Memorandum

Date: January 9, 2025

To: Patrick Kallas, David J. Powers & Associates, Inc.

From: Gary K. Black, Nivedha Baskarapandian

Subject: Transportation Analysis for the Residential Development at 271 El Camino Real in San Bruno, California

Introduction

Hexagon Transportation Consultants, Inc. has prepared a transportation analysis for the proposed residential development at 271 El Camino Real in San Bruno. The project is located on the west side of El Camino Real between Crysal Springs Avenue and San Felipe Avenue (see Figure 1). The project would develop an existing vacant lot and build one four-story multi-family residential building with 36 condominiums, one single-family home, and a parking garage on the ground floor (see Figure 2). Vehicle access to and from the site and parking garage would be via a new driveway on El Camino Real.

The transportation analysis includes trip generation estimates, a review of the site plan, and a qualitative discussion of required CEQA topics (vehicle miles traveled [VMT], consistency with bicycle, pedestrian, and transit plans, roadway hazards, and emergency vehicle access).

Trip Generation

Through empirical research, data have been collected that show trip generation rates for many types of land uses. The data are published in the Institute of Transportation Engineers' (ITE) *Trip Generation Manual, 11th Edition* (2021). The magnitude of traffic added to the roadway system by the development is estimated by multiplying the applicable trip generation rate by the size of the development. The rates published for "Multifamily Housing (Low-Rise)" (Land Use Code 220) were used for the proposed condominiums and rates published for "Single-Family Detached Housing" (Land Use Code 210) were used for the proposed single-family home.

Based on the ITE trip generation rates, it is estimated that the proposed project would generate 252 daily trips, with 15 trips (three inbound and 12 outbound) during the AM peak hour and 20 trips (13 inbound and seven outbound) during the PM peak hour (see Table 1).

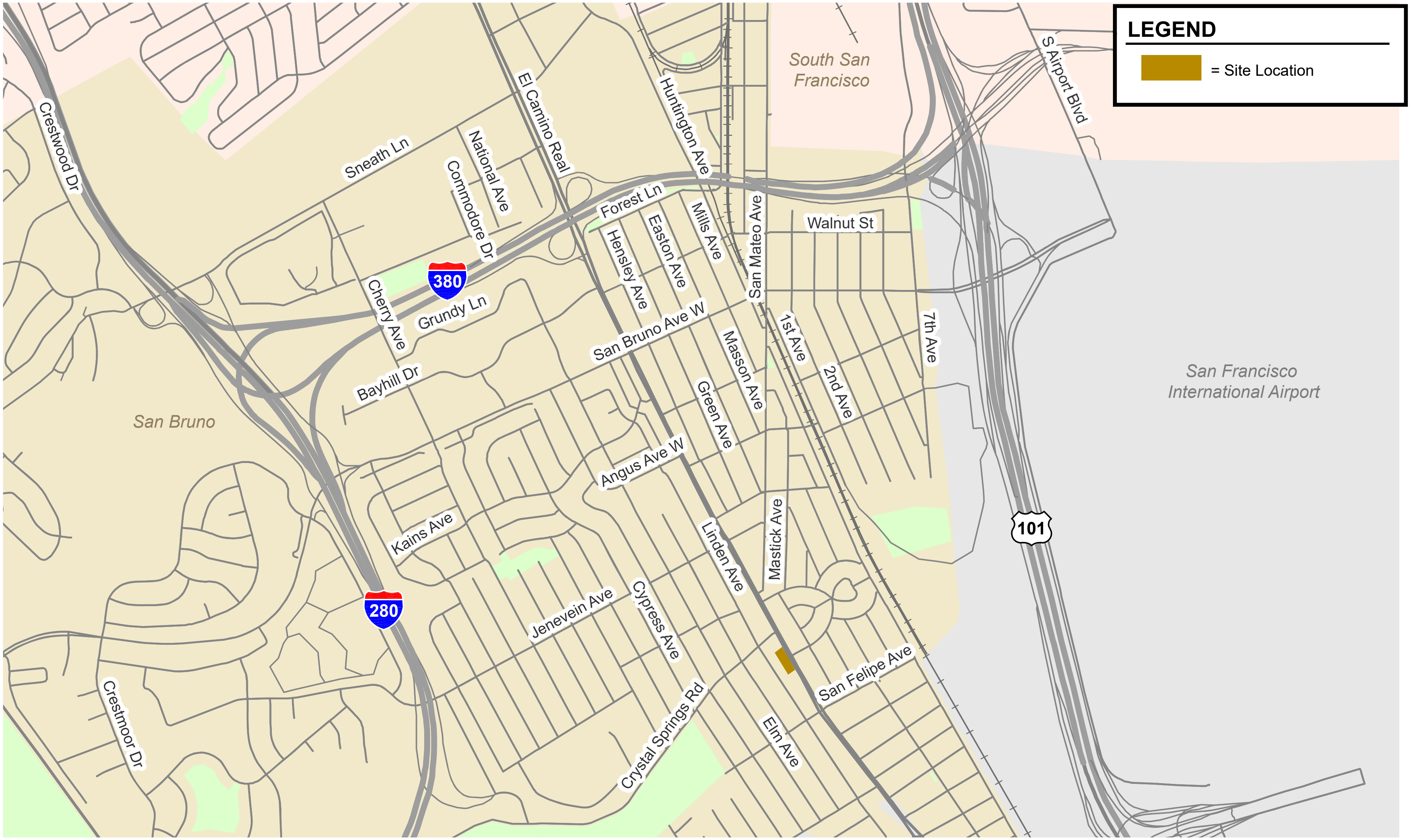

Figure 1
Project Site Location

HEXAGON

NORTH
Not to Scale

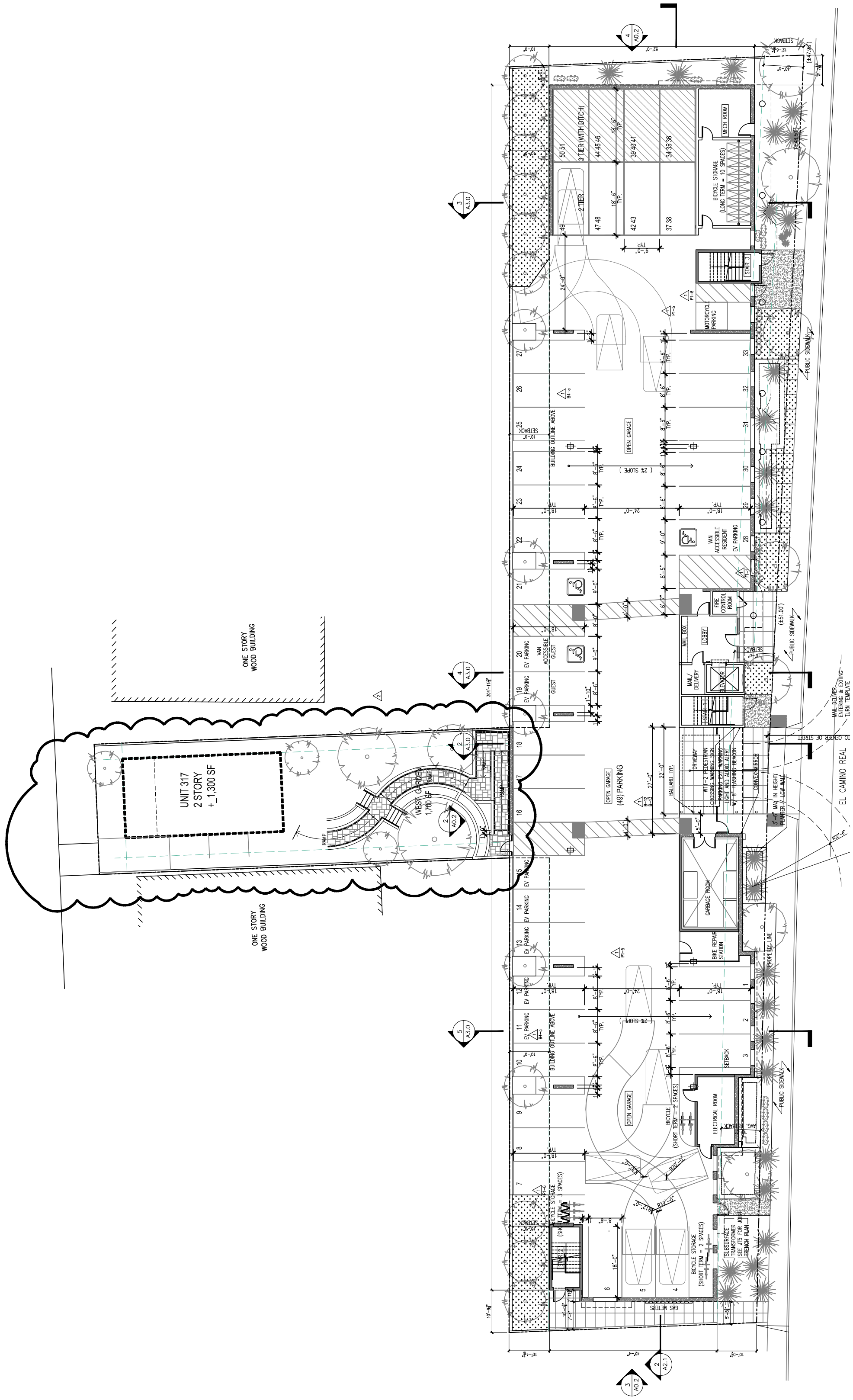

Figure 2
Site Plan

Table 1
Project Trip Generation

Land Use	Size		Daily Rate	Daily Total	AM Peak Hour Rate	AM In	AM Out	AM Total	PM Peak Hour Rate	PM In	PM Out	PM Total
Proposed												
Condominiums [1]	36	d.u.	6.74	243	0.40	3	11	14	0.51	12	7	19
Single-Family Home [2]	1	d.u.	9.43	9	0.70	0	1	1	0.94	1	0	1
Total Project Trips				**252**		**3**	**12**	**15**		**13**	**7**	**20**

Notes
d.u. = dwelling units
[1] Trip generation rate for the proposed townhomes are based on the ITE's *Trip Generation Manual, 11th Edition* rates for Land Use Code 220 "Multifamily Housing (Low Rise) - Not close to rail transit in a General Urban/Suburban area."
[2] Trip generation rate for the proposed single-family home is based on the ITE's *Trip Generation Manual, 11th Edition* rates for Land Use Code 210 "Single-Family Detached Housing."

VMT Assessment

Vehicle Miles Traveled (VMT) is the total miles traveled by motorized vehicles that a development is expected to generate in a day. The Governor's Office of Planning and Research (OPR) released a Technical Advisory on Evaluating Transportation Impacts in CEQA in December 2018 that contains OPR's technical recommendations regarding assessment of VMT, thresholds of significance, and mitigation measures.

The City of San Bruno has not yet adopted any thresholds or guidelines related to VMT. Thus, the VMT thresholds used for this project are based on the OPR VMT guidelines. The OPR Technical Advisory specifies procedures for determining project impacts on VMT based on the project description, characteristics, and location. The VMT methodology also includes screening criteria that are used to identify types, characteristics, and locations of projects that would not exceed the VMT thresholds of significance.

Screening for VMT Analysis

The OPR VMT Policy establishes screening criteria for developments that are expected to cause a less-than-significant transportation impact under CEQA and are not required to prepare further VMT analysis. The OPR VMT Policy provides the following screening criteria to exempt development projects from conducting a full VMT analysis:

- Small developments – Projects that generate fewer than 110 trips per day
- Projects in Low-VMT Areas – Projects located in low-VMT areas that have similar features as existing developments
- Projects in Proximity to Major Transit Stops – Projects that are located within a half mile of an existing major transit stop or an existing stop along a high-quality transit corridor
- Affordable Housing – 100% affordable housing in infill locations
- Local and Regional Serving Retail – Retail projects of 50,000 s.f. or less

Because the project is located on El Camino Real, a high-quality transit corridor, the project would meet the proximity to major transit stops screening criterion and would result in a less-than-significant VMT impact.

Other CEQA Impact Topics

The project's CEQA transportation impacts related to consistency with plans and policies addressing transit, roadway, bicycle and pedestrian facilities, roadway hazards, and emergency access are discussed below.

Consistency with Plans and Policies

Pedestrian connections would be available between the project site and the neighboring facilities via the sidewalks on El Camino Real and crosswalks at the intersections of El Camino Real and Crystal Springs Avenue and San Felipe Avenue. The project proposes to maintain the existing sidewalk along its frontage on El Camino Real. The project would not affect the existing pedestrian access in the area.

The project would provide a bike storage room on the ground floor to the right side of the parking garage for long-term bicycle parking. Short-term bike racks would be provided to the right of the project driveway and in the parking garage right to the right side. Access to the bike storage room would be via the sidewalks and pedestrian walkways surrounding the building. Near the project site, there are no designated bike routes. The project would not affect any proposed bicycle facilities, nor would it conflict with any bicycle plans.

Existing transit services near the project site are provided by SamTrans. The nearest stop is located at the intersection of El Camino Real and San Felipe Avenue, approximately 600 feet south of the project site and provides access to Route ECR. Any new ridership generated by the project is expected to be relatively low and could be accommodated by the existing buses.

Roadway Hazards

The project would have one driveway on El Camino Real to access the parking garage. The project driveway would be designed in accordance with city standards. The project would generate mostly passenger vehicles, and the surrounding roadway system is designed to accommodate these vehicles. Therefore, the project would not create roadway hazards or generate incompatible uses on the surrounding roadways.

Site Plan Review

A review of the project site plan was performed to determine if adequate site access and on-site circulation are provided and to identify any access or circulation issues that should be improved. This review is based on the site plan prepared by Tectonic Builders Corporation, dated March 3, 2024, in accordance with generally accepted traffic engineering standards.

Vehicle Site Access

Vehicle access to the project site would be provided via one right-in/right-out driveway along El Camino Real. Left turns are precluded by the median on El Camino Real. The driveway would be 22 feet wide, which is sufficient for two-way traffic. The project proposes installing a warning system for pedestrians crossing and vehicles entering and exiting the project site.

The project is estimated to generate 15 trips during the AM peak hour and 20 trips during the PM peak hour. This calculates to about one car every three minutes entering or exiting the driveway during the peak hour. This small number of trips would not have issues accessing the driveway and would not disrupt traffic operations on El Camino Real.

Sight Distance at the Project Driveway

The project driveway should be free and clear of any obstructions to provide adequate sight distance, thereby ensuring that exiting vehicles can see pedestrians on the sidewalk and vehicles and bicycles traveling on El Camino Real. Providing the appropriate sight distance reduces the likelihood of a collision at a driveway and provides drivers with the ability to locate sufficient gaps in traffic and exit a driveway.

Any landscaping and signage should be located in such a way to ensure an unobstructed view for drivers exiting the site. The minimum acceptable sight distance often considered is the Caltrans stopping sight distance.

The speed limit on El Camino Real is 35 mph in front of the project site. According to the Caltrans sight distance standards, the stopping sight distance for a 35-mph roadway is 300 feet (based on a design speed of 40 mph). The project driveway is located on a portion of El Camino Real that has no roadway curves within 300 feet of the driveway that would obstruct the vision of exiting and entering drivers. However, street parking is allowed along El Camino Real along the project frontage. To maintain adequate sight distance, Hexagon recommends 25 feet of No Parking (Red Zone) north of the project driveway.

According to the site plan, landscaping and street trees would be added along the project frontage on El Camino Real. Landscaping near the driveways would be 2 to 3 feet high at maturity and trees near the driveway would have a high canopy of at least 8 feet high. The landscaping features shown on the site plan are not expected to obstruct the vision of exiting drivers. Therefore, the sight distances at the project driveways would be adequate.

On-Site Circulation

Parking for the proposed project would be provided by a private garage on the ground floor under the condominiums. The parking aisle would have a minimum width of 24 feet, which is sufficient for maneuvering in and out of the parking spaces and would meet the City's requirement for two-way traffic.

Garbage Truck Loading

The site plan shows a garbage room to the left of the parking garage entrance. Figure 3 shows the proposed garbage plan. The proposed garbage plan shows that trash bins would be hauled to the curb and garbage trucks would be able to access the bin from El Camino Real. Currently street parking is allowed on El Camino Real along the project frontage. The applicant should check with the City to see if garbage pickup at the curb on El Camino Real is allowed, as garbage trucks would block the curb lane while loading.

Emergency Vehicle Access

The site plan does not show a specific plan for emergency vehicles access. Emergency vehicles would be able to access the site via the project driveway or the project frontage on El Camino Real. The turning movements show that emergency vehicles such as ambulances would be able to circulate the parking garage (see Figure 4). Larger emergency vehicles such as firetrucks would access the site via the curb along the project frontage.

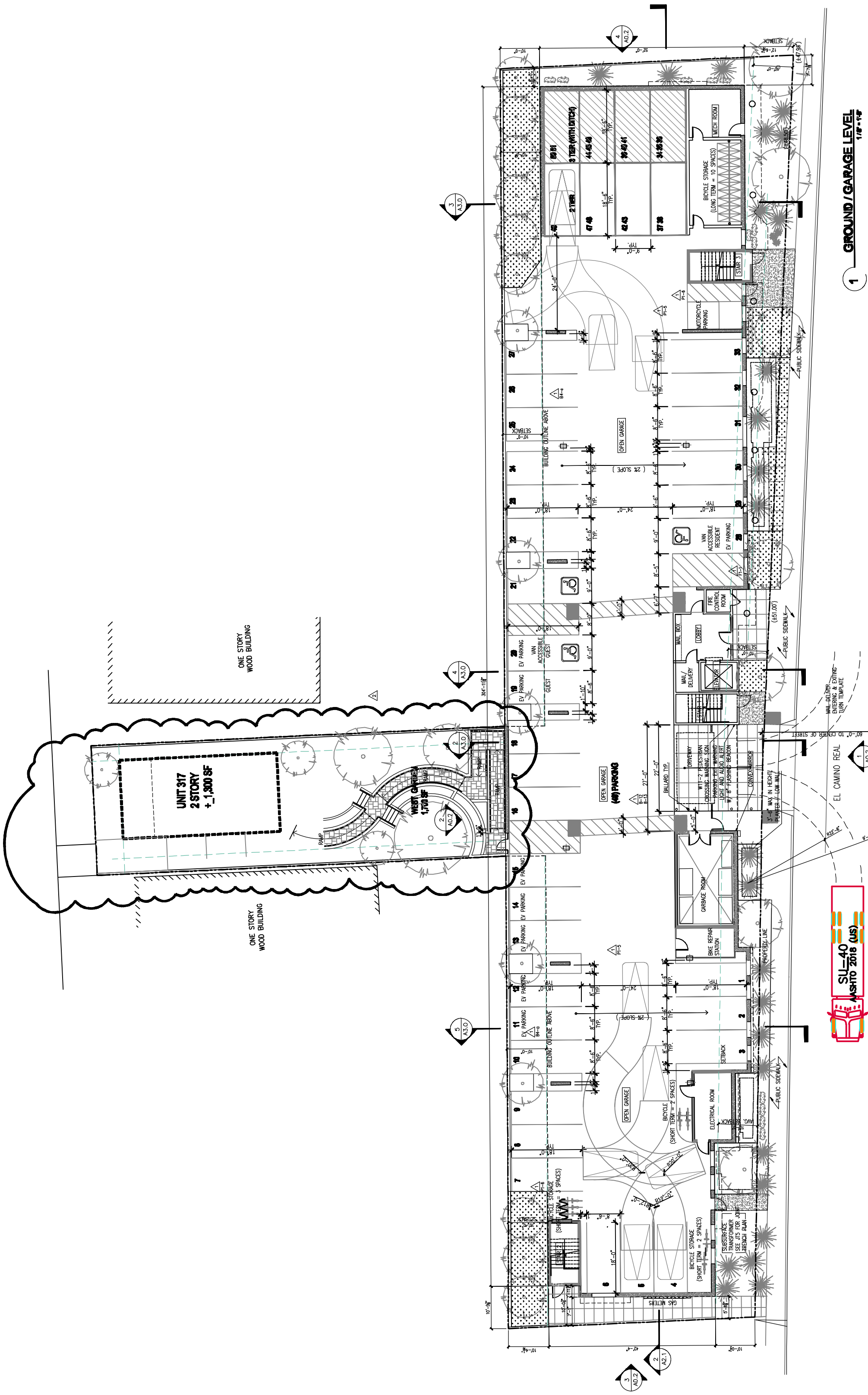

Figure 3
Garbage Plan

NORTH
Not to Scale

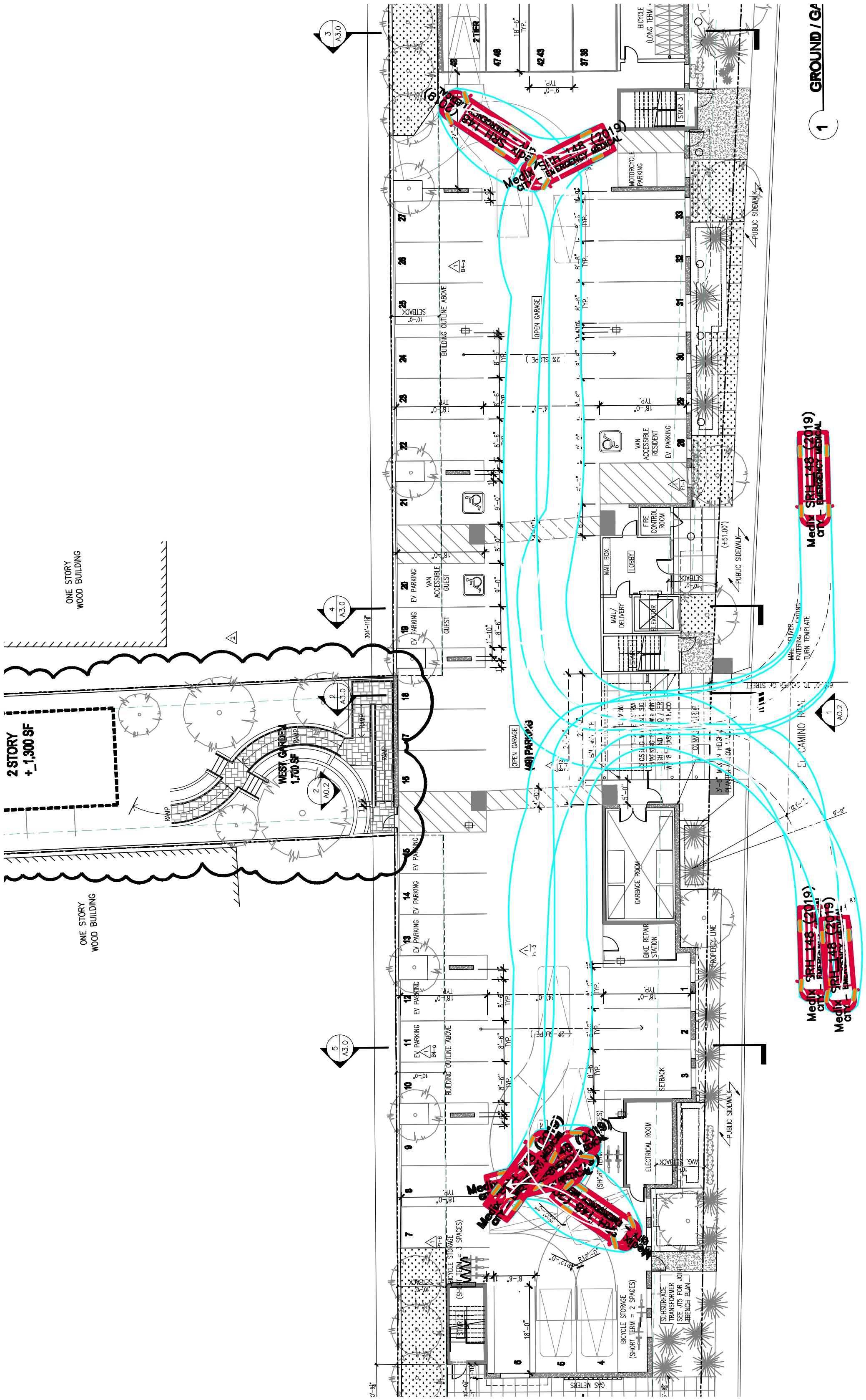

Figure 4
Emergency Access

Parking

The project does not meet the State of California Assembly Bill 2097 and is not exempt from meeting a parking minimum. According to City of San Bruno Zoning Code 12.100.030 Table 12.100-1, single-family residential units are required to provide two parking spaces per unit and multifamily residential units are required to provide two parking spaces per two or more-bedroom unit plus one guest parking space per 10 units. The project proposes one single-family home and 36 multifamily units and would be required to provide 74 parking spaces for residents and four parking spaces for guests for a total of 78 parking spaces. The site plan shows 51 parking spaces which includes two guest parking spaces that are also ADA spaces. The project would not meet the City's parking requirement.

