11 EL CAMINO REAL RESIDENTIAL PROJECT AIR QUALITY & GREENHOUSE GAS ASSESSMENT

San Carlos, California

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Introduction

The purpose of this report is to address air quality, health risk, and greenhouse gas (GHG) impacts associated with the proposed residential development located at 11 El Camino Real in San Carlos, California. The air quality and GHG impacts from this project would be associated with demolition of the existing land uses, construction of the new building and infrastructure, and operation of the project. Air pollutants and GHG emissions were predicted using appropriate computer models. In addition, the potential health risk impacts associated with construction and operation of the project and the impact of existing toxic air contaminant (TAC) sources affecting the nearby and proposed sensitive receptors were evaluated. The analysis was conducted following guidance provided by the Bay Area Air Quality Management District (BAAQMD).[1]

Project Description

The 2.2-acre project site is currently developed with an existing commercial building and associated surface parking lot. The project proposes to demolish the existing use and construct a 258,930 square foot (sf), six-story residential building with up to 242 units. The project also proposes one level of below grade parking and one level of podium parking, totaling 123,410-sf. There would be 281 parking spaces, 97 spaces would have Tier 2 electric vehicle (EV) chargers and 145 spaces would include electricity infrastructure. In addition, the project proposes to include one 86-horsepower (hp) diesel emergency fire pump. Construction is expected to begin in May 2024 and will be completed by July 2026.

Setting

The project is located in San Mateo 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 concentrations in the air basin 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 ozone. Controlling the emissions of these precursor pollutants is the focus of the Bay Area's attempts to reduce ambient ozone concentrations. The highest ozone concentrations in the Bay Area occur in the eastern and southern inland valleys that are downwind of air pollutant sources. High ozone concentrations aggravate respiratory and cardiovascular diseases, reduced lung function, and increase coughing and chest discomfort.

Particulate matter is another problematic air pollutant in the air basin. 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

[1] Bay Area Air Quality Management District, 2023. *CEQA Air Quality Guidelines*. April.

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

Toxic Air Contaminants

Toxic air contaminants (TAC) are a broad class of compounds known to cause morbidity or mortality (usually 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 of TACs can result in adverse health effects, they are regulated at the regional, State, and federal level.

Diesel exhaust is the predominant TAC in urban air and is estimated to represent about three-quarters of the cancer risk from TACs (based on the Bay Area average). According to the California Air Resources Board (CARB), diesel exhaust is a complex mixture of gases, vapors, and fine particles. This complexity makes the evaluation of health effects from diesel exhaust exposure a complicated 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. The most recent Office of Environmental Health Hazard Assessment (OEHHA) risk assessment guidelines were published in February of 2015 and incorporated into BAAQMD's current CEQA guidance.[2]

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, people 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 multi-family residences to the northwest, with multi- and single-family residences at further distances to the west and northwest. This project would introduce new sensitive receptors (i.e., residents) to the area.

[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.

Regulatory Setting

Federal Regulations

The United States Environmental Protection Agency (EPA) sets nationwide emission standards for mobile sources, which include on-road (highway) motor vehicles such trucks, buses, and automobiles, and non-road (off-road) vehicles and equipment used in construction, agricultural, industrial, and mining activities (such as bulldozers and loaders). The EPA also sets nationwide fuel standards. However, California also has the ability to set motor vehicle emission standards and standards for fuel, as long as they are the same or more stringent than the nationwide standards.

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

In concert with the diesel engine emission standards, the EPA has also substantially reduced the amount of sulfur allowed in diesel fuels. The sulfur contained in diesel fuel is a significant contributor to the formation of particulate matter in diesel-fueled engine exhaust. The current standards limit the amount of sulfur allowed in diesel fuel to 15 parts per million by weight (ppmw). Ultra-low sulfur diesel (ULSD), as it is referred to, is required for use by all vehicles in the U.S.

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

State Regulations

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

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[3] USEPA, 2000. *Regulatory Announcement, Heavy-Duty Engine and Vehicle Standards and Highway Diesel Fuel Sulfur Control Requirements*. EPA420-F-00-057. December.

[4] California Air Resources Board, 2000. *Risk Reduction Plan to Reduce Particulate Matter Emissions from Diesel-Fueled Engines and Vehicles*. October.

CARB has adopted and implemented a number of regulations for stationary and mobile sources to reduce emissions of DPM. Several of these regulatory programs affect medium and heavy-duty diesel trucks that represent the bulk of DPM emissions from California highways. CARB regulations require on-road diesel trucks to be retrofitted with particulate matter controls or replaced to meet 2010 or later engine standards that have much lower DPM and $PM_{2.5}$ emissions. This regulation will substantially reduce these emissions between 2013 and 2023. While new trucks and buses will meet strict federal standards, this measure is intended to accelerate the rate at which the fleet either turns over so there are more cleaner vehicles on the road or is retrofitted to meet similar standards. With this regulation, older, more polluting trucks would be removed from the roads sooner.

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

Bay Area Air Quality Management District (BAAQMD)

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

BAAQMD is the lead agency in developing plans to address attainment and maintenance of the National Ambient Air Quality Standards (NAAQS) and California Ambient Air Quality Standards (CAAQS). The District also has permit authority over most types of stationary 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.[5] 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 has been 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.

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

Throughout the program, information derived from the technical analyses has been used to develop emission reduction activities in areas with high TAC exposures and high density of sensitive populations. Risk reduction activities associated with the CARE program are focused on the most at-risk communities in the Bay Area. Seven areas have been identified by BAAQMD as impacted communities. They include Eastern San Francisco, Richmond/San Pablo, Western Alameda, San José, Vallejo, Concord, and Pittsburgh/Antioch. The project site is not within any of the BAAQMD CARE areas.

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 CalEnviroScreen score at or above the 70^{th} percentile, or (ii) within 1,000 feet of any such census tract.[6] The BAAQMD has identified several overburden areas within the air district's boundaries. However, the project site is not within a BAAQMD overburdened area as identified by BAAQMD's Overburdened Areas Map.[7]

BAAQMD CEQA Air Quality Guidelines

In June 2010, BAAQMD adopted thresholds of significance to assist in the review of projects under CEQA. In 2023, the BAAQMD revised the *California Environmental Quality Act (CEQA) Air Quality Guidelines* that included the significance thresholds to assist in the evaluation of air quality impacts of projects and plans proposed within the Bay Area. The thresholds contained in the CEQA guidance were designed to establish the level at which BAAQMD believed air pollution emissions would cause significant environmental impacts under CEQA. The original 2011 thresholds were challenged in court and were mostly upheld.

In 2017, BAAQMD updated its CEQA Air Quality Guidelines and included revised significance thresholds. The 2017 guidelines 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 GHG emissions.

In 2022, BAAQMD revised its CEQA Guidelines and GHG thresholds, eliminating quantified emissions limits for GHG analyses. The current BAAQMD guidelines and thresholds were used in this analysis and are summarized in Table 1.[8] Air quality impacts and community health risks are considered potentially significant if they exceed these thresholds.

[6] See BAAQMD: https://www.baaqmd.gov/~/media/dotgov/files/rules/reg-2-permits/2021-amendments/documents/20210722_01_appendixd_mapsofoverburdenedcommunities-pdf.pdf?la=en , accessed 11/23/2021.
[7] See BAAQMD: https://www.baaqmd.gov/about-air-quality/interactive-data-maps
[8] Bay Area Air Quality Management District, 2023. *2022 CEQA Guidelines*. April.

Table 1. BAAQMD CEQA Air Quality Significance Thresholds

<table>
<tr><th rowspan="2">Criteria Air Pollutant</th><th>Construction Thresholds</th><th colspan="2">Operational Thresholds</th></tr>
<tr><th>Average Daily Emissions (lbs./day)</th><th>Average Daily Emissions (lbs./day)</th><th>Annual Average Emissions (tons/year)</th></tr>
<tr><td>ROG</td><td>54</td><td>54</td><td>10</td></tr>
<tr><td>NO_x</td><td>54</td><td>54</td><td>10</td></tr>
<tr><td>PM_{10}</td><td>82 (Exhaust)</td><td>82</td><td>15</td></tr>
<tr><td>$PM_{2.5}$</td><td>54 (Exhaust)</td><td>54</td><td>10</td></tr>
<tr><td>CO</td><td>Not Applicable</td><td colspan="2">9.0 ppm (8-hour average) or 20.0 ppm (1-hour average)</td></tr>
<tr><td>Fugitive Dust (PM_{10}/$PM_{2.5}$)</td><td>Best Management Practices (BMPs)*</td><td colspan="2">Not Applicable</td></tr>
<tr><th>Health Risks and Hazards</th><th>Single Sources Within 1,000-foot Zone of Influence</th><th colspan="2">Combined Sources (Cumulative from all sources within 1000-foot zone of influence)</th></tr>
<tr><td>Excess Cancer Risk</td><td>>10.0 in a million</td><td colspan="2">>100 in a million</td></tr>
<tr><td>Hazard Index</td><td>>1.0</td><td colspan="2">>10.0</td></tr>
<tr><td>Incremental annual $PM_{2.5}$</td><td>>0.3 µg/m^3</td><td colspan="2">>0.8 µg/m^3</td></tr>
<tr><th colspan="4">Greenhouse Gas Emissions</th></tr>
<tr><td>Land Use Projects – (Must Include A or B)</td><td colspan="3">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="4">Note: ROG = reactive organic gases, NOx = nitrogen oxides, PM_{10} = course particulate matter or particulates with an aerodynamic diameter of 10 micrometers (µm) or less, $PM_{2.5}$ = fine particulate matter or particulates with an aerodynamic diameter of 2.5µm or less. GHG = greenhouse gases.
* BAAQMD strongly recommends implementing all feasible fugitive dust management practices especially when construction projects are located near sensitive communities, including schools, residential areas, or other sensitive land uses.</td></tr>
</table>

Source: Bay Area Air Quality Management District, 2022

BAAQMD Rules and Regulations

Combustion equipment associated with the proposed project includes new diesel engines to power fire pumps that would establish new sources of particulate matter and gaseous emissions. Emissions would primarily result from the testing of the emergency backup fire pumps. Certain emission sources would be subject to BAAQMD Regulations and Rules. The District's rules and regulations that may apply to the project include:

- Regulation 2 – Permits
  - Rule 2-1: General Requirements
  - Rule 2-2: New Source Review
  - Rule 2-5: New Source Review of Toxic Air Contaminants
- Regulation 6 – Particulate Matter and Visible Emissions
  - Rule 6-2: Commercial Cooking Equipment
  - Rule 6-3: Wood-Burning Devices
  - Rule 6-7: Odorous Substances
- Regulation 9 – Inorganic Gaseous Pollutants
  - Rule 9-1: Sulfur Dioxide
  - Rule 9-7: Nitrogen Oxides and Carbon Monoxide from Industrial, Institutional, and Commercial Boilers, Steam Generators, And Process Heaters
  - Rule 9-8: Nitrogen Oxides and Carbon Monoxide from Stationary Internal Combustion Engines

Permits

Rule 2-1-301 requires that any person installing, modifying, or replacing any equipment, the use of which may reduce or control the emission of air contaminants, shall first obtain an Authority to Construct (ATC).

Rule 2-1-302 requires that written authorization from the BAAQMD in the form of a Permit to Operate (PTO) be secured before any such equipment is used or operated.

Rule 2-1 lists sources that are exempt from permitting.

New Source Review

Rule 2-2, New Source Review (NSR), applies to all new and modified sources or facilities that are subject to the requirements of Rule 2-1-301. The purpose of the rule is to provide for review of such sources and to provide mechanisms by which no net increase in emissions will result.

Rule 2-2-301 requires that an applicant for an ATC or PTO apply Best Available Control Technology (BACT) to any new or modified source that results in an increase in emissions and has emissions of precursor organic compounds, non-precursor organic compounds, NOx, SO_2, PM_{10}, or CO of 10.0 pounds or more per highest day. Based on the estimated emissions from the proposed project, BACT will be required for NOx emissions from the diesel-fueled engines.

Rule 2-5 applies to new and modified sources of TAC emissions. BAAQMD evaluates the TAC emissions in order to evaluate potential public exposure and health risk, to mitigate potentially significant health risks resulting from these exposures, and to provide net health risk benefits by improving the level of control when existing sources are modified or replaced. Toxics BACT (or TBACT) is applied to any new or modified source of TACs where the source risk is a cancer risk greater than 1.0 in one million and/or a chronic hazard index greater than 0.20. Permits are not issued for any new or modified source that has risks or net project risks that exceed a cancer risk of 10.0 in one million or a chronic or acute hazard index of 1.0.

Stationary Diesel Airborne Toxic Control Measure

The BAAQMD administers the CARB's Airborne Toxic Control Measure (ACTM) for Stationary Diesel engines (section 93115, title 17 CA Code of Regulations). The project's stationary sources will be new stationary emergency stationary emergency standby diesel engines larger than 50 hp. These limits vary based on maximum engine power. All engines are limited to PM emission rates of 0.15 g/hp-hour, regardless of size. This ACTM limits engine operation 50 hours per year for routine testing and maintenance.

Offsets

Rule 2-2-302 require that offsets be provided for a new or modified source that emits more than 10 tons per year of NOx or precursor organic compounds. It is not expected that emissions of any pollutant will exceed the offset thresholds.

Prohibitory Rules

Regulation 6 pertains to particulate matter and visible emissions. Although the engines will be fueled with diesel, they will be modern, low emission engines. Thus, the engines are expected to comply with Regulation 6.

Rule 6-3 applies to emissions from wood-burning devices. Effective November 1, 2016, no person or builder shall install a wood-burning device in a new building construction.

Rule 9-1 applies to sulfur dioxide. The engines will use ultra-low sulfur diesel fuel (less than 15 ppm sulfur) and will not be a significant source of sulfur dioxide emissions and are expected to comply with the requirements of Rule 9-1.

Rule 9-7 limits the emissions of NOx CO from industrial, institutional and commercial boilers, steam generators and process heaters. This regulation typically applies to boilers with a heat rating of 2 million British Thermal Units (BTU) per hour

Rule 9-8 prescribes NOx and CO emission limits for stationary internal combustion engines. Since the proposed engines will be used with emergency standby fire pumps, Regulation 9-8-110 exempts the engines from the requirements of this Rule, except for the recordkeeping requirements (9-8-530) and limitations on hours of operation for reliability-related operation (maintenance and testing). The engines will not operate more than 50 hours per year, which will satisfy the requirements of 9-8-111.

BACT for Standby Diesel Engines

Since the fire pumps will be used exclusively for emergency use during involuntary loss of power, the BACT levels listed for IC compression engines in the BAAQMD BACT Guidelines would apply. These are provided for two separate size ranges of diesel engines:

> I.C. Engine – Compression Ignition >50hp and <1.000hp: BAAQMD applies BACT 2 emission limits based on the ATCM for stationary emergency standby diesel engines larger than 50 brake-horsepower (BHP). NOx emission factor limit is subject to the CARB ACTM that ranges from 3.0 to 3.5 grams per horsepower hour (g/hp-hr). The PM (PM10 or PM2.5) limit is 0.15 g/hp-hr per CARB's ACTM.
>
> I.C. Engine – Compression Ignition >999hp: BAAQMD applies specific BACT emission limits for stationary emergency standby diesel engines equal or larger than 1,000 brake-horsepower (BHP). NOx emission factor limit is subject to the CARB ACTM that ranges from 0.5 g/hp-hr. The PM (PM10 or PM2.5) limit is 0.02 g/hp-hr. POC (i.e., ROG) limits are 0.14 g/hp-hr.

City of San Carlos 2030 General Plan

The San Carlos 2030 General Plan's Environmental Management Element includes 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 policies and actions are applicable to the proposed project:

Policies

Policy EM-6.1: Support and comply with the BAAQMD, State and federal standards and policies that improve air quality in the Bay Area.

Policy EM-6.2: Support and encourage commercial uses to adopt environmentally friendly technologies and reduce the release of pollutants.

Policy EM-6.3: Support the reduction of emissions of particulates from wood burning appliances, construction activity, automobiles, trucks and other sources.

Policy EM-6.6: BAAQMD recommended measures to reduce PM_{10} and exhaust emissions associated with construction shall be applied to new development in San Carlos.

AIR QUALITY IMPACTS AND MITIGATION MEASURES

Impact AIR-1: Conflict with or obstruct implementation of the applicable air quality plan?

BAAQMD is the regional agency responsible for overseeing compliance with State and federal laws, regulations, and programs within the San Francisco Bay Area Air Basin (SFBAAB). BAAQMD, with assistance from the Association of Bay Area Governments (ABAG) and Metropolitan Transportation Commission (MTC), implements specific plans to meet the applicable laws, regulations, and programs. The most recent and comprehensive of which is the *Bay Area 2017 Clean Air Plan*.[9] The primary goals of the Clean Air Plan are to attain air quality standards, reduce population exposure and protect public health, and reduce GHG emissions and protect the climate. The BAAQMD has also recently updated its CEQA guidelines to assist lead agencies in evaluating the significance of air quality and GHG impacts. In formulating compliance strategies, BAAQMD relies on the planned land uses identified in local general plans. Land use planning affects vehicle travel, which, in turn, affects region-wide emissions of air pollutants and GHGs.

Conclusion AIR-1

The 2017 Clean Air Plan, adopted by BAAQMD in April 2017, includes control measures that are intended to reduce air pollutant emissions in the Bay Area either directly or indirectly. General plans must show consistency with the control measures listed within the Clean Air Plan. However, at the project-level, there are no consistency measures or thresholds. Despite this, the proposed project would not conflict with the latest Clean Air planning efforts since 1) the project would have construction and operational emissions below the BAAQMD thresholds (see Impact 2 below) and 2) the project would be considered urban infill, 3) the project would be located near employment centers, and 4) the project would be located near transit with regional connections.

Impact AIR-2: Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard?

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

[9] Bay Area Air Quality Management District (BAAQMD), 2017. *Final 2017 Clean Air Plan.*

Construction Period Emissions

The California Emissions Estimator Model (CalEEMod) Online Version 2022.1.1 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 1*.

<u>CalEEMod Inputs</u>

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
Apartments Mid Rise	242	Dwelling Unit	382,340	2.20
Enclosed Parking with Elevator	281	Parking Spaces	138,420	

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 provided by the project applicant.

The project construction equipment worksheets provided by the applicant included the schedule for each phase of construction (included in *Attachment 1*). Within each construction phase, the quantity of equipment to be used along with the average use hours per day and total number of workdays was provided by the applicant. Since different equipment would have different estimates of the working days per phase, the hours per day for each phase were computed by dividing the total number of hours that the equipment would be used by the total number of days in that phase. The construction schedules assumed that the earliest possible start date would be May 2024 and the project would be built out over a period of approximately 26 months or 580 construction workdays. The earliest year of operation was assumed to be 2027.

Construction Truck Traffic Emissions

Construction would produce traffic in the form of worker trips and truck traffic. The traffic-related emissions are based on worker and vendor trip estimates produced by CalEEMod and haul trips that were computed based on the estimate of demolition material to be exported, soil imported and/or exported to the site, and the estimate of concrete and asphalt truck trips to and from the site. CalEEMod provides daily estimates of worker and vendor trips for each applicable phase. The total trips for those were computed by multiplying the daily trip rate by the number of days in that phase. Daily haul trips for demolition and grading were estimated by CalEEMod using the provided demolition and grading volumes. The number of concrete and asphalt total round haul trips were estimated for the project and converted to daily one-way trips, assuming two trips per delivery. These values are shown in the project construction equipment worksheets included in *Attachment 1*.

<u>Summary of Computed Construction Emissions</u>

Average daily emissions were annualized for each year of construction by dividing the annual construction emissions by the number of active workdays during that year. Table 3 shows the unmitigated annualized average daily construction emissions of ROG, NO_X, PM_{10} exhaust, and $PM_{2.5}$ exhaust during construction of the project. As indicated in Table 3, predicted unmitigated annualized project construction emissions would not exceed the BAAQMD significance thresholds during any year of construction.

Table 3. Construction Period Emissions - Unmitigated

Year	ROG	NOx	PM_{10} Exhaust	$PM_{2.5}$ Exhaust
Construction Emissions Per Year (Tons)				
2024	0.03	0.46	0.01	0.01
2025	2.78	0.50	0.01	0.01
2026	0.01	0.07	<0.01	<0.01
Average Daily Construction Emissions Per Year (pounds/day)				
2024 (172 construction workdays)	0.36	5.39	0.13	0.12
2025 (261 construction workdays)	21.28	3.84	0.07	0.06
2026 (147 construction workdays)	0.15	0.91	0.01	0.01
BAAQMD Thresholds (pounds per day)	*54* lbs./day	*54* lbs./day	*82* lbs./day	*54* lbs./day
Exceed Threshold?	No	No	No	No

Construction activities, particularly during site preparation and grading, would temporarily generate fugitive dust in the form of 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 requires all projects include a "basic" set of best management practices (BMPs) to manage fugitive dust and consider impacts from dust (i.e. fugitive PM_{10} and $PM_{2.5}$) to be less than significant BMPs are implemented.

Basic Best Management Practices: **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. The contractor shall implement the following BMPs 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 practicable. Building pads shall be laid as soon as practicable after grading unless seeding or soil binders are used.

6. All excavation, grading, and/or demolition activities shall be suspended when average wind speeds exceed 20 mph.

7. All trucks and equipment, including their tires, shall be washed off prior to leaving the site.

8. Unpaved roads providing access to site located 100 feet of further from a paved road shall be treated with a 6- to 12-inch layer of compacted layer of wood chips, mulch, or gravel.

9. Publicly visible signs shall be posted with the telephone number and name of the 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 General Air Pollution Complaints number shall be visible to ensure compliance with applicable regulations.

BAAQMD strongly encourages enhanced BMPs for construction sites near schools, residential areas, or other sensitive land uses. Enhanced measures include:

- Limit the simultaneous occurrence of excavation, grading, and ground-disturbing construction activities.
- Install wind breaks (e.g., trees, fences) on the windward side(s) of actively disturbed areas of construction. Wind breaks should have at maximum 50 percent air porosity.
- Plant vegetative ground cover (e.g., fast-germinating native grass seed) in disturbed areas as soon as possible and watered appropriately until vegetation is established.
- Install sandbags or other erosion control measures to prevent silt runoff to public roadways from sites with a slope greater than one percent.
- Minimize the amount of excavated material or waste materials stored at the site.
- Hydroseed or apply non-toxic soil stabilizers to construction areas, including previously graded areas, that are inactive for at least 10 calendar days.

The measures above are consistent with BAAQMD-recommended basic and enhanced BMPs for reducing fugitive dust contained in the BAAQMD CEQA Air Quality Guidelines. For this analysis, only the basic set of best management practices are required as the unmitigated fugitive dust emissions from project sources were below the BAAQMD single-source threshold.

Operational Period Emissions

Operational air emissions from the project would be generated primarily from autos driven by future residents as well as stationary sources (i.e., fire pumps). Evaporative ROG emissions from architectural coatings and maintenance products (classified as consumer products) are also typical ROG emission sources from these types of land uses. CalEEMod was used to estimate emissions from operation of the proposed project assuming full build-out.

<u>CalEEMod Inputs</u>

Land Uses

The project land uses were input to CalEEMod as described above for the construction period modeling.

Model 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 CalEEMod. The earliest year of full operation would be 2027 if construction begins in 2024. Emissions associated with build-out later than 2027 would be lower.

Traffic Information

CalEEMod allows the user to enter specific vehicle trip generation rates. Therefore, the project-specific daily trip generation rate provided by the traffic consultant was entered into the model.[10] The project would produce approximately 1,099 daily trips. When considering the *20% TDM Reduction* adjustments applied in the traffic analysis, the project would then produce 879 net daily trips. The daily trip generation was calculated using ITE trip generation rates, the size of the project land uses, and the adjusted total automobile trips. The Saturday and Sunday trip rates were derived by multiplying the ratio of the CalEEMod default rates for Saturday and Sunday trips to the default weekday rate with the project-specific daily weekday trip rate. The default trip lengths and trip types specified by CalEEMod were used.

Energy

CalEEMod defaults for energy use were used, which include the 2019 Title 24 Building Standards. GHG emissions modeling includes those indirect emissions from electricity consumption. The electricity produced emission rate was modified in CalEEMod. CalEEMod has a default emission factor of 99.98 pounds of CO_2 per megawatt of electricity produced, which is based on Peninsula Clean Energy's 2019 emissions rate.

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[10] Hexagon Transportation Consultants, Inc., *Transportation Demand Management Plan 11 Camino Real Residential Development in City of San Carlos,* March 15, 2023.

The City of San Carlos passed a reach code in January 2021 that prohibits the use of natural gas infrastructure in all new construction projects, with some exemptions.[11] This reach code applies to any new construction starting May 2021. Therefore, for this project, natural gas was set to zero and the energy use associated with natural gas was reassigned to electricity use in CalEEMod.

Diesel Fire Pumps

The project proposes to include an 89-hp diesel fire pump located on the southwest side of the first floor near El Camino Real. The diesel engine would be tested periodically and provide power to the fire pump to power the sprinkler systems in the event of a building fire. For modeling purposes, it is assumed that the fire pump diesel engine would be operated primarily for testing and maintenance purposes. Fire water pump DPM emissions were calculated using the particulate matter (PM) emission factor from Table 3-4.1 of AP42 and assuming 50 hours per year of emergency use plus 100 hours for non-testing and non-maintenance purposes for a total of 150 hours[12]. The engine would be required to meet CARB and EPA emission standards and consume commercially available California low-sulfur diesel fuel.

Other Inputs

Default model assumptions for emissions associated with solid waste generation and water use were used. Wastewater treatment was estimated to be 100% aerobic conditions to represent City wastewater treatment plant conditions. The project site would not send wastewater to on-site septic tanks or facultative lagoons.

Existing Use

The existing use of the site encompasses a commercial building with associated parking. However, an existing use CalEEMod run was not created due to the expected low emissions from the existing use of the site. Further, the traffic consultant did not provide a trip generation value for the existing use of the site.

<u>Summary of Computed Operational Emissions</u>

Annual emissions were predicted using CalEEMod and daily emissions were estimated assuming 365 days of operation. Table 4 shows unmitigated net average daily operational emissions of ROG, NO_X, total PM_{10}, and total $PM_{2.5}$ during operation of the project. Operational period emissions would not exceed the BAAQMD significance thresholds.

[11] City of San Carlos Local Building Energy Standards, Reach Code, URL: https://www.cityofsancarlos.org/Home/ShowDocument?id=6531

[12] Using 50 hours for emergency operation is intended maintain a conservative analysis of the impacts from operation of the diesel-engine powered fire pump.

Table 4. Operational Period Emissions

Scenario	ROG	NOx	PM_{10}	$PM_{2.5}$
2027 Annual Project Operational Emissions (*tons/year*)	2.13	0.26	0.74	0.19
Project Fire Pump (*tons/year)*	0.00	0.15	<0.01	<0.01
BAAQMD Thresholds (tons /year)	*10 tons*	*10 tons*	*15 tons*	*10 tons*
Exceed Threshold?	*No*	*No*	*No*	*No*
2027 Daily Project Operational Emissions (*pounds/day*)[1]	11.66	2.28	4.10	1.08
BAAQMD Thresholds (pounds/day)	*54* lbs.	*54* lbs.	*82* lbs.	*54* lbs.
Exceed Threshold?	*No*	*No*	*No*	*No*
Notes: [1]Assumes 365-day operation.				

