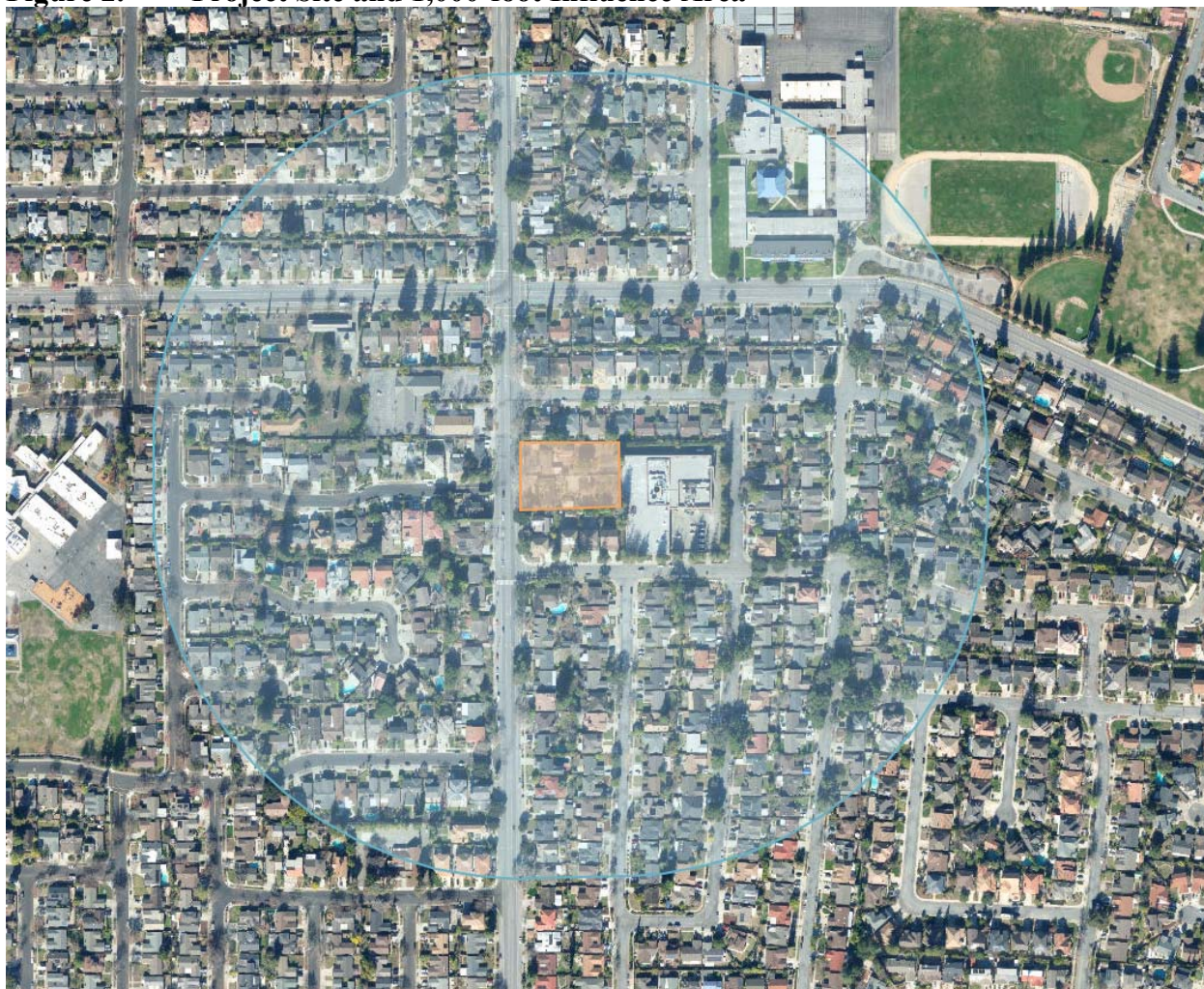
Cumulative Health Risks of all TAC Sources at the Off-Site Project MEI

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 stationary sources identified by BAAQMD.

A review of the project area using traffic data collected by the City of San Jose indicated that no roadways within the influence area would have traffic exceeding 10,000 vehicles per day.¹³ A review of BAAQMD's *Permitted Stationary Sources 2020* geographic information systems (GIS) map tool identified one stationary source with the potential to affect the project site and MEI. Figure 2 shows the project area included within the influence area. Details of the modeling and health risk calculations are included in *Attachment 4*.

¹³ City of San Jose. *Traffic Volume*. Web:
<https://csj.maps.arcgis.com/apps/webappviewer/index.html?id=067fbd3db8dd44f8a60f48148331b3d7>

Figure 2. Project Site and 1,000-foot Influence Area



BAAQMD Permitted Stationary Sources

Permitted stationary sources of air pollution near the project site were identified using BAAQMD's *Permitted Stationary Sources 2020* GIS website,¹⁴ which identifies the location of nearby stationary sources and their estimated risk and hazard impacts, including emissions and adjustments to account for new OEHHA guidance. One source, a generator, was identified using this tool. A Stationary Source Information Form (SSIF) containing the identified source was prepared and submitted to BAAQMD. BAAQMD provided updated emissions data and screening risk values for the source.¹⁵ The screening risk and hazard levels provided by BAAQMD for source #13532 was well over their risk thresholds, so refined modeling was performed to provide a more accurate assessment of impacts from this source.

¹⁴ BAAQMD, <https://baaqmd.maps.arcgis.com/apps/webappviewer/index.html?id=845658c19eae4594b9f4b805fb9d89a3>

¹⁵ Correspondence with Alison Kirk, BAAQMD, January 13, 2023.

To estimate potential increased cancer risks and PM_{2.5} impacts from generator source #13532, the U.S. EPA AERMOD dispersion model was used to calculate the maximum annual DPM concentration at the construction MEI. Emissions of DPM were based on PM₁₀ exhaust emissions provided by BAAQMD for the operation of generator source #13532. The same construction MEI, breathing height, and BAAQMD San José International Airport meteorological data used in the construction dispersion modeling were used for the generator source #13532 modeling. Stack parameters (stack height and diameter, exhaust flow rate, and exhaust gas temperature) for modeling the generator was based on BAAQMD default parameters for emergency generators.¹⁶ Annual average DPM and PM_{2.5} concentrations were modeled assuming that generator testing could occur from 9:00 a.m. – 5:00 p.m., 365 days per year.

Figure 3 shows the modeled on-site receptors, the off-site MEI receptor, and generator stack location. Community risk impacts from stationary source upon the MEI are reported in Table 6. *Attachment 4* includes the emission calculations used for generator source #13532 modeling and the cancer risk calculations.

Summary of Health Risks at the Project MEI

Table 6 reports both the project and cumulative community risk impacts at the sensitive receptor most affected by the project (i.e., the MEI). The health risks from project activities (construction and operation) would exceed the maximum increased cancer risk single-source threshold, as discussed above. However, the cumulative source thresholds would not be exceeded.

Table 6. Cumulative Community Risk Impacts at the Location of the Project MEI

Source		Cancer Risk (per million)	Annual PM _{2.5} (µg/m ³)	Hazard Index
Project Impacts				
Total/Maximum Project Impact (Years 0-30)	Unmitigated	15.8 (infant	0.12	0.01
	Mitigated	4.4 (infant)	0.07	<0.01
BAAQMD Single-Source Threshold		10	0.3	1.0
Exceed Threshold?	Unmitigated	Yes	No	No
	Mitigated	No	No	No
Existing Cumulative Sources				
Pacific Bell (Facility ID #13532, Generator)		6.0	<0.01	<0.01
Combined Sources	Unmitigated	21.8	<0.13	<0.02
	Mitigated	10.4	<0.08	<0.02
BAAQMD Cumulative Source Threshold		100	0.8	10.0
Exceed Threshold?	Unmitigated	No	No	No
	Mitigated	No	No	No

¹⁶ The San Francisco Community Risk Reduction Plan: Technical Support Document, BAAQMD, San Francisco Dept. of Public Health, and San Francisco Planning Dept., December 2012

Non-CEQA: On-Site Community Risk Assessment for TAC Sources - New Project Residences

The City's General Plan Policy MS-11.1 requires new residential development projects and projects categorized as sensitive receptors to incorporate effective mitigation into project designs to avoid significant risks to health and safety required when new residential are proposed near existing sources of TACs. BAAQMD's recommended thresholds for health risks and hazards, shown in Table 1, are used to evaluate on-site exposure.

In addition to evaluating health impact from project construction, a health risk assessment was completed to assess the impact existing TAC sources would have on the new proposed sensitive receptors (residents) that that project would introduce. The same TAC sources identified above were used in this health risk assessment.¹⁷ Figure 3 shows the on-site sensitive receptors in relation to the nearby TAC sources. All on-site community task results are listed in Table 7.

Stationary Sources

The stationary source modeling analysis for the new project sensitive receptors was conducted in the same manner as described above for the construction MEI. Table 7 shows the health risk assessment results from the stationary source.

Combined Community Health Risk at Project Site

Health risk impacts from the existing TAC source upon the project site are reported in Table 7. The risks from the singular TAC source are compared against the BAAQMD single-source threshold. The risks from sources are then combined and compared against the BAAQMD cumulative-source threshold. As shown, the cancer risk from generator #13532 exceeds the BAAQMD single-source threshold at the project site sensitive receptors. The annual PM_{2.5} concentrations and HI from the source does not exceed their single-source or cumulative-source BAAQMD thresholds and the cancer risk does not exceed the cumulative-source threshold.