Car Lift

The project proposes to use two- and three-tiered car lifts for 18 of the parking spaces. These parking spaces would be located at the right side of the parking garage. The three-tiered car lift would have one space below grade. The car lift specification chosen would be suitable for larger passenger vehicles such as SUVs.

Conclusions

The results of the transportation assessment for the 271 El Camino Real project are summarized below.

- The project would not have a VMT impact as the site is along a major transit corridor.
- The project shows adequate site access and circulation for residents and emergency vehicles.
    - The applicant should check with the City if trash pick up at the curb along El Camino Real is allowed.
- The project proposes 51 parking spaces where 78 are required.
- Hexagon recommends 25 feet of red curb north of the driveway to provide adequate sight distance.

271 EL CAMINO REAL PROJECT NOISE AND VIBRATION ASSESSMENT

San Bruno, California

January 23, 2025

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INTRODUCTION

The project proposes the construction of a four-story condominium building at a vacant site located at 271 El Camino Real in San Bruno, California. Three-stories of condominiums would be constructed above one story of ground level parking. A total of 35 units are proposed.

This report evaluates the project's potential to result in significant impacts with respect to applicable California Environmental Quality Act (CEQA) guidelines. The report is divided into three sections: 1) the Setting Section provides a brief description of the fundamentals of environmental noise and groundborne vibration, summarizes applicable regulatory criteria, and discusses ambient noise conditions in the project vicinity; 2) the Plan Consistency Analysis section discusses noise and land use compatibility utilizing policies in the City's General Plan; and 3) the Impacts and Mitigation Measures Section describes the significance criteria used to evaluate project impacts, provides a discussion of each project impact, and presents mitigation measures, where necessary, to mitigate project impacts to a less-than-significant level.

SETTING

Fundamentals of Environmental Noise

Noise may be defined as unwanted sound. Noise is usually objectionable because it is disturbing or annoying. The objectionable nature of sound could be caused by its *pitch* or its *loudness*. *Pitch* is the height or depth of a tone or sound, depending on the relative rapidity (*frequency*) of the vibrations by which it is produced. Higher pitched signals sound louder to humans than sounds with a lower pitch. *Loudness* is the intensity of sound waves combined with the reception characteristics of the ear. Intensity may be compared with the height of an ocean wave in that it is a measure of the amplitude of the sound wave.

In addition to the concepts of pitch and loudness, there are several noise measurement scales which are used to describe noise in a particular location. A *decibel (dB)* is a unit of measurement which indicates the relative amplitude of a sound. The zero on the decibel scale is based on the lowest sound level that the healthy, unimpaired human ear can detect. Sound levels in decibels are calculated on a logarithmic basis. An increase of 10 decibels represents a ten-fold increase in acoustic energy, while 20 decibels is 100 times more intense, 30 decibels is 1,000 times more intense, etc. There is a relationship between the subjective noisiness or loudness of a sound and its intensity. Each 10 decibel increase in sound level is perceived as approximately a doubling of loudness over a fairly wide range of intensities. Technical terms are defined in Table 1.

There are several methods of characterizing sound. The most common in California is the *A-weighted sound level (dBA).* This scale gives greater weight to the frequencies of sound to which the human ear is most sensitive. Representative outdoor and indoor noise levels in units of dBA are shown in Table 2. Because sound levels can vary markedly over a short period of time, a method for describing either the average character of the sound or the statistical behavior of the variations must be utilized. Most commonly, environmental sounds are described in terms of an average level that has the same acoustical energy as the summation of all the time-varying events.

This *energy-equivalent sound/noise descriptor* is called L_{eq}. The most common averaging period is hourly, but L_{eq} can describe any series of noise events of arbitrary duration.

The scientific instrument used to measure noise is the sound level meter. Sound level meters can accurately measure environmental noise levels to within plus or minus 1 dBA. Various computer models are used to predict environmental noise levels from sources, such as roadways and airports. The accuracy of the predicted models depends upon the distance the receptor is from the noise source. Close to the noise source, the models are accurate to within about plus or minus 1 to 2 dBA.

Since the sensitivity to noise increases during the evening and at night -- because excessive noise interferes with the ability to sleep -- 24-hour descriptors have been developed that incorporate artificial noise penalties added to quiet-time noise events. The *Community Noise Equivalent Level* (*CNEL*) is a measure of the cumulative noise exposure in a community, with a 5 dB penalty added to evening (7:00 pm - 10:00 pm) and a 10 dB addition to nocturnal (10:00 pm - 7:00 am) noise levels. The *Day/Night Average Sound Level* (*DNL* or L_{dn}) is essentially the same as CNEL, with the exception that the evening time period is dropped and all occurrences during this three-hour period are grouped into the daytime period.

Effects of Noise

Sleep and Speech Interference

The thresholds for speech interference indoors are about 45 dBA if the noise is steady and above 55 dBA if the noise is fluctuating. Outdoors the thresholds are about 15 dBA higher. Steady noises of sufficient intensity (above 35 dBA) and fluctuating noise levels above about 45 dBA have been shown to affect sleep. Interior residential standards for multi-family dwellings are set by the State of California at 45 dBA L_{dn}. Typically, the highest steady traffic noise level during the daytime is about equal to the L_{dn} and nighttime levels are 10 dBA lower. The standard is designed for sleep and speech protection and most jurisdictions apply the same criterion for all residential uses. Typical structural attenuation is 12 to 17 dBA with open windows. With closed windows in good condition, the noise attenuation factor is around 20 dBA for an older structure and 25 dBA for a newer dwelling.[1] Sleep and speech interference is therefore possible when exterior noise levels are about 57 to 62 dBA L_{dn} with open windows and 65 to 70 dBA L_{dn} if the windows are closed. Levels of 55 to 60 dBA are common along collector streets and secondary arterials, while 65 to 70 dBA is a typical value for a primary/major arterial. Levels of 75 to 80 dBA are normal noise levels at the first row of development outside a freeway right-of-way. In order to achieve an acceptable interior noise environment, bedrooms facing secondary roadways need to be able to have their windows closed, those facing major roadways and freeways typically need special glass windows.

Annoyance

Attitude surveys are used for measuring the annoyance felt in a community for noises intruding into homes or affecting outdoor activity areas. In these surveys, it was determined that the causes

[1] Based on the U.S. Department of Transportation Federal Highway Administration document "Highway Traffic Noise: Analysis and Abatement Guidance" (2010) and data from Illingworth & Rodkin, Inc. noise monitoring projects.

for annoyance include interference with speech, radio and television, house vibrations, and interference with sleep and rest. The L_{dn} as a measure of noise has been found to provide a valid correlation between noise level and the percentage of people annoyed. People have been asked to judge the annoyance caused by aircraft noise and ground transportation noise. There continues to be disagreement about the relative annoyance of these different sources. When measuring the percentage of the population highly annoyed, the threshold for ground vehicle noise is about 50 dBA L_{dn}. At a L_{dn} of about 60 dBA, approximately 12 percent of the population is highly annoyed. When the L_{dn} increases to 70 dBA, the percentage of the population highly annoyed increases to about 25 to 30 percent of the population. There is, therefore, an increase of about 2 percent per dBA between a L_{dn} of 60 to 70 dBA. Between a L_{dn} of 70 to 80 dBA, each decibel increase increases by about 3 percent the percentage of the population highly annoyed. People appear to respond more adversely to aircraft noise. When the L_{dn} is 60 dBA, approximately 30 to 35 percent of the population is believed to be highly annoyed. Each decibel increase to 70 dBA adds about 3 percentage points to the number of people highly annoyed. Above 70 dBA, each decibel increase results in about a 4 percent increase in the percentage of the population highly annoyed.[2]

[2] Kryter, Karl D. The Effects of Noise on Man. Menlo Park, Academic Press, Inc., 1985.

TABLE 1 Definition of Acoustical Terms Used in this Report

Term	Definition
Decibel, dB	A unit describing the amplitude of sound, equal to 20 times the logarithm to the base 10 of the ratio of the pressure of the sound measured to the reference pressure. The reference pressure for air is 20 micro Pascals.
Sound Pressure Level	Sound pressure is the sound force per unit area, usually expressed in micro Pascals (or 20 micro Newtons per square meter), where 1 Pascal is the pressure resulting from a force of 1 Newton exerted over an area of 1 square meter. The sound pressure level is expressed in decibels as 20 times the logarithm to the base 10 of the ratio between the pressures exerted by the sound to a reference sound pressure (e. g., 20 micro Pascals). Sound pressure level is the quantity that is directly measured by a sound level meter.
Frequency, Hz	The number of complete pressure fluctuations per second above and below atmospheric pressure. Normal human hearing is between 20 Hz and 20,000 Hz. Infrasonic sound are below 20 Hz and Ultrasonic sounds are above 20,000 Hz.
A-Weighted Sound Level, dBA	The sound pressure level in decibels as measured on a sound level meter using the A-weighting filter network. The A-weighting filter de-emphasizes the very low and very high frequency components of the sound in a manner similar to the frequency response of the human ear and correlates well with subjective reactions to noise.
Equivalent Noise Level, L_{eq}	The average A-weighted noise level during the measurement period.
L_{max}, L_{min}	The maximum and minimum A-weighted noise level during the measurement period.
L_{01}, L_{10}, L_{50}, L_{90}	The A-weighted noise levels that are exceeded 1%, 10%, 50%, and 90% of the time during the measurement period.
Day/Night Noise Level, L_{dn} or DNL	The average A-weighted noise level during a 24-hour day, obtained after addition of 10 decibels to levels measured in the night between 10:00 pm and 7:00 am.
Community Noise Equivalent Level, CNEL	The average A-weighted noise level during a 24-hour day, obtained after addition of 5 decibels in the evening from 7:00 pm to 10:00 pm and after addition of 10 decibels to sound levels measured in the night between 10:00 pm and 7:00 am.
Ambient Noise Level	The composite of noise from all sources near and far. The normal or existing level of environmental noise at a given location.
Intrusive	That noise which intrudes over and above the existing ambient noise at a given location. The relative intrusiveness of a sound depends upon its amplitude, duration, frequency, and time of occurrence and tonal or informational content as well as the prevailing ambient noise level.

Source: Handbook of Acoustical Measurements and Noise Control, Harris, 1998.

TABLE 2 Typical Noise Levels in the Environment

Common Outdoor Activities	Noise Level (dBA)	Common Indoor Activities
	110 dBA	Rock band
Jet fly-over at 1,000 feet		
	100 dBA	
Gas lawn mower at 3 feet		
	90 dBA	
Diesel truck at 50 feet at 50 mph		Food blender at 3 feet
	80 dBA	Garbage disposal at 3 feet
Noisy urban area, daytime		
Gas lawn mower, 100 feet	70 dBA	Vacuum cleaner at 10 feet
Commercial area		Normal speech at 3 feet
Heavy traffic at 300 feet	60 dBA	
		Large business office
Quiet urban daytime	50 dBA	Dishwasher in next room
Quiet urban nighttime	40 dBA	Theater, large conference room
Quiet suburban nighttime		
	30 dBA	Library
Quiet rural nighttime		Bedroom at night, concert hall (background)
	20 dBA	
		Broadcast/recording studio
	10 dBA	
	0 dBA	

Source: Technical Noise Supplement (TeNS), California Department of Transportation, September 2013.

Fundamentals of Groundborne Vibration

Ground vibration consists of rapidly fluctuating motions or waves with an average motion of zero. Several different methods are typically used to quantify vibration amplitude. One method is the Peak Particle Velocity (PPV). The PPV is defined as the maximum instantaneous positive or negative peak of the vibration wave. In this report, a PPV descriptor with units of mm/sec or in/sec is used to evaluate construction generated vibration for building damage and human complaints. Table 3 displays the reactions of people and the effects on buildings that continuous or frequent intermittent vibration levels produce. The guidelines in Table 3 represent syntheses of vibration criteria for human response and potential damage to buildings resulting from construction vibration.

Construction activities can cause vibration that varies in intensity depending on several factors. The use of pile driving and vibratory compaction equipment typically generates the highest construction related groundborne vibration levels. Because of the impulsive nature of such activities, the use of the PPV descriptor has been routinely used to measure and assess groundborne vibration and almost exclusively to assess the potential of vibration to cause damage and the degree of annoyance for humans.

The two primary concerns with construction-induced vibration, the potential to damage a structure and the potential to interfere with the enjoyment of life, are evaluated against different vibration limits. Human perception to vibration varies with the individual and is a function of physical setting and the type of vibration. Persons exposed to elevated ambient vibration levels, such as people in an urban environment, may tolerate a higher vibration level.

Structural damage can be classified as cosmetic only, such as paint flaking or minimal extension of cracks in building surfaces; minor, including limited surface cracking; or major, that may threaten the structural integrity of the building. Safe vibration limits that can be applied to assess the potential for damaging a structure vary by researcher. The damage criteria presented in Table 3 include several categories for ancient, fragile, and historic structures, the types of structures most at risk to damage. Most buildings are included within the categories ranging from “Historic and some old buildings” to “Modern industrial/commercial buildings”. Construction-induced vibration that can be detrimental to the building is very rare and has only been observed in instances where the structure is at a high state of disrepair and the construction activity occurs immediately adjacent to the structure.

The annoyance levels shown in Table 3 should be interpreted with care since vibration may be found to be annoying at lower levels than those shown, depending on the level of activity or the sensitivity of the individual. To sensitive individuals, vibrations approaching the threshold of perception can be annoying. Low-level vibrations frequently cause irritating secondary vibration, such as a slight rattling of windows, doors, or stacked dishes. The rattling sound can give rise to exaggerated vibration complaints, even though there is very little risk of actual structural damage.

TABLE 3 Reaction of People and Damage to Buildings from Continuous or Frequent Intermittent Vibration Levels

Velocity Level, PPV (in/sec)	Human Reaction	Effect on Buildings
0.01	Barely perceptible	No effect
0.04	Distinctly perceptible	Vibration unlikely to cause damage of any type to any structure
0.08	Distinctly perceptible to strongly perceptible	Recommended upper level of the vibration to which ruins and ancient monuments should be subjected
0.1	Strongly perceptible	Threshold at which there is a risk of damage to fragile buildings with no risk of damage to most buildings
0.25	Strongly perceptible to severe	Threshold at which there is a risk of damage to historic and some old buildings.
0.3	Strongly perceptible to severe	Threshold at which there is a risk of damage to older residential structures
0.5	Severe - Vibrations considered unpleasant	Threshold at which there is a risk of damage to new residential and modern commercial/industrial structures

Source: Transportation and Construction Vibration Guidance Manual, California Department of Transportation, April 2020.

Regulatory Background – Noise

This section describes the relevant guidelines, policies, and standards established by State Agencies, San Mateo County, and the City of San Bruno. The State CEQA Guidelines, Appendix G, are used to assess the potential significance of impacts pursuant to local General Plan policies or the applicable standards of other agencies. A summary of the applicable regulatory criteria is provided below.

State of California

State CEQA Guidelines. The California Environmental Quality Act (CEQA) contains guidelines to evaluate the significance of effects of environmental noise attributable to a proposed project. Under CEQA, noise impacts would be considered significant if the project would result in:

(a) Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies;

(b) Generation of excessive groundborne vibration or groundborne noise levels;

(c) For a project located within the vicinity of a private airstrip or an airport land use plan or where such a plan has not been adopted within two miles of a public airport or public use airport, if the project would expose people residing or working in the project area to excessive noise levels.

2022 California Building Code, Title 24, Part 2. The current version of the California Building Code (CBC) requires interior noise levels in multi-family residential units attributable to exterior environmental noise sources to be limited to a level not exceeding 45 dBA DNL/CNEL in any habitable room.

San Mateo County

Comprehensive Airport Land Use Compatibility Plan for the Environs of San Francisco International Airport, November 2012. Noise compatibility policies established in this document were designed to protect the public health, safety, and welfare by minimizing the exposure of residents and occupants of future noise-sensitive development to excessive noise and to protect the public interest in providing for the orderly development of SFO by ensuring that new development in the Airport environs complies with all requirements necessary to ensure compatibility with aircraft noise in the area. The intent is to avoid the introduction of new incompatible land uses into the Airport's "noise impact area" so that the Airport will continue to be in compliance with the State Noise Standards for airports (California Code of Regulations, Title 21, Sections 5012 and 5014).[3] The following noise compatibility policies (NP) shall apply to the ALUCP and are applicable to this project:

NP-1: Noise Compatibility Zones. For the purposes of this ALUCP, the projected 2020 CNEL noise contour map from the Draft Environmental Assessment for the Proposed Runway Safety Area Program shall define the boundaries within which noise compatibility policies described in this Section shall apply.[4] Exhibit IV-5 depicts the noise compatibility zones. More detail is provided on Exhibit IV-6. The zones are defined by the CNEL 65, 70 and 75 dB contours.

NP-2: Airport Noise/Land Use Compatibility Criteria. The compatibility of proposed land uses located in the Airport noise compatibility zones shall be determined according to the noise/land use compatibility criteria shown in Table IV-1. The criteria indicate the maximum acceptable airport noise levels, described in terms of Community Noise Equivalent Level (CNEL), for the indicated land uses. The compatibility criteria indicate whether a proposed land use is "compatible," "conditionally compatible," or "not compatible" within each zone, designated by the identified CNEL ranges.

- "Compatible" means that the proposed land use is compatible with the CNEL level indicated in the table and may be permitted without any special requirements related to the attenuation of aircraft noise.

- "Conditionally compatible" means that the proposed land use is compatible if the conditions described in Table IV-1 are met.

- "Not compatible" means that the proposed land use is incompatible with aircraft noise at the indicated CNEL level.

3 In 2002, the San Mateo County Board of Supervisors declared that the Airport had eliminated its "noise impact area," as defined under state law -- California Code of Regulations, Title 21, Sections 5012 and 5014.

4 URS Corporation and BridgeNet International. Draft Environmental Assessment, Proposed Runway Safety Area Program, San Francisco International Airport, June 2011.

NP-3: Grant of Avigation Easement. Any action that would either permit or result in the development or construction of a land use considered to be conditionally compatible with aircraft noise of CNEL 65 dB or greater shall be subject to this easement requirement. The determination of conditional compatibility shall be based on the criteria presented in Table IV-1 "Noise/Land Use Compatibility Criteria."

The San Mateo County Airport Land Use Commission (the C/CAG Board) deems it necessary to: (1) ensure the unimpeded use of airspace in the vicinity of SFO; (2) to ensure that new noise-sensitive land uses within the CNEL 65 dB contour are made compatible with aircraft noise, in accordance with California Code of Regulations, Title 21, Section 5014; and (3) to provide notice to owners of real property near the Airport of the proximity to SFO and of the potential impacts that could occur on the property from airport/aircraft operations. Thus, C/CAG shall condition its approval of proposed development upon the owner of the subject property granting an avigation easement to the City and County of San Francisco, as the proprietor of SFO. The local government with the ultimate permitting and approval authority over the proposed development shall ensure that this condition is implemented prior to final approval of the proposed development. If the approval action for the proposed development includes construction of a building(s) and/or other structures, the local permitting authority shall require the grant of an avigation easement to the City and County of San Francisco prior to issuance of a building permit(s) for the proposed building or structure. If the proposed development is not built, then, upon notice by the local permitting authority, SFO shall record a notice of termination of the avigation easement.

The avigation easement to be used in fulfilling this condition is presented in Appendix G.

NP-4: Residential Uses Within CNEL 70 dB Contour. As described in Table IV-1, residential uses are not compatible in areas exposed to noise above CNEL 70 dB and typically should not be allowed in these high noise areas.

> *NP-4.1: Situations Where Residential Use Is Conditionally Compatible.* Residential uses are considered conditionally compatible in areas exposed to noise above CNEL 70 dB only if the proposed use is on a lot of record zoned exclusively for residential use as of the effective date of the ALUCP. In such a case, the residential use must be sound-insulated to achieve an indoor noise level of CNEL 45 dB or less from exterior sources. The property owner also shall grant an avigation easement to the City and County of San Francisco in accordance with Policy NP-3 prior to issuance of a building permit for the proposed building or structure.

Table IV-1 Noise/Land Use Compatibility Criteria

LAND USE	COMMUNITY NOISE EQUIVALENT LEVEL (CNEL) BELOW 65 dB	65-70 dB	70-75 dB	75 dB AND OVER
Residential				
Residential, single family detached	Y	C	N *(a)*	N
Residential, multi-family and single family attached	Y	C	N *(a)*	N
Transient lodgings	Y	C	C	N
Public/Institutional				
Public and Private Schools	Y	C	N	N
Hospitals and nursing homes	Y	C	N	N
Places of public assembly, including places of worship	Y	C	N	N
Auditoriums, and concert halls	Y	C	C	N
Libraries	Y	C	C	N
Outdoor music shells, amphitheaters	Y	N	N	N
Recreational				
Outdoor sports arenas and spectator sports	Y	Y	Y	N
Nature exhibits and zoos	Y	Y	N	N
Amusements, parks, resorts and camps	Y	Y	Y	N
Golf courses, riding stables, and water recreation	Y	Y	Y	Y
Commercial				
Offices, business and professional, general retail	Y	Y	Y	Y
Wholesale; retail building materials, hardware, farm equipment	Y	Y	Y	Y
Industrial and Production				
Manufacturing	Y	Y	Y	Y
Utilities	Y	Y	Y	Y
Agriculture and forestry	Y	Y *(b)*	Y *(c)*	Y *(c)*
Mining and fishing, resource production and extraction	Y	Y	Y	Y

Notes:

CNEL = Community Noise Equivalent Level, in A-weighted decibels.

Y (Yes) = Land use and related structures compatible without restrictions.

C (conditionally compatible) = Land use and related structures are permitted, provided that sound insulation is provided to reduce interior noise levels from exterior sources to CNEL 45 dB or lower and that an avigation easement is granted to the City and County of San Francisco as operator of SFO. See Policy NP-3.