Impact AIR-3: Expose sensitive receptors to substantial pollutant concentrations?

Project impacts related to increased health 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 sources and stationary sources).

Project construction activity would generate dust and equipment exhaust that would affect nearby sensitive receptors. The project would include the installation of an emergency diesel fire pump and would generate some traffic consisting of mostly light-duty gasoline-powered vehicles, which would produce TAC and air pollutant emissions.

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 existing sources of TACs was assessed in terms of the cumulative risk which includes the project contribution; as well as the risk on the new sensitive receptors introduced by the project.

Health Risk Methodology for Construction and Operation

Health risk impacts were addressed by predicting increased cancer risk, the increase in annual $PM_{2.5}$ concentrations, and by 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, 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,[13] 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.

[13] BAAQMD, 2022. *BAAQMD CEQA Air Quality Guidelines Appendix E*. April 2023.

The methodology for computing health risks impacts is contained in Appendix E of the BAAQMD CEQA Guidelines. TAC and $PM_{2.5}$ emissions are calculated, a dispersion model used to estimate ambient pollutant concentrations, and cancer risks and HI calculated using DPM concentrations.

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 surrounding 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.

Health Risk from Project Construction

The primary health risk impact issues associated with construction projects are cancer risks associated with diesel exhaust (i.e., DPM), which is a known TAC, and exposure to high ambient concentrations of dust (i.e., $PM_{2.5}$). DPM poses both a potential health and nuisance impact to nearby receptors. A health risk assessment of the project construction activities was conducted that evaluated potential health effects to nearby sensitive receptors from construction emissions of DPM and $PM_{2.5}$.[14] This assessment included dispersion modeling to predict the offsite concentrations resulting from project construction, so that lifetime cancer risks and non-cancer health effects could be estimated.

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. Total DPM emissions from all construction stages were estimated to be 0.02 tons (34 pounds). The on-road emissions are a result of haul truck travel, worker travel, and vendor deliveries during construction. A trip length of one mile was used to represent vehicle travel while at or near the construction site. It was assumed that these emissions from on-road vehicles traveling at or near the site would occur at the construction site. Fugitive $PM_{2.5}$ dust emissions were calculated by CalEEMod to be 0.01 ton (26 pounds) for the overall construction period.

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.[15] Emission sources for the construction site were grouped into two categories: exhaust emissions of DPM and fugitive $PM_{2.5}$ dust emissions.

[14] DPM is identified by California as a toxic air contaminant due to the potential to cause cancer.
[15] BAAQMD, 2023, *Appendix E of the 2022 BAAQMD CEQA Guidelines.* April.

Construction Sources

To represent the construction equipment exhaust emissions, an area source emission release height of 20 feet (6 meters) was used for the area sources.[16] The release height incorporates both the physical release height from the construction equipment (i.e., the height of the exhaust pipe) and plume rise after it leaves the exhaust pipe. Plume rise is due to both the high temperature of the exhaust and the high velocity of the exhaust gas. It should be noted that when modeling an area source, plume rise is not calculated by the AERMOD dispersion model as it would do for a point source (exhaust stack). Therefore, the release height from an area source used to represent emissions from sources with plume rise, such as construction equipment, should be based on the height the exhaust plume is expected to achieve, not just the height of the top of the exhaust pipe.

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

AERMOD Inputs and Meteorological Data

The modeling used a five-year meteorological data set (2011-2015) from the San Carlos Airport prepared for us with the AERMOD model by the BAAQMD. Construction emissions were modeled as occurring daily between 8:00 a.m. to 5:00 p.m., per the project applicant's construction schedule. Annual DPM and $PM_{2.5}$ concentrations from construction activities during the 2024-2026 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), 15 feet (4.5 meters), 25 feet (7.6 meters) were used to represent the breathing height on the first through third floors of nearby single- and multi-family residences.[17]

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[16] California Air Resource Board, 2007. *Proposed Regulation for In-Use Off-Road Diesel Vehicles, Appendix D: Health Risk Methodology*. April. Web: https://ww3.arb.ca.gov/regact/2007/ordiesl07/ordiesl07.htm

[17] 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

Summary of Construction Health Risk Impacts

The maximum increased cancer risks were calculated using the modeled TAC concentrations combined with the BAAQMD CEQA guidance for age sensitivity factors and exposure parameters. Non-cancer health hazards and maximum $PM_{2.5}$ concentrations were also calculated and identified. Age-sensitivity factors reflect the greater sensitivity of infants and small children to cancer causing TACs. Third trimester, infant, child, and adult exposures were assumed to occur at all residences during the entire construction period.

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

The maximum modeled annual DPM and $PM_{2.5}$ concentrations were identified at nearby sensitive receptors (as shown in Figure 1) to find the maximally exposed individuals (MEI). Results of this assessment indicated that the construction MEI was located on the first floor of a multi-family home northwest of the project site. Table 5 summarizes the maximum cancer risks, $PM_{2.5}$ concentrations, and HI for project's construction activities at the MEI. *Attachment 2* to this report includes the emission calculations used for the construction area source modeling and the cancer risk calculations.

Health Risks from Project Operation

Operation of the project would have long-term emissions from mobile sources (i.e., traffic) and stationary sources (i.e., fire pumps). While these emissions would not be as intensive at or near the site as construction activity, they would contribute to long-term effects to sensitive receptors.

Project Traffic

Diesel powered vehicles are the primary concern with local traffic-generated TAC impacts. This project would generate 1,099 daily trips or 879 net daily trips[18] with a majority of the trips being from light-duty gasoline-powered vehicles (i.e., passenger cars). The project is not anticipated to generate large amounts of truck trips that would involve diesel vehicles. Per BAAQMD recommended risks and methodology, a road with less than 10,000 total vehicle per day is considered a low-impact source of TACs and do not need to be considered in the CEQA analysis.[19] In addition, projects with the potential to cause or contribute to increased cancer risk from traffic include those that have high numbers of diesel-powered on road trucks or use off-road diesel equipment on site, such as a distribution center, a quarry, or a manufacturing facility, may potentially expose existing or future planned receptors to substantial cancer risk levels and/or health hazards. This is not a project of concern for mobile sources. Emissions from project traffic are considered negligible and not included within this analysis.

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[18] Hexagon Transportation Consultants, Inc., *Transportation Demand Management Plan 11 Camino Real Residential Development in City of San Carlos,* March 15, 2023.
[19] Bay Area Air Quality Management District, 2012, *Recommended Methods for Screening and Modeling Local Risks and Hazards, Version 3.0.* May. Web: https://www.baaqmd.gov/~/media/files/planning-and-research/ceqa/risk-modeling-approach-may-2012.pdf?la=en

Diesel Fire Pumps

The fire pump will be located on the southwest side of the first floor near El Camino Real. The pump would be tested periodically and provide fire suppression in the event of a fire. The fire pump was modeled in AERMOD as a point source using default stack parameters provided by BAAQMD.[20] For modeling purposes, it was assumed that the pumps would be operated primarily for testing and maintenance purposes with additional hours for non-testing and non-maintenance periods, totaling 150 hours per year. During testing periods, the engine would typically be run for less than one hour. Figure 1 shows the point source used for modeling emissions from the fire pump.

The diesel engine would be subject to CARB's Stationary Diesel Airborne Toxics Control Measure (ATCM) and require permits from the BAAQMD, since they will be equipped with an engine larger than 50-HP. As part of the BAAQMD permit requirements for toxics screening analysis, the engine emissions will have to meet Best Available Control Technology for Toxics (TBACT) and pass the toxic risk screening level of less than ten in a million. The risk assessment would be prepared by BAAQMD. Depending on results, BAAQMD would set limits for DPM emissions (e.g., more restricted engine operation periods). Sources of air pollutant emissions complying with all applicable BAAQMD regulations generally will not be considered to have a significant air quality community risk impact.

To assess potential cancer risks and $PM_{2.5}$ impacts from operation of the fire pump, the U.S. EPA AERMOD dispersion model was used to calculate the maximum annual DPM concentrations at off-site sensitive receptor locations (nearby residences). The same receptors and breathing heights used in the construction dispersion modeling were used for the fire pump model. Additionally, the same BAAQMD San Carlos Airport meteorological data was used. Stack parameters (stack height, exhaust flow rate, and exhaust gas temperature) for modeling the fire pump was based on BAAQMD default parameters for emergency generators.[21] Annual average DPM and $PM_{2.5}$ concentrations were modeled assuming that fire pump operation could occur at any time of the day (24 hours per day, 365 days per year).

To calculate the increased cancer risk from the fire pump at the MEI, the cancer risks were also adjusted for exposure duration to account for the MEI being exposed to construction for the first three years of the 30-year period. The exposure duration was adjusted for 27 years of exposure since receptors would be exposed to 3 years of construction before the fire pump is operational. Table 5 lists the community risks from stand-by diesel fire pump at the location of residential MEI. The emissions and health risk calculations for the proposed fire pump are included in *Attachment 3*.

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[20] Bay Area Air Quality Management District, San Francisco Department of Public Health, and San Francisco Planning Department, 2012. *The San Francisco Community Risk Reduction Plan: Technical Support Document,* BAAQMD, December. Web: https://www.gsweventcenter.com/Appeal_Response_References/2012_1201_BAAQMD.pdf

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

Figure 1. Locations of Project Construction Site, Fire Pump, Off-Site Sensitive Receptors, and Maximum TAC Impact Location (MEI)

Summary of Project-Related Health Risks at the Off-Site Project MEI

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 3 years of construction cancer risks and 27 years of operational cancer risks. The cancer risks from construction and operation of the project were added 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.

Project risk impacts are shown in Table 5. The unmitigated maximum cancer risks, annual $PM_{2.5}$ concentration, and Hazard Index from project construction and operational activities at the residential project MEI location would not exceed the single-source significance thresholds.

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

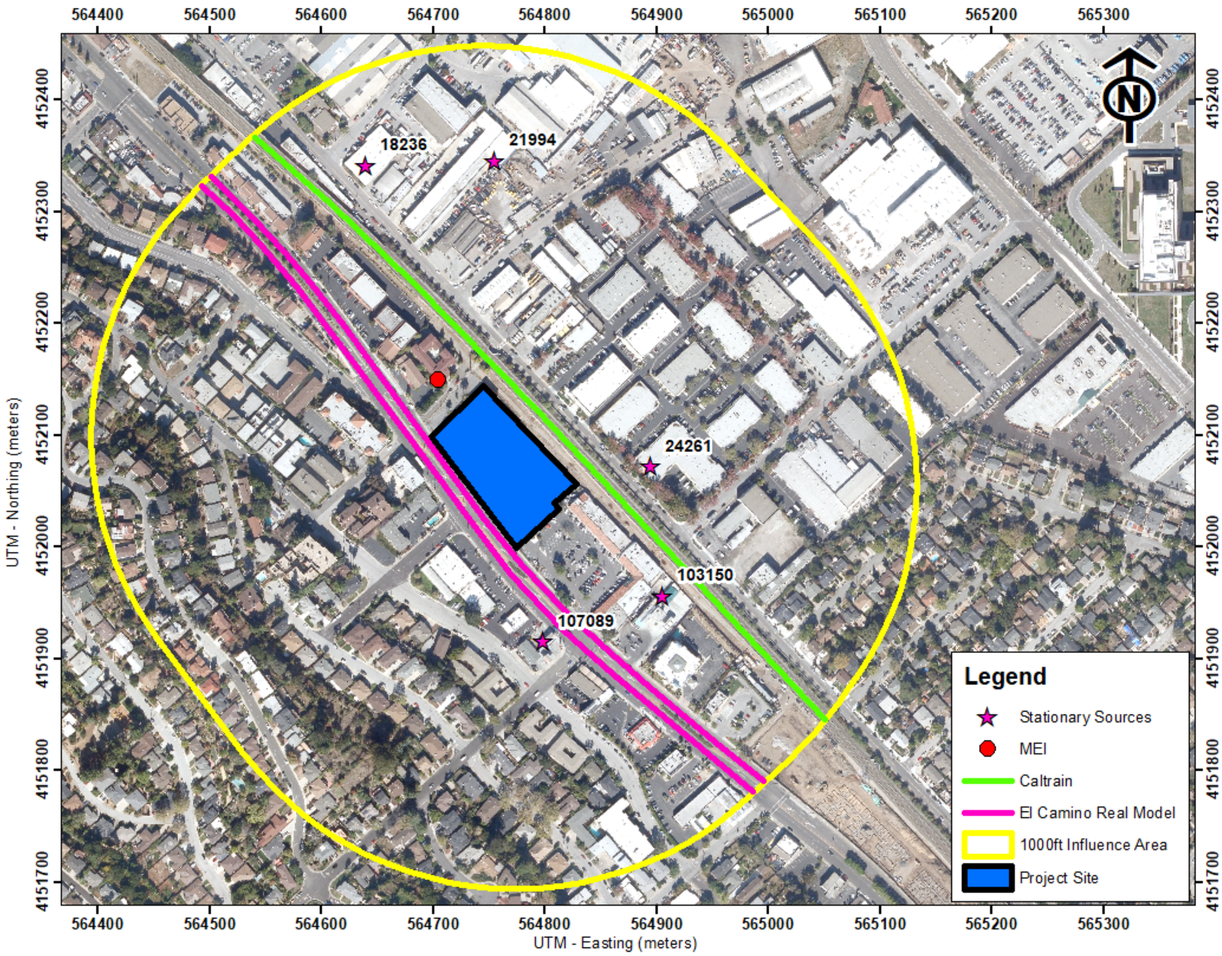
Source		Cancer Risk (per million)	Annual $PM_{2.5}$ ($\mu g/m^3$)	Hazard Index
Project MEI				
Project Construction (Years 0 - 3)	Unmitigated	2.54 (infant)	0.02	<0.01
Project Fire Pump Operation (Years 3 - 30)		0.21 (child)	<0.01	<0.01
Total/Maximum Project Impact (Years 0 - 30)	Unmitigated	2.75 (infant)	0.02	<0.01
BAAQMD Single-Source Threshold		***10***	***0.3***	***1.0***
Exceed Threshold?	Unmitigated	*No*	*No*	*No*

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

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

A review of the provided traffic information indicated that El Camino Real would exceed 10,000 vehicles per day. Other nearby streets would have less than 10,000 vehicles per day. The Caltrain rail lines are located adjacent to the project site. A review of BAAQMD's stationary source map website identified five stationary sources with the potential to affect the project MEI. Figure 2 shows the location of the sources affecting the MEI. Health risk impacts from these sources upon the MEI reported in Table 6. Details of the modeling and health risk calculations are included in *Attachment 3.*

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



Local Roadways – El Camino Real

A refined analysis of potential health impacts from vehicle traffic on El Camino Real was conducted. 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 AERMOD to predict exposure to TACs. The associated cancer risks are then computed based on the modeled exposures.

Traffic Emissions

This analysis involved the development of DPM, organic TACs, and $PM_{2.5}$ emissions for traffic on each roadway using the latest version of CARB's EMFAC emissions model (EMFAC2021).[22] EMFAC2021 includes the latest data on California's car and truck fleets and travel activity. EMFAC2021 produces emissions rates for either specific vehicle categories or aggregate rates emissions rates using county-wide vehicle populations. However, the rates produced are only for criteria pollutants, not TACs or DPM. Therefore, CT-EMFAC2017 was also used to aid in the development of TAC emissions rates used in the analysis.

[22] EMFAC2017 became available for use in March 2018 and approved by the EPA in August 2019. EMFAC2021 has not yet been approved by U.S. EPA at the time this report was prepared.

CT-EMFAC2017 is the Caltrans version of the CARB's EMFAC2017 emissions model and provides emission factors for mobile source criteria pollutants and TACs, including DPM, based on specific truck fractions input by the user. CT-EMFAC2017 uses the fraction of Non-Truck vehicles and trucks (i.e., Truck 1 and Truck 2) to develop aggregate emissions factors for each of 15 speed bins. The truck percentage from non-state highways in San Mateo County (Truck 1, 4.1 percent, Truck 2, 2.9 percent)[23] was input into CT-EMFAC2017 to develop emissions factors.

Next, the ratio of DPM to $PM_{2.5}$ produced by CT-EMFAC2017 was used to derive a DPM emissions rate using EMFAC2021 rates for each speed needed. Emission processes modeled for the analysis include idle emissions and running exhaust for $PM_{2.5}$, DPM, and TOG. Fugitive $PM_{2.5}$ emissions were also estimated using the road dust emissions factors provided by CT-EMFAC2017 and the tire wear and brake wear emissions rates provided by EMFAC2021. Inputs to the emissions models (both EMFAC2021 and CT-EMFAC2017) include region (i.e., San Mateo County), type of road (i.e., Major/Collector), year of analysis (i.e., 2024 – construction start year), and season (i.e., 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 offsite receptors, the EMFAC2021 and CT-EMFAC2017 models were used to develop vehicle emission factors for the year 2024 (construction start 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 EMFAC2021 and 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 El Camino Real was based on cumulative plus project traffic volumes provided by the project's traffic data.[24] The calculated ADT on El Camino Real was 30,505 vehicles. Average hourly traffic distributions for San Mateo County roadways were developed using the EMFAC model,[25] 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, the average speed of 35 mph on El Camino Real was assumed for all vehicles based on posted speed limit signs.

Hourly emissions rates were developed for DPM, organic TACs, and $PM_{2.5}$ along the applicable segments of each roadway within 1,000 feet of the project site. AERMOD was used to estimate the TAC and $PM_{2.5}$ concentrations at the project MEI location. 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.

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[23] Bay Area Air Quality Management District, 2023, Appendix E of the *BAAQMD CEQA Guidance.* April.
[24] Hexagon Transportation Consultants, Inc., File: 11 ECR Volumes – DJP.xlsx
[25] 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.

Roadway Dispersion Modeling

Dispersion modeling of TAC and $PM_{2.5}$ emissions was conducted using the AERMOD dispersion model, which is recommended by the BAAQMD for this type of analysis.[26] TAC and $PM_{2.5}$ emissions from El Camino Real within about 1,000 feet of the project site were evaluated with the model. Emissions from vehicle traffic travel were modeled in AERMOD using a series of volume sources along a line (line volume sources), with line segments used to represent opposing travel lanes on El Camino Real. The same meteorological data and off-site sensitive receptors used in the previous project dispersion modeling were used in the roadway 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 traffic on El Camino Real were calculated using receptor heights of 5 feet (1.5 meters) to represent the breathing heights on the first floor of the nearby residence. Health risk impacts from the roadway sources upon the MEI are reported in Table 6 and calculations are included in *Attachment 3*.

Railways – Caltrain

The project site is located about 50 feet west of and adjacent to Caltrain and Union Pacific Railroad (UPRR) rail lines. Rail activity on these lines currently generates TAC and $PM_{2.5}$ emissions from locomotive exhaust. These rail lines are used primarily for Caltrain passenger service; however, there is some freight service by trains using diesel-fueled locomotives. Based on the current Caltrain schedule effective September 12, 2022 there are 104 trains that pass the project site during weekdays and 32 on weekends. In addition to the passenger trains there are about four freight trains that use the rail lines on a daily basis.[27]

Currently all of Caltrain's passenger trains use diesel locomotives. The Peninsula Corridor Electrification Project is a key component of the Caltrain Modernization Program that would electrify the Caltrain Corridor from San Francisco to the Tamien Caltrain station in San José. As part of the program to modernize operation of the Caltrain rail corridor between San José and San Francisco, Caltrain is planning to phase in the change from using diesel locomotives to use of electric trains.[28] This plan was formally adopted on January 8, 2015[29] and electrified service is anticipated to begin in late 2024.[30]

Caltrain plans are that initial service between San José and San Francisco would use a mixed fleet of electric and diesel locomotives, with approximately 75 percent of the service being electric and 25 percent being diesel. After the initial implementation period, diesel locomotives would be replaced with electric trains over time as they reach the end of their service life. Caltrain's diesel-powered locomotives would continue to be used to provide service between the San José Diridon Station and Gilroy with through service north to San Francisco. It is expected that all of the San

[26] BAAQMD. *Recommended Methods for Screening and Modeling Local Risks and Hazards*. May 2012
[27] U.S. Department of Transportation, Federal Railroad Administration. U.S. DOT Crossing Inventory Form for Crossing 754935A. Revision Date 2/28/2022.
[28] Caltrain, 2014. *Peninsula Corridor Electrification Project. Final Environmental Impact Report.* December 2014.
[29] Caltrain, 2015. *Peninsula Corridor Electrification Fact Sheet.* May 2015.
[30] Caltrain, 2021. *Caltrain Electrification Delayed to 2024*. June 3, 2021. See: *www.caltrain.com/about/MediaRelations/news/Caltrain_Electrification_Delayed_to_2024.html*

José to San Francisco fleet would be electric trains about five to eight years after initial electric service begins.[31,32]

Starting in 2024 with Caltrain electrification, there would be 24 daily weekday trips and 4 daily weekend trips using trains with diesel locomotives[33]. On an annual average basis this would be an average of 18 daily trains using diesel locomotives. Use of these diesel trains by Caltrain between San Francisco and San Jose would be phased out over time and replaced by electric trains. All trains used for freight service were assumed to use diesel powered locomotives and now and in the future.

Rail Line Emissions

For this evaluation the exposure period for off-site residents from rail activities was assumed to begin in 2024, coincident with the beginning of project construction. In calculating cancer risks at existing off-site residences from DPM emissions from rail line diesel locomotives a 30-year exposure period is used per BAAQMD health risk guidance.[34] In this case, the exposure period at the construction MEI would be from 2024 through 2053. During this period, the MEI would be exposed to diesel locomotive emissions during the three years of project construction (2024-2026) in addition to post-construction locomotive emissions for the remainder of the of the 30-year exposure period during 2027 through 2053. For evaluating cancer risks of future project residents at the project site from diesel locomotive DPM emissions the initial exposure year was assumed to be 2027, when project operation is expected to begin. In this case, the 30-year residential exposure period would be from 2027 through 2056.

For calculating emissions from Caltrain locomotives four time periods were used, 2024, 2025 through 2030 (construction period), 2031 through 2053 (post construction and project operation), and 2027 through 2030 (project operation). Caltrain electrification was assumed to be progressing during these periods. Initially, prior to electrification in late 2024, there would be an annual average of 83 daily diesel Caltrain locomotives passing the site. During the 2025-2030 period the first stages of electrification were assumed to occur and there would be 24 daily weekday trips and 4 daily weekend trips using trains with diesel locomotives.[35] On an annual average basis this would be an average of 18 daily trains using diesel locomotives. During the 2031 through 2053 period it was assumed that there would be 6 weekday diesel trains. On an annual average basis this would be an average of 4 daily weekday trains using diesel locomotives. Caltrain trains were assumed to be traveling at an average speed of 40 mph while passing the site. For all time periods it was assumed that all trains used for freight service would use diesel powered locomotives. The freight trains were also assumed to be traveling at 40 mph.

DPM and $PM_{2.5}$ emissions from trains on the rail line were calculated using EPA emission factors for locomotives[36] and CARB adjustment factors to account for fuels used in California.[37] Caltrain's

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[31] Caltrain 2015. *Short Range Transit Plan:FY2015-2024*. October 1, 2015.
[32] Caltrain 2019. *Short Range Transit Plan:FY2018-2027*. June 6, 2019.
[33] Caltrain 2015. *Short Range Transit Plan:FY2015-2024*. October 1, 2015.
[34] BAAQMD, 2016. *BAAQMD Air Toxics NSR Program Health Risk Assessment (HRA) Guidelines*. December 2016.
[35] Caltrain 2015. *Short Range Transit Plan:FY2015-2024*. October 1, 2015.
[36] *Emission Factors for Locomotives*, USEPA 2009 (EPA-420-F-09-025)
[37] *Offroad Modeling, Change Technical Memo*, Changes to the Locomotive Inventory, CARB July 2006.

current locomotive fleet consists of twenty-three 3,200 horsepower (hp) locomotives of model year or overhaul date of 1999 or later, three 3,200 hp locomotives of model year 1998, and six 3,600 hp locomotives of model year 2003.[38] The current fleet average locomotive engine size is about 3,285 hp. In estimating diesel emissions for 2024 prior to electrification a fleet average locomotive engine size of 3,285 hp was used. When electrification occurs, Caltrain will initially retain the six 3,600 hp locomotives and the three-model year 1998 3,200 hp locomotives.[39] In estimating diesel emissions for locomotives used during the electrification process, an average locomotive horsepower of 3,467 hp was used. Emissions from the freight trains were calculated assuming they would use two diesel locomotives with 2,300 hp engines (total of 4,600 hp). Since the exposure duration used in calculating child cancer risks at the MEI location and for future project sensitive receptors is 30 years, the passenger and freight train average DPM and $PM_{2.5}$ emissions were calculated based on average EPA emission factors for the periods 2024, 2025-2040, and 2031-2053 for impacts at the MEI receptor and 2027-2023 and 2031-2056. Emissions for the 2031-2053 period were conservatively assumed to also represent average emissions during the 2031-2060 period used for calculating cancer risks to on-site project sensitive receptors. This is a conservative assumption since emissions in the later years would be low and the addition of three years of low emissions to the average emissions would reduce the average emission rate.

Railway Dispersion Modeling

Dispersion modeling of locomotive emissions was conducted using the EPA's AERMOD dispersion model and five-year data set (2011-2015) of hourly meteorological data from the San Carlos Airport prepared for use with the AERMOD model by the BAAQMD. Locomotive emissions from train travel within about 1,000 feet of the project site were modeled as a line volume source comprised of a series of volume sources along the rail lines. DPM and $PM_{2.5}$ concentrations at the locations of existing off-site residents and at locations of future project residents were evaluated.

Nearby Developments

642 Quarry Road - this project is located at 642 Quarry Road which is approximately 860 feet north of the project site. This project involves construction of two six-story buildings for research and development lab and office use and a ten-story parking structure. Impacts upon the MEI were taken from the Initial Study/Mitigated Negative Declaration for 642 Quarry Road. The impacts shown in Table 6 are the impacts shown at the MEI for 642 Quarry Road. However, the sensitive receptor that is the MEI for this project is a different receptor than the MEI for 642 Quarry Road. Adding the results in this manner is an overestimation of the impacts from the nearby 642 Quarry Road project and is done to be conservative.

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[38] Caltrain *Commute Fleets*. Available at: http://www.caltrain.com/about/statsandreports.html. Accessed January 4, 2022.
[39] Caltrain 2015. *Short Range Transit Plan:FY2015-2024*. October 1, 2015.

BAAQMD Permitted Stationary Sources

Permitted stationary sources of air pollution near the project site were identified using BAAQMD's *Permitted Stationary Sources 2021* GIS map website.[40] 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. Five sources were identified using this tool, three generic sources and two gas dispensing facilities. A stationary source information request was submitted to BAAQMD in order to estimate health risk impacts from the gasoline dispensing facility.[41] The BAAQMD GIS website provided screening risks and hazards for the generic sources.