Table 7. Cumulative Community Risk Impacts Upon the On-site Sensitive Receptors

Source	Cancer Risk (per million)	Annual PM _{2.5} (µg/m ³)	Hazard Index
Pacific Bell (Facility ID #13532, Generator)			
Without MERV13	24.0	0.03	<0.01
With MERV13	7.2	0.01	<0.01
BAAQMD Single-Source Threshold	10	0.3	1.0
Exceed Threshold?			
Without MERV13	Yes	No	No
With MERV13	No	No	No
BAAQMD Cumulative Source Threshold	100	0.8	10.0
Exceed Threshold?	No	No	No

¹⁷ 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.

Figure 3. Locations of Project Site, Generator, Construction MEI and On-Site Sensitive Receptors, and Receptors with Maximum TAC Impacts



Recommended Design Features to Reduce Project Receptor Exposure

Filtration in ventilation systems at the project site would be recommended to reduce the level of harmful pollutants to below the significant thresholds. Exposure to cancer risk from generator source #13532 is above the BAAQMD single source threshold. Cancer risk is mostly the result of exposure to diesel exhaust particulate matter. The project shall include the following measures to minimize long-term increased cancer risk exposure for new project occupants:

1. Install air filtration and fresh air ventilation system intakes for all 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.
5. If source #135321 is removed or altered, then this measure is no longer necessary.

Effectiveness of Recommended Design Features

A properly installed and operated ventilation system with MERV13 would achieve an 80-percent reduction for small particulates.¹⁸ The overall effectiveness calculations take into account the amount of time spent outdoors and 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, then the overall effectiveness of a MERV13 filtration system would be about 70-percent for PM_{2.5} exposure. For generator source #13532, this would reduce the cancer risk to 7.2 in a million. With this recommended design feature, impacts from generator source #13532 would be below the single--source threshold.

¹⁸ 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 health 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.

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

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 2015.¹⁹ 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.²⁰ 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.²¹ 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

¹⁹ 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.

²⁰ CARB, 2015. *Risk Management Guidance for Stationary Sources of Air Toxics*. July 23.

²¹ 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 are 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:

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

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)

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

Where:

C_{air} = concentration in air (µg/m³)

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 →	3 rd Trimester	0<2	2 < 16	16 - 30
DPM Cancer Potency Factor (mg/kg-day) ⁻¹		1.10E+00	1.10E+00	1.10E+00	1.10E+00
Daily Breathing Rate (L/kg-day) 80 th Percentile Rate		273	758	572	261
Daily Breathing Rate (L/kg-day) 95 th Percentile Rate		361	1,090	745	335
8-hour Breathing Rate (L/kg-8 hours) 95 th 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 ($\mu\text{g}/\text{m}^3$).

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: Miller Ave Subdivision DEFAULTS

Complete ALL Portions in Yellow

See Equipment Type TAB for type, horsepower and load factor

Project Size: 8 Dwelling Units 1.07 total project acres disturbed

37,699 sf s.f. single-family 2,179-sf condo

s.f. retail

s.f. office/commercial

7,304 s.f. other, specify: Private street

s.f. parking garage spaces

s.f. parking lot spaces

Construction Days (i.e. M-F) to

Construction Hours am to pm

Pile Driving? Y/N?

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

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: 6/1/2023	Total phase: 20					Overall Import/Export Volumes
	End Date: 6/28/2023							
1	Concrete/Industrial Saws	81	0.73	8	20	8	9461	Demolition Volume
	Excavators	158	0.38			0	0	Square footage of buildings to be demolished
1	Rubber-Tired Dozers	247	0.4	8	20	8	15808	(or total tons to be hauled)
3	Tractors/Loaders/Backhoes	97	0.37	8	20	8	17227	6,750 square feet or
	Other Equipment?							7 Hauling volume (tons)
								Any pavement demolished and hauled? 5,150 square feet
	Site Preparation	Start Date: 6/29/2023	Total phase: 2					
	End Date: 6/30/2023							
1	Graders	187	0.41	8	2	8	1227	
1	Rubber Tired Dozers	247	0.4	7	2	7	1383	
1	Tractors/Loaders/Backhoes	97	0.37	8	2	8	574	
	Other Equipment?							
	Grading / Excavation	Start Date: 7/1/2023	Total phase: 4					Soil Hauling Volume
	End Date: 7/6/2023							
	Excavators	158	0.38			0	0	Export volume = 1,000 cubic yards?
1	Graders	187	0.41	8	4	8	2453	Import volume = 1,000 cubic yards?
1	Rubber Tired Dozers	247	0.4	8	4	8	3162	
	Concrete/Industrial Saws	81	0.73			0	0	
2	Tractors/Loaders/Backhoes	97	0.37	7	4	7	2010	
	Other Equipment?							
	Trenching/Foundation	Start Date: 7/1/2023	Total phase: 4					
	End Date: 7/6/2023							
1	Tractor/Loader/Backhoe	97	0.37	8	4	8	1148	
1	Excavators	158	0.38	8	4	8	1921	
	Other Equipment?							
	Building - Exterior	Start Date: 7/7/2023	Total phase: 200					Cement Trucks? 100 Total Round-Trips
	End Date: 4/11/2024							
1	Cranes	231	0.29	6	200	6	80388	Electric? (Y/N) Otherwise assumed diesel
1	Forklifts	89	0.2	6	200	6	21360	Liquid Propane (LPG)? (Y/N) Otherwise Assumed diesel
1	Generator Sets	84	0.74	8	200	8	99456	Or temporary line power? (Y/N)
1	Tractors/Loaders/Backhoes	97	0.37	6	200	6	43068	
3	Welders	46	0.45	8	200	8	99360	
	Other Equipment?							
	Building - Interior/Architectural Coating	Start Date: 4/12/2024	Total phase: 10					
	End Date: 4/25/2024							
1	Air Compressors	78	0.48	6	10	6	2246	
	Aerial Lift	62	0.31			0	0	
	Other Equipment?							
	Paving	Start Date: 4/26/2024	Total phase: 10					Asphalt? cubic yards or 31 round trips?
	Start Date: 5/9/2024							
1	Cement and Mortar Mixers	9	0.56	6	10	6	302	
1	Pavers	130	0.42	6	10	6	3276	
1	Paving Equipment	132	0.36	8	10	8	3802	
1	Rollers	80	0.38	7	10	7	2128	
1	Tractors/Loaders/Backhoes	97	0.37	8	10	8	2871	
	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	

Equipment types listed in "Equipment Types" worksheet tab.

Equipment listed in this sheet is to provide an example of inputs

It is assumed that water trucks would be used during grading

Add or subtract phases and equipment, as appropriate

Modify horsepower or load factor, as appropriate

Complete one sheet for each project component

Construction Criteria Air Pollutants							
Unmitigated	ROG	NOX	PM10 Exhaust	PM2.5 Exhaust	PM2.5 Fugitive	CO2e	
Year	Tons					MT	
Construction Equipment							
2023	0.12	0.93	0.04	0.04	0.01	142.76	
2024	0.34	0.44	0.02	0.02	0.00	74.69	
EMFAC							
2023	0.002	0.02	0.001	0.001	0.001	16.03	
2024	0.001	0.01	0.001	0.0003	0.001	9.57	
Total Construction Emissions by Year							
2023	0.12	0.95	0.04	0.04		158.78	
2024	0.34	0.46	0.02	0.02		84.25	
	Total Construction Emissions						
Tons	0.46	1.40	0.06	0.06		243.04	
Pounds/Workdays	Average Daily Emissions					Workdays	
2023	1.53	12.39	0.56	0.52			153
2024	7.31	9.81	0.41	0.39			93
Threshold - lbs/day	54.0	54.0	82.0	54.0			
	Total Construction Emissions						
Pounds	8.85	22.21	0.97	0.91		0.00	
Average	3.72	11.42	0.50	0.47		0.00	246.00
Threshold - lbs/day	54.0	54.0	82.0	54.0			

Mitigated Construction Criteria Air Pollutants							
Mitigated	ROG	NOX	PM10 Exhaust	PM2.5 Exhaust	M2.5 Fugitiv	CO2e	
Year	Tons					MT	
Construction Equipment							
2023			0.01		0.005		
2024			0.01		0.00		
EMFAC							
2023							
2024							
Total Construction Emissions by Year							
2023-2024							
2024							
	Total Construction Emissions						
Tons	0.00	0.00	0.00	0.00		0.00	

Miller Ave Subdivision

Unmitigated DPM

Year	CalEEMod DPM	DPM EMFAC2021	Unmitigated Emissions		CalEEMod Fug PM2.5	Fug PM2.5 EMFAC2021	Unmitigated Emissions
2023	0.0412	0.0001	0.0413		0.0104	0.00004	0.0104
2024	0.0184	0.0000	0.0184		0.0000	0.00003	0.00003

Mitigated DPM

Year	CalEEMod DPM	DPM EMFAC2021	Mitigated Emissions		CalEEMod Fug PM2.5	Fug PM2.5 EMFAC2021	Mitigated Emissions
2023	0.0107	0.0001	0.0108		0.0047	0.00004	0.0047
2024	0.0061	0.00004	0.0061		0.0000	0.00003	0.00003

