2110 OLD MIDDLEFIELD WAY GAS STATION HEALTH RISK & GREENHOUSE GAS ASSESSMENT

Mountain View, California

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Introduction

The purpose of this report is to address the potential health risk and greenhouse gas (GHG) impacts associated with the construction and operation of a proposed gas station located at 2110 Old Middlefield Way in Mountain View, California. The air quality and GHG impacts from this project would be associated with construction and operation of the gas station. Air pollutant emissions associated with 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 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 construct a 3-pump, 6-fueling position gas station with a food mart and car wash on the 0.32-acre vacant site. The maximum amount of throughput for the gas dispensing facility (GDF) would be 900,000 gallons of unleaded gas and 75,000 gallons of diesel gas annually. The new 3,271 square-foot (sf) gas station and car wash development would be comprised of three primary components: 1) a canopied fuel service bay with three dual gas pumps, 2) a 531-sf convenience store, and 3) a 652-sf automatic drive-through care wash. The project includes 4 off-street parking spaces, including 1 EV parking space.

Setting

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

Air Pollutants of Concern

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

Particulate matter is another problematic air pollutant of the Bay Area. Particulate matter is assessed and measured in terms of respirable particulate matter or particles that have a diameter of 10 micrometers or less (PM_{10}) and fine particulate matter where particles have a diameter of 2.5 micrometers or less ($PM_{2.5}$). Elevated concentrations of PM_{10} and $PM_{2.5}$ are the result of both region-wide (or cumulative) emissions and localized emissions. High particulate matter levels

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

aggravate respiratory and cardiovascular diseases, reduce lung function, increase mortality (e.g., lung cancer), and result in reduced lung function growth in children.

<u>Toxic Air Contaminants</u>

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.

DPM

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 complexity 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.

Non-Diesel Total Organic Gases

Gasoline-powered vehicles, particularly light-duty autos and trucks, emit TACs mostly in the form of total organic gases (TOG). TOG emissions associated with these types of vehicles occur primarily in two forms: running exhaust and evaporative running losses. Additional TOG emissions occur when starting a vehicle, especially cold vehicles. Mobile source TOG includes TACs such as benzene, 1,3-Butadiene, and formaldehyde. Emissions of these TACs are controlled through requirements of motor vehicle exhaust systems and the formulation of gasoline by the U.S. EPA and CARB

Benzene

Benzene is a fundamental component of gasoline and diesel fuel as well as vehicle exhaust. Benzene is emitted through the evaporation of gasoline vapors. Since it is known to cause cancer in humans, benzene was classified as a TAC in 1984 by CARB. Benzene emissions from fuel use are regulated in numerous ways that include standards for the formulation of gasoline, vehicle

[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.

emission standards, and vapor control systems for storage, fuel dispensing facilities and vehicle on-board fuel systems.

Sensitive Receptors

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

Regulatory Setting

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

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

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 a CARE area or within an overburdened area as identified by CalEnviroScreen as the Project site is scored at the 45th 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 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.

The Project is subject to BAAQMD permitting requirements. All gasoline dispensing facilities are required to have a Permit to Operate from the District, in accordance with Regulation 8 Rule 7 and include Phase I (vapor recovery during transfer of gasoline between any cargo tank and any stationary tank at GDF) and Phase II (vapor recovery during motor vehicle refueling operations from any stationary tank at GDF) systems. Projects involving modifications must be authorized by BAAQMD prior to construction. This includes the replacement or installation of tanks and/or vapor recovery lines, dispenser modifications and the addition of nozzles to a facility. For approval, the project must meet the toxic screening requirements listed in Regulation 2-5. Based on the results of that screening, BAAQMD may impose limits on gasoline throughput for the facility.

City of Mountain View 2030 General Plan

The Mountain View 2030 General Plan includes goals, policies, and actions to reduce exposure of the City's sensitive population to exposure of air pollution, toxic air contaminants, and GHG emissions. The following goals, policies, and actions are applicable to the proposed project:

Climate Change

INC 12.1: Emissions reduction target. Maintain a greenhouse gas emissions reduction target.

[4] See BAAQMD: https://www.baaqmd.gov/~/media/dotgov/files/rules/reg-2-permits/2021-amendments/documents/20210722_01_appendixd_mapsofoverburdenedcommunities-pdf.pdf?la=en , accessed 10/1/2021.
[5] OEHAA, 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.

INC 12.2: Emissions reduction strategies. Develop cost-effective strategies for reducing greenhouse gas emissions.

INC 12.3: Adaptation strategies. Develop strategies for adapting to climate change in partnership with local and regional agencies.

Air Quality

INC 20.1: Pollution prevention. Discourage mobile and stationary sources of air pollution.

INC 20.2: Collaboration. Participate in state and regional planning efforts to improve air quality.

INC 20.6: Air quality standards. Protect the public and construction workers from construction exhaust and particulate emissions.

INC 20.7: Protect sensitive receptors. Protect the public from substantial pollutant concentrations.

INC 20.8: Offensive odors. Protect residents from offensive odors.

<u>Significance Thresholds</u>

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. In 2017, BAAQMD updated its CEQA Air Quality Guidelines and included revised significance thresholds. In 2022, BAAQMD revised its GHG thresholds, eliminating quantified emissions limits. The current BAAQMD thresholds were used in this analysis and are summarized in Table 1. Air quality impacts and community health risks are considered potentially significant if they exceed these thresholds.

Table 1. BAAQMD CEQA Significance Thresholds

<table>
<tr><th>Health Risks and Hazards</th><th>Single Sources Within 1,000-foot Zone of Influence</th><th>Combined Sources (Cumulative from all sources within 1000-foot zone of influence)</th></tr>
<tr><td>Excess Cancer Risk</td><td>10 per one million</td><td>100 per one million</td></tr>
<tr><td>Hazard Index</td><td>1.0</td><td>10.0</td></tr>
<tr><td>Incremental annual $PM_{2.5}$</td><td>0.3 $\mu g/m^3$</td><td>0.8 $\mu g/m^3$</td></tr>
<tr><th colspan="3">Greenhouse Gas Emissions</th></tr>
<tr><td>Land Use Projects – (Must Include A or B)</td><td colspan="2">A. Projects must include, at a minimum, the following project design elements:
1. Buildings
a. The project will not include natural gas appliances or natural gas plumbing (in both residential and nonresidential development).
b. The project will not result in any wasteful, inefficient, or unnecessary energy usage as determined by the analysis required under CEQA Section 21100(b)(3) and Section 15126.2(b) of the State CEQA Guidelines.
2. Transportation
a. Achieve a reduction in project-generated vehicle miles traveled (VMT) below the regional average consistent with the current version of the California Climate Change Scoping Plan (currently 15 percent) or meet a locally adopted Senate Bill 743 VMT target, reflecting the recommendations provided in the Governor’s Office of Planning and Research’s Technical Advisory on Evaluating Transportation Impacts in CEQA:
i. Residential projects: 15 percent below the existing VMT per capita
ii. Office projects: 15 percent below the existing VMT per employee
iii. Retail projects: no net increase in existing VMT
b. Achieve compliance with off-street electric vehicle requirements in the most recently adopted version of CALGreen Tier 2.
B. Be consistent with a local GHG reduction strategy that meets the criteria under State CEQA Guidelines Section 15183.5(b).</td></tr>
<tr><td colspan="3">Note: PM_{10} = course particulate matter or particulates with an aerodynamic diameter of 10 micrometers (µm) or less, $PM_{2.5}$ = fine particulate matter or particulates with an aerodynamic diameter of 2.5µm or less. GHG = greenhouse gases.</td></tr>
</table>

Health Risk Impacts and Mitigation Measures

Project impacts related to increased community risk can occur either by introducing a new source of TACs with the potential to adversely affect existing sensitive receptors in the project vicinity or by significantly exacerbating existing cumulative TAC impacts. This project would introduce new sources of TACs during construction (i.e., on-site construction and truck hauling emissions) and operation (i.e., mobile and stationary sources).

Project construction activity would generate dust and equipment exhaust that would affect nearby sensitive receptors. The project would have TAC emissions from the gasoline station and the generated traffic. Project impacts to existing sensitive receptors were addressed for temporary construction activities and long-term operational conditions. There are also several sources of existing TACs and localized air pollutants in the vicinity of the project. The impact of the existing sources of TAC was also assessed in terms of the cumulative risk that includes the project contribution.

Community Risk Methodology

Health risk impacts were addressed by predicting increased cancer risk, the increase in annual $PM_{2.5}$ concentrations and computing the Hazard Index (HI) for non-cancer health risks. The risk impacts from the project are the combination of risks from construction and operation sources. These sources include on-site construction activity, construction truck hauling, the GDF, and increased traffic from the project. To evaluate the increased cancer risks from the project, a 30-year exposure period was used, per BAAQMD guidance,[7] with the sensitive receptors being exposed to both project construction and operation emissions during this timeframe.

The project increased cancer risk is computed by summing the project construction cancer risk and operation cancer risk contributions. Unlike the increased maximum cancer risk, the annual $PM_{2.5}$ concentration and HI values are not additive but based on the annual maximum values for the entirety of the project. The project maximally exposed individual (MEI) is identified as the sensitive receptor that is most impacted by the project's construction and operation.

The methodology for computing community risks impacts is contained in *Attachment 1*. This involved the calculation of TAC and $PM_{2.5}$ emissions, dispersion modeling of these emissions, and computations of cancer risk and non-cancer health effects.

Construction Period Emissions

The California Emissions Estimator Model (CalEEMod) Online Version 2022.1 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 CalEEMod model output along with construction inputs are included in *Attachment 2*.

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[7] BAAQMD, 2016. *BAAQMD Air Toxics NSR Program Health Risk Assessment (HRA) Guidelines*. December 2016.

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
Gasoline/Service Station	3.00	Pumps	3,271	0.32

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 6 months.

Construction Truck Traffic Emissions

Construction would produce traffic in the form of worker trips and truck traffic. The traffic-related emissions are based on worker and vendor trip estimates produced by CalEEMod and haul trips that were computed based on the estimate of 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 soil import/export were estimated by CalEEMod using the estimated grading volumes provided.[8]

Health Risk from Project Construction

Construction equipment and associated heavy-duty truck traffic generates diesel exhaust, which is a known TAC. These exhaust air pollutant emissions would not be considered to contribute substantially to existing or projected air quality violations. Construction exhaust emissions may still pose health risks for sensitive receptors such as surrounding residents. The primary community risk impacts associated with construction emissions are cancer risk and exposure to $PM_{2.5}$. Diesel exhaust (i.e., DPM) poses both a potential health and nuisance impact to nearby receptors. A health risk assessment of the project construction activities was conducted that

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

evaluated potential health effects to nearby sensitive receptors from construction emissions of DPM and $PM_{2.5}$.[9] This assessment included dispersion modeling to predict the off-site and on-site concentrations resulting from project construction, so that increased cancer risks and non-cancer health effects could be evaluated.

Modeled Sensitive Receptors

Receptors for this assessment included locations where sensitive populations closest to the project would be present for extended periods of time (i.e., chronic exposures). This includes the existing residences to the surrounding of the site, as shown in Figure 1. Residential receptors are assumed to include all receptor groups (i.e., third trimester, infants, children, and adults) with almost continuous exposure to project emissions. While there are additional sensitive receptors within 1,000 feet of the project site, the receptors chosen are adequate to identify maximum impacts from the project.

Construction Emissions

The CalEEMod model provided total annual PM_{10} exhaust emissions (assumed to be DPM) for the off-road construction equipment and for exhaust emissions 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. Total uncontrolled DPM emissions from on-site construction activities were estimated to be 0.02 tons (40 pounds). Uncontrolled fugitive dust ($PM_{2.5}$) emissions were estimated to be as less than 0.005 tons (10 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

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

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 height across the construction site. Emissions from the construction equipment and on-road vehicle travel were distributed throughout the area sources.

AERMOD Inputs and Meteorological Data

The modeling used a five-year data set (2013 - 2017) of hourly meteorological data from the Moffett Federal Airfield prepared for use with the AERMOD model by BAAQMD. Construction emissions were modeled as occurring daily between 8:00 a.m. to 5:00 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 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) and 15 feet (4.5 meters) were used to represent the breathing height of residences on the first and second floors in nearby single- and multi-family residences.[12]

<u>Summary of Construction Health Risk Impacts</u>

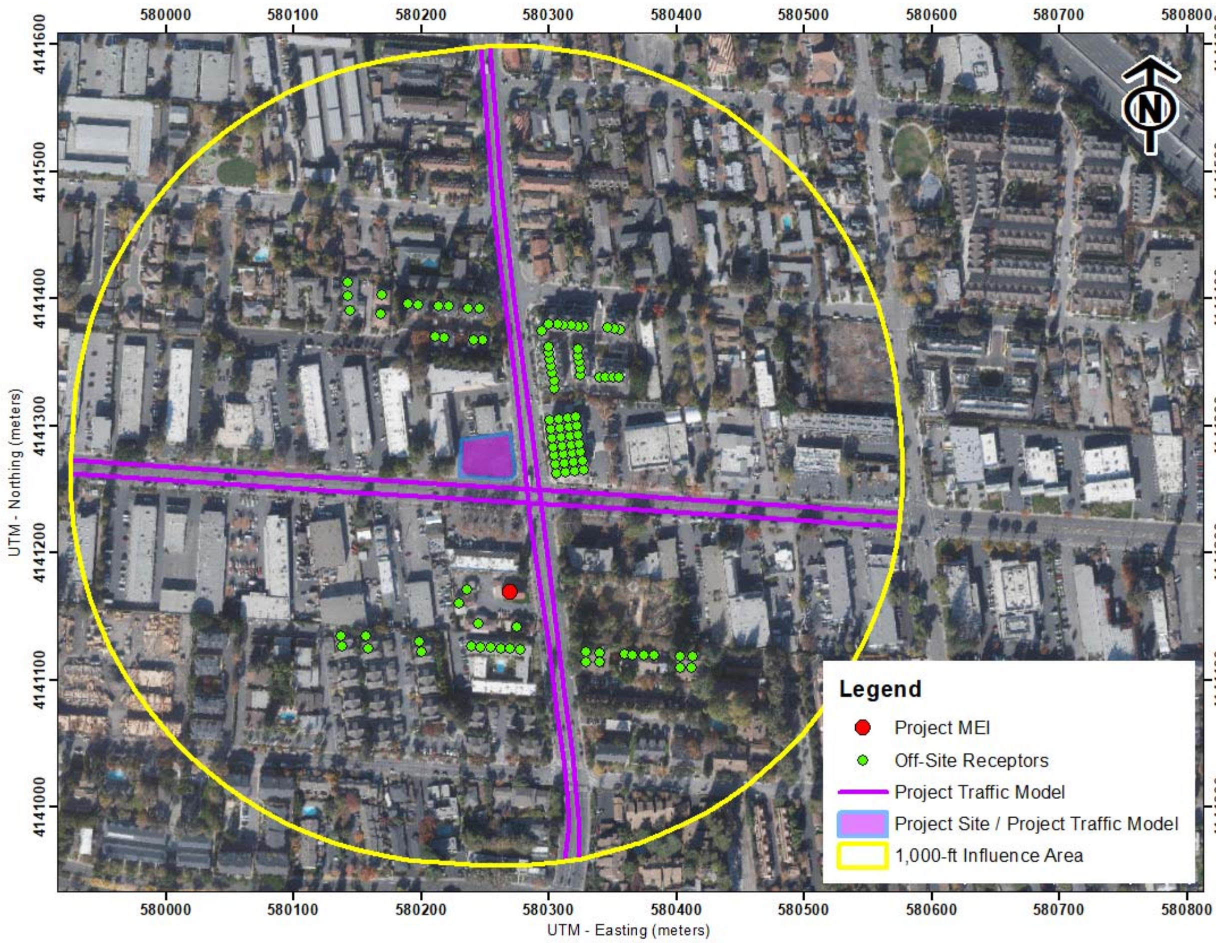
The maximum increased cancer risks were calculated using the modeled TAC concentrations combined with the OEHHA guidance for age sensitivity factors and exposure parameters as recommended by BAAQMD (see *Attachment 1)*. Non-cancer health hazards (HI) and maximum $PM_{2.5}$ concentrations were also calculated 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,.

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 refence exposure level of 5 $\mu g/m^3$.

[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

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 opposite Old Middlefield Way. Table 3 summarizes the maximum cancer risks, $PM_{2.5}$ concentrations, and health hazard indexes for project related construction activities affecting the construction MEI. *Attachment 3* to this report includes the emission calculations used for the construction area source modeling and the cancer risk calculations.

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



Community Risks from Project Operation

The proposed GDF would include 3 pumps with 6 fueling positions. The maximum amount of throughput for the GDF would be 900,000 gallons of unleaded gas and 75,000 gallons of diesel gas annually.

GDFs are a source of TAC emissions because of the TACs contained in evaporating gasoline and traffic accessing the facility. Evaporative emissions include those from vehicle fueling and spillage, tanker trucks delivering fuel to the facility, evaporative emissions from unloading fuel from trucks to storage tanks, and evaporative emissions from the natural off gassing that occurs during fuel storage (i.e., fuel tank breathing). The primary TACs of concern from GDFs are the different toxic components of vehicle exhaust emissions and the toxic components related to the evaporation of gasoline.[13] Traffic emissions include vehicles traveling nearby and at the project and vehicles briefly idling at the project site. Health impacts from operation of the GDF are addressed by estimating emissions from each source assuming the facility is operational for 30 years. The year 2024 (project operational year) was selected as the first year of analysis for generating emission rates. Vehicle emission rates are anticipated to decrease in the future due to improvements in exhaust systems and vehicle fleet turnover from older, more polluting vehicles to newer cleaner vehicles.

Traffic-Related Emissions from the GDF

Traffic related emissions include on-site and off-site emissions. On-site emissions include travel to and from the fuel pumps and vehicle idling while in the fuel pump queue. Off-site emissions include the vehicle emissions from travel to and from the site. Truck traffic to fill storage tanks would be infrequent.

This analysis involved the development of DPM, organic TACs, and $PM_{2.5}$ emissions for project generated traffic on-site and off-site using the Caltrans version of the CARB EMFAC2017 emissions model, known as CT-EMFAC2017. CT-EMFAC2017 provides emission factors for mobile source criteria pollutants and TACs, including DPM. Emission processes modeled include running exhaust for DPM, $PM_{2.5}$ and total organic compounds (TOG), running evaporative losses for TOG, and tire and brake wear and fugitive road dust for $PM_{2.5}$. All $PM_{2.5}$ emissions from all vehicles were used, rather than just the $PM_{2.5}$ fraction from diesel powered vehicles, because all vehicle types (i.e., gasoline and diesel powered) produce $PM_{2.5}$. Additionally, $PM_{2.5}$ emissions from vehicle tire and brake wear and from re-entrained roadway dust were included in these emissions. DPM emissions are projected to decrease in the future and are reflected in the CT-EMFAC2017 emissions data. Inputs to the model include region (Santa Clara County), type of road (major/collector), truck percentage for non-state highways in Santa Clara County (3.51 percent),[14] traffic mix assigned by CT-EMFAC2017 for the county, year of analysis (2024 – project operational year), and season (annual). For on-site emissions, a

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[13] BAAQMD. 2012. Recommended Methods for Screening and Modeling Local Risks and Hazard. May.
[14] 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

0.25-mile segment length was included in the CT-EMFAC2017. These emissions were applied to an area source, representing travel throughout the project site.

The project would generate 1,032 daily trips based on the Project's traffic analysis.[15] There also would be about 111 trucks per year (102 gas and 9 diesel) based on 8,800 gallon/delivery.[16] Average hourly traffic distributions for Santa Clara County roadways were developed using the EMFAC model,[17] which were then applied to the project trips to obtain estimated hourly traffic volumes and emissions for the roadway. For all hours of the day an average speed of 30 mph on Old Middlefield Way and Rengstorff Avenue was assumed for all vehicles based on 5 mph under the posted speed limit signs to account for commute congestion and the amount of access in the area. On-site travel speeds were assumed to be very slow at 5 mph, and therefore, would account for idling. Emissions were assumed to occur 24-hours per day, 365 days per year.

Dispersion modeling of TAC and $PM_{2.5}$ emissions from traffic was conducted using the EPA AERMOD air quality dispersion model, which is recommended by the BAAQMD for this type of analysis.[18] TAC and $PM_{2.5}$ emissions from project traffic on roadways within about 1,000 feet of the project site was evaluated with the model. Emissions from project vehicle traffic were modeled in AERMOD using a series of volume sources along a line (line volume sources), with line segments used to represent the travel lanes on the roadways. On- and near-site project traffic emissions were evaluated as an area source within the project site to capture on-site project traffic. The same meteorological data used in the construction dispersion modeling were used in the project traffic modeling. Other inputs to the model included road geometry, hourly traffic emissions, and receptor locations and heights. Annual TAC and $PM_{2.5}$ concentrations at the project MEI for 2024 from project traffic on the roadways and project site were calculated using receptor heights of 5 feet (1.5 meters) to represent the breathing heights at the single-family residence.

The cancer risk, $PM_{2.5}$ concentration, and HI impacts from project traffic on the MEI are shown in Table 3. Figure 1 shows the project traffic areas used for the modeling. Details of the emission calculations, dispersion modeling, and cancer risk calculations for the receptors with the maximum cancer risk from the project's traffic are provided in *Attachment 3.*

Gasoline-Related Emissions from the GDF

The transfer and storage of gasoline results in evaporative emissions, which is made up of several pollutants considered TACs, specifically Benzene, Ethylbenzene, Toluene, and Xylenes. CARB and the California Air Pollution Control Officer's Association (CAPCOA) developed

[15] Hexagon Transportation Consultants, Inc., *2110 Old Middlefield Way Gas Station Development Multi-Modal Transportation Analysis,* August 30, 2022.
[16] CARB and CAPCOA, *Gasoline Service Station Industrywide Risk Assessment Technical Guidance*, September 2021.
[17] The Burden output from EMFAC2007, a previous version of CARB's EMFAC model, was used for this since the current web-based version of EMFAC2014 does not include Burden type output with hour-by-hour traffic volume information.
[18] BAAQMD. *Recommended Methods for Screening and Modeling Local Risks and Hazards*. May 2012

guidance and a screening tool to calculate the health risk values for GDFs.[19] Inputs for the screening tool includes annual gas throughput, meteorological data, distance to nearest resident receptors, and control scenarios. This screening tool was used to calculate the health risk for the proposed project using gasoline throughput, project settings, distance to the MEI receptor, and exposure parameters consistent with BAAQMD risk assessment methods. The cancer risk and HI impacts from GDFs on the MEI are shown in Table 3. The screening tool inputs and health risk screening values for the proposed GDFs are provided in *Attachment 3*.

<u>Summary of Project-Related Community Risks at the Off-Site Project MEI</u>

The total risk impacts from a project are the combination of construction and operation sources. These sources include on-site construction activity that would last less than a year, operational project traffic, and the GDF that is assumed to operate for 30 years. The project impact is computed by adding the construction cancer risk for an infant/child to the increased cancer risk for the project operational conditions at the MEI over a 30-year period. The project MEI is identified as the sensitive receptor that is most affected by the project's construction and operation.

For this project, the sensitive receptor identified in Figure 1 as the construction MEI is also the project MEI. At this location, the MEI would be exposed to emissions from one year of construction and 29 years of operation. The cancer risks from construction and operation of the project were summed together. Unlike the increased maximum cancer risk, the annual $PM_{2.5}$ concentration and HI risks are not additive but based on an annual maximum risk for the entirety of the project.

As shown in Table 6, the unmitigated maximum cancer risks from construction activities at the MEI location would exceed the BAAQMD single-source significance threshold. However, with the incorporation of the *Mitigation Measure AQ-1 and AQ-2*, the mitigated risk and hazard values would reduce emissions such that cancer risk caused by construction would not exceed the BAAQMD single-source significance thresholds. The unmitigated $PM_{2.5}$ concentration and HI at the MEI do not exceed their respective BAAQMD single-source significance thresholds.