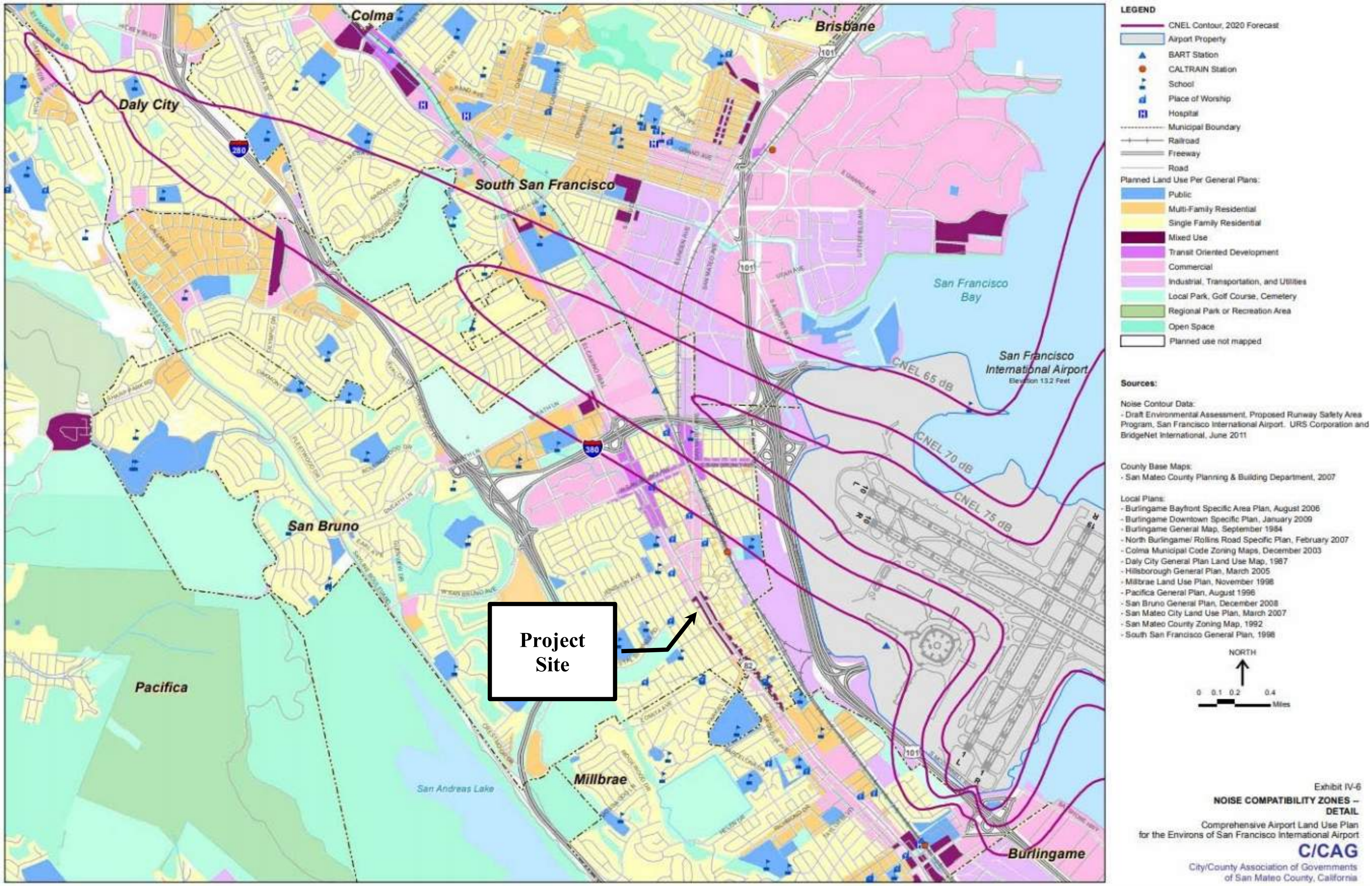
N (No) = Land use and related structures are not compatible.

(a) Use is conditionally compatible only on an existing lot of record zoned only for residential use as of the effective date of the ALUCP. Use must be sound-insulated to achieve an indoor noise level of CNEL 45 dB or less from exterior sources. The property owners shall grant an avigation easement to the City and County of San Francisco prior to issuance of a building permit for the proposed building or structure. If the proposed development is not built, then, upon notice by the local permitting authority, SFO shall record a notice of termination of the avigation easement.

(b) Residential buildings must be sound-insulated to achieve an indoor noise level of CNEL 45 dB or less from exterior sources.

(c) Accessory dwelling units are not compatible.

SOURCES: Jacobs Consultancy Team 2010. Based on State of California General Plan Guidelines for noise elements of general plans; California Code of Regulations, Title 21, Division 2.5, Chapter 6, Section 5006; and 14 CFR Part 150, Appendix A, Table 1.
PREPARED BY: Ricondo & Associates, Inc., June 2012.



Source: Comprehensive Airport Land Use Compatibility Plan for the Environs of San Francisco International Airport, November 2012, accessed via https://ccag.ca.gov/wp-content/uploads/2014/10/Consolidated_CCAG_ALUCP_November-20121.pdf June 2021.

City of San Bruno

City of San Bruno General Plan. The City of San Bruno's General Plan includes a Noise section within the Health and Safety Element which provides guidelines to achieve the goal of maintaining an acceptable community noise level. The following general plan policies are applicable to the project:

HS-32 Encourage developers to mitigate ambient noise levels adjacent to major noise sources by incorporating acoustical site planning into their projects. Utilize the City's Building Code to implement mitigation measures, such as:

- Incorporating buffers and/or landscaped berms along high-noise roadways or railways;
- Incorporating traffic calming measures and alternative intersection design within and/or adjacent to the project;
- Using reduced-noise pavement (rubberized asphalt); and
- Incorporating state-of-the-art structural sound attenuation measures.

HS-33 Prevent the placement of new noise-sensitive uses unless adequate mitigation is provided. Establish insulation requirements as mitigation measures for all development, per the standards in Table 7-1.

HS-34 Discourage noise-sensitive uses such as hospitals, schools, and rest homes from locating in areas with high noise levels. Conversely, discourage new uses likely to produce high levels of noise from locating in areas where noise-sensitive uses would be impacted.

HS-35 Require developers to comply with relevant noise insulation standards contained in Title 24 of the California Code of Regulations (Part 2, Appendix Chapter 12A).

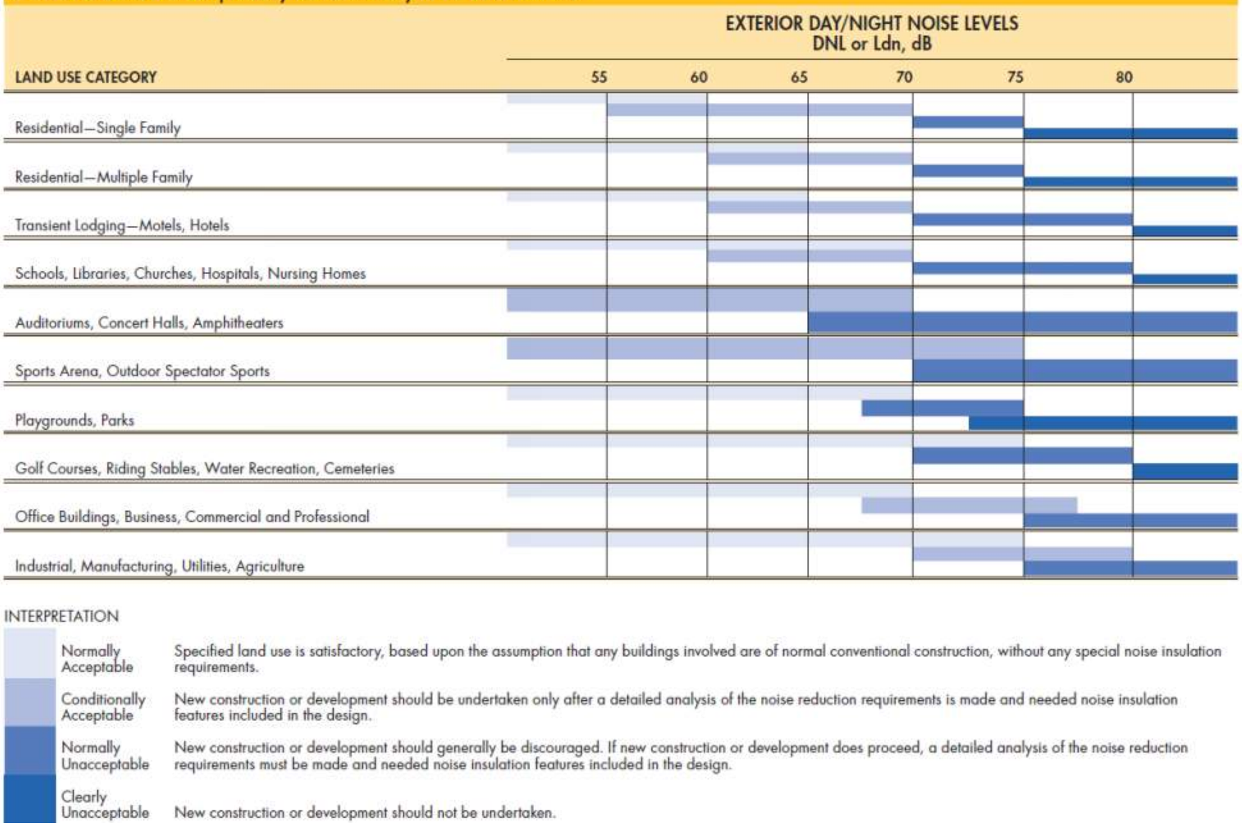
HS-38 Require developers to mitigate noise exposure to sensitive receptors from construction activities. Mitigation may include a combination of techniques that reduce noise generated at the source, increase the noise insulation at the receptor, or increase the noise attenuation rate as noise travels from the source to the receptor.

TABLE 7-1: San Mateo County Comprehensive Airport Land Use Plan Noise/Land Use Compatibility Standards

LAND USE	GENERAL LAND USE CRITERIA, CNELA		
	COMPATIBLE *No special noise insulation requirements for new construction*	**CONDITIONALLY COMPATIBLE** *New development should be undertaken only after analysis and including needed noise insulation features in design*	**INCOMPATIBLE** *New construction should not be undertaken unless related to airport activities or services. Special noise insulation features should be included in construction*
RESIDENTIAL: single- and multi-family, mobile homes, schools, libraries, churches, hospitals, nursing homes, and auditoriums	Less than 65	65 to 70	More than 70
COMMERCIAL: retail, restaurants, office buildings, hotels, motels, movie theaters, sports arenas, playgrounds, cemeteries, and golf courses	Less than 70	70 to 80	More than 80
INDUSTRIAL: manufacturing, transportation, communications, and utilities	Less than 75	75 to 85	More than 85
OPEN SPACE: agriculture, mining, fishing	Less than 75	NA	More than 75

Source: San Mateo County Airport Land Use Commission, San Mateo County Comprehensive Airport Land Use Plan, December 1996.

TABLE 7-2: Land Use Compatibility For Community Noise Environments



City of San Bruno Municipal Code. San Bruno's Noise Ordinance is contained in Title 6 of the San Bruno Municipal Code. The ordinance places limits on noise levels in residential zones, limits construction activity noise levels and hours near residential zones, establishes machinery noise level limits, and addresses amplified sounds. The following ordinances are applicable to the project:

<u>6.16.030 Ambient noise level limits.</u> Where the ambient noise level is less than designated in this section, the respective noise level in this section shall govern.

Sound Level A, decibels

Residential zone, time ten p.m. to seven a.m., forty-five decibels; seven a.m. to ten p.m., sixty decibels. (Ord. 1354 § 1; prior code § 16-4.3)

<u>6.16.050 Noise levels exceeding ambient base level.</u> Any noise level exceeding the zone ambient base level at the property plane of any property, or exceeding the zone ambient base level on any adjacent residential area zone line or at any place of other property (or, if a condominium or apartment house, within any adjoining apartment) by more than ten decibels shall be deemed to be prima facie evidence of a violation of the provisions of this chapter. However, during the period of seven a.m. to ten p.m. the ambient base level may be exceeded by twenty decibels for a period not to exceed thirty minutes during any twenty-four-hour period.

> 6.16.060 Machinery noise levels. No person shall operate any machinery, equipment, pump, fan, air conditioning apparatus or similar mechanical device in any manner so as to create any noise which would cause the noise level at the property plane of any property to exceed the ambient base noise level by more than ten decibels. However, during the period of seven a.m. to ten p.m. the ambient noise level may be exceeded by twenty decibels for a period not to exceed thirty minutes during any twenty-four-hour period.
>
> 6.16.070 Construction of buildings and projects. No person shall, within any residential zone, or within a radius of five hundred feet therefrom, operate equipment or perform any outside construction or repair work on any building, structure, or other project, or operate any pile driver, power shovel, pneumatic hammer, derrick, power hoist, or any other construction-type device which shall exceed, between the hours of seven a.m. and ten p.m., a noise level of eighty-five decibels as measured at one hundred feet, or exceed between the hours of ten p.m. and seven a.m. a noise level of sixty decibels as measured at one hundred feet, unless such person shall have first obtained a permit therefor from the director of public works. No permit shall be required to perform emergency work.

Regulatory Background – Vibration

California Department of Transportation. Caltrans identifies a vibration threshold of 0.5 in/sec PPV for buildings structurally sound and designed to modern engineering standards, 0.3 in/sec PPV for buildings that are found to be structurally sound but where structural damage is a major concern, and a conservative limit of 0.25 in/sec PPV for historic and some old buildings (see Table 3).

Existing Noise Environment

Figure 1 shows the project site and vicinity. The project site is bound by commercial uses to the north and to the south, by residences to the west, and by El Camino Real to the east. Opposite El Camino Real are additional commercial uses and the Stratford School.

The existing noise environment at the project site results primarily from traffic noise along El Camino Real. Traffic noise along nearby U.S. Highway 101 and aircraft associated with San Francisco International Airport also contribute to the noise environment.

This site was studied by *Illingworth & Rodkin, Inc.*[5] in April 2021 for a proposed residential development. The noise level measurements made in 2021 continue to represent the existing noise environment assuming relatively small increases in traffic volumes over the past three years. Traffic volumes are expected to increase by about 1% - 2% per year, correlating with a traffic noise increase of less than 1 dBA.

The 2021 noise survey consisted of two long-term (LT-1 and LT-2) and two short-term (ST-1 and ST-2) noise measurements as shown in Figure 1. These measurements were made between Wednesday, June 2, 2021, and Friday, June 4, 2021. Weather conditions during the measurement

[5] Illingworth & Rodkin, Inc., "Butler Apartments Noise and Vibration Assessment," June 16, 2021.

period were good for noise monitoring. Meteorological conditions on Wednesday, Thursday, and Friday consisted of partly cloudy skies, calm to light winds, and seasonable temperatures.

The predominant noise source at Site LT-1, located approximately 135 feet from the center of El Camino Real along the western boundary of the site, was traffic along the roadway. Daytime noise levels at LT-1 typically ranged from 60 to 64 dBA L_{eq}, and nighttime noise levels typically ranged from 51 to 63 dBA L_{eq}. The day-night average noise level at LT-1 was 65 dBA L_{dn} over the 24-hour noise monitoring period on Thursday, June 3, 2021. Figure A1 through A3 displays the noise data collected at LT-1.

LT-2 was located along the eastern boundary of the site, approximately 65 feet from the center of El Camino Real. The predominant noise source at LT-2 was also El Camino Real traffic. Daytime noise levels at LT-2 typically ranged from 66 to 71 dBA L_{eq}, and nighttime noise levels typically ranged from 57 to 68 dBA L_{eq}. The day-night average noise level at LT-2 was 71 dBA L_{dn} over the 24-hour noise monitoring period on Thursday, June 3, 2021. Figure A4 through A6 displays the noise data collected at LT-2.

Short-term, observed, noise measurements were made at locations ST-1 and ST-2. The noise levels measured at ST-1 were representative of the existing noise environment at the outdoor activity area proposed west of the building. Vehicle traffic along El Camino Real produced noise levels ranging from 50 to 64 dBA, and jets produced noise levels ranging from 55 to 56 dBA. The average noise level was 54 dBA L_{eq} between 9:20 a.m. and 9:30 a.m. on Friday, June 4, 2021.

Noise levels measured at ST-2 were representative of the noise environment at existing land uses adjoining El Camino Real and at the proposed residential units. Similar to LT-2, traffic produced noise levels ranging from 55 to 71 dBA. The average noise level was 67 dBA L_{eq} between 9:40 a.m. and 9:50 a.m. on Friday, June 4, 2021.

FIGURE 1 Aerial Image of the Project Site and Surrounding Area with Long- and Short-Term Measurement Locations Identified

Source: Google Earth, 2024.

PLAN CONSISTENCY ANALYSIS

Noise and Land Use Compatibility

The City of San Bruno's General Plan sets forth policies to help minimize the impact of noise on people throughout the City of San Bruno. The applicable General Plan policies were presented in detail in the Regulatory Background section and are summarized below for the proposed project:

- The City's normally acceptable exterior noise level standard is 65 dBA L_{dn} or less for the proposed multifamily residential land uses.

- The City's acceptable interior noise level standard is 45 dBA L_{dn} or less for the proposed multifamily residential land uses.

The future noise environment at the site would continue to result primarily from vehicular traffic along El Camino Real. A full traffic study was not required for the proposed project; however, 14 to 18 peak hour trips would be generated by the proposed project during the AM and PM peak traffic hours. These additional peak hour trips would not result in a measurable or detectable increase in noise. To estimate the future noise levels at the project site, an increase of about 1% or 2% per year in traffic volumes along El Camino Real was assumed for the next 15 to 20 years. Conservatively, this would result in a future noise level increase of up to 2 dBA L_{dn} above existing conditions. This increase was applied throughout the project site.

Future Exterior Noise Environment

The site plan shows a garden and a deck on the first residential floor of the proposed building. The building would adequately shield these outdoor use areas from El Camino Real traffic noise. Future exterior noise levels would be at or below 60 dBA L_{dn}. The exterior use areas proposed by the project would be compatible with the future noise environment.

Future Interior Noise Environment

Standard residential construction provides approximately 15 dBA of exterior-to-interior noise reduction, assuming the windows are partially open for ventilation. Standard construction with the windows closed provides approximately 20 to 25 dBA of noise reduction in interior spaces. Where exterior noise levels range from 60 to 65 dBA L_{dn}, the inclusion of adequate forced-air mechanical ventilation is often the method selected to reduce interior noise levels to acceptable levels by closing the windows to control noise. Where noise levels exceed 65 dBA L_{dn}, forced-air mechanical ventilation systems and sound-rated construction methods are normally required. Such methods or materials may include a combination of smaller window and door sizes as a percentage of the total building façade facing the noise source, sound-rated windows and doors, sound rated exterior wall assemblies, and mechanical ventilation so windows may be kept closed at the occupant's discretion.

The eastern façade of the proposed building would be set back approximately 70 to 80 feet from the centerline of El Camino Real. At this distance, the residential units located along the eastern façade would be exposed to future exterior noise levels ranging from 72 to 73 dBA L_{dn}. Assuming windows to be partially open, future interior noise levels at units located along the eastern building façade would be up to 58 dBA L_{dn}.

Units located along the northern and southern building façades would also be exposed to traffic noise from El Camino Real. These units would be set back 70 to 125 feet from the centerline of El Camino Real. At these distances, the residential units along the northern and southern building façades would be exposed to future exterior noise levels ranging from 70 to 73 dBA L_{dn}. Assuming windows to be partially open, future interior noise levels at the units would range from 55 to 58 dBA L_{dn}.

To meet the interior noise requirements set forth by the City of San Bruno of 45 dBA L_{dn}, implementation of noise insulation features would be required.

Recommended Noise Insulation Features to Reduce Future Interior Noise Levels

The following noise insulation features shall be incorporated into the proposed project:

- Provide a suitable form of forced-air mechanical ventilation, as determined by the local building official, for all residential units on the project site, so that windows can be kept closed at the occupant's discretion to control interior noise and achieve the interior noise standards.

- Preliminary calculations indicate that residential units with direct line-of-sight to El Camino Real, which would be located along the eastern, northern, and southern façades of the proposed building would require windows and doors with a minimum rating of 35 STC. All remaining residential units would require standard construction materials.

The implementation of these noise insulation features would reduce interior noise levels to 45 dBA L_{dn} or less at residential uses.

Conditions of Approval

The project applicant shall prepare final design plans that incorporate building design and acoustical treatments to ensure compliance with State Building Codes and City noise standards. A project-specific acoustical analysis shall be prepared to ensure that the design incorporates controls to reduce interior noise levels to 45 dBA L_{dn} or lower within the residential units. The project applicant shall conform with any special building construction techniques requested by the City's Building Department, which may include sound-rated windows and doors, sound-rated wall constructions, and acoustical caulking.

NOISE IMPACTS AND MITIGATION MEASURES

This section describes the significance criteria used to evaluate project impacts under CEQA, provides a discussion of each project impact, and presents mitigation measures, where necessary, to reduce project impacts to less-than-significant levels.

Significance Criteria

The following criteria were used to evaluate the significance of environmental noise resulting from the project:

(a) Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies;

(b) Generation of excessive groundborne vibration or groundborne noise levels;

(c) For a project located within the vicinity of a private airstrip or an airport land use plan or where such a plan has not been adopted within two miles of a public airport or public use airport, if the project would expose people residing or working in the project area to excessive noise levels.

Impact 1a: **Temporary Construction Noise.** Existing receptors are not expected to be exposed to temporary construction noise levels exceeding the City's threshold. In accordance with Policy HS-38 of the City's General Plan, this temporary noise impact would be reduced to a **less-than-significant** level with the incorporation of construction best management practices.

The construction schedule assumed that the earliest possible start date would be early March 2026, and the development would be built over a period of 9.5 months. Construction hours are expected to be limited to weekdays between the hours 7:00 a.m. and 4:00 p.m. Construction phases would include site preparation, excavation, grading, trenching, building construction, architectural coating, and paving. During each phase of construction, there would be a different mix of equipment operating, and noise levels would vary by phase and vary within phases, based on the amount of equipment in operation and the location at which the equipment is operating.

Noise impacts resulting from construction depend upon the noise generated by various pieces of construction equipment, the timing and duration of noise-generating activities, and the distance between construction noise sources and noise-sensitive areas. Construction noise impacts primarily result when construction activities occur during noise-sensitive times of the day (e.g., early morning, evening, or nighttime hours), the construction occurs in areas immediately adjoining noise-sensitive land uses, or when construction lasts over extended periods of time.

Based on General Plan Policy HS-38, developers are required to mitigate noise exposure to sensitive receptors resulting from construction activities. Mitigation may include reducing construction noise at the source, as the sound is being transmitted through the air, and at the receptor. Municipal Code Section 6.16.070 prohibits noise from non-emergency operation of construction equipment from exceeding 85 dBA at a distance of 100 feet between the hours of 7:00 a.m. and 10:00 p.m. and from exceeding 60 dBA at a distance of 100 feet from 10:00 p.m. until 7:00 a.m. unless a permit is obtained from the director of public works.

Construction activities for individual projects are typically carried out in phases. During each phase of construction, there would be a different mix of equipment operating, and noise levels would vary by phase and vary within phases, based on the amount of equipment in operation and the location at which the equipment is operating. The typical range of maximum instantaneous noise levels for the proposed project would be 70 to 90 dBA L_{max} at a distance of 50 feet (see Table 4) from the equipment.

Table 5 shows the hourly average noise level ranges, by construction phase, typical for various types of projects. Hourly average noise levels generated by construction typically are about 65 to 88 dBA L_{eq} for residential structures, measured at a distance of 50 feet from the center of a busy construction site. Construction-generated noise levels drop off at a rate of about 6 dBA per doubling of the distance between the source and receptor. Shielding by buildings or terrain often results in lower construction noise levels at distant receptors.