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 Gasoline Dispensing Facilities* and *Generic Equipment.* Health risk impacts from the stationary source upon the MEIs are reported in Table 6.

Conclusion AIR-3

Table 6 reports both the project and cumulative health risk impacts at the sensitive receptors most affected by project construction and operation (i.e., the project MEI). As shown in Table 6, the project would not exceed the single-source or cumulative-source thresholds for cancer risk, annual $PM_{2.5}$ concentration, and hazard index.

[40] BAAQMD, Web: https://baaqmd.maps.arcgis.com/apps/webappviewer/index.html?id=845658c19eae4594b9f4b805fb9d89a3

[41] Correspondence with BAAQMD CEQA, May 1, 2023.

Table 6. Cumulative Health Risk Impacts at the Project MEIs

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	2.75 (infant)	0.02	<0.01
BAAQMD Single-Source Threshold	***10***	***0.3***	***1.0***
Exceed Threshold? Unmitigated	*No*	*No*	*No*
Cumulative Impacts			
El Camino Real, ADT 30,505	4.30	0.25	<0.01
Caltrain	37.50	0.14	
Rod'z Auto Body dba: Marks Body Shop (Facility ID #18236, Automotive Body, Paint, and Interior Repair and Maintenance), MEI at 650 feet	-	-	<0.01
Pang Pang Auto Body Shop (Facility #21994, Automotive Body, Paint, and Interior Repair and Maintenance), MEI at 610 feet	-	-	<0.01
Silicon Valley Coffee LLC (Facility ID #24261, Coffee and Tea Manufacturing), MEI at 610 feet	<0.01	<0.01	-
Auto Pride Wash (Facility ID #103150, Gas Dispensing Facility), MEI at 910 feet	0.19	-	<0.01
Justin Chevron (Facility ID #107089, Gas Dispensing Facility), MEI at 820 feet	0.72	-	<0.01
Temporary Nearby Development Construction Impacts			
642 Quarry Road – 860 feet north	6.0	0.02	<0.01
Combined Sources Unmitigated	<51.47	<0.44	<0.07
BAAQMD Cumulative Source Threshold	***100***	***0.8***	***10.0***
Exceed Threshold? Unmitigated	*No*	*No*	*No*

Non-CEQA: On-site Health Risk Assessment for TAC Sources - New Project Sensitive Residences

A health risk assessment was completed to assess the impact that the existing TAC sources would have on the new proposed sensitive receptors (i.e., residents) introduced by the project. The same TAC sources identified above were used in this assessment.[42] BAAQMD's recommended thresholds for health risks and hazards, shown in Table 1, are used to evaluate on-site exposure. Figure 3 shows the on-site sensitive receptors in relation to the nearby TAC sources. Results are listed in Table 7. *Attachment 3* includes the dispersion modeling and risk calculations for TAC source impacts upon the proposed on-site sensitive receptors.

Local Roadways – El Camino Real

The roadway impacts on new project residents were conducted in the same manner as described above for the off-site MEIs. However, the year 2027 (operational year) emission factors were conservatively assumed as being representative of future conditions, instead of 2024 (construction year). An analysis based on 2027 resulted in an increased ADT on El Camino Real of 31,421 vehicles. On-site receptors were placed throughout the project site with a spacing of 7 meters (23 feet). Roadway impacts were modeled at receptor heights of 5 feet (1.5 meters) and 18 feet (5.5 meters) representing sensitive receptors on the first and second floors of the proposed building. The portion of the roadways included in the modeling is shown in Figure 3 along with the project site and receptor locations where impacts were modeled.

Maximum increased cancer risks were calculated for the residents at the project site using the maximum modeled TAC concentrations. A 30-year exposure period was used in calculating cancer risks assuming the residents would include infants and adults were assumed to be in the new apartments for 24 hours per day for 350 days per year. The highest impacts from El Camino Real occurred at a receptor on the first floor along the southwestern edge of the multi-family building. Cancer risks associated with the roadways are greatest closest to the roadways and decrease with distance from the roads. The roadway impacts at the project site are shown in Table 7. Details of the emission calculations, dispersion modeling, and cancer risk calculations are contained in *Attachment 3.*

Railways – Caltrain

The railway impacts on new project residents were conducted in the same manner as described above for the off-site MEI. However, since project residents would not occupy the project site until 2027, exposures to locomotives traveling on the Caltrain railway were adjusted to begin in 2027 instead of 2024.

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

Stationary Sources

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

Nearby Developments

The impacts from nearby developments upon the project sensitive receptors was conducted in the same manner as described above for the construction MEI.

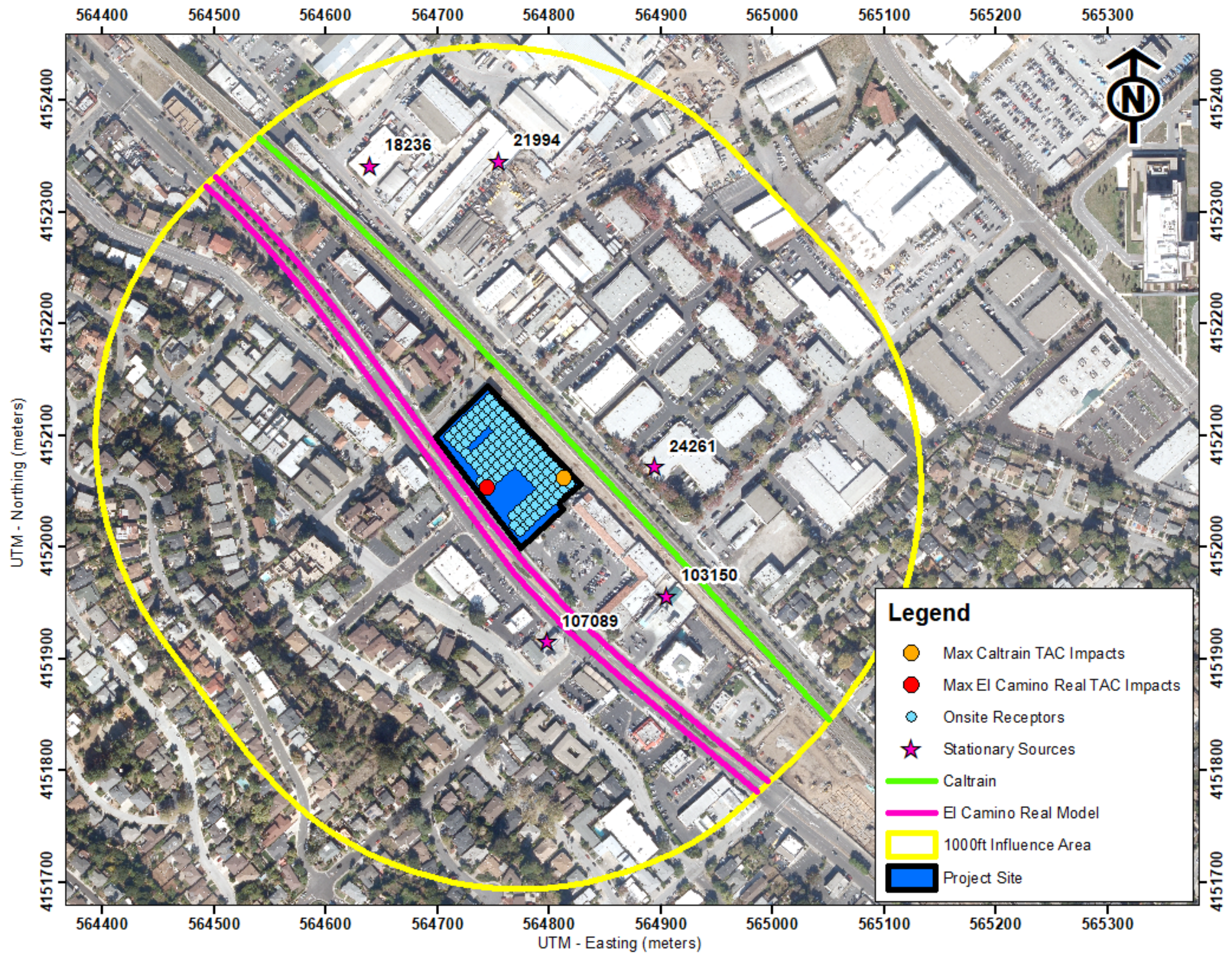
Summary of Cumulative Health Risks at the Project Site

Health risk impacts from the existing and TAC sources upon the project site are reported in Table 7. The risks from the singular TAC sources are compared against the BAAQMD single-source threshold. The risks from all the sources are then combined and compared against the BAAQMD cumulative-source threshold. As shown, the cancer risk from Caltrain and the annual $PM_{2.5}$ concentration from El Camino Real exceed the BAAQMD single-source thresholds, but no cumulative source thresholds were exceeded.

Table 7. Impacts from Combined Sources to Project Site Receptors

Source	Cancer Risk (per million)	Annual $PM_{2.5}$ ($\mu g/m^3$)	Hazard Index
El Camino Real, ADT 31,421 Without MERV13 With MERV13	4.76 1.43	**0.52** 0.16	<0.01 <0.01
Caltrain Without MERV13 With MERV13	**18.50** 5.55	0.04 0.01	- -
Rod'z Auto Body dba: Marks Body Shop (Facility ID #18236, Automotive Body, Paint, and Interior Repair and Maintenance), MEI at 675 feet	-	-	<0.01
Pang Pang Auto Body Shop (Facility #21994, Automotive Body, Paint, and Interior Repair and Maintenance), MEI at 585 feet	-	-	<0.01
Silicon Valley Coffee LLC (Facility ID #24261, Coffee, and Tea Manufacturing), MEI at 340 feet	<0.01	<0.01	-
Auto Pride Wash (Facility ID #103150, Gas Dispensing Facility), MEI at 400 feet	0.75	-	<0.01
Justin Chevron (Facility ID #107089, Gas Dispensing Facility), MEI at 315 feet	3.91	-	0.02
Temporary Nearby Development Construction Impacts			
642 Quarry Road – 860 feet north	6.0	0.02	<0.01
BAAQMD Single-Source Threshold	***10***	***0.3***	***1.0***
Exceed Threshold? Without MERV13 *With MERV13*	***Yes*** *No*	***Yes*** *No*	*No* *No*
Cumulative Total Without MERV13 With MERV13	33.93 17.65	<0.59 <0.20	<0.07 <0.07
BAAQMD Cumulative Source Threshold	***100***	***0.8***	***10.0***
Exceed Threshold? Without MERV13 *With MERV13*	*No* *No*	*No* *No*	*No* *No*

Figure 3. Locations of Project Site, On-Site Residential Receptors, Roadway Models, Caltrain, Stationary Sources, and Maximum TAC Impacts



Recommended Design Features to Reduce Project Receptor Exposure

Filtration in ventilation systems at the project site would be recommended to reduce the level of harmful pollutants to below the significant thresholds. The significant exposure for new project receptors is judged by two effects: (1) increased cancer risk, and (2) annual $PM_{2.5}$ concentration. Exposure to cancer risk from Caltrain and annual $PM_{2.5}$ concentrations from El Camino Real are above the thresholds. The cancer risks from Caltrain are based on exposure to diesel particulate matter from the exhaust of trains passing by the project site. The annual $PM_{2.5}$ concentrations from El Camino Real are based on the exposure to $PM_{2.5}$ resulting from emissions attributable to truck and auto exhaust, the wearing of brakes and tires and re-entrainment of roadway dust from vehicles traveling over pavement. Reducing particulate matter exposure would reduce both annual $PM_{2.5}$ exposures and cancer risk.

The project shall include the following measures to minimize long-term increased cancer risk and annual $PM_{2.5}$ exposure for new project occupants:

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

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

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

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

Effectiveness of Recommended Design Features

A properly installed and operated ventilation system with MERV13 would achieve an 80-percent reduction for small particulates.[43] The overall effectiveness calculations take into account the amount of time spent outdoors and away from home. Assuming that the filtration system is 80-percent effective and the individual is being exposed to 21 hours of indoor filtered air and three hours of outdoor unfiltered air, then the overall effectiveness of a MERV13 filtration system would be about 70-percent for $PM_{2.5}$ exposure. For Caltrain, this would reduce the cancer risk to 5.55 per million. For El Camino Real, this would reduce the maximum annual $PM_{2.5}$ concentration to 0.16 $\mu g/m^3$. With this recommended design feature, impacts from Caltrain and El Camino Real would be below their respective single-source thresholds.

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

GREENHOUSE GAS EMISSIONS

Setting

Gases that trap heat in the atmosphere, GHGs, regulate the earth's temperature. This phenomenon, known as the greenhouse effect, is responsible for maintaining a habitable climate. 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 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).[44] These emissions were lower than peak levels of 7,416 MMT that were emitted in 2007. CARB updates the statewide GHG emission

[44] 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

inventory on an annual basis where the latest inventory includes 2000 through 2020 emissions.[45] In 2020, GHG emissions from statewide emitting activities were 369.2 MMT CO_2e. The 2020 emissions have decreased by 25 percent since peak levels in 2004 and are 35.3 MMT CO_2e lower than 2019 emissions level and almost 62 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 13.8 MT CO_2e per person to 9.3 MT CO_2e per person in 2020.

Recent 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 85 percent below 1990 levels.

The first Scoping Plan for AB 32 was adopted by CARB in December 2008. Its most recent update was completed in December of 2022[46]. It contains the State's main strategies to achieve carbon neutrality by 2045. This plan extends and expands upon the earlier versions with a target of reducing anthropogenic emissions to 85 percent below 1990 levels by 2045. It also takes the step of adding carbon neutrality as a science-based guide and touchstone for California's climate work. Measures to achieve carbon neutrality include rapidly moving to zero emission vehicles (ZEV), removing natural gas as an option for space conditioning, increasing the number of solar arrays and wind turbines, and scaling up renewable hydrogen for hard-to-electrify end uses.

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.

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[45] CARB. 2022. *California Greenhouse Gas Emission for 2000 to 2020*. Web: https://ww2.arb.ca.gov/sites/default/files/classic/cc/inventory/2000-2020_ghg_inventory_trends.pdf

[46] CARB. 2022. Final 2022 Scoping Plan Update and Appendices. Web: https://ww2.arb.ca.gov/our-work/programs/ab-32-climate-change-scoping-plan/2022-scoping-plan-documents

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.

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 GHG 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*.[47] 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 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,

[47] 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

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 Scoping Plan was updated in 2022 and lays out how the state can get to carbon neutrality by 2045 or earlier. It is the first Scoping Plan that adds carbon neutrality as a science-based guide and touchstone beyond statutorily established emission reduction targets.[48]

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 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 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.

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[49]. 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.

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

[49] Governor's Office of Planning and Research. 2018. *Technical Advisory on Evaluating Transportation Impacts in CEQA*. December.

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.

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, 2027 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.[50] 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 (2022 California Building Standard Code) was effective as of January 1, 2023.

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 (2022 Energy Code) replaced the 2019 Energy Code as of January 1,2023. 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.[51]

Requirements for electric vehicle (EV) charging infrastructure are set forth in Title 24 of the California Code of Regulations. 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 2022 standards require deployment of additional EV chargers in various building

[50] 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.
[51] See: https://www.energy.ca.gov/sites/default/files/2020-03/Title_24_2019_Building_Standards_FAQ_ada.pdf

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, installation of EV chargers, and 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.

CEC studies have identified the most aggressive electrification scenario as putting the building sector on track to reach the carbon neutrality goal by 2045.[52] 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.

Advanced Clean Cars

The Advanced Clean Cars Program, originally adopted by CARB in 2012, was designed to bring together CARB's traditional passenger vehicle requirements to meet federal air quality standards and also support California's AB 32 goals to develop and implement programs to reduce GHG emissions back down to 1990 levels by 2020, a goal achieved in 2016 as a result of numerous emissions reduction programs.

Advanced Clean Cars II (ACC II) is phase two of the original rule. ACC II establishes a year-by-year process, starting in 2026, so all new cars and light trucks sold in California will be zero-emission vehicles by 2035, including plug-in hybrid electric vehicles. The regulation codifies the light-duty vehicle goals set out in Governor Newsom's Executive Order N-79-20. Currently, 16 percent of new light-duty vehicles sold in California are zero emissions or plug-in hybrids. By 2030, 68 percent of new vehicles sold in California would be zero emissions and 100 percent by 2035.

Since this regulation was recently adopted, the air pollutant and GHG emissions computed in this assessment do not reflect the emissions reductions. Future updates to the State's mobile emission factor model, EMFAC, will include these effects.

City of San Carlos 2030 General Plan

The City of San Carlos General Plan 2030 includes policies and programs to reduce exposure of the City's sensitive population to exposure of air pollution, TACs, and GHG emissions. The following policies and programs are applicable to the proposed project:

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

Policies

Policy EM-7.1: Take appropriate action to address climate change and reduce greenhouse gas emissions.

Policy EM-7.3: Participate in regional, State, and federal efforts to reduce greenhouse gas emissions and mitigate the impacts resulting from climate change.

Policy EM-7.6: Support greenhouse gas (GHG) emission reduction measures and climate change resiliency strategies that are cost effective and help create an environmentally sustainable, livable, and equitable community. The cost of implementation to the City and private sector shall be considered prior to the adoption of any GHG reduction strategy.

City of San Carlos Climate Mitigation and Adaptative Plan (CMAP)

The City of San Carlos has adopted a new Climate Mitigation and Adaptation Plan (CMAP) to reduce greenhouse gas emissions.[53] The CMAP aims to reduce emissions 40% by 2030 and 80% by 2050 relative to 1990 levels. This CMAP is an update to the 2009 Climate Action Plan (2009 CAP) that provides updated information, an expanded set of GHG reduction strategies, climate adaptation strategies and a planning horizon out to 2050. The following goals and strategies found in the CMAP are relevant to this project:

- Goal 1: Reduce energy use
  - Strategy 1: Regional Energy Conservation and Efficiency Programs. Promote available energy efficiency and conservation opportunities, incentives, and technical assistance for businesses and residents.
- Goal 2: Transition to carbon-free energy sources
  - Strategy 4: Electrification. Transition to electricity as the primary energy source citywide.
  - Strategy 5: Building Codes. Advance electrification through local amendments to the California Building Code.
  - Strategy 7: Peninsula Clean Energy. Continue to support and promote PCE as the community's official electricity provider with a goal to provide 100 percent carbon-free renewable energy by 2025.
- Goal 4: Promote sustainable development that reduces vehicle miles traveled.
  - Strategy 17: Vehicles Miles Traveled. Reduce community-wide transportation-related emissions per resident and employee, with an emphasis on reductions from existing and new development in the city's core commercial, office, and industrial areas, including development on the east side.
- Goal 7: Become a zero-waste community.

[53] City of San Carlos Climate Mitigation and Adaptation Plan, URL: https://www.cityofsancarlos.org/government/departments/city-manager-s-office-communications/responsible-environment/climate-action-plan

- Strategy 27: Construction and Demolition Waste. Increase the amount of waste recycled during construction and demolition of buildings.

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 current 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 (16.8 percent in Petaluma) 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).

New land use projects are required to meet either section A or B from the above list, not both, to be considered less than significant.

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. Emissions for the proposed project are discussed below.

CalEEMod Modeling

CalEEMod was used to predict GHG emissions from operation of the site assuming full build-out of the project. The project land use types and size and other project-specific information were input to the model, as described above within the construction period emissions. CalEEMod output is included in *Attachment 1*.

Construction GHG Emissions

GHG emissions associated with construction were computed at 979 MT of CO_2e for the total construction period. These are the emissions from on-site operation of construction equipment, vendor and hauling truck trips, and worker trips. Neither the City nor BAAQMD have an adopted threshold of significance for construction-related GHG emissions, though the California Office of Planning and Research (OPR) recommends quantifying emissions and disclosing that GHG emissions would occur during construction, even in cases where BAAQMD does not. BAAQMD also encourages the incorporation of best management practices to reduce GHG emissions during construction where feasible and applicable.

Operational GHG Emissions

The CalEEMod model, along with the project vehicle trip generation rates were used to estimate daily emissions associated with operation of the proposed project. As shown in Table 8 for informational purposes, annual GHG emissions resulting from operation of the proposed project are predicted to be 857 MT of CO_2e in 2027.

Table 8. Annual Project GHG Emissions (CO_2e) in Metric Tons

Source Category	2027 Proposed Project
Mobile	693
Area	5
Energy Consumption	88
Water Usage	8
Solid Waste Generation	59
Refrigerants	0
Stationary	7
Total (MT CO_{2e}/year)	857

For this impact to be considered less than significant, it must be consistent with a local GHG reduction strategy (Threshold B) or meet the minimum project design elements recommended by BAAQMD (Threshold A). Threshold A is being applied to the analysis of this project as Threshold B is not applicable. Threshold A requires the project:

1. Avoid construction of new natural gas connections for the residential building,
    - Conforms – The project will be all electric.
2. Avoid wasteful or inefficient use of electricity,
    - Conforms – The project would meet CALGreen Building Standards Code requirements that are considered to be energy efficient.

3. Include electric vehicle charging infrastructure that meets current Building Code CALGreen Tier 2 compliance, and
   - Conforms – the project is intending to install 97 EV charging parking spots and 145 EV ready parking spots.
4. Reduce VMT per service population by 15 percent over regional average.
   - Conforms – The project plans to include a TDM plan that would reduce vehicle trips by 20 percent to meet Section 18.25.030 of the City of San Carlos Municipal Code. Some of the measures to meet this reduction goal include assigning a transportation coordinator to inform residents of alternative travel modes, provide bicycle parking, and have ride matching assistance.

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

The City of San Carlos has a CMAP and enforces its building codes, which aim to reduce GHG emissions. Therefore, if individual projects conform to City building Codes, they will conform with the CAP and would not conflict with local plans, policies, or regulations applicable to GHG emissions. The proposed project would be constructed in conformance with at minimum the 2022 CalGreen and the Title 24 Building Codes, which requires high-efficiency water fixtures, water-efficient irrigation systems, and compliance with current energy efficiency standards. Compliance with these standards ensures compliance with State and federal plans, policies, and regulations applicable to GHG emissions.

Conclusion GHG-1 and GHG-2

The project conforms with Threshold A. As a result, the GHG impacts from the proposed project are considered to be less-than-significant.

Supporting Documentation

Attachment 1 includes the CalEEMod output for project construction and operational criteria air pollutant emissions. Also included are any modeling assumptions.

Attachment 2 is the health risk assessment. AERMOD dispersion modeling files for these assessments, which are quite voluminous, are available upon request and would be provided in digital format.

Attachment 3 includes the cumulative health risk calculations, modeling results, and health risk calculations from sources affecting the MEI and on-site receptors.

Attachment 1: CalEEMod Modeling Inputs and Outputs

Air Quality/Noise Construction Information Data Request

Project Name: **11 El Camino Real, San Carlos CA**

Complete ALL Portions in Yellow

See Equipment Type TAB for type, horsepower and load factor

Project Size
- **242** Dwelling Units — **2.2** total project acres disturbed
- **382,340** s.f. residential
- **0** s.f. retail
- **0** s.f. office/commercial
- ____ s.f. other, specify:
- **138420** s.f. parking garage — **298** spaces
- **0** s.f. parking lot — ____ spaces

Construction Days 5/6/2024 to 9/15/2026

Construction Hours 7 am to 5 pm

Pile Driving? Y/N?

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

IF YES (if BOTH separate values) -->

Kilowatts/Horsepower: _________

Fuel Type: ____________

Location in project (Plans Desired if Available):

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

Quantity	Description	HP	Load Factor	Hours/day	Total Work Days	Avg. Hours per day	HP Annual Hours	Comments
	Demolition	**Start Date:**	**5/6/2024**	**Total phase:**	**28**			**Overall Import/Export Volumes**
		End Date:	**6/6/2024**					
1	Concrete/Industrial Saws	81	0.73	8	5	1.42857143	2365	**Demolition Volume**
2	Excavators	158	0.38	8	20	5.71428571	19213	Square footage of buildings to be demolished
0	Rubber-Tired Dozers	247	0.4			0	0	(*or* total tons to be hauled)
1	Tractors/Loaders/Backhoes	97	0.37	8	20	5.71428571	5742	**_?_** square feet *or*
1	*Water Truck*	250	0.38	8	20	5.71428571	15200	**3,100 tons crushed Concrete** Hauling volume (tons)
								Any pavement demolished and hauled? 1,000 **tons crushed pavement**
	Site Preparation	**Start Date:**	**6/6/2024**	**Total phase:**	**20**			
		End Date:	**7/1/2024**					
1	Graders	187	0.41	8	2	0.8	1227	
	Rubber Tired Dozers	247	0.4			0	0	
1	Drilled Displacement Colum Rig	275	0.4	8	12	5	10560	
2	Tractors/Loaders/Backhoes	97	0.37	8	2	0.8	1148	
1	*Water Truck*	250	0.38	8	2			
	Grading / Excavation	**Start Date:**	**7/2/2024**	**Total phase:**	**15**			
		End Date:	**7/17/2024**					**Soil Hauling Volume**
1	Excavators	158	0.38	8	15	8	7205	Export volume = **17,950** cubic yards
1	Graders	187	0.41	8	6	3.2	3680	Import volume = **0** cubic yards?
	Rubber Tired Dozers	247	0.4			0	0	
	Concrete/Industrial Saws	81	0.73			0	0	
1	Tractors/Loaders/Backhoes	97	0.37	8	15	8	4307	
1	*Water Truck*	250	0.38	8	15	8	11400	
	Trenching/Foundation	**Start Date:**	**7/18/2024**	**Total phase:**	**90**			
		End Date:	**1/22/2025**					
1	Tractor/Loader/Backhoe	30	0.37	8	90	8	7992	
2	Excavators	30	0.38	8	90	8	16416	
1	*Water Trailer*	10	0.5	8	90			
	Building - Exterior	**Start Date:**	**2/16/2025**	**Total phase:**	**259**			**Cement Trucks? _500_ Total Round-Trips**
		End Date:	**2/15/2026**					
1	Cranes	231	0.29	8	100	3.08880309	53592	Electric? (Y/N) _Y__ Otherwise assumed diesel
1	Forklifts	89	0.2	8	246	7.5984556	35030	Liquid Propane (LPG)? (Y/N) _N__ Otherwise Assumed diesel
2	Generator Sets	84	0.74	4	246	3.7992278	122331	Or temporary line power? (Y/N) _Y__
0	Tractors/Loaders/Backhoes	97	0.37			0	0	
0	Welders	46	0.45			0	0	
	Other Equipment?							
Building - Interior/Architectural Coating		**Start Date:**	**9/15/2025**	**Total phase:**	**30**			
		End Date:	**10/24/2025**					
2	Air Compressors	78	0.48	8	30	8	17971	
1	Aerial Lift	62	0.31	8	30	8	4613	
	Other Equipment?							
	Paving	**Start Date:**	**7/15/2026**	**Total phase:**	**9**			
		Start Date:	**7/25/2026**					
	Cement and Mortar Mixers	9	0.56			0	0	
1	Pavers	130	0.42	8	1	0.88888889	437	**Asphalt 300 tons or ____ round trips?**
	Paving Equipment	132	0.36			0	0	
2	Rollers	80	0.38	8	1	0.88888889	486	
1	Tractors/Loaders/Backhoes	97	0.37	8	8	7.11111111	2297	
	Other Equipment?							
	Additional Phases	**Start Date:**		**Total phase:**				
		Start Date:						
							0	
							0	
							0	
							0	
							0	

Equipment types listed in "Equipment Types" worksheet tab.