Table 3. Project Health Risk Impacts at the Off-Site Receptors

Source		Cancer Risk (per million)	Annual $PM_{2.5}$ ($\mu g/m^3$)	Hazard Index
Project Construction (Years 0-1)	Unmitigated	**15.17 (infant)**	0.11	0.02
	Mitigated*	3.81 (infant)	0.05	<0.01
Project Traffic (Years 2-30)		0.65 (infant)	0.03	<0.01
GDF Screening Tool Using Net Throughput		0.77 (30-year)**	--	0.08
Total/Maximum Project Impact (Years 0-30)	Unmitigated	**16.59**	0.11	0.08
	Mitigated*	5.23	0.05	0.08
	BAAQMD Single-Source Threshold	***10***	***0.3***	***1.0***
Exceed Threshold?	Unmitigated	***Yes***	*No*	*No*
	Mitigated*	*No*	*No*	*No*

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

** Includes infant exposure.

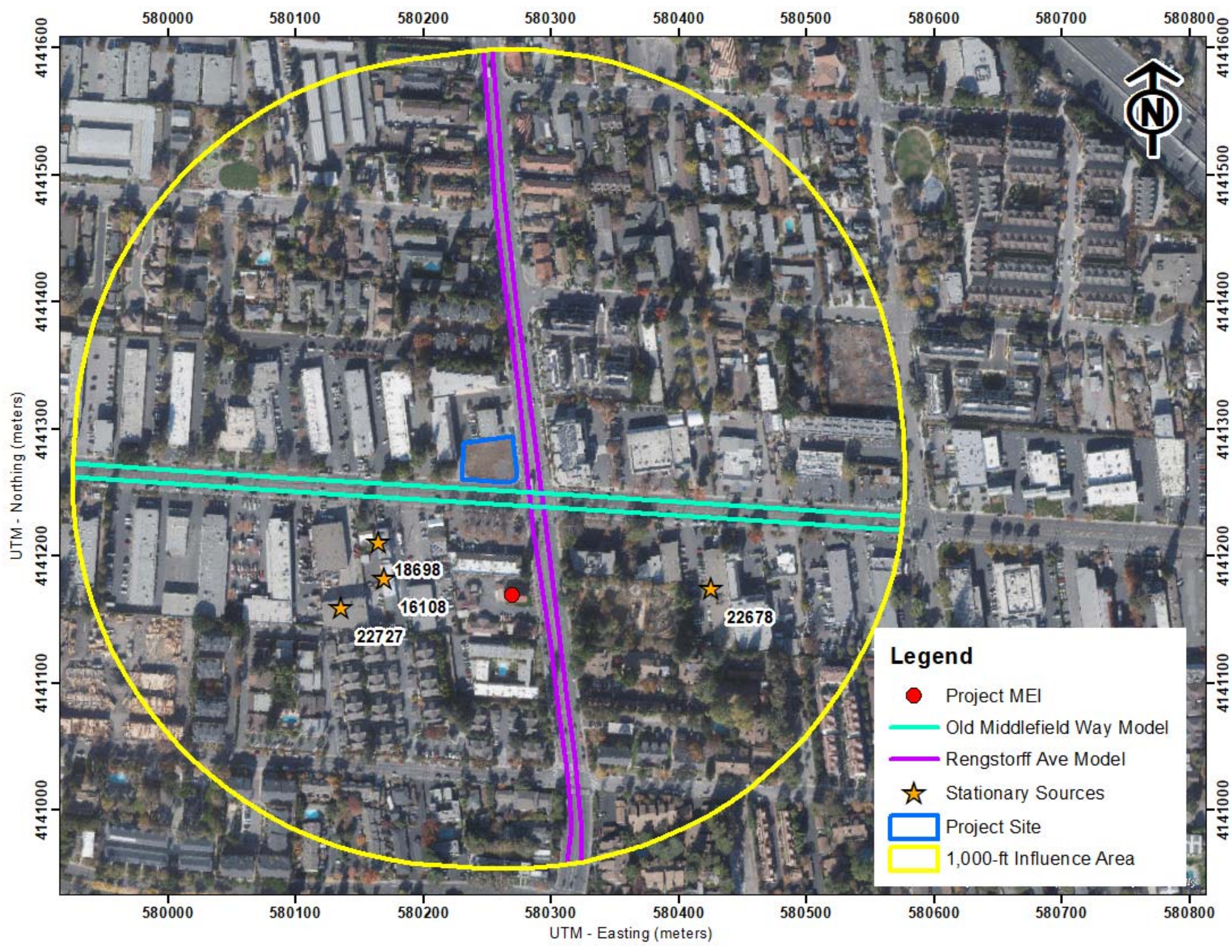
[19] CARB, Gasoline Service Station Industrywide Risk Assessment Guidance, 2022. Web: https://ww2.arb.ca.gov/resources/documents/gasoline-service-station-industrywide-risk-assessment-guidance

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 traffic consultant indicated that two roadways within the influence area, Old Middlefield Way and Rengstorff Avenue, would have traffic exceeding 10,000 vehicles per day. Other nearby streets would have less than 10,000 vehicles per day and are considered negligible sources of TACs. A review of BAAQMD's *Permitted Stationary Sources 2020* geographic information systems (GIS) map tool identified four stationary sources with the potential to affect the MEI. Figure 2 shows the project area included within the influence area. Health risk impacts from these sources upon the MEIs are reported in Table 7. Details of the modeling and health risk calculations are included in *Attachment 4.*

Figure 2. Project Site and Nearby TAC and $PM_{2.5}$ Sources



Local Roadways – Old Middlefield Way and Rengstorff Avenue

A refined analysis of potential health impacts from vehicle traffic on Old Middlefield Way and Rengstorff Avenue was conducted since the roadway was estimated to have average daily traffic (ADT) exceeding 10,000 vehicles. The refined analysis involved predicting emissions for the traffic volume and mix of vehicle types on the roadway near the project site and using an atmospheric dispersion model to predict exposure to TACs. The associated cancer risks are then computed based on the modeled exposures. *Attachment 1* includes a description of how health risk impacts, including cancer risk are computed.

Emissions Rates

This analysis involved the development of DPM, organic TACs, and $PM_{2.5}$ emissions for traffic on Old Middlefield Way and Rengstorff Avenue using CT-EMFAC2017, as described in the project traffic modeling. Inputs to the model include region (Santa Clara County), type of road (major/collector), truck percentage for non-state highways in Santa Clara County (3.51 percent),[20] traffic mix assigned by CT-EMFAC2017 for the county, year of analysis (2024 – project operational year), and season (annual).

To estimate TAC and $PM_{2.5}$ emissions over the 30-year exposure period used for calculating the increased cancer risks for sensitive receptors at the MEI, the CT-EMFAC2017 model was used to develop vehicle emission factors for the year 2024 (project operational year). Emissions associated with vehicle travel depend on the year of analysis because emission control technology requirements are phased-in over time. Therefore, the earlier the year analyzed in the model, the higher the emission rates utilized by CT-EMFAC2017. Year 2024 emissions were conservatively assumed as being representative of future conditions over the time period that cancer risks are evaluated since, as discussed above, overall vehicle emissions, and in particular diesel truck emissions, will decrease in the future.

The ADT for Old Middlefield Way and Rengstorff Avenue was based on AM and PM peak-hour background traffic volumes for the nearby roadway provided by the project's traffic data.[21] The calculated ADT on Old Middlefield Way was 17,396 vehicles and on and Rengstorff Avenue was 12,949 vehicles. Average hourly traffic distributions for Santa Clara County roadways were developed using the EMFAC model,[22] which were then applied to the ADT volumes to obtain estimated hourly traffic volumes and emissions for the roadway. For all hours of the day an average speed of 30 mph on Old Middlefield Way and Rengstorff Avenue was assumed for all vehicles based on 5 mph under the posted speed limit signs to account for commute congestion and the amount of access in the area.

[20] 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

[21] Hexagon Transportation Consultants, Inc., *2110 Old Middlefield Way Gas Station Development Multi-Modal Transportation Analysis,* August 30, 2022.

[22] The Burden output from EMFAC2007, a previous version of CARB's EMFAC model, was used for this since the current web-based version of EMFAC2021 does not include Burden type output with hour by hour traffic volume information.

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

Dispersion Modeling

Dispersion modeling of TAC and $PM_{2.5}$ emissions was conducted using the EPA AERMOD air quality dispersion model, which is recommended by the BAAQMD for this type of analysis.[23] TAC and $PM_{2.5}$ emissions from traffic Old Middlefield Way and Rengstorff Avenue within 1,000 feet of the project site were evaluated. Vehicle traffic on the roadways was modeled using a series of volume sources along a line (line volume sources); with line segments used for travel on the roadways in both opposing directions. The same meteorological data and off-site sensitive receptors used in the previous site dispersion modeling scenarios were used in this roadway modeling. Other inputs to the model included road geometry, hourly traffic emissions, and receptor locations. Annual TAC and $PM_{2.5}$ concentrations using 2024 emissions from traffic on Old Middlefield Way and Rengstorff Avenue were calculated using the model. Concentrations were calculated at the project MEI with receptor heights of 5 feet (1.5 meters) to represent the breathing heights at the single-family residence.

Computed Cancer and Non-Cancer Health Impacts

The cancer risk, $PM_{2.5}$ concentration, and HI impacts from Old Middlefield Way and Rengstorff Avenue on the project MEI are shown in Table 4. Figure 2 shows the roadway links modeled and receptor locations where concentrations were calculated. Details of the emission calculations, dispersion modeling, and cancer risk calculations for the receptors with the maximum cancer risk from traffic on Old Middlefield Way and Rengstorff Avenue are provided in *Attachment 4.*

<u>BAAQMD Permitted Stationary Sources</u>

Permitted stationary sources of air pollution near the project site were identified using BAAQMD's *Permitted Stationary Sources 2020* GIS map website.[24] This mapping tool identifies the location of nearby stationary sources and their estimated risk and hazard impacts, including emissions and adjustments to account for new OEHHA guidance. Four sources were identified using this tool with all four sources being auto body shops. The BAAQMD GIS website provided screening risks and hazards for the remaining sources. Therefore, a stationary source information request was not required to be submitted to BAAQMD.

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

The screening risk and hazard levels provided by BAAQMD for the stationary sources were adjusted for distance using BAAQMD's *Distance Adjustment Multiplier Tool for Generic Engines*. Health risk impacts from the stationary source upon the MEIs are reported in Table 4.

Summary of Health Risks at the Project MEI

Table 4 reports both the project and cumulative community risk impacts at the sensitive receptors most affected by project construction and operation (i.e., the project MEI). Without mitigation, the project's community risk from project construction activities would exceed the maximum increased cancer risk single-source threshold. The annual $PM_{2.5}$ concentration and hazard risk values, which include both the unmitigated and mitigated conditions, would not exceed their single-source thresholds. With the incorporation of *Mitigation Measure AQ-1 and AQ-2*, the mitigated cancer risk would no longer exceed its BAAQMD single-source significance threshold. In addition, the combined unmitigated cancer risk, $PM_{2.5}$ concentration, and HI values would not exceed their respective cumulative thresholds.

Table 4. Cumulative Community Risk Impacts at the Location of the Project MEI

Source	Cancer Risk (per million)	Annual $PM_{2.5}$ ($\mu g/m^3$)	Hazard Index
Project Impacts			
Total/Maximum Project Impact (Years 0-30) Unmitigated Mitigated	**16.59 (infant)** 5.23 (infant)	0.11 0.05	0.08 0.08
BAAQMD Single-Source Threshold	***10***	***0.3***	***1.0***
Exceed Threshold? *Unmitigated* *Mitigated*	***Yes*** *No*	*No* *No*	*No* *No*
Existing Cumulative Sources			
Old Middlefield Way, ADT 17,396	1.71	0.16	<0.01
Rengstorff Ave, ADT 12,949	2.28	0.23	<0.01
Dave's Body Shop (Facility ID #16108, Auto Body), MEI at 250 feet.	-	-	<0.01
Bedford Auto Body (Facility ID #1127, Auto Body), MEI at 275 feet.	-	-	<0.01
Caliber Collision Center (Facility ID #1127, Auto Body), MEI at 450 feet.	-	-	<0.01
Service King Body & Paint (Facility ID #1127, Auto Body), MEI at 325 feet.	-	-	<0.01
Combined Sources Unmitigated Mitigated	20.58 9.22	0.50 0.44	<0.14 <0.14
BAAQMD Cumulative Source Threshold	***100***	***0.8***	***10.0***
Exceed Threshold? Unmitigated Mitigated	*No* *No*	*No* *No*	*No* *No*

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

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.

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 45 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 (PM_{10} 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 2 or 3 engines and include particulate matter emissions control equivalent to CARB Level 3 verifiable diesel emission control devices that altogether achieve a 45 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 45 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 75 percent to 3.81 per million at the MEI and the project's total cancer risk impact would be reduced to 5.23 per million A plan that reduces DPM emissions by 45 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.

GREENHOUSE GAS EMISSIONS

Setting

Greenhouse gases (GHGs) are chemical compounds that trap heat in the earth's atmosphere, raising its temperature. The most common GHGs are carbon dioxide (CO_2) and water vapor but there are also several others, most importantly methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF_6). These are released into the earth's atmosphere through a variety of natural processes and human activities. Sources of GHGs are generally as follows:

- CO_2, CH_4, and N_2O are byproducts of fossil fuel combustion.
- N_2O is associated with agricultural operations such as fertilization of crops.
- CH_4 is commonly created by off-gassing from agricultural practices (e.g., keeping livestock) and landfill operations.
- Chlorofluorocarbons (CFCs) were widely used as refrigerants, propellants, and cleaning solvents but their production has been stopped by international treaty.
- HFCs are now used as a substitute for CFCs in refrigeration and cooling.
- PFCs and sulfur hexafluoride emissions are commonly created by industries such as aluminum production and semi-conductor manufacturing.

Each GHG has its own potency and effect upon the earth's energy balance. This is expressed in terms of a global warming potential (GWP), with CO_2 being assigned a value of 1 and sulfur hexafluoride being several orders of magnitude stronger. In GHG emission inventories, the weight of each gas is multiplied by its GWP and is measured in units of CO_2 equivalents (CO_2e).

An expanding body of scientific research supports the theory that global climate change is currently affecting changes in weather patterns, average sea level, ocean acidification, chemical reaction rates, and precipitation rates, and that it will increasingly do so in the future. The climate and several naturally occurring resources within California are adversely affected by the global warming trend. Increased precipitation and sea level rise will increase coastal flooding, saltwater intrusion, and degradation of wetlands. Mass migration and/or loss of plant and animal species could also occur. Potential effects of global climate change that could adversely affect human health include more extreme heat waves and heat-related stress; an increase in climate-sensitive diseases; more frequent and intense natural disasters such as flooding, hurricanes, and drought; and increased levels of air pollution.

Federal and State Regulatory Actions for GHG Emissions

Executive Order S-3-05 – California GHG Reduction Targets

Executive Order (EO) S-3-05 was signed by Governor Arnold Schwarzenegger in 2005 to set GHG emission reduction targets for California. The three targets established by this EO are as follows: (1) reduce California's GHG emissions to 2000 levels by 2010, (2) reduce California's GHG emissions to 1990 levels by 2020, and (3) reduce California's GHG emissions by 80 percent below 1990 levels by 2050.

Assembly Bill 32 – California Global Warming Solutions Act (2006)

Assembly Bill (AB) 32, the Global Warming Solutions Act of 2006, codified the State's GHG emissions target by directing CARB to reduce the State's global warming emissions to 1990 levels by 2020. AB 32 was signed and passed into law by Governor Schwarzenegger on September 27, 2006. Since that time, the CARB, CEC, California Public Utilities Commission (CPUC), and Building Standards Commission have all been developing regulations that will help meet the goals of AB 32 and Executive Order S-3-05, which has a target of reducing GHG emissions 80 percent below 1990 levels.

A Scoping Plan for AB 32 was adopted by CARB in December 2008. It contains the State's main strategies to reduce GHGs from business-as-usual emissions projected in 2020 back down to 1990 levels. Business-as-usual (BAU) is the projected emissions in 2020, including increases in emissions caused by growth, without any GHG reduction measures. The Scoping Plan has a range of GHG reduction actions, including direct regulations, alternative compliance mechanisms, monetary and non-monetary incentives, voluntary actions, and market-based mechanisms such as a cap-and-trade system.

As directed by AB 32, CARB has also approved a statewide GHG emissions limit. On December 6, 2007, CARB staff resolved an amount of 427 million metric tons (MMT) of CO_2e as the total statewide GHG 1990 emissions level and 2020 emissions limit. The limit is a cumulative statewide limit, not a sector- or facility-specific limit. CARB updated the future 2020 BAU annual emissions forecast, due to the economic downturn, to 545 MMT of CO_2e. Two GHG emissions reduction measures currently enacted that were not previously included in the 2008 Scoping Plan baseline inventory were included, further reducing the baseline inventory to 507 MMT of CO_2e. Thus, an estimated reduction of 80 MMT of CO_2e is necessary to reduce statewide emissions to meet the AB 32 target by 2020.

Executive Order B-30-15 & Senate Bill 32 GHG Reduction Targets – 2030 GHG Reduction Target

In April 2015, Governor Brown signed EO B-30-15, which extended the goals of AB 32, setting a greenhouse gas emissions target at 40 percent of 1990 levels by 2030. On September 8, 2016, Governor Brown signed Senate Bill (SB) 32, which legislatively established the GHG reduction target of 40 percent of 1990 levels by 2030. In November 2017, CARB issued *California's 2017 Climate Change Scoping Plan.* [25] While the State is on track to exceed the AB 32 scoping plan 2020 targets, this plan is an update to reflect the enacted SB 32 reduction target.

SB 32 was passed in 2016, which codified a 2030 GHG emissions reduction target of 40 percent below 1990 levels. CARB has drafted a 2022 Scoping Plan Update to reflect the 2030 target set by Executive Order B-30-15 and codified by SB 32. The 2022 draft plan:

- Identifies a path to keep California on track to meet its SB 32 GHG reduction target of at

[25] California Air Resource Board, 2017. *California's 2017 Climate Change Scoping Plan: The Strategy for Achieving California's 2030 Greenhouse Gas Targets.* November. Web: https://ww2.arb.ca.gov/sites/default/files/classic//cc/scopingplan/scoping_plan_2017.pdf

least 40 percent below 1990 emissions by 2030.

- Identifies a technologically feasible, cost-effective path to achieve carbon neutrality by 2045 or earlier.
- Focuses on strategies for reducing California's dependency on petroleum to provide consumers with clean energy options that address climate change, improve air quality, and support economic growth and clean sector jobs.
- Integrates equity and protecting California's most impacted communities as a driving principle.
- Incorporates the contribution of natural and working lands to the state's GHG emissions, as well as its role in achieving carbon neutrality.
- Relies on the most up to date science, including the need to deploy all viable tools, including carbon capture and sequestration as well a direct air capture.
- Evaluates multiple options for achieving our GHG and carbon neutrality targets, as well as the public health benefits and economic impacts associated with each.

The draft Scoping Plan Update was published on May 10, 2022 and, once final, will lay out how the state can get to carbon neutrality by 2045 or earlier. It is also the first Scoping Plan that adds carbon neutrality as a science-based guide and touchstone beyond statutorily established emission reduction targets.[26]

The mid-term 2030 target is considered critical by CARB on the path to obtaining an even deeper GHG emissions target of 80 percent below 1990 levels by 2050, as directed in Executive Order S-3-05. The 2022 Draft Scoping Plan outlines the suite of policy measures, regulations, planning efforts, and investments in clean technologies and infrastructure, providing a blueprint to continue driving down GHG emissions and to not only obtain the statewide goals, but cost-effectively achieve carbon-neutrality by 2045 or earlier. In the draft 2022 Scoping Plan, CARB recommends:

- VMT per capita reduced 12% below 2019 levels by 2030 and 22% below 2019 levels by 2045.
- 100% of Light-duty vehicle sales are zero emissions vehicles (ZEV) by 2035.
- 100% of medium duty/heavy duty vehicle sales are ZEV by 2040.
- 100% of passenger and other locomotive sales are ZEV by 2030.
- 100% of line haul locomotive sales are ZEV by 2035.
- All electric appliances in new residential and commercial building beginning 2026 (residential) and 2029 (commercial).
- 80% of residential appliance sales are electric by 2030 and 100% of residential appliance sales are electric by 2035.
- 80% of commercial appliance sales are electric by 2030 and 100% of commercial appliance sales are electric by 2045.

[26] https://ww2.arb.ca.gov/our-work/programs/ab-32-climate-change-scoping-plan/2022-scoping-plan-documents

Executive Order B-55-18 – Carbon Neutrality

In 2018, a new statewide goal was established to achieve carbon neutrality as soon as possible, but no later than 2045, and to maintain net negative emissions thereafter. CARB and other relevant state agencies are tasked with establishing sequestration targets and create policies/programs that would meet this goal. The Draft 2022 Scoping Plan Update addresses EO B-55-18 and would cost-effectively achieve carbon-neutrality by 2045 or earlier.

Senate Bill 375 – California's Regional Transportation and Land Use Planning Efforts (2008)

California enacted legislation (SB 375) to expand the efforts of AB 32 by controlling indirect GHG emissions caused by urban sprawl. SB 375 provides incentives for local governments and applicants to implement new conscientiously planned growth patterns. This includes incentives for creating attractive, walkable, and sustainable communities and revitalizing existing communities. The legislation also allows applicants to bypass certain environmental reviews under CEQA if they build projects consistent with the new sustainable community strategies. Development of more alternative transportation options that would reduce vehicle trips and miles traveled, along with traffic congestion, would be encouraged. SB 375 enhances CARB's ability to reach the AB 32 goals by directing the agency in developing regional GHG emission reduction targets to be achieved from the transportation sector for 2020 and 2035. CARB works with the metropolitan planning organizations (e.g., Association of Bay Area Governments [ABAG] and Metropolitan Transportation Commission [MTC]) to align their regional transportation, housing, and land use plans to reduce vehicle miles traveled and demonstrate the region's ability to attain its GHG reduction targets. A similar process is used to reduce transportation emissions of ozone precursor pollutants in the Bay Area.

Senate Bill 350 - Renewable Portfolio Standards

In September 2015, the California Legislature passed SB 350, which increases the states Renewables Portfolio Standard (RPS) for content of electrical generation from the 33 percent target for 2020 to a 50 percent renewables target by 2030.

Senate Bill 100 – Current Renewable Portfolio Standards

In September 2018, SB 100 was signed by Governor Brown to revise California's RPS program goals, furthering California's focus on using renewable energy and carbon-free power sources for its energy needs. The bill would require all California utilities to supply a specific percentage of their retail sales from renewable resources by certain target years. By December 31, 2024, 44 percent of the retails sales would need to be from renewable energy sources, by December 31, 2026 the target would be 40 percent, by December 31, 2017 the target would be 52 percent, and by December 31, 2030 the target would be 60 percent. By December 31, 2045, all California utilities would be required to supply retail electricity that is 100 percent carbon-free and sourced from eligible renewable energy resource to all California end-use customers.

California Building Standards Code – Title 24 Part 11 & Part 6

The California Green Building Standards Code (CALGreen Code) is part of the California Building Standards Code under Title 24, Part 11.[27] The CALGreen Code encourages sustainable construction standards that involve planning/design, energy efficiency, water efficiency resource efficiency, and environmental quality. These green building standard codes are mandatory statewide and are applicable to residential and non-residential developments. The most recent CALGreen Code (2019 California Building Standard Code) was effective as of January 1, 2020.

The California Building Energy Efficiency Standards (California Energy Code) is under Title 24, Part 6 and is overseen by the California Energy Commission (CEC). This code includes design requirements to conserve energy in new residential and non-residential developments, while being cost effective for homeowners. This Energy Code is enforced and verified by cities during the planning and building permit process. The current energy efficiency standards (2019 Energy Code) replaced the 2016 Energy Code as of January 1,2020. Under the 2019 standards, single-family homes are predicted to be 53 percent more efficient than homes built under the 2016 standard due more stringent energy-efficiency standards and mandatory installation of solar photovoltaic systems. For nonresidential developments, it is predicted that these buildings will use 30 percent less energy due to lightening upgrades.[28]

CEC studies have identified the most aggressive electrification scenario as putting the building sector on track to reach the carbon neutrality goal by 2045.[29] Installing new natural gas infrastructure in new buildings will interfere with this goal. To meet the State's goal, communities have been adopting "Reach" codes that prohibit natural gas connections in new and remodeled buildings.

Requirements for electric vehicle (EV) charging infrastructure are set forth in Title 24 of the California Code of Regulations and are regularly updated on a 3-year cycle. The CALGreen standards consist of a set of mandatory standards required for new development, as well as two more voluntary standards known as Tier 1 and Tier 2. The CalGreen standards have recently been updated (2022 version) to require deployment of additional EV chargers in various building types, including multifamily residential and nonresidential land uses. They include requirements for both EV capable parking spaces and the installation of Level 2 EV supply equipment for multifamily residential and nonresidential buildings. The 2022 CALGreen standards include requirements for both EV readiness and the actual installation of EV chargers. The 2022 CALGreen standards include both mandatory requirements and more aggressive voluntary Tier 1 and Tier 2 provisions. Providing EV charging infrastructure that meets current CALGreen requirements will not be sufficient to power the anticipated more extensive level of EV penetration in the future that is needed to meet SB 30 climate goals.

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[27] See: https://www.dgs.ca.gov/BSC/Resources/Page-Content/Building-Standards-Commission-Resources-List-Folder/CALGreen#:~:text=CALGreen%20is%20the%20first%2Din,to%201990%20levels%20by%202020.

[28] See: https://www.energy.ca.gov/sites/default/files/2020-03/Title_24_2019_Building_Standards_FAQ_ada.pdf

[29] California Energy Commission. 2021. F*inal Commission Report: California Building Decarbonization Assessment. Publication Number CEC-400-2021-006-CMF*.August

SB 743 Transportation Impacts

Senate Bill 743 required lead agencies to abandon the old "level of service" metric for evaluating a project's transportation impacts, which was based solely on the amount of delay experienced by motor vehicles. In response, the Governor's Office of Planning and Research (OPR) developed a VMT metric that considered other factors such as reducing GHG emissions and developing multimodal transportation[30]. A VMT-per-capita metric was adopted into the CEQA Guidelines Section 15064.3 in November 2017. Given current baseline per-capita VMT levels computed by CARB in the 2030 Scoping Plan of 22.24 miles per day for light-duty vehicles and 24.61 miles per day for all vehicle types, the reductions needed to achieve the 2050 climate goal are 16.8 percent for light-duty vehicles and 14.3 percent for all vehicle types combined. *Based on this analysis (as well as other factors), OPR recommended using a 15-percent reduction in per capita VMT as an appropriate threshold of significance for evaluating transportation impacts.*

Federal and Statewide GHG Emissions

The U.S. EPA reported that in 2022, total gross nationwide GHG emissions were 5,215.6 million metric tons (MMT) carbon dioxide equivalent (CO_2e).[31] These emissions were lower than peak levels of 7,416 MMT that were emitted in 2007. CARB updates the statewide GHG emission inventory on an annual basis where the latest inventory includes 2000 through 2019 emissions.[32] In 2019, GHG emissions from statewide emitting activities were 418.2 MMT CO_2e. The 2019 emissions have decreased by 30 percent since peak levels in 2007 and are 7.2 MMT CO_2e lower than 2018 emissions level and almost 13 MMT CO_2e below the State's 2020 GHG limit of 431 MMT CO_2e. Per capita GHG emissions in California have dropped from a 2001 peak of 14.0 MT CO_2e per person to 10.5 MT CO_2e per person in 2019. The most recent Bay Area emission inventory was computed for the year 2011.[33] The Bay Area GHG emission were 87 MMT. As a point of comparison, statewide emissions were about 444 MMT in 2011.

City of Mountain View

GHG Reduction Program

The City of Mountain View adopted a qualified GHG reduction program (GGRP) in August 2012.[34] This program meets the requirements of a GHG Reduction Strategy under State CEQA Guidelines Section 15183.5. The program includes 5 strategies and 20 measures that will enable the City to achieve a communitywide emissions efficiency (per-service population – residents

[30] Governor's Office of Planning and Research. 2018. *Technical Advisory on Evaluating Transportation Impacts in CEQA*. December.
[31] United States Environmental Protection Agency, 2022. *Draft Inventory of U.S. Greenhouse Gas Emissions and Sinks 1990-2020*. February. Web: https://www.epa.gov/ghgemissions/inventory-us-greenhouse-gas-emissions-and-sinks
[32] CARB. 2021. *California Greenhouse Gas Emission for 2000 to 2019*. Web: https://ww3.arb.ca.gov/cc/inventory/pubs/reports/2000_2019/ghg_inventory_trends_00-19.pdf
[33] BAAQMD. 2015. *Bay Area Emissions Inventory Summary Report: Greenhouse Gases Base Year 2011*. January. Web: http://www.baaqmd.gov/~/media/files/planning-and-research/emission-inventory/by2011_ghgsummary.pdf.
[34] AECOM. 2012. City of Mountain View Greenhouse Gas Reduction Program. August. Web: https://www.mountainview.gov/civicax/filebank/blobdload.aspx?blobid=10700

and full-time employees) of 15 to 20 percent over 2005 levels by 2020 and of 30 percent over 2005 levels by 2030. The GGRP goals are updated every three to five years using sustainability action plans (SAPs) to augment the 2030 General Plan Action Plan actions, to assess if it is achieving its goal of reducing GHG emissions, and to review the City's overall strategy for GHG emission reductions. The most current SAP is from 2019.