Pavement Demo

	sq in	sq ft	Cft	CY	Deliveries	Trips
Concrete		3500	3500	129.6296	15.55556	31
Asphalt		0	0	0	0	0
Asphalt Demo		4850	1212.5	44.90741	5.388889	11

Building Const

	sq in	sq ft	Cft	CY	Deliveries	Trips
Concrete		22500	22500	833.3333	100	200
Asphalt		0	0	0	0	0
Asphalt Demo		0	0	0	0	0

Paving

	sq in	sq ft	Cft	CY	Deliveries	Trips
Concrete		22500	22500	833.3333	100	200
Asphalt		0	0	0	0	0
Asphalt Demo		0	0	0	0	0

Asphalt

	sq in	sq ft	Cft	CY	Deliveries	Trips
Concrete		0	0	0	0	0
Asphalt		27250	6812.5	252.3148	30.27778	61
Asphalt Demo		0	0	0	0	0

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

Santa Clara County, Annual

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Single Family Housing	7.00	Dwelling Unit	1.07	37,699.00	20
Condo/Townhouse	2.00	Dwelling Unit	0.00	2,179.00	6
Other Asphalt Surfaces	7.30	1000sqft	0.00	7,304.00	0

1.2 Other Project Characteristics

Urbanization	Urban	Wind Speed (m/s)	2.2	Precipitation Freq (Days)	58
Climate Zone	4			Operational Year	2025
Utility Company	Pacific Gas and Electric Company				
CO2 Intensity (lb/MW hr)	203.98	CH4 Intensity (lb/MW hr)	0.033	N2O Intensity (lb/MW hr)	0.004

1.3 User Entered Comments & Non-Default Data

Off-road Equipment - Defaults

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

Construction Off-road Equipment Mitigation - BMPs tier 4 interim mitigation.

[illegible]

Miller Avenue Subdivision, San Jose - Santa Clara County, Annual

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

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
tblConstructionPhase	PhaseEndDate	5/9/2024	4/25/2024
tblConstructionPhase	PhaseEndDate	4/25/2024	5/9/2024
tblConstructionPhase	PhaseStartDate	4/26/2024	4/12/2024
tblConstructionPhase	PhaseStartDate	4/12/2024	4/26/2024
tblGrading	MaterialExported	0.00	1,000.00
tblGrading	MaterialImported	0.00	1,000.00
tblLandUse	LandUseSquareFeet	12,600.00	37,699.00
tblLandUse	LandUseSquareFeet	2,000.00	2,179.00
tblLandUse	LotAcreage	2.27	1.07
tblLandUse	LotAcreage	0.13	0.00
tblLandUse	LotAcreage	0.17	0.00
tblOffRoadEquipment	LoadFactor	0.37	0.37
tblOffRoadEquipment	LoadFactor	0.38	0.38
tblOffRoadEquipment	OffRoadEquipmentType		Tractors/Loaders/Backhoes
tblOffRoadEquipment	OffRoadEquipmentType		Excavators
tblTripsAndVMT	HaulingTripNumber	31.00	0.00
tblTripsAndVMT	HaulingTripNumber	250.00	0.00
tblTripsAndVMT	VendorTripNumber	2.00	0.00
tblTripsAndVMT	WorkerTripNumber	13.00	0.00
tblTripsAndVMT	WorkerTripNumber	8.00	0.00
tblTripsAndVMT	WorkerTripNumber	10.00	0.00
tblTripsAndVMT	WorkerTripNumber	5.00	0.00
tblTripsAndVMT	WorkerTripNumber	7.00	0.00
tblTripsAndVMT	WorkerTripNumber	1.00	0.00

Miller Avenue Subdivision, San Jose - Santa Clara County, Annual

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

tblTripsAndVMT	WorkerTripNumber	13.00	0.00
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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	0.1152	0.9285	0.9641	1.7100e-003	0.0239	0.0412	0.0651	0.0104	0.0395	0.0499	0.0000	142.0831	142.0831	0.0269	0.0000	142.7557
2024	0.3388	0.4448	0.5163	9.0000e-004	0.0000	0.0184	0.0184	0	0.0177	0.0177	0.0000	74.3598	74.3598	0.0131	0.0000	74.688
Maximum	0.3388	0.9285	0.9641	1.7100e-003	0.0239	0.0412	0.0651	0.0104	0.0395	0.0499	0.0000	142.0831	142.0831	0.0269	0.0000	142.7557

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2023	0.0312	0.7400	1.0500	1.7100e-003	0.0107	0.0107	0.0214	4.67E-03	0.0107	0.0154	0.0000	142.0829	142.0829	0.0269	0.0000	142.7555
2024	0.2984	0.4036	0.5571	9.0000e-004	0.0000	6.11E-03	6.1100e-003	0	6.1100e-003	6.1100e-003	0.0000	74.3597	74.3597	0.0131	0.0000	74.6880
Maximum	0.2984	0.7400	1.0500	1.7100e-003	0.0107	0.0107	0.0214	4.6700e-003	0.0107	0.0154	0.0000	142.0829	142.0829	0.0269	0.0000	142.7555

Miller Avenue Subdivision, San Jose - 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
Percent Reduction	27.38	16.72	-8.55	0.00	55.01	71.80	67.00	54.97	70.62	68.23	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	6-1-2023	8-31-2023	0.4735	0.3243
2	9-1-2023	11-30-2023	0.4301	0.3378
3	12-1-2023	2-29-2024	0.4140	0.3378
4	3-1-2024	5-31-2024	0.5089	0.4734
		Highest	0.5089	0.4734

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	6/1/2023	6/28/2023	5	20	
2	Site Preparation	Site Preparation	6/29/2023	6/30/2023	5	2	
3	Grading	Grading	7/1/2023	7/6/2023	5	4	
4	Trenching	Trenching	7/1/2023	7/6/2023	5	4	
5	Building Construction	Building Construction	7/7/2023	4/11/2024	5	200	
6	Architectural Coating	Architectural Coating	4/12/2024	4/25/2024	5	10	
7	Paving	Paving	4/26/2024	5/9/2024	5	10	

Acres of Grading (Site Preparation Phase): 1.88**Acres of Grading (Grading Phase): 4****Acres of Paving: 0****Residential Indoor: 80,753; Residential Outdoor: 26,918; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 438 (Architectural****OffRoad Equipment**

Miller Avenue Subdivision, San Jose - Santa Clara County, Annual

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

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Rubber Tired Dozers	1	8.00	247	0.40
Demolition	Tractors/Loaders/Backhoes	3	8.00	97	0.37
Site Preparation	Graders	1	8.00	187	0.41
Site Preparation	Rubber Tired Dozers	1	7.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Tractors/Loaders/Backhoes	2	7.00	97	0.37
Building Construction	Cranes	1	6.00	231	0.29
Building Construction	Forklifts	1	6.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	1	6.00	97	0.37
Building Construction	Welders	3	8.00	46	0.45
Paving	Cement and Mortar Mixers	1	6.00	9	0.56
Paving	Pavers	1	6.00	130	0.42
Paving	Paving Equipment	1	8.00	132	0.36
Paving	Rollers	1	7.00	80	0.38
Paving	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Architectural Coating	Air Compressors	1	6.00	78	0.48
Trenching	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Trenching	Excavators	1	8.00	158	0.38

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	5	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

Miller Avenue Subdivision, San Jose - Santa Clara County, Annual

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

Grading	4	0.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	7	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
Architectural Coating	1	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

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**

	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					3.3200e-003	0.0000	3.3200e-003	5.0000e-004	0.0000	5.0000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0147	0.1432	0.1346	2.4000e-004		6.7700e-003	6.7700e-003		6.3300e-003	6.3300e-003	0.0000	21.0866	21.0866	5.3500e-003	0.0000	21.2202
Total	0.0147	0.1432	0.1346	2.4000e-004	3.3200e-003	6.7700e-003	0.0101	5.0000e-004	6.3300e-003	6.8300e-003	0.0000	21.0866	21.0866	5.3500e-003	0.0000	21.2202

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
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Miller Avenue Subdivision, San Jose - 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					
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					1.4900e-003	0.0000	1.4900e-003	2.3000e-004	0.0000	2.3000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	4.6300e-003	0.0854	0.1542	2.4000e-004		3.7000e-004	3.7000e-004		3.7000e-004	3.7000e-004	0.0000	21.0865	21.0865	5.3500e-003	0.0000	21.2202
Total	4.6300e-003	0.0854	0.1542	2.4000e-004	1.4900e-003	3.7000e-004	1.8600e-003	2.3000e-004	3.7000e-004	6.0000e-004	0.0000	21.0865	21.0865	5.3500e-003	0.0000	21.2202

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					

[illegible]

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

[illegible]

	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					2.8200e-003	0.0000	2.8200e-003	1.3500e-003	0.0000	1.3500e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	3.0000e-004	5.0700e-003	9.8200e-003	2.0000e-005		3.0000e-005	3.0000e-005		3.0000e-005	3.0000e-005	0.0000	1.5114	1.5114	4.9000e-004	0.0000	1.5236
Total	3.0000e-004	5.0700e-003	9.8200e-003	2.0000e-005	2.8200e-003	3.0000e-005	2.8500e-003	1.3500e-003	3.0000e-005	1.3800e-003	0.0000	1.5114	1.5114	4.9000e-004	0.0000	1.5236

[illegible]

Miller Avenue Subdivision, San Jose - Santa Clara County, Annual

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

[illegible]