Federal Highway Administration's (FHWA's) Roadway Construction Noise Model (RCNM) was used to calculate the typical hourly average noise levels for each phase of construction, assuming the two loudest pieces of equipment would operate simultaneously, as recommended by the Federal Transit Administration (FTA) for construction noise evaluations. This construction noise model includes representative sound levels for the most common types of construction equipment and the approximate usage factors of such equipment that were developed based on an extensive database of information gathered during the construction of the Central Artery/Tunnel Project in Boston, Massachusetts (CA/T Project or "Big Dig"). The usage factors represent the percentage of time that the equipment would be operating at full power.

Equipment expected to be used in each construction phase are summarized in Table 6, along with the quantity of each type of equipment and the reference noise level at 100 feet, assuming the operation of the two loudest pieces of construction equipment for each construction phase, per recommendation by the FTA.

Temporary construction noise was also assessed at the receiving property lines of all existing receptors in the area that would have direct exposure to the project site. Table 7 summarizes the hourly average noise levels calculated for all construction equipment operating simultaneously in each phase for the proposed building construction when the source levels are positioned at the center of the project site and propagated to the receiving property lines. Noise levels in Table 7 do not assume reductions due to intervening buildings or existing barriers.

TABLE 4 Construction Equipment 50-Foot Noise Emission Limits

Equipment Category	L_{max} Level (dBA)[1,2]	Impact/Continuous
Arc Welder	73	Continuous
Auger Drill Rig	85	Continuous
Backhoe	80	Continuous
Bar Bender	80	Continuous
Boring Jack Power Unit	80	Continuous
Chain Saw	85	Continuous
Compressor[3]	70	Continuous
Compressor (other)	80	Continuous
Concrete Mixer	85	Continuous
Concrete Pump	82	Continuous
Concrete Saw	90	Continuous
Concrete Vibrator	80	Continuous
Crane	85	Continuous
Dozer	85	Continuous
Excavator	85	Continuous
Front End Loader	80	Continuous
Generator	82	Continuous
Generator (25 KVA or less)	70	Continuous
Gradall	85	Continuous
Grader	85	Continuous
Grinder Saw	85	Continuous
Horizontal Boring Hydro Jack	80	Continuous
Hydra Break Ram	90	Impact
Impact Pile Driver	105	Impact
Insitu Soil Sampling Rig	84	Continuous
Jackhammer	85	Impact
Mounted Impact Hammer (hoe ram)	90	Impact
Paver	85	Continuous
Pneumatic Tools	85	Continuous
Pumps	77	Continuous
Rock Drill	85	Continuous
Scraper	85	Continuous
Slurry Trenching Machine	82	Continuous
Soil Mix Drill Rig	80	Continuous
Street Sweeper	80	Continuous
Tractor	84	Continuous
Truck (dump, delivery)	84	Continuous
Vacuum Excavator Truck (vac-truck)	85	Continuous
Vibratory Compactor	80	Continuous
Vibratory Pile Driver	95	Continuous
All other equipment with engines larger than 5 HP	85	Continuous

Notes:

[1] Measured at 50 feet from the construction equipment, with a "slow" (1 sec.) time constant.

[2] Noise limits apply to total noise emitted from equipment and associated components operating at full power while engaged in its intended operation.

[3] Portable Air Compressor rated at 75 cfm or greater and that operates at greater than 50 psi.

TABLE 5 Typical Ranges of Construction Noise Levels at 50 Feet, L_{eq} (dBA)

	Domestic Housing		Office Building, Hotel, Hospital, School, Public Works		Industrial Parking Garage, Religious Amusement & Recreations, Store, Service Station		Public Works Roads & Highways, Sewers, and Trenches	
	I	**II**	**I**	**II**	**I**	**II**	**I**	**II**
Ground Clearing	83	83	84	84	84	83	84	84
Excavation	88	75	89	79	89	71	88	78
Foundations	81	81	78	78	77	77	88	88
Erection	81	65	87	75	84	72	79	78
Finishing	88	72	89	75	89	74	84	84

I - All pertinent equipment present at site.
II - Minimum required equipment present at site.

Source: U.S.E.P.A., Legal Compilation on Noise, Vol. 1, p. 2-104, 1973.

TABLE 6 Estimated Construction Noise Levels for the Proposed Project Building at a Distance of 100 feet

Phase of Construction	Total Workdays	Construction Equipment (Quantity)	Estimated Construction Noise Level at 100 feet, dBA L_{eq}
Site Preparation	2	Grader (1)[a] Rubber-Tired Dozer (1) Tractor/Loader/Backhoe (1)[a]	78
Grading/Excavation	4	Grader (1)[a] Rubber-Tired Dozer (1) Tractor/Loader/Backhoe (2)[a]	78
Trenching/Foundation	4	Tractor/Loader/Backhoe (1)[a] Excavator (1)[a]	76
Building – Exterior	200	Crane (1) Forklift (1) Generator Set (1)[a] Tractor/Loader/Backhoe (1)[a] Welder (3)	76
Building – Interior/ Architectural Coating	10	Air Compressor (1)[a]	68
Paving	10	Cement & Mortar Mixer (1) Paver (1) Paving Equipment (1)[a] Roller (1) Tractor/Loader/Backhoe (1)[a]	78

[a] Denotes two loudest pieces of construction equipment per phase.

TABLE 7 Estimated Construction Noise Levels at Nearby Land Uses

Phase of Construction	Calculated Hourly Average Noise Levels, L_{eq} (dBA)			
	North Comm. (150ft)	East Comm. & School (155ft)	South Comm. (150ft)	West Res. (50ft)
Site Preparation	75	75	75	85
Grading/ Excavation	76	76	76	86
Trenching/ Foundation	72	72	72	82
Building –Exterior	74	74	74	83
Building – Interior/ Architectural Coating	64	64	64	74
Paving	76	76	76	86

Construction noise levels are anticipated to comply with the City of San Bruno's Municipal Code threshold of 85 dBA at 100 feet during daytime hours on typical construction days.

Reasonable regulation of the hours of construction, as well as regulation of the arrival and operation of heavy equipment and the delivery of construction material, are necessary to protect the health and safety of persons, promote the general welfare of the community, and maintain the quality of life. The following construction best management practices shall be incorporated into the proposed project as a project condition of approval, in compliance with Policy HS-38 of the City's General Plan:

Best Management Practices

- Construction equipment shall be well-maintained and used judiciously to be as quiet as practical;
- Equip all internal combustion engine-driven equipment with mufflers, which are in good condition and appropriate for the equipment;
- Utilize "quiet" models of air compressors and other stationary noise sources where technology exists;
- Locate all stationary noise-generating equipment, such as air compressors and portable power generators, away from noise-sensitive receptors;
- Locate staging areas and construction material areas away from noise-sensitive receptors;
- Prohibit all unnecessary idling of internal combustion engines;
- Consider temporary noise barriers during construction phases involving earth moving equipment (e.g., grading operations) where they would be effective in reducing the construction noise impact, when directly adjoining sensitive receptors. An eight-foot plywood noise barrier could reduce noise levels by at least 5 dBA;

- Designate a "disturbance coordinator" who would be responsible for responding to any local complaints about construction noise. The disturbance coordinator will determine the cause of the noise complaint (e.g., starting too early, bad muffler, etc.) and will require that reasonable measures warranted to correct the problem be implemented. Conspicuously post a telephone number for the disturbance coordinator at the construction site and include it in the notice sent to neighbors regarding the construction schedule.

Implementation of the above best management practices would reduce construction noise levels emanating from the site and minimize disruption and annoyance. With the incorporation of these measures and recognizing that noise generated by construction activities would occur over a temporary period, overall noise exposure would be minimized at sensitive receptors in the project vicinity. This would be a less-than-significant impact.

Mitigation Measure 1a: No further mitigation required.

Impact 1b: Permanent Noise Level Increase/Exceed Applicable Standards. The proposed project would not result in a substantial permanent noise level increase at residential uses. This is a **less-than-significant** impact.

A significant impact would result if the proposed project would result in a substantial permanent increase in noise levels at sensitive receptors in the vicinity. A substantial increase would occur if: a) the noise level increase is 5 dBA L_{dn} or greater, with a future noise level of less than 60 dBA L_{dn}; or b) the noise level increase is 3 dBA L_{dn} or greater, with a future noise level of 60 dBA L_{dn} or greater. Noise-sensitive receptors surrounding the project site are exposed to existing noise levels greater than 60 dBA L_{dn}; therefore, a significant noise increase would occur if project-generated operations would permanently increase noise levels by 3 dBA L_{dn}.

Section 6.16.050 of the City's Municipal Code prohibits the generation of noise exceeding ambient zone base levels by 10 dBA at the property plane of any property.

Receptors located along El Camino Real, including the commercial uses to the north and to the south, as well as the commercial uses and the school to the east, have existing ambient noise levels represented by LT-2, which ranged from 66 to 71 dBA L_{eq} (average of 68 dBA L_{eq}) during daytime hours and from 57 to 68 dBA L_{eq} (average of 63 dBA L_{eq}) during nighttime hours. At these receptors, daytime and nighttime thresholds would be 78 and 73 dBA L_{eq}, respectively.

The west residences have existing ambient noise levels represented by LT-1, which ranged from 60 to 64 dBA L_{eq} (average of 62 dBA L_{eq}) during daytime hours and from 51 to 63 dBA L_{eq} (average of 57 dBA L_{eq}) during nighttime hours. At these receptors, daytime and nighttime thresholds would be 72 and 67 dBA L_{eq}, respectively.

Project Traffic Increase

As previously discussed, project-generated vehicle trips would not result in a measurable or detectable noise level increase (0 dBA L_{dn} increase). The project would not result in a substantial permanent noise increase at noise-sensitive receptors in the project vicinity. This is a less-than-significant impact.

Mechanical Equipment

The site plan shows a subsurface transformer located along the eastern façade of the proposed building at the ground level, as well as future solar panels and other mechanical equipment on the rooftop. While these units are not identified, these equipment are most likely heating, ventilation, and air conditioning (HVAC) units.

Transformers up to 1,000 kVA typically generate noise levels up to 64 dB, as measured at 1 meter (about 3 feet). Assuming the transformer runs continuously during daytime and nighttime hours, the hourly average noise level would be 64 dBA L_{eq} at 1 meter, and the day-night average noise level would be 70 dBA L_{dn} at a distance of 1 meter. Due to the location of the transformer along the eastern façade, the residential uses to the west would not be exposed to transformer noise. Noise levels estimated at the other surrounding receptors are summarized in Table 8.

Noise levels due to the transformer would be below City's thresholds at all surrounding receptors, and when added to the ambient L_{dn} would not result in a measurable or detectable noise level increase (i.e., 0 dBA L_{dn} increase).

TABLE 8 Estimated Operational Noise Levels for the Ground-Level Transformer

Receptor	Distance from Equipment, feet	Hourly L_{eq}, dBA	L_{dn}, dBA	Noise Level Increase, dBA L_{dn}
North Commercial Uses	295	24	31	0
East Commercial Uses & School	125	32	38	0
South Commercial Uses	30	44	50	0

While noise levels from solar panels would not be audible at the property line, noise levels for residential HVAC units typically range from 53 to 63 dBA at 3 feet during operation. These types of units typically cycle on and off continuously during daytime and nighttime hours. Multiple clusters of six units are shown on the roof plan, and two clusters of six units are shown in relatively close proximity near the center of the building, which the west residences would potentially be exposed to. Assuming six units in a given cluster would operate simultaneously at any given time, the estimated combined noise level at 3 feet would be up to 71 dBA, and the day-night average noise level would be 77 dBA L_{dn} at 3 feet, assuming consistent 24-hour operation.

Table 9 summarizes the noise levels generated by the HVAC units propagated to the property lines of the surrounding receptors. These noise levels represent the nearest cluster of units to each receptor. For the west residences, distances in Table 9 were measured from the centers of the two clusters located in close proximity, and the noise levels reflect the combination of both clusters (i.e., 12 units operating simultaneously). Additionally, the elevation of the HVAC units above the ground and the setbacks from the edge of the roof would provide a minimum attenuation of 15 dBA for all surrounding receptors located near the ground. This attenuation is applied to the noise levels in Table 9.

Noise levels due to rooftop equipment would be below City's thresholds at all surrounding receptors, and when added to the ambient L_{dn} would not result in a measurable or detectable noise level increase (i.e., 0 dBA L_{dn} increase).

TABLE 9 Estimated Operational Noise Levels for Rooftop HVAC Equipment

Receptor	**Distance from Equipment, feet**	**Hourly L_{eq}, dBA**	**L_{dn}, dBA**	**Noise Level Increase, dBA L_{dn}**
North Commercial Uses	25	37[a]	44[a]	0
East Commercial Uses & School	150	22[a]	28[a]	0
South Commercial Uses	45	32[a]	39[a]	0
West Residential Uses	20[b] 45[c]	40[d]	47[d]	0

[a] Minimum attenuation of 15 dBA due to elevation of HVAC units above the ground and the setbacks from the rooftop edge is applied to the noise levels.
[b] Distance from center of nearest HVAC cluster.
[c] Distance from center of farther HVAC cluster.
[d] Combined noise levels from both HVAC clusters.

Total Combined Project-Generated Noise

The operational noise levels produced by the proposed project combined (i.e., traffic and mechanical equipment) would not result in a measurable or detectable permanent noise level increase (i.e., 0 dBA L_{dn} increase) at the existing noise-sensitive receptors in the project vicinity. Further, operational noise levels are not expected to exceed levels 10 dBA above ambient noise levels during daytime and nighttime hours at the surrounding land uses. This is a less-than-significant impact.

Mitigation Measure 1b: None required.

Impact 2: Exposure to Excessive Groundborne Vibration. Construction-related vibration levels could exceed applicable vibration thresholds at nearby sensitive land uses. This is a **potentially significant** impact.

The construction of the project may generate perceptible vibration when heavy equipment or impact tools (e.g., jackhammers, hoe rams) are used. Construction activities would include demolition, site preparation work, foundation work, and new building framing and finishing. Pile driving equipment, which can cause excessive vibration, is not expected to occur during construction of the proposed project.

The City of San Bruno does not specify a construction vibration limit. For structural damage, the California Department of Transportation recommends a vibration limit of 0.5 in/sec PPV for new residential and modern commercial/industrial structures, 0.3 in/sec PPV for older residential structures, and a limit of 0.25 in/sec PPV for historic and some old buildings (see Table 3). Figure 2, which is included in the City's General Plan, shows the historical resources in the City of San Bruno. From this figure, the nearest historical building is located opposite El Camino Real from the project site, which would be 120 feet east of the project's nearest boundary. While this building would be subject to the conservative 0.25 in/sec PPV threshold, the 0.3 in/sec PPV vibration limit would be applicable to all other properties adjoining the project site.

Table 10 presents typical construction equipment at a distance of 25 feet. Project construction activities, such as drilling, the use of jackhammers, rock drills and other high-power or vibratory tools, and rolling stock equipment (tracked vehicles, compactors, etc.) may generate substantial vibration in the immediate vicinity. Table 9 also shows the minimum distances at which the 0.25 and 0.3 in/sec PPV thresholds would not be exceeded.

TABLE 10 Vibration Source Levels for Construction Equipment

Equipment		PPV at 25 ft., in/sec	Minimum Distance to Meet Threshold, feet	
			0.25 in/sec PPV	0.3 in/sec PPV
Clam shovel drop		0.202	21	18
Hydromill (slurry wall)	in soil	0.008	2	1
	in rock	0.017	3	2
Vibratory Roller		0.210	22	19
Hoe Ram		0.089	10	9
Large bulldozer		0.089	10	9
Caisson drilling		0.089	10	9
Loaded trucks		0.076	9	8
Jackhammer		0.035	5	4
Small bulldozer		0.003	1	<1

Source: Transit Noise and Vibration Impact Assessment Manual, Federal Transit Administration, Office of Planning and Environment, U.S. Department of Transportation, September 2018, as modified by Illingworth & Rodkin, Inc., October 2024.

Vibration levels are highest close to the source and then attenuate with increasing distance at the rate $\left(D_{ref}/D\right)^{1.1}$, where D is the distance from the source in feet and D_{ref} is the reference distance of 25 feet. While construction noise levels increase based on the cumulative equipment in use simultaneously, construction vibration levels would be dependent on the location of individual pieces of equipment. That is, equipment scattered throughout the site would not generate a collective vibration level, but a vibratory roller, for instance, operating near the project site boundary would generate the worst-case vibration levels for the receptor sharing that property line. Further, construction vibration impacts are assessed based on the potential for damage to buildings on receiving land uses, not at receptors at the nearest property lines.

The historical building located opposite El Camino Real would be 120 feet east of the nearest project boundary and would, therefore, be exposed to vibration levels below 0.04 in/sec PPV, which would not exceed the conservative 0.25 in/sec PPV threshold.

The adjoining buildings, however, would be 5 to 40 feet from the shared project boundaries. Table 11 summarizes the vibration levels expected at these buildings.

TABLE 11 Construction Vibration Levels Estimated at the Nearest Surrounding Building Façades Adjoining the Project Site

Phase	Equipment	PPV at 25 ft., in/sec	Vibration at Surrounding Buildings		
			North Comm. (5ft)	South Comm. (40ft)	West Res. (5ft)
Demolition	Concrete/Industrial Saw	0.035	0.206	0.021	0.206
	Rubber-Tired Dozer	0.089	**0.523**	0.053	**0.523**
	Tractor/Loader/Backhoe	0.003	0.018	0.002	0.018
Site Preparation	Grader	0.089	**0.523**	0.053	**0.523**
	Rubber-Tired Dozer	0.089	**0.523**	0.053	**0.523**
	Tractor/Loader/Backhoe	0.003	0.018	0.002	0.018
Grading/ Excavation	Grader	0.089	**0.523**	0.053	**0.523**
	Rubber-Tired Dozer	0.089	**0.523**	0.053	**0.523**
	Tractor/Loader/Backhoe	0.003	0.018	0.002	0.018
Trenching/ Foundation	Tractor/Loader/Backhoe	0.003	0.018	0.002	0.018
	Excavator	0.089	**0.523**	0.053	**0.523**
Building – Exterior	Crane	0.003	0.018	0.002	0.018
	Forklift	0.003	0.018	0.002	0.018
	Generator Set	0.003	0.018	0.002	0.018
	Tractor/Loader/Backhoe	0.003	0.018	0.002	0.018
	Welder	0.003	0.018	0.002	0.018
Building – Interior/ Architectural Coating	Air Compressor	0.003	0.018	0.002	0.018
Paving	Cement & Mortar Mixer	0.003	0.018	0.002	0.018
	Paver	0.003	0.018	0.002	0.018
	Paving Equipment	0.003	0.018	0.002	0.018
	Roller	0.21	**1.233**	0.125	**1.233**
	Tractor/Loader/Backhoe	0.003	0.018	0.002	0.018

Source: Transit Noise and Vibration Impact Assessment Manual, Federal Transit Administration, Office of Planning and Environment, U.S. Department of Transportation, September 2018, as modified by Illingworth & Rodkin, Inc., October 2024.

Project construction activities would potentially generate vibration levels up to 1.2 in/sec PPV at the nearest commercial and residential structures adjoining the site to the north and to the west, respectively. A study completed by the US Bureau of Mines analyzed the effects of blast-induced vibration on buildings in USBM RI 8507.[6] The findings of this study have been applied to buildings affected by construction-generated vibrations.[7] As reported in USBM RI 8507[6] and reproduced by Dowding,[7] Figure 3 presents the damage probability, in terms of "threshold damage" (described above as cosmetic damage), "minor damage," and "major damage," at varying vibration levels.

[6] Siskind, D.E., M.S. Stagg, J.W. Kopp, and C.H. Dowding, Structure Response and Damage Produced by Ground Vibration form Surface Mine Blasting, RI 8507, Bureau of Mines Report of Investigations, U.S. Department of the Interior Bureau of Mines, Washington, D.C., 1980.

[7] Dowding, C.H., Construction Vibrations, Prentice Hall, Upper Saddle River, 1996.

As shown in Figure 3, maximum vibration levels of 1.2 in/sec PPV or lower would result in about 20% chance of cosmetic damage. Maximum vibration levels of 0.6 in/sec PPV or lower would result in less than 8% chance of cosmetic damage. No minor or major damage would be expected at the buildings immediately adjoining the project site.

Neither cosmetic, minor, or major damage would occur at conventional buildings surrounding the project site to the east and northeast, as well as buildings farther than 200 feet from the site during use of typical construction activities. At these locations, and in other surrounding areas where vibration would not be expected to cause cosmetic damage, vibration levels may still be perceptible. However, as with any type of construction, this would be anticipated and would not be considered significant, given the intermittent and short duration of the phases that have the highest potential of producing vibration (use of jackhammers and other high-power tools). By use of administrative controls, such as notifying neighbors of scheduled construction activities and scheduling construction activities with the highest potential to produce perceptible vibration during hours with the least potential to affect nearby businesses, perceptible vibration can be kept to a minimum.

In summary, the construction of the project would potentially generate vibration levels exceeding the 0.3 in/sec PPV at the nearest buildings adjoining the site. This would be a potentially significant impact.