Climate Protection Roadmap

The 2015 Climate Protection Roadmap (CPR)[35] identifies strategies and mechanisms to reduce community-wide greenhouse gas emissions 80% by 2050. Their CAP from 2012 did not contain actions strong enough to achieve the City's adopted absolute targets (5% below 2005 baseline levels by 2012, 10% below 2005 baseline levels by 2015, 15–20% below 2005 baseline levels by 2020, 80% below 2005 baseline levels by 2050). The City recognized the incongruence of the efficiency targets used within their CAP and sought to resolve the issue by conducting a study to evaluate the feasibility of achieving the adopted targets. The City initiated the CPR for this purpose. The CPR is not a plan in and of itself, but an analysis that may be used by City officials to evaluate the potential for long-term communitywide emission reduction initiatives moving forward. Due to the high-level nature of the analysis, the CPR does not explicitly direct implementation of any specific city actions. However, it outlines viable options for future city programs, policies, and actions that could be pursued following additional feasibility analysis.

2019 Mountain View Green Building and Reach Codes

On November 12, 2019, the City adopted the Mountain View Green Building Code amendments,[36] which includes a Reach Codes for new construction. Reach Codes exceed the State's minimum energy code requirements. Included in the City's Reach Codes is a requirement that new buildings be all-electric. Natural gas use in buildings is one of the largest sources of GHG emissions in Mountain View, so meeting their GHG reduction goals requires reducing this source of emissions. The City provides a worksheet to help new construction projects meet their new building code amendments and reach code.

Carbon Neutrality Resolution

In April 2020, the City Council passed a resolution for Mountain View to become a carbon neutral city by 2045.[37] This means that in addition to achieving the adopted 2045 GHG reduction target of 75% below 2005 levels, Mountain View has committed to balancing any remaining GHG emissions with carbon sequestration projects and/or carbon offsets.

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[35] City of Mountain View, Climate Protection Roadmap. September 2015. Web: https://www.mountainview.gov/civicax/filebank/blobdload.aspx?BlobID=19516

[36] City of Mountain View, *2019 MOUNTAIN VIEW GREEN BUILDING AND REACH CODES*, 2019. Web: https://www.mountainview.gov/depts/comdev/building/construction/2019_mountain_view_green_building_and_reach_codes.asp

[37] City of Mountain View, *Carbon Neutrality Resolution*, April 2020. Web: file:///C:/Users/cdivine/Downloads/ATT%201%20-%20Resolution.pdf

BAAQMD GHG Significance Thresholds

On April 20, 2022, BAAQMD adopted new thresholds of significance for operational GHG emissions from land use projects for projects beginning the CEQA process. The following framework is how BAAQMD will determine GHG significance moving forward.[38] Note BAAQMD intends that the thresholds apply to projects that begin the CEQA process after adoption of the thresholds, unless otherwise directed by the lead agency. The new thresholds of significance are:

A. Projects must include, at a minimum, the following project design elements:
   a. Buildings
      i. The project will not include natural gas appliances or natural gas plumbing (in both residential and non-residential development).
      ii. The project will not result in any wasteful, inefficient, or unnecessary energy usage as determined by the analysis required under CEQA Section 21100(b)(3) and Section 15126.2(b) of the State CEQA Guidelines.
   b. Transportation
      i. Achieve a reduction in project-generated vehicle miles traveled (VMT) below the regional average consistent with the current version of the California Climate Change Scoping Plan (currently 15 percent) or meet a locally adopted Senate Bill 743 VMT target, reflecting the recommendations provided in the Governor's Office of Planning and Research's Technical Advisory on Evaluating Transportation Impacts in CEQA:
         1. Residential Projects: 15 percent (16.8 percent in Petaluma) below the existing VMT per capita
         2. Office Projects: 15 percent below the existing VMT per employee
         3. Retail Projects: no net increase in existing VMT
      ii. Achieve compliance with off-street electric vehicle requirements in the most recently adopted version of CALGreen Tier 2.

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

Any new land use project would have to include either section A or B from the above list, not both, to be considered in compliance with BAAQMD's GHG thresholds of significance.

[38] Justification Report: BAAQMD CEQA Thresholds for Evaluating the Significance of Climate Impacts from Land Use Project and Plans. Web: https://www.baaqmd.gov/~/media/files/planning-and-research/ceqa/ceqa-thresholds-2022/justification-report-pdf.pdf?la=en

Impact GHG-1: Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?

GHG emissions associated with development of the proposed project would occur over the short-term from construction activities, consisting primarily of emissions from equipment exhaust and worker and vendor trips. There would also be long-term operational emissions associated with vehicular traffic within the project vicinity, energy and water usage, and solid waste disposal. The City of Mountain View has adopted a GHG reduction strategy that meets the State CEQA Guidelines Section 15183.5. Therefore, the project is considered to have a less-than-significant impact on GHG emissions per BAAQMD GHG threshold B.

BAAQMD has developed new GHG thresholds in 2022. These are addressed below.

Impact GHG-2: Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?

The proposed building would be constructed in conformance with CALGreen and the Title 24 Building Code, which requires high-efficiency water fixtures, water-efficient irrigation systems, and compliance with current energy efficacy standards. To avoid interference with statewide GHG reduction measures identified in CARB's Scoping Plan and SB 100 goals, the project would include the following standard requirements:

1. Avoid construction of new natural gas connections for building: Project plans do not include natural gas infrastructure.

2. Avoid wasteful or inefficient use of electricity: The Project would meet City CalGreen building code requirements.

3. Include electric vehicle charging infrastructure that meets current Building Code CALGreen Tier 2 compliance: The project includes 3 parking spaces and one would include EV charging infrastructure.

4. Reduce VMT per capita by 15 percent over baseline conditions: A CEQA VMT impact analysis was not required for the project because the proposed gas station meets the screening criterion for local-serving retail developments (50,000 square feet or less). Therefore, the project is expected to result in a less-than-significant VMT impact.

Supporting Documentation

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

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

Attachment 3 is the health risk assessment. 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 4 includes the cumulative community risk calculations, modeling results, and health risk calculations from sources affecting the project MEI receptor.

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.[39] 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.[40] 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.[41] Exposure parameters from the OEHHA guidelines and the recent BAAQMD HRA Guidelines were used in this evaluation.

<u>Cancer Risk</u>

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

[39] 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.

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

[41] 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:

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

Where:

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

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

Where:

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

* An 8-hour breathing rate (8HrBR) is used for worker and school child exposures.

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

Parameter	Exposure Type →	Infant		Child	Adult
	Age Range →	3rd Trimester	0<2	2 < 16	16 - 30
DPM Cancer Potency Factor $(mg/kg\text{-}day)^{-1}$		1.10E+00	1.10E+00	1.10E+00	1.10E+00
Vehicle TOG Exhaust		6.28E-03	6.28E-03	6.28E-03	6.28E-03
Vehicle TOG Evaporative		3.70E-04	3.70E-04	3.70E-04	3.70E-04
Daily Breathing Rate (L/kg-day) 80th Percentile Rate		273	758	572	261
Daily Breathing Rate (L/kg-day) 95th Percentile Rate		361	1,090	745	335
8-hour Breathing Rate (L/kg-8 hours) 95th Percentile Rate		-	1,200	520	240
Inhalation Absorption Factor		1	1	1	1
Averaging Time (years)		70	70	70	70
Exposure Duration (years)		0.25	2	14	14*
Exposure Frequency (days/year)		350	350	350	350*
Age Sensitivity Factor		10	10	3	1
Fraction of Time at Home (FAH)		0.85-1.0	0.85-1.0	0.72-1.0	0.73*

Non-Cancer Hazards

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

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

Annual $PM_{2.5}$ Concentrations

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

Attachment 2: CalEEMod Modeling Inputs and Outputs

2110 Old Middlefield Gas Station Detailed Report

Table of Contents

1. Basic Project Information

1.1. Basic Project Information

Data Field	Value
Project Name	2110 Old Middlefield Gas Station
Lead Agency	—
Land Use Scale	Project/site
Analysis Level for Defaults	County
Windspeed (m/s)	2.70
Precipitation (days)	32.8
Location	2110 Old Middlefield Way, Mountain View, CA 94043, USA
County	Santa Clara
City	Mountain View
Air District	Bay Area AQMD
Air Basin	San Francisco Bay Area
TAZ	1713
EDFZ	1
Electric Utility	Silicon Valley Clean Energy
Gas Utility	Pacific Gas & Electric

1.2. Land Use Types

Land Use Subtype	Size	Unit	Lot Acreage	Building Area (sq ft)	Landscape Area (sq ft)	Special Landscape Area (sq ft)	Population	Description
Gasoline/Service Station	3.00	Pump	0.32	3,271	2,942	—	—	—

1.3. User-Selected Emission Reduction Measures by Emissions Sector

Sector	#	Measure Title
Construction	C-5	Use Advanced Engine Tiers
Construction	C-10-A	Water Exposed Surfaces
Construction	C-11	Limit Vehicle Speeds on Unpaved Roads

2. Emissions Summary

2.1. Construction Emissions Compared Against Thresholds

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

Un/Mit.	ROG	NOx	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—
Unmit.	1.31	12.7	0.60	5.39	5.99	0.55	2.59	3.14	1,865
Mit.	0.25	5.38	0.03	2.15	2.19	0.03	1.02	1.05	1,865
% Reduced	81%	58%	94%	60%	64%	94%	61%	66%	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—
Unmit.	6.97	5.95	0.28	0.14	0.36	0.26	0.03	0.26	1,333
Mit.	6.85	4.53	0.09	0.14	0.23	0.08	0.03	0.11	1,333
% Reduced	2%	24%	70%	—	36%	69%	—	57%	—
Average Daily (Max)	—	—	—	—	—	—	—	—	—
Unmit.	0.27	1.79	0.09	0.04	0.12	0.08	0.02	0.09	393
Mit.	0.15	1.35	0.01	0.02	0.03	0.01	0.01	0.02	393
% Reduced	45%	24%	90%	51%	78%	89%	55%	84%	—
Annual (Max)	—	—	—	—	—	—	—	—	—
Unmit.	0.05	0.33	0.02	0.01	0.02	0.01	< 0.005	0.02	65.1

Mit.	0.03	0.25	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	65.1
% Reduced	45%	24%	90%	51%	78%	89%	55%	84%	—

2.2. Construction Emissions by Year, Unmitigated

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

Year	ROG	NOx	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	CO2e
Daily - Summer (Max)	—	—	—	—	—	—	—	—	—
2023	1.31	12.7	0.60	5.39	5.99	0.55	2.59	3.14	1,865
Daily - Winter (Max)	—	—	—	—	—	—	—	—	—
2023	6.97	5.95	0.28	0.14	0.36	0.26	0.03	0.26	1,333
Average Daily	—	—	—	—	—	—	—	—	—
2023	0.27	1.79	0.09	0.04	0.12	0.08	0.02	0.09	393
Annual	—	—	—	—	—	—	—	—	—
2023	0.05	0.33	0.02	0.01	0.02	0.01	< 0.005	0.02	65.1

2.3. Construction Emissions by Year, Mitigated

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

Year	ROG	NOx	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	CO2e
Daily - Summer (Max)	—	—	—	—	—	—	—	—	—
2023	0.25	5.38	0.03	2.15	2.19	0.03	1.02	1.05	1,865
Daily - Winter (Max)	—	—	—	—	—	—	—	—	—
2023	6.85	4.53	0.09	0.14	0.23	0.08	0.03	0.11	1,333
Average Daily	—	—	—	—	—	—	—	—	—
2023	0.15	1.35	0.01	0.02	0.03	0.01	0.01	0.02	393

Annual	—	—	—	—	—	—	—	—	—
2023	0.03	0.25	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	65.1

2.4. Operations Emissions Compared Against Thresholds

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

Un/Mit.	ROG	NOx	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—
Unmit.	4.18	3.50	0.06	3.15	3.21	0.06	0.55	0.61	9,247
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—
Unmit.	3.96	4.11	0.06	3.15	3.21	0.06	0.55	0.61	8,670
Average Daily (Max)	—	—	—	—	—	—	—	—	—
Unmit.	3.26	2.17	0.03	1.40	1.43	0.03	0.25	0.27	4,024
Annual (Max)	—	—	—	—	—	—	—	—	—
Unmit.	0.59	0.40	0.01	0.25	0.26	0.01	0.04	0.05	666

2.5. Operations Emissions by Sector, Unmitigated

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

Sector	ROG	NOx	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—
Mobile	4.08	3.46	0.06	3.15	3.20	0.05	0.55	0.61	9,197
Area	0.10	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	0.59
Energy	< 0.005	0.04	< 0.005	—	< 0.005	< 0.005	—	< 0.005	46.3
Water	—	—	—	—	—	—	—	—	0.33
Waste	—	—	—	—	—	—	—	—	3.05
Total	4.18	3.50	0.06	3.15	3.21	0.06	0.55	0.61	9,247

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—
Mobile	3.88	4.07	0.06	3.15	3.20	0.05	0.55	0.61	8,621
Area	0.08	—	—	—	—	—	—	—	—
Energy	< 0.005	0.04	< 0.005	—	< 0.005	< 0.005	—	< 0.005	46.3
Water	—	—	—	—	—	—	—	—	0.33
Waste	—	—	—	—	—	—	—	—	3.05
Total	3.96	4.11	0.06	3.15	3.21	0.06	0.55	0.61	8,670
Average Daily	—	—	—	—	—	—	—	—	—
Mobile	3.17	2.13	0.03	1.40	1.42	0.03	0.25	0.27	3,974
Area	0.09	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	0.29
Energy	< 0.005	0.04	< 0.005	—	< 0.005	< 0.005	—	< 0.005	46.3
Water	—	—	—	—	—	—	—	—	0.33
Waste	—	—	—	—	—	—	—	—	3.05
Total	3.26	2.17	0.03	1.40	1.43	0.03	0.25	0.27	4,024
Annual	—	—	—	—	—	—	—	—	—
Mobile	0.58	0.39	0.01	0.25	0.26	< 0.005	0.04	0.05	658
Area	0.02	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	0.05
Energy	< 0.005	0.01	< 0.005	—	< 0.005	< 0.005	—	< 0.005	7.66
Water	—	—	—	—	—	—	—	—	0.05
Waste	—	—	—	—	—	—	—	—	0.50
Total	0.59	0.40	0.01	0.25	0.26	0.01	0.04	0.05	666

2.6. Operations Emissions by Sector, Mitigated

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

Sector	ROG	NOx	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—

Mobile	4.08	3.46	0.06	3.15	3.20	0.05	0.55	0.61	9,197
Area	0.10	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	0.59
Energy	< 0.005	0.04	< 0.005	—	< 0.005	< 0.005	—	< 0.005	46.3
Water	—	—	—	—	—	—	—	—	0.33
Waste	—	—	—	—	—	—	—	—	3.05
Total	4.18	3.50	0.06	3.15	3.21	0.06	0.55	0.61	9,247
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—
Mobile	3.88	4.07	0.06	3.15	3.20	0.05	0.55	0.61	8,621
Area	0.08	—	—	—	—	—	—	—	—
Energy	< 0.005	0.04	< 0.005	—	< 0.005	< 0.005	—	< 0.005	46.3
Water	—	—	—	—	—	—	—	—	0.33
Waste	—	—	—	—	—	—	—	—	3.05
Total	3.96	4.11	0.06	3.15	3.21	0.06	0.55	0.61	8,670
Average Daily	—	—	—	—	—	—	—	—	—
Mobile	3.17	2.13	0.03	1.40	1.42	0.03	0.25	0.27	3,974
Area	0.09	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	0.29
Energy	< 0.005	0.04	< 0.005	—	< 0.005	< 0.005	—	< 0.005	46.3
Water	—	—	—	—	—	—	—	—	0.33
Waste	—	—	—	—	—	—	—	—	3.05
Total	3.26	2.17	0.03	1.40	1.43	0.03	0.25	0.27	4,024
Annual	—	—	—	—	—	—	—	—	—
Mobile	0.58	0.39	0.01	0.25	0.26	< 0.005	0.04	0.05	658
Area	0.02	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	0.05
Energy	< 0.005	0.01	< 0.005	—	< 0.005	< 0.005	—	< 0.005	7.66
Water	—	—	—	—	—	—	—	—	0.05
Waste	—	—	—	—	—	—	—	—	0.50
Total	0.59	0.40	0.01	0.25	0.26	0.01	0.04	0.05	666

3. Construction Emissions Details

3.1. Site Preparation (2023) - Unmitigated

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

Location	ROG	NOx	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	CO2e
Onsite	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.54	5.02	0.27	—	0.27	0.25	—	0.25	861
Dust From Material Movement	—	—	—	0.53	0.53	—	0.06	0.06	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	0.01	< 0.005	—	< 0.005	< 0.005	—	< 0.005	2.36
Dust From Material Movement	—	—	—	< 0.005	< 0.005	—	< 0.005	< 0.005	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	0.39
Dust From Material Movement	—	—	—	< 0.005	< 0.005	—	< 0.005	< 0.005	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—
Worker	0.02	0.02	0.00	0.04	0.04	0.00	0.01	0.01	45.3

Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	0.12
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	0.02
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.2. Site Preparation (2023) - Mitigated

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

Location	ROG	NOx	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	CO2e
Onsite	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.13	3.48	0.02	—	0.02	0.02	—	0.02	861
Dust From Material Movement	—	—	—	0.21	0.21	—	0.02	0.02	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	0.01	< 0.005	—	< 0.005	< 0.005	—	< 0.005	2.36
Dust From Material Movement	—	—	—	< 0.005	< 0.005	—	< 0.005	< 0.005	—

Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	0.39
Dust From Material Movement	—	—	—	< 0.005	< 0.005	—	< 0.005	< 0.005	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—
Worker	0.02	0.02	0.00	0.04	0.04	0.00	0.01	0.01	45.3
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	0.12
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	0.02
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.3. Grading (2023) - Unmitigated

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

Location	ROG	NOx	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	CO2e
Onsite	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—

Off-Road Equipment	1.28	12.6	0.60	—	0.60	0.55	—	0.55	1,719
Dust From Material Movement	—	—	—	5.31	5.31	—	2.57	2.57	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.07	< 0.005	—	< 0.005	< 0.005	—	< 0.005	9.42
Dust From Material Movement	—	—	—	0.03	0.03	—	0.01	0.01	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	0.01	< 0.005	—	< 0.005	< 0.005	—	< 0.005	1.56
Dust From Material Movement	—	—	—	0.01	0.01	—	< 0.005	< 0.005	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—
Worker	0.03	0.02	0.00	0.06	0.06	0.00	0.01	0.01	68.0
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	< 0.005	0.10	< 0.005	0.02	0.02	< 0.005	0.01	0.01	78.0
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	0.35
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.43
Annual	—	—	—	—	—	—	—	—	—

Worker	< 0.005	< 0.005	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	0.06
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.07

3.4. Grading (2023) - Mitigated

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

Location	ROG	NOx	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	CO2e
Onsite	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.22	5.26	0.03	—	0.03	0.03	—	0.03	1,719
Dust From Material Movement	—	—	—	2.07	2.07	—	1.00	1.00	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	0.03	< 0.005	—	< 0.005	< 0.005	—	< 0.005	9.42
Dust From Material Movement	—	—	—	0.01	0.01	—	0.01	0.01	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	0.01	< 0.005	—	< 0.005	< 0.005	—	< 0.005	1.56
Dust From Material Movement	—	—	—	< 0.005	< 0.005	—	< 0.005	< 0.005	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—
Worker	0.03	0.02	0.00	0.06	0.06	0.00	0.01	0.01	68.0
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	< 0.005	0.10	< 0.005	0.02	0.02	< 0.005	0.01	0.01	78.0
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	0.35
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.43
Annual	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	0.06
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.07

3.5. Building Construction (2023) - Unmitigated

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

Location	ROG	NOx	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	CO2e
Onsite	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.58	5.93	0.28	—	0.28	0.26	—	0.26	1,309
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.58	5.93	0.28	—	0.28	0.26	—	0.26	1,309
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—

Off-Road Equipment	0.16	1.62	0.08	—	0.08	0.07	—	0.07	359
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.03	0.30	0.01	—	0.01	0.01	—	0.01	59.4
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.00	0.01	0.01	0.00	< 0.005	< 0.005	9.48
Vendor	< 0.005	0.02	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	15.6
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.00	0.01	0.01	0.00	< 0.005	< 0.005	8.75
Vendor	< 0.005	0.02	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	15.6
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	2.43
Vendor	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	4.27
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	0.40
Vendor	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.71
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.6. Building Construction (2023) - Mitigated

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

Location	ROG	NOx	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	CO2e
Onsite	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.18	4.50	0.02	—	0.02	0.02	—	0.02	1,309
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.18	4.50	0.02	—	0.02	0.02	—	0.02	1,309
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.05	1.23	0.01	—	0.01	0.01	—	0.01	359
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.23	< 0.005	—	< 0.005	< 0.005	—	< 0.005	59.4
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.00	0.01	0.01	0.00	< 0.005	< 0.005	9.48
Vendor	< 0.005	0.02	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	15.6
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.00	0.01	0.01	0.00	< 0.005	< 0.005	8.75
Vendor	< 0.005	0.02	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	15.6
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—

Worker	< 0.005	< 0.005	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	2.43
Vendor	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	4.27
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	0.40
Vendor	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.71
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.7. Paving (2023) - Unmitigated

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

Location	ROG	NOx	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	CO2e
Onsite	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.53	4.61	0.22	—	0.22	0.20	—	0.20	826
Paving	0.00	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.06	< 0.005	—	< 0.005	< 0.005	—	< 0.005	11.3
Paving	0.00	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	0.01	< 0.005	—	< 0.005	< 0.005	—	< 0.005	1.87
Paving	0.00	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Offsite	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—
Worker	0.06	0.06	0.00	0.14	0.14	0.00	0.03	0.03	146
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	2.03
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	0.34
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.8. Paving (2023) - Mitigated

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

Location	ROG	NOx	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	CO2e
Onsite	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.26	4.37	0.09	—	0.09	0.08	—	0.08	826
Paving	0.00	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—

Off-Road Equipment	< 0.005	0.06	< 0.005	—	< 0.005	< 0.005	—	< 0.005	11.3
Paving	0.00	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	0.01	< 0.005	—	< 0.005	< 0.005	—	< 0.005	1.87
Paving	0.00	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—
Worker	0.06	0.06	0.00	0.14	0.14	0.00	0.03	0.03	146
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	2.03
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	0.34
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.9. Architectural Coating (2023) - Unmitigated

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

Location	ROG	NOx	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	CO2e

Onsite	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.15	0.93	0.04	—	0.04	0.03	—	0.03	134
Architectural Coatings	6.82	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	0.01	< 0.005	—	< 0.005	< 0.005	—	< 0.005	1.84
Architectural Coatings	0.09	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	0.30
Architectural Coatings	0.02	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	1.75
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	0.02

Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	< 0.005
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.10. Architectural Coating (2023) - Mitigated

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

Location	ROG	NOx	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	CO2e
Onsite	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.02	1.07	0.03	—	0.03	0.03	—	0.03	134
Architectural Coatings	6.82	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	0.01	< 0.005	—	< 0.005	< 0.005	—	< 0.005	1.84
Architectural Coatings	0.09	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	0.30
Architectural Coatings	0.02	—	—	—	—	—	—	—	—

Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	1.75
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	0.02
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	< 0.005
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

4. Operations Emissions Details

4.1. Mobile Emissions by Land Use

4.1.1. Unmitigated

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

Land Use	ROG	NOx	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—
Gasoline/Service Station	4.08	3.46	0.06	3.15	3.20	0.05	0.55	0.61	9,197
Total	4.08	3.46	0.06	3.15	3.20	0.05	0.55	0.61	9,197

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—
Gasoline/Service Station	3.88	4.07	0.06	3.15	3.20	0.05	0.55	0.61	8,621
Total	3.88	4.07	0.06	3.15	3.20	0.05	0.55	0.61	8,621
Annual	—	—	—	—	—	—	—	—	—
Gasoline/Service Station	0.58	0.39	0.01	0.25	0.26	< 0.005	0.04	0.05	658
Total	0.58	0.39	0.01	0.25	0.26	< 0.005	0.04	0.05	658

4.1.2. Mitigated

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

Land Use	ROG	NOx	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—
Gasoline/Service Station	4.08	3.46	0.06	3.15	3.20	0.05	0.55	0.61	9,197
Total	4.08	3.46	0.06	3.15	3.20	0.05	0.55	0.61	9,197
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—
Gasoline/Service Station	3.88	4.07	0.06	3.15	3.20	0.05	0.55	0.61	8,621
Total	3.88	4.07	0.06	3.15	3.20	0.05	0.55	0.61	8,621
Annual	—	—	—	—	—	—	—	—	—
Gasoline/Service Station	0.58	0.39	0.01	0.25	0.26	< 0.005	0.04	0.05	658
Total	0.58	0.39	0.01	0.25	0.26	< 0.005	0.04	0.05	658

4.2. Energy

4.2.1. Electricity Emissions By Land Use - Unmitigated

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

Land Use	ROG	NOx	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—
Gasoline/Service Station	—	—	—	—	—	—	—	—	0.23
Total	—	—	—	—	—	—	—	—	0.23
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—
Gasoline/Service Station	—	—	—	—	—	—	—	—	0.23
Total	—	—	—	—	—	—	—	—	0.23
Annual	—	—	—	—	—	—	—	—	—
Gasoline/Service Station	—	—	—	—	—	—	—	—	0.04
Total	—	—	—	—	—	—	—	—	0.04

4.2.2. Electricity Emissions By Land Use - Mitigated

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

Land Use	ROG	NOx	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—
Gasoline/Service Station	—	—	—	—	—	—	—	—	0.23
Total	—	—	—	—	—	—	—	—	0.23
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—
Gasoline/Service Station	—	—	—	—	—	—	—	—	0.23
Total	—	—	—	—	—	—	—	—	0.23
Annual	—	—	—	—	—	—	—	—	—
Gasoline/Service Station	—	—	—	—	—	—	—	—	0.04