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

It is assumed that water trucks would be used during grading

Add or subtract phases and equipment, as appropriate

Modify horsepower or load factor, as appropriate

Complete one sheet for each project component

Construction Criteria Air Pollutants							
Unmitigated	ROG	NOX	PM10 Exhaust	PM2.5 Exhaust	PM2.5 Fugitive	**CO2e**	
Year	Tons					MT	
Construction Equipment							
2024	0.03	0.46	0.01	0.01	0.02	181	
2025	2.78	0.50	0.01	0.01	0.07	407	
2026	0.01	0.07	0.00	0.00	0.01	59	
	Total Construction Emissions						
Tons	2.82	1.03	0.02	0.02		646.67	
Pounds/Workdays	*Average Daily Emissions*					Workdays	
2024	0.36	5.39	0.13	0.12			**172**
2025	21.28	3.84	0.07	0.06			**261**
2026	0.15	0.91	0.01	0.01			**147**
Threshold - lbs/day	**54.0**	**54.0**	**82.0**	**54.0**			
	Total Construction Emissions						
Pounds	21.80	10.14	0.21	0.19		0.00	
Average	9.73	3.55	0.07	0.07		0.00	580.29
Threshold - lbs/day	**54.0**	**54.0**	**82.0**	**54.0**			

Operational Criteria Air Pollutants							
Unmitigated	ROG	NOX	Total PM10	Total PM2.5			
Year	Tons						
Project Operation	2.13	0.26	0.74	0.19			
Project Fire Pump	0.00	0.15	0.00	0.00			
Total	2.13	0.42	0.75	0.20			
	Existing Use Emissions						
	Net Annual Operational Emissions						
Tons/year	2.13	0.42	0.75	0.20			
Threshold - Tons/year	**10.0**	**10.0**	**15.0**	**10.0**			
	Average Daily Emissions						
Pounds Per Day	11.66	2.28	4.10	1.08			
Threshold - lbs/day	**54.0**	**54.0**	**82.0**	**54.0**			

Category	**CO2e**			
	Project	Existing	Project 2030	Existing
Mobile	692.75			
Area	1.76			
Energy	90.73			
Water	8.02			
Waste	55.87			
Refrig.	0.45			
Stationary	7.48			
TOTAL	857.06	0.00	0.00	0.00
Net GHG Emissions		857.06		0.00

Traffic Consultant Trip Gen							CalEEMod Default		
Land Use			**Size**	**Daily Trips**	**New Trips**	**Weekday Trip Gen**	**Weekday**	**Sat**	**Sun**
Apartments Mid Rise	DU		242	1099	879	***3.63***	5.44	4.91	4.09
20% TDM Reduction		20%		*-220*			*Rev*	***3.28***	***2.73***

Table 1
Project Trip Generation Estimates

					AM Peak Hour				PM Peak Hour			
Land Use	**Size**	**Unit**	**Daily Rate**	**Daily Trips**	**Peak Rate**	**Trips In**	**Trips Out**	**Total Trips**	**Peak Rate**	**Trips In**	**Trips Out**	**Total Trips**
Proposed Project												
Multi-Family Housing	242	DU	4.54	1,099	0.37	21	69	90	0.39	57	37	94
20% TDM Reduction				(220)		(4)	(14)	(18)		(11)	(8)	(19)

11 El Camino Real, San Carlos Detailed Report

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7.6. Health & Equity Custom Measures

8. User Changes to Default Data

1. Basic Project Information

1.1. Basic Project Information

Data Field	Value
Project Name	11 El Camino Real, San Carlos
Construction Start Date	5/6/2024
Operational Year	2027
Lead Agency	—
Land Use Scale	Project/site
Analysis Level for Defaults	County
Windspeed (m/s)	4.70
Precipitation (days)	3.20
Location	11 El Camino Real, San Carlos, CA 94070, USA
County	San Mateo
City	San Carlos
Air District	Bay Area AQMD
Air Basin	San Francisco Bay Area
TAZ	1258
EDFZ	1
Electric Utility	Peninsula Clean Energy
Gas Utility	Pacific Gas & Electric
App Version	2022.1.1.16

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

Apartments Mid Rise	242	Dwelling Unit	2.20	382,340	0.00	0.00	697	—
Enclosed Parking with Elevator	298	Space	0.00	138,420	0.00	0.00	—	—

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	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—
Unmit.	181	27.3	0.32	4.03	4.26	0.31	1.02	1.33	29.9	16,638
Mit.	180	27.1	0.21	4.00	4.14	0.20	0.99	1.19	29.9	16,638
% Reduced	< 0.5%	1%	36%	1%	3%	34%	3%	10%	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—
Unmit.	181	7.07	0.14	2.73	2.87	0.13	0.65	0.78	0.30	4,635
Mit.	180	7.88	0.14	2.73	2.87	0.13	0.65	0.78	0.30	4,635
% Reduced	< 0.5%	-11%	—	—	—	—	—	—	—	—
Average Daily (Max)	—	—	—	—	—	—	—	—	—	—
Unmit.	15.2	2.74	0.06	1.49	1.54	0.05	0.36	0.41	2.86	2,457

Mit.	15.2	2.77	0.04	1.49	1.52	0.04	0.36	0.39	2.86	2,457
% Reduced	< 0.5%	-1%	36%	—	1%	35%	—	5%	—	—
Annual (Max)	—	—	—	—	—	—	—	—	—	—
Unmit.	2.78	0.50	0.01	0.27	0.28	0.01	0.07	0.07	0.47	407
Mit.	2.77	0.51	0.01	0.27	0.28	0.01	0.07	0.07	0.47	407
% Reduced	< 0.5%	-1%	36%	—	1%	35%	—	5%	—	—

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	R	CO2e
Daily - Summer (Max)	—	—	—	—	—	—	—	—	—	—
2024	0.74	27.3	0.32	4.03	4.26	0.31	1.02	1.33	29.9	16,638
2025	181	6.78	0.14	2.73	2.87	0.13	0.65	0.78	11.7	4,751
2026	0.17	2.16	0.05	0.22	0.28	0.05	0.06	0.11	1.35	1,015
Daily - Winter (Max)	—	—	—	—	—	—	—	—	—	—
2024	0.34	3.00	0.11	0.08	0.19	0.10	0.02	0.12	0.01	698
2025	181	7.07	0.14	2.73	2.87	0.13	0.65	0.78	0.30	4,635
2026	0.64	3.62	0.05	2.34	2.40	0.05	0.56	0.62	0.24	3,693
Average Daily	—	—	—	—	—	—	—	—	—	—
2024	0.17	2.54	0.06	0.42	0.48	0.05	0.09	0.14	0.69	1,093
2025	15.2	2.74	0.05	1.49	1.54	0.05	0.36	0.41	2.86	2,457
2026	0.06	0.37	0.01	0.22	0.22	0.01	0.05	0.06	0.38	355
Annual	—	—	—	—	—	—	—	—	—	—
2024	0.03	0.46	0.01	0.08	0.09	0.01	0.02	0.03	0.11	181
2025	2.78	0.50	0.01	0.27	0.28	0.01	0.07	0.07	0.47	407
2026	0.01	0.07	< 0.005	0.04	0.04	< 0.005	0.01	0.01	0.06	58.9

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	R	CO2e
Daily - Summer (Max)	—	—	—	—	—	—	—	—	—	—
2024	0.47	27.1	0.21	4.00	4.14	0.20	0.99	1.19	29.9	16,638
2025	180	7.59	0.14	2.73	2.87	0.13	0.65	0.78	11.7	4,751
2026	0.09	2.32	0.02	0.22	0.24	0.02	0.06	0.08	1.35	1,015
Daily - Winter (Max)	—	—	—	—	—	—	—	—	—	—
2024	0.11	3.49	0.07	0.08	0.15	0.06	0.02	0.08	0.01	698
2025	180	7.88	0.14	2.73	2.87	0.13	0.65	0.78	0.30	4,635
2026	0.60	3.56	0.02	2.34	2.37	0.02	0.56	0.59	0.24	3,693
Average Daily	—	—	—	—	—	—	—	—	—	—
2024	0.07	2.71	0.04	0.41	0.45	0.04	0.09	0.12	0.69	1,093
2025	15.2	2.77	0.03	1.49	1.52	0.03	0.36	0.39	2.86	2,457
2026	0.06	0.37	< 0.005	0.22	0.22	< 0.005	0.05	0.05	0.38	355
Annual	—	—	—	—	—	—	—	—	—	—
2024	0.01	0.49	0.01	0.07	0.08	0.01	0.02	0.02	0.11	181
2025	2.77	0.51	0.01	0.27	0.28	< 0.005	0.07	0.07	0.47	407
2026	0.01	0.07	< 0.005	0.04	0.04	< 0.005	0.01	0.01	0.06	58.9

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	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—
Unmit.	11.8	1.29	0.02	4.27	4.30	0.02	1.08	1.10	14.8	5,527

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—
Unmit.	11.8	1.53	0.02	4.27	4.30	0.02	1.08	1.10	3.05	5,325
Average Daily (Max)	—	—	—	—	—	—	—	—	—	—
Unmit.	11.7	1.43	0.03	4.05	4.08	0.02	1.03	1.05	7.70	5,131
Annual (Max)	—	—	—	—	—	—	—	—	—	—
Unmit.	2.13	0.26	< 0.005	0.74	0.74	< 0.005	0.19	0.19	1.27	849

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	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—
Mobile	2.16	1.29	0.02	4.27	4.30	0.02	1.08	1.10	12.1	4,591
Area	9.66	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00
Energy	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	548
Water	—	—	—	—	—	—	—	—	—	48.5
Waste	—	—	—	—	—	—	—	—	—	337
Refrig.	—	—	—	—	—	—	—	—	2.74	2.74
Stationary	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00
Total	11.8	1.29	0.02	4.27	4.30	0.02	1.08	1.10	14.8	5,527
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—
Mobile	2.12	1.53	0.02	4.27	4.30	0.02	1.08	1.10	0.31	4,388
Area	9.66	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00
Energy	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	548
Water	—	—	—	—	—	—	—	—	—	48.5
Waste	—	—	—	—	—	—	—	—	—	337

Refrig.	—	—	—	—	—	—	—	—	2.74	2.74
Stationary	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00
Total	11.8	1.53	0.02	4.27	4.30	0.02	1.08	1.10	3.05	5,325
Average Daily	—	—	—	—	—	—	—	—	—	—
Mobile	1.98	1.37	0.02	4.05	4.08	0.02	1.03	1.05	4.96	4,184
Area	9.66	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00
Energy	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	548
Water	—	—	—	—	—	—	—	—	—	48.5
Waste	—	—	—	—	—	—	—	—	—	337
Refrig.	—	—	—	—	—	—	—	—	2.74	2.74
Stationary	0.02	0.06	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	9.92
Total	11.7	1.43	0.03	4.05	4.08	0.02	1.03	1.05	7.70	5,131
Annual	—	—	—	—	—	—	—	—	—	—
Mobile	0.36	0.25	< 0.005	0.74	0.74	< 0.005	0.19	0.19	0.82	693
Area	1.76	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00
Energy	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	90.7
Water	—	—	—	—	—	—	—	—	—	8.02
Waste	—	—	—	—	—	—	—	—	—	55.9
Refrig.	—	—	—	—	—	—	—	—	0.45	0.45
Stationary	< 0.005	0.01	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	1.64
Total	2.13	0.26	< 0.005	0.74	0.74	< 0.005	0.19	0.19	1.27	849

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	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—

Mobile	2.16	1.29	0.02	4.27	4.30	0.02	1.08	1.10	12.1	4,591
Area	9.66	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00
Energy	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	548
Water	—	—	—	—	—	—	—	—	—	48.5
Waste	—	—	—	—	—	—	—	—	—	337
Refrig.	—	—	—	—	—	—	—	—	2.74	2.74
Stationary	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00
Total	11.8	1.29	0.02	4.27	4.30	0.02	1.08	1.10	14.8	5,527
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—
Mobile	2.12	1.53	0.02	4.27	4.30	0.02	1.08	1.10	0.31	4,388
Area	9.66	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00
Energy	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	548
Water	—	—	—	—	—	—	—	—	—	48.5
Waste	—	—	—	—	—	—	—	—	—	337
Refrig.	—	—	—	—	—	—	—	—	2.74	2.74
Stationary	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00
Total	11.8	1.53	0.02	4.27	4.30	0.02	1.08	1.10	3.05	5,325
Average Daily	—	—	—	—	—	—	—	—	—	—
Mobile	1.98	1.37	0.02	4.05	4.08	0.02	1.03	1.05	4.96	4,184
Area	9.66	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00
Energy	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	548
Water	—	—	—	—	—	—	—	—	—	48.5
Waste	—	—	—	—	—	—	—	—	—	337
Refrig.	—	—	—	—	—	—	—	—	2.74	2.74
Stationary	0.02	0.06	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	9.92
Total	11.7	1.43	0.03	4.05	4.08	0.02	1.03	1.05	7.70	5,131
Annual	—	—	—	—	—	—	—	—	—	—

Mobile	0.36	0.25	< 0.005	0.74	0.74	< 0.005	0.19	0.19	0.82	693
Area	1.76	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00
Energy	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	90.7
Water	—	—	—	—	—	—	—	—	—	8.02
Waste	—	—	—	—	—	—	—	—	—	55.9
Refrig.	—	—	—	—	—	—	—	—	0.45	0.45
Stationary	< 0.005	0.01	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	1.64
Total	2.13	0.26	< 0.005	0.74	0.74	< 0.005	0.19	0.19	1.27	849

3. Construction Emissions Details

3.1. Demolition (2024) - 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	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.26	2.35	0.09	—	0.09	0.08	—	0.08	—	455
Demolition	—	—	—	3.00	3.00	—	0.45	0.45	—	—
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	0.02	0.15	0.01	—	0.01	0.01	—	0.01	—	29.9
Demolition	—	—	—	0.20	0.20	—	0.03	0.03	—	—
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	0.03	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	4.95
Demolition	—	—	—	0.04	0.04	—	0.01	0.01	—	—
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	0.08	0.08	0.00	0.02	0.02	0.31	—
Vendor	< 0.005	0.09	< 0.005	0.01	0.02	< 0.005	< 0.005	< 0.005	0.14	—
Hauling	0.08	5.39	0.04	0.78	0.82	0.04	0.21	0.25	6.67	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.00	0.01	0.01	0.00	< 0.005	< 0.005	0.01	—
Vendor	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—
Hauling	0.01	0.37	< 0.005	0.05	0.05	< 0.005	0.01	0.02	0.19	—
Annual	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	< 0.005	—
Vendor	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—
Hauling	< 0.005	0.07	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	0.03	—

3.2. Demolition (2024) - 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	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.07	2.75	0.06	—	0.06	0.05	—	0.05	—	455

Demolition	—	—	—	3.00	3.00	—	0.45	0.45	—	—
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	0.18	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	29.9
Demolition	—	—	—	0.20	0.20	—	0.03	0.03	—	—
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	0.03	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	4.95
Demolition	—	—	—	0.04	0.04	—	0.01	0.01	—	—
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	0.08	0.08	0.00	0.02	0.02	0.31	—
Vendor	< 0.005	0.09	< 0.005	0.01	0.02	< 0.005	< 0.005	< 0.005	0.14	—
Hauling	0.08	5.39	0.04	0.78	0.82	0.04	0.21	0.25	6.67	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.00	0.01	0.01	0.00	< 0.005	< 0.005	0.01	—
Vendor	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—
Hauling	0.01	0.37	< 0.005	0.05	0.05	< 0.005	0.01	0.02	0.19	—
Annual	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	< 0.005	—
Vendor	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—

Hauling	< 0.005	0.07	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	0.03	—

3.3. Site Preparation (2024) - 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	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.20	1.94	0.07	—	0.07	0.07	—	0.07	—	754
Dust From Material Movement	—	—	—	0.05	0.05	—	0.01	0.01	—	—
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	0.10	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	37.2
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	0.02	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	6.16
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	0.08	0.08	0.00	0.02	0.02	0.31	—
Vendor	< 0.005	0.09	< 0.005	0.01	0.02	< 0.005	< 0.005	< 0.005	0.14	—
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	0.01	—
Vendor	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—
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	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—

3.4. Site Preparation (2024) - 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	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.16	1.82	0.05	—	0.05	0.04	—	0.04	—	754
Dust From Material Movement	—	—	—	0.02	0.02	—	< 0.005	< 0.005	—	—
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	0.09	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	37.2
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	0.02	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	6.16
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	0.08	0.08	0.00	0.02	0.02	0.31	—
Vendor	< 0.005	0.09	< 0.005	0.01	0.02	< 0.005	< 0.005	< 0.005	0.14	—
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	0.01	—
Vendor	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—
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	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—

3.5. Grading (2024) - 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	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.37	3.41	0.16	—	0.16	0.14	—	0.14	—	661
Dust From Material Movement	—	—	—	0.39	0.39	—	0.05	0.05	—	—
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	0.11	0.01	—	0.01	< 0.005	—	< 0.005	—	21.7
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	—
Annual	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	0.02	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	3.60
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	0.06	0.06	0.00	0.01	0.01	0.23	—
Vendor	< 0.005	0.09	< 0.005	0.01	0.02	< 0.005	< 0.005	< 0.005	0.14	—
Hauling	0.35	23.8	0.16	3.47	3.63	0.16	0.95	1.11	29.5	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	< 0.005	—
Vendor	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—
Hauling	0.01	0.81	0.01	0.11	0.12	0.01	0.03	0.04	0.42	—
Annual	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	< 0.005	—
Vendor	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—
Hauling	< 0.005	0.15	< 0.005	0.02	0.02	< 0.005	0.01	0.01	0.07	—

3.6. Grading (2024) - 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	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.10	3.20	0.04	—	0.04	0.04	—	0.04	—	661
Dust From Material Movement	—	—	—	0.15	0.15	—	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	0.11	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	21.7
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	—
Annual	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	0.02	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	3.60
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	0.06	0.06	0.00	0.01	0.01	0.23	—
Vendor	< 0.005	0.09	< 0.005	0.01	0.02	< 0.005	< 0.005	< 0.005	0.14	—
Hauling	0.35	23.8	0.16	3.47	3.63	0.16	0.95	1.11	29.5	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	< 0.005	—
Vendor	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—
Hauling	0.01	0.81	0.01	0.11	0.12	0.01	0.03	0.04	0.42	—
Annual	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	< 0.005	—
Vendor	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—
Hauling	< 0.005	0.15	< 0.005	0.02	0.02	< 0.005	0.01	0.01	0.07	—

3.7. Building Construction (2025) - Unmitigated

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

Location	ROG	NOx	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.08	0.74	0.04	—	0.04	0.04	—	0.04	—	153
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	0.08	0.74	0.04	—	0.04	0.04	—	0.04	—	153
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	0.46	0.02	—	0.02	0.02	—	0.02	—	95.5
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	0.08	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	15.8
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	0.56	0.42	0.00	1.92	1.92	0.00	0.45	0.45	6.33	—
Vendor	0.05	2.00	0.02	0.35	0.37	0.02	0.09	0.11	3.48	—
Hauling	0.01	0.47	< 0.005	0.07	0.07	< 0.005	0.02	0.02	0.60	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—

Worker	0.56	0.57	0.00	1.92	1.92	0.00	0.45	0.45	0.16	—
Vendor	0.05	2.09	0.02	0.35	0.37	0.02	0.09	0.11	0.09	—
Hauling	0.01	0.49	< 0.005	0.07	0.07	< 0.005	0.02	0.02	0.02	—
Average Daily	—	—	—	—	—	—	—	—	—	—
Worker	0.34	0.31	0.00	1.20	1.20	0.00	0.28	0.28	1.71	—
Vendor	0.03	1.29	0.01	0.22	0.23	0.01	0.06	0.07	0.94	—
Hauling	< 0.005	0.30	< 0.005	0.04	0.05	< 0.005	0.01	0.01	0.16	—
Annual	—	—	—	—	—	—	—	—	—	—
Worker	0.06	0.06	0.00	0.22	0.22	0.00	0.05	0.05	0.28	—
Vendor	0.01	0.24	< 0.005	0.04	0.04	< 0.005	0.01	0.01	0.16	—
Hauling	< 0.005	0.05	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	0.03	—

3.8. Building Construction (2025) - 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	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.02	0.62	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	153
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	0.02	0.62	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	153
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	0.39	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	95.5

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	0.07	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	15.8
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	0.56	0.42	0.00	1.92	1.92	0.00	0.45	0.45	6.33	—
Vendor	0.05	2.00	0.02	0.35	0.37	0.02	0.09	0.11	3.48	—
Hauling	0.01	0.47	< 0.005	0.07	0.07	< 0.005	0.02	0.02	0.60	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—
Worker	0.56	0.57	0.00	1.92	1.92	0.00	0.45	0.45	0.16	—
Vendor	0.05	2.09	0.02	0.35	0.37	0.02	0.09	0.11	0.09	—
Hauling	0.01	0.49	< 0.005	0.07	0.07	< 0.005	0.02	0.02	0.02	—
Average Daily	—	—	—	—	—	—	—	—	—	—
Worker	0.34	0.31	0.00	1.20	1.20	0.00	0.28	0.28	1.71	—
Vendor	0.03	1.29	0.01	0.22	0.23	0.01	0.06	0.07	0.94	—
Hauling	< 0.005	0.30	< 0.005	0.04	0.05	< 0.005	0.01	0.01	0.16	—
Annual	—	—	—	—	—	—	—	—	—	—
Worker	0.06	0.06	0.00	0.22	0.22	0.00	0.05	0.05	0.28	—
Vendor	0.01	0.24	< 0.005	0.04	0.04	< 0.005	0.01	0.01	0.16	—
Hauling	< 0.005	0.05	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	0.03	—

3.9. Building Construction (2026) - Unmitigated

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

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

Onsite	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.07	0.68	0.03	—	0.03	0.03	—	0.03	—	153
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	—	13.8
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	—	2.28
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	0.52	0.50	0.00	1.92	1.92	0.00	0.45	0.45	0.14	—
Vendor	0.05	1.97	0.02	0.35	0.37	0.02	0.09	0.11	0.08	—
Hauling	0.01	0.47	< 0.005	0.07	0.07	< 0.005	0.02	0.02	0.01	—
Average Daily	—	—	—	—	—	—	—	—	—	—
Worker	0.05	0.04	0.00	0.17	0.17	0.00	0.04	0.04	0.22	—
Vendor	< 0.005	0.17	< 0.005	0.03	0.03	< 0.005	0.01	0.01	0.13	—
Hauling	< 0.005	0.04	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	0.02	—
Annual	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.00	0.03	0.03	0.00	0.01	0.01	0.04	—

Vendor	< 0.005	0.03	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	0.02	—
Hauling	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—

3.10. Building Construction (2026) - 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	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.02	0.62	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	153
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	—	13.8
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	—	2.28
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	0.52	0.50	0.00	1.92	1.92	0.00	0.45	0.45	0.14	—
Vendor	0.05	1.97	0.02	0.35	0.37	0.02	0.09	0.11	0.08	—
Hauling	0.01	0.47	< 0.005	0.07	0.07	< 0.005	0.02	0.02	0.01	—

Average Daily	—	—	—	—	—	—	—	—	—	—
Worker	0.05	0.04	0.00	0.17	0.17	0.00	0.04	0.04	0.22	—
Vendor	< 0.005	0.17	< 0.005	0.03	0.03	< 0.005	0.01	0.01	0.13	—
Hauling	< 0.005	0.04	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	0.02	—
Annual	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.00	0.03	0.03	0.00	0.01	0.01	0.04	—
Vendor	< 0.005	0.03	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	0.02	—
Hauling	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—

3.11. Paving (2026) - 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	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.13	1.28	0.05	—	0.05	0.04	—	0.04	—	326
Paving	0.00	—	—	—	—	—	—	—	—	—
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	—	7.15
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	—	1.18

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)	—	—	—	—	—	—	—	—	—	—
Worker	0.02	0.02	0.00	0.08	0.08	0.00	0.02	0.02	0.24	—
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—
Hauling	0.01	0.86	0.01	0.14	0.15	0.01	0.04	0.04	1.11	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—
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	< 0.005	0.02	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.01	—
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	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—

3.12. Paving (2026) - 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	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.05	1.44	0.01	—	0.01	0.01	—	0.01	—	326
Paving	0.00	—	—	—	—	—	—	—	—	—
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	—	7.15
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	—	1.18
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)	—	—	—	—	—	—	—	—	—	—
Worker	0.02	0.02	0.00	0.08	0.08	0.00	0.02	0.02	0.24	—
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—
Hauling	0.01	0.86	0.01	0.14	0.15	0.01	0.04	0.04	1.11	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—
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	< 0.005	0.02	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.01	—
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	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—

3.13. Architectural Coating (2025) - 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	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.38	3.08	0.08	—	0.08	0.07	—	0.07	—	505
Architectural Coatings	179	—	—	—	—	—	—	—	—	—
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	0.38	3.08	0.08	—	0.08	0.07	—	0.07	—	505
Architectural Coatings	179	—	—	—	—	—	—	—	—	—
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	0.03	0.25	0.01	—	0.01	0.01	—	0.01	—	41.5
Architectural Coatings	14.8	—	—	—	—	—	—	—	—	—
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	0.05	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	6.88
Architectural Coatings	2.69	—	—	—	—	—	—	—	—	—
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	0.11	0.08	0.00	0.38	0.38	0.00	0.09	0.09	1.27	—
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)	—	—	—	—	—	—	—	—	—	—
Worker	0.11	0.11	0.00	0.38	0.38	0.00	0.09	0.09	0.03	—
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	—
Average Daily	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.00	0.03	0.03	0.00	0.01	0.01	0.04	—
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	0.01	0.01	0.00	< 0.005	< 0.005	0.01	—
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	—

3.14. Architectural Coating (2025) - 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	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.08	3.99	0.11	—	0.11	0.11	—	0.11	—	505
Architectural Coatings	179	—	—	—	—	—	—	—	—	—

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	0.08	3.99	0.11	—	0.11	0.11	—	0.11	—	505
Architectural Coatings	179	—	—	—	—	—	—	—	—	—
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	0.33	0.01	—	0.01	0.01	—	0.01	—	41.5
Architectural Coatings	14.8	—	—	—	—	—	—	—	—	—
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	0.06	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	6.88
Architectural Coatings	2.69	—	—	—	—	—	—	—	—	—
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	0.11	0.08	0.00	0.38	0.38	0.00	0.09	0.09	1.27	—
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)	—	—	—	—	—	—	—	—	—	—
Worker	0.11	0.11	0.00	0.38	0.38	0.00	0.09	0.09	0.03	—
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	—

Average Daily	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.00	0.03	0.03	0.00	0.01	0.01	0.04	—
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	0.01	0.01	0.00	< 0.005	< 0.005	0.01	—
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	—