FIGURE 2 Historic Resource Map with Project Site Identified

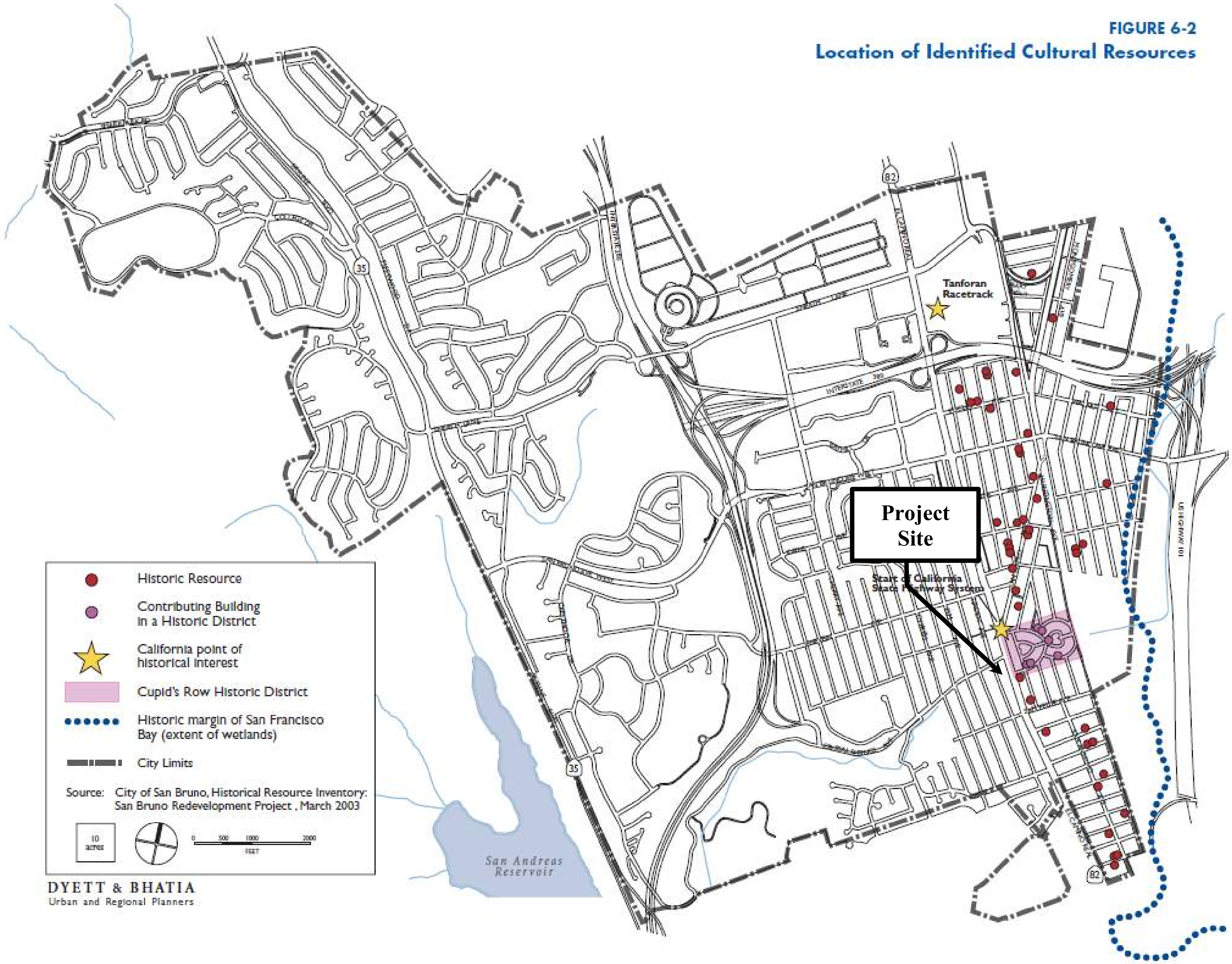
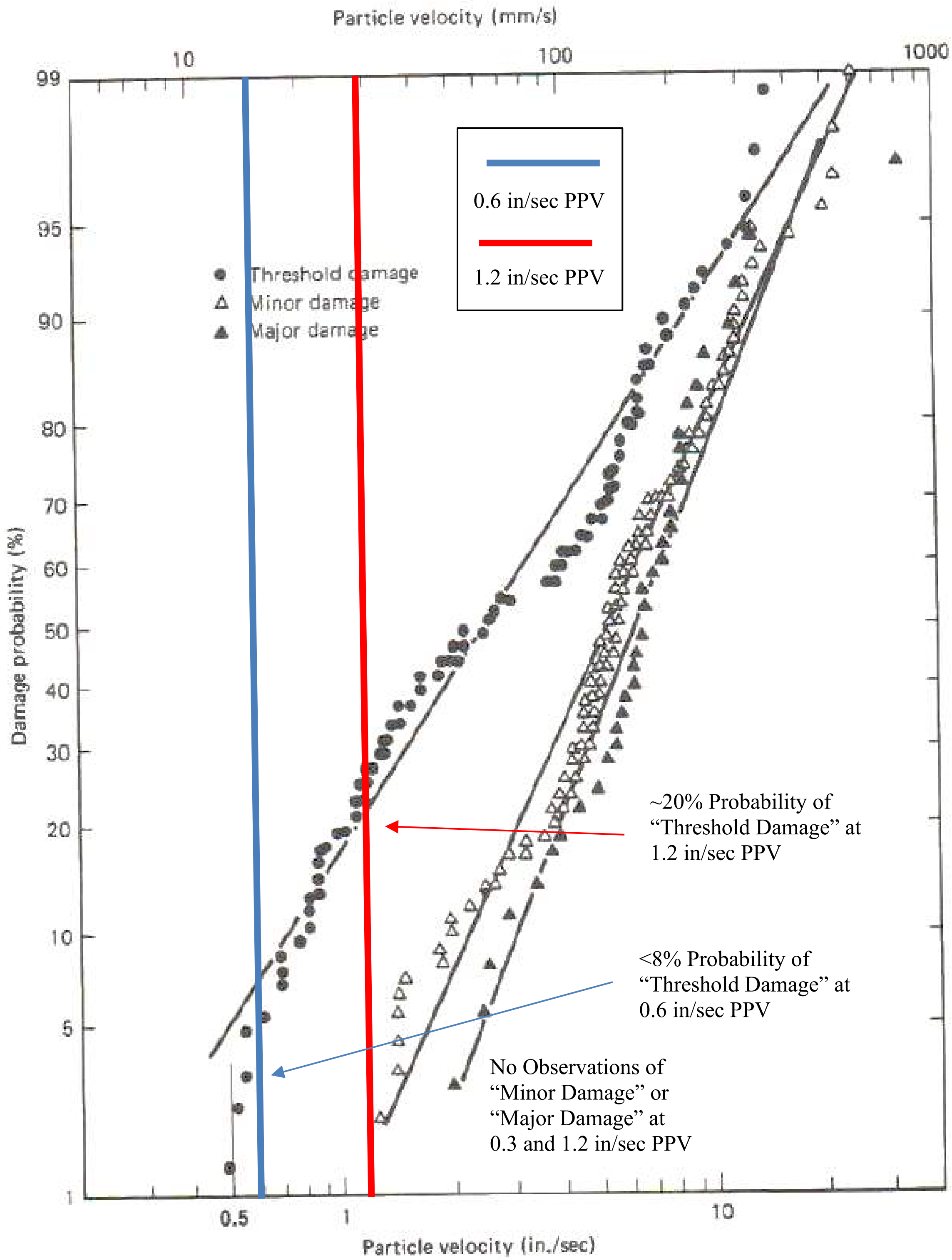


FIGURE 3 Probability of Cracking and Fatigue from Repetitive Loading



Source: Dowding, C.H., Construction Vibrations, Prentice Hall, Upper Saddle River, 1996.

Mitigation Measure 2:

The following measures shall be implemented where vibration levels due to construction activities would exceed 0.3 in/sec PPV:

- A list of all heavy construction equipment to be used for this project known to produce high vibration levels (e.g., dozers, graders, excavators, and vibratory rollers) shall be submitted to the City by the contractor, as well as a list of smaller equipment (less than 18,000 pounds) to be used near the northern and western property lines.

- Smaller equipment (less than 18,000 pounds) shall be used near the property lines adjacent to the residential and commercial buildings to minimize vibration levels. For example, a smaller vibratory roller similar to a Caterpillar model CP433E vibratory compactor could be used when compacting materials within 25 feet of the adjacent conventional buildings to the north and to the west. The smaller equipment intended to implement this requirement shall be individually identified among the list of equipment required under the above condition as the subset of equipment allowed for use at the property lines.

- Avoid dropping heavy equipment and using vibratory rollers within 25 feet of sensitive structures to the north and to the west. Use alternative methods for breaking up existing pavement, such as a pavement grinder, instead of dropping heavy objects, within 25 feet of the adjacent northern and western buildings. Portable jackhammers, saws, or grinders shall be used to minimize impacts to the ground.

The implementation of these mitigation measures would reduce a potential impact to a less-than-significant level.

Impact 3: **Excessive Aircraft Noise.** The project site is located less than 1 mile from the San Francisco International Airport. The noise environment attributable to aircraft is considered normally acceptable under the San Mateo County ALUC noise compatibility policies. This is a **less-than-significant** impact.

San Francisco International Airport is a public-use airport located approximately 0.9 miles east of the project site. According to the San Mateo County Airport Land Use Commission (ALUC) and the contours provided above in the Regulatory Criteria section, the project site lies outside the 65 dBA CNEL/L_{dn} contour line (as shown above in the Regulatory Background Section). The proposed project would be compatible with the City's exterior noise standards for aircraft noise.

Assuming standard construction materials for aircraft noise below 60 dBA L_{dn}, the future interior noise levels resulting from aircraft would be below 45 dBA L_{dn}. Therefore, future interior noise at the proposed building would be compatible with aircraft noise. This would be a less-than-significant impact.

Mitigation Measure 3: **None required.**

Cumulative Impacts

Cumulative noise impacts would include either cumulative traffic noise increases under future conditions or temporary construction noise from cumulative construction projects.

For a substantial permanent cumulative noise increase to occur, two qualifications must be met: 1) if the cumulative plus project traffic volumes result in a noise level increase at sensitive receptors of 5 dBA L_{dn} or greater, with a future noise level of less than 60 dBA L_{dn}, or of 3 dBA L_{dn} or greater, with a future noise level of 60 dBA L_{dn} or greater, compared to existing traffic volumes; and 2) if the cumulative plus project traffic volumes result in a 1 dBA L_{dn} or more noise level increase compared to cumulative (no project) conditions, which would be considered a cumulatively considerable contribution to the overall traffic noise increase.

Project-generated vehicle trips are insignificant when compared to existing traffic volumes, and would continue to be insignificant under future cumulative conditions. The project is not expected to result in a cumulatively considerable traffic noise increase. This is a less-than-significant impact.

From the City's website,[8] the nearest planned or approved project is proposed hotel project located at 160 El Camino Real, which is approximately 935 feet southeast of the project site. This project would not share noise-sensitive receptors with the 271 El Camino Real project site. This would not result in a significant cumulative construction impact. There are no additional planned or approved development projects located within 1,000 feet of the proposed project site. There would not be a cumulative construction impact associated with the proposed project.