Total	—	—	—	—	—	—	—	—	0.04

4.2.3. Natural Gas Emissions By Land Use - Unmitigated

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

Land Use	ROG	NOx	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—
Gasoline/Service Station	< 0.005	0.04	< 0.005	—	< 0.005	< 0.005	—	< 0.005	46.0
Total	< 0.005	0.04	< 0.005	—	< 0.005	< 0.005	—	< 0.005	46.0
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—
Gasoline/Service Station	< 0.005	0.04	< 0.005	—	< 0.005	< 0.005	—	< 0.005	46.0
Total	< 0.005	0.04	< 0.005	—	< 0.005	< 0.005	—	< 0.005	46.0
Annual	—	—	—	—	—	—	—	—	—
Gasoline/Service Station	< 0.005	0.01	< 0.005	—	< 0.005	< 0.005	—	< 0.005	7.62
Total	< 0.005	0.01	< 0.005	—	< 0.005	< 0.005	—	< 0.005	7.62

4.2.4. Natural Gas Emissions By Land Use - Mitigated

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

Land Use	ROG	NOx	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—
Gasoline/Service Station	< 0.005	0.04	< 0.005	—	< 0.005	< 0.005	—	< 0.005	46.0
Total	< 0.005	0.04	< 0.005	—	< 0.005	< 0.005	—	< 0.005	46.0
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—
Gasoline/Service Station	< 0.005	0.04	< 0.005	—	< 0.005	< 0.005	—	< 0.005	46.0

Total	< 0.005	0.04	< 0.005	—	< 0.005	< 0.005	—	< 0.005	46.0
Annual	—	—	—	—	—	—	—	—	—
Gasoline/Service Station	< 0.005	0.01	< 0.005	—	< 0.005	< 0.005	—	< 0.005	7.62
Total	< 0.005	0.01	< 0.005	—	< 0.005	< 0.005	—	< 0.005	7.62

4.3. Area Emissions by Source

4.3.2. Unmitigated

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

Source	ROG	NOx	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—
Consumer Products	0.07	—	—	—	—	—	—	—	—
Architectural Coatings	0.01	—	—	—	—	—	—	—	—
Landscape Equipment	0.02	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	0.59
Total	0.10	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	0.59
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—
Consumer Products	0.07	—	—	—	—	—	—	—	—
Architectural Coatings	0.01	—	—	—	—	—	—	—	—
Total	0.08	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—
Consumer Products	0.01	—	—	—	—	—	—	—	—
Architectural Coatings	< 0.005	—	—	—	—	—	—	—	—

Landscape Equipment	< 0.005	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	0.05
Total	0.02	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	0.05

4.3.1. Mitigated

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

Source	ROG	NOx	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—
Consumer Products	0.07	—	—	—	—	—	—	—	—
Architectural Coatings	0.01	—	—	—	—	—	—	—	—
Landscape Equipment	0.02	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	0.59
Total	0.10	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	0.59
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—
Consumer Products	0.07	—	—	—	—	—	—	—	—
Architectural Coatings	0.01	—	—	—	—	—	—	—	—
Total	0.08	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—
Consumer Products	0.01	—	—	—	—	—	—	—	—
Architectural Coatings	< 0.005	—	—	—	—	—	—	—	—
Landscape Equipment	< 0.005	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	0.05
Total	0.02	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	0.05

4.4. Water Emissions by Land Use

4.4.2. Unmitigated

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

Land Use	ROG	NOx	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—
Gasoline/Service Station	—	—	—	—	—	—	—	—	0.33
Total	—	—	—	—	—	—	—	—	0.33
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—
Gasoline/Service Station	—	—	—	—	—	—	—	—	0.33
Total	—	—	—	—	—	—	—	—	0.33
Annual	—	—	—	—	—	—	—	—	—
Gasoline/Service Station	—	—	—	—	—	—	—	—	0.05
Total	—	—	—	—	—	—	—	—	0.05

4.4.1. Mitigated

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

Land Use	ROG	NOx	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—
Gasoline/Service Station	—	—	—	—	—	—	—	—	0.33
Total	—	—	—	—	—	—	—	—	0.33
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—
Gasoline/Service Station	—	—	—	—	—	—	—	—	0.33

Total	—	—	—	—	—	—	—	—	0.33
Annual	—	—	—	—	—	—	—	—	—
Gasoline/Service Station	—	—	—	—	—	—	—	—	0.05
Total	—	—	—	—	—	—	—	—	0.05

4.5. Waste Emissions by Land Use

4.5.2. Unmitigated

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

Land Use	ROG	NOx	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—
Gasoline/Service Station	—	—	—	—	—	—	—	—	3.05
Total	—	—	—	—	—	—	—	—	3.05
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—
Gasoline/Service Station	—	—	—	—	—	—	—	—	3.05
Total	—	—	—	—	—	—	—	—	3.05
Annual	—	—	—	—	—	—	—	—	—
Gasoline/Service Station	—	—	—	—	—	—	—	—	0.50
Total	—	—	—	—	—	—	—	—	0.50

4.5.1. Mitigated

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

Land Use	ROG	NOx	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	CO2e

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—
Gasoline/Service Station	—	—	—	—	—	—	—	—	3.05
Total	—	—	—	—	—	—	—	—	3.05
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—
Gasoline/Service Station	—	—	—	—	—	—	—	—	3.05
Total	—	—	—	—	—	—	—	—	3.05
Annual	—	—	—	—	—	—	—	—	—
Gasoline/Service Station	—	—	—	—	—	—	—	—	0.50
Total	—	—	—	—	—	—	—	—	0.50

4.6. Refrigerant Emissions by Land Use

4.6.1. Unmitigated

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

Land Use	ROG	NOx	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—

4.6.2. Mitigated

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

Land Use	ROG	NOx	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—

4.7. Offroad Emissions By Equipment Type

4.7.1. Unmitigated

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

Equipment Type	ROG	NOx	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—

4.7.2. Mitigated

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

Equipment Type	ROG	NOx	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—

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

4.8. Stationary Emissions By Equipment Type

4.8.1. Unmitigated

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

Equipment Type	ROG	NOx	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—

4.8.2. Mitigated

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

Equipment Type	ROG	NOx	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—

4.9. User Defined Emissions By Equipment Type

4.9.1. Unmitigated

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

Equipment Type	ROG	NOx	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—

4.9.2. Mitigated

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

Equipment Type	ROG	NOx	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—

4.10. Soil Carbon Accumulation By Vegetation Type

4.10.1. Soil Carbon Accumulation By Vegetation Type - Unmitigated

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

Vegetation	ROG	NOx	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—

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

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

Land Use	ROG	NOx	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—

4.10.3. Avoided and Sequestered Emissions by Species - Unmitigated

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

Species	ROG	NOx	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—

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

4.10.4. Soil Carbon Accumulation By Vegetation Type - Mitigated

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

Vegetation	ROG	NOx	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—

Total	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—

4.10.5. Above and Belowground Carbon Accumulation by Land Use Type - Mitigated

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

Land Use	ROG	NOx	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—

4.10.6. Avoided and Sequestered Emissions by Species - Mitigated

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

Species	ROG	NOx	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—

Avoided	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—

5. Activity Data

5.1. Construction Schedule

Phase Name	Phase Type	Start Date	End Date	Days Per Week	Work Days per Phase	Phase Description
Site Preparation	Site Preparation	6/16/2023	6/17/2023	5.00	1.00	—
Grading	Grading	6/18/2023	6/20/2023	5.00	2.00	—
Building Construction	Building Construction	6/21/2023	11/8/2023	5.00	100	—
Paving	Paving	11/9/2023	11/16/2023	5.00	5.00	—
Architectural Coating	Architectural Coating	11/17/2023	11/24/2023	5.00	5.00	—

5.2. Off-Road Equipment

5.2.1. Unmitigated

Phase Name	Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor
Site Preparation	Graders	Diesel	Average	1.00	8.00	148	0.41
Site Preparation	Tractors/Loaders/Backhoes	Diesel	Average	1.00	8.00	84.0	0.37
Grading	Graders	Diesel	Average	1.00	6.00	148	0.41
Grading	Rubber Tired Dozers	Diesel	Average	1.00	6.00	367	0.40
Grading	Tractors/Loaders/Backhoes	Diesel	Average	1.00	7.00	84.0	0.37
Building Construction	Cranes	Diesel	Average	1.00	4.00	367	0.29
Building Construction	Forklifts	Diesel	Average	2.00	6.00	82.0	0.20
Building Construction	Tractors/Loaders/Backhoes	Diesel	Average	2.00	8.00	84.0	0.37
Paving	Cement and Mortar Mixers	Diesel	Average	4.00	6.00	10.0	0.56
Paving	Pavers	Diesel	Average	1.00	7.00	81.0	0.42
Paving	Rollers	Diesel	Average	1.00	7.00	36.0	0.38
Paving	Tractors/Loaders/Backhoes	Diesel	Average	1.00	7.00	84.0	0.37
Architectural Coating	Air Compressors	Diesel	Average	1.00	6.00	37.0	0.48

5.2.2. Mitigated

Phase Name	Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor
Site Preparation	Graders	Diesel	Tier 4 Interim	1.00	8.00	148	0.41
Site Preparation	Tractors/Loaders/Backhoes	Diesel	Tier 4 Interim	1.00	8.00	84.0	0.37
Grading	Graders	Diesel	Tier 4 Interim	1.00	6.00	148	0.41

Grading	Rubber Tired Dozers	Diesel	Tier 4 Interim	1.00	6.00	367	0.40
Grading	Tractors/Loaders/Backhoes	Diesel	Tier 4 Interim	1.00	7.00	84.0	0.37
Building Construction	Cranes	Diesel	Tier 4 Interim	1.00	4.00	367	0.29
Building Construction	Forklifts	Diesel	Tier 4 Interim	2.00	6.00	82.0	0.20
Building Construction	Tractors/Loaders/Backhoes	Diesel	Tier 4 Interim	2.00	8.00	84.0	0.37
Paving	Cement and Mortar Mixers	Diesel	Average	4.00	6.00	10.0	0.56
Paving	Pavers	Diesel	Tier 4 Interim	1.00	7.00	81.0	0.42
Paving	Rollers	Diesel	Tier 4 Interim	1.00	7.00	36.0	0.38
Paving	Tractors/Loaders/Backhoes	Diesel	Tier 4 Interim	1.00	7.00	84.0	0.37
Architectural Coating	Air Compressors	Diesel	Tier 4 Interim	1.00	6.00	37.0	0.48

5.3. Construction Vehicles

5.3.1. Unmitigated

Phase Name	Trip Type	One-Way Trips per Day	Miles per Trip	Vehicle Mix
Site Preparation	—	—	—	—
Site Preparation	Worker	5.00	11.7	LDA,LDT1,LDT2
Site Preparation	Vendor	—	8.40	HHDT,MHDT
Site Preparation	Hauling	0.00	20.0	HHDT
Site Preparation	Onsite truck	—	—	HHDT
Grading	—	—	—	—
Grading	Worker	7.50	11.7	LDA,LDT1,LDT2
Grading	Vendor	—	8.40	HHDT,MHDT
Grading	Hauling	1.00	20.0	HHDT
Grading	Onsite truck	—	—	HHDT

Building Construction	—	—	—	—
Building Construction	Worker	1.05	11.7	LDA,LDT1,LDT2
Building Construction	Vendor	0.54	8.40	HHDT,MHDT
Building Construction	Hauling	0.00	20.0	HHDT
Building Construction	Onsite truck	—	—	HHDT
Paving	—	—	—	—
Paving	Worker	17.5	11.7	LDA,LDT1,LDT2
Paving	Vendor	—	8.40	HHDT,MHDT
Paving	Hauling	0.00	20.0	HHDT
Paving	Onsite truck	—	—	HHDT
Architectural Coating	—	—	—	—
Architectural Coating	Worker	0.21	11.7	LDA,LDT1,LDT2
Architectural Coating	Vendor	—	8.40	HHDT,MHDT
Architectural Coating	Hauling	0.00	20.0	HHDT
Architectural Coating	Onsite truck	—	—	HHDT

5.3.2. Mitigated

Phase Name	Trip Type	One-Way Trips per Day	Miles per Trip	Vehicle Mix
Site Preparation	—	—	—	—
Site Preparation	Worker	5.00	11.7	LDA,LDT1,LDT2
Site Preparation	Vendor	—	8.40	HHDT,MHDT
Site Preparation	Hauling	0.00	20.0	HHDT
Site Preparation	Onsite truck	—	—	HHDT
Grading	—	—	—	—
Grading	Worker	7.50	11.7	LDA,LDT1,LDT2
Grading	Vendor	—	8.40	HHDT,MHDT
Grading	Hauling	1.00	20.0	HHDT

Grading	Onsite truck	—	—	HHDT
Building Construction	—	—	—	—
Building Construction	Worker	1.05	11.7	LDA,LDT1,LDT2
Building Construction	Vendor	0.54	8.40	HHDT,MHDT
Building Construction	Hauling	0.00	20.0	HHDT
Building Construction	Onsite truck	—	—	HHDT
Paving	—	—	—	—
Paving	Worker	17.5	11.7	LDA,LDT1,LDT2
Paving	Vendor	—	8.40	HHDT,MHDT
Paving	Hauling	0.00	20.0	HHDT
Paving	Onsite truck	—	—	HHDT
Architectural Coating	—	—	—	—
Architectural Coating	Worker	0.21	11.7	LDA,LDT1,LDT2
Architectural Coating	Vendor	—	8.40	HHDT,MHDT
Architectural Coating	Hauling	0.00	20.0	HHDT
Architectural Coating	Onsite truck	—	—	HHDT

5.4. Vehicles

5.4.1. Construction Vehicle Control Strategies

Non-applicable. No control strategies activated by user.

5.5. Architectural Coatings

Phase Name	Residential Interior Area Coated (sq ft)	Residential Exterior Area Coated (sq ft)	Non-Residential Interior Area Coated (sq ft)	Non-Residential Exterior Area Coated (sq ft)	Parking Area Coated (sq ft)
Architectural Coating	0.00	0.00	4,907	1,636	—

5.6. Dust Mitigation

5.6.1. Construction Earthmoving Activities

Phase Name	Material Imported (cy)	Material Exported (cy)	Acres Graded (acres)	Material Demolished (sq. ft.)	Acres Paved (acres)
Site Preparation	—	—	0.50	0.00	—
Grading	16.0	—	1.50	0.00	—
Paving	0.00	0.00	0.00	0.00	0.00

5.6.2. Construction Earthmoving Control Strategies

Non-applicable. No control strategies activated by user.

5.7. Construction Paving

Land Use	Area Paved (acres)	% Asphalt
Gasoline/Service Station	0.00	0%

5.8. Construction Electricity Consumption and Emissions Factors

kWh per Year and Emission Factor (lb/MWh)

Year	kWh per Year	CO2	CH4	N2O
2023	0.00	2.34	0.00	0.00

5.9. Operational Mobile Sources

5.9.1. Unmitigated

Land Use Type	Trips/Weekday	Trips/Saturday	Trips/Sunday	Trips/Year	VMT/Weekday	VMT/Saturday	VMT/Sunday	VMT/Year
Gasoline/Service Station	1,032	1,093	1,001	378,276	2,723	11,451	10,490	1,853,990

5.9.2. Mitigated

Land Use Type	Trips/Weekday	Trips/Saturday	Trips/Sunday	Trips/Year	VMT/Weekday	VMT/Saturday	VMT/Sunday	VMT/Year
Gasoline/Service Station	1,032	1,093	1,001	378,276	2,723	11,451	10,490	1,853,990

5.10. Operational Area Sources

5.10.1. Hearths

5.10.1.1. Unmitigated

5.10.1.2. Mitigated

5.10.2. Architectural Coatings

Residential Interior Area Coated (sq ft)	Residential Exterior Area Coated (sq ft)	Non-Residential Interior Area Coated (sq ft)	Non-Residential Exterior Area Coated (sq ft)	Parking Area Coated (sq ft)
0	0.00	4,907	1,636	—

5.10.3. Landscape Equipment

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

5.10.4. Landscape Equipment - Mitigated

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

5.11. Operational Energy Consumption

5.11.1. Unmitigated

Electricity (kWh/yr) and CO_2 and CH_4 and N_2O and Natural Gas (kBTU/yr)

Land Use	Electricity (kWh/yr)	CO2	CH4	N2O	Natural Gas (kBTU/yr)
Gasoline/Service Station	35,687	2.34	0.0000	0.0000	143,234

5.11.2. Mitigated

Electricity (kWh/yr) and CO_2 and CH_4 and N_2O and Natural Gas (kBTU/yr)

Land Use	Electricity (kWh/yr)	CO2	CH4	N2O	Natural Gas (kBTU/yr)
Gasoline/Service Station	35,687	2.34	0.0000	0.0000	143,234

5.12. Operational Water and Wastewater Consumption

5.12.1. Unmitigated

Land Use	Indoor Water (gal/year)	Outdoor Water (gal/year)
Gasoline/Service Station	39,846	31,451

5.12.2. Mitigated

Land Use	Indoor Water (gal/year)	Outdoor Water (gal/year)
Gasoline/Service Station	39,846	31,451

5.13. Operational Waste Generation

5.13.1. Unmitigated

Land Use	Waste (ton/year)	Cogeneration (kWh/year)
Gasoline/Service Station	1.62	0.00

5.13.2. Mitigated

Land Use	Waste (ton/year)	Cogeneration (kWh/year)
Gasoline/Service Station	1.62	0.00

5.14. Operational Refrigeration and Air Conditioning Equipment

5.14.1. Unmitigated

Land Use Type	Equipment Type	Refrigerant	GWP	Quantity (kg)	Operations Leak Rate	Service Leak Rate	Times Serviced

5.14.2. Mitigated

Land Use Type	Equipment Type	Refrigerant	GWP	Quantity (kg)	Operations Leak Rate	Service Leak Rate	Times Serviced

5.15. Operational Off-Road Equipment

5.15.1. Unmitigated

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

5.15.2. Mitigated

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

5.16. Stationary Sources

5.16.1. Emergency Generators and Fire Pumps

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

5.16.2. Process Boilers

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

5.17. User Defined

Equipment Type	Fuel Type
—	—

5.18. Vegetation

5.18.1. Land Use Change

5.18.1.1. Unmitigated

Vegetation Land Use Type	Vegetation Soil Type	Initial Acres	Final Acres

5.18.1.2. Mitigated

Vegetation Land Use Type	Vegetation Soil Type	Initial Acres	Final Acres

5.18.1. Biomass Cover Type

5.18.1.1. Unmitigated

Biomass Cover Type	Initial Acres	Final Acres

5.18.1.2. Mitigated

Biomass Cover Type	Initial Acres	Final Acres

5.18.2. Sequestration

5.18.2.1. Unmitigated

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

5.18.2.2. Mitigated

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

6. Climate Risk Detailed Report

6.1. Climate Risk Summary

Cal-Adapt midcentury 2040–2059 average projections for four hazards are reported below for your project location. These are under Representation Concentration Pathway (RCP) 8.5 which assumes GHG emissions will continue to rise strongly through 2050 and then plateau around 2100.

Climate Hazard	Result for Project Location	Unit
Temperature and Extreme Heat	12.7	annual days of extreme heat
Extreme Precipitation	4.40	annual days with precipitation above 20 mm
Sea Level Rise	0.00	meters of inundation depth
Wildfire	8.55	annual hectares burned

Temperature and Extreme Heat data are for grid cell in which your project are located. The projection is based on the 98th historical percentile of daily maximum/minimum temperatures from observed historical data (32 climate model ensemble from Cal-Adapt, 2040–2059 average under RCP 8.5). Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.
Extreme Precipitation data are for the grid cell in which your project are located. The threshold of 20 mm is equivalent to about ¾ an inch of rain, which would be light to moderate rainfall if received over a full day or heavy rain if received over a period of 2 to 4 hours. Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.
Sea Level Rise data are for the grid cell in which your project are located. The projections are from Radke et al. (2017), as reported in Cal-Adapt (2040–2059 average under RCP 8.5), and consider different increments of sea level rise coupled with extreme storm events. Users may select from four model simulations to view the range in potential inundation depth for the grid cell. The four simulations make different assumptions about expected rainfall and temperature are: Warmer/drier (HadGEM2-ES), Cooler/wetter (CNRM-CM5), Average conditions (CanESM2), Range of different rainfall and temperature possibilities (MIROC5). Each grid cell is 50 meters (m) by 50 m, or about 164 feet (ft) by 164 ft.
Wildfire data are for the grid cell in which your project are located. The projections are from UC Davis, as reported in Cal-Adapt (2040–2059 average under RCP 8.5), and consider historical data of climate, vegetation, population density, and large (> 400 ha) fire history. Users may select from four model simulations to view the range in potential wildfire probabilities for the grid cell. The four simulations make different assumptions about expected rainfall and temperature are: Warmer/drier (HadGEM2-ES), Cooler/wetter (CNRM-CM5), Average conditions (CanESM2), Range of different rainfall and temperature possibilities (MIROC5). Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.

6.2. Initial Climate Risk Scores

Climate Hazard	Exposure Score	Sensitivity Score	Adaptive Capacity Score	Vulnerability Score
Temperature and Extreme Heat	N/A	N/A	N/A	N/A
Extreme Precipitation	N/A	N/A	N/A	N/A
Sea Level Rise	N/A	N/A	N/A	N/A
Wildfire	N/A	N/A	N/A	N/A
Flooding	N/A	N/A	N/A	N/A
Drought	N/A	N/A	N/A	N/A
Snowpack Reduction	N/A	N/A	N/A	N/A
Air Quality Degradation	N/A	N/A	N/A	N/A

The sensitivity score reflects the extent to which a project would be adversely affected by exposure to a climate hazard. Exposure is rated on a scale of 1 to 5, with a score of 5 representing the greatest exposure.
The adaptive capacity of a project refers to its ability to manage and reduce vulnerabilities from projected climate hazards. Adaptive capacity is rated on a scale of 1 to 5, with a score of 5 representing the greatest ability to adapt.
The overall vulnerability scores are calculated based on the potential impacts and adaptive capacity assessments for each hazard. Scores do not include implementation of climate risk reduction measures.

6.3. Adjusted Climate Risk Scores

Climate Hazard	Exposure Score	Sensitivity Score	Adaptive Capacity Score	Vulnerability Score
Temperature and Extreme Heat	N/A	N/A	N/A	N/A
Extreme Precipitation	N/A	N/A	N/A	N/A
Sea Level Rise	N/A	N/A	N/A	N/A
Wildfire	N/A	N/A	N/A	N/A
Flooding	N/A	N/A	N/A	N/A
Drought	N/A	N/A	N/A	N/A
Snowpack Reduction	N/A	N/A	N/A	N/A
Air Quality Degradation	N/A	N/A	N/A	N/A

The sensitivity score reflects the extent to which a project would be adversely affected by exposure to a climate hazard. Exposure is rated on a scale of 1 to 5, with a score of 5 representing the greatest exposure.

The adaptive capacity of a project refers to its ability to manage and reduce vulnerabilities from projected climate hazards. Adaptive capacity is rated on a scale of 1 to 5, with a score of 5 representing the greatest ability to adapt.
The overall vulnerability scores are calculated based on the potential impacts and adaptive capacity assessments for each hazard. Scores include implementation of climate risk reduction measures.

6.4. Climate Risk Reduction Measures

7. Health and Equity Details

7.1. CalEnviroScreen 4.0 Scores

The maximum CalEnviroScreen score is 100. A high score (i.e., greater than 50) reflects a higher pollution burden compared to other census tracts in the state.

Indicator	Result for Project Census Tract
Exposure Indicators	—
AQ-Ozone	13.6
AQ-PM	18.9
AQ-DPM	90.6
Drinking Water	61.9
Lead Risk Housing	20.4
Pesticides	0.00
Toxic Releases	27.4
Traffic	91.4
Effect Indicators	—
CleanUp Sites	96.9
Groundwater	97.9
Haz Waste Facilities/Generators	85.9
Impaired Water Bodies	43.8
Solid Waste	0.00
Sensitive Population	—
Asthma	8.97
Cardio-vascular	19.1

Low Birth Weights	98.7
Socioeconomic Factor Indicators	—
Education	54.6
Housing	34.2
Linguistic	47.7
Poverty	29.5
Unemployment	1.15

7.2. Healthy Places Index Scores

The maximum Health Places Index score is 100. A high score (i.e., greater than 50) reflects healthier community conditions compared to other census tracts in the state.

Indicator	Result for Project Census Tract
Economic	—
Above Poverty	74.60541512
Employed	96.34287181
Median HI	91.03041191
Education	—
Bachelor's or higher	86.75734634
High school enrollment	100
Preschool enrollment	61.50391377
Transportation	—
Auto Access	48.80020531
Active commuting	87.00115488
Social	—
2-parent households	98.17785192
Voting	89.61888875
Neighborhood	—
Alcohol availability	11.95945079

Park access	8.392146798
Retail density	95.54728603
Supermarket access	79.71256256
Tree canopy	74.48992686
Housing	—
Homeownership	36.99473887
Housing habitability	66.54690107
Low-inc homeowner severe housing cost burden	32.54202489
Low-inc renter severe housing cost burden	77.7235981
Uncrowded housing	83.16437829
Health Outcomes	—
Insured adults	64.22430386
Arthritis	95.4
Asthma ER Admissions	90.2
High Blood Pressure	94.6
Cancer (excluding skin)	71.8
Asthma	86.2
Coronary Heart Disease	95.4
Chronic Obstructive Pulmonary Disease	95.5
Diagnosed Diabetes	94.5
Life Expectancy at Birth	99.3
Cognitively Disabled	99.3
Physically Disabled	96.1
Heart Attack ER Admissions	66.9
Mental Health Not Good	84.7
Chronic Kidney Disease	93.4
Obesity	81.6

Pedestrian Injuries	19.6
Physical Health Not Good	93.9
Stroke	95.7
Health Risk Behaviors	—
Binge Drinking	25.3
Current Smoker	85.1
No Leisure Time for Physical Activity	87.6
Climate Change Exposures	—
Wildfire Risk	0.0
SLR Inundation Area	42.3
Children	37.8
Elderly	95.7
English Speaking	74.6
Foreign-born	68.8
Outdoor Workers	68.8
Climate Change Adaptive Capacity	—
Impervious Surface Cover	19.4
Traffic Density	83.8
Traffic Access	74.6
Other Indices	—
Hardship	2.7
Other Decision Support	—
2016 Voting	88.0

7.3. Overall Health & Equity Scores

Metric	Result for Project Census Tract
CalEnviroScreen 4.0 Score for Project Location (a)	45.0

Healthy Places Index Score for Project Location (b)	93.0
Project Located in a Designated Disadvantaged Community (Senate Bill 535)	No
Project Located in a Low-Income Community (Assembly Bill 1550)	No
Project Located in a Community Air Protection Program Community (Assembly Bill 617)	No

a: The maximum CalEnviroScreen score is 100. A high score (i.e., greater than 50) reflects a higher pollution burden compared to other census tracts in the state.
b: The maximum Health Places Index score is 100. A high score (i.e., greater than 50) reflects healthier community conditions compared to other census tracts in the state.