3.15. Trenching (2024) - 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	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.32	2.89	0.11	—	0.11	0.10	—	0.10	—	576
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	0.32	2.89	0.11	—	0.11	0.10	—	0.10	—	576
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	0.10	0.94	0.04	—	0.04	0.03	—	0.03	—	188
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—
Annual	—	—	—	—	—	—	—	—	—	—

Off-Road Equipment	0.02	0.17	0.01	—	0.01	0.01	—	0.01	—	31.2
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	0.06	0.06	0.00	0.01	0.01	0.23	—
Vendor	< 0.005	0.09	< 0.005	0.01	0.02	< 0.005	< 0.005	< 0.005	0.14	—
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—
Worker	0.02	0.02	0.00	0.06	0.06	0.00	0.01	0.01	0.01	—
Vendor	< 0.005	0.09	< 0.005	0.01	0.02	< 0.005	< 0.005	< 0.005	< 0.005	—
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—
Average Daily	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.00	0.02	0.02	0.00	< 0.005	< 0.005	0.03	—
Vendor	< 0.005	0.03	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.02	—
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	0.01	—
Vendor	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—

3.16. Trenching (2024) - 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	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—

Off-Road Equipment	0.09	3.37	0.07	—	0.07	0.06	—	0.06	—	576
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	0.09	3.37	0.07	—	0.07	0.06	—	0.06	—	576
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	0.03	1.10	0.02	—	0.02	0.02	—	0.02	—	188
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	0.20	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	31.2
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	0.06	0.06	0.00	0.01	0.01	0.23	—
Vendor	< 0.005	0.09	< 0.005	0.01	0.02	< 0.005	< 0.005	< 0.005	0.14	—
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—
Worker	0.02	0.02	0.00	0.06	0.06	0.00	0.01	0.01	0.01	—
Vendor	< 0.005	0.09	< 0.005	0.01	0.02	< 0.005	< 0.005	< 0.005	< 0.005	—
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—
Average Daily	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.00	0.02	0.02	0.00	< 0.005	< 0.005	0.03	—
Vendor	< 0.005	0.03	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.02	—

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	0.01	—
Vendor	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—

3.17. Trenching (2025) - 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	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.30	2.76	0.09	—	0.09	0.09	—	0.09	—	576
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	0.12	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	24.8
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	0.02	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	4.10
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	0.02	0.02	0.00	0.06	0.06	0.00	0.01	0.01	0.01	—
Vendor	< 0.005	0.09	< 0.005	0.01	0.02	< 0.005	< 0.005	< 0.005	< 0.005	—
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	< 0.005	—
Vendor	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—
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	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—

3.18. Trenching (2025) - 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	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.09	3.37	0.07	—	0.07	0.06	—	0.06	—	576
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	0.15	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	24.8
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	0.03	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	4.10
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	0.02	0.02	0.00	0.06	0.06	0.00	0.01	0.01	0.01	—
Vendor	< 0.005	0.09	< 0.005	0.01	0.02	< 0.005	< 0.005	< 0.005	< 0.005	—
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	< 0.005	—
Vendor	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—
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	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—
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	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—

Apartments Mid Rise	2.16	1.29	0.02	4.27	4.30	0.02	1.08	1.10	12.1	4,591
Enclosed Parking with Elevator	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	2.16	1.29	0.02	4.27	4.30	0.02	1.08	1.10	12.1	4,591
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—
Apartments Mid Rise	2.12	1.53	0.02	4.27	4.30	0.02	1.08	1.10	0.31	4,388
Enclosed Parking with Elevator	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	2.12	1.53	0.02	4.27	4.30	0.02	1.08	1.10	0.31	4,388
Annual	—	—	—	—	—	—	—	—	—	—
Apartments Mid Rise	0.36	0.25	< 0.005	0.74	0.74	< 0.005	0.19	0.19	0.82	693
Enclosed Parking with Elevator	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	0.36	0.25	< 0.005	0.74	0.74	< 0.005	0.19	0.19	0.82	693

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	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—
Apartments Mid Rise	2.16	1.29	0.02	4.27	4.30	0.02	1.08	1.10	12.1	4,591
Enclosed Parking with Elevator	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Total	2.16	1.29	0.02	4.27	4.30	0.02	1.08	1.10	12.1	4,591
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—
Apartments Mid Rise	2.12	1.53	0.02	4.27	4.30	0.02	1.08	1.10	0.31	4,388
Enclosed Parking with Elevator	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	2.12	1.53	0.02	4.27	4.30	0.02	1.08	1.10	0.31	4,388
Annual	—	—	—	—	—	—	—	—	—	—
Apartments Mid Rise	0.36	0.25	< 0.005	0.74	0.74	< 0.005	0.19	0.19	0.82	693
Enclosed Parking with Elevator	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	0.36	0.25	< 0.005	0.74	0.74	< 0.005	0.19	0.19	0.82	693

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	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—
Apartments Mid Rise	—	—	—	—	—	—	—	—	—	405
Enclosed Parking with Elevator	—	—	—	—	—	—	—	—	—	143
Total	—	—	—	—	—	—	—	—	—	548
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—

Apartments Mid Rise	—	—	—	—	—	—	—	—	—	405
Enclosed Parking with Elevator	—	—	—	—	—	—	—	—	—	143
Total	—	—	—	—	—	—	—	—	—	548
Annual	—	—	—	—	—	—	—	—	—	—
Apartments Mid Rise	—	—	—	—	—	—	—	—	—	67.1
Enclosed Parking with Elevator	—	—	—	—	—	—	—	—	—	23.6
Total	—	—	—	—	—	—	—	—	—	90.7

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	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—
Apartments Mid Rise	—	—	—	—	—	—	—	—	—	405
Enclosed Parking with Elevator	—	—	—	—	—	—	—	—	—	143
Total	—	—	—	—	—	—	—	—	—	548
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—
Apartments Mid Rise	—	—	—	—	—	—	—	—	—	405
Enclosed Parking with Elevator	—	—	—	—	—	—	—	—	—	143

Total	—	—	—	—	—	—	—	—	—	548
Annual	—	—	—	—	—	—	—	—	—	—
Apartments Mid Rise	—	—	—	—	—	—	—	—	—	67.1
Enclosed Parking with Elevator	—	—	—	—	—	—	—	—	—	23.6
Total	—	—	—	—	—	—	—	—	—	90.7

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	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—
Apartments Mid Rise	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00
Enclosed Parking with Elevator	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00
Total	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—
Apartments Mid Rise	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00
Enclosed Parking with Elevator	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00
Total	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00
Annual	—	—	—	—	—	—	—	—	—	—
Apartments Mid Rise	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00

Enclosed Parking with Elevator	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00
Total	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00

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	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—
Apartments Mid Rise	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00
Enclosed Parking with Elevator	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00
Total	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—
Apartments Mid Rise	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00
Enclosed Parking with Elevator	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00
Total	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00
Annual	—	—	—	—	—	—	—	—	—	—
Apartments Mid Rise	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00
Enclosed Parking with Elevator	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00
Total	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00

4.3. Area Emissions by Source

4.3.1. Unmitigated

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

Source	ROG	NOx	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—
Hearths	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00
Consumer Products	8.18	—	—	—	—	—	—	—	—	—
Architectural Coatings	1.48	—	—	—	—	—	—	—	—	—
Total	9.66	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—
Hearths	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00
Consumer Products	8.18	—	—	—	—	—	—	—	—	—
Architectural Coatings	1.48	—	—	—	—	—	—	—	—	—
Total	9.66	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00
Annual	—	—	—	—	—	—	—	—	—	—
Hearths	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00
Consumer Products	1.49	—	—	—	—	—	—	—	—	—
Architectural Coatings	0.27	—	—	—	—	—	—	—	—	—
Total	1.76	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00

4.3.2. 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	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—
Hearths	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00
Consumer Products	8.18	—	—	—	—	—	—	—	—	—
Architectural Coatings	1.48	—	—	—	—	—	—	—	—	—
Total	9.66	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—
Hearths	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00
Consumer Products	8.18	—	—	—	—	—	—	—	—	—
Architectural Coatings	1.48	—	—	—	—	—	—	—	—	—
Total	9.66	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00
Annual	—	—	—	—	—	—	—	—	—	—
Hearths	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00
Consumer Products	1.49	—	—	—	—	—	—	—	—	—
Architectural Coatings	0.27	—	—	—	—	—	—	—	—	—
Total	1.76	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00

4.4. Water Emissions by Land Use

4.4.1. Unmitigated

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

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

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—
Apartments Mid Rise	—	—	—	—	—	—	—	—	—	48.5
Enclosed Parking with Elevator	—	—	—	—	—	—	—	—	—	0.00
Total	—	—	—	—	—	—	—	—	—	48.5
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—
Apartments Mid Rise	—	—	—	—	—	—	—	—	—	48.5
Enclosed Parking with Elevator	—	—	—	—	—	—	—	—	—	0.00
Total	—	—	—	—	—	—	—	—	—	48.5
Annual	—	—	—	—	—	—	—	—	—	—
Apartments Mid Rise	—	—	—	—	—	—	—	—	—	8.02
Enclosed Parking with Elevator	—	—	—	—	—	—	—	—	—	0.00
Total	—	—	—	—	—	—	—	—	—	8.02

4.4.2. 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	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—
Apartments Mid Rise	—	—	—	—	—	—	—	—	—	48.5

Enclosed Parking with Elevator	—	—	—	—	—	—	—	—	—	0.00
Total	—	—	—	—	—	—	—	—	—	48.5
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—
Apartments Mid Rise	—	—	—	—	—	—	—	—	—	48.5
Enclosed Parking with Elevator	—	—	—	—	—	—	—	—	—	0.00
Total	—	—	—	—	—	—	—	—	—	48.5
Annual	—	—	—	—	—	—	—	—	—	—
Apartments Mid Rise	—	—	—	—	—	—	—	—	—	8.02
Enclosed Parking with Elevator	—	—	—	—	—	—	—	—	—	0.00
Total	—	—	—	—	—	—	—	—	—	8.02

4.5. Waste Emissions by Land Use

4.5.1. Unmitigated

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

Land Use	ROG	NOx	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—
Apartments Mid Rise	—	—	—	—	—	—	—	—	—	337
Enclosed Parking with Elevator	—	—	—	—	—	—	—	—	—	0.00

Total	—	—	—	—	—	—	—	—	—	337
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—
Apartments Mid Rise	—	—	—	—	—	—	—	—	—	337
Enclosed Parking with Elevator	—	—	—	—	—	—	—	—	—	0.00
Total	—	—	—	—	—	—	—	—	—	337
Annual	—	—	—	—	—	—	—	—	—	—
Apartments Mid Rise	—	—	—	—	—	—	—	—	—	55.9
Enclosed Parking with Elevator	—	—	—	—	—	—	—	—	—	0.00
Total	—	—	—	—	—	—	—	—	—	55.9

4.5.2. 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	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—
Apartments Mid Rise	—	—	—	—	—	—	—	—	—	337
Enclosed Parking with Elevator	—	—	—	—	—	—	—	—	—	0.00
Total	—	—	—	—	—	—	—	—	—	337
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—
Apartments Mid Rise	—	—	—	—	—	—	—	—	—	337

Enclosed Parking with Elevator	—	—	—	—	—	—	—	—	—	0.00
Total	—	—	—	—	—	—	—	—	—	337
Annual	—	—	—	—	—	—	—	—	—	—
Apartments Mid Rise	—	—	—	—	—	—	—	—	—	55.9
Enclosed Parking with Elevator	—	—	—	—	—	—	—	—	—	0.00
Total	—	—	—	—	—	—	—	—	—	55.9

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	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—
Apartments Mid Rise	—	—	—	—	—	—	—	—	2.74	2.74
Total	—	—	—	—	—	—	—	—	2.74	2.74
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—
Apartments Mid Rise	—	—	—	—	—	—	—	—	2.74	2.74
Total	—	—	—	—	—	—	—	—	2.74	2.74
Annual	—	—	—	—	—	—	—	—	—	—
Apartments Mid Rise	—	—	—	—	—	—	—	—	0.45	0.45
Total	—	—	—	—	—	—	—	—	0.45	0.45

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	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—
Apartments Mid Rise	—	—	—	—	—	—	—	—	2.74	2.74
Total	—	—	—	—	—	—	—	—	2.74	2.74
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—
Apartments Mid Rise	—	—	—	—	—	—	—	—	2.74	2.74
Total	—	—	—	—	—	—	—	—	2.74	2.74
Annual	—	—	—	—	—	—	—	—	—	—
Apartments Mid Rise	—	—	—	—	—	—	—	—	0.45	0.45
Total	—	—	—	—	—	—	—	—	0.45	0.45

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	R	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	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—

4.8. Stationary Emissions By Equipment Type

4.8.1. Unmitigated

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

Equipment Type	ROG	NOx	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—
Fire Pump	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	—
undefined	—	—	—	—	—	—	—	—	—	0.00
Total	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—
Fire Pump	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	—
undefined	—	—	—	—	—	—	—	—	—	0.00
Total	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00

Annual	—	—	—	—	—	—	—	—	—	—
Fire Pump	< 0.005	0.01	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	—
undefined	—	—	—	—	—	—	—	—	—	1.64
Total	< 0.005	0.01	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	1.64

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	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—
Fire Pump	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	—
undefined	—	—	—	—	—	—	—	—	—	0.00
Total	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—
Fire Pump	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	—
undefined	—	—	—	—	—	—	—	—	—	0.00
Total	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00
Annual	—	—	—	—	—	—	—	—	—	—
Fire Pump	< 0.005	0.01	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	—
undefined	—	—	—	—	—	—	—	—	—	1.64
Total	< 0.005	0.01	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	1.64

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	R	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	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—

4.10. Soil Carbon Accumulation By Vegetation Type

4.10.1. Soil Carbon Accumulation By Vegetation Type - Unmitigated

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

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

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

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

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

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

4.10.3. Avoided and Sequestered Emissions by Species - Unmitigated

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

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

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

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	R	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	R	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	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—

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

5. Activity Data

5.1. Construction Schedule

Phase Name	Phase Type	Start Date	End Date	Days Per Week	Work Days per Phase	Phase Description
Demolition	Demolition	5/6/2024	6/6/2024	5.00	24.0	—
Site Preparation	Site Preparation	6/6/2024	7/1/2024	5.00	18.0	—
Grading	Grading	7/2/2024	7/17/2024	5.00	12.0	—
Building Construction	Building Construction	2/16/2025	2/15/2026	5.00	260	—
Paving	Paving	7/15/2026	7/25/2026	5.00	8.00	—

Architectural Coating	Architectural Coating	9/15/2025	10/24/2025	5.00	30.0	—
Trenching	Trenching	7/18/2024	1/22/2025	5.00	135	—

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
Demolition	Concrete/Industrial Saws	Diesel	Average	1.00	1.43	33.0	0.73
Demolition	Tractors/Loaders/Backhoes	Diesel	Average	1.00	5.71	84.0	0.37
Demolition	Excavators	Diesel	Average	2.00	5.71	36.0	0.38
Site Preparation	Graders	Diesel	Average	1.00	0.80	148	0.41
Site Preparation	Tractors/Loaders/Backhoes	Diesel	Average	2.00	0.80	84.0	0.37
Site Preparation	Bore/Drill Rigs	Diesel	Average	1.00	5.00	275	0.40
Grading	Graders	Diesel	Average	1.00	3.20	148	0.41
Grading	Tractors/Loaders/Backhoes	Diesel	Average	1.00	8.00	84.0	0.37
Grading	Excavators	Diesel	Average	1.00	8.00	36.0	0.38
Building Construction	Cranes	Electric	Average	1.00	3.10	367	0.29
Building Construction	Forklifts	Diesel	Average	1.00	8.00	82.0	0.20
Building Construction	Generator Sets	Electric	Average	2.00	3.80	14.0	0.74
Paving	Pavers	Diesel	Average	1.00	0.90	81.0	0.42
Paving	Rollers	Diesel	Average	2.00	0.90	36.0	0.38
Paving	Tractors/Loaders/Backhoes	Diesel	Average	1.00	7.10	84.0	0.37
Architectural Coating	Air Compressors	Diesel	Average	2.00	8.00	37.0	0.48
Architectural Coating	Aerial Lifts	Diesel	Average	1.00	8.00	46.0	0.31

Trenching	Tractors/Loaders/Backh	Diesel	Average	1.00	8.00	84.0	0.37
Trenching	Excavators	Diesel	Average	2.00	8.00	36.0	0.38

5.2.2. Mitigated

Phase Name	Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor
Demolition	Concrete/Industrial Saws	Diesel	Tier 4 Interim	1.00	1.43	33.0	0.73
Demolition	Tractors/Loaders/Backhoes	Diesel	Tier 4 Interim	1.00	5.71	84.0	0.37
Demolition	Excavators	Diesel	Tier 4 Interim	2.00	5.71	36.0	0.38
Site Preparation	Graders	Diesel	Tier 4 Interim	1.00	0.80	148	0.41
Site Preparation	Tractors/Loaders/Backhoes	Diesel	Tier 4 Interim	2.00	0.80	84.0	0.37
Site Preparation	Bore/Drill Rigs	Diesel	Average	1.00	5.00	275	0.40
Grading	Graders	Diesel	Tier 4 Interim	1.00	3.20	148	0.41
Grading	Tractors/Loaders/Backhoes	Diesel	Tier 4 Interim	1.00	8.00	84.0	0.37
Grading	Excavators	Diesel	Tier 4 Interim	1.00	8.00	36.0	0.38
Building Construction	Cranes	Electric	Tier 4 Interim	1.00	3.10	367	0.29
Building Construction	Forklifts	Diesel	Tier 4 Interim	1.00	8.00	82.0	0.20
Building Construction	Generator Sets	Electric	Average	2.00	3.80	14.0	0.74
Paving	Pavers	Diesel	Tier 4 Interim	1.00	0.90	81.0	0.42
Paving	Rollers	Diesel	Tier 4 Interim	2.00	0.90	36.0	0.38
Paving	Tractors/Loaders/Backhoes	Diesel	Tier 4 Interim	1.00	7.10	84.0	0.37
Architectural Coating	Air Compressors	Diesel	Tier 4 Interim	2.00	8.00	37.0	0.48
Architectural Coating	Aerial Lifts	Diesel	Tier 4 Interim	1.00	8.00	46.0	0.31
Trenching	Tractors/Loaders/Backhoes	Diesel	Tier 4 Interim	1.00	8.00	84.0	0.37

Trenching	Excavators	Diesel	Tier 4 Interim	2.00	8.00	36.0	0.38

5.3. Construction Vehicles

5.3.1. Unmitigated

Phase Name	Trip Type	One-Way Trips per Day	Miles per Trip	Vehicle Mix
Demolition	—	—	—	—
Demolition	Worker	10.0	11.7	LDA,LDT1,LDT2
Demolition	Vendor	2.00	8.40	HHDT,MHDT
Demolition	Hauling	42.3	20.0	HHDT
Demolition	Onsite truck	—	—	HHDT
Site Preparation	—	—	—	—
Site Preparation	Worker	10.0	11.7	LDA,LDT1,LDT2
Site Preparation	Vendor	2.00	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	2.00	8.40	HHDT,MHDT
Grading	Hauling	187	20.0	HHDT
Grading	Onsite truck	—	—	HHDT
Building Construction	—	—	—	—
Building Construction	Worker	232	11.7	LDA,LDT1,LDT2
Building Construction	Vendor	48.6	8.40	HHDT,MHDT
Building Construction	Hauling	3.85	20.0	HHDT
Building Construction	Onsite truck	—	—	HHDT
Paving	—	—	—	—

Paving	Worker	10.0	11.7	LDA,LDT1,LDT2
Paving	Vendor	—	8.40	HHDT,MHDT
Paving	Hauling	7.50	20.0	HHDT
Paving	Onsite truck	—	—	HHDT
Architectural Coating	—	—	—	—
Architectural Coating	Worker	46.5	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
Trenching	—	—	—	—
Trenching	Worker	7.50	11.7	LDA,LDT1,LDT2
Trenching	Vendor	2.00	8.40	HHDT,MHDT
Trenching	Hauling	0.00	20.0	HHDT
Trenching	Onsite truck	—	—	HHDT

5.3.2. Mitigated

Phase Name	Trip Type	One-Way Trips per Day	Miles per Trip	Vehicle Mix
Demolition	—	—	—	—
Demolition	Worker	10.0	11.7	LDA,LDT1,LDT2
Demolition	Vendor	2.00	8.40	HHDT,MHDT
Demolition	Hauling	42.3	20.0	HHDT
Demolition	Onsite truck	—	—	HHDT
Site Preparation	—	—	—	—
Site Preparation	Worker	10.0	11.7	LDA,LDT1,LDT2
Site Preparation	Vendor	2.00	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	2.00	8.40	HHDT,MHDT
Grading	Hauling	187	20.0	HHDT
Grading	Onsite truck	—	—	HHDT
Building Construction	—	—	—	—
Building Construction	Worker	232	11.7	LDA,LDT1,LDT2
Building Construction	Vendor	48.6	8.40	HHDT,MHDT
Building Construction	Hauling	3.85	20.0	HHDT
Building Construction	Onsite truck	—	—	HHDT
Paving	—	—	—	—
Paving	Worker	10.0	11.7	LDA,LDT1,LDT2
Paving	Vendor	—	8.40	HHDT,MHDT
Paving	Hauling	7.50	20.0	HHDT
Paving	Onsite truck	—	—	HHDT
Architectural Coating	—	—	—	—
Architectural Coating	Worker	46.5	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
Trenching	—	—	—	—
Trenching	Worker	7.50	11.7	LDA,LDT1,LDT2
Trenching	Vendor	2.00	8.40	HHDT,MHDT
Trenching	Hauling	0.00	20.0	HHDT
Trenching	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	774,239	258,080	0.00	0.00	—

5.6. Dust Mitigation

5.6.1. Construction Earthmoving Activities

Phase Name	Material Imported (cy)	Material Exported (cy)	Acres Graded (acres)	Material Demolished (Ton of Debris)	Acres Paved (acres)
Demolition	0.00	0.00	0.00	3,100	—
Site Preparation	—	—	0.90	0.00	—
Grading	—	17,950	2.40	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
Apartments Mid Rise	—	0%
Enclosed Parking with Elevator	0.00	100%

5.8. Construction Electricity Consumption and Emissions Factors

kWh per Year and Emission Factor (lb/MWh)

Year	kWh per Year	CO2	CH4	N2O
2024	0.00	100.0	0.03	< 0.005
2025	305	100.0	0.03	< 0.005
2026	305	100.0	0.03	< 0.005

5.9. Operational Mobile Sources

5.9.1. Unmitigated

Land Use Type	Trips/Weekday	Trips/Saturday	Trips/Sunday	Trips/Year	VMT/Weekday	VMT/Saturday	VMT/Sunday	VMT/Year
Apartments Mid Rise	878	794	661	304,865	6,070	5,485	4,565	2,106,540
Enclosed Parking with Elevator	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

5.9.2. Mitigated

Land Use Type	Trips/Weekday	Trips/Saturday	Trips/Sunday	Trips/Year	VMT/Weekday	VMT/Saturday	VMT/Sunday	VMT/Year
Apartments Mid Rise	878	794	661	304,865	6,070	5,485	4,565	2,106,540
Enclosed Parking with Elevator	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

5.10. Operational Area Sources

5.10.1. Hearths

5.10.1.1. Unmitigated

Hearth Type	Unmitigated (number)
Apartments Mid Rise	—
Wood Fireplaces	0
Gas Fireplaces	0

Propane Fireplaces	0
Electric Fireplaces	0
No Fireplaces	0
Conventional Wood Stoves	0
Catalytic Wood Stoves	0
Non-Catalytic Wood Stoves	0
Pellet Wood Stoves	0

5.10.1.2. Mitigated

Hearth Type	Unmitigated (number)
Apartments Mid Rise	—
Wood Fireplaces	0
Gas Fireplaces	0
Propane Fireplaces	0
Electric Fireplaces	0
No Fireplaces	0
Conventional Wood Stoves	0
Catalytic Wood Stoves	0
Non-Catalytic Wood Stoves	0
Pellet Wood Stoves	0

5.10.2. Architectural Coatings

Residential Interior Area Coated (sq ft)	Residential Exterior Area Coated (sq ft)	Non-Residential Interior Area Coated (sq ft)	Non-Residential Exterior Area Coated (sq ft)	Parking Area Coated (sq ft)
774238.5	258,080	0.00	0.00	—

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

Land Use	Electricity (kWh/yr)	CO2	CH4	N2O	Natural Gas (kBTU/yr)
Apartments Mid Rise	1,449,984	100.0	0.0330	0.0040	0.00
Enclosed Parking with Elevator	510,968	100.0	0.0330	0.0040	0.00

5.11.2. Mitigated

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

Land Use	Electricity (kWh/yr)	CO2	CH4	N2O	Natural Gas (kBTU/yr)
Apartments Mid Rise	1,449,984	100.0	0.0330	0.0040	0.00
Enclosed Parking with Elevator	510,968	100.0	0.0330	0.0040	0.00

5.12. Operational Water and Wastewater Consumption

5.12.1. Unmitigated

Land Use	Indoor Water (gal/year)	Outdoor Water (gal/year)

Apartments Mid Rise	8,776,469	0.00
Enclosed Parking with Elevator	0.00	0.00

5.12.2. Mitigated

Land Use	Indoor Water (gal/year)	Outdoor Water (gal/year)
Apartments Mid Rise	8,776,469	0.00
Enclosed Parking with Elevator	0.00	0.00

5.13. Operational Waste Generation

5.13.1. Unmitigated

Land Use	Waste (ton/year)	Cogeneration (kWh/year)
Apartments Mid Rise	179	—
Enclosed Parking with Elevator	0.00	—

5.13.2. Mitigated

Land Use	Waste (ton/year)	Cogeneration (kWh/year)
Apartments Mid Rise	179	—
Enclosed Parking with Elevator	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
Apartments Mid Rise	Average room A/C & Other residential A/C and heat pumps	R-410A	2,088	< 0.005	2.50	2.50	10.0

Apartments Mid Rise	Household refrigerators and/or freezers	R-134a	1,430	0.12	0.60	0.00	1.00

5.14.2. Mitigated

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

5.15. Operational Off-Road Equipment

5.15.1. Unmitigated

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

5.15.2. 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
Fire Pump	Diesel	1.00	0.00	50.0	86.0	0.73

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	9.23	annual days of extreme heat
Extreme Precipitation	4.65	annual days with precipitation above 20 mm
Sea Level Rise	0.00	meters of inundation depth
Wildfire	13.4	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	6.38
AQ-PM	18.7
AQ-DPM	77.9
Drinking Water	11.4
Lead Risk Housing	60.4
Pesticides	0.00
Toxic Releases	26.9
Traffic	55.0
Effect Indicators	—
CleanUp Sites	71.9
Groundwater	95.9
Haz Waste Facilities/Generators	88.9
Impaired Water Bodies	0.00
Solid Waste	22.1
Sensitive Population	—
Asthma	11.7
Cardio-vascular	13.3
Low Birth Weights	74.9
Socioeconomic Factor Indicators	—
Education	24.1
Housing	21.6
Linguistic	36.0
Poverty	23.9

Unemployment	25.2

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	72.1416656
Employed	91.08174002
Median HI	71.96201719
Education	—
Bachelor's or higher	83.65199538
High school enrollment	100
Preschool enrollment	82.71525728
Transportation	—
Auto Access	55.28037983
Active commuting	71.05094315
Social	—
2-parent households	19.08122674
Voting	87.46310792
Neighborhood	—
Alcohol availability	19.2865392
Park access	81.35506224
Retail density	83.10021814
Supermarket access	65.10971385
Tree canopy	87.27062749
Housing	—
Homeownership	20.18478121

Housing habitability	66.13627615
Low-inc homeowner severe housing cost burden	70.11420506
Low-inc renter severe housing cost burden	76.20941871
Uncrowded housing	77.4541255
Health Outcomes	—
Insured adults	70.78147055
Arthritis	0.0
Asthma ER Admissions	79.6
High Blood Pressure	0.0
Cancer (excluding skin)	0.0
Asthma	0.0
Coronary Heart Disease	0.0
Chronic Obstructive Pulmonary Disease	0.0
Diagnosed Diabetes	0.0
Life Expectancy at Birth	89.3
Cognitively Disabled	70.6
Physically Disabled	80.2
Heart Attack ER Admissions	85.2
Mental Health Not Good	0.0
Chronic Kidney Disease	0.0
Obesity	0.0
Pedestrian Injuries	19.6
Physical Health Not Good	0.0
Stroke	0.0
Health Risk Behaviors	—
Binge Drinking	0.0
Current Smoker	0.0

No Leisure Time for Physical Activity	0.0
Climate Change Exposures	—
Wildfire Risk	0.0
SLR Inundation Area	0.0
Children	50.1
Elderly	38.5
English Speaking	45.4
Foreign-born	57.9
Outdoor Workers	75.9
Climate Change Adaptive Capacity	—
Impervious Surface Cover	41.3
Traffic Density	46.5
Traffic Access	87.4
Other Indices	—
Hardship	11.1
Other Decision Support	—
2016 Voting	91.2

7.3. Overall Health & Equity Scores

Metric	Result for Project Census Tract
CalEnviroScreen 4.0 Score for Project Location (a)	26.0
Healthy Places Index Score for Project Location (b)	83.0
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

Health & Equity Evaluation Scorecard not completed.