3.4 Grading - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0143	0.0000	0.0143	6.8700e-003	0.0000	6.8700e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.6700e-003	0.0289	0.0174	4.0000e-005		1.2100e-003	1.2100e-003		1.1100e-003	1.1100e-003	0.0000	3.6208	3.6208	1.1700e-003	0.0000	3.6501
Total	2.6700e-003	0.0289	0.0174	4.0000e-005	0.0143	1.2100e-003	0.0155	6.8700e-003	1.1100e-003	7.9800e-003	0.0000	3.6208	3.6208	1.1700e-003	0.0000	3.6501

Unmitigated Construction Off-Site

[illegible]

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					
Off-Road	6.8000e-004	6.1700e-003	0.0110	2.0000e-005		3.0000e-004	3.0000e-004		2.8000e-004	2.8000e-004	0.0000	1.4569	1.4569	4.7000e-004	0.0000	1.4687
Total	6.8000e-004	6.1700e-003	0.0110	2.0000e-005		3.0000e-004	3.0000e-004		2.8000e-004	2.8000e-004	0.0000	1.4569	1.4569	4.7000e-004	0.0000	1.4687

Unmitigated Construction Off-Site

[illegible]

Miller Avenue Subdivision, San Jose - 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	2.7000e-004	7.2700e-003	0.0125	2.0000e-005		3.0000e-005	3.0000e-005		3.0000e-005	3.0000e-005	0.0000	1.4569	1.4569	4.7000e-004	0.0000	1.4686
Total	2.7000e-004	7.2700e-003	0.0125	2.0000e-005		3.0000e-005	3.0000e-005		3.0000e-005	3.0000e-005	0.0000	1.4569	1.4569	4.7000e-004	0.0000	1.4686

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

3.6 Building Construction - 2023**Unmitigated Construction On-Site**

Miller Avenue Subdivision, San Jose - 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					
Off-Road	0.0960	0.7378	0.7945	1.3900e-003		0.0324	0.0324		0.0313	0.0313	0.0000	114.4075	114.4075	0.0194	0.0000	114.8931
Total	0.0960	0.7378	0.7945	1.3900e-003		0.0324	0.0324		0.0313	0.0313	0.0000	114.4075	114.4075	0.0194	0.0000	114.8931

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					

Miller Avenue Subdivision, San Jose - 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	0.0253	0.6295	0.8492	1.3900e-003		0.0102	0.0102		0.0102	0.0102	0.0000	114.4073	114.4073	0.0194	0.0000	114.8930
Total	0.0253	0.6295	0.8492	1.3900e-003		0.0102	0.0102		0.0102	0.0102	0.0000	114.4073	114.4073	0.0194	0.0000	114.8930

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

3.6 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	0.0525	0.4094	0.4631	8.2000e-004		0.0167	0.0167		0.0161	0.0161	0.0000	67.1962	67.1962	0.0112	0.0000	67.4759
Total	0.0525	0.4094	0.4631	8.2000e-004		0.0167	0.0167		0.0161	0.0161	0.0000	67.1962	67.1962	0.0112	0.0000	67.4759

Miller Avenue Subdivision, San Jose - 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	0.0148	0.3697	0.4987	8.2000e-004		5.9800e-003	5.9800e-003		5.9800e-003	5.9800e-003	0.0000	67.1961	67.1961	0.0112	0.0000	67.4759
Total	0.0148	0.3697	0.4987	8.2000e-004		5.9800e-003	5.9800e-003		5.9800e-003	5.9800e-003	0.0000	67.1961	67.1961	0.0112	0.0000	67.4759

Miller Avenue Subdivision, San Jose - 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

3.7 Architectural Coating - 2024**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.2822					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	9.0000e-004	6.0900e-003	9.0500e-003	1.0000e-005		3.0000e-004	3.0000e-004		3.0000e-004	3.0000e-004	0.0000	1.2766	1.2766	7.0000e-005	0.0000	1.2784
Total	0.2831	6.0900e-003	9.0500e-003	1.0000e-005		3.0000e-004	3.0000e-004		3.0000e-004	3.0000e-004	0.0000	1.2766	1.2766	7.0000e-005	0.0000	1.2784

Unmitigated Construction Off-Site

Miller Avenue Subdivision, San Jose - 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

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.2822					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.7000e-004	5.3000e-003	9.1600e-003	1.0000e-005		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	1.2766	1.2766	7.0000e-005	0.0000	1.2784
Total	0.2825	5.3000e-003	9.1600e-003	1.0000e-005		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	1.2766	1.2766	7.0000e-005	0.0000	1.2784

Mitigated Construction Off-Site

Miller Avenue Subdivision, San Jose - 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

3.8 Paving - 2024**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	3.0900e-003	0.0293	0.0441	7.0000e-005		1.4100e-003	1.4100e-003		1.3000e-003	1.3000e-003	0.0000	5.8870	5.8870	1.8700e-003	0.0000	5.9337
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	3.0900e-003	0.0293	0.0441	7.0000e-005		1.4100e-003	1.4100e-003		1.3000e-003	1.3000e-003	0.0000	5.8870	5.8870	1.8700e-003	0.0000	5.9337

Unmitigated Construction Off-Site

Miller Avenue Subdivision, San Jose - 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

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	1.0700e-003	0.0286	0.0493	7.0000e-005		1.1000e-004	1.1000e-004		1.1000e-004	1.1000e-004	0.0000	5.8870	5.8870	1.8700e-003	0.0000	5.9337
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	1.0700e-003	0.0286	0.0493	7.0000e-005		1.1000e-004	1.1000e-004		1.1000e-004	1.1000e-004	0.0000	5.8870	5.8870	1.8700e-003	0.0000	5.9337

Mitigated Construction Off-Site

Miller Avenue Subdivision, San Jose - 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

Attachment 3: EMFAC2021 Calculations

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	13	0	260	0	73	10.8	7.3	20	LD_Mix	HDT_Mix	HHDT	2808	0	1460
Site Preparation	8	0	16	0	0	10.8	7.3	20	LD_Mix	HDT_Mix	HHDT	172.8	0	0
Grading	10	0	40	0	250	10.8	7.3	20	LD_Mix	HDT_Mix	HHDT	432	0	5000
Trenching	5	0	20	0	0	10.8	7.3	20	LD_Mix	HDT_Mix	HHDT	216	0	0
Building Construction	7	2	1400	400	200	10.8	7.3	7.3	LD_Mix	HDT_Mix	HHDT	15120	2920	1460
Architectural Coating	1	0	10	0	0	10.8	7.3	20	LD_Mix	HDT_Mix	HHDT	108	0	0
Paving	13	0	130	0	62	10.8	7.3	7.3	LD_Mix	HDT_Mix	HHDT	1404	0	452.6

Number of Days Per Year

2023	6/1/23	12/31/23	214	153
2024	1/1/24	5/9/24	130	93
			344	247 Total Workdays

Phase	Start Date	End Date	Days/Week	Workdays
Demolition	6/1/2023	6/28/2023	5	20
Site Preparation	6/29/2023	6/30/2023	5	2
Grading	7/1/2023	7/6/2023	5	4
Trenching	7/1/2023	7/6/2023	5	4
Building Construction	7/7/2023	4/11/2024	5	200
Architectural Coating	4/12/2024	4/25/2024	5	10
Paving	4/26/2024	5/9/2024	5	10

Miller Ave Subdivision Summary of Construction Traffic Emissions (EMFAC2021)

Pollutants YEAR	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	NBio- CO2	CH4	N2O	CO2e
	Tons										Metric Tons			
	Criteria Pollutants													
2023	0.0021	0.0197	0.0272	0.0002	0.0065	0.0013	0.0078	0.0010	0.0005	0.0015	15.4240	0.0010	0.0019	16.0285
2024	0.0012	0.0115	0.0156	0.0001	0.0039	0.0008	0.0047	0.0006	0.0003	0.0009	9.2051	0.0006	0.0012	9.5654
Toxic Air Contaminants (0.5 Mile Trip Length)														
2023	0.0017	0.0051	0.0090	0.0000	0.0003	0.0001	0.0004	0.0000	0.0000	0.0001	1.1768	0.0002	0.0002	1.2394
2024	0.0010	0.0030	0.0052	0.0000	0.0002	0.0000	0.0002	0.0000	0.0000	0.0000	0.7011	0.0001	0.0001	0.7383

Units: miles/day for CVMT and EVMT, trips/day for Trips, g/mile for RUNEX, PMBW and PMTW, g/trip for STREX, HOTSOAK and RUNLOSS, g/vehicle/day for IDLEX and DIURN. PHEV calculated based on total VMT.