7.4. Health & Equity Measures

No Health & Equity Measures selected.

7.5. Evaluation Scorecard

This table summarizes the points earned for each health and equity measure category, and the total possible points for each category. If N/A is selected for any measure(s), the total possible points in that category are reduced accordingly. The points for each category are then weighted on a 15-point scale to determine the score per category and a total weighted score.

Category	Number of Applicable Measures	Total Points Earned by Applicable Measures	Max Possible Points	Weighted Score
Community-Centered Development	2.00	0.00	10.0	0.00
Inclusive Engagement	6.00	0.00	30.0	0.00
Accountability	5.00	0.00	25.0	0.00
Construction Equity	6.00	0.00	30.0	0.00
Public Health and Air Quality	3.00	0.00	15.0	0.00
Inclusive Economics & Prosperity	4.00	0.00	20.0	0.00
Inclusive Communities	5.00	0.00	25.0	0.00
Total	31.0	0.00	155	0.00

Based on the weighted score of 0 out of a total 155 possible points, your project qualifies for the Acorn equity award level.
Organization(s) consulted by the user to complete the Health & Equity Scorecard:

7.6. Health & Equity Custom Measures

No Health & Equity Custom Measures created.

8. User Changes to Default Data

Screen	Justification
Characteristics: Utility Information	Mt View Clean Energy Provider
Land Use	Plan provided SF
Construction: Off-Road Equipment	Trenching added
Construction: Construction Phases	Default Const Schedule, Vacant Site No Demo

the AM peak hour and 58 trips (29 inbound and 29 outbound) occurring during the PM peak hour (see Table 3).

Table 3
Project Trip Generation Estimates

		Daily		AM Peak Hour				PM Peak Hour			
		Trip		Trip	Trips			Trip	Trips		
Land Use	Size	Rate	Trips	Rate	In	Out	Total	Rate	In	Out	Total
Gas Station[1]	6 fueling positions	172.01	1,032	10.28	31	31	62	13.91	42	41	83
Pass-by Reduction[2]			-310		-10	-9	-19		-13	-12	-25
Net Project Trips			**722**		**21**	**22**	**43**		**29**	**29**	**58**

Notes:
All trip rates are from ITE *Trip Generation Manual* , 11th Edition, 2021.
1. Average trip rates (in trips per vehicle fueling positions) for Gasoline/Service Station (Land Use 944) were used.
2. An average 30% pass-by trip reduction was applied based on the maximum allowable pass-by trip reduction rate in the VTA *Transportation Impact Analysis Guidelines* , October 2014..

Trip Distribution and Assignment

The trip distribution for the project was estimated based on existing travel patterns on the surrounding roadway network and the locations of complementary land uses (see Figure 7). The peak-hour trips generated by the proposed project were assigned to the roadway system based on the directions of approach and departure, the roadway network connections, and the location of project driveways (see Figure 7). Because the proposed driveways would be located approximately 50 feet from the Rengstorff Avenue/Old Middlefield Way intersection, vehicle queues longer than 2 vehicles at the intersection would block left-turn access to the site from both streets. Additionally, because the southbound and eastbound left-turn lanes at the Rengstorff Avenue/Old Middlefield Way intersection are 100 feet long, any left-turn vehicles exiting the site would need to cross the left-turn lanes. Therefore, it is expected that most vehicles would access the site via right turns.

Roadway Network

The roadway network under background and background plus project conditions would be the same as existing conditions because there are no planned and funded transportation improvements at the study intersections that would alter the existing intersection lane configurations, and the project would not alter the existing intersection lane configurations.

Traffic Volumes

Background Traffic Volumes

Background traffic volumes for the study intersections (see Figure 8) were estimated by adding to the existing traffic volumes the trips generated by nearby approved projects that have not been constructed or occupied.

A list of approved projects was obtained from the City of Mountain View. Hexagon considered both the location and size of the approved projects in order to eliminate those that were too far away or too small to affect traffic conditions of the study intersections. Vehicle trips from the approved projects were obtained from the project's traffic study or environmental document (initial study or EIR), if available.

Attachment 3: Project Construction and Operation Emissions and Health Risk Calculations

Construction Health Risk Assessment and Calculations

2110 Old Middlefield Way GDF, Mountain View, CA

DPM Emissions and Modeling Emission Rates - Unmitigated

Construction Year	Activity	DPM (ton/year)	Area Source	DPM Emissions (lb/yr)	DPM Emissions (lb/hr)	DPM Emissions (g/s)	Modeled Area (m^2)	DPM Emission Rate ($g/s/m^2$)
2023	Construction	0.0200	CON_DPM	40.0	0.01218	1.53E-03	1340	1.14E-06

Construction Hours

hr/day =	9	(8am - 5pm)
days/yr =	365	
hours/year =	3285	

DPM Construction Emissions and Modeling Emission Rates - With Mitigation

Construction Year	Activity	DPM (ton/year)	Area Source	DPM Emissions (lb/yr)	DPM Emissions (lb/hr)	DPM Emissions (g/s)	Modeled Area (m^2)	DPM Emission Rate ($g/s/m^2$)
2023	Construction	0.0050	CON_DPM	10.0	0.00304	3.84E-04	1340	2.86E-07

Construction Hours

hr/day =	9	(8am - 5pm)
days/yr =	365	
hours/year =	3285	

2110 Old Middlefield Way GDF, Mountain View, CA

PM2.5 Fugitive Dust Emissions for Modeling - Unmitigated

Construction Year	Activity	Area Source	PM2.5 Emissions (ton/year)	PM2.5 Emissions (lb/yr)	PM2.5 Emissions (lb/hr)	PM2.5 Emissions (g/s)	Modeled Area (m^2)	PM2.5 Emission Rate $g/s/m^2$
2023	Construction	CON_FUG	0.0050	10.0	0.00304	3.84E-04	1,340	2.86E-07

Construction Hours

hr/day =	9	(8am - 5pm)
days/yr =	365	
hours/year =	3285	

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

Construction Year	Activity	Area Source	PM2.5 Emissions (ton/year)	PM2.5 Emissions (lb/yr)	PM2.5 Emissions (lb/hr)	PM2.5 Emissions (g/s)	Modeled Area (m^2)	PM2.5 Emission Rate $g/s/m^2$
2023	Construction	CON_FUG	0.0050	10.0	0.00304	3.84E-04	1,340	2.86E-07

Construction Hours

hr/day =	9	(8am - 5pm)
days/yr =	365	
hours/year =	3285	

2110 Old Middlefield Way GDF, Mountain View, CA
- Construction Health Impact Summary

Maximum Impacts at MEI Residential Location - Without Mitigation

Emissions Year	Maximum Concentrations: Exhaust PM10/DPM (μg/m^3)	Maximum Concentrations: Fugitive PM2.5 (μg/m^3)	Cancer Risk (per million): Infant/Child	Cancer Risk (per million): Adult	Hazard Index (-)	Maximum Annual PM2.5 Concentration (μg/m^3)
2023	0.0853	0.0240	**15.17**	0.24	0.02	0.11

Maximum Impacts at MEI Residential Location - With Mitigation

Emissions Year	Maximum Concentrations: Exhaust PM10/DPM (μg/m^3)	Maximum Concentrations: Fugitive PM2.5 (μg/m^3)	Cancer Risk (per million): Infant/Child	Cancer Risk (per million): Adult	Hazard Index (-)	Maximum Annual PM2.5 Concentration (μg/m^3)
2023	0.0214	0.0240	3.81	0.06	0.004	0.05

- Tier 4 Interim Engines and BMPs Mitigation

2110 Old Middlefield Way GDF, Mountain View, CA - Construction Impacts - Without Mitigation
Maximum DPM Cancer Risk and PM2.5 Calculations From Construction
Impacts at Off-Site MEI Location - 1.5 meter receptor height (1st Floor Level)

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

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

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

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

Values

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

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

Construction Cancer Risk by Year - Maximum Impact Receptor Location

			Infant/Child - Exposure Information			Infant/Child	Adult - Exposure Information			Adult
	Exposure				Age	Cancer	Modeled		Age	Cancer
Exposure	Duration		DPM Conc (ug/m3)		Sensitivity	Risk	DPM Conc (ug/m3)		Sensitivity	Risk
Year	(years)	Age	Year	Annual	Factor	(per million)	Year	Annual	Factor	(per million)
0	0.25	-0.25 - 0*	2023	0.0853	10	1.16	2023	0.0853	-	-
1	1	0 - 1	2023	0.0853	10	14.01	2023	0.0853	1	0.24
2	1	1 - 2		0.0000	10	0.00		0.0000	1	0.00
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						**15.17**				**0.24**

* Third trimester of pregnancy

Maximum		
Hazard Index	**Fugitive PM2.5**	**Total PM2.5**
0.02	0.02	0.11

2110 Old Middlefield Way GDF, Mountain View, CA - Construction Impacts - Without Mitigation
Maximum DPM Cancer Risk and PM2.5 Calculations From Construction
Impacts at Off-Site MEI Location - 4.5 meter receptor height (2nd Floor Level)

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

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

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

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

Values

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

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

Construction Cancer Risk by Year - Maximum Impact Receptor Location

			Infant/Child - Exposure Information			Infant/Child	Adult - Exposure Information			Adult	Maximum		
	Exposure				Age	Cancer	Modeled		Age	Cancer			
Exposure	Duration		DPM Conc (ug/m3)		Sensitivity	Risk	DPM Conc (ug/m3)		Sensitivity	Risk	Hazard	Fugitive	Total
Year	(years)	Age	Year	Annual	Factor	(per million)	Year	Annual	Factor	(per million)	Index	PM2.5	PM2.5
0	0.25	-0.25 - 0*	2023	0.0411	10	0.56	2023	0.0411	-	-			
1	1	0 - 1	2023	0.0411	10	6.75	2023	0.0411	1	0.12	0.01	0.01	0.05
2	1	1 - 2		0.0000	10	0.00		0.0000	1	0.00			
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						**7.31**				**0.12**			

* Third trimester of pregnancy

2110 Old Middlefield Way GDF, Mountain View, CA - Construction Impacts - With Mitigation
Maximum DPM Cancer Risk and PM2.5 Calculations From Construction
Impacts at Off-Site MEI Location - 1.5 meter receptor height (1st Floor Level)

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

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

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

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

Values

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

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

Construction Cancer Risk by Year - Maximum Impact Receptor Location

			Infant/Child - Exposure Information			Infant/Child	Adult - Exposure Information			Adult
	Exposure				Age	Cancer	Modeled		Age	Cancer
Exposure	Duration		DPM Conc (ug/m3)		Sensitivity	Risk	DPM Conc (ug/m3)		Sensitivity	Risk
Year	(years)	Age	Year	Annual	Factor	(per million)	Year	Annual	Factor	(per million)
0	0.25	-0.25 - 0*	2023	0.0214	10	0.29	2023	0.0214	-	-
1	1	0 - 1	2023	0.0214	10	3.51	2023	0.0214	1	0.06
2	1	1 - 2		0.0000	10	0.00		0.0000	1	0.00
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						**3.81**				**0.06**

* Third trimester of pregnancy

Maximum		
Hazard Index	**Fugitive PM2.5**	**Total PM2.5**
0.00	0.02	0.05

Operational Health Risk Assessment and Calculations

CT-EMFAC2017 Emissions Factors for Santa Clara County 2024

File Name:	2110 Old Middlefield GDF - Santa Clara (SF) - 2024 - Annual.EF
CT-EMFAC2017 Version:	1.0.2.27401
Run Date:	1/24/2023 15:23
Area:	Santa Clara (SF)
Analysis Year:	2024
Season:	Annual

===

Vehicle Category	VMT Fraction Across Category	Diesel VMT Fraction Within Category	Gas VMT Fraction Within Category
Truck 1	0.015	0.495	0.505
Truck 2	0.02	0.937	0.048
Non-Truck	0.965	0.014	0.955

===

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

===

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

Pollutant Name	<= 5 mph	10 mph	15 mph	20 mph	25 mph	30 mph	35 mph	40 mph
PM2.5	0.008837	0.005727	0.003882	0.002774	0.002102	0.001693	0.001451	0.001324
TOG	0.182802	0.119558	0.080373	0.056919	0.043051	0.034349	0.028781	0.025311
Diesel PM	0.000842	0.000689	0.000532	0.000425	0.000365	0.000339	0.000339	0.000361

===

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

Pollutant Name	Emission Factor
TOG	1.303551

===

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

Pollutant Name	Emission Factor
PM2.5	0.002108

===

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

Pollutant Name	Emission Factor
PM2.5	0.016805

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

Pollutant Name	Emission Factor
PM2.5	0.01484

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

Project Traffic Emissions and Health Risk Calculations

2110 Old Middlefield Way GDF, Mountain View, CA

On-Site Project Traffic Emissions and Modeling Emission Rates

Area Source	Activity	Emissions (grams/day)	Emissions (g/s)	Release Height (m)	Modeled Area (m^2)	Emission Rate $g/s/m^2$
DPM	On-Site Traffic	0.2	2.31E-06	3.4	1,340	1.73E-09
PM2.5	On-Site Traffic	2.3	2.66E-05	1.3	1,340	1.99E-08
TOG Exhaust	On-Site Traffic	47.2	5.46E-04	1.3	1,340	4.08E-07
TOG Evaporative	On-Site Traffic	134.5	1.56E-03	1.3	1,340	1.16E-06
Fugitive PM2.5	On-Site Traffic	8.6	9.95E-05	1.3	1,340	7.43E-08
Total		***192.8***	***2.23E-03***			

2110 Old Middlefield Way GDF, Mountain View, CA - Offsite Residential Roadway Modeling
Project Traffic Operation - Old Middlefield Way
DPM Modeling - Roadway Links, Traffic Volumes, and DPM Emissions
Year = 2024

Road Link	Description	Direction	No. Lanes	Link Length (m)	Link Length (mi)	Link Width (m)	Link Width (ft)	Release Height (m)	Average Speed (mph)	Average Vehicles per Day
DPM_EB_MID	Old Middlefield Way Eastbound	EB	2	651.3	0.40	13.3	43.7	3.4	30	258
DPM_WB_MID	Old Middlefield Way Westbound	WB	2	651.6	0.40	13.3	43.7	3.4	30	258
									Total	516

Emission Factors - DPM

Speed Category	1	2	3	4
Travel Speed (mph)	30			
Emissions per Vehicle (g/VMT)	0.00034			

Emisson Factors from CT-EMFAC2017

2024 Hourly Traffic Volumes and DPM Emissions - DPM_EB_MID

Hour	% Per Hour	VPH	g/s	Hour	% Per Hour	VPH	g/s	Hour	% Per Hour	VPH	g/s
1	3.90%	10	3.83E-07	9	6.42%	17	6.31E-07	17	5.62%	14	5.52E-07
2	2.58%	7	2.54E-07	10	7.34%	19	7.21E-07	18	3.27%	8	3.21E-07
3	2.87%	7	2.82E-07	11	6.42%	17	6.31E-07	19	2.35%	6	2.31E-07
4	3.32%	9	3.27E-07	12	6.88%	18	6.76E-07	20	0.86%	2	8.45E-08
5	2.18%	6	2.14E-07	13	6.25%	16	6.14E-07	21	3.09%	8	3.04E-07
6	3.38%	9	3.32E-07	14	6.19%	16	6.09E-07	22	4.13%	11	4.06E-07
7	6.02%	16	5.92E-07	15	5.10%	13	5.01E-07	23	2.52%	7	2.48E-07
8	4.64%	12	4.56E-07	16	3.78%	10	3.72E-07	24	0.92%	2	9.02E-08
								Total		258	

2024 Hourly Traffic Volumes Per Direction and DPM Emissions - DPM_WB_MID

Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile
1	3.90%	10	3.83E-07	9	6.42%	17	6.31E-07	17	5.62%	14	5.52E-07
2	2.58%	7	2.54E-07	10	7.34%	19	7.22E-07	18	3.27%	8	3.21E-07
3	2.87%	7	2.82E-07	11	6.42%	17	6.31E-07	19	2.35%	6	2.31E-07
4	3.32%	9	3.27E-07	12	6.88%	18	6.76E-07	20	0.86%	2	8.46E-08
5	2.18%	6	2.14E-07	13	6.25%	16	6.14E-07	21	3.09%	8	3.04E-07
6	3.38%	9	3.33E-07	14	6.19%	16	6.09E-07	22	4.13%	11	4.06E-07
7	6.02%	16	5.92E-07	15	5.10%	13	5.02E-07	23	2.52%	7	2.48E-07
8	4.64%	12	4.57E-07	16	3.78%	10	3.72E-07	24	0.92%	2	9.02E-08
								Total		258	

2110 Old Middlefield Way GDF, Mountain View, CA - Offsite Residential Roadway Modeling
Project Traffic Operation - Old Middlefield Way
PM2.5 Modeling - Roadway Links, Traffic Volumes, and PM2.5 Emissions
Year = 2024

Road Link	Description	Direction	No. Lanes	Link Length (m)	Link Length (mi)	Link Width (m)	Link Width (ft)	Release Height (m)	Average Speed (mph)	Average Vehicles per Day
PM25_EB_MID	Old Middlefield Way Eastbound	EB	2	651.3	0.40	13.3	44	1.3	30	258
PM25_WB_MID	Old Middlefield Way Westbound	WB	2	651.6	0.40	13.3	44	1.3	30	258
									Total	516

Emission Factors - PM2.5

Speed Category	1	2	3	4
Travel Speed (mph)	30			
Emissions per Vehicle (g/VMT)	0.001693			

Emisson Factors from CT-EMFAC2017

2024 Hourly Traffic Volumes and PM2.5 Emissions - PM25_EB_MID

Hour	% Per Hour	VPH	g/s	Hour	% Per Hour	VPH	g/s	Hour	% Per Hour	VPH	g/s
1	1.15%	3	5.65E-07	9	7.11%	18	3.49E-06	17	7.39%	19	3.63E-06
2	0.42%	1	2.05E-07	10	4.39%	11	2.15E-06	18	8.18%	21	4.01E-06
3	0.41%	1	1.99E-07	11	4.66%	12	2.29E-06	19	5.70%	15	2.80E-06
4	0.26%	1	1.28E-07	12	5.89%	15	2.89E-06	20	4.27%	11	2.10E-06
5	0.50%	1	2.45E-07	13	6.15%	16	3.02E-06	21	3.26%	8	1.60E-06
6	0.90%	2	4.44E-07	14	6.04%	16	2.96E-06	22	3.30%	9	1.62E-06
7	3.79%	10	1.86E-06	15	7.01%	18	3.44E-06	23	2.46%	6	1.21E-06
8	7.76%	20	3.81E-06	16	7.14%	18	3.50E-06	24	1.87%	5	9.16E-07
								Total		258	

2024 Hourly Traffic Volumes Per Direction and PM2.5 Emissions - PM25_WB_MID

Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile
1	1.15%	3	5.66E-07	9	7.11%	18	3.49E-06	17	7.39%	19	3.63E-06
2	0.42%	1	2.05E-07	10	4.39%	11	2.15E-06	18	8.18%	21	4.02E-06
3	0.41%	1	1.99E-07	11	4.66%	12	2.29E-06	19	5.70%	15	2.80E-06
4	0.26%	1	1.28E-07	12	5.89%	15	2.89E-06	20	4.27%	11	2.10E-06
5	0.50%	1	2.45E-07	13	6.15%	16	3.02E-06	21	3.26%	8	1.60E-06
6	0.90%	2	4.44E-07	14	6.04%	16	2.97E-06	22	3.30%	9	1.62E-06
7	3.79%	10	1.86E-06	15	7.01%	18	3.45E-06	23	2.46%	6	1.21E-06
8	7.76%	20	3.81E-06	16	7.14%	18	3.51E-06	24	1.87%	5	9.17E-07
								Total		258	

2110 Old Middlefield Way GDF, Mountain View, CA - Offsite Residential Roadway Modeling
Project Traffic Operation - Old Middlefield Way
TOG Exhaust Modeling - Roadway Links, Traffic Volumes, and TOG Exhaust Emissions
Year = 2024

Road Link	Description	Direction	No. Lanes	Link Length (m)	Link Length (mi)	Link Width (m)	Link Width (ft)	Release Height (m)	Average Speed (mph)	Average Vehicles per Day
TEXH_EB_MID	Old Middlefield Way Eastbound	EB	2	651.3	0.40	13.3	44	1.3	30	258
TEXH_WB_MID	Old Middlefield Way Westbound	WB	2	651.6	0.40	13.3	44	1.3	30	258
									Total	516

Emission Factors - TOG Exhaust

Speed Category	1	2	3	4
Travel Speed (mph)	30			
Emissions per Vehicle (g/VMT)	0.03435			

Emisson Factors from CT-EMFAC2017

2024 Hourly Traffic Volumes and TOG Exhaust Emissions - TEXH_EB_MID

Hour	% Per Hour	VPH	g/s	Hour	% Per Hour	VPH	g/s	Hour	% Per Hour	VPH	g/s
1	1.15%	3	1.15E-05	9	7.11%	18	7.09E-05	17	7.39%	19	7.36E-05
2	0.42%	1	4.16E-06	10	4.39%	11	4.37E-05	18	8.18%	21	8.15E-05
3	0.41%	1	4.04E-06	11	4.66%	12	4.65E-05	19	5.70%	15	5.67E-05
4	0.26%	1	2.61E-06	12	5.89%	15	5.87E-05	20	4.27%	11	4.26E-05
5	0.50%	1	4.98E-06	13	6.15%	16	6.13E-05	21	3.26%	8	3.25E-05
6	0.90%	2	9.00E-06	14	6.04%	16	6.01E-05	22	3.30%	9	3.28E-05
7	3.79%	10	3.78E-05	15	7.01%	18	6.99E-05	23	2.46%	6	2.45E-05
8	7.76%	20	7.74E-05	16	7.14%	18	7.11E-05	24	1.87%	5	1.86E-05
								Total		258	

2024 Hourly Traffic Volumes Per Direction and TOG Exhaust Emissions - TEXH_WB_MID

Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile
1	1.15%	3	1.15E-05	9	7.11%	18	7.09E-05	17	7.39%	19	7.36E-05
2	0.42%	1	4.16E-06	10	4.39%	11	4.37E-05	18	8.18%	21	8.15E-05
3	0.41%	1	4.05E-06	11	4.66%	12	4.65E-05	19	5.70%	15	5.68E-05
4	0.26%	1	2.61E-06	12	5.89%	15	5.87E-05	20	4.27%	11	4.26E-05
5	0.50%	1	4.98E-06	13	6.15%	16	6.13E-05	21	3.26%	8	3.25E-05
6	0.90%	2	9.01E-06	14	6.04%	16	6.02E-05	22	3.30%	9	3.29E-05
7	3.79%	10	3.78E-05	15	7.01%	18	6.99E-05	23	2.46%	6	2.45E-05
8	7.76%	20	7.74E-05	16	7.14%	18	7.11E-05	24	1.87%	5	1.86E-05
								Total		258	

2110 Old Middlefield Way GDF, Mountain View, CA - Offsite Residential Roadway Modeling
Project Traffic Operation - Old Middlefield Way
TOG Evaporative Emissions Modeling - Roadway Links, Traffic Volumes, and TOG Evaporative Emissions
Year = 2024

Road Link	Description	Direction	No. Lanes	Link Length (m)	Link Length (mi)	Link Width (m)	Link Width (ft)	Release Height (m)	Average Speed (mph)	Average Vehicles per Day
TEVAP_EB_MID	Old Middlefield Way Eastbound	EB	2	651.3	0.40	13.3	44	1.3	30	258
TEVAP_WB_MID	Old Middlefield Way Westbound	WB	2	651.6	0.40	13.3	44	1.3	30	258
									Total	516

Emission Factors - PM2.5 - Evaporative TOG

Speed Category	1	2	3	4
Travel Speed (mph)	30			
Emissions per Vehicle per Hour (g/hour)	1.30355			
Emissions per Vehicle per Mile (g/VMT)	0.04345			

Emisson Factors from CT-EMFAC2017

2024 Hourly Traffic Volumes and TOG Evaporative Emissions - TEVAP_EB_MID

Hour	% Per Hour	VPH	g/s	Hour	% Per Hour	VPH	g/s	Hour	% Per Hour	VPH	g/s
1	1.15%	3	1.45E-05	9	7.11%	18	8.96E-05	17	7.39%	19	9.31E-05
2	0.42%	1	5.26E-06	10	4.39%	11	5.53E-05	18	8.18%	21	1.03E-04
3	0.41%	1	5.12E-06	11	4.66%	12	5.88E-05	19	5.70%	15	7.18E-05
4	0.26%	1	3.30E-06	12	5.89%	15	7.42E-05	20	4.27%	11	5.39E-05
5	0.50%	1	6.30E-06	13	6.15%	16	7.75E-05	21	3.26%	8	4.11E-05
6	0.90%	2	1.14E-05	14	6.04%	16	7.61E-05	22	3.30%	9	4.15E-05
7	3.79%	10	4.78E-05	15	7.01%	18	8.84E-05	23	2.46%	6	3.10E-05
8	7.76%	20	9.78E-05	16	7.14%	18	9.00E-05	24	1.87%	5	2.35E-05
								Total		258	

2024 Hourly Traffic Volumes Per Direction and TOG Evaporative Emissions - TEVAP_WB_MID

Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile
1	1.15%	3	1.45E-05	9	7.11%	18	8.97E-05	17	7.39%	19	9.31E-05
2	0.42%	1	5.27E-06	10	4.39%	11	5.53E-05	18	8.18%	21	1.03E-04
3	0.41%	1	5.12E-06	11	4.66%	12	5.88E-05	19	5.70%	15	7.18E-05
4	0.26%	1	3.30E-06	12	5.89%	15	7.42E-05	20	4.27%	11	5.39E-05
5	0.50%	1	6.30E-06	13	6.15%	16	7.76E-05	21	3.26%	8	4.11E-05
6	0.90%	2	1.14E-05	14	6.04%	16	7.61E-05	22	3.30%	9	4.16E-05
7	3.79%	10	4.78E-05	15	7.01%	18	8.84E-05	23	2.46%	6	3.10E-05
8	7.76%	20	9.79E-05	16	7.14%	18	9.00E-05	24	1.87%	5	2.35E-05
								Total		258	

2110 Old Middlefield Way GDF, Mountain View, CA - Offsite Residential Roadway Modeling
Project Traffic Operation - Old Middlefield Way
Fugitive Road PM2.5 Modeling - Roadway Links, Traffic Volumes, and Fugitive Road PM2.5 Emissions
Year = 2024