7.6. Health & Equity Custom Measures

No Health & Equity Custom Measures created.

8. User Changes to Default Data

Screen	Justification
Characteristics: Utility Information	San Carlos default clean energy provider is Peninsula Clean Energy.
Land Use	Total lot acreage and number of dwelling units/parking spaces from provided project construction worksheet.
Construction: Construction Phases	Provided by project applicant in construction worksheet. Phase dates were used instead of phase lengths.
Construction: Off-Road Equipment	equipment list provied by project applicant.
Construction: Trips and VMT	Water truck trips (2/day) included as vendor trips for demo, site prep, grading, and trenching. Pavement demo = 10 truck trips/day, building construction = 3.85 concrete truck trips/day, paving = 7.5 asphalt truck trips/day.
Operations: Vehicle Data	Provided trip gen.
Operations: Hearths	No new hearths.
Operations: Energy Use	San Carlos REACH Code - no natural gas. Convert to electricity.
Operations: Water and Waste Water	Wastewater treatment = 100% aerobic, no septic tanks or lagoons.

2. Emissions Summary - HRA

2.2 Construction Emissions by Year, Unmitigated

Year	ROG	NOx	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	R	CO_2e
Daily - Summer (Max)										
2024	0.5411332	7.2776722	0.1654253	3.1120634	3.2754757	0.1528579	0.4753260	0.6258287	1.5107387	1784.896315673524
2025	180.57478	4.7352684	0.1196911	0.2423887	0.3620799	0.1103007	0.0584111	0.1687118	1.0936123	1147.8803572398053
2026	0.1598873	1.4361208	0.0482704	0.0140178	0.0622883	0.0444352	0.0035595	0.0479948	0.0760567	378.25102412707827
Daily - Winter (Max)										
2024	0.3366424	2.9265498	0.1108474	0.0070207	0.1178681	0.1019866	0.0017055	0.1036922	0.0009576	591.658192477828
2025	180.56633	4.8009329	0.1197760	0.2423887	0.3621648	0.1103856	0.0584111	0.1687967	0.0283471	1139.2732591060446
2026	0.5608632	1.5936391	0.0346536	0.2095522	0.2442058	0.0320662	0.0507142	0.0827804	0.0230714	586.8530479732184
Average Daily										
2024	0.1580818	1.5095372	0.0512013	0.2246810	0.2758823	0.0471400	0.0349391	0.0820791	0.0382829	337.5734097517945
2025	15.176035	1.4141420	0.0363070	0.1335532	0.1698603	0.0335182	0.0322991	0.0658174	0.2702893	441.50372490422166
2026	0.0536302	0.1731236	0.0041774	0.0191332	0.0233107	0.0038605	0.0046338	0.0084943	0.0352351	61.15101302131172
Annual										
2024	0.0288499	0.2754905	0.0093442	0.0410042	0.0503485	0.0086030	0.0063763	0.0149794	0.0063381	55.88913035326043
2025	2.7696264	0.2580809	0.0066260	0.0243734	0.0309995	0.0061170	0.0058946	0.0120116	0.0447494	73.09598007368204
2026	0.0097875	0.0315950	0.0007623	0.0034918	0.0042542	0.0007045	0.0008456	0.0015502	0.0058335	10.124248057614817

5.3. Construction Vehicles - HRA

5.3.1 Unmitigated

Phase Nam	Trip Type	One-Way T	Miles per T	Vehicle Mix
Demolition				
Demolitior	Worker	10	1	LDA,LDT1,LDT2
Demolitior	Vendor	2	1	HHDT,MHDT
Demolitior	Hauling	42.291666	1	HHDT
Demolitior	Onsite truc			HHDT
Site Preparation				
Site Prepar	Worker	10	1	LDA,LDT1,LDT2
Site Prepar	Vendor	2	1	HHDT,MHDT
Site Prepar	Hauling	0	1	HHDT
Site Prepar	Onsite truc			HHDT
Grading				
Grading	Worker	7.5	1	LDA,LDT1,LDT2
Grading	Vendor	2	1	HHDT,MHDT
Grading	Hauling	187	1	HHDT
Grading	Onsite truc			HHDT
Building Construction				
Building Cc	Worker	232.3764	1	LDA,LDT1,LDT2
Building Cc	Vendor	48.556838	1	HHDT,MHDT
Building Cc	Hauling	3.85	1	HHDT
Building Cc	Onsite truc			HHDT
Paving				
Paving	Worker	10	1	LDA,LDT1,LDT2
Paving	Vendor		1	HHDT,MHDT
Paving	Hauling	7.5	1	HHDT
Paving	Onsite truc			HHDT
Architectural Coating				
Architectu	Worker	46.47528	1	LDA,LDT1,LDT2
Architectu	Vendor		1	HHDT,MHDT
Architectu	Hauling	0	1	HHDT
Architectu	Onsite truc			HHDT
Trenching				
Trenching	Worker	7.5	1	LDA,LDT1,LDT2
Trenching	Vendor	2	1	HHDT,MHDT
Trenching	Hauling	0	1	HHDT
Trenching	Onsite truc			HHDT

Attachment 2: Project Construction and Operational Emissions and Health Risk Calculations

11 El Camino Real, San Carlos, CA
Construction Health Impact Summary

Maximum Impacts at MEI Location - Without Mitigation

Emissions Year	Maximum Concentrations		Cancer Risk (per million)		Hazard Index	Maximum Annual PM2.5 Concentration
	Exhaust PM10/DPM ($\mu g/m^3$)	Fugitive PM2.5 ($\mu g/m^3$)	Infant/Child	Adult	(-)	($\mu g/m^3$)
2024	0.0086	0.0071	1.52	0.02	0.00	0.02
2025	0.0061	0.0066	1.00	0.02	0.00	0.01
2026	0.0007	0.0010	0.02	0.00	0.00	0.00
Total	-	-	**2.54**	**0.04**		-
Maximum	0.0086	0.0071	**-**	**-**	**0.00**	**0.02**

11 El Camino Real, San Carlos, CA

DPM Emissions and Modeling Emission Rates - Unmitigatec

Construction Year	Activity	DPM (ton/year)	Area Source	DPM Emissions (lb/yr)	(lb/hr)	(g/s)	Modeled Area (m^2)	DPM Emission Rate ($g/s/m^2$)
2024	Construction	0.0093	CON_DPM	18.7	0.00569	7.17E-04	8,825	8.12E-08
2025	Construction	0.0066	CON_DPM	13.3	0.00403	5.08E-04	8,825	5.76E-08
2026	Construction	0.0008	CON_DPM	1.5	0.00046	5.85E-05	8,825	6.63E-09
Total		***0.0167***		***33.5***	***0.0102***	***0.0013***		

Construction Hours

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

11 El Camino Real, San Carlos, CA

PM2.5 Fugitive Dust Emissions for Modeling - Unmitigatec

Construction Year	Activity	Area Source	PM2.5 Emissions (ton/year)	(lb/yr)	(lb/hr)	(g/s)	Modeled Area (m^2)	PM2.5 Emission Rate $g/s/m^2$
2024	Construction	CON_FUG	0.0064	12.8	0.00388	4.89E-04	8,825	5.54E-08
2025	Construction	CON_FUG	0.0059	11.8	0.00359	4.52E-04	8,825	5.12E-08
2026	Construction	CON_FUG	0.0008	1.7	0.00051	6.49E-05	8,825	7.35E-09
Total			***0.0131***	***26.2***	***0.0080***	***0.0010***		

Construction Hours

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

11 El Camino Real, San Carlos, CA - Construction Impacts - Without Mitigation
Maximum DPM Cancer Risk and PM2.5 Calculations From Construction
Impacts at Off-Site MEI Location - 7.6 meter receptor height

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

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

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

Where: C_{air} = concentration in air ($\mu g/m^3$)
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

Exposure Year	Exposure Duration (years)	Age	Infant/Child - Exposure Information DPM Conc (ug/m3) Year	Annual	Age Sensitivity Factor	Infant/Child Cancer Risk (per million)	Adult - Exposure Information Modeled DPM Conc (ug/m3) Year	Annual	Age Sensitivity Factor	Adult Cancer Risk (per million)	Maximum Hazard Index	Fugitive PM2.5	Total PM2.5
0	0.25	-0.25 - 0*	2024	0.0063	10	0.09	2024	0.0063	-	-			
1	1	0 - 1	2024	0.0063	10	1.03	2024	0.0063	1	0.02	0.001	0.00	0.01
2	1	1 - 2	2025	0.0045	10	0.73	2025	0.0045	1	0.01	0.001	0.00	0.01
3	1	2 - 3	2026	0.0005	3	0.01	2026	0.0005	1	0.00	0.000	0.00	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						**1.87**				**0.03**			

* Third trimester of pregnancy

11 El Camino Real, San Carlos, 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

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

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

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

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

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**	**Maximum**		
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*	2024	0.0075	10	0.10	2024	0.0075	-	-			
1	1	0 - 1	2024	0.0075	10	1.24	2024	0.0075	1	0.02	0.002	0.006	0.01
2	1	1 - 2	2025	0.0053	10	0.88	2025	0.0053	1	0.02	0.001	0.006	0.01
3	1	2 - 3	2026	0.0006	3	0.02	2026	0.0006	1	0.00	0.000	0.001	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						**2.23**				**0.04**			

* Third trimester of pregnancy

11 El Camino Real, San Carlos, 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

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

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

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

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

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**		**Maximum**	
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*	2024	0.0086	10	0.12	2024	0.0086	-	-			
1	1	0 - 1	2024	0.0086	10	1.41	2024	0.0086	1	0.02	0.00	0.007	0.02
2	1	1 - 2	2025	0.0061	10	1.00	2025	0.0061	1	0.02	0.00	0.007	0.01
3	1	2 - 3	2026	0.0007	3	0.02	2026	0.0007	1	0.00	0.00	0.001	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						**2.54**				**0.04**			

* Third trimester of pregnancy

Attachment 3: Health Risk Modeling Information and Calculations

11 El Camino Real, San Carlos, CA

Fire Pump Impacts

Off-site Sensitive Receptors

MEI Location = 1.5 meter receptor height

DPM Emission Rates			
	DPM Emissions per Fire Pump		
	Max Daily	Annual	
Source Type	(lb/day)	(lb/year)	
86-horsepower fire pump	0.025	9.03	
DPM Emissions	4.52E-03	tons/year	

Modeling Information	
Model	AERMOD
Source	Diesel Generator Engine
Source Type	Point
Meteorological Data	2011 - 2015 San Carlos Airport Meteorological Data
Point Source Stack Parameters	
Fire Pump Engine Size (hp)	86
Stack Height (ft)	10.00
Stack Diameter (ft)**	0.60
Exhaust Gas Flowrate (CFM)*	2527.73
Stack Exit Velocity (ft/sec)**	149.00
Exhaust Temperature (˚F)**	872.00
Emissions Rate (lb/hr)	0.001031

* AERMOD default

**BAAQMD default generator parameters

11 El Camino Real, San Carlos, CA - Cancer Risks from Project Operation
Project Fire Pump
Impacts at Off-Site Receptors- 1.5m MEI Receptor Heights
Impact at Project MEI (27-year Exposure)

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

	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				
Exposure Year	**Exposure Duration (years)**	**Age**	**DPM Conc (ug/m3) Year**	**Annual**	**Age Sensitivity Factor**	**Cancer Risk (per million)**		**Hazard Index**	**Fugitive PM2.5**	**Total PM2.5**
0	0.25	-0.25 - 0*	2024	0.0000	10	0.000				
1	1	0 - 1	2024	0.0000	10	0.000				
2	1	1 - 2	2025	0.0000	10	0.000				
3	1	2 - 3	2026	0.0000	3	0.000				
4	1	3 - 4	2027	0.0006	3	0.014		0.00011	0.0000	0.0006
5	1	4 - 5	2028	0.0006	3	0.014				
6	1	5 - 6	2029	0.0006	3	0.014				
7	1	6 - 7	2030	0.0006	3	0.014				
8	1	7 - 8	2031	0.0006	3	0.014				
9	1	8 - 9	2032	0.0006	3	0.014				
10	1	9 - 10	2033	0.0006	3	0.014				
11	1	10 - 11	2034	0.0006	3	0.014				
12	1	11 - 12	2035	0.0006	3	0.014				
13	1	12 - 13	2036	0.0006	3	0.014				
14	1	13 - 14	2037	0.0006	3	0.014				
15	1	14 - 15	2038	0.0006	3	0.014				
16	1	15 - 16	2039	0.0006	3	0.014				
17	1	16-17	2040	0.0006	1	0.002				
18	1	17-18	2041	0.0006	1	0.002				
19	1	18-19	2042	0.0006	1	0.002				
20	1	19-20	2043	0.0006	1	0.002				
21	1	20-21	2044	0.0006	1	0.002				
22	1	21-22	2045	0.0006	1	0.002				
23	1	22-23	2046	0.0006	1	0.002				
24	1	23-24	2047	0.0006	1	0.002				
25	1	24-25	2048	0.0006	1	0.002				
26	1	25-26	2049	0.0006	1	0.002				
27	1	26-27	2050	0.0006	1	0.002				
28	1	27-28	2051	0.0006	1	0.002				
29	1	28-29	2052	0.0006	1	0.002				
30	1	29-30	2053	0.0006	1	0.002				
Total Increased Cancer Risk						**0.21**	**Max**	**0.00011**	**0.0000**	**0.0006**

* Third trimester of pregnancy

11 El Camino Real, San Carlos, CA - El Camino Real Traffic - TACs & PM2.5
AERMOD Risk Modeling Parameters and Maximum Concentrations
at Construction Residential MEI Receptor (1.5 meter receptor height)

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

Meteorological Conditions	
BAAQMD San Carlos Airport Met Data	2011 - 2015
Land Use Classification	Urban
Wind Speed	Variable
Wind Direction	Variable

Construction Residential MEI Cancer Risk Maximum Concentrations

Meteorological Data Years	Concentration (µg/m3)*		
	DPM	Exhaust TOG	Evaporative TOG
2013-2017	0.0046	0.1878	0.2618

Construction Residential MEI PM2.5 Maximum Concentrations

Meteorological Data Years	PM2.5 Concentration (µg/m3)*		
	Total PM2.5	Fugitive PM2.5	Vehicle PM2.5
2013-2017	0.2454	0.2288	0.0166

11 El Camino Real, San Carlos, CA - El Camino Real Traffic Cancer Risk
Impacts at Construction Residential 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	0.0046	0.1878	0.2618	0.063	0.015	0.0012	0.08
1	1	0 - 1	2024	10	0.0046	0.1878	0.2618	0.759	0.176	0.0145	0.95
2	1	1 - 2	2025	10	0.0046	0.1878	0.2618	0.759	0.176	0.0145	0.95
3	1	2 - 3	2026	3	0.0046	0.1878	0.2618	0.119	0.028	0.0023	0.15
4	1	3 - 4	2027	3	0.0046	0.1878	0.2618	0.119	0.028	0.0023	0.15
5	1	4 - 5	2028	3	0.0046	0.1878	0.2618	0.119	0.028	0.0023	0.15
6	1	5 - 6	2029	3	0.0046	0.1878	0.2618	0.119	0.028	0.0023	0.15
7	1	6 - 7	2030	3	0.0046	0.1878	0.2618	0.119	0.028	0.0023	0.15
8	1	7 - 8	2031	3	0.0046	0.1878	0.2618	0.119	0.028	0.0023	0.15
9	1	8 - 9	2032	3	0.0046	0.1878	0.2618	0.119	0.028	0.0023	0.15
10	1	9 - 10	2033	3	0.0046	0.1878	0.2618	0.119	0.028	0.0023	0.15
11	1	10 - 11	2034	3	0.0046	0.1878	0.2618	0.119	0.028	0.0023	0.15
12	1	11 - 12	2035	3	0.0046	0.1878	0.2618	0.119	0.028	0.0023	0.15
13	1	12 - 13	2036	3	0.0046	0.1878	0.2618	0.119	0.028	0.0023	0.15
14	1	13 - 14	2037	3	0.0046	0.1878	0.2618	0.119	0.028	0.0023	0.15
15	1	14 - 15	2038	3	0.0046	0.1878	0.2618	0.119	0.028	0.0023	0.15
16	1	15 - 16	2039	3	0.0046	0.1878	0.2618	0.119	0.028	0.0023	0.15
17	1	16-17	2040	1	0.0046	0.1878	0.2618	0.013	0.003	0.0003	0.02
18	1	17-18	2041	1	0.0046	0.1878	0.2618	0.013	0.003	0.0003	0.02
19	1	18-19	2042	1	0.0046	0.1878	0.2618	0.013	0.003	0.0003	0.02
20	1	19-20	2043	1	0.0046	0.1878	0.2618	0.013	0.003	0.0003	0.02
21	1	20-21	2044	1	0.0046	0.1878	0.2618	0.013	0.003	0.0003	0.02
22	1	21-22	2045	1	0.0046	0.1878	0.2618	0.013	0.003	0.0003	0.02
23	1	22-23	2046	1	0.0046	0.1878	0.2618	0.013	0.003	0.0003	0.02
24	1	23-24	2047	1	0.0046	0.1878	0.2618	0.013	0.003	0.0003	0.02
25	1	24-25	2048	1	0.0046	0.1878	0.2618	0.013	0.003	0.0003	0.02
26	1	25-26	2049	1	0.0046	0.1878	0.2618	0.013	0.003	0.0003	0.02
27	1	26-27	2050	1	0.0046	0.1878	0.2618	0.013	0.003	0.0003	0.02
28	1	27-28	2051	1	0.0046	0.1878	0.2618	0.013	0.003	0.0003	0.02
29	1	28-29	2052	1	0.0046	0.1878	0.2618	0.013	0.003	0.0003	0.02
30	1	29-30	2053	1	0.0046	0.1878	0.2618	0.013	0.003	0.0003	0.02
Total Increased Cancer Risk								3.44	0.798	0.066	**4.30**

* Third trimester of pregnancy

Hazard Index	Maximum Fugitive PM2.5	Total PM2.5
0.00092	0.23	0.25

11 El Camino Real, San Carlos, CA - El Camino Real Traffic - TACs & PM2.5
AERMOD Risk Modeling Parameters and Maximum Concentrations
at Onsite Residential MEI Receptor (1.5 meter receptor height)

Emission Year	2027
Receptor Information	Construction Residential MEI receptor
Number of Receptors	24
Receptor Height	1.5 meters
Receptor Distances	At Construction Residential MEI location

Meteorological Conditions	
BAAQMD San Carlos Airport Met Data	2011 - 2015
Land Use Classification	Urban
Wind Speed	Variable
Wind Direction	Variable

Construction Residential MEI Cancer Risk Maximum Concentrations

Meteorological	Concentration (μg/m3)*		
Data Years	DPM	Exhaust TOG	Evaporative TOG
2013-2017	0.0043	0.3359	0.5439

Construction Residential MEI PM2.5 Maximum Concentrations

Meteorological	PM2.5 Concentration (μg/m3)*		
Data Years	Total PM2.5	Fugitive PM2.5	Vehicle PM2.5
2013-2017	0.5224	0.4946	0.0278

11 El Camino Real, San Carlos, CA - El Camino Real Traffic Cancer Risk
Impacts at Onsite Residential 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*	2027	10	0.0043	0.3359	0.5439	0.058	0.026	0.0025	0.09
1	1	0 - 1	2027	10	0.0043	0.3359	0.5439	0.706	0.315	0.0300	1.05
2	1	1 - 2	2028	10	0.0043	0.3359	0.5439	0.706	0.315	0.0300	1.05
3	1	2 - 3	2029	3	0.0043	0.3359	0.5439	0.111	0.050	0.0047	0.17
4	1	3 - 4	2030	3	0.0043	0.3359	0.5439	0.111	0.050	0.0047	0.17
5	1	4 - 5	2031	3	0.0043	0.3359	0.5439	0.111	0.050	0.0047	0.17
6	1	5 - 6	2032	3	0.0043	0.3359	0.5439	0.111	0.050	0.0047	0.17
7	1	6 - 7	2033	3	0.0043	0.3359	0.5439	0.111	0.050	0.0047	0.17
8	1	7 - 8	2034	3	0.0043	0.3359	0.5439	0.111	0.050	0.0047	0.17
9	1	8 - 9	2035	3	0.0043	0.3359	0.5439	0.111	0.050	0.0047	0.17
10	1	9 - 10	2036	3	0.0043	0.3359	0.5439	0.111	0.050	0.0047	0.17
11	1	10 - 11	2037	3	0.0043	0.3359	0.5439	0.111	0.050	0.0047	0.17
12	1	11 - 12	2038	3	0.0043	0.3359	0.5439	0.111	0.050	0.0047	0.17
13	1	12 - 13	2039	3	0.0043	0.3359	0.5439	0.111	0.050	0.0047	0.17
14	1	13 - 14	2040	3	0.0043	0.3359	0.5439	0.111	0.050	0.0047	0.17
15	1	14 - 15	2041	3	0.0043	0.3359	0.5439	0.111	0.050	0.0047	0.17
16	1	15 - 16	2042	3	0.0043	0.3359	0.5439	0.111	0.050	0.0047	0.17
17	1	16-17	2043	1	0.0043	0.3359	0.5439	0.012	0.006	0.0005	0.02
18	1	17-18	2044	1	0.0043	0.3359	0.5439	0.012	0.006	0.0005	0.02
19	1	18-19	2045	1	0.0043	0.3359	0.5439	0.012	0.006	0.0005	0.02
20	1	19-20	2046	1	0.0043	0.3359	0.5439	0.012	0.006	0.0005	0.02
21	1	20-21	2047	1	0.0043	0.3359	0.5439	0.012	0.006	0.0005	0.02
22	1	21-22	2048	1	0.0043	0.3359	0.5439	0.012	0.006	0.0005	0.02
23	1	22-23	2049	1	0.0043	0.3359	0.5439	0.012	0.006	0.0005	0.02
24	1	23-24	2050	1	0.0043	0.3359	0.5439	0.012	0.006	0.0005	0.02
25	1	24-25	2051	1	0.0043	0.3359	0.5439	0.012	0.006	0.0005	0.02
26	1	25-26	2052	1	0.0043	0.3359	0.5439	0.012	0.006	0.0005	0.02
27	1	26-27	2053	1	0.0043	0.3359	0.5439	0.012	0.006	0.0005	0.02
28	1	27-28	2054	1	0.0043	0.3359	0.5439	0.012	0.006	0.0005	0.02
29	1	28-29	2055	1	0.0043	0.3359	0.5439	0.012	0.006	0.0005	0.02
30	1	29-30	2056	1	0.0043	0.3359	0.5439	0.012	0.006	0.0005	0.02
Total Increased Cancer Risk								3.20	1.427	0.136	**4.76**

* Third trimester of pregnancy

Hazard Index	**Maximum Fugitive PM2.5**	**Total PM2.5**
0.00086	0.49	0.52

11 El Camino Real, San Carlos, CA - El Camino Real Traffic - TACs & PM2.5
AERMOD Risk Modeling Parameters and Maximum Concentrations
at Onsite Residential MEI Receptor (4.5 meter receptor height)

Emission Year	2027
Receptor Information	Construction Residential MEI receptor
Number of Receptors	115
Receptor Height	4.5 meters
Receptor Distances	At Construction Residential MEI location
Meteorological Conditions	
BAAQMD San Carlos Airport Met Data	2011 - 2015
Land Use Classification	Urban
Wind Speed	Variable
Wind Direction	Variable

Construction School MEI Cancer Risk Maximum Concentrations

Meteorological	Concentration (µg/m3)*		
Data Years	DPM	Exhaust TOG	Evaporative TOG
2013-2017	0.0033	0.2095	0.3390

Construction School MEI PM2.5 Maximum Concentrations

Meteorological	PM2.5 Concentration (µg/m3)*		
Data Years	Total PM2.5	Fugitive PM2.5	Vehicle PM2.5
2013-2017	0.3258	0.3085	0.0173

11 El Camino Real, San Carlos, CA - El Camino Real Traffic Cancer Risk
Impacts at Onsite Residential MEI - 4.5 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 ($\mu g/m^3$)
SAF = Student Adjustment Factor (unitless)
= (24 hrs/9 hrs) x (7 days/5 days) = 3.73
8-Hr BR = Eight-hour breathing rate (L/kg body weight-per 8 hrs)
A = Inhalation absorption factor
EF = Exposure frequency (days/year)
10^{-6} = Conversion factor

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
8-Hr BR* =	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 8-hr breathing rates for moderate intensity activities