[illegible]

		Mix %	Adj	ROG_DIURN	ROG_HTSK	ROG_IDLEX	ROG_RESTL	ROG_RUNEX	ROG_RUNLS	ROG_STREX	NMX_IDLEX	NMX_RUNEX	NMX_STREX	CO_IDLEX	CO_RUNEX	CO_STREX	SO2_IDLEX	SO2_RUNEX	SO2_STREX	Road Dust PM10	PM10_P MBW	PM10_P MTW	PM10_ID LEX	PM10_RU NEX	PM10_STREX	Road Dust PM25	PM25_P MBW	PM25_P MTW	PM25_IDL EX	PM25_RUN EX	PM25_STR EX	CO2_NBIO _IDLEX	CO2_NBIO _RUNEX	CO2_NBIO _STREX	CH4_IDLE X	CH4_RUNEX	CH4_STREX	N2O_IDLE	N2O_RUNEX	N2O_STREX		
Category	Hauling	HHDT	100.0	1	0.000287604	8.55424E-05	0.332404817	0	0.01953334	0.00077057	5.28839E-07	4.1629787	1.930480649	2.692504026	5.211988	0.7948148	0.000555	0.0074608	0.01488345	2.65981E-07	0.299	0.081444	0.030123	0.002283	0.025833	9.98684E-07	0.04499	0.028506	0.008781	0.002179	0.0247116	9.138E-07	850.51039	1643.0479	0.0269048	0.235881	0.125647179	9.74075E-08	0.136898	0.262148415	2.4682E-05	
				0	0.028424515	0.006961572	0.027029656	0	0.044340878	0.05660025	0.002337336	0.5040436	1.235274528	1.396113281	0.673566	0.4057701	1.151494	0.0015021	0.01767743	8.73526E-05		0.045469	0.03	0.002542	0.014831	0.000112942		0.015914	0.003	0.002431	0.0142769	0.000104	161.33734	1239.5984	8.8350743	0.012943	0.009900777	0.093245497	0.034829	0.159885109	0.00609652	
	Vendor	HHDT	50.0	0.5	0.000143802	4.27712E-05	0.166202408	0	0.00976667	0.00038529	2.6442E-07	2.0814893	0.965240325	1.346252013	2.605994	0.3974074	0.000277	0.0037304	0.007441725	1.32991E-07			0.040722	0.0217561	0.001142	0.012916	4.99342E-07		0.014253	0.00439	0.001089	0.0123558	4.59E-07	425.2352	821.52395	0.0134524	0.11794	0.06282339	4.87037E-08	0.068449	0.131074208	1.2341E-05
				0.5	0.024121257	0.030480786	0.0137944828	0	0.02217489	0.02830413	0.026168668	0.4620218	0.609637264	0.688066641	0.336783	0.20518851	0.576247	0.0007511	0.005883871	4.36763E-05			0.022795	0.006	0.001271	0.007405	5.64711E-05		0.007957	0.0015	0.001216	0.0071384	5.13E-05	80.66867	639.79919	4.417987	0.006471	0.004951388	0.034622748	0.012414	0.079942554	0.02048026
Worker	LDA	50.0	1	0.01435606	0.003523357	0.179967236	0	0.01435606	0.02868941	0.026168932	2.5435111	1.574877589	2.044308654	2.942777	0.5992925	0.576524	0.0044815	0.013325596	4.38093E-05	0.299	0.063457	0.023561	0.002413	0.020382	5.69705E-05	0.04499	0.02221	0.00589	0.002305	0.0149842	5.24E-05	505.92387	1441.3231	4.4314394	0.124412	0.067776978	0.004622797	0.080863	0.211016762	0.0030606		
			0.5	0.143306127	0.042683769	0	0	0.0045285	0.10768412	0.159592017	0	0.021193179	0.123461753	0	0.3503116	1.546631	0	0.001247344	0.00032278			0.0036	0.004	0	0.000614	0.000990927		0.00126	0.001	0	0.0005655	0.000911	0	126.17319	32.650143	0	0.001154545	0.034539145	0	0.00324937	0.01544107	
			25.0	0.156677436	0.04332923	0	0.00778025	0.12516577	0.145126689	0	0.035722679	0.100614187	0	0.3863947	1.408382	0	0.000818289	0.000217331			0.002307	0.002	0	0.000514	0.000767782		0.000807	0.0005	0	0.0004735	0.000706	0	82.773349	21.983712	0	0.00173807	0.028030471	0	0.00255413	0.00991395		
			25.0	0.25	0.074138692	0.021036563	0	0	0.00307124	0.05534742	0.101569939	0	0.019062039	0.088569484	0	0.2213791	0.96209	0	0.000853405	0.000219425			0.002219	0.002	0	0.000345	0.000540097		0.000777	0.0005	0	0.0003173	0.000497	0	86.33608	22.19552	0	0.000769908	0.021709383	0	0.001616746	0.00956276
			1	0.374122256	0.107049562	0	0	0.015382	0.28819731	0.406288645	0	0.075976897	0.311645425	0	0.9580854	3.917103	0	0.002918938	0.000759537	0.299	0.008126	0.008	0	0.001473	0.002298785	0.04499	0.002844	0.002	0	0.0013563	0.002114	0	295.28262	76.829375	0	0.003662524	0.084238998	0	0.006420246	0.03491778		

		Mix %	Adj	ROG_DIURN	ROG_HTSK	ROG_IDLEX	ROG_RESTL	ROG_RUNEX	ROG_RUNLS	ROG_STREX	NOX_IDLEX	NOX_RUNEX	NOX_STREX	CO_IDLEX	CO_RUNEX	CO_STREX	SO2_IDLEX	SO2_RUNEX	SO2_STREX	Road Dust PM10	PM10_P MBW	PM10_P MTW	PM10_ID LEX	PM10_RU NEX	PM10_STREX	Road Dust PM25	PM25_P MBW	PM25_P MTW	PM25_IDL EX	PM25_RUN EX	PM25_STR EX	CO2_NBIO _IDLEX	CO2_NBIO _RUNEX	CO2_NBIO _STREX	CH4_IDLE X	CH4_RUNEX	CH4_STREX	N2O IDLE N2O_RUNEX N2O_STREX					
Category	Usage																																										
Vendor	HHDT	100.0	1	0.000195977	5.82846E-05	0.329789936	0	0.01860554	0.00052501	4.36152E-07	4.075118	1.850604526	2.731408381	5.19556	0.7748868	0.000626	0.0072803	0.014635772	1.93499E-07		0.081298	0.030125	0.002182	0.025474	6.09682E-07	0.04499	0.028454	0.008781	0.002082	0.0243688	5.61E-07	832.31669	1617.1297	0.029573	0.232934	0.121678903	8.02769E-08	0.134072	0.258076714	1.9476E-05			
	MHD	0.0	0	0.025794994	0.09259754	0.026559118	0	0.03811329	0.00996401	0.04894298	0.8528585	1.11292374	1.40786614	0.871381	0.3461728	1.07433	0.00249	0.015644295	8.43096E-05	0.299	0.045399	0.012	0.002128	0.012985	0.000106814		0.015589	0.003	0.0002055	0.0124151	9.83E-05	160.25985	1225.1806	8.5293121	0.013383	0.009658327	0.008772715	0.034689	0.18249654	0.00633332			
	HHDT	50.0	0.5	9.79886E-05	2.91423E-05	0.164894968	0	0.00930277	0.0002625	2.18076E-07	2.037559	0.925302263	1.36570419	2.59778	0.3874434	0.000313	0.0036402	0.007317886	9.67497E-08		0.040649	0.0217563	0.001091	0.012737	3.04841E-07		0.014227	0.004391	0.001041	0.0121844	2.8E-07	416.15835	808.56485	0.0097865	0.116467	0.060839451	4.01385E-08	0.067036	0.129038357	9.7382E-06			
	MHD	50.0	0.5	0.023897457	0.003129877	0.013179559	0	0.02905664	0.02542001	0.02447149	0.4464293	0.556460967	0.70394807	0.335691	0.1739264	0.537165	0.000745	0.005832147	4.22605E-05	0.299	0.0227	0.006	0.001084	0.006492	5.34075E-05		0.007945	0.0015	0.001018	0.0062075	4.81E-05	80.12904	614.5903	4.2646561	0.006691	0.004826164	0.004386358	0.012344	0.079124827	0.00301596			
Worker	LDA	50.0	0.5	0.136796864	0.040510207	0.178074527	0	0.00395941	0.0236849	0.147535756	0.2489883	0.14178125	0.2696526	2.39347	0.5605298	0.53478	0.0043852	0.0130033	0.22752E-05	0.299	0.0037348	0.02363	0.001255	0.015933	5.37319E-05	0.04499	0.02172	0.00581	0.0002059	0.013989	4.894E-05	496.28872	1231.4522	4.2646561	0.23158	0.0566865	0.004386358	0.07938	0.20613814	0.0149032			
	LDA	50.0	0.5	0.136796864	0.040510207	0	0	0.00394285	0.0236849	0.147535756	0	0.018684555	0.115476587	0	0.3248678	1.445873	0	0.001211349	0.000313927		0.003584	0.004	0	0.000585	0.000954881		0.001254	0.001	0	0.000539	0.000878	0	122.54122	31.754603	0	0.001026569	0.03235985	0	0.002808964	0.01494032			
	LDT1	25.0	0.25	0.148814258	0.041105424	0	0	0.00690435	0.11745495	0.134116008	0	0.0319581	0.094816504	0	0.354682	1.306204	0	0.000804362	0.00021249		0.002306	0.002	0	0.000482	0.00072446		0.000807	0.0005	0	0.0004435	0.000666	0	81.34419	21.494004	0	0.001555571	0.026204278	0	0.002343639	0.00962361			
	LDT2	25.0	0.25	0.072041204	0.020150051	0	0	0.00277508	0.05358915	0.0947995741	0	0.017007912	0.082407943	0	0.2073341	0.905899	0	0.000831592	0.000213499		0.002217	0.002	0	0.000333	0.000528973		0.000776	0.0005	0	0.0003065	0.000485	0	84.129497	21.596069	0	0.000704556	0.020482149	0	0.001504103	0.0091976			
		1	0.357654326	0.1021765881	0	0	0	0.01362228	0.2734126	0.376447505	0	0.067650567	0.292701033	0	0.8868839	3.657977	0	0.002847102	0.000739916	0.299	0.008307	0.008	0	0.001401	0.002306314	0.04499	0.002837	0.002	0	0.001389	0.002029	0	288.01491	74.844675	0	0.003286696	0.079046277	0	0.005928705	0.03376153			