Road Link	Description	Direction	No. Lanes	Link Length (m)	Link Length (mi)	Link Width (m)	Link Width (ft)	Release Height (m)	Average Speed (mph)	Average Vehicles per Day
FUG_EB_MID	Old Middlefield Way Eastbound	EB	2	651.3	0.40	13.3	44	1.3	30	258
FUG_WB_MID	Old Middlefield Way Westbound	WB	2	651.6	0.40	13.3	44	1.3	30	258
									Total	516

Emission Factors - Fugitive PM2.5

Speed Category	1	2	3	4
Travel Speed (mph)	30			
Tire Wear - Emissions per Vehicle (g/VMT)	0.00211			
Brake Wear - Emissions per Vehicle (g/VMT)	0.01681			
Road Dust - Emissions per Vehicle (g/VMT)	0.01484			
Total Fugitive PM2.5 - Emissions per Vehicle (g/VMT)	0.03375			

Emisson Factors from CT-EMFAC2017

2024 Hourly Traffic Volumes and Fugitive PM2.5 Emissions - FUG_EB_MID

Hour	% Per Hour	VPH	g/s	Hour	% Per Hour	VPH	g/s	Hour	% Per Hour	VPH	g/s
1	1.15%	3	1.13E-05	9	7.11%	18	6.96E-05	17	7.39%	19	7.23E-05
2	0.42%	1	4.09E-06	10	4.39%	11	4.29E-05	18	8.18%	21	8.00E-05
3	0.41%	1	3.97E-06	11	4.66%	12	4.57E-05	19	5.70%	15	5.58E-05
4	0.26%	1	2.56E-06	12	5.89%	15	5.76E-05	20	4.27%	11	4.18E-05
5	0.50%	1	4.89E-06	13	6.15%	16	6.02E-05	21	3.26%	8	3.19E-05
6	0.90%	2	8.85E-06	14	6.04%	16	5.91E-05	22	3.30%	9	3.23E-05
7	3.79%	10	3.71E-05	15	7.01%	18	6.87E-05	23	2.46%	6	2.41E-05
8	7.76%	20	7.60E-05	16	7.14%	18	6.99E-05	24	1.87%	5	1.83E-05
								Total		258	

2024 Hourly Traffic Volumes Per Direction and Fugitive PM2.5 Emissions - FUG_WB_MID

Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile
1	1.15%	3	1.13E-05	9	7.11%	18	6.97E-05	17	7.39%	19	7.23E-05
2	0.42%	1	4.09E-06	10	4.39%	11	4.30E-05	18	8.18%	21	8.01E-05
3	0.41%	1	3.98E-06	11	4.66%	12	4.57E-05	19	5.70%	15	5.58E-05
4	0.26%	1	2.56E-06	12	5.89%	15	5.77E-05	20	4.27%	11	4.19E-05
5	0.50%	1	4.89E-06	13	6.15%	16	6.03E-05	21	3.26%	8	3.19E-05
6	0.90%	2	8.85E-06	14	6.04%	16	5.91E-05	22	3.30%	9	3.23E-05
7	3.79%	10	3.71E-05	15	7.01%	18	6.87E-05	23	2.46%	6	2.41E-05
8	7.76%	20	7.60E-05	16	7.14%	18	6.99E-05	24	1.87%	5	1.83E-05
								Total		258	

2110 Old Middlefield Way GDF, Mountain View, CA - Offsite Residential Roadway Modeling
Project Traffic Operation - Rengstorff Avenue
DPM Modeling - Roadway Links, Traffic Volumes, and DPM Emissions
Year = 2024

Road Link	Description	Direction	No. Lanes	Link Length (m)	Link Length (mi)	Link Width (m)	Link Width (ft)	Release Height (m)	Average Speed (mph)	Average Vehicles per Day
DPM_NB_REN	Rengstorff Ave Northbound	NB	2	644.0	0.40	13.3	43.7	3.4	30	258
DPM_SB_REN	Rengstorff Ave Southbound	SB	2	645.0	0.40	13.3	43.7	3.4	30	258
									Total	516

Emission Factors - DPM

Speed Category	1	2	3	4
Travel Speed (mph)	30			
Emissions per Vehicle (g/VMT)	0.00034			

Emisson Factors from CT-EMFAC2017

2024 Hourly Traffic Volumes and DPM Emissions - DPM_NB_REN

Hour	% Per Hour	VPH	g/s	Hour	% Per Hour	VPH	g/s	Hour	% Per Hour	VPH	g/s
1	3.90%	10	3.79E-07	9	6.42%	17	6.24E-07	17	5.62%	14	5.46E-07
2	2.58%	7	2.51E-07	10	7.34%	19	7.13E-07	18	3.27%	8	3.18E-07
3	2.87%	7	2.79E-07	11	6.42%	17	6.24E-07	19	2.35%	6	2.28E-07
4	3.32%	9	3.23E-07	12	6.88%	18	6.69E-07	20	0.86%	2	8.36E-08
5	2.18%	6	2.12E-07	13	6.25%	16	6.07E-07	21	3.09%	8	3.01E-07
6	3.38%	9	3.29E-07	14	6.19%	16	6.02E-07	22	4.13%	11	4.01E-07
7	6.02%	16	5.85E-07	15	5.10%	13	4.96E-07	23	2.52%	7	2.45E-07
8	4.64%	12	4.51E-07	16	3.78%	10	3.68E-07	24	0.92%	2	8.91E-08
								Total		258	

2024 Hourly Traffic Volumes Per Direction and DPM Emissions - DPM_SB_REN

Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile
1	3.90%	10	3.79E-07	9	6.42%	17	6.25E-07	17	5.62%	14	5.47E-07
2	2.58%	7	2.51E-07	10	7.34%	19	7.14E-07	18	3.27%	8	3.18E-07
3	2.87%	7	2.79E-07	11	6.42%	17	6.25E-07	19	2.35%	6	2.29E-07
4	3.32%	9	3.24E-07	12	6.88%	18	6.70E-07	20	0.86%	2	8.37E-08
5	2.18%	6	2.12E-07	13	6.25%	16	6.08E-07	21	3.09%	8	3.01E-07
6	3.38%	9	3.29E-07	14	6.19%	16	6.03E-07	22	4.13%	11	4.02E-07
7	6.02%	16	5.86E-07	15	5.10%	13	4.97E-07	23	2.52%	7	2.46E-07
8	4.64%	12	4.52E-07	16	3.78%	10	3.68E-07	24	0.92%	2	8.93E-08
								Total		258	

2110 Old Middlefield Way GDF, Mountain View, CA - Offsite Residential Roadway Modeling
Project Traffic Operation - Rengstorff Avenue
PM2.5 Modeling - Roadway Links, Traffic Volumes, and PM2.5 Emissions
Year = 2024

Road Link	Description	Direction	No. Lanes	Link Length (m)	Link Length (mi)	Link Width (m)	Link Width (ft)	Release Height (m)	Average Speed (mph)	Average Vehicles per Day
PM25_NB_REN	Rengstorff Ave Northbound	NB	2	644.0	0.40	13.3	44	1.3	30	258
PM25_SB_REN	Rengstorff Ave Southbound	SB	2	645.0	0.40	13.3	44	1.3	30	258
									Total	516

Emission Factors - PM2.5

Speed Category	1	2	3	4
Travel Speed (mph)	30			
Emissions per Vehicle (g/VMT)	0.001693			

Emisson Factors from CT-EMFAC2017

2024 Hourly Traffic Volumes and PM2.5 Emissions - PM25_NB_REN

Hour	% Per Hour	VPH	g/s	Hour	% Per Hour	VPH	g/s	Hour	% Per Hour	VPH	g/s
1	1.15%	3	5.59E-07	9	7.11%	18	3.45E-06	17	7.39%	19	3.59E-06
2	0.42%	1	2.03E-07	10	4.39%	11	2.13E-06	18	8.18%	21	3.97E-06
3	0.41%	1	1.97E-07	11	4.66%	12	2.26E-06	19	5.70%	15	2.77E-06
4	0.26%	1	1.27E-07	12	5.89%	15	2.86E-06	20	4.27%	11	2.08E-06
5	0.50%	1	2.43E-07	13	6.15%	16	2.99E-06	21	3.26%	8	1.58E-06
6	0.90%	2	4.39E-07	14	6.04%	16	2.93E-06	22	3.30%	9	1.60E-06
7	3.79%	10	1.84E-06	15	7.01%	18	3.41E-06	23	2.46%	6	1.19E-06
8	7.76%	20	3.77E-06	16	7.14%	18	3.47E-06	24	1.87%	5	9.06E-07
								Total		258	

2024 Hourly Traffic Volumes Per Direction and PM2.5 Emissions - PM25_SB_REN

Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile
1	1.15%	3	5.60E-07	9	7.11%	18	3.46E-06	17	7.39%	19	3.59E-06
2	0.42%	1	2.03E-07	10	4.39%	11	2.13E-06	18	8.18%	21	3.98E-06
3	0.41%	1	1.97E-07	11	4.66%	12	2.27E-06	19	5.70%	15	2.77E-06
4	0.26%	1	1.27E-07	12	5.89%	15	2.86E-06	20	4.27%	11	2.08E-06
5	0.50%	1	2.43E-07	13	6.15%	16	2.99E-06	21	3.26%	8	1.58E-06
6	0.90%	2	4.39E-07	14	6.04%	16	2.94E-06	22	3.30%	9	1.60E-06
7	3.79%	10	1.84E-06	15	7.01%	18	3.41E-06	23	2.46%	6	1.20E-06
8	7.76%	20	3.78E-06	16	7.14%	18	3.47E-06	24	1.87%	5	9.07E-07
								Total		258	

2110 Old Middlefield Way GDF, Mountain View, CA - Offsite Residential Roadway Modeling
Project Traffic Operation - Rengstorff Avenue
TOG Exhaust Modeling - Roadway Links, Traffic Volumes, and TOG Exhaust Emissions
Year = 2024

Road Link	Description	Direction	No. Lanes	Link Length (m)	Link Length (mi)	Link Width (m)	Link Width (ft)	Release Height (m)	Average Speed (mph)	Average Vehicles per Day
TEXH_NB_REN	Rengstorff Ave Northbound	NB	2	644.0	0.40	13.3	44	1.3	30	258
TEXH_SB_REN	Rengstorff Ave Southbound	SB	2	645.0	0.40	13.3	44	1.3	30	258
									Total	516

Emission Factors - TOG Exhaust

Speed Category	1	2	3	4
Travel Speed (mph)	30			
Emissions per Vehicle (g/VMT)	0.03435			

Emisson Factors from CT-EMFAC2017

2024 Hourly Traffic Volumes and TOG Exhaust Emissions - TEXH_NB_REN

Hour	% Per Hour	VPH	g/s	Hour	% Per Hour	VPH	g/s	Hour	% Per Hour	VPH	g/s
1	1.15%	3	1.13E-05	9	7.11%	18	7.01E-05	17	7.39%	19	7.28E-05
2	0.42%	1	4.11E-06	10	4.39%	11	4.32E-05	18	8.18%	21	8.05E-05
3	0.41%	1	4.00E-06	11	4.66%	12	4.60E-05	19	5.70%	15	5.61E-05
4	0.26%	1	2.58E-06	12	5.89%	15	5.80E-05	20	4.27%	11	4.21E-05
5	0.50%	1	4.92E-06	13	6.15%	16	6.06E-05	21	3.26%	8	3.21E-05
6	0.90%	2	8.90E-06	14	6.04%	16	5.95E-05	22	3.30%	9	3.25E-05
7	3.79%	10	3.73E-05	15	7.01%	18	6.91E-05	23	2.46%	6	2.42E-05
8	7.76%	20	7.65E-05	16	7.14%	18	7.03E-05	24	1.87%	5	1.84E-05
								Total		258	

2024 Hourly Traffic Volumes Per Direction and TOG Exhaust Emissions - TEXH_SB_REN

Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile
1	1.15%	3	1.14E-05	9	7.11%	18	7.02E-05	17	7.39%	19	7.29E-05
2	0.42%	1	4.12E-06	10	4.39%	11	4.33E-05	18	8.18%	21	8.07E-05
3	0.41%	1	4.01E-06	11	4.66%	12	4.60E-05	19	5.70%	15	5.62E-05
4	0.26%	1	2.58E-06	12	5.89%	15	5.81E-05	20	4.27%	11	4.22E-05
5	0.50%	1	4.93E-06	13	6.15%	16	6.07E-05	21	3.26%	8	3.21E-05
6	0.90%	2	8.92E-06	14	6.04%	16	5.96E-05	22	3.30%	9	3.25E-05
7	3.79%	10	3.74E-05	15	7.01%	18	6.92E-05	23	2.46%	6	2.43E-05
8	7.76%	20	7.66E-05	16	7.14%	18	7.04E-05	24	1.87%	5	1.84E-05
								Total		258	

2110 Old Middlefield Way GDF, Mountain View, CA - Offsite Residential Roadway Modeling
Project Traffic Operation - Rengstorff Avenue
TOG Evaporative Emissions Modeling - Roadway Links, Traffic Volumes, and TOG Evaporative Emissions
Year = 2024

Road Link	Description	Direction	No. Lanes	Link Length (m)	Link Length (mi)	Link Width (m)	Link Width (ft)	Release Height (m)	Average Speed (mph)	Average Vehicles per Day
TEVAP_NB_REN	Rengstorff Ave Northbound	NB	2	644.0	0.40	13.3	44	1.3	30	258
TEVAP_SB_REN	Rengstorff Ave Southbound	SB	2	645.0	0.40	13.3	44	1.3	30	258
									Total	516

Emission Factors - PM2.5 - Evaporative TOG

Speed Category	1	2	3	4
Travel Speed (mph)	30			
Emissions per Vehicle per Hour (g/hour)	1.30355			
Emissions per Vehicle per Mile (g/VMT)	0.04345			

Emisson Factors from CT-EMFAC2017

2024 Hourly Traffic Volumes and TOG Evaporative Emissions - TEVAP_NB_REN

Hour	% Per Hour	VPH	g/s	Hour	% Per Hour	VPH	g/s	Hour	% Per Hour	VPH	g/s
1	1.15%	3	1.43E-05	9	7.11%	18	8.86E-05	17	7.39%	19	9.20E-05
2	0.42%	1	5.20E-06	10	4.39%	11	5.47E-05	18	8.18%	21	1.02E-04
3	0.41%	1	5.06E-06	11	4.66%	12	5.81E-05	19	5.70%	15	7.10E-05
4	0.26%	1	3.26E-06	12	5.89%	15	7.34E-05	20	4.27%	11	5.33E-05
5	0.50%	1	6.23E-06	13	6.15%	16	7.67E-05	21	3.26%	8	4.06E-05
6	0.90%	2	1.13E-05	14	6.04%	16	7.52E-05	22	3.30%	9	4.11E-05
7	3.79%	10	4.72E-05	15	7.01%	18	8.74E-05	23	2.46%	6	3.07E-05
8	7.76%	20	9.68E-05	16	7.14%	18	8.89E-05	24	1.87%	5	2.33E-05
								Total		258	

2024 Hourly Traffic Volumes Per Direction and TOG Evaporative Emissions - TEVAP_SB_REN

Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile
1	1.15%	3	1.44E-05	9	7.11%	18	8.88E-05	17	7.39%	19	9.22E-05
2	0.42%	1	5.21E-06	10	4.39%	11	5.47E-05	18	8.18%	21	1.02E-04
3	0.41%	1	5.07E-06	11	4.66%	12	5.82E-05	19	5.70%	15	7.11E-05
4	0.26%	1	3.26E-06	12	5.89%	15	7.35E-05	20	4.27%	11	5.33E-05
5	0.50%	1	6.24E-06	13	6.15%	16	7.68E-05	21	3.26%	8	4.07E-05
6	0.90%	2	1.13E-05	14	6.04%	16	7.53E-05	22	3.30%	9	4.11E-05
7	3.79%	10	4.73E-05	15	7.01%	18	8.75E-05	23	2.46%	6	3.07E-05
8	7.76%	20	9.69E-05	16	7.14%	18	8.91E-05	24	1.87%	5	2.33E-05
								Total		258	

2110 Old Middlefield Way GDF, Mountain View, CA - Offsite Residential Roadway Modeling
Project Traffic Operation - Rengstorff Avenue
Fugitive Road PM2.5 Modeling - Roadway Links, Traffic Volumes, and Fugitive Road PM2.5 Emissions
Year = 2024

Road Link	Description	Direction	No. Lanes	Link Length (m)	Link Length (mi)	Link Width (m)	Link Width (ft)	Release Height (m)	Average Speed (mph)	Average Vehicles per Day
FUG_NB_REN	Rengstorff Ave Northbound	NB	2	644.0	0.40	13.3	44	1.3	30	258
FUG_SB_REN	Rengstorff Ave Southbound	SB	2	645.0	0.40	13.3	44	1.3	30	258
									Total	516

Emission Factors - Fugitive PM2.5

Speed Category	1	2	3	4
Travel Speed (mph)	30			
Tire Wear - Emissions per Vehicle (g/VMT)	0.00211			
Brake Wear - Emissions per Vehicle (g/VMT)	0.01681			
Road Dust - Emissions per Vehicle (g/VMT)	0.01484			
Total Fugitive PM2.5 - Emissions per Vehicle (g/VMT)	0.03375			

Emisson Factors from CT-EMFAC2017

2024 Hourly Traffic Volumes and Fugitive PM2.5 Emissions - FUG_NB_REN

Hour	% Per Hour	VPH	g/s	Hour	% Per Hour	VPH	g/s	Hour	% Per Hour	VPH	g/s
1	1.15%	3	1.11E-05	9	7.11%	18	6.88E-05	17	7.39%	19	7.15E-05
2	0.42%	1	4.04E-06	10	4.39%	11	4.25E-05	18	8.18%	21	7.91E-05
3	0.41%	1	3.93E-06	11	4.66%	12	4.52E-05	19	5.70%	15	5.51E-05
4	0.26%	1	2.53E-06	12	5.89%	15	5.70E-05	20	4.27%	11	4.14E-05
5	0.50%	1	4.84E-06	13	6.15%	16	5.96E-05	21	3.26%	8	3.15E-05
6	0.90%	2	8.75E-06	14	6.04%	16	5.84E-05	22	3.30%	9	3.19E-05
7	3.79%	10	3.67E-05	15	7.01%	18	6.79E-05	23	2.46%	6	2.38E-05
8	7.76%	20	7.52E-05	16	7.14%	18	6.91E-05	24	1.87%	5	1.81E-05
								Total		258	

2024 Hourly Traffic Volumes Per Direction and Fugitive PM2.5 Emissions - FUG_SB_REN

Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile
1	1.15%	3	1.12E-05	9	7.11%	18	6.90E-05	17	7.39%	19	7.16E-05
2	0.42%	1	4.05E-06	10	4.39%	11	4.25E-05	18	8.18%	21	7.93E-05
3	0.41%	1	3.94E-06	11	4.66%	12	4.52E-05	19	5.70%	15	5.52E-05
4	0.26%	1	2.54E-06	12	5.89%	15	5.71E-05	20	4.27%	11	4.14E-05
5	0.50%	1	4.84E-06	13	6.15%	16	5.96E-05	21	3.26%	8	3.16E-05
6	0.90%	2	8.76E-06	14	6.04%	16	5.85E-05	22	3.30%	9	3.20E-05
7	3.79%	10	3.67E-05	15	7.01%	18	6.80E-05	23	2.46%	6	2.39E-05
8	7.76%	20	7.53E-05	16	7.14%	18	6.92E-05	24	1.87%	5	1.81E-05
								Total		258	

2110 Old Middlefield Way GDF, Mountain View, CA - Project Traffic - TACs & PM2.5
AERMOD Risk Modeling Parameters and Maximum Concentrations
at Project MEI Receptor (1.5m receptor height)

Emission Year	2024
Receptor Information	Project MEI receptors
Number of Receptors	1
Receptor Height	1.5 meters
Receptor Distances	At Project MEI location
Meteorological Conditions	
BAAQMD Moffett Federal Airfield Met Data	2013-2017
Land Use Classification	Urban
Wind Speed	Variable
Wind Direction	Variable

Project MEI Cancer Risk Maximum Concentrations

Meteorological Data Years	Concentration (µg/m3)		
	DPM	Exhaust TOG	Evaporative TOG
2013-2017	0.0004	0.1082	0.2905

Project MEI PM2.5 Maximum Concentrations

Meteorological Data Years	PM2.5 Concentration (µg/m3)		
	Total PM2.5	Fugitive PM2.5	Vehicle PM2.5
2013-2017	0.0336	0.0284	0.0053

2110 Old Middlefield Way GDF, Mountain View, CA - Project Traffic Cancer Risk
Impacts at Project MEI - 1.5 meter receptor heights
29 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 $(mg/kg\text{-}day)^{-1}$
ASF = Age sensitivity factor for specified age group
ED = Exposure duration (years)
AT = Averaging time for lifetime cancer risk (years)
FAH = Fraction of time spent at home (unitless)

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

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

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

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

Values

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

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

Project Traffic Cancer Risk by Year - Maximum Impact Receptor Location

Constr

Maximum - Exposure Information					Concentration (ug/m3)			Cancer Risk (per million)			
Exposure Year	Exposure Duration (years)	Age	Year	Age Sensitivity Factor	DPM	Exhaust TOG	Evaporative TOG	DPM	Exhaust TOG	Evaporative TOG	TOTAL
0	0.25	-0.25 - 0*	2023	10	0.0000	0.0000	0.0000	0.000	0.000	0.0000	0.00
1	1	0 - 1	2023	10	0.0000	0.0000	0.0000	0.000	0.000	0.0000	0.00
2	1	1 - 2	2024	10	0.0004	0.1082	0.2905	0.071	0.101	0.0160	0.19
3	1	2 - 3	2025	3	0.0004	0.1082	0.2905	0.011	0.016	0.0025	0.03
4	1	3 - 4	2026	3	0.0004	0.1082	0.2905	0.011	0.016	0.0025	0.03
5	1	4 - 5	2027	3	0.0004	0.1082	0.2905	0.011	0.016	0.0025	0.03
6	1	5 - 6	2028	3	0.0004	0.1082	0.2905	0.011	0.016	0.0025	0.03
7	1	6 - 7	2029	3	0.0004	0.1082	0.2905	0.011	0.016	0.0025	0.03
8	1	7 - 8	2030	3	0.0004	0.1082	0.2905	0.011	0.016	0.0025	0.03
9	1	8 - 9	2031	3	0.0004	0.1082	0.2905	0.011	0.016	0.0025	0.03
10	1	9 - 10	2032	3	0.0004	0.1082	0.2905	0.011	0.016	0.0025	0.03
11	1	10 - 11	2033	3	0.0004	0.1082	0.2905	0.011	0.016	0.0025	0.03
12	1	11 - 12	2034	3	0.0004	0.1082	0.2905	0.011	0.016	0.0025	0.03
13	1	12 - 13	2035	3	0.0004	0.1082	0.2905	0.011	0.016	0.0025	0.03
14	1	13 - 14	2036	3	0.0004	0.1082	0.2905	0.011	0.016	0.0025	0.03
15	1	14 - 15	2037	3	0.0004	0.1082	0.2905	0.011	0.016	0.0025	0.03
16	1	15 - 16	2038	3	0.0004	0.1082	0.2905	0.011	0.016	0.0025	0.03
17	1	16-17	2039	1	0.0004	0.1082	0.2905	0.001	0.002	0.0003	0.00
18	1	17-18	2040	1	0.0004	0.1082	0.2905	0.001	0.002	0.0003	0.00
19	1	18-19	2041	1	0.0004	0.1082	0.2905	0.001	0.002	0.0003	0.00
20	1	19-20	2042	1	0.0004	0.1082	0.2905	0.001	0.002	0.0003	0.00
21	1	20-21	2043	1	0.0004	0.1082	0.2905	0.001	0.002	0.0003	0.00
22	1	21-22	2044	1	0.0004	0.1082	0.2905	0.001	0.002	0.0003	0.00
23	1	22-23	2045	1	0.0004	0.1082	0.2905	0.001	0.002	0.0003	0.00
24	1	23-24	2046	1	0.0004	0.1082	0.2905	0.001	0.002	0.0003	0.00
25	1	24-25	2047	1	0.0004	0.1082	0.2905	0.001	0.002	0.0003	0.00
26	1	25-26	2048	1	0.0004	0.1082	0.2905	0.001	0.002	0.0003	0.00
27	1	26-27	2049	1	0.0004	0.1082	0.2905	0.001	0.002	0.0003	0.00
28	1	27-28	2050	1	0.0004	0.1082	0.2905	0.001	0.002	0.0003	0.00
29	1	28-29	2051	1	0.0004	0.1082	0.2905	0.001	0.002	0.0003	0.00
30	1	29-30	2052	1	0.0004	0.1082	0.2905	0.001	0.002	0.0003	0.00
Total Increased Cancer Risk								0.24	0.350	0.055	**0.65**

* Third trimester of pregnancy

Hazard Index	Maximum Fugitive PM2.5	Total PM2.5
0.0001	0.03	0.03

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

Required Value	User Defined Input	Instructions
Annual Throughput (gallons/year)	975000	Enter your gas station's annual throughput in gallons of gasoline dispensed per year.
Hourly Dispensing Throughput (gallons/hour)	500	The tool will calculate the maximum hourly vehicle fueling throughput based on annual throughput as defined by Table 10 of the 2020 Gasoline Service Station Industrywide Risk Assessment Technical Guidance Document (Technical Guidance). If a different value is desired please enter it into cell L4.
Hourly Loading Throughput (gallons/hour)	8800	The tool will calculate the maximum hourly loading throughput based on annual throughput as defined by Table 10 of the Technical Guidance. If a different value is desired please enter it into cell L5.
Meteorological Data	San Jose	Select appropriate meteorological data. Met sets provided include 2 rural (Redding and Lancaster) and 4 urban (Fresno, Ontario, San Diego, and San Jose) locations. Use whichever best correlates to your location. If you would like to use site-specific meteorological data please refer to the Variable Met Tool.
Distance to Nearest Resident (meters)	80	Enter the distance to the nearest residential receptor in meters as measured from the edge of the station canopy. Please note that the value must be between 10 and 1000 meters. The distance you input will round down to the nearest receptor distance used in the Technical Guidance (e.g., 19m will return value at 10m distance).
Distance to Nearest Business (meters)	80	Enter the distance to the nearest worker receptor in meters as measured from the edge of the station canopy. Please note that the value must be between 10 and 1000 meters. The distance you input will round down to the nearest receptor distance used in the Technical Guidance (e.g., 19m will return value at 10m distance).
Distance to Acute Receptor (meters)	80	Enter the distance where acute impacts are expected in meters as measured from the edge of the station canopy. This can be the distance to the property boundary, nearest resident, nearest worker, or any other user defined location. Please note that the value must be between 10 and 1000 meters. The distance you input will round down to the nearest receptor distance used in the Technical Guidance (e.g., 19m will return value at 10m distance).
Control Scenario	EVR Phase I & EVR Phase II	Select the appropriate control scenario for your gas station. Please refer to technical Guidance for an explanation of the different control scenarios. Almost all gas stations in California are equipped with EVR Phase I and EVR Phase II controls.
Include Building Downwash Adjustments	no	Building downwash may over estimate risk results. High results should be investigated further through site-specific health risk assessment.