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	Hazard Index	Maximum Fugitive PM2.5	Total PM2.5
0	0.25	-0.25 - 0*	2022	10	0.0033	0.2095	0.3390	0.045	0.016	0.0016	0.06	0.0007	0.31	0.33
1	1	0 - 1	2027	10	0.0033	0.2095	0.3390	0.542	0.196	0.0187	0.76			
2	1	1 - 2	2028	10	0.0033	0.2095	0.3390	0.542	0.196	0.0187	0.76			
3	1	2 - 3	2029	3	0.0033	0.2095	0.3390	0.085	0.031	0.0029	0.12			
4	1	3 - 4	2030	3	0.0033	0.2095	0.3390	0.085	0.031	0.0029	0.12			
5	1	4 - 5	2031	3	0.0033	0.2095	0.3390	0.085	0.031	0.0029	0.12			
6	1	5 - 6	2032	3	0.0033	0.2095	0.3390	0.085	0.031	0.0029	0.12			
7	1	6 - 7	2033	3	0.0033	0.2095	0.3390	0.085	0.031	0.0029	0.12			
8	1	7 - 8	2034	3	0.0033	0.2095	0.3390	0.085	0.031	0.0029	0.12			
9	1	8 - 9	2035	3	0.0033	0.2095	0.3390	0.085	0.031	0.0029	0.12			
10	1	9 - 10	2036	3	0.0033	0.2095	0.3390	0.085	0.031	0.0029	0.12			
11	1	10 - 11	2037	3	0.0033	0.2095	0.3390	0.085	0.031	0.0029	0.12			
12	1	11 - 12	2038	3	0.0033	0.2095	0.3390	0.085	0.031	0.0029	0.12			
13	1	12 - 13	2039	3	0.0033	0.2095	0.3390	0.085	0.031	0.0029	0.12			
14	1	13 - 14	2040	3	0.0033	0.2095	0.3390	0.085	0.031	0.0029	0.12			
15	1	14 - 15	2041	3	0.0033	0.2095	0.3390	0.085	0.031	0.0029	0.12			
16	1	15 - 16	2042	3	0.0033	0.2095	0.3390	0.085	0.031	0.0029	0.12			
17	1	16-17	2043	1	0.0033	0.2095	0.3390	0.009	0.003	0.0003	0.01			
18	1	17-18	2044	1	0.0033	0.2095	0.3390	0.009	0.003	0.0003	0.01			
19	1	18-19	2045	1	0.0033	0.2095	0.3390	0.009	0.003	0.0003	0.01			
20	1	19-20	2046	1	0.0033	0.2095	0.3390	0.009	0.003	0.0003	0.01			
21	1	20-21	2047	1	0.0033	0.2095	0.3390	0.009	0.003	0.0003	0.01			
22	1	21-22	2048	1	0.0033	0.2095	0.3390	0.009	0.003	0.0003	0.01			
23	1	22-23	2049	1	0.0033	0.2095	0.3390	0.009	0.003	0.0003	0.01			
24	1	23-24	2050	1	0.0033	0.2095	0.3390	0.009	0.003	0.0003	0.01			
25	1	24-25	2051	1	0.0033	0.2095	0.3390	0.009	0.003	0.0003	0.01			
26	1	25-26	2052	1	0.0033	0.2095	0.3390	0.009	0.003	0.0003	0.01			
27	1	26-27	2053	1	0.0033	0.2095	0.3390	0.009	0.003	0.0003	0.01			
28	1	27-28	2054	1	0.0033	0.2095	0.3390	0.009	0.003	0.0003	0.01			
29	1	28-29	2055	1	0.0033	0.2095	0.3390	0.009	0.003	0.0003	0.01			
30	1	29-30	2056	1	0.0033	0.2095	0.3390	0.009	0.003	0.0003	0.01			
Total Increased Cancer Risk								2.456	0.890	0.085	**3.43**			

* Third trimester of pregnancy

File Name: San Mateo (SF) - 2024 - Annual.EF
EMFAC2021/CT-EMFAC2017
Run Date: 3/22/2023 13:22
Area: San Mateo (SF)
Analysis Year: 2024
Season: Annual

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Vehicle Category	VMT Fraction Across Category	Diesel VMT Fra Within Categor	Gas VMT Fraction Within Category
Truck 1	0.041	0.491	0.509
Truck 2	0.029	0.87	0.113
Non-Truck	0.93	0.017	0.957

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Road Type:		Freeway	Major/Collecto	Local Urban
Silt Loading Factor:	CARB	0.015 g/m2	0.032 g/m2	0.32 g/m2
Precipitation Correctior	CARB	P = 64 days	N = 365 days	

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

Pollutant Name	<= 5 mph	10 mph	15 mph	20 mph	25 mph	30 mph	35 mph	40 mph	45 mph	50 mph	55 mph	60 mph	65 mph	70 mph	75 mph
PM2.5	0.010240	0.006952	0.004788	0.003442	0.002639	0.002132	0.001808	0.001617	0.001533	0.001542	0.001639	0.001809	0.002053	0.009038	0.009038
PM10	0.011026	0.007471	0.005141	0.003693	0.002829	0.002284	0.001935	0.001730	0.001639	0.001647	0.001748	0.001929	0.002189	0.009506	0.009506
NOx	0.318689	0.254433	0.193898	0.162638	0.140354	0.123708	0.111098	0.102316	0.097238	0.095791	0.097956	0.103576	0.112611	0.495535	0.495535
CO	1.396960	1.240589	1.105479	0.995521	0.905166	0.828131	0.761654	0.704353	0.655238	0.613632	0.579156	0.551815	0.532011	1.535022	1.535250
HC	0.118868	0.077242	0.051824	0.036662	0.027633	0.021911	0.018198	0.015836	0.014457	0.013870	0.014009	0.014893	0.016657	0.081202	0.081220
TOG	0.132790	0.086726	0.058131	0.041091	0.031046	0.024670	0.020504	0.017831	0.016251	0.015556	0.015673	0.016617	0.018527	0.090778	0.090804
ROG	0.098349	0.064552	0.043269	0.030590	0.023177	0.018465	0.015367	0.013368	0.012176	0.011643	0.011716	0.012402	0.013800	0.069627	0.069649
1,3-Butadiene	0.001218	0.000791	0.000533	0.000379	0.000287	0.000228	0.000191	0.000169	0.000157	0.000153	0.000157	0.000169	0.000192	0.000192	0.000192
Acetaldehyde	0.002600	0.001823	0.001050	0.000602	0.000432	0.000342	0.000285	0.000248	0.000227	0.000217	0.000219	0.000232	0.000256	0.000260	0.000265
Acrolein	0.000269	0.000174	0.000118	0.000085	0.000064	0.000051	0.000043	0.000038	0.000035	0.000034	0.000035	0.000038	0.000043	0.000043	0.000043
Benzene	0.005512	0.003602	0.002398	0.001680	0.001266	0.001006	0.000844	0.000744	0.000690	0.000671	0.000688	0.000742	0.000838	0.000840	0.000841
Diesel PM	0.001263	0.001085	0.000864	0.000698	0.000599	0.000545	0.000520	0.000522	0.000549	0.000603	0.000685	0.000784	0.000892	0.000897	0.000897
Ethylbenzene	0.002298	0.001492	0.001007	0.000717	0.000542	0.000431	0.000362	0.000319	0.000296	0.000289	0.000296	0.000320	0.000362	0.000362	0.000362
Formaldehyde	0.007048	0.004840	0.002911	0.001785	0.001304	0.001034	0.000863	0.000755	0.000694	0.000669	0.000678	0.000723	0.000805	0.000814	0.000824
Naphthalene	0.000168	0.000112	0.000074	0.000052	0.000039	0.000031	0.000027	0.000023	0.000022	0.000021	0.000021	0.000023	0.000026	0.000024	0.000024
POM	0.000204	0.000135	0.000087	0.000059	0.000044	0.000035	0.000029	0.000025	0.000023	0.000023	0.000023	0.000025	0.000028	0.000028	0.000028
DEOG	0.021884	0.126332	0.068659	0.034862	0.025483	0.020656	0.016979	0.014337	0.012648	0.011849	0.011890	0.012250	0.012352	0.012372	0.012396
CO2	823.156398	674.096440	551.904896	462.691107	397.750089	354.180412	327.660011	315.042797	313.331695	319.884702	331.396119	344.836328	357.544070	401.317497	401.317497
N2O	0.024670	0.020952	0.016810	0.014679	0.013123	0.011842	0.011035	0.010434	0.010066	0.009997	0.010205	0.010583	0.011184	0.011184	0.011184
CH4	0.018304	0.012434	0.008776	0.006485	0.005033	0.004085	0.003461	0.003064	0.002834	0.002743	0.002779	0.002947	0.003270	0.012859	0.012860
BC	0.002190	0.001427	0.000976	0.000702	0.000534	0.000429	0.000365	0.000328	0.000311	0.000310	0.000324	0.000352	0.000397	0.000397	0.000397

Fleet Average Fuel Consumption (gallons/veh-mile)

Fuel Type	<= 5 mph	10 mph	15 mph	20 mph	25 mph	30 mph	35 mph	40 mph	45 mph	50 mph	55 mph	60 mph	65 mph	70 mph	75 mph
Gasoline	0.073774	0.059871	0.049022	0.04076	0.034824	0.030919	0.028654	0.027719	0.027802	0.028601	0.029773	0.030939	0.031816	0.031816	0.031816
Diesel	0.010272	0.008597	0.006561	0.005623	0.004926	0.004367	0.004014	0.003741	0.003575	0.003575	0.003683	0.003859	0.004144	0.004144	0.004144

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

Pollutant Name	Emission Factor
HC	0.931519
TOG	0.995914
ROG	0.995914
1,3-Butadiene	0
Benzene	0.011772
Ethylbenzene	0.019306
Naphthalene	0.001648
CH4	0.177336
HFC	0.018155

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

Pollutant Name	Emission Factor
PM2.5	0.002073
PM10	0.008292

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

Pollutant Name	<= 5 mph	10 mph	15 mph	20 mph	25 mph	30 mph	35 mph	40 mph	45 mph	50 mph	55 mph	60 mph	65 mph	70 mph	75 mph
PM2.5	0.004541031	0.005068304	0.005589586	0.006098561	0.006290135	0.006309237	0.006287894	0.005802148	0.004807201	0.00382517	0.003206838	0.00291481	0.002622783	0.002622783	0.002622783
PM10	0.012974374	0.014480868	0.015970246	0.017424459	0.017971814	0.018026391	0.017965411	0.016577567	0.013734861	0.010929057	0.009162393	0.00832803	0.007493667	0.007493667	0.007493667

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

Road Type:	Freeway Emission Factor	Major/Collector Emission Factc	Local Urban
Pollutant Name			
PM2.5	0.008298	0.016535	0.134398
PM10	0.055317	0.110231	0.895989

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11 El Camino Real, San Carlos, CA - Off-Site Residential
Cumulative Operation - El Camino Real
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_ECR	El Camino Real Northbound	NB	2	735.8	0.46	13.3	43.7	3.4	35	15,253
DPM_SB_ECR	El Camino Real Southbound	SB	3	735.3	0.46	17.0	55.7	3.4	35	15,253
									Total	30,505

Emission Factors

Speed Category	1	2	3	4
Travel Speed (mph)	35			
Emissions per Vehicle (g/VMT)	0.00052			

2024 Hourly Traffic Volumes and DPM Emissions - DPM_NB_ECR

Hour	% Per Hour	VPH	g/s	Hour	% Per Hour	VPH	g/s	Hour	% Per Hour	VPH	g/s
1	3.80%	580	3.83E-05	9	6.65%	1014	6.70E-05	17	6.48%	989	6.53E-05
2	3.14%	479	3.17E-05	10	8.30%	1266	8.37E-05	18	3.84%	585	3.87E-05
3	2.48%	378	2.50E-05	11	6.32%	963	6.37E-05	19	2.35%	358	2.37E-05
4	0.99%	151	1.00E-05	12	7.64%	1165	7.70E-05	20	1.19%	182	1.20E-05
5	0.99%	151	1.00E-05	13	6.81%	1039	6.87E-05	21	2.81%	429	2.83E-05
6	2.15%	328	2.17E-05	14	6.65%	1014	6.70E-05	22	4.79%	731	4.83E-05
7	4.83%	737	4.87E-05	15	5.99%	913	6.03E-05	23	3.47%	529	3.50E-05
8	3.34%	510	3.37E-05	16	4.33%	661	4.37E-05	24	0.66%	101	6.66E-06
								Total		15,253	

2024 Hourly Traffic Volumes Per Direction and DPM Emissions - DPM_SB_ECR

Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile
1	3.80%	580	3.83E-05	9	6.65%	1014	6.69E-05	17	6.48%	989	6.53E-05
2	3.14%	479	3.16E-05	10	8.30%	1266	8.36E-05	18	3.84%	585	3.86E-05
3	2.48%	378	2.50E-05	11	6.32%	963	6.36E-05	19	2.35%	358	2.37E-05
4	0.99%	151	9.99E-06	12	7.64%	1165	7.69E-05	20	1.19%	182	1.20E-05
5	0.99%	151	9.99E-06	13	6.81%	1039	6.86E-05	21	2.81%	429	2.83E-05
6	2.15%	328	2.16E-05	14	6.65%	1014	6.69E-05	22	4.79%	731	4.83E-05
7	4.83%	737	4.86E-05	15	5.99%	913	6.03E-05	23	3.47%	529	3.50E-05
8	3.34%	510	3.37E-05	16	4.33%	661	4.36E-05	24	0.66%	101	6.66E-06
								Total		15,253	

11 El Camino Real, San Carlos, CA - Off-Site Residential
Cumulative Operation - El Camino Real
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
PM2.5_NB_ECR	El Camino Real Northbound	NB	2	735.8	0.46	13.3	44	1.3	35	15,253
PM2.5_SB_ECR	El Camino Real Southbound	SB	3	735.3	0.46	17.0	56	1.3	35	15,253
									Total	30,505

Emission Factors - PM2.5

Speed Category	1	2	3	4
Travel Speed (mph)	35			
Emissions per Vehicle (g/VMT)	0.001808			

2024 Hourly Traffic Volumes and PM2.5 Emissions - PM2.5_NB_ECR

Hour	% Per Hour	VPH	g/s	Hour	% Per Hour	VPH	g/s	Hour	% Per Hour	VPH	g/s
1	1.12%	170	3.91E-05	9	7.12%	1086	2.49E-04	17	7.43%	1133	2.60E-04
2	0.42%	63	1.46E-05	10	4.38%	667	1.53E-04	18	8.23%	1255	2.88E-04
3	0.38%	58	1.32E-05	11	4.65%	710	1.63E-04	19	5.73%	874	2.01E-04
4	0.18%	27	6.18E-06	12	5.90%	899	2.06E-04	20	4.30%	656	1.51E-04
5	0.46%	70	1.62E-05	13	6.17%	941	2.16E-04	21	3.25%	496	1.14E-04
6	0.85%	129	2.97E-05	14	6.05%	922	2.12E-04	22	3.31%	505	1.16E-04
7	3.73%	569	1.31E-04	15	7.05%	1075	2.47E-04	23	2.48%	379	8.69E-05
8	7.76%	1184	2.72E-04	16	7.18%	1095	2.51E-04	24	1.88%	286	6.57E-05
								Total		15,253	

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

Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile
1	1.12%	170	3.91E-05	9	7.12%	1086	2.49E-04	17	7.43%	1133	2.60E-04
2	0.42%	63	1.45E-05	10	4.38%	667	1.53E-04	18	8.23%	1255	2.88E-04
3	0.38%	58	1.32E-05	11	4.65%	710	1.63E-04	19	5.73%	874	2.01E-04
4	0.18%	27	6.17E-06	12	5.90%	899	2.06E-04	20	4.30%	656	1.50E-04
5	0.46%	70	1.62E-05	13	6.17%	941	2.16E-04	21	3.25%	496	1.14E-04
6	0.85%	129	2.97E-05	14	6.05%	922	2.12E-04	22	3.31%	505	1.16E-04
7	3.73%	569	1.31E-04	15	7.05%	1075	2.47E-04	23	2.48%	379	8.68E-05
8	7.76%	1184	2.72E-04	16	7.18%	1095	2.51E-04	24	1.88%	286	6.57E-05
								Total		15,253	

11 El Camino Real, San Carlos, CA - Off-Site Residential
Cumulative Operation - El Camino Real
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_ECR	El Camino Real Northbound	NB	2	735.8	0.46	13.3	44	1.3	35	15,253
TEXH_SB_ECR	El Camino Real Southbound	SB	3	735.3	0.46	17.0	56	1.3	35	15,253
									Total	30,505

Emission Factors - TOG Exhaust

Speed Category	1	2	3	4
Travel Speed (mph)	35			
Emissions per Vehicle (g/VMT)	0.02050			

2024 Hourly Traffic Volumes and TOG Exhaust Emissions - TEXH_NB_ECR

Hour	% Per Hour	VPH	g/s	Hour	% Per Hour	VPH	g/s	Hour	% Per Hour	VPH	g/s
1	1.12%	170	4.44E-04	9	7.12%	1086	2.83E-03	17	7.43%	1133	2.95E-03
2	0.42%	63	1.65E-04	10	4.38%	667	1.74E-03	18	8.23%	1255	3.27E-03
3	0.38%	58	1.50E-04	11	4.65%	710	1.85E-03	19	5.73%	874	2.28E-03
4	0.18%	27	7.00E-05	12	5.90%	899	2.34E-03	20	4.30%	656	1.71E-03
5	0.46%	70	1.83E-04	13	6.17%	941	2.45E-03	21	3.25%	496	1.29E-03
6	0.85%	129	3.37E-04	14	6.05%	922	2.40E-03	22	3.31%	505	1.32E-03
7	3.73%	569	1.48E-03	15	7.05%	1075	2.80E-03	23	2.48%	379	9.86E-04
8	7.76%	1184	3.08E-03	16	7.18%	1095	2.85E-03	24	1.88%	286	7.46E-04
								Total		15,253	

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

Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile
1	1.12%	170	4.43E-04	9	7.12%	1086	2.82E-03	17	7.43%	1133	2.95E-03
2	0.42%	63	1.65E-04	10	4.38%	667	1.74E-03	18	8.23%	1255	3.27E-03
3	0.38%	58	1.50E-04	11	4.65%	710	1.85E-03	19	5.73%	874	2.27E-03
4	0.18%	27	7.00E-05	12	5.90%	899	2.34E-03	20	4.30%	656	1.71E-03
5	0.46%	70	1.83E-04	13	6.17%	941	2.45E-03	21	3.25%	496	1.29E-03
6	0.85%	129	3.37E-04	14	6.05%	922	2.40E-03	22	3.31%	505	1.31E-03
7	3.73%	569	1.48E-03	15	7.05%	1075	2.80E-03	23	2.48%	379	9.85E-04
8	7.76%	1184	3.08E-03	16	7.18%	1095	2.85E-03	24	1.88%	286	7.45E-04
								Total		15,253	

11 El Camino Real, San Carlos, CA - Off-Site Residential
Cumulative Operation - El Camino Real
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_ECR	El Camino Real Northbound	NB	2	735.8	0.46	13.3	44	1.3	35	15,253
TEVAP_SB_ECR	El Camino Real Southbound	SB	3	735.3	0.46	17.0	56	1.3	35	15,253
									Total	30,505

Emission Factors - PM2.5 - Evaporative TOG

Speed Category	1	2	3	4
Travel Speed (mph)	35			
Emissions per Vehicle per Hour (g/hour)	0.99591			
Emissions per Vehicle per Mile (g/VMT)	0.02845			

2024 Hourly Traffic Volumes and TOG Evaporative Emissions - TEVAP_NB_ECR

Hour	% Per Hour	VPH	g/s	Hour	% Per Hour	VPH	g/s	Hour	% Per Hour	VPH	g/s
1	1.12%	170	6.16E-04	9	7.12%	1086	3.92E-03	17	7.43%	1133	4.09E-03
2	0.42%	63	2.29E-04	10	4.38%	667	2.41E-03	18	8.23%	1255	4.54E-03
3	0.38%	58	2.08E-04	11	4.65%	710	2.56E-03	19	5.73%	874	3.16E-03
4	0.18%	27	9.72E-05	12	5.90%	899	3.25E-03	20	4.30%	656	2.37E-03
5	0.46%	70	2.55E-04	13	6.17%	941	3.40E-03	21	3.25%	496	1.79E-03
6	0.85%	129	4.68E-04	14	6.05%	922	3.33E-03	22	3.31%	505	1.83E-03
7	3.73%	569	2.06E-03	15	7.05%	1075	3.89E-03	23	2.48%	379	1.37E-03
8	7.76%	1184	4.28E-03	16	7.18%	1095	3.96E-03	24	1.88%	286	1.03E-03
								Total		15,253	

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

Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile
1	1.12%	170	6.15E-04	9	7.12%	1086	3.92E-03	17	7.43%	1133	4.09E-03
2	0.42%	63	2.29E-04	10	4.38%	667	2.41E-03	18	8.23%	1255	4.53E-03
3	0.38%	58	2.08E-04	11	4.65%	710	2.56E-03	19	5.73%	874	3.16E-03
4	0.18%	27	9.71E-05	12	5.90%	899	3.25E-03	20	4.30%	656	2.37E-03
5	0.46%	70	2.54E-04	13	6.17%	941	3.40E-03	21	3.25%	496	1.79E-03
6	0.85%	129	4.67E-04	14	6.05%	922	3.33E-03	22	3.31%	505	1.82E-03
7	3.73%	569	2.06E-03	15	7.05%	1075	3.88E-03	23	2.48%	379	1.37E-03
8	7.76%	1184	4.28E-03	16	7.18%	1095	3.96E-03	24	1.88%	286	1.03E-03
								Total		15,253	

11 El Camino Real, San Carlos, CA - Off-Site Residential
Cumulative Operation - El Camino Real
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_ECR	El Camino Real Northbound	NB	2	735.8	0.46	13.3	44	1.3	35	15,253
FUG_SB_ECR	El Camino Real Southbound	SB	3	735.3	0.46	17.0	56	1.3	35	15,253
									Total	30,505

Emission Factors - Fugitive PM2.5

Speed Category	1	2	3	4
Travel Speed (mph)	35			
Tire Wear - Emissions per Vehicle (g/VMT)	0.00207			
Brake Wear - Emissions per Vehicle (g/VMT)	0.00629			
Road Dust - Emissions per Vehicle (g/VMT)	0.01654			
Total Fugitive PM2.5 - Emissions per Vehicle (g/VMT)	0.02490			

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

Hour	% Per Hour	VPH	g/s	Hour	% Per Hour	VPH	g/s	Hour	% Per Hour	VPH	g/s
1	1.12%	170	5.39E-04	9	7.12%	1086	3.43E-03	17	7.43%	1133	3.58E-03
2	0.42%	63	2.00E-04	10	4.38%	667	2.11E-03	18	8.23%	1255	3.97E-03
3	0.38%	58	1.82E-04	11	4.65%	710	2.24E-03	19	5.73%	874	2.76E-03
4	0.18%	27	8.51E-05	12	5.90%	899	2.84E-03	20	4.30%	656	2.07E-03
5	0.46%	70	2.23E-04	13	6.17%	941	2.98E-03	21	3.25%	496	1.57E-03
6	0.85%	129	4.09E-04	14	6.05%	922	2.92E-03	22	3.31%	505	1.60E-03
7	3.73%	569	1.80E-03	15	7.05%	1075	3.40E-03	23	2.48%	379	1.20E-03
8	7.76%	1184	3.74E-03	16	7.18%	1095	3.46E-03	24	1.88%	286	9.05E-04
								Total		15,253	

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

Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile
1	1.12%	170	5.38E-04	9	7.12%	1086	3.43E-03	17	7.43%	1133	3.58E-03
2	0.42%	63	2.00E-04	10	4.38%	667	2.11E-03	18	8.23%	1255	3.97E-03
3	0.38%	58	1.82E-04	11	4.65%	710	2.24E-03	19	5.73%	874	2.76E-03
4	0.18%	27	8.50E-05	12	5.90%	899	2.84E-03	20	4.30%	656	2.07E-03
5	0.46%	70	2.23E-04	13	6.17%	941	2.97E-03	21	3.25%	496	1.57E-03
6	0.85%	129	4.09E-04	14	6.05%	922	2.91E-03	22	3.31%	505	1.60E-03
7	3.73%	569	1.80E-03	15	7.05%	1075	3.40E-03	23	2.48%	379	1.20E-03
8	7.76%	1184	3.74E-03	16	7.18%	1095	3.46E-03	24	1.88%	286	9.05E-04
								Total		15,253	

File Name: Local Roadways 2027.EF
EMFAC2021/CT-EMFAC2017
Run Date: 4/6/2023 12:59
Area: San Mateo (SF)
Analysis Year: 2027
Season: Annual

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Vehicle Category	VMT Fraction Across Category	Diesel VMT Fra Within Categor	Gas VMT Fraction Within Category
Truck 1	0.017	0.509	0.491
Truck 2	0.014	0.871	0.111
Non-Truck	0.969	0.017	0.948

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Road Type:		Freeway	Major/Collecto	Local Urban
Silt Loading Factor:	CARB	0.015 g/m2	0.032 g/m2	0.32 g/m2
Precipitation Correctior	CARB	P = 64 days	N = 365 days	

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

Pollutant Name	<= 5 mph	10 mph	15 mph	20 mph	25 mph	30 mph	35 mph	40 mph	45 mph	50 mph	55 mph	60 mph	65 mph	70 mph	75 mph
PM2.5	0.007822	0.005129	0.003484	0.002486	0.001882	0.001504	0.001268	0.001131	0.001070	0.001071	0.001131	0.001246	0.001422	0.009038	0.009038
PM10	0.008464	0.005543	0.003763	0.002683	0.002029	0.001621	0.001366	0.001217	0.001150	0.001150	0.001213	0.001336	0.001524	0.009506	0.009506
NOx	0.216795	0.174730	0.135972	0.114958	0.100060	0.088849	0.080408	0.074541	0.071128	0.070101	0.071444	0.075096	0.081071	0.495535	0.495535
CO	1.389100	1.239449	1.109245	1.002043	0.913427	0.837378	0.771304	0.713834	0.663970	0.621007	0.584521	0.554441	0.531063	1.535022	1.535250
HC	0.115177	0.074199	0.049655	0.035035	0.026265	0.020744	0.017207	0.014993	0.013729	0.013225	0.013412	0.014317	0.016085	0.081202	0.081220
TOG	0.103071	0.066372	0.044230	0.031118	0.023325	0.018424	0.015274	0.013291	0.012146	0.011670	0.011803	0.012569	0.014091	0.090778	0.090804
ROG	0.093166	0.060403	0.040342	0.028411	0.021361	0.016922	0.014059	0.012252	0.011211	0.010785	0.010919	0.011635	0.013039	0.069627	0.069649
1,3-Butadiene	0.001164	0.000755	0.000510	0.000364	0.000276	0.000219	0.000184	0.000163	0.000151	0.000147	0.000151	0.000164	0.000186	0.000186	0.000186
Acetaldehyde	0.001818	0.001251	0.000748	0.000455	0.000332	0.000263	0.000219	0.000192	0.000176	0.000169	0.000172	0.000184	0.000205	0.000208	0.000210
Acrolein	0.000260	0.000168	0.000114	0.000082	0.000062	0.000049	0.000041	0.000037	0.000034	0.000033	0.000034	0.000037	0.000042	0.000042	0.000042
Benzene	0.005137	0.003341	0.002243	0.001588	0.001200	0.000954	0.000800	0.000706	0.000656	0.000639	0.000656	0.000708	0.000803	0.000804	0.000805
Diesel PM	0.000523	0.000457	0.000369	0.000301	0.000261	0.000241	0.000235	0.000241	0.000260	0.000291	0.000334	0.000388	0.000449	0.000450	0.000450
Ethylbenzene	0.002198	0.001424	0.000964	0.000689	0.000521	0.000415	0.000348	0.000307	0.000286	0.000279	0.000286	0.000309	0.000351	0.000351	0.000351
Formaldehyde	0.005407	0.003645	0.002273	0.001468	0.001086	0.000861	0.000720	0.000632	0.000583	0.000564	0.000574	0.000617	0.000694	0.000699	0.000704
Naphthalene	0.000156	0.000102	0.000069	0.000049	0.000037	0.000030	0.000025	0.000022	0.000021	0.000020	0.000020	0.000022	0.000025	0.000024	0.000024
POM	0.000174	0.000113	0.000075	0.000052	0.000039	0.000031	0.000026	0.000023	0.000021	0.000020	0.000021	0.000022	0.000025	0.000025	0.000025
DEOG	0.011293	0.126332	0.068659	0.034862	0.025483	0.020656	0.016979	0.014337	0.012648	0.011849	0.011890	0.012250	0.012352	0.012372	0.012396
CO2	770.341090	628.417545	513.910146	429.211864	368.291929	327.641288	303.512920	292.762118	292.336558	299.531539	311.005853	323.691329	334.884146	401.317497	401.317497
N2O	0.015786	0.013479	0.011074	0.009715	0.008729	0.007912	0.007389	0.007010	0.006783	0.006721	0.006840	0.007085	0.007474	0.007474	0.007474
CH4	0.018258	0.012367	0.008725	0.006446	0.004996	0.004052	0.003435	0.003044	0.002821	0.002734	0.002773	0.002942	0.003266	0.012859	0.012860
BC	0.001841	0.001185	0.000801	0.000571	0.000430	0.000342	0.000288	0.000256	0.000240	0.000237	0.000246	0.000268	0.000303	0.000303	0.000303