Attachment 4: Project Construction Emissions and Health Risk Calculations

Miller Ave Subdivision, San Jose Construction Emissions

Unmitigated Emissions

Year	CalEEMod DPM	DPM EMFAC2021	Unmitigated Emissions	CalEEMod Fug PM2.5	Fug PM2.5 EMFAC2021	Unmitigated Emissions
2023	0.0412	0.0001	0.0413	0.0104	0.00004	0.01044
2024	0.0184	0.00004	0.0184	0.0000	0.00003	0.00003

Mitigated Emissions

Year	CalEEMod DPM	DPM EMFAC2021	Mitigated Emissions	CalEEMod Fug PM2.5	Fug PM2.5 EMFAC2021	Mitigated Emissions
2023	0.0107	0.0001	0.01076	0.0047	0.00004	0.00471
2024	0.0061	0.00004	0.00615	0.0000	0.00003	0.00003

Miller Avenue Subdivision, San Jose, CA

DPM Construction Emissions and Modeling Emission Rates - Unmitigated

Construction		DPM	Source	No.	DPM Emissions			Emissions per Point Source
Year	Activity	(ton/year)	Type	Sources	(lb/yr)	(lb/hr)	(g/s)	(g/s)
2023	Construction	0.0413	Point	88	82.6	0.02514	3.17E-03	3.60E-05
2023	Construction	0.0184	Point	88	36.8	0.01120	1.41E-03	1.60E-05
Total		0.060		176	119.4	0.0363	0.0046	

hr/day = 9 (7am - 4pm)
 days/yr = 365
 hours/year = 3285

PM2.5 Fugitive Dust Construction Emissions for Modeling - Unmitigated

Construction		Area	PM2.5 Emissions				Modeled Area	DPM Emission Rate
Year	Activity	Source	(ton/year)	(lb/yr)	(lb/hr)	(g/s)	(m ²)	g/s/m ²
2023	Construction	23_FUG	0.01044	20.9	0.00636	8.01E-04	4,341	1.84E-07
2023	Construction	24_FUG	0.000030	0.1	0.00002	2.30E-06	4,341	5.30E-10
Total			0.010	20.940	0.006	0.001		

hr/day = 9 (7am - 4pm)
 days/yr = 365
 hours/year = 3285

DPM Construction Emissions and Modeling Emission Rates - With Mitigation

Construction Year	Activity	DPM (ton/year)	Source Type	No. Sources	DPM Emissions			Emissions per Point Source (g/s)
					(lb/yr)	(lb/hr)	(g/s)	
2023	Construction	0.01080	Point	88	21.6	0.00658	8.28E-04	9.41E-06
2023	Construction	0.00610	Point	88	12.2	0.00371	4.68E-04	5.32E-06
Total		0.006		176	33.80	0.0103	0.0013	

hr/day = 9 (7am - 4pm)
days/yr = 365
hours/year = 3285

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

Construction Year	Activity	Area Source	PM2.5 Emissions				Modeled Area (m ²)	DPM Emission Rate g/s/m ²
			(ton/year)	(lb/yr)	(lb/hr)	(g/s)		
2023	Construction	23_FUG	0.00471	9.4	0.00287	3.61E-04	4,341	8.32E-08
2023	Construction	24_FUG	0.00003	0.1	0.00002	2.30E-06	4,341	5.30E-10
Total			0.0047	9.5	0.0029	0.0004		

hr/day = 9 (7am - 4pm)
days/yr = 365
hours/year = 3285

Miller Avenue Subdivision, San Jose, CA Construction Health Impacts Summary

Maximum Impacts at Construction MEI Location - Uncontrolled

Emissions Year	Maximum Concentrations		Cancer Risk (per million)		Hazard Index (-)	Maximum Annual PM2.5 Concentration (µg/m ³)
	Exhaust PM10/DPM (µg/m ³)	Fugitive PM2.5 (µg/m ³)				
			Child	Adult		
2023	0.0628	0.0537	11.17	0.18	0.013	0.12
2024	0.0280	0.0002	4.59	0.08	0.006	0.03
Total	-	-	15.8	0.3	-	-
Maximum	0.0628	0.0537	-	-	0.013	0.12

Maximum Impacts at Construction MEI Location - With Mitigation

Emissions Year	Maximum Concentrations		Cancer Risk (per million)		Hazard Index (-)	Maximum Annual PM2.5 Concentration (µg/m ³)
	Exhaust PM10/DPM (µg/m ³)	Fugitive PM2.5 (µg/m ³)				
			Child	Adult		
2023	0.0164	0.0537	2.92	0.05	0.003	0.07
2024	0.0093	0.0002	1.52	0.03	0.002	0.01
Total	-	-	4.4	0.07	-	-
Maximum	0.0164	0.0537	-	-	0.003	0.07

Miller Avenue Subdivision, San Jose, CA - Uncontrolled Emissions
Maximum DPM Cancer Risk Calculations From Construction
Impacts at Off-Site Receptors-1.5 meter receptor height

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/m³)

DBR = daily breathing rate (L/kg body weight-day)

A = Inhalation absorption factor

EF = Exposure frequency (days/year)

10⁻⁶ = Conversion factor

Values

Age --> Parameter	Infant/Child				Adult
	3rd Trimester	0 - 2	2 - 9	2 - 16	16 - 30
ASF =	10	10	3	3	1
CPF =	1.10E+00	1.10E+00	1.10E+00	1.10E+00	1.10E+00
DBR* =	361	1090	631	572	261
A =	1	1	1	1	1
EF =	350	350	350	350	350
AT =	70	70	70	70	70
FAH =	1.00	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

Exposure Year	Exposure Duration (years)	Age	Infant/Child - Exposure Information			Infant/Child Cancer Risk (per million)	Adult - Exposure Information			Adult Cancer Risk (per million)	at MEI	
			DPM Conc (ug/m3)	Age Sensitivity Factor	Modeled		Age Sensitivity Factor					
								DPM Conc (ug/m3)				
								Year	Annual		Year	Annual
0	0.25	-0.25 - 0*	2023	0.0628	10	0.85	-	-	-	-		
1	1	0 - 1	2023	0.0628	10	10.31	2023	0.0628	1	0.18	0.0537	0.1165
2	1	1 - 2	2024	0.0280	10	4.59	2024	0.0280	1	0.08	0.0002	0.0281
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						15.76				0.26		

* Third trimester of pregnancy

Miller Avenue Subdivision, San Jose, CA - Mitigated Emissions
Maximum DPM Cancer Risk Calculations From Construction
Impacts at Off-Site Receptors-1.5 meter receptor height

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/m³)
 DBR = daily breathing rate (L/kg body weight-day)
 A = Inhalation absorption factor
 EF = Exposure frequency (days/year)
 10⁻⁶ = Conversion factor

Values

Age --> Parameter	Infant/Child				Adult
	3rd Trimester	0 - 2	2 - 9	2 - 16	16 - 30
ASF =	10	10	3	3	1
CPF =	1.10E+00	1.10E+00	1.10E+00	1.10E+00	1.10E+00
DBR* =	361	1090	631	572	261
A =	1	1	1	1	1
EF =	350	350	350	350	350
AT =	70	70	70	70	70
FAH =	1.00	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

Exposure Year	Exposure Duration (years)	Age	Infant/Child - Exposure Information			Infant/Child Cancer Risk (per million)	Adult - Exposure Information			Adult Cancer Risk (per million)	at MEI	
			DPM Conc (ug/m3)		Age Sensitivity Factor		Modeled		Age Sensitivity Factor			
			Year	Annual			DPM Conc (ug/m3)	Year			Annual	
0	0.25	-0.25 - 0*	2023	0.0164	10	0.22	-	-	-	-		
1	1	0 - 1	2023	0.0164	10	2.70	2023	0.0164	1	0.05	0.0537	0.070
2	1	1 - 2	2024	0.0093	10	1.52	2024	0.0093	1	0.03	0.0002	0.009
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		0.00000	3	0.00		0.00000	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						4.44				0.07		

* Third trimester of pregnancy

Miller Ave Subdivision, San Jose - Construction Risks at School/Daycare Receptors
Maximum DPM Cancer Risk and PM2.5 Calculations For Construction Emissions - Unmitigated
Impacts at Sunshine Montessori School - 1 meter receptor heights

Student Cancer Risk (per million) = CPF x Inhalation Dose x ASF x ED/AT 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)

Inhalation Dose = C_{air} x SCAF x 8-Hr BR x A x (EF/365) x 10⁻⁶

Where: C_{air} = concentration in air (µg/m³)

SCAF = School Child Adjustment Factor (unitless) for source operation

and exposures different than 8 hours/day

= (24/SHR) x (7days/SDay) x (SCHR/8 hrs)

SHR = Hours/day of emission source operation

SDay = Number of days per week of source operation

SCHR = School operation hours while emission source in operation

8-Hr BR = Eight-hour breathing rate (L/kg body weight-per 8 hrs)