Risk Value	Results
Max Residential Cancer Risk (chances/million)	0.77
Max Worker Cancer Risk (chances/million)	0.06
Chronic HI	0.00
Acute HI	0.08

Attachment 4: Cumulative Health Risk Modeling Information and Calculations

CT-EMFAC2017 Emissions Factors for Santa Clara County 2024

File Name:	2110 Old Middlefield GDF - Santa Clara (SF) - 2024 - Annual.EF
CT-EMFAC2017 Version:	1.0.2.27401
Run Date:	1/24/2023 15:23
Area:	Santa Clara (SF)
Analysis Year:	2024
Season:	Annual

==

Vehicle Category	VMT Fraction Across Category	Diesel VMT Fraction Within Category	Gas VMT Fraction Within Category
Truck 1	0.015	0.495	0.505
Truck 2	0.02	0.937	0.048
Non-Truck	0.965	0.014	0.955

==

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

==

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

Pollutant Name	<= 5 mph	10 mph	15 mph	20 mph	25 mph	30 mph	35 mph	40 mph
PM2.5	0.008837	0.005727	0.003882	0.002774	0.002102	0.001693	0.001451	0.001324
TOG	0.182802	0.119558	0.080373	0.056919	0.043051	0.034349	0.028781	0.025311
Diesel PM	0.000842	0.000689	0.000532	0.000425	0.000365	0.000339	0.000339	0.000361

==

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

Pollutant Name	Emission Factor
TOG	1.303551

==

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

Pollutant Name	Emission Factor
PM2.5	0.002108

==

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

Pollutant Name	Emission Factor
PM2.5	0.016805

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

Pollutant Name	Emission Factor
PM2.5	0.01484

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

Old Middlefield Way - Traffic Emissions and Health Risk Calculations

Analysis Year = ***2024***

Vehicle Type	2022 Caltrans Vehicles (veh/day)	2024 Vehicles (veh/day)
Truck 1 (MDT)	472	481
Truck 2 (HDT)	127	129
Non-Truck	16,456	16,785
Total	**17,055**	**17,396**

Increase From 2022	1.02
Vehicles/Direction	**8,698**
Avg Vehicles/Hour/Direction	362

Traffic Data Year = ***2022***

Project Traffic Background ADT	AADT Total	Total Truck
Old Middlefield Way & Rengstoff Ave	17,055	599
	Percent of Total Vehicles	3.51%

Traffic Increase per Year (%) = *1.00%*

2110 Old Middlefield Way GDF, Mountain View, CA - Offsite Residential Roadway Modeling
Cumulative Operation - Old Middlefield Way
DPM Modeling - Roadway Links, Traffic Volumes, and DPM Emissions
Year = 2024

Road Link	Description	Direction	No. Lanes	Link Length (m)	Link Length (mi)	Link Width (m)	Link Width (ft)	Release Height (m)	Average Speed (mph)	Average Vehicles per Day
DPM_EB_MID	Old Middlefield Way Eastbound	EB	2	651.3	0.40	13.3	43.7	3.4	30	8,698
DPM_WB_MID	Old Middlefield Way Westbound	WB	2	651.6	0.40	13.3	43.7	3.4	30	8,698
									Total	17,396

Emission Factors - DPM

Speed Category	1	2	3	4
Travel Speed (mph)	30			
Emissions per Vehicle (g/VMT)	0.00034			

Emisson Factors from CT-EMFAC2017

2024 Hourly Traffic Volumes and DPM Emissions - DPM_EB_MID

Hour	% Per Hour	VPH	g/s	Hour	% Per Hour	VPH	g/s	Hour	% Per Hour	VPH	g/s
1	3.90%	339	1.29E-05	9	6.42%	558	2.13E-05	17	5.62%	488	1.86E-05
2	2.58%	224	8.55E-06	10	7.34%	638	2.43E-05	18	3.27%	284	1.08E-05
3	2.87%	249	9.50E-06	11	6.42%	558	2.13E-05	19	2.35%	204	7.79E-06
4	3.32%	289	1.10E-05	12	6.88%	598	2.28E-05	20	0.86%	75	2.85E-06
5	2.18%	189	7.22E-06	13	6.25%	543	2.07E-05	21	3.09%	269	1.03E-05
6	3.38%	294	1.12E-05	14	6.19%	538	2.05E-05	22	4.13%	359	1.37E-05
7	6.02%	523	1.99E-05	15	5.10%	444	1.69E-05	23	2.52%	219	8.36E-06
8	4.64%	404	1.54E-05	16	3.78%	329	1.25E-05	24	0.92%	80	3.04E-06
								Total		8,698	

2024 Hourly Traffic Volumes Per Direction and DPM Emissions - DPM_WB_MID

Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile
1	3.90%	339	1.29E-05	9	6.42%	558	2.13E-05	17	5.62%	488	1.86E-05
2	2.58%	224	8.55E-06	10	7.34%	638	2.43E-05	18	3.27%	284	1.08E-05
3	2.87%	249	9.50E-06	11	6.42%	558	2.13E-05	19	2.35%	204	7.79E-06
4	3.32%	289	1.10E-05	12	6.88%	598	2.28E-05	20	0.86%	75	2.85E-06
5	2.18%	189	7.22E-06	13	6.25%	543	2.07E-05	21	3.09%	269	1.03E-05
6	3.38%	294	1.12E-05	14	6.19%	538	2.05E-05	22	4.13%	359	1.37E-05
7	6.02%	523	2.00E-05	15	5.10%	444	1.69E-05	23	2.52%	219	8.36E-06
8	4.64%	404	1.54E-05	16	3.78%	329	1.25E-05	24	0.92%	80	3.04E-06
								Total		8,698	

2110 Old Middlefield Way GDF, Mountain View, CA - Offsite Residential Roadway Modeling
Cumulative Operation - Old Middlefield Way
PM2.5 Modeling - Roadway Links, Traffic Volumes, and PM2.5 Emissions
Year = 2024

Road Link	Description	Direction	No. Lanes	Link Length (m)	Link Length (mi)	Link Width (m)	Link Width (ft)	Release Height (m)	Average Speed (mph)	Average Vehicles per Day
PM25_EB_MID	Old Middlefield Way Eastbound	EB	2	651.3	0.40	13.3	44	1.3	30	8,698
PM25_WB_MID	Old Middlefield Way Westbound	WB	2	651.6	0.40	13.3	44	1.3	30	8,698
									Total	17,396

Emission Factors - PM2.5

Speed Category	1	2	3	4
Travel Speed (mph)	30			
Emissions per Vehicle (g/VMT)	0.001693			

Emisson Factors from CT-EMFAC2017

2024 Hourly Traffic Volumes and PM2.5 Emissions - PM25_EB_MID

Hour	% Per Hour	VPH	g/s	Hour	% Per Hour	VPH	g/s	Hour	% Per Hour	VPH	g/s
1	1.15%	100	1.91E-05	9	7.11%	619	1.18E-04	17	7.39%	642	1.22E-04
2	0.42%	36	6.91E-06	10	4.39%	381	7.26E-05	18	8.18%	711	1.35E-04
3	0.41%	35	6.72E-06	11	4.66%	406	7.72E-05	19	5.70%	495	9.43E-05
4	0.26%	23	4.33E-06	12	5.89%	512	9.75E-05	20	4.27%	372	7.08E-05
5	0.50%	43	8.27E-06	13	6.15%	535	1.02E-04	21	3.26%	283	5.39E-05
6	0.90%	79	1.50E-05	14	6.04%	525	9.99E-05	22	3.30%	287	5.46E-05
7	3.79%	330	6.27E-05	15	7.01%	610	1.16E-04	23	2.46%	214	4.07E-05
8	7.76%	675	1.29E-04	16	7.14%	621	1.18E-04	24	1.87%	162	3.09E-05
								Total		8,698	

2024 Hourly Traffic Volumes Per Direction and PM2.5 Emissions - PM25_WB_MID

Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile
1	1.15%	100	1.91E-05	9	7.11%	619	1.18E-04	17	7.39%	642	1.22E-04
2	0.42%	36	6.92E-06	10	4.39%	381	7.26E-05	18	8.18%	711	1.35E-04
3	0.41%	35	6.72E-06	11	4.66%	406	7.73E-05	19	5.70%	495	9.43E-05
4	0.26%	23	4.33E-06	12	5.89%	512	9.75E-05	20	4.27%	372	7.08E-05
5	0.50%	43	8.28E-06	13	6.15%	535	1.02E-04	21	3.26%	283	5.40E-05
6	0.90%	79	1.50E-05	14	6.04%	525	1.00E-04	22	3.30%	287	5.46E-05
7	3.79%	330	6.28E-05	15	7.01%	610	1.16E-04	23	2.46%	214	4.08E-05
8	7.76%	675	1.29E-04	16	7.14%	621	1.18E-04	24	1.87%	162	3.09E-05
								Total		8,698	

2110 Old Middlefield Way GDF, Mountain View, CA - Offsite Residential Roadway Modeling
Cumulative Operation - Old Middlefield Way
TOG Exhaust Modeling - Roadway Links, Traffic Volumes, and TOG Exhaust Emissions
Year = 2024

Road Link	Description	Direction	No. Lanes	Link Length (m)	Link Length (mi)	Link Width (m)	Link Width (ft)	Release Height (m)	Average Speed (mph)	Average Vehicles per Day
TEXH_EB_MID	Old Middlefield Way Eastbound	EB	2	651.3	0.40	13.3	44	1.3	30	8,698
TEXH_WB_MID	Old Middlefield Way Westbound	WB	2	651.6	0.40	13.3	44	1.3	30	8,698
									Total	17,396

Emission Factors - TOG Exhaust

Speed Category	1	2	3	4
Travel Speed (mph)	30			
Emissions per Vehicle (g/VMT)	0.03435			

Emisson Factors from CT-EMFAC2017

2024 Hourly Traffic Volumes and TOG Exhaust Emissions - TEXH_EB_MID

Hour	% Per Hour	VPH	g/s	Hour	% Per Hour	VPH	g/s	Hour	% Per Hour	VPH	g/s
1	1.15%	100	3.87E-04	9	7.11%	619	2.39E-03	17	7.39%	642	2.48E-03
2	0.42%	36	1.40E-04	10	4.39%	381	1.47E-03	18	8.18%	711	2.75E-03
3	0.41%	35	1.36E-04	11	4.66%	406	1.57E-03	19	5.70%	495	1.91E-03
4	0.26%	23	8.78E-05	12	5.89%	512	1.98E-03	20	4.27%	372	1.44E-03
5	0.50%	43	1.68E-04	13	6.15%	535	2.07E-03	21	3.26%	283	1.09E-03
6	0.90%	79	3.04E-04	14	6.04%	525	2.03E-03	22	3.30%	287	1.11E-03
7	3.79%	330	1.27E-03	15	7.01%	610	2.36E-03	23	2.46%	214	8.27E-04
8	7.76%	675	2.61E-03	16	7.14%	621	2.40E-03	24	1.87%	162	6.27E-04
								Total		8,698	

2024 Hourly Traffic Volumes Per Direction and TOG Exhaust Emissions - TEXH_WB_MID

Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile
1	1.15%	100	3.87E-04	9	7.11%	619	2.39E-03	17	7.39%	642	2.48E-03
2	0.42%	36	1.40E-04	10	4.39%	381	1.47E-03	18	8.18%	711	2.75E-03
3	0.41%	35	1.36E-04	11	4.66%	406	1.57E-03	19	5.70%	495	1.91E-03
4	0.26%	23	8.79E-05	12	5.89%	512	1.98E-03	20	4.27%	372	1.44E-03
5	0.50%	43	1.68E-04	13	6.15%	535	2.07E-03	21	3.26%	283	1.09E-03
6	0.90%	79	3.04E-04	14	6.04%	525	2.03E-03	22	3.30%	287	1.11E-03
7	3.79%	330	1.27E-03	15	7.01%	610	2.36E-03	23	2.46%	214	8.27E-04
8	7.76%	675	2.61E-03	16	7.14%	621	2.40E-03	24	1.87%	162	6.27E-04
								Total		8,698	

2110 Old Middlefield Way GDF, Mountain View, CA - Offsite Residential Roadway Modeling
Cumulative Operation - Old Middlefield Way
TOG Evaporative Emissions Modeling - Roadway Links, Traffic Volumes, and TOG Evaporative Emissions
Year = 2024

Road Link	Description	Direction	No. Lanes	Link Length (m)	Link Length (mi)	Link Width (m)	Link Width (ft)	Release Height (m)	Average Speed (mph)	Average Vehicles per Day
TEVAP_EB_MID	Old Middlefield Way Eastbound	EB	2	651.3	0.40	13.3	44	1.3	30	8,698
TEVAP_WB_MID	Old Middlefield Way Westbound	WB	2	651.6	0.40	13.3	44	1.3	30	8,698
									Total	17,396

Emission Factors - PM2.5 - Evaporative TOG

Speed Category	1	2	3	4
Travel Speed (mph)	30			
Emissions per Vehicle per Hour (g/hour)	1.30355			
Emissions per Vehicle per Mile (g/VMT)	0.04345			

Emisson Factors from CT-EMFAC2017

2024 Hourly Traffic Volumes and TOG Evaporative Emissions - TEVAP_EB_MID

Hour	% Per Hour	VPH	g/s	Hour	% Per Hour	VPH	g/s	Hour	% Per Hour	VPH	g/s
1	1.15%	100	4.89E-04	9	7.11%	619	3.02E-03	17	7.39%	642	3.14E-03
2	0.42%	36	1.77E-04	10	4.39%	381	1.86E-03	18	8.18%	711	3.47E-03
3	0.41%	35	1.72E-04	11	4.66%	406	1.98E-03	19	5.70%	495	2.42E-03
4	0.26%	23	1.11E-04	12	5.89%	512	2.50E-03	20	4.27%	372	1.82E-03
5	0.50%	43	2.12E-04	13	6.15%	535	2.61E-03	21	3.26%	283	1.38E-03
6	0.90%	79	3.84E-04	14	6.04%	525	2.56E-03	22	3.30%	287	1.40E-03
7	3.79%	330	1.61E-03	15	7.01%	610	2.98E-03	23	2.46%	214	1.05E-03
8	7.76%	675	3.30E-03	16	7.14%	621	3.03E-03	24	1.87%	162	7.93E-04
								Total		8,698	

2024 Hourly Traffic Volumes Per Direction and TOG Evaporative Emissions - TEVAP_WB_MID

Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile
1	1.15%	100	4.89E-04	9	7.11%	619	3.02E-03	17	7.39%	642	3.14E-03
2	0.42%	36	1.78E-04	10	4.39%	381	1.86E-03	18	8.18%	711	3.48E-03
3	0.41%	35	1.73E-04	11	4.66%	406	1.98E-03	19	5.70%	495	2.42E-03
4	0.26%	23	1.11E-04	12	5.89%	512	2.50E-03	20	4.27%	372	1.82E-03
5	0.50%	43	2.12E-04	13	6.15%	535	2.62E-03	21	3.26%	283	1.38E-03
6	0.90%	79	3.84E-04	14	6.04%	525	2.57E-03	22	3.30%	287	1.40E-03
7	3.79%	330	1.61E-03	15	7.01%	610	2.98E-03	23	2.46%	214	1.05E-03
8	7.76%	675	3.30E-03	16	7.14%	621	3.03E-03	24	1.87%	162	7.93E-04
								Total		8,698	

2110 Old Middlefield Way GDF, Mountain View, CA - Offsite Residential Roadway Modeling
Cumulative Operation - Old Middlefield Way
Fugitive Road PM2.5 Modeling - Roadway Links, Traffic Volumes, and Fugitive Road PM2.5 Emissions
Year = 2024

Road Link	Description	Direction	No. Lanes	Link Length (m)	Link Length (mi)	Link Width (m)	Link Width (ft)	Release Height (m)	Average Speed (mph)	Average Vehicles per Day
FUG_EB_MID	Old Middlefield Way Eastbound	EB	2	651.3	0.40	13.3	44	1.3	30	8,698
FUG_WB_MID	Old Middlefield Way Westbound	WB	2	651.6	0.40	13.3	44	1.3	30	8,698
									Total	17,396

Emission Factors - Fugitive PM2.5

Speed Category	1	2	3	4
Travel Speed (mph)	30			
Tire Wear - Emissions per Vehicle (g/VMT)	0.00211			
Brake Wear - Emissions per Vehicle (g/VMT)	0.01681			
Road Dust - Emissions per Vehicle (g/VMT)	0.01484			
Total Fugitive PM2.5 - Emissions per Vehicle (g/VMT)	0.03375			

Emisson Factors from CT-EMFAC2017

2024 Hourly Traffic Volumes and Fugitive PM2.5 Emissions - FUG_EB_MID

Hour	% Per Hour	VPH	g/s	Hour	% Per Hour	VPH	g/s	Hour	% Per Hour	VPH	g/s
1	1.15%	100	3.80E-04	9	7.11%	619	2.35E-03	17	7.39%	642	2.44E-03
2	0.42%	36	1.38E-04	10	4.39%	381	1.45E-03	18	8.18%	711	2.70E-03
3	0.41%	35	1.34E-04	11	4.66%	406	1.54E-03	19	5.70%	495	1.88E-03
4	0.26%	23	8.63E-05	12	5.89%	512	1.94E-03	20	4.27%	372	1.41E-03
5	0.50%	43	1.65E-04	13	6.15%	535	2.03E-03	21	3.26%	283	1.08E-03
6	0.90%	79	2.98E-04	14	6.04%	525	1.99E-03	22	3.30%	287	1.09E-03
7	3.79%	330	1.25E-03	15	7.01%	610	2.32E-03	23	2.46%	214	8.12E-04
8	7.76%	675	2.56E-03	16	7.14%	621	2.36E-03	24	1.87%	162	6.16E-04
								Total		8,698	

2024 Hourly Traffic Volumes Per Direction and Fugitive PM2.5 Emissions - FUG_WB_MID

Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile
1	1.15%	100	3.80E-04	9	7.11%	619	2.35E-03	17	7.39%	642	2.44E-03
2	0.42%	36	1.38E-04	10	4.39%	381	1.45E-03	18	8.18%	711	2.70E-03
3	0.41%	35	1.34E-04	11	4.66%	406	1.54E-03	19	5.70%	495	1.88E-03
4	0.26%	23	8.64E-05	12	5.89%	512	1.94E-03	20	4.27%	372	1.41E-03
5	0.50%	43	1.65E-04	13	6.15%	535	2.03E-03	21	3.26%	283	1.08E-03
6	0.90%	79	2.98E-04	14	6.04%	525	1.99E-03	22	3.30%	287	1.09E-03
7	3.79%	330	1.25E-03	15	7.01%	610	2.32E-03	23	2.46%	214	8.13E-04
8	7.76%	675	2.56E-03	16	7.14%	621	2.36E-03	24	1.87%	162	6.16E-04
								Total		8,698	

2110 Old Middlefield Way GDF, Mountain View, CA - Old Middlefield Way Traffic - TACs & PM2.5
AERMOD Risk Modeling Parameters and Maximum Concentrations
at Project MEI Receptor, 1.5m receptor height

Emission Year	2024
Receptor Information	Project MEI receptor
Number of Receptors	1
Receptor Height	1.5 meters
Receptor Distances	At Project MEI location

Meteorological Conditions	
BAQMD Moffett Fed Airfield Met Data	2013-2017
Land Use Classification	Urban
Wind Speed	Variable
Wind Direction	Variable

Project MEI Cancer Risk Maximum Concentrations

Meteorological	Concentration (μg/m3)		
Data Years	DPM	Exhaust TOG	Evaporative TOG
2013-2017	0.0014	0.1546	0.1955

Project MEI PM2.5 Maximum Concentrations

Meteorological	PM2.5 Concentration (μg/m3)		
Data Years	Total PM2.5	Fugitive PM2.5	Vehicle PM2.5
2013-2017	0.1600	0.1524	0.0076

2110 Old Middlefield Way GDF, Mountain View, CA - Old Middlefield Way Cancer Risk & PM2.5 Impacts at Project MEI - 1.5 meter receptor height
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 $(mg/kg\text{-}day)^{-1}$
ASF = Age sensitivity factor for specified age group
ED = Exposure duration (years)
AT = Averaging time for lifetime cancer risk (years)
FAH = Fraction of time spent at home (unitless)

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

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

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

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

Values

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

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

Construction Cancer Risk by Year - Maximum Impact Receptor Location

Maximum - Exposure Information					Concentration (ug/m3)			Cancer Risk (per million)			
Exposure Year	Exposure Duration (years)	Age	Year	Age Sensitivity Factor	DPM	Exhaust TOG	Evaporative TOG	DPM	Exhaust TOG	Evaporative TOG	TOTAL
0	0.25	-0.25 - 0*	2024	10	0.0014	0.1546	0.1955	0.018	0.012	0.0009	0.03
1	1	0 - 1	2024	10	0.0014	0.1546	0.1955	0.222	0.145	0.0108	0.38
2	1	1 - 2	2025	10	0.0014	0.1546	0.1955	0.222	0.145	0.0108	0.38
3	1	2 - 3	2026	3	0.0014	0.1546	0.1955	0.035	0.023	0.0017	0.06
4	1	3 - 4	2027	3	0.0014	0.1546	0.1955	0.035	0.023	0.0017	0.06
5	1	4 - 5	2028	3	0.0014	0.1546	0.1955	0.035	0.023	0.0017	0.06
6	1	5 - 6	2029	3	0.0014	0.1546	0.1955	0.035	0.023	0.0017	0.06
7	1	6 - 7	2030	3	0.0014	0.1546	0.1955	0.035	0.023	0.0017	0.06
8	1	7 - 8	2031	3	0.0014	0.1546	0.1955	0.035	0.023	0.0017	0.06
9	1	8 - 9	2032	3	0.0014	0.1546	0.1955	0.035	0.023	0.0017	0.06
10	1	9 - 10	2033	3	0.0014	0.1546	0.1955	0.035	0.023	0.0017	0.06
11	1	10 - 11	2034	3	0.0014	0.1546	0.1955	0.035	0.023	0.0017	0.06
12	1	11 - 12	2035	3	0.0014	0.1546	0.1955	0.035	0.023	0.0017	0.06
13	1	12 - 13	2036	3	0.0014	0.1546	0.1955	0.035	0.023	0.0017	0.06
14	1	13 - 14	2037	3	0.0014	0.1546	0.1955	0.035	0.023	0.0017	0.06
15	1	14 - 15	2038	3	0.0014	0.1546	0.1955	0.035	0.023	0.0017	0.06
16	1	15 - 16	2039	3	0.0014	0.1546	0.1955	0.035	0.023	0.0017	0.06
17	1	16-17	2040	1	0.0014	0.1546	0.1955	0.004	0.003	0.0002	0.01
18	1	17-18	2041	1	0.0014	0.1546	0.1955	0.004	0.003	0.0002	0.01
19	1	18-19	2042	1	0.0014	0.1546	0.1955	0.004	0.003	0.0002	0.01
20	1	19-20	2043	1	0.0014	0.1546	0.1955	0.004	0.003	0.0002	0.01
21	1	20-21	2044	1	0.0014	0.1546	0.1955	0.004	0.003	0.0002	0.01
22	1	21-22	2045	1	0.0014	0.1546	0.1955	0.004	0.003	0.0002	0.01
23	1	22-23	2046	1	0.0014	0.1546	0.1955	0.004	0.003	0.0002	0.01
24	1	23-24	2047	1	0.0014	0.1546	0.1955	0.004	0.003	0.0002	0.01
25	1	24-25	2048	1	0.0014	0.1546	0.1955	0.004	0.003	0.0002	0.01
26	1	25-26	2049	1	0.0014	0.1546	0.1955	0.004	0.003	0.0002	0.01
27	1	26-27	2050	1	0.0014	0.1546	0.1955	0.004	0.003	0.0002	0.01
28	1	27-28	2051	1	0.0014	0.1546	0.1955	0.004	0.003	0.0002	0.01
29	1	28-29	2052	1	0.0014	0.1546	0.1955	0.004	0.003	0.0002	0.01
30	1	29-30	2053	1	0.0014	0.1546	0.1955	0.004	0.003	0.0002	0.01
Total Increased Cancer Risk								1.00	0.657	0.049	**1.71**

* Third trimester of pregnancy

	Maximum	
Hazard Index	**Fugitive PM2.5**	**Total PM2.5**
0.0003	0.15	0.16

Rengstorff Avenue - Traffic Emissions and Health Risk Calculations

2110 Old Middlefield Way GDF, Mountain View, CA - Offsite Residential Roadway Modeling
Cumulative Operation - Rengstorff Avenue
DPM Modeling - Roadway Links, Traffic Volumes, and DPM Emissions
Year = 2024

Road Link	Description	Direction	No. Lanes	Link Length (m)	Link Length (mi)	Link Width (m)	Link Width (ft)	Release Height (m)	Average Speed (mph)	Average Vehicles per Day
DPM_NB_REN	Rengstorff Ave Northbound	NB	2	644.0	0.40	13.3	43.7	3.4	30	6,474
DPM_SB_REN	Rengstorff Ave Southbound	SB	2	645.0	0.40	13.3	43.7	3.4	30	6,474
									Total	12,949

Emission Factors - DPM

Speed Category	1	2	3	4
Travel Speed (mph)	30			
Emissions per Vehicle (g/VMT)	0.00034			

Emisson Factors from CT-EMFAC2017

2024 Hourly Traffic Volumes and DPM Emissions - DPM_NB_REN

Hour	% Per Hour	VPH	g/s	Hour	% Per Hour	VPH	g/s	Hour	% Per Hour	VPH	g/s
1	3.90%	252	9.51E-06	9	6.42%	416	1.57E-05	17	5.62%	364	1.37E-05
2	2.58%	167	6.29E-06	10	7.34%	475	1.79E-05	18	3.27%	211	7.97E-06
3	2.87%	186	6.99E-06	11	6.42%	416	1.57E-05	19	2.35%	152	5.73E-06
4	3.32%	215	8.11E-06	12	6.88%	445	1.68E-05	20	0.86%	56	2.10E-06
5	2.18%	141	5.31E-06	13	6.25%	404	1.52E-05	21	3.09%	200	7.55E-06
6	3.38%	219	8.25E-06	14	6.19%	401	1.51E-05	22	4.13%	267	1.01E-05
7	6.02%	390	1.47E-05	15	5.10%	330	1.24E-05	23	2.52%	163	6.15E-06
8	4.64%	301	1.13E-05	16	3.78%	245	9.23E-06	24	0.92%	59	2.24E-06
								Total		6,474	