Fleet Average Fuel Consumption (gallons/veh-mile)

Fuel Type	<= 5 mph	10 mph	15 mph	20 mph	25 mph	30 mph	35 mph	40 mph	45 mph	50 mph	55 mph	60 mph	65 mph	70 mph	75 mph
Gasoline	0.067163	0.054504	0.044629	0.037108	0.031703	0.028148	0.026086	0.025234	0.02531	0.026037	0.027104	0.028205	0.029034	0.029034	0.029034
Diesel	0.005486	0.004589	0.003549	0.00303	0.002647	0.002342	0.002144	0.001997	0.001908	0.001905	0.001964	0.002066	0.002232	0.002232	0.002232

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

Pollutant Name	Emission Factor
HC	0.896388
TOG	0.865514
ROG	0.958355
1,3-Butadiene	0
Benzene	0.010454
Ethylbenzene	0.017144
Naphthalene	0.001464
CH4	0.162343
HFC	0.011118

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

Pollutant Name	Emission Factor
PM2.5	0.001999
PM10	0.007996

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

Pollutant Name	<= 5 mph	10 mph	15 mph	20 mph	25 mph	30 mph	35 mph	40 mph	45 mph	50 mph	55 mph	60 mph	65 mph	70 mph	75 mph
PM2.5	0.003531933	0.004085775	0.004636833	0.005179826	0.005415859	0.005439685	0.00544377	0.004958266	0.003955897	0.002960085	0.002320115	0.002015201	0.001710287	0.001710287	0.001710287
PM10	0.010091238	0.011673642	0.013248095	0.014799502	0.015473884	0.015541957	0.015553628	0.014166475	0.011302564	0.008457386	0.006628901	0.005757718	0.004886536	0.004886536	0.004886536

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

Road Type:	Major/Collector
Pollutant Name	
PM2.5	0.015032
PM10	0.100216

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11 El Camino Real, San Carlos, CA - On-Site Residential
Cumulative Operation - El Camino Real
DPM Modeling - Roadway Links, Traffic Volumes, and DPM Emissions
Year = 2027

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_ECR	El Camino Real Northbound	NB	2	735.8	0.46	13.3	43.7	3.4	35	15,253
DPM_SB_ECR	El Camino Real Southbound	SB	3	735.3	0.46	17.0	55.7	3.4	35	15,253
									Total	30,505

Emission Factors

Speed Category	1	2	3	4
Travel Speed (mph)	35			
Emissions per Vehicle (g/VMT)	0.00023			

2027 Hourly Traffic Volumes and DPM Emissions - DPM_NB_ECR

Hour	% Per Hour	VPH	g/s	Hour	% Per Hour	VPH	g/s	Hour	% Per Hour	VPH	g/s
1	4.02%	613	1.83E-05	9	6.62%	1010	3.01E-05	17	6.46%	986	2.94E-05
2	3.38%	515	1.54E-05	10	8.04%	1226	3.66E-05	18	3.89%	593	1.77E-05
3	2.57%	392	1.17E-05	11	6.11%	932	2.78E-05	19	2.28%	348	1.04E-05
4	0.96%	147	4.39E-06	12	7.59%	1157	3.45E-05	20	0.96%	147	4.39E-06
5	0.96%	147	4.39E-06	13	7.11%	1084	3.23E-05	21	2.89%	441	1.32E-05
6	2.25%	343	1.02E-05	14	6.62%	1010	3.01E-05	22	4.82%	736	2.19E-05
7	4.50%	687	2.05E-05	15	6.14%	937	2.79E-05	23	3.54%	539	1.61E-05
8	3.25%	495	1.48E-05	16	4.21%	642	1.92E-05	24	0.80%	123	3.66E-06
								Total		15,253	

2027 Hourly Traffic Volumes Per Direction and DPM Emissions - DPM_SB_ECR

Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile
1	4.02%	613	1.83E-05	9	6.62%	1010	3.01E-05	17	6.46%	986	2.94E-05
2	3.38%	515	1.53E-05	10	8.04%	1226	3.65E-05	18	3.89%	593	1.77E-05
3	2.57%	392	1.17E-05	11	6.11%	932	2.78E-05	19	2.28%	348	1.04E-05
4	0.96%	147	4.38E-06	12	7.59%	1157	3.45E-05	20	0.96%	147	4.38E-06
5	0.96%	147	4.38E-06	13	7.11%	1084	3.23E-05	21	2.89%	441	1.32E-05
6	2.25%	343	1.02E-05	14	6.62%	1010	3.01E-05	22	4.82%	736	2.19E-05
7	4.50%	687	2.05E-05	15	6.14%	937	2.79E-05	23	3.54%	539	1.61E-05
8	3.25%	495	1.48E-05	16	4.21%	642	1.91E-05	24	0.80%	123	3.65E-06
								Total		15,253	

11 El Camino Real, San Carlos, CA - On-Site Residential
Cumulative Operation - El Camino Real
PM2.5 Modeling - Roadway Links, Traffic Volumes, and PM2.5 Emissions
Year = 2027

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
PM2.5_NB_ECR	El Camino Real Northbound	NB	2	735.8	0.46	13.3	44	1.3	35	15,253
PM2.5_SB_ECR	El Camino Real Southbound	SB	3	735.3	0.46	17.0	56	1.3	35	15,253
									Total	30,505

Emission Factors - PM2.5

Speed Category	1	2	3	4
Travel Speed (mph)	35			
Emissions per Vehicle (g/VMT)	0.001268			

2027 Hourly Traffic Volumes and PM2.5 Emissions - PM2.5_NB_ECR

Hour	% Per Hour	VPH	g/s	Hour	% Per Hour	VPH	g/s	Hour	% Per Hour	VPH	g/s
1	1.12%	171	2.75E-05	9	7.12%	1086	1.75E-04	17	7.43%	1134	1.83E-04
2	0.41%	63	1.01E-05	10	4.37%	667	1.07E-04	18	8.23%	1256	2.02E-04
3	0.37%	57	9.15E-06	11	4.65%	709	1.14E-04	19	5.74%	875	1.41E-04
4	0.18%	27	4.38E-06	12	5.89%	899	1.45E-04	20	4.31%	657	1.06E-04
5	0.46%	70	1.12E-05	13	6.16%	940	1.51E-04	21	3.25%	496	7.99E-05
6	0.85%	129	2.08E-05	14	6.05%	922	1.49E-04	22	3.31%	505	8.14E-05
7	3.73%	569	9.16E-05	15	7.06%	1076	1.73E-04	23	2.48%	379	6.10E-05
8	7.76%	1184	1.91E-04	16	7.19%	1096	1.76E-04	24	1.88%	286	4.61E-05
								Total		15,253	

2027 Hourly Traffic Volumes Per Direction and PM2.5 Emissions - PM2.5_SB_ECR

Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile
1	1.12%	171	2.74E-05	9	7.12%	1086	1.75E-04	17	7.43%	1134	1.82E-04
2	0.41%	63	1.01E-05	10	4.37%	667	1.07E-04	18	8.23%	1256	2.02E-04
3	0.37%	57	9.15E-06	11	4.65%	709	1.14E-04	19	5.74%	875	1.41E-04
4	0.18%	27	4.37E-06	12	5.89%	899	1.45E-04	20	4.31%	657	1.06E-04
5	0.46%	70	1.12E-05	13	6.16%	940	1.51E-04	21	3.25%	496	7.98E-05
6	0.85%	129	2.08E-05	14	6.05%	922	1.48E-04	22	3.31%	505	8.13E-05
7	3.73%	569	9.16E-05	15	7.06%	1076	1.73E-04	23	2.48%	379	6.09E-05
8	7.76%	1184	1.91E-04	16	7.19%	1096	1.76E-04	24	1.88%	286	4.60E-05
								Total		15,253	

11 El Camino Real, San Carlos, CA - On-Site Residential
Cumulative Operation - El Camino Real
TOG Exhaust Modeling - Roadway Links, Traffic Volumes, and TOG Exhaust Emissions
Year = 2027

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_ECR	El Camino Real Northbound	NB	2	735.8	0.46	13.3	44	1.3	35	15,253
TEXH_SB_ECR	El Camino Real Southbound	SB	3	735.3	0.46	17.0	56	1.3	35	15,253
									Total	30,505

Emission Factors - TOG Exhaust

Speed Category	1	2	3	4
Travel Speed (mph)	35			
Emissions per Vehicle (g/VMT)	0.01527			

2027 Hourly Traffic Volumes and TOG Exhaust Emissions - TEXH_NB_ECR

Hour	% Per Hour	VPH	g/s	Hour	% Per Hour	VPH	g/s	Hour	% Per Hour	VPH	g/s
1	1.12%	171	3.31E-04	9	7.12%	1086	2.11E-03	17	7.43%	1134	2.20E-03
2	0.41%	63	1.22E-04	10	4.37%	667	1.29E-03	18	8.23%	1256	2.44E-03
3	0.37%	57	1.10E-04	11	4.65%	709	1.38E-03	19	5.74%	875	1.70E-03
4	0.18%	27	5.27E-05	12	5.89%	899	1.74E-03	20	4.31%	657	1.27E-03
5	0.46%	70	1.35E-04	13	6.16%	940	1.82E-03	21	3.25%	496	9.62E-04
6	0.85%	129	2.50E-04	14	6.05%	922	1.79E-03	22	3.31%	505	9.80E-04
7	3.73%	569	1.10E-03	15	7.06%	1076	2.09E-03	23	2.48%	379	7.35E-04
8	7.76%	1184	2.30E-03	16	7.19%	1096	2.13E-03	24	1.88%	286	5.55E-04
								Total		15,253	

2027 Hourly Traffic Volumes Per Direction and TOG Exhaust Emissions - TEXH_SB_ECR

Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile
1	1.12%	171	3.31E-04	9	7.12%	1086	2.11E-03	17	7.43%	1134	2.20E-03
2	0.41%	63	1.22E-04	10	4.37%	667	1.29E-03	18	8.23%	1256	2.43E-03
3	0.37%	57	1.10E-04	11	4.65%	709	1.37E-03	19	5.74%	875	1.70E-03
4	0.18%	27	5.27E-05	12	5.89%	899	1.74E-03	20	4.31%	657	1.27E-03
5	0.46%	70	1.35E-04	13	6.16%	940	1.82E-03	21	3.25%	496	9.62E-04
6	0.85%	129	2.50E-04	14	6.05%	922	1.79E-03	22	3.31%	505	9.80E-04
7	3.73%	569	1.10E-03	15	7.06%	1076	2.09E-03	23	2.48%	379	7.34E-04
8	7.76%	1184	2.30E-03	16	7.19%	1096	2.12E-03	24	1.88%	286	5.54E-04
								Total		15,253	

11 El Camino Real, San Carlos, CA - On-Site Residential
Cumulative Operation - El Camino Real
TOG Evaporative Emissions Modeling - Roadway Links, Traffic Volumes, and TOG Evaporative Emissions
Year = 2027

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_ECR	El Camino Real Northbound	NB	2	735.8	0.46	13.3	44	1.3	35	15,253
TEVAP_SB_ECR	El Camino Real Southbound	SB	3	735.3	0.46	17.0	56	1.3	35	15,253
									Total	30,505

Emission Factors - PM2.5 - Evaporative TOG

Speed Category	1	2	3	4
Travel Speed (mph)	35			
Emissions per Vehicle per Hour (g/hour)	0.86551			
Emissions per Vehicle per Mile (g/VMT)	0.02473			

2027 Hourly Traffic Volumes and TOG Evaporative Emissions - TEVAP_NB_ECR

Hour	% Per Hour	VPH	g/s	Hour	% Per Hour	VPH	g/s	Hour	% Per Hour	VPH	g/s
1	1.12%	171	5.35E-04	9	7.12%	1086	3.41E-03	17	7.43%	1134	3.56E-03
2	0.41%	63	1.98E-04	10	4.37%	667	2.10E-03	18	8.23%	1256	3.94E-03
3	0.37%	57	1.78E-04	11	4.65%	709	2.23E-03	19	5.74%	875	2.75E-03
4	0.18%	27	8.54E-05	12	5.89%	899	2.82E-03	20	4.31%	657	2.06E-03
5	0.46%	70	2.19E-04	13	6.16%	940	2.95E-03	21	3.25%	496	1.56E-03
6	0.85%	129	4.05E-04	14	6.05%	922	2.90E-03	22	3.31%	505	1.59E-03
7	3.73%	569	1.79E-03	15	7.06%	1076	3.38E-03	23	2.48%	379	1.19E-03
8	7.76%	1184	3.72E-03	16	7.19%	1096	3.44E-03	24	1.88%	286	8.98E-04
								Total		15,253	

2027 Hourly Traffic Volumes Per Direction and TOG Evaporative Emissions - TEVAP_SB_ECR

Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile
1	1.12%	171	5.35E-04	9	7.12%	1086	3.41E-03	17	7.43%	1134	3.56E-03
2	0.41%	63	1.98E-04	10	4.37%	667	2.09E-03	18	8.23%	1256	3.94E-03
3	0.37%	57	1.78E-04	11	4.65%	709	2.23E-03	19	5.74%	875	2.75E-03
4	0.18%	27	8.53E-05	12	5.89%	899	2.82E-03	20	4.31%	657	2.06E-03
5	0.46%	70	2.19E-04	13	6.16%	940	2.95E-03	21	3.25%	496	1.56E-03
6	0.85%	129	4.05E-04	14	6.05%	922	2.89E-03	22	3.31%	505	1.59E-03
7	3.73%	569	1.79E-03	15	7.06%	1076	3.38E-03	23	2.48%	379	1.19E-03
8	7.76%	1184	3.72E-03	16	7.19%	1096	3.44E-03	24	1.88%	286	8.98E-04
								Total		15,253	

11 El Camino Real, San Carlos, CA - On-Site Residential
Cumulative Operation - El Camino Real
Fugitive Road PM2.5 Modeling - Roadway Links, Traffic Volumes, and Fugitive Road PM2.5 Emissions
Year = 2027

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_ECR	El Camino Real Northbound	NB	2	735.8	0.46	13.3	44	1.3	35	15,253
FUG_SB_ECR	El Camino Real Southbound	SB	3	735.3	0.46	17.0	56	1.3	35	15,253
									Total	30,505

Emission Factors - Fugitive PM2.5

Speed Category	1	2	3	4
Travel Speed (mph)	35			
Tire Wear - Emissions per Vehicle (g/VMT)	0.00200			
Brake Wear - Emissions per Vehicle (g/VMT)	0.00544			
Road Dust - Emissions per Vehicle (g/VMT)	0.01503			
Total Fugitive PM2.5 - Emissions per Vehicle (g/VMT)	0.02247			

2027 Hourly Traffic Volumes and Fugitive PM2.5 Emissions - FUG_NB_ECR

Hour	% Per Hour	VPH	g/s	Hour	% Per Hour	VPH	g/s	Hour	% Per Hour	VPH	g/s
1	1.12%	171	4.87E-04	9	7.12%	1086	3.10E-03	17	7.43%	1134	3.24E-03
2	0.41%	63	1.80E-04	10	4.37%	667	1.90E-03	18	8.23%	1256	3.58E-03
3	0.37%	57	1.62E-04	11	4.65%	709	2.02E-03	19	5.74%	875	2.50E-03
4	0.18%	27	7.76E-05	12	5.89%	899	2.57E-03	20	4.31%	657	1.87E-03
5	0.46%	70	1.99E-04	13	6.16%	940	2.68E-03	21	3.25%	496	1.42E-03
6	0.85%	129	3.68E-04	14	6.05%	922	2.63E-03	22	3.31%	505	1.44E-03
7	3.73%	569	1.62E-03	15	7.06%	1076	3.07E-03	23	2.48%	379	1.08E-03
8	7.76%	1184	3.38E-03	16	7.19%	1096	3.13E-03	24	1.88%	286	8.16E-04
								Total		15,253	

2027 Hourly Traffic Volumes Per Direction and Fugitive PM2.5 Emissions - FUG_SB_ECR

Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile
1	1.12%	171	4.86E-04	9	7.12%	1086	3.10E-03	17	7.43%	1134	3.23E-03
2	0.41%	63	1.80E-04	10	4.37%	667	1.90E-03	18	8.23%	1256	3.58E-03
3	0.37%	57	1.62E-04	11	4.65%	709	2.02E-03	19	5.74%	875	2.49E-03
4	0.18%	27	7.75E-05	12	5.89%	899	2.56E-03	20	4.31%	657	1.87E-03
5	0.46%	70	1.99E-04	13	6.16%	940	2.68E-03	21	3.25%	496	1.41E-03
6	0.85%	129	3.68E-04	14	6.05%	922	2.63E-03	22	3.31%	505	1.44E-03
7	3.73%	569	1.62E-03	15	7.06%	1076	3.07E-03	23	2.48%	379	1.08E-03
8	7.76%	1184	3.38E-03	16	7.19%	1096	3.13E-03	24	1.88%	286	8.16E-04
								Total		15,253	

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	**4/10/2023**
Contact Name	Jordyn Bauer
Affiliation	Illingworth & Rodkin, Inc.
Phone	707-794-0400 x103
Email	jbauer@illingworthrodkin.com
Project Name	11 El Camino Real
Address	11 El Camino Real
City	San Carlos
County	San Mateo
Type (residential, commercial, mixed use, industrial, etc.)	Residential
Project Size (# of units or building square feet)	254,930
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** lue section only.

6. Note that a small percentage of the stationa... ...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 (Map B on right). If HRSA values are presented, these values have already been modeled and cannot be adjusted further.

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

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

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

Table B: Google Earth data

Distance from Receptor (feet) or MEI[1]	Plant No.	Facility Name	Address	Cancer Risk[2]	Hazard Risk[2]	$PM_{2.5}$[2]	Source No.[3]	Type of Source[4]	Fuel Code[5]	Status/Comments
650	18236	Rod'z Auto Body dba: Marks Bc	643 Quarry Rd	-	0.001	-		Automotive Body, Paint, and Interior Rep		2021 Dataset
610	21994	Pang Pang Auto Body Shop	219 Old County Rd #C	-	0.001	-		Automotive Body, Paint, and Interior Rep		2021 Dataset
610	24261	Silicon Valley Coffee LLC	299 Old County Rd Unit 1	0.001	-	0.001		Coffee and Tea Manufacturing		2021 Dataset
910	103150	Auto Pride Wash	195 El Camino Real	11.372	0.049	-		Gas Dispensing Facility		2021 Dataset
820	107089	Justin Chevron	90 El Camino Real	34.331	0.149	-		Gas Dispensing Facility		2021 Dataset

Project MEI

Distance Adjustment Multiplier	Adjusted Cancer Risk Estimate	Adjusted Hazard Risk	Adjusted PM2.5
0.26	#VALUE!	0.00026	#VALUE!
0.28	#VALUE!	0.00028	#VALUE!
0.28	0.00	#VALUE!	0.0003
0.02	0.19	0.00083	#VALUE!
0.02	0.72	0.00313	#VALUE!

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

Project Site

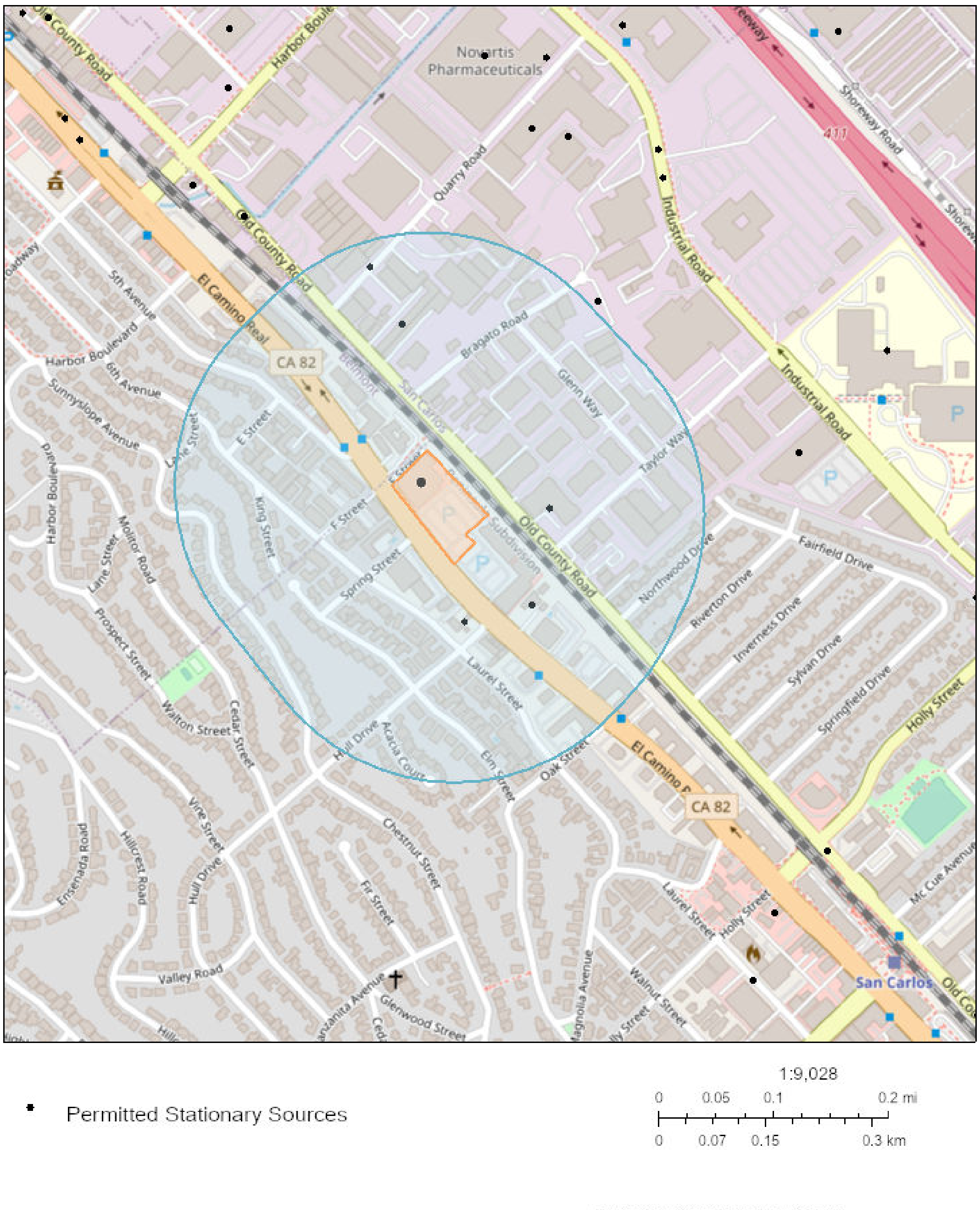
Distance from Receptor (feet) or MEI[1]	FACID (Plant No.)	Distance Adjustment Multiplier	Adjusted Cancer Risk Estimate	Adjusted Hazard Risk	Adjusted PM2.5
675	18236	0.246	#VALUE!	0.0002	#VALUE!
585	21994	0.299	#VALUE!	0.0003	#VALUE!
175	24261	0.679	0.0007	#VALUE!	0.0007
400	103150	0.066	0.75	0.0032	#VALUE!
280	107089	0.114	3.91	0.0170	#VALUE!

Screening Report

Area of Interest (AOI) Information

Area : 4,624,960.88 ft²

Apr 10 2023 11:06:07 Pacific Daylight Time



Summary

Name	Count	Area(ft²)	Length(ft)
Permitted Stationary Sources	5	N/A	N/A

Permitted Stationary Sources

#	Facility_I	Facility_N	Address	City	State
1	18236	Rod'z Auto Body dba: Marks Body Shop	643 Quarry Rd	San Carlos	CA
2	21994	Pang Pang Auto Body Shop	219 Old County Rd #C	San Carlos	CA
3	24261	Silicon Valley Coffee LLC	299 Old County Rd Unit 11	San Carlos	CA
4	103150	Auto Pride Wash	195 El Camino Real	San Carlos	CA
5	107089	Justin Chevron	90 El Camino Real	San Carlos	CA

#	Zip	County	Latitude	Longitude	Details
1	94070	San Mateo	37.516343	-122.268304	*No Data*
2	94070	San Mateo	37.515613	-122.267784	*No Data*
3	94070	San Mateo	37.513297	-122.265449	*No Data*
4	94070	San Mateo	37.512074	-122.265728	Gas Dispensing Facility
5	94070	San Mateo	37.511863	-122.266798	Gas Dispensing Facility

#	NAICS	NAICS_Sect	NAICS_Subs	NAICS_Indu	Cancer_Ris
1	811121	Other Services (except Public Administration)	Repair and Maintenance	Automotive Body, Paint, and Interior Repair and Maintenance	0.000000
2	811121	Other Services (except Public Administration)	Repair and Maintenance	Automotive Body, Paint, and Interior Repair and Maintenance	0.000000
3	311920	Manufacturing	Food Manufacturing	Coffee and Tea Manufacturing	0.001000
4	447110	Retail Trade	Gasoline Stations	Gasoline Stations with Convenience Stores	11.372000
5	447110	Retail Trade	Gasoline Stations	Gasoline Stations with Convenience Stores	34.331000

#	Chronic_Ha	PM25	Count
1	0.001000	0.000000	1
2	0.001000	0.000000	1
3	0.000000	0.001000	1
4	0.049000	0.000000	1
5	0.149000	0.000000	1

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