[8] https://sanbruno.ca.gov/248/Development-Activity

APPENDIX A

FIGURE A1 Daily Trend in Noise Levels for LT-1, Wednesday, June 2, 2021

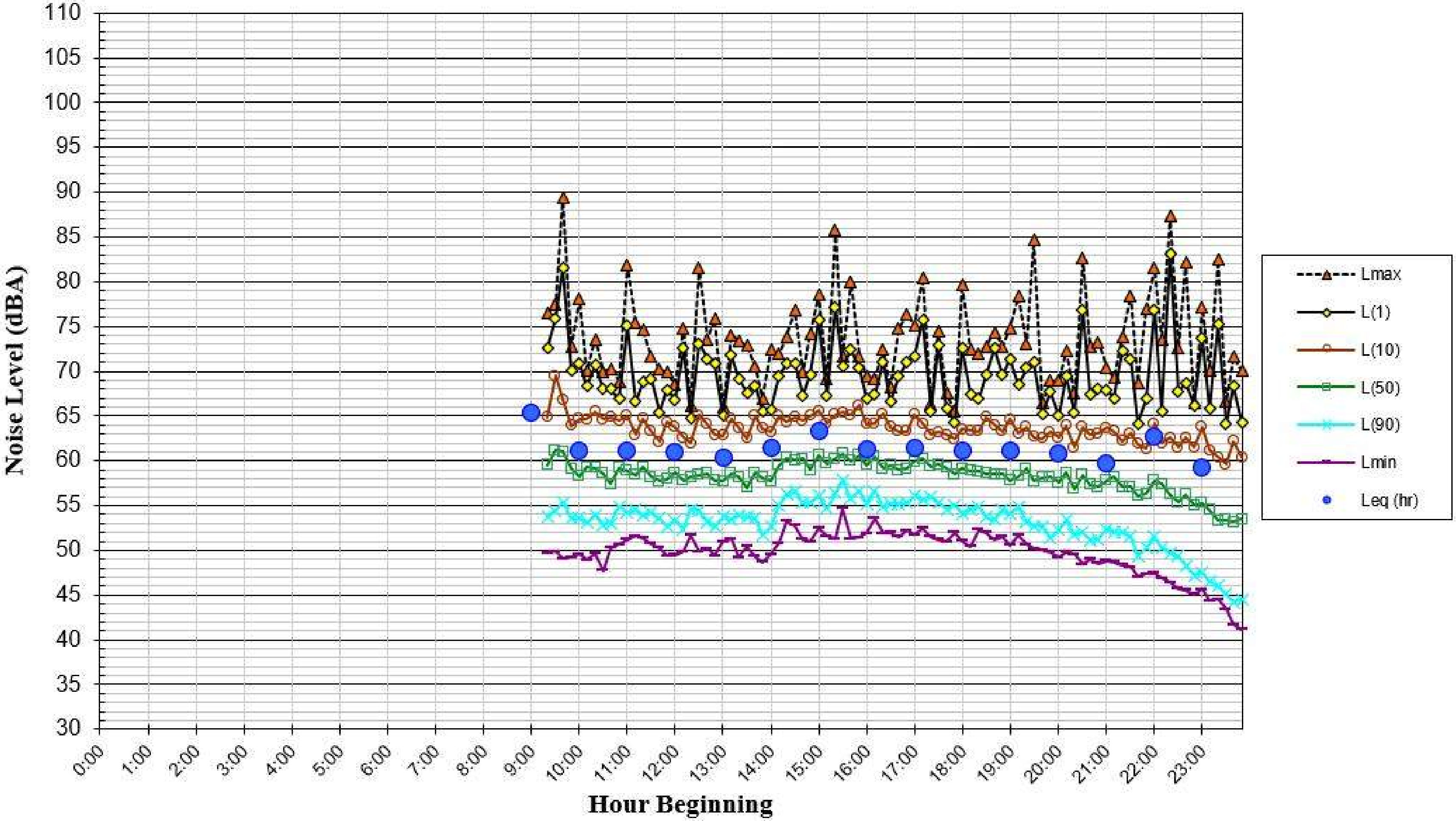


FIGURE A2 Daily Trend in Noise Levels for LT-1, Thursday, June 3, 2021

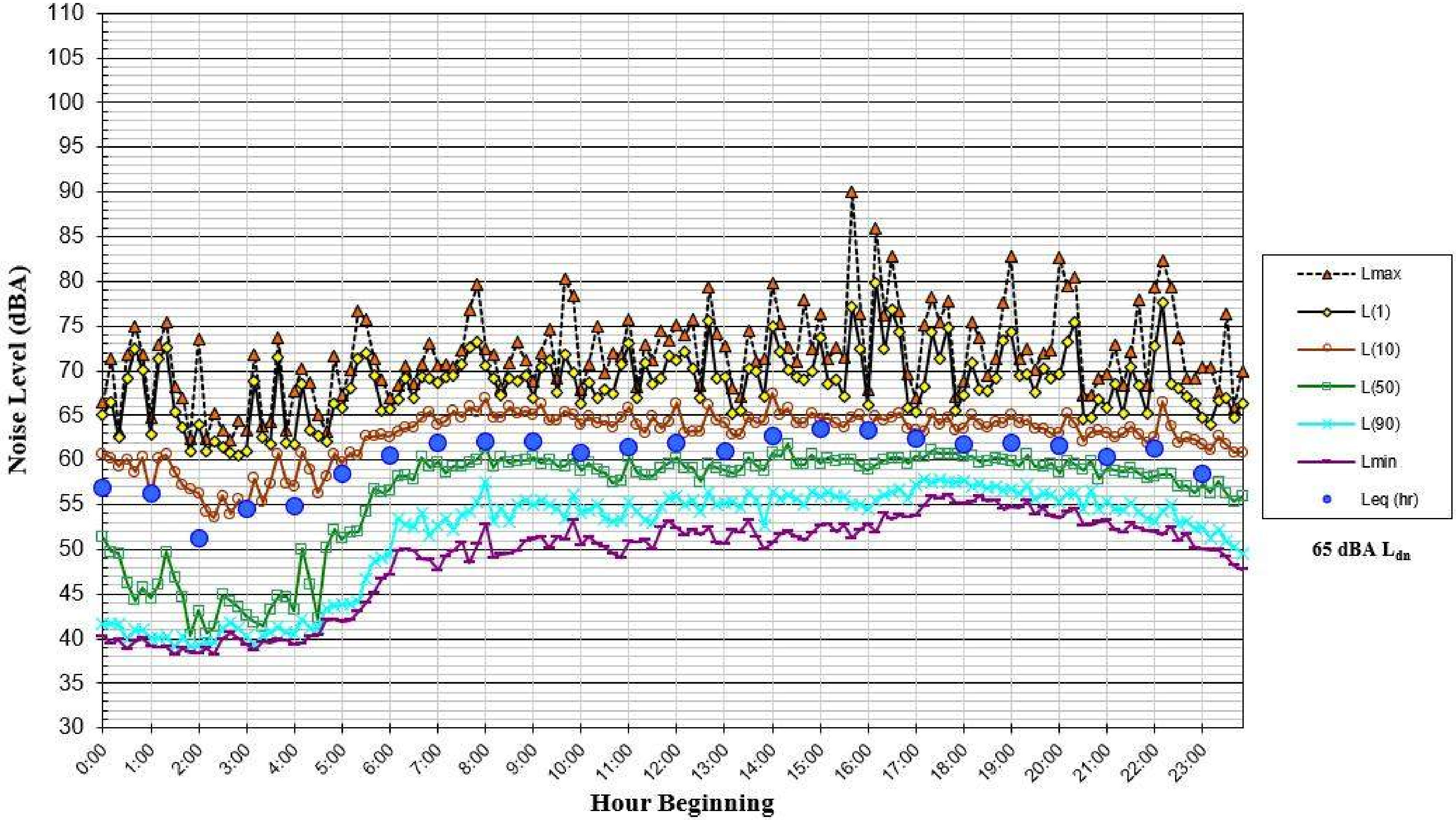


FIGURE A3 Daily Trend in Noise Levels for LT-1, Friday, June 4, 2021

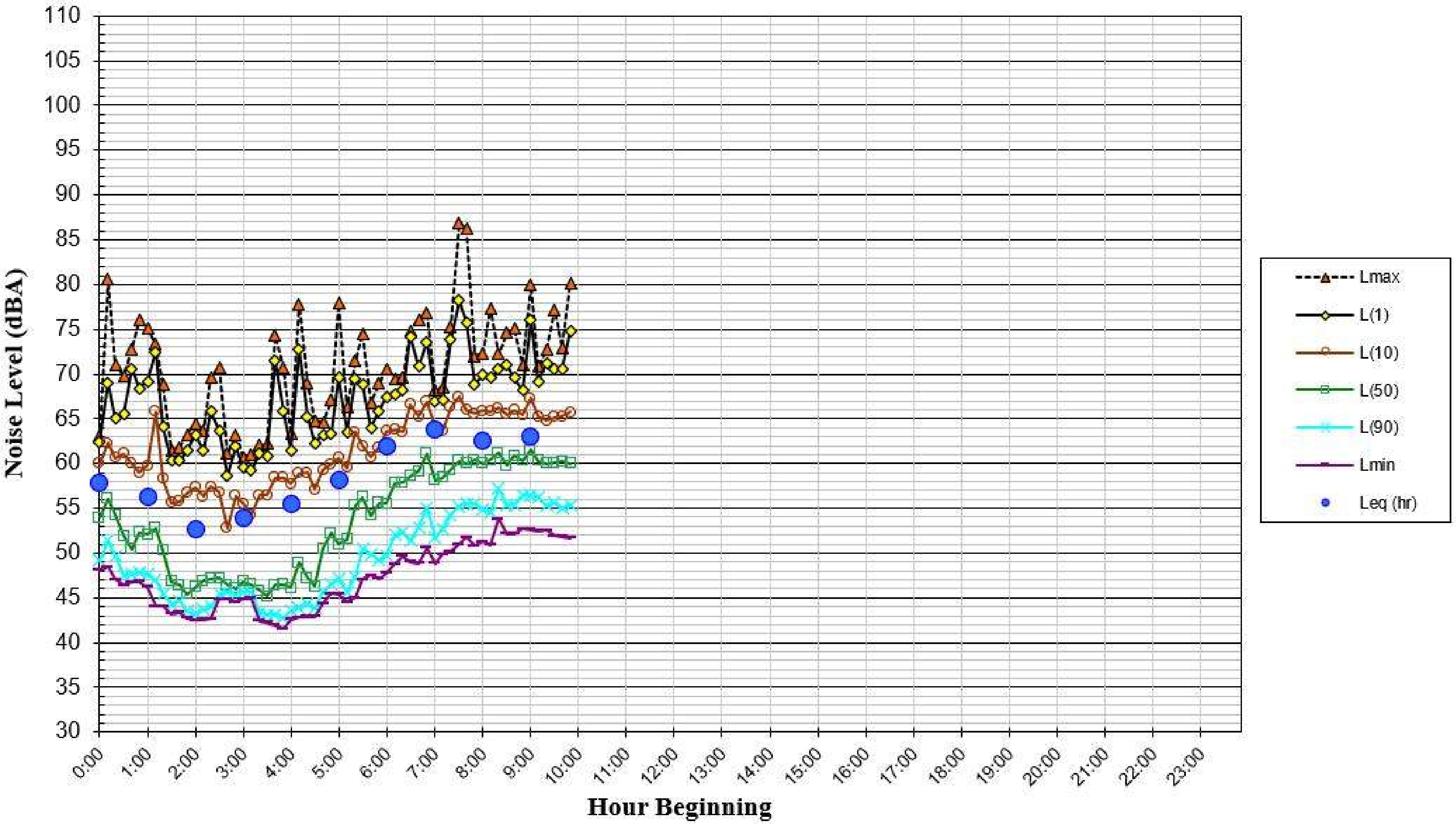


FIGURE A4 Daily Trend in Noise Levels for LT-2, Wednesday, June 2, 2021

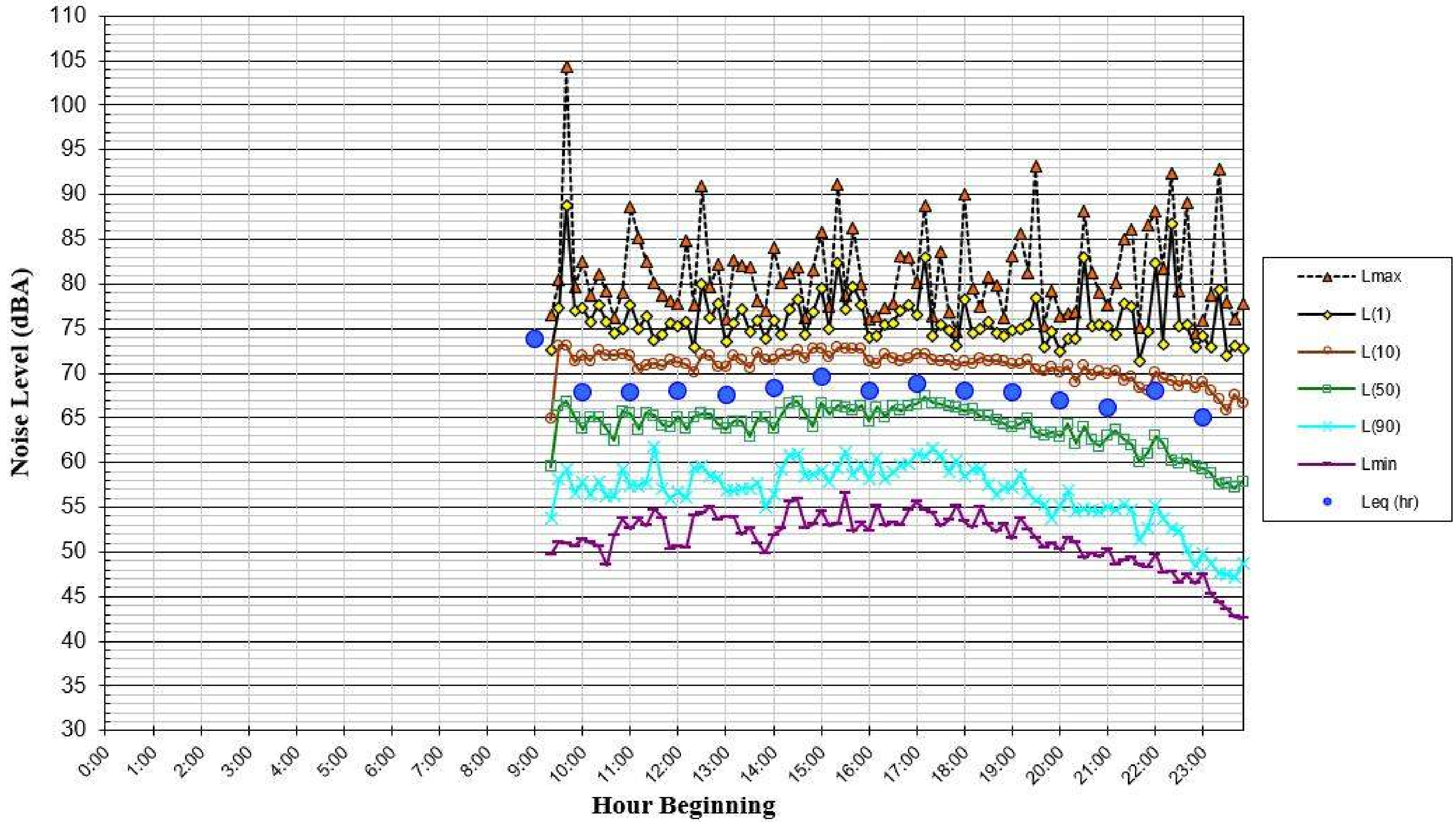


FIGURE A5 Daily Trend in Noise Levels for LT-2, Thursday, June 3, 2021

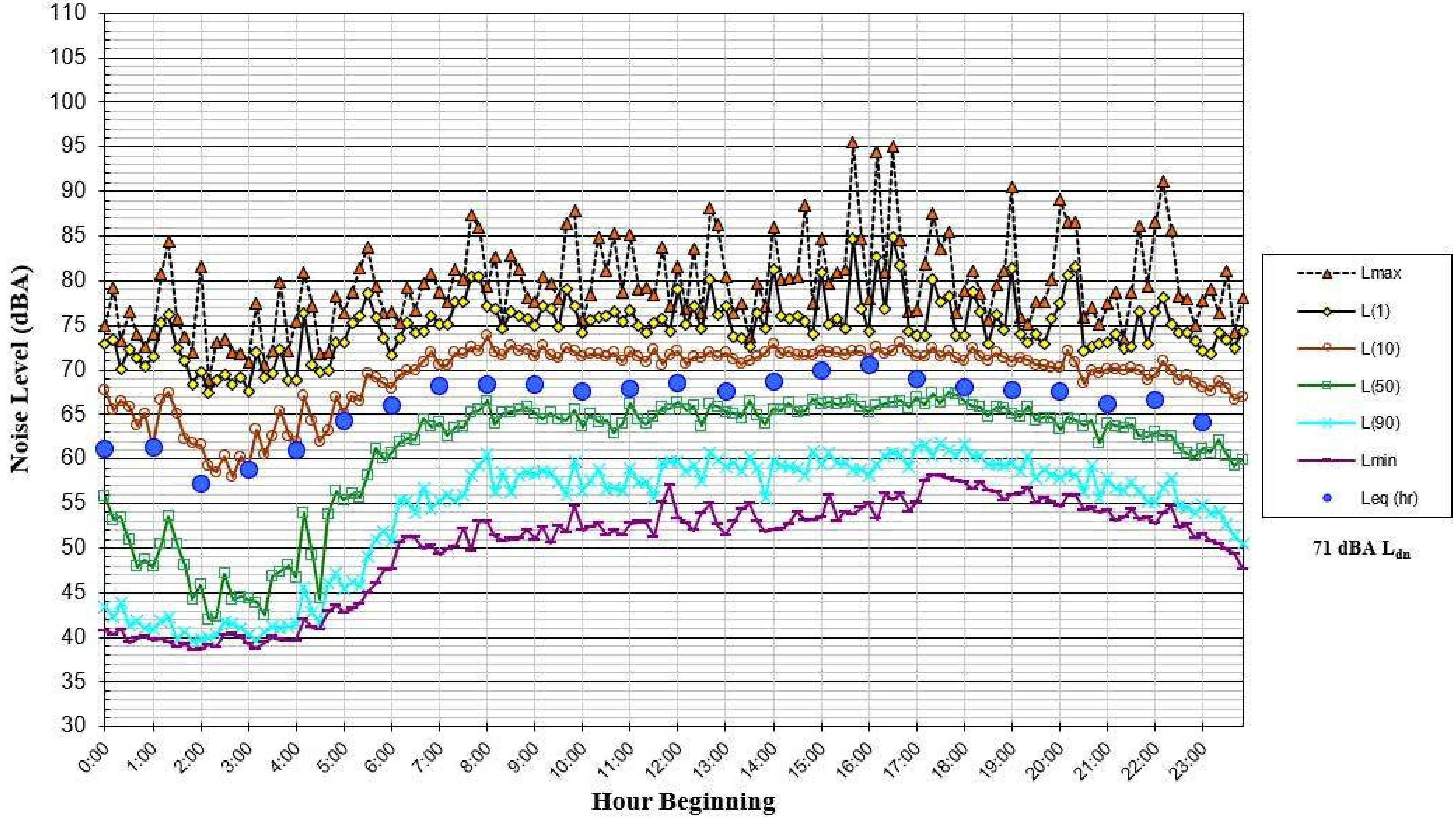
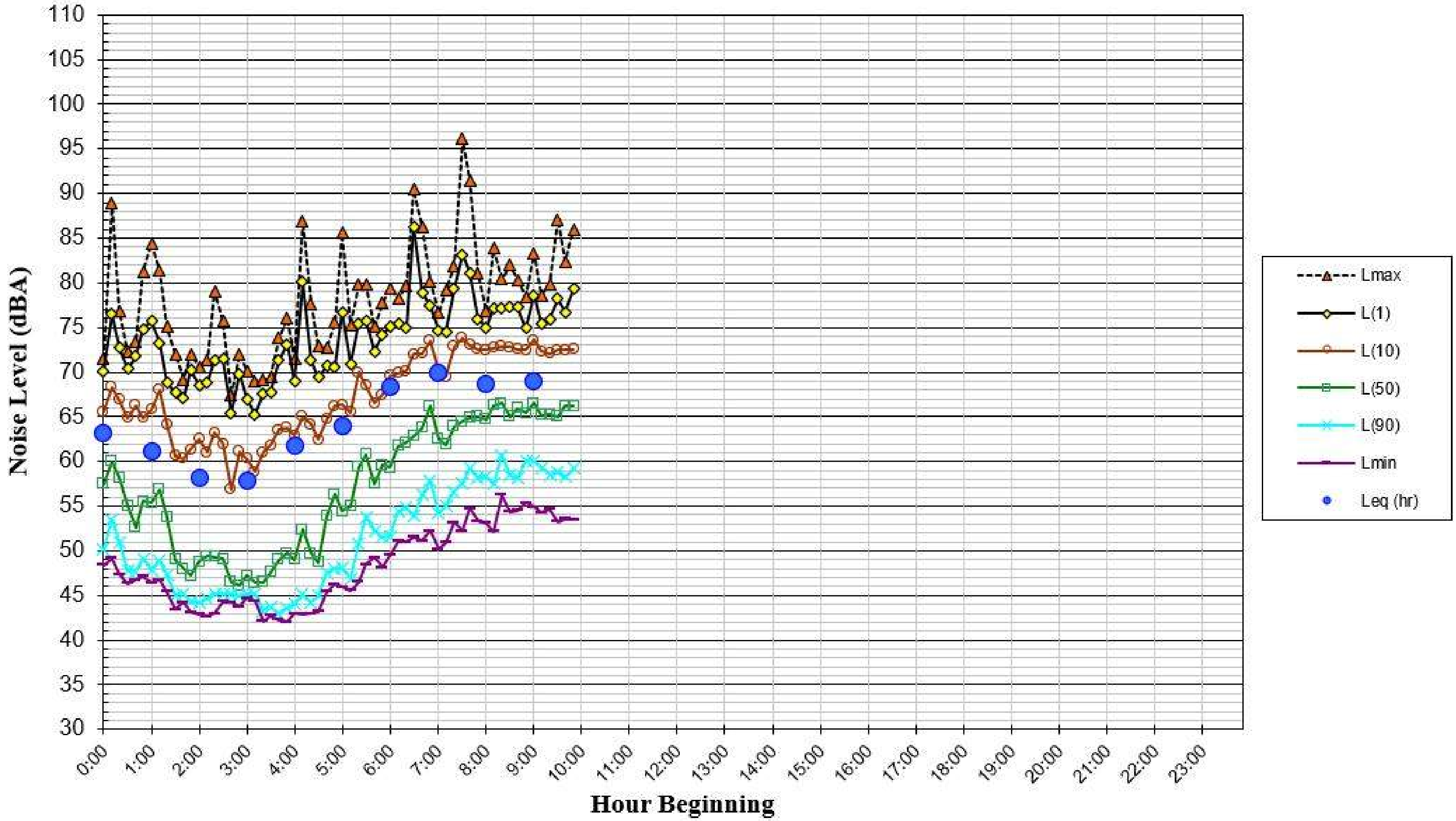


FIGURE A6 Daily Trend in Noise Levels for LT-2, Friday, June 4, 2021



271 EL CAMINO REAL CONSTRUCTION EMISSIONS & HEALTH RISK ASSESSMENT

San Bruno, California

December 23, 2024
Revised January 9, 2025

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Introduction

The purpose of this report is to address the potential construction air quality and health risk impacts associated with the proposed residential development located at 271 El Camino Real in San Bruno, California. Air quality impacts would be associated with construction of the new buildings and infrastructure. Air pollutant emissions associated with construction of the project were estimated using appropriate computer models. In addition, the potential health risks 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[2]

The approximately 0.57-acre project site is currently vacant. The project proposes to construct a four-story condominium building with 35 units totaling approximately 46,808 square feet (sf) on three levels above a ground floor parking garage with 51 spaces totaling 17,613-sf. Construction is proposed from March 2026 through December 2026.

Setting

Ambient Air Quality Standards

The Federal and California Clean Air Acts have established ambient air quality standards for different pollutants. National ambient air quality standards (NAAQS) were established by the Federal Clean Air Act of 1970 (amended in 1977 and 1990) for six "criteria" pollutants. These criteria pollutants now include carbon monoxide (CO), ozone (O_3), nitrogen dioxide (NO_2), respirable particulate matter with a diameter less than 10 microns (PM_{10}), sulfur dioxide (SO_2), and lead (Pb). In 1997, The Environmental Protection Agency (EPA) added fine particulate matter ($PM_{2.5}$) as a criteria pollutant. The air pollutants for which standards have been established are considered the most prevalent air pollutants known to be hazardous to human health. California ambient air quality standards (CAAQS) include the NAAQS pollutants and also hydrogen sulfide, sulfates, vinyl chloride, and visibility reducing particles. These additional CAAQS pollutants tend to have unique sources and are not typically included in environmental air quality assessments. In addition, lead concentrations have decreased dramatically since it was removed from motor vehicle fuels. The Bay Area has attained the CO standard and monitoring data from the last 30 years show relatively low concentrations throughout the Bay Area. Therefore, CO is not an air quality issue for land use type projects such as this one.

[1] Bay Area Air Quality Management District, *2022 CEQA Guidelines*, April 2023.
[2] Since completion of this analysis, the project dwelling unit count has increased to 37 from 35. Increasing the dwelling unit count would have negligible effects on the construction emissions as the vast majority of those emissions come from construction equipment usage. As a result, the conclusions of this analysis remain valid and unchanged from the analysis presented in this report.

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 concentrations. 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 downwind of existing 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 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

TACs are a broad class of compounds known to cause morbidity or mortality, often because they cause cancer. TACs are found in ambient air, especially in urban areas, and are caused by industry, agriculture, fuel combustion, and commercial operations (e.g., dry cleaners). TACs are typically found in low concentrations, even near their source (e.g., diesel particulate matter [DPM] near a freeway). Because chronic exposure 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 complex scientific issue. Some of the chemicals in diesel exhaust, such as benzene and formaldehyde, have been previously identified as TACs by the CARB, and are listed as carcinogens either under the State's Proposition 65 or under the Federal Hazardous Air Pollutants programs. Health risks from TACs are estimated using the Office of Environmental Health Hazard Assessment (OEHHA) risk assessment guidelines, which were published in February of 2015 and incorporated into BAAQMD's CEQA guidance.[3]

$PM_{2.5}$ emissions can include TACs. Due to the adverse health effects caused by $PM_{2.5}$ exposure even at low concentrations, BAAQMD developed assessing methods and health risk thresholds to address exposure to increased concentrations caused by project $PM_{2.5}$ emissions.[4]

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[3] 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.

[4] BAAQMD, 2022 CEQA Air Quality Guidelines, Appendix A, p40.

Project Air Quality Conditions

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 ($PM_{2.5}$).

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, infants and 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 in the single-family and multi-family residences adjacent to the west and south. There are additional sensitive receptors located at further distances from the site. There are also children located at the Stratford School northeast of the project site. This project would introduce new sensitive receptors (i.e., residents) to the area.

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 NAAQS and 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

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

programs to estimate concentrations of TAC, and an assessment of exposures and health risks. 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 located 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 score at or above the 70th percentile, or (ii) within 1,000 feet of any such census tract.[6] The BAAQMD has identified several overburdened areas within its boundaries. However, the project site is not within an overburdened area as the Project site is scored at the 20th percentile on CalEnviroScreen.[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 include significance thresholds to assist in the evaluation of air quality impacts of projects and plans proposed within the Bay Area. The current BAAQMD guidelines provide recommended procedures for evaluating potential air impacts during the environmental review process consistent with CEQA requirements including thresholds of significance, mitigation measures, and background air quality information. They include assessment methodologies for criteria air pollutants, air toxics, odors, and GHG emissions, as shown in Table 1.[8] Air quality impacts and health risks are considered potentially significant if they exceed these thresholds.

The BAAQMD recommends 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 if BMPs are implemented (listed below). BAAQMD strongly encourages enhanced BMPs for construction sites near schools, residential areas, other sensitive land uses, or if air quality impacts were found to be significant.

[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.
[7] OEHAA, CalEnviroScreen 4.0 Maps https://oehha.ca.gov/calenviroscreen/report/calenviroscreen-40
[8] Bay Area Air Quality Management District, 2023. *2022 CEQA Guidelines*. April.

Table 1. BAAQMD CEQA Significance Thresholds

<table>
<tr><th rowspan="2">Criteria Air Pollutant</th><th colspan="4">Construction Thresholds</th></tr>
<tr><th colspan="4">Average Daily Emissions (lbs./day)</th></tr>
<tr><td>ROG</td><td colspan="4">54</td></tr>
<tr><td>NO_x</td><td colspan="4">54</td></tr>
<tr><td>PM_{10}</td><td colspan="4">82 (Exhaust)</td></tr>
<tr><td>$PM_{2.5}$</td><td colspan="4">54 (Exhaust)</td></tr>
<tr><td>CO</td><td colspan="4">Not Applicable</td></tr>
<tr><td>Fugitive Dust (PM_{10}/$PM_{2.5}$)</td><td colspan="4">Best Management Practices (BMPs)*</td></tr>
<tr><th>Health Risks and Hazards</th><th colspan="2">Single Sources / Individual Projects</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 in a million</td><td rowspan="3">OR
Compliance with Qualified Community Risk Reduction Plan</td><td>>100 in a million</td><td rowspan="3">OR
Compliance with Qualified Community Risk Reduction Plan</td></tr>
<tr><td>Hazard Index</td><td>>1.0</td><td>>10.0</td></tr>
<tr><td>Incremental annual $PM_{2.5}$</td><td>>0.3 μg/m^3</td><td>>0.8 μg/m^3</td></tr>
<tr><td colspan="5">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. VMT = vehicle miles traveled.
* 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

<u>City of San Bruno General Plan</u>

The San Bruno General Plan outlines a vision for the long-range physical and economic development of the community through 2025. It includes goals, policies, and actions to reduce exposure of the City’s sensitive population to exposure of air pollution, toxic air contaminants, and GHG emissions. The following goals, policies, and actions are applicable to the proposed project:

<u>Guiding Policies</u>

ECR-E: Contribute to regional attainment by improving ambient air quality levels within San Bruno.

<u>Implementing Policies - Air Quality</u>

ERC-25: Maintain and improve air quality by requiring project mitigation, such as Transportation Demand Management (TDM) techniques, where air quality impacts are unavoidable.

ERC-26: Require dust abatement actions for all new construction and redevelopment projects.

ERC-30: Encourage new residential developments to incorporate measures such as shuttle services to major employment centers, commercial areas and transit areas, and provision of adequate transit facilities.

ERC-31: Prepare a Greenhouse Gas Emissions Reduction Plan, focusing on feasible actions the City can take to minimize the adverse impacts of Plan implementation on climate change and air quality. The Plan will include but will not be limited to:

- An inventory of all known, or reasonably discoverable, sources of greenhouse gases (GHGs) that currently exist in the City and sources that existed in 1990. In determining what is a source of GHG emissions, the City may rely on the definition of "greenhouse gas emissions source" or "source" as defined in section 38505 of the California Global Warming Solutions Act ("AB 32") or its governing regulations. The inventory may include estimates of emissions drawing on available information from State and regional air quality boards, supplemented by information obtained by the City.

- A projected inventory of the new GHGs that can reasonably be expected to be emitted in the year 2025 due to the City's discretionary land use decisions pursuant to the 2025 General Plan Update, as well as new GHGs emitted by the City's internal government operations. The projected inventories will include estimates, supported by substantial evidence, of future emissions from planned land use and information from state and regional air quality boards and agencies.

- A target for the reduction of those sources of future emissions reasonably attributable to the City's discretionary land use decisions under the 2025 General Plan and the City's internal government operations, and feasible GHG emission reduction measures whose purpose shall be to meet this reduction target by regulating those sources of GHG emissions reasonably attributable to the City's discretionary land use decisions and the City's internal government operations.

ERC-32: Coordinate air quality planning efforts with local, regional, and State agencies. Support the Bay Area Air Quality Management District's efforts to monitor and control air pollutants from stationary sources.

ERC-33: Require all large construction projects to mitigate diesel exhaust emissions through use of alternate fuels and control devices.

ERC-34: Require that adequate buffer distances be provided between odor sources and sensitive receptors, such as schools, hospitals, and community centers.

Construction Period Emissions

The California Emissions Estimator Model (CalEEMod) Version 2022 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[9]	35	Dwelling Unit	46,808	0.57
Unenclosed Parking with Elevator	51	Parking Spaces	17,613	

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 quantities, average hours per day, total number of workdays, and schedule, was based on a blend of information provided by the project applicant and CalEEMod defaults (included in *Attachment 1*). The construction schedule estimates a start date of March 2026, and the project would be built out over a period of approximately 10 months, or 208 construction workdays. The earliest full 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 amount of soil imported and/or exported to the site and the amount of cement truck trips to and from the site. CalEEMod provides daily estimates of worker and vendor trips for each applicable phase. Daily haul trips for grading were developed by CalEEMod using the provided soil export volumes. The concrete haul trips were provided and converted to daily one-way trips, assuming two trips per delivery.

[9] Since completion of this analysis, the project dwelling unit count has increased to 37 from 35. Increasing the dwelling unit count would have negligible effects on the construction emissions as the vast majority of those emissions come from construction equipment usage. As a result, the conclusions of this analysis remain valid and unchanged from the analysis presented in this report.

Summary of Computed Construction Emissions

Average daily construction emissions were estimated for the total duration of the project (208 days) since the duration of project construction is estimated to be under one year. Table 3 shows the unmitigated 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 annualized project construction emissions would not exceed the BAAQMD significance thresholds.

Table 3. Construction Period Emissions - Unmitigated

Year	**ROG**	**NOx**	**PM_{10} Exhaust**	**$PM_{2.5}$ Exhaust**
Construction Emissions Total (Tons)				
2026	0.42	0.74	0.03	0.02
Average Daily Construction Emissions (pounds/day)				
2026 (208 construction workdays)	4.00	7.08	0.25	0.23
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 recommends all projects include a "basic" set of best management practices (BMPs) to manage fugitive dust and considers impacts from dust (i.e., fugitive PM_{10} and $PM_{2.5}$) to be less-than-significant if BMPs are implemented to reduce these emissions. San Bruno General Plan Policy ERC-26 specifies that all new construction and redevelopment projects are required to include dust abatement actions. Therefore, the project would be required to implement the following basic BMPs recommended by BAAQMD, per San Bruno General Plan Policy ERC-26, during all phases of construction.

***General Plan Policy ERC-26/ 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 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 possible. Building pads shall be laid as soon as possible 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 sites located 100 feet or 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 also 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.

Mitigation Measure AQ-1: **In addition to Basic BMPs, also include the following enhanced BMPs.**

1. Limit the simultaneous occurrence of excavation, grading, and ground-disturbing construction activities.
2. 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.
3. 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.
4. Install sandbags or other erosion control measures to prevent silt runoff to public roadways from sites with a slope greater than one percent.
5. Minimize the amount of excavated material or waste materials stored at the site.
6. Hydroseed or apply non-toxic soil stabilizers to construction areas, including previously graded areas, that are inactive for at least 10 calendar days.

Effectiveness of General Plan Policy ERC-26 and Mitigation Measure AQ-1 for Basic and Enhanced BMPs

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, both the basic and enhanced sets of BMPs are required as the unmitigated fugitive dust emissions from construction are above the BAAQMD single-source threshold when only basic BMPs are included, as discussed below.

Construction Health Risk Impacts

Project impacts related to increased health risk can occur by generating emissions of TACs and air pollutants. Temporary project construction activity would generate emissions of DPM from equipment and trucks and generate dust on a temporary basis that could affect nearby sensitive receptors. Additionally, there are existing sources of TACs and localized air pollutants in the vicinity of the project. The cumulative impact of the Project and existing TAC sources was assessed.

Health risk impacts are addressed by predicting increased lifetime cancer risk, the increase in annual $PM_{2.5}$ concentrations, and computing the Hazard Index (HI) for non-cancer health risks. Construction equipment and associated heavy-duty truck traffic generates diesel exhaust, which is a known TAC. These exhaust emissions pose health risks for sensitive receptors such as surrounding residents. The primary health risk impact issues associated with construction emissions are cancer risk and exposure to $PM_{2.5}$. A health risk assessment of the project construction activities was conducted that evaluated potential health effects to nearby sensitive receptors from construction emissions of DPM and $PM_{2.5}$.[10] This assessment included dispersion modeling to predict the offsite and onsite concentrations resulting from project construction, so that lifetime cancer risks and non-cancer health effects could be evaluated.

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 nearby residences, as shown in Figure 1. Residential receptors were assumed to include all receptor groups (i.e., third trimester, infants, children, and adults) with almost continuous exposure to project emissions. Health risks were also computed for child receptors at the Stratford School. While there are additional sensitive receptors within 1,000 feet of the project site, the receptors chosen are adequate to identify maximum impacts from the project.

Construction Emissions

The CalEEMod model provided total uncontrolled 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 were estimated to be 0.03 tons (51 pounds) and fugitive dust emissions ($PM_{2.5}$) to be 0.02 tons (33 pounds) from all construction stages. The on-road emissions are a result of haul truck travel during grading activities, worker travel, and vendor deliveries during construction. A trip length of one mile was used to represent vehicle travel while at or near the construction site. It was assumed that the emissions from on-road vehicles traveling at or near the site would occur at the construction site.

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

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

Construction Sources

To represent the construction equipment exhaust emissions, an area source was used with an emission release height of 20 feet (6 meters).[12] 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, was 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 dispersion modeling used a five-year meteorological data set (2013 - 2017) from the San Francisco International Airport prepared for use with the AERMOD model by the BAAQMD. Construction emissions were modeled as occurring Monday through Friday between 7:00 a.m. to 4:00 p.m., according to the construction schedule provided by the project applicant. Annual DPM and $PM_{2.5}$ concentrations from construction activities during the 2026 period were calculated at nearby sensitive receptors using the model. Receptor heights of 5 feet (1.5 meters) and 15 feet (4.5 meters) were used to represent the breathing height on the first and second floors of nearby single-family and multi-family residences.[13] A receptor height of 3 feet (1 meter) was used to represent the breathing height of children at the Stratford School.

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[11] BAAQMD, Appendix E of the 2022 *BAAQMD CEQA Guidelines*, April 2023.
[12] 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
[13] BAAQMD, Appendix E of the 2022 *BAAQMD CEQA Guidelines*, April 2023.