2024 Hourly Traffic Volumes Per Direction and DPM Emissions - DPM_SB_REN

Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile
1	3.90%	252	9.52E-06	9	6.42%	416	1.57E-05	17	5.62%	364	1.37E-05
2	2.58%	167	6.30E-06	10	7.34%	475	1.79E-05	18	3.27%	211	7.98E-06
3	2.87%	186	7.00E-06	11	6.42%	416	1.57E-05	19	2.35%	152	5.74E-06
4	3.32%	215	8.12E-06	12	6.88%	445	1.68E-05	20	0.86%	56	2.10E-06
5	2.18%	141	5.32E-06	13	6.25%	404	1.53E-05	21	3.09%	200	7.56E-06
6	3.38%	219	8.26E-06	14	6.19%	401	1.51E-05	22	4.13%	267	1.01E-05
7	6.02%	390	1.47E-05	15	5.10%	330	1.25E-05	23	2.52%	163	6.16E-06
8	4.64%	301	1.13E-05	16	3.78%	245	9.24E-06	24	0.92%	59	2.24E-06
								Total		6,474	

2110 Old Middlefield Way GDF, Mountain View, CA - Offsite Residential Roadway Modeling
Cumulative Operation - Rengstorff Avenue
PM2.5 Modeling - Roadway Links, Traffic Volumes, and PM2.5 Emissions
Year = 2024

Road Link	Description	Direction	No. Lanes	Link Length (m)	Link Length (mi)	Link Width (m)	Link Width (ft)	Release Height (m)	Average Speed (mph)	Average Vehicles per Day
PM25_NB_REN	Rengstorff Ave Northbound	NB	2	644.0	0.40	13.3	44	1.3	30	6,474
PM25_SB_REN	Rengstorff Ave Southbound	SB	2	645.0	0.40	13.3	44	1.3	30	6,474
									Total	12,949

Emission Factors - PM2.5

Speed Category	1	2	3	4
Travel Speed (mph)	30			
Emissions per Vehicle (g/VMT)	0.001693			

Emisson Factors from CT-EMFAC2017

2024 Hourly Traffic Volumes and PM2.5 Emissions - PM25_NB_REN

Hour	% Per Hour	VPH	g/s	Hour	% Per Hour	VPH	g/s	Hour	% Per Hour	VPH	g/s
1	1.15%	75	1.40E-05	9	7.11%	460	8.67E-05	17	7.39%	478	9.00E-05
2	0.42%	27	5.09E-06	10	4.39%	284	5.34E-05	18	8.18%	529	9.96E-05
3	0.41%	26	4.95E-06	11	4.66%	302	5.68E-05	19	5.70%	369	6.94E-05
4	0.26%	17	3.19E-06	12	5.89%	381	7.17E-05	20	4.27%	277	5.21E-05
5	0.50%	32	6.09E-06	13	6.15%	398	7.50E-05	21	3.26%	211	3.97E-05
6	0.90%	59	1.10E-05	14	6.04%	391	7.36E-05	22	3.30%	213	4.02E-05
7	3.79%	245	4.62E-05	15	7.01%	454	8.55E-05	23	2.46%	159	3.00E-05
8	7.76%	503	9.46E-05	16	7.14%	462	8.70E-05	24	1.87%	121	2.27E-05
								Total		6,474	

2024 Hourly Traffic Volumes Per Direction and PM2.5 Emissions - PM25_SB_REN

Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile
1	1.15%	75	1.41E-05	9	7.11%	460	8.68E-05	17	7.39%	478	9.01E-05
2	0.42%	27	5.10E-06	10	4.39%	284	5.35E-05	18	8.18%	529	9.98E-05
3	0.41%	26	4.95E-06	11	4.66%	302	5.69E-05	19	5.70%	369	6.95E-05
4	0.26%	17	3.19E-06	12	5.89%	381	7.19E-05	20	4.27%	277	5.22E-05
5	0.50%	32	6.10E-06	13	6.15%	398	7.51E-05	21	3.26%	211	3.98E-05
6	0.90%	59	1.10E-05	14	6.04%	391	7.37E-05	22	3.30%	213	4.02E-05
7	3.79%	245	4.63E-05	15	7.01%	454	8.56E-05	23	2.46%	159	3.00E-05
8	7.76%	503	9.47E-05	16	7.14%	462	8.71E-05	24	1.87%	121	2.28E-05
								Total		6,474	

2110 Old Middlefield Way GDF, Mountain View, CA - Offsite Residential Roadway Modeling
Cumulative Operation - Rengstorff Avenue
TOG Exhaust Modeling - Roadway Links, Traffic Volumes, and TOG Exhaust Emissions
Year = 2024

Road Link	Description	Direction	No. Lanes	Link Length (m)	Link Length (mi)	Link Width (m)	Link Width (ft)	Release Height (m)	Average Speed (mph)	Average Vehicles per Day
TEXH_NB_REN	Rengstorff Ave Northbound	NB	2	644.0	0.40	13.3	44	1.3	30	6,474
TEXH_SB_REN	Rengstorff Ave Southbound	SB	2	645.0	0.40	13.3	44	1.3	30	6,474
									Total	12,949

Emission Factors - TOG Exhaust

Speed Category	1	2	3	4
Travel Speed (mph)	30			
Emissions per Vehicle (g/VMT)	0.03435			

Emisson Factors from CT-EMFAC2017

2024 Hourly Traffic Volumes and TOG Exhaust Emissions - TEXH_NB_REN

Hour	% Per Hour	VPH	g/s	Hour	% Per Hour	VPH	g/s	Hour	% Per Hour	VPH	g/s
1	1.15%	75	2.85E-04	9	7.11%	460	1.76E-03	17	7.39%	478	1.83E-03
2	0.42%	27	1.03E-04	10	4.39%	284	1.08E-03	18	8.18%	529	2.02E-03
3	0.41%	26	1.00E-04	11	4.66%	302	1.15E-03	19	5.70%	369	1.41E-03
4	0.26%	17	6.47E-05	12	5.89%	381	1.46E-03	20	4.27%	277	1.06E-03
5	0.50%	32	1.24E-04	13	6.15%	398	1.52E-03	21	3.26%	211	8.05E-04
6	0.90%	59	2.23E-04	14	6.04%	391	1.49E-03	22	3.30%	213	8.15E-04
7	3.79%	245	9.37E-04	15	7.01%	454	1.73E-03	23	2.46%	159	6.08E-04
8	7.76%	503	1.92E-03	16	7.14%	462	1.76E-03	24	1.87%	121	4.61E-04
								Total		6,474	

2024 Hourly Traffic Volumes Per Direction and TOG Exhaust Emissions - TEXH_SB_REN

Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile
1	1.15%	75	2.85E-04	9	7.11%	460	1.76E-03	17	7.39%	478	1.83E-03
2	0.42%	27	1.03E-04	10	4.39%	284	1.09E-03	18	8.18%	529	2.02E-03
3	0.41%	26	1.01E-04	11	4.66%	302	1.15E-03	19	5.70%	369	1.41E-03
4	0.26%	17	6.48E-05	12	5.89%	381	1.46E-03	20	4.27%	277	1.06E-03
5	0.50%	32	1.24E-04	13	6.15%	398	1.52E-03	21	3.26%	211	8.07E-04
6	0.90%	59	2.24E-04	14	6.04%	391	1.49E-03	22	3.30%	213	8.16E-04
7	3.79%	245	9.38E-04	15	7.01%	454	1.74E-03	23	2.46%	159	6.09E-04
8	7.76%	503	1.92E-03	16	7.14%	462	1.77E-03	24	1.87%	121	4.62E-04
								Total		6,474	

2110 Old Middlefield Way GDF, Mountain View, CA - Offsite Residential Roadway Modeling
Cumulative Operation - Rengstorff Avenue
TOG Evaporative Emissions Modeling - Roadway Links, Traffic Volumes, and TOG Evaporative Emissions
Year = 2024

Road Link	Description	Direction	No. Lanes	Link Length (m)	Link Length (mi)	Link Width (m)	Link Width (ft)	Release Height (m)	Average Speed (mph)	Average Vehicles per Day
TEVAP_NB_REN	Rengstorff Ave Northbound	NB	2	644.0	0.40	13.3	44	1.3	30	6,474
TEVAP_SB_REN	Rengstorff Ave Southbound	SB	2	645.0	0.40	13.3	44	1.3	30	6,474
									Total	12,949

Emission Factors - PM2.5 - Evaporative TOG

Speed Category	1	2	3	4
Travel Speed (mph)	30			
Emissions per Vehicle per Hour (g/hour)	1.30355			
Emissions per Vehicle per Mile (g/VMT)	0.04345			

Emisson Factors from CT-EMFAC2017

2024 Hourly Traffic Volumes and TOG Evaporative Emissions - TEVAP_NB_REN

Hour	% Per Hour	VPH	g/s	Hour	% Per Hour	VPH	g/s	Hour	% Per Hour	VPH	g/s
1	1.15%	75	3.60E-04	9	7.11%	460	2.22E-03	17	7.39%	478	2.31E-03
2	0.42%	27	1.31E-04	10	4.39%	284	1.37E-03	18	8.18%	529	2.56E-03
3	0.41%	26	1.27E-04	11	4.66%	302	1.46E-03	19	5.70%	369	1.78E-03
4	0.26%	17	8.18E-05	12	5.89%	381	1.84E-03	20	4.27%	277	1.34E-03
5	0.50%	32	1.56E-04	13	6.15%	398	1.92E-03	21	3.26%	211	1.02E-03
6	0.90%	59	2.83E-04	14	6.04%	391	1.89E-03	22	3.30%	213	1.03E-03
7	3.79%	245	1.19E-03	15	7.01%	454	2.19E-03	23	2.46%	159	7.70E-04
8	7.76%	503	2.43E-03	16	7.14%	462	2.23E-03	24	1.87%	121	5.83E-04
								Total		6,474	

2024 Hourly Traffic Volumes Per Direction and TOG Evaporative Emissions - TEVAP_SB_REN

Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile
1	1.15%	75	3.61E-04	9	7.11%	460	2.23E-03	17	7.39%	478	2.31E-03
2	0.42%	27	1.31E-04	10	4.39%	284	1.37E-03	18	8.18%	529	2.56E-03
3	0.41%	26	1.27E-04	11	4.66%	302	1.46E-03	19	5.70%	369	1.78E-03
4	0.26%	17	8.19E-05	12	5.89%	381	1.84E-03	20	4.27%	277	1.34E-03
5	0.50%	32	1.56E-04	13	6.15%	398	1.93E-03	21	3.26%	211	1.02E-03
6	0.90%	59	2.83E-04	14	6.04%	391	1.89E-03	22	3.30%	213	1.03E-03
7	3.79%	245	1.19E-03	15	7.01%	454	2.20E-03	23	2.46%	159	7.71E-04
8	7.76%	503	2.43E-03	16	7.14%	462	2.24E-03	24	1.87%	121	5.84E-04
								Total		6,474	

2110 Old Middlefield Way GDF, Mountain View, CA - Offsite Residential Roadway Modeling
Cumulative Operation - Rengstorff Avenue
Fugitive Road PM2.5 Modeling - Roadway Links, Traffic Volumes, and Fugitive Road PM2.5 Emissions
Year = 2024

Road Link	Description	Direction	No. Lanes	Link Length (m)	Link Length (mi)	Link Width (m)	Link Width (ft)	Release Height (m)	Average Speed (mph)	Average Vehicles per Day
FUG_NB_REN	Rengstorff Ave Northbound	NB	2	644.0	0.40	13.3	44	1.3	30	6,474
FUG_SB_REN	Rengstorff Ave Southbound	SB	2	645.0	0.40	13.3	44	1.3	30	6,474
									Total	12,949

Emission Factors - Fugitive PM2.5

Speed Category	1	2	3	4
Travel Speed (mph)	30			
Tire Wear - Emissions per Vehicle (g/VMT)	0.00211			
Brake Wear - Emissions per Vehicle (g/VMT)	0.01681			
Road Dust - Emissions per Vehicle (g/VMT)	0.01484			
Total Fugitive PM2.5 - Emissions per Vehicle (g/VMT)	0.03375			

Emisson Factors from CT-EMFAC2017

2024 Hourly Traffic Volumes and Fugitive PM2.5 Emissions - FUG_NB_REN

Hour	% Per Hour	VPH	g/s	Hour	% Per Hour	VPH	g/s	Hour	% Per Hour	VPH	g/s
1	1.15%	75	2.80E-04	9	7.11%	460	1.73E-03	17	7.39%	478	1.79E-03
2	0.42%	27	1.01E-04	10	4.39%	284	1.07E-03	18	8.18%	529	1.99E-03
3	0.41%	26	9.86E-05	11	4.66%	302	1.13E-03	19	5.70%	369	1.38E-03
4	0.26%	17	6.35E-05	12	5.89%	381	1.43E-03	20	4.27%	277	1.04E-03
5	0.50%	32	1.21E-04	13	6.15%	398	1.49E-03	21	3.26%	211	7.91E-04
6	0.90%	59	2.20E-04	14	6.04%	391	1.47E-03	22	3.30%	213	8.01E-04
7	3.79%	245	9.21E-04	15	7.01%	454	1.70E-03	23	2.46%	159	5.98E-04
8	7.76%	503	1.89E-03	16	7.14%	462	1.73E-03	24	1.87%	121	4.53E-04
								Total		6,474	

2024 Hourly Traffic Volumes Per Direction and Fugitive PM2.5 Emissions - FUG_SB_REN

Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile
1	1.15%	75	2.80E-04	9	7.11%	460	1.73E-03	17	7.39%	478	1.80E-03
2	0.42%	27	1.02E-04	10	4.39%	284	1.07E-03	18	8.18%	529	1.99E-03
3	0.41%	26	9.88E-05	11	4.66%	302	1.13E-03	19	5.70%	369	1.39E-03
4	0.26%	17	6.36E-05	12	5.89%	381	1.43E-03	20	4.27%	277	1.04E-03
5	0.50%	32	1.22E-04	13	6.15%	398	1.50E-03	21	3.26%	211	7.93E-04
6	0.90%	59	2.20E-04	14	6.04%	391	1.47E-03	22	3.30%	213	8.02E-04
7	3.79%	245	9.22E-04	15	7.01%	454	1.71E-03	23	2.46%	159	5.99E-04
8	7.76%	503	1.89E-03	16	7.14%	462	1.74E-03	24	1.87%	121	4.54E-04
								Total		6,474	

2110 Old Middlefield Way GDF, Mountain View, CA - Rengstorff Ave Traffic - TACs & PM2.5
AERMOD Risk Modeling Parameters and Maximum Concentrations
at Project MEI Receptor, 1.5m receptor height

Emission Year	2024
Receptor Information	Project MEI receptor
Number of Receptors	1
Receptor Height	1.5 meters
Receptor Distances	At Project MEI location
Meteorological Conditions	
BAQMD Moffett Fed Airfield Met Data	2013-2017
Land Use Classification	Urban
Wind Speed	Variable
Wind Direction	Variable

Project MEI Cancer Risk Maximum Concentrations

Meteorological	Concentration (µg/m3)		
Data Years	DPM	Exhaust TOG	Evaporative TOG
2013-2017	0.0017	0.2191	0.2765

Project MEI PM2.5 Maximum Concentrations

Meteorological	PM2.5 Concentration (µg/m3)		
Data Years	Total PM2.5	Fugitive PM2.5	Vehicle PM2.5
2013-2017	0.2256	0.2148	0.0108

2110 Old Middlefield Way GDF, Mountain View, CA - Rengstorff Ave Cancer Risk & PM2.5
Impacts at Project MEI - 1.5 meter receptor height
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 $(mg/kg\text{-}day)^{-1}$
ASF = Age sensitivity factor for specified age group
ED = Exposure duration (years)
AT = Averaging time for lifetime cancer risk (years)
FAH = Fraction of time spent at home (unitless)

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

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

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

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

Values

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

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

Construction Cancer Risk by Year - Maximum Impact Receptor Location

Maximum - Exposure Information					Concentration (ug/m3)			Cancer Risk (per million)			TOTAL
Exposure Year	Exposure Duration (years)	Age	Year	Age Sensitivity Factor	DPM	Exhaust TOG	Evaporative TOG	DPM	Exhaust TOG	Evaporative TOG	
0	0.25	-0.25 - 0*	2024	10	0.0017	0.2191	0.2765	0.023	0.017	0.0013	0.04
1	1	0 - 1	2024	10	0.0017	0.2191	0.2765	0.283	0.205	0.0153	0.50
2	1	1 - 2	2025	10	0.0017	0.2191	0.2765	0.283	0.205	0.0153	0.50
3	1	2 - 3	2026	3	0.0017	0.2191	0.2765	0.044	0.032	0.0024	0.08
4	1	3 - 4	2027	3	0.0017	0.2191	0.2765	0.044	0.032	0.0024	0.08
5	1	4 - 5	2028	3	0.0017	0.2191	0.2765	0.044	0.032	0.0024	0.08
6	1	5 - 6	2029	3	0.0017	0.2191	0.2765	0.044	0.032	0.0024	0.08
7	1	6 - 7	2030	3	0.0017	0.2191	0.2765	0.044	0.032	0.0024	0.08
8	1	7 - 8	2031	3	0.0017	0.2191	0.2765	0.044	0.032	0.0024	0.08
9	1	8 - 9	2032	3	0.0017	0.2191	0.2765	0.044	0.032	0.0024	0.08
10	1	9 - 10	2033	3	0.0017	0.2191	0.2765	0.044	0.032	0.0024	0.08
11	1	10 - 11	2034	3	0.0017	0.2191	0.2765	0.044	0.032	0.0024	0.08
12	1	11 - 12	2035	3	0.0017	0.2191	0.2765	0.044	0.032	0.0024	0.08
13	1	12 - 13	2036	3	0.0017	0.2191	0.2765	0.044	0.032	0.0024	0.08
14	1	13 - 14	2037	3	0.0017	0.2191	0.2765	0.044	0.032	0.0024	0.08
15	1	14 - 15	2038	3	0.0017	0.2191	0.2765	0.044	0.032	0.0024	0.08
16	1	15 - 16	2039	3	0.0017	0.2191	0.2765	0.044	0.032	0.0024	0.08
17	1	16-17	2040	1	0.0017	0.2191	0.2765	0.005	0.004	0.0003	0.01
18	1	17-18	2041	1	0.0017	0.2191	0.2765	0.005	0.004	0.0003	0.01
19	1	18-19	2042	1	0.0017	0.2191	0.2765	0.005	0.004	0.0003	0.01
20	1	19-20	2043	1	0.0017	0.2191	0.2765	0.005	0.004	0.0003	0.01
21	1	20-21	2044	1	0.0017	0.2191	0.2765	0.005	0.004	0.0003	0.01
22	1	21-22	2045	1	0.0017	0.2191	0.2765	0.005	0.004	0.0003	0.01
23	1	22-23	2046	1	0.0017	0.2191	0.2765	0.005	0.004	0.0003	0.01
24	1	23-24	2047	1	0.0017	0.2191	0.2765	0.005	0.004	0.0003	0.01
25	1	24-25	2048	1	0.0017	0.2191	0.2765	0.005	0.004	0.0003	0.01
26	1	25-26	2049	1	0.0017	0.2191	0.2765	0.005	0.004	0.0003	0.01
27	1	26-27	2050	1	0.0017	0.2191	0.2765	0.005	0.004	0.0003	0.01
28	1	27-28	2051	1	0.0017	0.2191	0.2765	0.005	0.004	0.0003	0.01
29	1	28-29	2052	1	0.0017	0.2191	0.2765	0.005	0.004	0.0003	0.01
30	1	29-30	2053	1	0.0017	0.2191	0.2765	0.005	0.004	0.0003	0.01
Total Increased Cancer Risk								1.28	0.931	0.069	**2.28**

* Third trimester of pregnancy

Hazard Index	Maximum Fugitive PM2.5	Total PM2.5
0.0003	0.21	0.23

BAY AREA AIR QUALITY MANAGEMENT DISTRICT

Risk & Hazard Stationary Source Inquiry Form

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

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

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

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

Table A: Requester Contact Information	
Date of Request	**11/14/2022**
Contact Name	Jordyn Bauer
Affiliation	Illingworth & Rodkin, Inc.
Phone	707-794-0400 x103
Email	jbauer@illingworthrodkin.com
Project Name	2110 Old Middlefield Gas Station
Address	2110 Old Middlefield Way
City	Mountain View
County	Santa Clara
Type (residential, commercial, mixed use, industrial, etc.)	Commercial
Project Size (# of units or building square feet)	3 pumps, 6 fuel dispensers
Comments:	

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

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

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

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

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

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

6. Note that a small percentage of the stationa[ry sources ha]ve Health Risk Screening Assessment (HRSA) data INSTEAD of screening level data. These sources will be noted by an asterisk next to the Plant Name [... ri]ght). If HRSA values are presented, these values have already been modeled and cannot be adjusted further.

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

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

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

Table B: Google Earth data

Distance from Receptor (feet) or MEI[1]	Plant No.	Facility Name	Address	Cancer Risk[2]	Hazard Risk[2]	$PM_{2.5}$[2]	Source No.[3]	Type of Source[4]	Fuel Code[5]	Status/Comments	Distance Adjustment Multiplier	Adjusted Cancer Risk Estimate	Adjusted Hazard Risk	Adjusted PM2.5
250	16108	Dave's Body Shop	2145 Old Middlefield Way Unit B	0	0.001	0		Automotive Body		2020 Dataset	0.58	0.00	0.001	0.00
275	18698	Bedford Auto Body	2145 Old Middlefield Way	0	0.001	0		Automotive Body		2020 Dataset	0.54	0.00	0.0003	0.00
450	22678	Caliber Collision Center	2029 Old Middlefield Way	0	0.0004	0		Automotive Body		2020 Dataset	0.39	0.00	0.0001	0.00
325	22727	Service King Body & Paint	2171 Old Middlefield Way	0	0.003	0		Automotive Body		2020 Dataset	0.49	0.00	0.001	0.00

Project MEI

Footnotes:
1. Maximally exposed individual
2. These Cancer Risk, Hazard Index, and PM2.5 columns represent the values in the Google Earth Plant Information Table.
3. Each plant may have multiple permits and sources.
4. Permitted sources include diesel back-up generators, gas stations, dry cleaners, boilers, printers, auto spray booths, etc.
5. Fuel codes: 98 = diesel, 189 = Natural Gas.
6. If a Health Risk Screening Assessment (HRSA) was completed for the source, the application number will be listed here.

8. Engineer who completed the HRSA. For District purposes only.
9. All HRSA completed before 1/5/2010 need to be multiplied by an age sensitivity factor of 1.7.
10. The HRSA "Chronic Health" number represents the Hazard Index.
11. Further information about common sources:
   a. Sources that only include diesel internal combustion engines can be adjusted using the BAAQMD's Diesel Multiplier worksheet.
   b. The risk from natural gas boilers used for space heating when <25 MM BTU/hr would have an estimated cancer risk of one in a million or less, and a chronic hazard index of 0.003 or
   c. BAAQMD Reg 11 Rule 16 required that all co-residential (sharing a wall, floor, ceiling or is in the same building as a residential unit) dry cleaners cease use of perc on July 1, 2010.
   Therefore, there is no cancer risk, hazard or PM2.5 concentrations from co-residential dry cleaning businesses in the BAAQMD.
   d. Non co-residential dry cleaners must phase out use of perc by Jan. 1, 2023. Therefore, the risk from these dry cleaners does not need to be factored in over a 70-year period, but instead should reflect
   e. Gas stations can be adjusted using BAAQMD's Gas Station Distance Mulitplier worksheet.
   f. Unless otherwise noted, exempt sources are considered insignificant. See BAAQMD Reg 2 Rule 1 for a list of exempt sources.
   g. This spray booth is considered to be insignificant.

Date last updated:
03/13/2018

Screening Report

Area of Interest (AOI) Information

Area : 3,610,827.29 ft²

Nov 14 2022 15:10:05 Pacific Standard Time

Permitted Stationary Sources

1:9,028

0 0.05 0.1 0.2 mi

0 0.07 0.15 0.3 km

Map data © OpenStreetMap contributors, CC-BY-SA

Summary

Name	Count	Area(ft^2)	Length(ft)
Permitted Stationary Sources	4	N/A	N/A

Permitted Stationary Sources

#	FacID	FacName	Address	City	Street
1	16108	Dave's Body Shop	2145 Old Middlefield Way Unit B	Mountain View	CA
2	18698	Bedford Auto Body	2145 Old Middlefield Way	Mountain View	CA
3	22678	Caliber Collision Center	2029 Old Middlefield Way	Mountain View	CA
4	22727	Service King Body & Paint	2171 Old Middlefield Way	Mountain View	CA

#	Zip	County	Latitude	Longitude	Details
1	94,043.00	Santa Clara	37.41	-122.09	*No Data*
2	94,043.00	Santa Clara	37.41	-122.09	*No Data*
3	94,043.00	Santa Clara	37.41	-122.09	*No Data*
4	94,043.00	Santa Clara	37.41	-122.09	*No Data*

#	NAICS	Sector	Sub_Sector	Industry	ChronicHI
1	811,121.00	Other Services (except Public Administration)	Repair and Maintenance	Automotive Body, Paint, and Interior Repair and Maintenance	0.0010094
2	811,121.00	Other Services (except Public Administration)	Repair and Maintenance	Automotive Body, Paint, and Interior Repair and Maintenance	0.0005047
3	811,121.00	Other Services (except Public Administration)	Repair and Maintenance	Automotive Body, Paint, and Interior Repair and Maintenance	0.0003659
4	811,121.00	Other Services (except Public Administration)	Repair and Maintenance	Automotive Body, Paint, and Interior Repair and Maintenance	0.0029650

#	PM2_5	Cancer Risk {expression/expr0}	Chronic Hazard Index {expression/expr1}	PM2.5 {expression/expr2}	Count
1	0.0000000	*No Data*	0.001	*No Data*	1
2	0.0000000	*No Data*	0.001	*No Data*	1
3	0.0000000	*No Data*	0	*No Data*	1
4	0.0000000	*No Data*	0.003	*No Data*	1

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