A = Inhalation absorption factor

EF = Exposure frequency (days/year)

10⁻⁶ = Conversion factor

Values

	Infant	Child
Age -->	0 - <2	2 - <16
Parameter		
ASF =	10	3
DPM CPF =	1.10E+00	1.10E+00
8-Hr BR* =	1200	520
SCHR =	9	9
SHR =	9	9
SDay =	5	5
A =	1	1
EF =	240	240
AT =	70	70
SCAF =	4.20	4.20

* 95th percentile 8-hr breathing rates for moderate intensity activities

Construction Cancer Risk by Year

Exposure Year	Exposure Duration (years)	Age	Child - Exposure Information			Child Cancer Risk (per million)	Maximum	
			DPM Conc (ug/m3)		Age* Sensitivity Factor		Hazard Index	Total PM2.5
			Year	Annual				
1	1	2 - 3	2023	0.02818	3	1.91	0.0056	0.0502
2	1	3 - 4	2024	0.01255	3	0.85	0.0025	0.0014
Total Increased Cancer Risk						2.76		

* Children assumed to be from 2 to 4 years old during construction activities

Miller Ave Subdivision, San Jose - Construction Risks at School/Daycare Receptors
Maximum DPM Cancer Risk and PM2.5 Calculations For Construction Emissions - Mitigated
Impacts at Sunshine Montessori School - 1 meter receptor heights

Student Cancer Risk (per million) = CPF x Inhalation Dose x ASF x ED/AT 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)

Inhalation Dose = C_{air} x SCAF x 8-Hr BR x A x (EF/365) x 10⁻⁶

Where: C_{air} = concentration in air (µg/m³)

SCAF = School Child Adjustment Factor (unitless) for source operation

and exposures different than 8 hours/day

= (24/SHR) x (7days/SDay) x (SCHR/8 hrs)

SHR = Hours/day of emission source operation

SDay = Number of days per week of source operation

SCHR = School operation hours while emission source in operation

8-Hr BR = Eight-hour breathing rate (L/kg body weight-per 8 hrs)

A = Inhalation absorption factor

EF = Exposure frequency (days/year)

10⁻⁶ = Conversion factor

Values

	Infant	Child
Age -->	0 - <2	2 - <16
Parameter		
ASF =	10	3
DPM CPF =	1.10E+00	1.10E+00
8-Hr BR* =	1200	520
SCHR =	9	9
SHR =	9	9
SDay =	5	5
A =	1	1
EF =	240	240
AT =	70	70
SCAF =	4.20	4.20

* 95th percentile 8-hr breathing rates for moderate intensity activities

Construction Cancer Risk by Year

Exposure Year	Exposure Duration (years)	Age	Child - Exposure Information			Child Cancer Risk (per million)	Maximum	
			DPM Conc (ug/m3)		Age* Sensitivity Factor		Hazard Index	Total PM2.5
			Year	Annual				
1	1	2 - 3	2023	0.00737	3	0.50	0.0015	0.0294
2	1	3 - 4	2024	0.00416	3	0.28	0.0008	0.0042
Total Increased Cancer Risk						0.78		

* Children assumed to be from 2 to 4 years old during construction activities

Miller Ave Subdivision, San Jose - Construction Risks at School/Daycare Receptors
Maximum DPM Cancer Risk and PM2.5 Calculations For Construction Emissions - Unmitigated
Impacts at Faith Hope & Love Chinese School- 1 meter receptor heights

Student Cancer Risk (per million) = CPF x Inhalation Dose x ASF x ED/AT 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)

Inhalation Dose = C_{air} x SCAF x 8-Hr BR x A x (EF/365) x 10⁻⁶

Where: C_{air} = concentration in air (µg/m³)

SCAF = School Child Adjustment Factor (unitless) for source operation

and exposures different than 8 hours/day

= (24/SHR) x (7days/SDay) x (SCHR/8 hrs)

SHR = Hours/day of emission source operation

SDay = Number of days per week of source operation

SCHR = School operation hours while emission source in operation

8-Hr BR = Eight-hour breathing rate (L/kg body weight-per 8 hrs)

A = Inhalation absorption factor

EF = Exposure frequency (days/year)

10⁻⁶ = Conversion factor

Values

	Infant	Child
Age -->	0 - <2	2 - <16
Parameter		
ASF =	10	3
DPM CPF =	1.10E+00	1.10E+00
8-Hr BR* =	1200	520
SCHR =	8	8
SHR =	9	9
SDay =	5	5
A =	1	1
EF =	240	240
AT =	70	70
SCAF =	3.73	3.73

* 95th percentile 8-hr breathing rates for moderate intensity activities

Construction Cancer Risk by Year

Exposure Year	Exposure Duration (years)	Age	Child - Exposure Information			Child Cancer Risk (per million)	Maximum	
			DPM Conc (ug/m3)		Age* Sensitivity Factor		Hazard Index	Total PM2.5
			Year	Annual				
1	1	2 - 3	2023	0.01001	3	0.60	0.0020	0.0146
2	1	3 - 4	2024	0.00446	3	0.27	0.0009	0.0014
Total Increased Cancer Risk						0.87		

* Children assumed to be from 2 to 4 years old during construction activities

Miller Ave Subdivision, San Jose - Construction Risks at School/Daycare Receptors
Maximum DPM Cancer Risk and PM2.5 Calculations For Construction Emissions - Mitigated
Impacts at Faith Hope & Love Chinese School- 1 meter receptor heights

Student Cancer Risk (per million) = CPF x Inhalation Dose x ASF x ED/AT 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)

Inhalation Dose = C_{air} x SCAF x 8-Hr BR x A x (EF/365) x 10⁻⁶

Where: C_{air} = concentration in air (µg/m³)

SCAF = School Child Adjustment Factor (unitless) for source operation

and exposures different than 8 hours/day

= (24/SHR) x (7days/SDay) x (SCHR/8 hrs)

SHR = Hours/day of emission source operation

SDay = Number of days per week of source operation

SCHR = School operation hours while emission source in operation

8-Hr BR = Eight-hour breathing rate (L/kg body weight-per 8 hrs)

A = Inhalation absorption factor

EF = Exposure frequency (days/year)

10⁻⁶ = Conversion factor

Values

	Infant	Child
Age -->	0 - <2	2 - <16
Parameter		
ASF =	10	3
DPM CPF =	1.10E+00	1.10E+00
8-Hr BR* =	1200	520
SCHR =	8	8
SHR =	9	9
SDay =	5	5
A =	1	1
EF =	240	240
AT =	70	70
SCAF =	3.73	3.73

* 95th percentile 8-hr breathing rates for moderate intensity activities

Construction Cancer Risk by Year

Exposure Year	Exposure Duration (years)	Age	Child - Exposure Information			Child Cancer Risk (per million)	Maximum	
			DPM Conc (ug/m3)		Age* Sensitivity Factor		Hazard Index	Total PM2.5
			Year	Annual				
1	1	2 - 3	2023	0.00262	3	0.16	0.0005	0.0072
2	1	3 - 4	2024	0.00148	3	0.09	0.0003	0.0014
Total Increased Cancer Risk						0.25		

* Children assumed to be from 2 to 4 years old during construction activities

Miller Ave Subdivision, San Jose - Construction Risks at School/Daycare Receptors
Maximum DPM Cancer Risk and PM2.5 Calculations For Construction Emissions - Unmitigated
Impacts at Miller Middle School- 1 meter receptor heights

Student Cancer Risk (per million) = CPF x Inhalation Dose x ASF x ED/AT 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)

Inhalation Dose = C_{air} x SCAF x 8-Hr BR x A x (EF/365) x 10⁻⁶

Where: C_{air} = concentration in air (µg/m³)

SCAF = School Child Adjustment Factor (unitless) for source operation

and exposures different than 8 hours/day

= (24/SHR) x (7days/SDay) x (SCHR/8 hrs)

SHR = Hours/day of emission source operation

SDay = Number of days per week of source operation

SCHR = School operation hours while emission source in operation

8-Hr BR = Eight-hour breathing rate (L/kg body weight-per 8 hrs)

A = Inhalation absorption factor

EF = Exposure frequency (days/year)

10⁻⁶ = Conversion factor

Values

	Infant	Child
Age -->	0 - <2	2 - <16
Parameter		
ASF =	10	3
DPM CPF =	1.10E+00	1.10E+00
8-Hr BR* =	1200	520
SCHR =	7	7
SHR =	9	9
SDay =	5	5
A =	1	1
EF =	200	200
AT =	70	70
SCAF =	3.27	3.27

* 95th percentile 8-hr breathing rates for moderate intensity activities

Construction Cancer Risk by Year

Exposure Year	Exposure Duration (years)	Age	Child - Exposure Information			Child Cancer Risk (per million)	Maximum	
			DPM Conc (ug/m3)		Age* Sensitivity Factor		Hazard Index	Total PM2.5
			Year	Annual				
1	1	11	2023	0.00233	3	0.10	0.0005	0.0029
2	1	12	2024	0.00104	3	0.05	0.0002	0.0010
Total Increased Cancer Risk						0.15		

* Middle school children assumed to be from 11 through 12 years old during construction activities

Miller Ave Subdivision, San Jose - Construction Risks at School/Daycare Receptors
Maximum DPM Cancer Risk and PM2.5 Calculations For Construction Emissions - Mitigated
Impacts at Miller Middle School- 1 meter receptor heights