Summary of Construction Health Risk Impacts

The maximum increased cancer risks were calculated using the modeled TAC concentrations combined with BAAQMD CEQA guidance for age sensitivity factors and exposure parameters. 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, while child exposures were assumed at the school.

Non-cancer health hazards and maximum $PM_{2.5}$ concentrations were also calculated. 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 modeled maximum annual DPM and $PM_{2.5}$ concentrations were identified at nearby sensitive receptors to find the MEI. Results of this assessment indicated that the construction MEIs were located at two different receptors. The cancer risk MEI was located on the first floor (5 feet above the ground) of a single-family residence west of the project site. The annual $PM_{2.5}$ concentration MEI was located on the first floor (5 feet above the ground) of single-family residence west of the project site near the cancer risk MEI. The location of the MEIs and nearby sensitive receptors are shown in Figure 1. Table 4 summarizes the maximum cancer risks, $PM_{2.5}$ concentrations, and health hazard indexes for project related construction activities. *Attachment 2* to this report includes the emission calculations used for the construction modeling and the cancer risk calculations.

As shown in Table 4, the project's construction cancer risk and annual $PM_{2.5}$ concentration exceed the BAAQMD single-source significance threshold at the MEIs. However, with the inclusion of *General Plan Policy ERC-26* and *Mitigation Measures AQ-1 and AQ-2*, the project's cancer risk and annual $PM_{2.5}$ concentration are reduced to levels below the BAAQMD single-source significance thresholds.

Additionally, modeling was conducted to predict the cancer risks, non-cancer health hazards, and maximum $PM_{2.5}$ concentrations associated with construction activities at the nearby Stratford School. Receptors were placed throughout the entire school building. The maximum increased cancer risks were adjusted using child exposure parameters. The cancer risk, $PM_{2.5}$ concentration, and HI did not exceed their respective BAAQMD single-source significance thresholds, as shown in Table 4.

Table 4. Construction Risk Impacts at the Off-Site Project MEIs and School

Source		Cancer Risk[1] (per million)	Annual $PM_{2.5}$[1] ($\mu g/m^3$)	Hazard Index
Project Construction	Unmitigated	**16.15 (infant)**	**0.40**	0.02
	Mitigated[2]	8.01 (infant)	0.25	0.01
	BAAQMD Single-Source Threshold	***>10.0***	***>0.3***	***>1.0***
Exceed Threshold?	Unmitigated	***Yes***	***Yes***	*No*
	Mitigated[2]	*No*	*No*	*No*
Maximum School Impact – Stratford School				
Project Construction	Unmitigated	1.69 (child)	0.05	<0.01
	BAAQMD Single-Source Threshold	***>10.0***	***>0.3***	***>1.0***
Exceed Threshold?	Unmitigated	*No*	*No*	*No*

[1] The maximum cancer risk and annual $PM_{2.5}$ concentration occur at two different receptors.
[2] Construction equipment with Tier 4 interim engines and enhanced BMPs as Mitigation.

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

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

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

A review of the project area using BAAQMD's geographic information systems (GIS) screening maps identified the existing health risks from a nearby roadway and stationary sources at the MEIs. El Camino Real and one stationary source within the 1,000-foot influence area could have cumulative health risk impacts at the MEIs. Figure 2 shows the sources affecting the MEIs. Health risk impacts from these sources upon the MEIs are reported in Table 5. Details of the cumulative screening, 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 since this roadway was identified as having high cancer risk and $PM_{2.5}$ concentration impacts on the BAAQMD screening maps. The refined analysis involved predicting emissions for the traffic volume and mix of vehicle types on the roadways near the project site and using an atmospheric dispersion model to predict exposure to TACs. The associated cancer risks are then computed based on the modeled exposures.

Emissions Rates

This analysis involved the development of DPM, organic TACs, and $PM_{2.5}$ emissions for traffic on El Camino using the Caltrans version of the CARB EMFAC2021 emissions model, known as

CT-EMFAC2021. CT-EMFAC2021 provides emission factors for mobile source criteria pollutants and TACs, including DPM. Emission processes modeled include running exhaust for DPM, $PM_{2.5}$ and total organic compounds (TOG), running evaporative losses for TOG, and tire and brake wear and fugitive road dust for $PM_{2.5}$. All $PM_{2.5}$ emissions from all vehicles were used, rather than just the $PM_{2.5}$ fraction from diesel powered vehicles, because all vehicle types (i.e., gasoline and diesel powered) produce $PM_{2.5}$. Additionally, $PM_{2.5}$ emissions from vehicle tire and brake wear from re-entrained roadway dust were included in these emissions. DPM emissions are projected to decrease in the future and are reflected in the CT-EMFAC2021 emissions data. Inputs to the model include region (San Mateo County), type of road (major/collector), traffic mix assigned by CT-EMFAC2021 for the county, truck percentage for non-state highways in San Mateo County (3.13 percent),[14] year of analysis (2026 - construction start year), and season (annual).

To estimate TAC and $PM_{2.5}$ emissions over the 30-year exposure period used for calculating the increased cancer risks for sensitive receptors at the MEI, the CT-EMFAC2021 model was used to develop vehicle emission factors for the year 2026 (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 CT-EMFAC2021. Year 2026 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 average daily traffic (ADT) for El Camino Real was based on Caltrans 2022 Traffic Volumes.[15] The ADT for the roadway was increased 1% per year from the year the volumes were measured. The calculated ADT on El Camino Real was 35,360 vehicles. Average hourly traffic distributions for San Mateo County roadways were developed using the EMFAC model,[16] which were then applied to the ADT volumes to obtain estimated hourly traffic volumes and emissions for the roadway. For all hours of the day an average speed of 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 El Camino within 1,000 feet of the project site. AERMOD was used to estimate the TAC and $PM_{2.5}$ concentrations at the MEI locations. Maximum increased lifetime cancer risks and maximum annual $PM_{2.5}$ concentrations for the construction MEI receptor were then computed using modeled TAC and $PM_{2.5}$ concentrations and BAAQMD methods and exposure parameters.

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[14] Bay Area Air Quality Management District, 2023, Appendix E of the *BAAQMD CEQA Guidance.* April.

[15] Caltrain 2022 Traffic Volumes on the State Highway Network. URL: https://gisdata-caltrans.opendata.arcgis.com/datasets/d8833219913c44358f2a9a71bda57f76_0/about

[16] 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.

Dispersion Modeling

Dispersion modeling of TAC and $PM_{2.5}$ emissions was conducted using the EPA AERMOD air quality dispersion model, which is recommended by the BAAQMD for this type of analysis.[17] TAC and $PM_{2.5}$ emissions from traffic on El Camino Real within 1,000 feet of the project site was evaluated. Vehicle traffic on El Camino Real was modeled using a series of area sources along a line (line area sources); with line segments used for travel on the roadways in both opposing directions. The same meteorological data and off-site sensitive receptors used in the previous construction site dispersion modeling scenario were used in the roadway modeling. Other inputs to the model included road geometry, hourly traffic emissions, and receptor locations. Annual TAC and $PM_{2.5}$ concentrations using 2026 emissions from traffic on El Camino Real were calculated using the model. Concentrations were calculated at the MEIs with a receptor height of 5 feet (1.5 meter) to represent the breathing heights on the first floor of the single-family residences.

Computed Cancer and Non-Cancer Health Impacts

The cancer risk, $PM_{2.5}$ concentration, and HI impacts from El Camino Real on the off-site MEIs are shown in Table 5. Figure 2 shows the roadways links modeled and receptor locations where concentrations were calculated. Details of the emission calculations, dispersion modeling, and cancer risk calculations for the receptors with the maximum cancer risk from traffic on El Camino Real are provided in *Attachment 3.*

<u>BAAQMD Permitted Stationary Sources</u>

Permitted stationary sources of air pollution near the project site were identified using BAAQMD's *Permitted Stationary Sources 2022* GIS website,[18] which identifies the location of nearby stationary sources and their estimated risk and hazard impacts, including emissions and adjustments to account for OEHHA guidance. One source was identified using this tool, a gasoline dispensing facility. A stationary source information request was submitted to BAAQMD in order to estimate health risk impacts from the gasoline dispensing facilities.[19]

The screening risk and hazard levels provided by BAAQMD for the stationary source was adjusted for distance using CARBS's *Gasoline Station Risk Screening Tool.* BAAQMD provided the gasoline throughput for the gas dispensing facilities near the project site. The provided throughputs along with the estimated distance between the MEIs and the gas dispensing facility, and the region for the gas station was input into the CARB tool. Health risk impacts from the stationary source upon the MEIs are reported in Table 5.

<u>Summary of Cumulative Risks at the Project MEI</u>

Table 5 reports both the project and cumulative health risk impacts at the sensitive receptor most

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[17] BAAQMD. *Recommended Methods for Screening and Modeling Local Risks and Hazards*. May 2012
[18] BAAQMD, https://baaqmd.maps.arcgis.com/apps/webappviewer/index.html?id=845658c19eae4594b9f4b805fb9d89a3
[19] Email from BAAQMD, December 16, 2024. Subject: "RE_ Public Records Number 2024-10-0253 Stationary Source Request for 24-154 271 El Camino Real_ San Bruno SSIF".

affected by project construction (i.e., the MEIs). The project's unmitigated construction cancer risk and annual $PM_{2.5}$ concentration exceeds their respective BAAQMD single-source thresholds. With the implementation of *General Plan Policy ERC-26* and *Mitigation Measures AQ-1 and AQ-2*, the project's cancer risk and annual $PM_{2.5}$ concentration would be lowered to levels below their respective single-source thresholds. The cancer risk, annual $PM_{2.5}$ concentration, and HI would not exceed any of the cumulative-source thresholds.

Table 5. Cumulative Health Risk Impacts at the Project MEIs

Source		Cancer Risk[1] (per million)	Annual $PM_{2.5}$[1] ($\mu g/m^3$)	Hazard Index
Project Impacts				
Project Construction	Unmitigated	**16.15 (infant)**	**0.40**	0.02
	Mitigated	8.01 (infant)	0.25	0.01
BAAQMD Single Source Threshold		***>10.0***	***>0.3***	***>1.0***
Exceed Threshold?	Unmitigated	***Yes***	***Yes***	*No*
	Mitigated	*No*	*No*	*No*
Cumulative Impacts				
El Camino Real – ADT 35.360		0.98	0.10	<0.01
Unocal #0109 (Facility ID #111596-1, Gas Dispensing Facility), MEIs at 995 feet.		0.45	-	0.04
Combined Sources	Unmitigated	17.58	0.50	<0.07
	Mitigated	9.44	0.35	<0.06
BAAQMD Cumulative Source Threshold		***>100***	***>0.8***	***>10.0***
Exceed Threshold?	Unmitigated	*No*	*No*	*No*
	Mitigated	*No*	*No*	*No*

[1] The maximum cancer risk and annual $PM_{2.5}$ concentration occur at two different receptors.

Mitigation Measure AQ-2: **Use construction equipment that has low diesel particulate matter exhaust emissions.**

Implement a feasible plan to reduce diesel particulate matter emissions by at least 40 percent such that increased cancer risk from construction would be reduced below TAC significance levels as follows:

1. All diesel-powered construction equipment larger than 25 horsepower used at the site for more than two continuous days or 20 hours total shall meet U.S. EPA Tier 4 emission standards for PM (PM_{10} and $PM_{2.5}$), if feasible, otherwise,

Alternatively, the applicant may develop another construction operations plan demonstrating that the construction equipment used on-site would achieve a reduction in construction diesel particulate matter emissions by 70 percent or greater. Elements of the plan could include a combination of some of the following measures:

- Implementation of No. 1 above to use Tier 4 or alternatively fueled equipment,
- Installation of electric power lines during early construction phases to avoid use of diesel generators, welders, and compressors,
- Use of electrically-powered equipment,

- Forklifts and aerial lifts used for exterior and interior building construction shall be electric or propane/natural gas powered,
- Change in construction build-out plans to lengthen phases, and
- Implementation of different building techniques that result in less diesel equipment usage.

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

Effectiveness of Mitigation Measure AQ-2

CalEEMod was used to compute emissions associated with these measures assuming that all construction equipment met U.S. EPA Tier 4 interim engine standards as well as basic BMPs per General Plan Policy ERC-26 and enhanced BMs per Mitigation Measure AQ-1. With these implemented, the project's cancer risk would be reduced by 50 percent to 8.01 per million and the annual $PM_{2.5}$ concentration would be reduced by 38 percent to 0.25 µg/m^3. As a result, the project's construction risks and hazards would be reduced below the BAAQMD single-source thresholds.

Non-CEQA: On-Site Health Risk Assessment of TAC Sources - New Project Receptors

In addition to evaluating health impacts from project construction, a health risk assessment was completed to assess the impact that the existing TAC sources would have on the new proposed sensitive receptors (residents) that the project would introduce. The same TAC sources identified above were used in this health risk assessment.[20] On-site health risk results are listed in Table 6. *Attachment 3* includes the screening information used for TAC source impacts upon the proposed on-site sensitive receptors.

<u>Local Roadways – El Camino Real</u>

The roadway impacts on new project residents was 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 2026 (construction year). An analysis based on 2027 resulted in an increased ADT on El Camino Real of 35,700 vehicles.

The project set of receptors were placed throughout the building at the locations of dwelling units on each floor. Roadway impacts were modeled at receptor heights of 18 feet (5.5 meters) and 28 feet (8.5 meters) representing sensitive receptors on the second and third floors of the building, since there would be no residences on the first floor of the proposed building. The portions of El Camino Real included in the modeling are shown in Figure 3 along with the project site and receptor locations where impacts were modeled.

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[20] 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.

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 through adults were assumed to be in the new apartments for 24 hours per day for 350 days per year. The maximum impacts from El Camino Real occurred at a receptor on the second floor (18 feet above the ground) at a dwelling unit that borders El Camino Real. 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 6. Details of the emission calculations, dispersion modeling, and cancer risk calculations are contained in *Attachment 3.*

Stationary Sources

The stationary source screening analysis for the new project sensitive receptors was conducted in the same manner as described above for the cumulative analysis. Table 6 shows the health risk impacts for the stationary sources on the project sensitive receptors.

Summary of Cumulative Health Risks at the Project Site

Health risk impacts from the existing TAC sources upon the project site are reported in Table 6. 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, none of the sources exceed the single-source or cumulative-source thresholds.

Table 6. Impacts from Combined Sources to Project Site Receptors

Source	**Cancer Risk (per million)**	**Annual $PM_{2.5}$ ($\mu g/m^3$)**	**Hazard Index**
Single-Source Impacts			
El Camino Real – ADT 35,700	1.17	0.11	<0.01
Unocal #0109 (Facility ID #111596-1, Gas Dispensing Facility), Project Site at 830 feet.	0.66	-	0.05
BAAQMD Single-Source Threshold	***>10.0***	***>0.3***	***>1.0***
Exceed Threshold?	*No*	*No*	*No*
Cumulative Total	1.83	0.11	<0.06
BAAQMD Cumulative Source Threshold	***>100***	***>0.8***	***>10.0***
Exceed Threshold?	*No*	*No*	*No*

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

Supporting Documentation

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

Attachment 2 includes the construction 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 screening and calculation information from sources affecting the MEIs and project receptors.

Attachment 1: CalEEMod Modeling Inputs and Outputs

Air Quality/Noise Construction Information Data Request

Project Name: 271 El Camino Real, San Bruno DEFAULTS

Complete ALL Portions in Yellow

See Equipment Type TAB for type, horsepower and load factor

Project Size	35 Dwelling Units	0.57 total project acres disturbed	
	46,808 s.f. residential		**Pile Driving? Y/N? NO**
	s.f. retail		
	s.f. office/commercial		**Project include on-site GENERATOR OR FIRE PUMP during project OPERATION (not construction)? N? _NO___**
	s.f. other, specify:		**IF YES (if BOTH separate values) -->**
	17,613 s.f. parking garage	51 spaces	**Kilowatts/Horsepower: _________**
	s.f. parking lot	spaces	**Fuel Type: ____________**
Construction Days (i.e, M-F)	M_F to		**Location in project (Plans Desired if Available):**
Construction Hours	7:00 am to	4:00 pm	

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:**~~	~~**3/1/2026**~~	~~**Total phase:**~~	~~**20**~~			~~**Overall Import/Export Volumes**~~
		~~**End Date:**~~	~~**6/30/2027**~~					
~~3~~	~~Concrete/Industrial Saws~~	~~81~~	~~0.73~~	~~6~~	~~15~~	~~4.5~~	~~15965~~	~~**Demolition Volume**~~
	~~Excavators~~	~~158~~	~~0.38~~			~~0~~	~~0~~	~~Square footage of buildings to be demolished~~
~~1~~	~~Rubber-Tired Dozers~~	~~247~~	~~0.4~~	~~6~~	~~20~~	~~6~~	~~11856~~	~~(or total tons to be hauled)~~
~~3~~	~~Tractors/Loaders/Backhoes~~	~~97~~	~~0.37~~	~~8~~	~~20~~	~~8~~	~~17227~~	~~_?_ square feet or~~
	~~*Other Equipment?*~~							~~_?_ Hauling volume (tons)~~
								Any pavement demolished and hauled? _?_ tons
	Site Preparation	**Start Date:**	**3/1/2026**	**Total phase:**	**10**			
		End Date:	**3/15/2026**					
1	Graders	187	0.41	8	10	8	6134	
1	Rubber Tired Dozers	247	0.4	7	10	7	6916	
1	Tractors/Loaders/Backhoes	97	0.37	8	10	8	2871	
	Other Equipment?							
	Grading / Excavation	**Start Date:**	**3/16/2026**	**Total phase:**	**15**			
		End Date:	**4/5/2026**					**Soil Hauling Volume**
	Excavators	158	0.38			0	0	Export volume = _1247_ cubic yards?
1	Graders	187	0.41	8	15	8	9200	Import volume = _0_ cubic yards?
1	Rubber Tired Dozers	247	0.4	8	15	8	11856	
	Concrete/Industrial Saws	81	0.73			0	0	
2	Tractors/Loaders/Backhoes	97	0.37	7	15	7	7537	
	Other Equipment?							
	Trenching/Foundation	**Start Date:**	**4/6/2026**	**Total phase:**	**51**			
		End Date:	**6/15/2026**					
1	Tractor/Loader/Backhoe	97	0.37	8	51	8	14643	
1	Excavators	158	0.38	8	51	8	24496	
	Other Equipment?							
	Building - Exterior	**Start Date:**	**6/15/2026**	**Total phase:**	**110**			**Cement Trucks? _?_ Total Round-Trips**
		End Date:	**11/15/2026**					
1	Cranes	231	0.29	6	110	6	44213	Electric? (Y/N) ___ Otherwise assumed diesel
1	Forklifts	89	0.2	6	110	6	11748	Liquid Propane (LPG)? (Y/N) ___ Otherwise Assumed diesel
1	Generator Sets	84	0.74	8	110	8	54701	Or temporary line power? (Y/N) ___
1	Tractors/Loaders/Backhoes	97	0.37	6	110	6	23687	
3	Welders	46	0.45	8	110	8	54648	
	Other Equipment?							
Building - Interior/Architectural Coating		**Start Date:**	**11/16/2026**	**Total phase:**	**11**			
		End Date:	**11/30/2026**					
1	Air Compressors	78	0.48	6	11	6	2471	
	Aerial Lift	62	0.31			0	0	
	Other Equipment?							
	Paving	**Start Date:**	**12/1/2026**	**Total phase:**	**11**			
		Start Date:	**12/15/2026**					
1	Cement and Mortar Mixers	9	0.56	6	11	6	333	**Asphalt? ___ cubic yards or ____ round trips? (no asphalt pavers in this project) Total concrete volume is about 17,000 Cubit feet = about 630 cubit yard**
1	Pavers	130	0.42	6	11	6	3604	
1	Paving Equipment	132	0.36	8	11	8	4182	
1	Rollers	80	0.38	7	11	7	2341	
1	Tractors/Loaders/Backhoes	97	0.37	8	11	8	3158	
	Other Equipment?							
	Additional Phases	**Start Date:**		**Total phase:**				
		Start Date:						
						#DIV/0!	0	
						#DIV/0!	0	
						#DIV/0!	0	
						#DIV/0!	0	
						#DIV/0!	0	

Equipment types listed in "Equipment Types" worksheet tab.