Student Cancer Risk (per million) = CPF x Inhalation Dose x ASF x ED/AT 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)

Inhalation Dose = C_{air} x SCAF x 8-Hr BR x A x (EF/365) x 10⁻⁶

Where: C_{air} = concentration in air (µg/m³)

SCAF = School Child Adjustment Factor (unitless) for source operation

and exposures different than 8 hours/day

= (24/SHR) x (7days/SDay) x (SCHR/8 hrs)

SHR = Hours/day of emission source operation

SDay = Number of days per week of source operation

SCHR = School operation hours while emission source in operation

8-Hr BR = Eight-hour breathing rate (L/kg body weight-per 8 hrs)

A = Inhalation absorption factor

EF = Exposure frequency (days/year)

10⁻⁶ = Conversion factor

Values

	Infant	Child
Age -->	0 - <2	2 - <16
Parameter		
ASF =	10	3
DPM CPF =	1.10E+00	1.10E+00
8-Hr BR* =	1200	520
SCHR =	7	7
SHR =	9	9
SDay =	5	5
A =	1	1
EF =	200	200
AT =	70	70
SCAF =	3.27	3.27

* 95th percentile 8-hr breathing rates for moderate intensity activities

Construction Cancer Risk by Year

Exposure Year	Exposure Duration (years)	Age	Child - Exposure Information			Child Cancer Risk (per million)	Maximum	
			DPM Conc (ug/m3)		Age* Sensitivity Factor		Hazard Index	Total PM2.5
			Year	Annual				
1	1	11	2023	0.00061	3	0.03	0.0001	0.0012
2	1	12	2024	0.00034	3	0.01	0.0001	0.0004
Total Increased Cancer Risk						0.04		

* Middle school children assumed to be from 11 through 12 years old during construction activities

Information for Pacific Bell Emergency Generator Impacts at On- and Off-Site MEIs

Miller Avenue Subdivision, San Jose, CA - AERMOD Modeling Parameters Pacific Bell (BAAQMD FID #13152) Emergency Generator Construction MEI Receptor - 1.5 meter Receptor Height

DPM Emission Rates			
Source Type	Annual Operation (hr)	DPM Emissions	
		Daily (lb/day)	Annual* (lb/yr)
Generator	-	0.2210	80.68

* Emissions from BAAQMD for source

Modeling Information			
Model:	AERMOD		
Source	Diesel Engine		
Source Type	Point		
Receptor Spacing	Construction MEI receptor location		
Receptor Height	1.5 meters		
Meteorological Data	2013-2017 BAAQMD San Jose Intl Airport data		
Point Source Stack Parameters			
Stack Height (ft)	8	(28 ft above grade level)	
Stack Diameter** (ft)	0.60		
Stack Exit Velocity** (ft/sec)	149		
Exhaust Temperature** (F)	872		
Annual Emission Rate (lb/year)	80.68	CalEEMod	
Hourly Emission Rate (lb/hr)	2.76E-02	calculated	(9am - 5pm operation)

** BAAQMD default generator parameters

**Miller Avenue Subdivision, San Jose, CA - DPM Cancer Risks at
Construction MEI Receptor - 1.5 meter Receptor Height
Pacific Bell (BAAQMD FID #13152) Emergency Generator
30-Year Residential Exposure**

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/m³)

DBR = daily breathing rate (L/kg body weight-day)

A = Inhalation absorption factor

EF = Exposure frequency (days/year)

10⁻⁶ = Conversion factor

Values

Cancer Potency Factors (mg/kg-day)⁻¹

TAC	CPF
DPM	1.10E+00

Age --> Parameter	Infant/Child			Adult
	3rd Trimester	0 - 2	2 - 16	16 +
ASF	10	10	3	1
DBR* =	361	1090	572	261
A =	1	1	1	1
EF =	350	350	350	350
ED =	0.25	2	14	14
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 MEI Cancer Pacific Bell Emergency Generator
Construction MEI Receptor - 1.5 meter Receptor Height**

Exposure Duration (years)	Age	Age Sensitivity Factor	DPM Annual Conc (ug/m3)	DPM Cancer Risk (per million)
0.25	-0.25 - 0*	10	0.00802	0.11
2	0 - 2	10	0.00802	2.63
14	2 - 16	3	0.00802	2.90
14	16+ _	1	0.00802	0.32
Total Increased Cancer Risk				5.97

* Third trimester of pregnancy

Miller Avenue Subdivision, San Jose, CA - AERMOD Modeling Parameters
Pacific Bell (BAAQMD FID #13152) Emergency Generator
On-Site Residential Receptors - 1.5 meter Receptor Heights

DPM Emission Rates			
Source Type	Annual Operation (hr)	DPM Emissions	
		Daily (lb/day)	Annual* (lb/yr)
Generator	-	0.2210	80.68

* Emissions from BAAQMD for source

Modeling Information			
Model:	AERMOD		
Source	Diesel Engine		
Source Type	Point		
Receptor Spacing	at proposed residences		
Receptor Height	1.5 meters		
Meteorological Data	2013-2017 BAAQMD San Jose Intl Airport data		
Point Source Stack Parameters			
Stack Height (ft)	9		
Stack Diameter** (ft)	0.60		
Stack Exit Velocity** (ft/sec)	149		
Exhaust Temperature** (F)	872		
Annual Emission Rate (lb/year)	80.68	CalEEMod	
Hourly Emission Rate (lb/hr)	2.76E-02	calculated	(9am - 5pm operation)

** BAAQMD default generator parameters

**Miller Avenue Subdivision, San Jose, CA - DPM Cancer Risks at
On-Site Residential Receptors - 1.5 meter Receptor Heights
Pacific Bell (BAAQMD FID #13152) Emergency Generator
30-Year Adult Exposure**

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/m³)

DBR = daily breathing rate (L/kg body weight-day)

A = Inhalation absorption factor

EF = Exposure frequency (days/year)

10⁻⁶ = Conversion factor

Values

Cancer Potency Factors (mg/kg-day)⁻¹

TAC	CPF
DPM	1.10E+00

Age --> Parameter	Infant/Child			Adult
	3rd Trimester	0 - 2	2 - 16	16 +
ASF	10	10	3	1
DBR* =	361	1090	572	261
A =	1	1	1	1
EF =	350	350	350	350
ED =	0.25	2	14	14
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

**On-Site MEI Cancer Risk: Pacific Bell Emergency Generator
On-Site Residential Receptors - 1.5 meter Receptor Heights**

Exposure Duration (years)	Age	Age Sensitivity Factor	DPM Annual Conc (ug/m3)	DPM Cancer Risk (per million)
0.25	-0.25 - 0*	10	0.03224	0.44
2	0 - 2	10	0.03224	10.59
14	2 - 16	3	0.03224	11.67
14	16+	1	0.03224	1.30
Total Increased Cancer Risk				24.00

* Third trimester of pregnancy

Miller Avenue Subdivision, San Jose, CA - AERMOD Modeling Parameters
Pacific Bell (BAAQMD FID #13152) Emergency Generator
On-Site Residential Receptors - 4.5 meter Receptor Heights

DPM Emission Rates			
Source Type	Annual Operation (hr)	DPM Emissions	
		Daily (lb/day)	Annual* (lb/yr)
Generator	-	0.2210	80.68

* Emissions from BAAQMD for source

Modeling Information			
Model:	AERMOD		
Source	Diesel Engine		
Source Type	Point		
Receptor Spacing	at proposed residences		
Receptor Height	4.5 meters (2nd Floor)		
Meteorological Data	2013-2017 BAAQMD San Jose Intl Airport data		
Point Source Stack Parameters			
Stack Height (ft)	9		
Stack Diameter** (ft)	0.60		
Stack Exit Velocity** (ft/sec)	149		
Exhaust Temperature** (F)	872		
Annual Emission Rate (lb/year)	80.68	CalEEMod	
Hourly Emission Rate (lb/hr)	2.76E-02	calculated	(9am - 5pm operation)

** BAAQMD default generator parameters

**Miller Avenue Subdivision, San Jose, CA - DPM Cancer Risks at
On-Site Residential Receptors - 4.5 meter Receptor Heights
Pacific Bell (BAAQMD FID #13152) Emergency Generator
30-Year Adult Exposure**

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/m³)

DBR = daily breathing rate (L/kg body weight-day)

A = Inhalation absorption factor

EF = Exposure frequency (days/year)

10⁻⁶ = Conversion factor

Values

Cancer Potency Factors (mg/kg-day)⁻¹

TAC	CPF
DPM	1.10E+00

Age --> Parameter	Infant/Child			Adult
	3rd Trimester	0 - 2	2 - 16	16 +
ASF	10	10	3	1
DBR* =	361	1090	572	261
A =	1	1	1	1
EF =	350	350	350	350
ED =	0.25	2	14	14
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

**On-Site MEI Cancer Risk: Pacific Bell Emergency Generator
On-Site Residential Receptors - 4.5 meter Receptor Heights**

Exposure Duration (years)	Age	Age Sensitivity Factor	DPM Annual Conc (ug/m3)	DPM Cancer Risk (per million)
0.25	-0.25 - 0*	10	0.02178	0.30
2	0 - 2	10	0.02178	7.15
14	2 - 16	3	0.02178	7.88
14	16+ _	1	0.02178	0.88
Total Increased Cancer Risk				16.21

* Third trimester of pregnancy