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

Complete one sheet for each project component

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

Construction Criteria Air Pollutants							
Unmitigated	ROG	NOX	PM10 Exhaust	PM2.5 Exhaust	PM2.5 Fugitive	**CO2e**	
Year	Tons					MT	
Construction Equipment							
2026	0.42	0.74	0.03	0.02	0.02	168.09	
	Total Construction Emissions						
Tons	0.42	0.74	0.03	0.02		168.09	
Pounds/Workdays	*Average Daily Emissions*					Workdays	
2026	4.00	7.08	0.25	0.23			**208**
Threshold - lbs/day	**54.0**	**54.0**	**82.0**	**54.0**			
	Total Construction Emissions						
Pounds	831.77	1473.21	51.75	47.65		0.00	
Average	4.00	7.08	0.25	0.23		0.00	208.00
Threshold - lbs/day	**54.0**	**54.0**	**82.0**	**54.0**			

24-154 271 El Camino Real, San Bruno T4i BMPs 2027 Detailed Report

Table of Contents

1. Basic Project Information

1.1. Basic Project Information

Data Field	Value
Project Name	24-154 271 El Camino Real, San Bruno T4i BMPs 2027
Construction Start Date	3/1/2026
Lead Agency	—
Land Use Scale	Project/site
Analysis Level for Defaults	County
Windspeed (m/s)	4.60
Precipitation (days)	37.8
Location	271 El Camino Real, San Bruno, CA 94066, USA
County	San Mateo
City	San Bruno
Air District	Bay Area AQMD
Air Basin	San Francisco Bay Area
TAZ	1228
EDFZ	1
Electric Utility	Peninsula Clean Energy
Gas Utility	Pacific Gas & Electric
App Version	2022.1.1.29

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	35.0	Dwelling Unit	0.57	46,808	0.00	—	101	—

Unenclosed Parking with Elevator	51.0	Space	0.00	17,613	0.00	—	—	—

1.3. User-Selected Emission Reduction Measures by Emissions Sector

Sector	#	Measure Title
Construction	C-5	Use Advanced Engine Tiers

2. Emissions Summary

2.1. Construction Emissions Compared Against Thresholds

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

Un/Mit.	ROG	NOx	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—
Unmit.	1.47	14.1	0.59	2.12	2.71	0.54	0.96	1.50	3,386
Mit.	0.49	11.7	0.24	2.12	2.17	0.22	0.96	1.02	3,386
% Reduced	66%	17%	60%	—	20%	60%	—	32%	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—
Unmit.	60.1	14.1	0.59	2.12	2.71	0.54	0.96	1.50	3,381
Mit.	60.0	9.45	0.20	2.12	2.17	0.18	0.96	1.02	3,381
% Reduced	< 0.5%	33%	66%	—	20%	66%	—	32%	—
Average Daily (Max)	—	—	—	—	—	—	—	—	—
Unmit.	2.28	4.04	0.14	0.24	0.39	0.13	0.09	0.22	1,015
Mit.	1.97	3.88	0.07	0.24	0.32	0.07	0.09	0.15	1,015
% Reduced	14%	4%	50%	—	18%	49%	—	29%	—
Annual (Max)	—	—	—	—	—	—	—	—	—

Unmit.	0.42	0.74	0.03	0.04	0.07	0.02	0.02	0.04	168
Mit.	0.36	0.71	0.01	0.04	0.06	0.01	0.02	0.03	168
% Reduced	14%	4%	50%	—	18%	49%	—	29%	—

2.2. Construction Emissions by Year, Unmitigated

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

Year	ROG	NOx	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	CO2e
Daily - Summer (Max)	—	—	—	—	—	—	—	—	—
2026	1.47	14.1	0.59	2.12	2.71	0.54	0.96	1.50	3,386
Daily - Winter (Max)	—	—	—	—	—	—	—	—	—
2026	60.1	14.1	0.59	2.12	2.71	0.54	0.96	1.50	3,381
Average Daily	—	—	—	—	—	—	—	—	—
2026	2.28	4.04	0.14	0.24	0.39	0.13	0.09	0.22	1,015
Annual	—	—	—	—	—	—	—	—	—
2026	0.42	0.74	0.03	0.04	0.07	0.02	0.02	0.04	168

2.3. Construction Emissions by Year, Mitigated

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

Year	ROG	NOx	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	CO2e
Daily - Summer (Max)	—	—	—	—	—	—	—	—	—
2026	0.49	11.7	0.24	2.12	2.17	0.22	0.96	1.02	3,386
Daily - Winter (Max)	—	—	—	—	—	—	—	—	—
2026	60.0	9.45	0.20	2.12	2.17	0.18	0.96	1.02	3,381
Average Daily	—	—	—	—	—	—	—	—	—
2026	1.97	3.88	0.07	0.24	0.32	0.07	0.09	0.15	1,015

Annual	—	—	—	—	—	—	—	—	—
2026	0.36	0.71	0.01	0.04	0.06	0.01	0.02	0.03	168

3. Construction Emissions Details

3.1. Site Preparation (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	CO2e
Onsite	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.24	11.0	0.51	—	0.51	0.47	—	0.47	2,072
Dust From Material Movement	—	—	—	1.63	1.63	—	0.78	0.78	—
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	0.30	0.01	—	0.01	0.01	—	0.01	56.8
Dust From Material Movement	—	—	—	0.04	0.04	—	0.02	0.02	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.06	< 0.005	—	< 0.005	< 0.005	—	< 0.005	9.40
Dust From Material Movement	—	—	—	0.01	0.01	—	< 0.005	< 0.005	—

Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—
Worker	0.02	0.02	0.00	0.06	0.06	0.00	0.01	0.01	57.9
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	1.59
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	0.26
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.2. Site Preparation (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	CO2e
Onsite	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.27	6.40	0.04	—	0.04	0.04	—	0.04	2,072
Dust From Material Movement	—	—	—	1.63	1.63	—	0.78	0.78	—

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	0.18	< 0.005	—	< 0.005	< 0.005	—	< 0.005	56.8
Dust From Material Movement	—	—	—	0.04	0.04	—	0.02	0.02	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	0.03	< 0.005	—	< 0.005	< 0.005	—	< 0.005	9.40
Dust From Material Movement	—	—	—	0.01	0.01	—	< 0.005	< 0.005	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—
Worker	0.02	0.02	0.00	0.06	0.06	0.00	0.01	0.01	57.9
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	1.59
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	0.26
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.3. Grading (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	CO2e
Onsite	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.42	12.9	0.58	—	0.58	0.53	—	0.53	2,463
Dust From Material Movement	—	—	—	1.84	1.84	—	0.89	0.89	—
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	1.42	12.9	0.58	—	0.58	0.53	—	0.53	2,463
Dust From Material Movement	—	—	—	1.84	1.84	—	0.89	0.89	—
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	0.06	0.53	0.02	—	0.02	0.02	—	0.02	101
Dust From Material Movement	—	—	—	0.08	0.08	—	0.04	0.04	—
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	0.10	< 0.005	—	< 0.005	< 0.005	—	< 0.005	16.8
Dust From Material Movement	—	—	—	0.01	0.01	—	0.01	0.01	—

Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—
Worker	0.02	0.02	0.00	0.08	0.08	0.00	0.02	0.02	81.2
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.02	1.20	0.01	0.19	0.20	0.01	0.05	0.06	842
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—
Worker	0.02	0.02	0.00	0.08	0.08	0.00	0.02	0.02	77.3
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.02	1.26	0.01	0.19	0.20	0.01	0.05	0.06	840
Average Daily	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	3.19
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	< 0.005	0.05	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	34.6
Annual	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	0.53
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	5.72

3.4. Grading (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	CO2e
Onsite	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.32	7.70	0.05	—	0.05	0.05	—	0.05	2,463

Dust From Material Movement	—	—	—	1.84	1.84	—	0.89	0.89	—
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	7.70	0.05	—	0.05	0.05	—	0.05	2,463
Dust From Material Movement	—	—	—	1.84	1.84	—	0.89	0.89	—
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	0.32	< 0.005	—	< 0.005	< 0.005	—	< 0.005	101
Dust From Material Movement	—	—	—	0.08	0.08	—	0.04	0.04	—
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	16.8
Dust From Material Movement	—	—	—	0.01	0.01	—	0.01	0.01	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—
Worker	0.02	0.02	0.00	0.08	0.08	0.00	0.02	0.02	81.2
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.02	1.20	0.01	0.19	0.20	0.01	0.05	0.06	842
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—

Worker	0.02	0.02	0.00	0.08	0.08	0.00	0.02	0.02	77.3
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.02	1.26	0.01	0.19	0.20	0.01	0.05	0.06	840
Average Daily	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	3.19
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	< 0.005	0.05	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	34.6
Annual	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	0.53
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	5.72

3.5. 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	CO2e
Onsite	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.01	8.57	0.29	—	0.29	0.27	—	0.27	1,807
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	1.01	8.57	0.29	—	0.29	0.27	—	0.27	1,807
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	0.31	2.58	0.09	—	0.09	0.08	—	0.08	545
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Annual	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.06	0.47	0.02	—	0.02	0.01	—	0.01	90.2
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	0.07	0.06	0.00	0.27	0.27	0.00	0.06	0.06	265
Vendor	0.01	0.26	< 0.005	0.05	0.05	< 0.005	0.01	0.02	196
Hauling	< 0.005	0.16	< 0.005	0.03	0.03	< 0.005	0.01	0.01	112
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—
Worker	0.07	0.07	0.00	0.27	0.27	0.00	0.06	0.06	252
Vendor	0.01	0.27	< 0.005	0.05	0.05	< 0.005	0.01	0.02	196
Hauling	< 0.005	0.17	< 0.005	0.03	0.03	< 0.005	0.01	0.01	111
Average Daily	—	—	—	—	—	—	—	—	—
Worker	0.02	0.02	0.00	0.08	0.08	0.00	0.02	0.02	76.2
Vendor	< 0.005	0.08	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	59.0
Hauling	< 0.005	0.05	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	33.6
Annual	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.00	0.01	0.01	0.00	< 0.005	< 0.005	12.6
Vendor	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	9.77
Hauling	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	5.57

3.6. 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	CO2e
Onsite	—	—	—	—	—	—	—	—	—

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.33	8.94	0.19	—	0.19	0.18	—	0.18	1,807
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	0.33	8.94	0.19	—	0.19	0.18	—	0.18	1,807
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	2.69	0.06	—	0.06	0.05	—	0.05	545
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	0.49	0.01	—	0.01	0.01	—	0.01	90.2
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	0.07	0.06	0.00	0.27	0.27	0.00	0.06	0.06	265
Vendor	0.01	0.26	< 0.005	0.05	0.05	< 0.005	0.01	0.02	196
Hauling	< 0.005	0.16	< 0.005	0.03	0.03	< 0.005	0.01	0.01	112
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—
Worker	0.07	0.07	0.00	0.27	0.27	0.00	0.06	0.06	252
Vendor	0.01	0.27	< 0.005	0.05	0.05	< 0.005	0.01	0.02	196
Hauling	< 0.005	0.17	< 0.005	0.03	0.03	< 0.005	0.01	0.01	111
Average Daily	—	—	—	—	—	—	—	—	—
Worker	0.02	0.02	0.00	0.08	0.08	0.00	0.02	0.02	76.2

Vendor	< 0.005	0.08	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	59.0
Hauling	< 0.005	0.05	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	33.6
Annual	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.00	0.01	0.01	0.00	< 0.005	< 0.005	12.6
Vendor	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	9.77
Hauling	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	5.57

3.7. 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	CO2e
Onsite	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.47	4.41	0.18	—	0.18	0.17	—	0.17	995
Paving	0.00	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.13	0.01	—	0.01	0.01	—	0.01	30.0
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	0.02	< 0.005	—	< 0.005	< 0.005	—	< 0.005	4.96
Paving	0.00	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—
Worker	0.03	0.03	0.00	0.10	0.10	0.00	0.02	0.02	96.6
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	2.92
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	0.48
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.8. Paving (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	CO2e
Onsite	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.19	4.63	0.06	—	0.06	0.05	—	0.05	995
Paving	0.00	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—

Off-Road Equipment	0.01	0.14	< 0.005	—	< 0.005	< 0.005	—	< 0.005	30.0
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	0.03	< 0.005	—	< 0.005	< 0.005	—	< 0.005	4.96
Paving	0.00	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—
Worker	0.03	0.03	0.00	0.10	0.10	0.00	0.02	0.02	96.6
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	2.92
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	0.48
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.9. Architectural Coating (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	CO2e

Onsite	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.12	0.86	0.02	—	0.02	0.02	—	0.02	134
Architectural Coatings	59.9	—	—	—	—	—	—	—	—
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	0.03	< 0.005	—	< 0.005	< 0.005	—	< 0.005	4.04
Architectural Coatings	1.81	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	0.67
Architectural Coatings	0.33	—	—	—	—	—	—	—	—
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	0.01	0.01	0.00	0.05	0.05	0.00	0.01	0.01	50.4
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	1.52

Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	0.25
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.10. Architectural Coating (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	CO2e
Onsite	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.02	1.07	0.03	—	0.03	0.03	—	0.03	134
Architectural Coatings	59.9	—	—	—	—	—	—	—	—
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	0.03	< 0.005	—	< 0.005	< 0.005	—	< 0.005	4.04
Architectural Coatings	1.81	—	—	—	—	—	—	—	—
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	0.67
Architectural Coatings	0.33	—	—	—	—	—	—	—	—

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	0.01	0.01	0.00	0.05	0.05	0.00	0.01	0.01	50.4
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	1.52
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	0.25
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

3.11. Trenching (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	CO2e
Onsite	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.20	1.86	0.06	—	0.06	0.05	—	0.05	433
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	0.03	0.26	0.01	—	0.01	0.01	—	0.01	60.6
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	0.05	< 0.005	—	< 0.005	< 0.005	—	< 0.005	10.0
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	0.01	0.01	0.00	0.04	0.04	0.00	0.01	0.01	40.6
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.00	0.01	0.01	0.00	< 0.005	< 0.005	5.42
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	0.90
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

3.12. Trenching (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	CO2e
Onsite	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—

Off-Road Equipment	0.07	2.28	0.04	—	0.04	0.03	—	0.03	433
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	0.32	0.01	—	0.01	< 0.005	—	< 0.005	60.6
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	10.0
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	0.01	0.01	0.00	0.04	0.04	0.00	0.01	0.01	40.6
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.00	0.01	0.01	0.00	< 0.005	< 0.005	5.42
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	0.90
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

4. Operations Emissions Details

4.10. Soil Carbon Accumulation By Vegetation Type

4.10.1. Soil Carbon Accumulation By Vegetation Type - Unmitigated

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

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

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

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

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

4.10.3. Avoided and Sequestered Emissions by Species - Unmitigated

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

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

4.10.4. Soil Carbon Accumulation By Vegetation Type - Mitigated

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

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

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

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

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

4.10.6. Avoided and Sequestered Emissions by Species - Mitigated

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

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

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

5. Activity Data

5.1. Construction Schedule

Phase Name	Phase Type	Start Date	End Date	Days Per Week	Work Days per Phase	Phase Description
Site Preparation	Site Preparation	3/1/2026	3/15/2026	5.00	10.0	—
Grading	Grading	3/16/2026	4/5/2026	5.00	15.0	—
Building Construction	Building Construction	6/15/2026	11/15/2026	5.00	110	—
Paving	Paving	12/1/2026	12/15/2026	5.00	11.0	—
Architectural Coating	Architectural Coating	11/16/2026	11/30/2026	5.00	11.0	—
Trenching	Trenching	4/6/2026	6/15/2026	5.00	51.0	—

5.2. Off-Road Equipment

5.2.1. Unmitigated

Phase Name	Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor
Site Preparation	Graders	Diesel	Average	1.00	8.00	148	0.41
Site Preparation	Tractors/Loaders/Backhoes	Diesel	Average	1.00	8.00	84.0	0.37
Site Preparation	Rubber Tired Dozers	Diesel	Average	1.00	7.00	367	0.40
Grading	Graders	Diesel	Average	1.00	8.00	148	0.41
Grading	Rubber Tired Dozers	Diesel	Average	1.00	8.00	367	0.40
Grading	Tractors/Loaders/Backhoes	Diesel	Average	2.00	7.00	84.0	0.37
Building Construction	Cranes	Diesel	Average	1.00	6.00	367	0.29
Building Construction	Forklifts	Diesel	Average	1.00	6.00	82.0	0.20
Building Construction	Tractors/Loaders/Backhoes	Diesel	Average	1.00	6.00	84.0	0.37
Building Construction	Generator Sets	Diesel	Average	1.00	8.00	14.0	0.74
Building Construction	Welders	Diesel	Average	3.00	8.00	46.0	0.45
Paving	Cement and Mortar Mixers	Diesel	Average	1.00	6.00	10.0	0.56
Paving	Pavers	Diesel	Average	1.00	6.00	81.0	0.42
Paving	Rollers	Diesel	Average	1.00	7.00	36.0	0.38

Paving	Tractors/Loaders/Back	Diesel	Average	1.00	8.00	84.0	0.37
Paving	Paving Equipment	Diesel	Average	1.00	8.00	89.0	0.36
Architectural Coating	Air Compressors	Diesel	Average	1.00	6.00	37.0	0.48
Trenching	Tractors/Loaders/Backhoes	Diesel	Average	1.00	8.00	84.0	0.37
Trenching	Excavators	Diesel	Average	1.00	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
Site Preparation	Graders	Diesel	Tier 4 Interim	1.00	8.00	148	0.41
Site Preparation	Tractors/Loaders/Backhoes	Diesel	Tier 4 Interim	1.00	8.00	84.0	0.37
Site Preparation	Rubber Tired Dozers	Diesel	Tier 4 Interim	1.00	7.00	367	0.40
Grading	Graders	Diesel	Tier 4 Interim	1.00	8.00	148	0.41
Grading	Rubber Tired Dozers	Diesel	Tier 4 Interim	1.00	8.00	367	0.40
Grading	Tractors/Loaders/Backhoes	Diesel	Tier 4 Interim	2.00	7.00	84.0	0.37
Building Construction	Cranes	Diesel	Tier 4 Interim	1.00	6.00	367	0.29
Building Construction	Forklifts	Diesel	Tier 4 Interim	1.00	6.00	82.0	0.20
Building Construction	Tractors/Loaders/Backhoes	Diesel	Tier 4 Interim	1.00	6.00	84.0	0.37
Building Construction	Generator Sets	Diesel	Average	1.00	8.00	14.0	0.74
Building Construction	Welders	Diesel	Tier 4 Interim	3.00	8.00	46.0	0.45
Paving	Cement and Mortar Mixers	Diesel	Average	1.00	6.00	10.0	0.56
Paving	Pavers	Diesel	Tier 4 Interim	1.00	6.00	81.0	0.42
Paving	Rollers	Diesel	Tier 4 Interim	1.00	7.00	36.0	0.38
Paving	Tractors/Loaders/Backhoes	Diesel	Tier 4 Interim	1.00	8.00	84.0	0.37
Paving	Paving Equipment	Diesel	Tier 4 Interim	1.00	8.00	89.0	0.36

Architectural Coating	Air Compressors	Diesel	Tier 4 Interim	1.00	6.00	37.0	0.48
Trenching	Tractors/Loaders/Backhoes	Diesel	Tier 4 Interim	1.00	8.00	84.0	0.37
Trenching	Excavators	Diesel	Tier 4 Interim	1.00	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
Site Preparation	—	—	—	—
Site Preparation	Worker	7.50	11.7	LDA,LDT1,LDT2
Site Preparation	Vendor	—	8.40	HHDT,MHDT
Site Preparation	Hauling	0.00	20.0	HHDT
Site Preparation	Onsite truck	—	—	HHDT
Grading	—	—	—	—
Grading	Worker	10.0	11.7	LDA,LDT1,LDT2
Grading	Vendor	—	8.40	HHDT,MHDT
Grading	Hauling	10.4	20.0	HHDT
Grading	Onsite truck	—	—	HHDT
Building Construction	—	—	—	—
Building Construction	Worker	32.6	11.7	LDA,LDT1,LDT2
Building Construction	Vendor	6.63	8.40	HHDT,MHDT
Building Construction	Hauling	1.38	20.0	HHDT
Building Construction	Onsite truck	—	—	HHDT
Paving	—	—	—	—
Paving	Worker	12.5	11.7	LDA,LDT1,LDT2
Paving	Vendor	—	8.40	HHDT,MHDT
Paving	Hauling	0.00	20.0	HHDT
Paving	Onsite truck	—	—	HHDT

Architectural Coating	—	—	—	—
Architectural Coating	Worker	6.52	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	5.00	11.7	LDA,LDT1,LDT2
Trenching	Vendor	—	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
Site Preparation	—	—	—	—
Site Preparation	Worker	7.50	11.7	LDA,LDT1,LDT2
Site Preparation	Vendor	—	8.40	HHDT,MHDT
Site Preparation	Hauling	0.00	20.0	HHDT
Site Preparation	Onsite truck	—	—	HHDT
Grading	—	—	—	—
Grading	Worker	10.0	11.7	LDA,LDT1,LDT2
Grading	Vendor	—	8.40	HHDT,MHDT
Grading	Hauling	10.4	20.0	HHDT
Grading	Onsite truck	—	—	HHDT
Building Construction	—	—	—	—
Building Construction	Worker	32.6	11.7	LDA,LDT1,LDT2
Building Construction	Vendor	6.63	8.40	HHDT,MHDT
Building Construction	Hauling	1.38	20.0	HHDT
Building Construction	Onsite truck	—	—	HHDT

Paving	—	—	—	—
Paving	Worker	12.5	11.7	LDA,LDT1,LDT2
Paving	Vendor	—	8.40	HHDT,MHDT
Paving	Hauling	0.00	20.0	HHDT
Paving	Onsite truck	—	—	HHDT
Architectural Coating	—	—	—	—
Architectural Coating	Worker	6.52	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	5.00	11.7	LDA,LDT1,LDT2
Trenching	Vendor	—	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

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

5.5. Architectural Coatings

Phase Name	Residential Interior Area Coated (sq ft)	Residential Exterior Area Coated (sq ft)	Non-Residential Interior Area Coated (sq ft)	Non-Residential Exterior Area Coated (sq ft)	Parking Area Coated (sq ft)
Architectural Coating	94,786	31,595	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 (sq. ft.)	Acres Paved (acres)
Site Preparation	—	—	9.38	0.00	—
Grading	—	1,247	15.0	0.00	—
Paving	0.00	0.00	0.00	0.00	0.00

5.6.2. Construction Earthmoving Control Strategies

Control Strategies Applied	Frequency (per day)	PM10 Reduction	PM2.5 Reduction
Water Exposed Area	3	74%	74%

5.7. Construction Paving

Land Use	Area Paved (acres)	% Asphalt
Apartments Mid Rise	—	0%
Unenclosed 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
2026	0.00	100.0	0.03	< 0.005

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	7.10	annual days of extreme heat
Extreme Precipitation	8.60	annual days with precipitation above 20 mm
Sea Level Rise	—	meters of inundation depth
Wildfire	24.0	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 (Radke et al., 2017, CEC-500-2017-008), and consider inundation location and depth for the San Francisco Bay, the Sacramento-San Joaquin River Delta and California coast resulting different increments of sea level rise coupled with extreme storm events. Users may select from four scenarios to view the range in potential inundation depth for the grid cell. The four scenarios are: No rise, 0.5 meter, 1.0 meter, 1.41 meters
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	0	0	0	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	1	1	1	2

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	10.6
AQ-PM	22.8
AQ-DPM	45.8
Drinking Water	17.8
Lead Risk Housing	67.0
Pesticides	0.00
Toxic Releases	32.6

Traffic	77.0
Effect Indicators	—
CleanUp Sites	33.9
Groundwater	71.8
Haz Waste Facilities/Generators	47.6
Impaired Water Bodies	0.00
Solid Waste	22.1
Sensitive Population	—
Asthma	53.0
Cardio-vascular	31.0
Low Birth Weights	37.6
Socioeconomic Factor Indicators	—
Education	28.8
Housing	9.53
Linguistic	39.8
Poverty	13.5
Unemployment	2.73

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	87.47593995
Employed	99.0632619
Median HI	83.65199538
Education	—
Bachelor's or higher	65.64865905
High school enrollment	100

Preschool enrollment	21.01886308
Transportation	—
Auto Access	84.51174131
Active commuting	79.03246503
Social	—
2-parent households	93.9304504
Voting	80.85461311
Neighborhood	—
Alcohol availability	44.88643655
Park access	81.35506224
Retail density	60.64416784
Supermarket access	42.44835108
Tree canopy	91.09457205
Housing	—
Homeownership	40.39522649
Housing habitability	78.03156679
Low-inc homeowner severe housing cost burden	70.96111895
Low-inc renter severe housing cost burden	89.18259977
Uncrowded housing	49.60862312
Health Outcomes	—
Insured adults	84.53740536
Arthritis	0.0
Asthma ER Admissions	46.9
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	63.6
Cognitively Disabled	66.4
Physically Disabled	52.4
Heart Attack ER Admissions	76.6
Mental Health Not Good	0.0
Chronic Kidney Disease	0.0
Obesity	0.0
Pedestrian Injuries	84.0
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	67.0
Elderly	29.3
English Speaking	43.3
Foreign-born	52.2
Outdoor Workers	39.7
Climate Change Adaptive Capacity	—
Impervious Surface Cover	51.2
Traffic Density	62.5
Traffic Access	61.6
Other Indices	—

Hardship	18.3
Other Decision Support	—
2016 Voting	74.7

7.3. Overall Health & Equity Scores

Metric	Result for Project Census Tract
CalEnviroScreen 4.0 Score for Project Location (a)	20.0
Healthy Places Index Score for Project Location (b)	90.0
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 Bruno default clean energy provider is Peninsula Clean Energy.
Land Use	Information provided by applicant provided construction worksheet.
Construction: Construction Phases	Information provided by applicant provided construction worksheet. No demo for vacant site.
Construction: Off-Road Equipment	Defaults - added trenching. Confirmed by applicant.
Construction: Trips and VMT	Building Construction = 630-cy of concrete (1.38 trips/day).

Construction: On-Road Fugitive Dust	Air District BMPs 15 mph. Required by San Bruno general plan.
Operations: Hearths	No hearths.
Operations: Water and Waste Water	Wastewater treatment 100% aerobic - no septic tanks or lagoons.
Operations: Vehicle Data	Provided trip gen.

2. Emissions Summary - HRA

2.2 Construction Emissions by Year, Unmitigated

Year	ROG	NOx	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	CO_2e
Daily - Summer (Max)									
2026	1.4515870	13.065089	0.5793989	1.8606963	2.4400952	0.5330837	0.8951083	1.4281920	2531.308332415587
Daily - Winter (Max)									
2026	60.059812	13.073061	0.5793989	1.8606963	2.4400952	0.5330837	0.8951083	1.4281920	2530.896457181226
Average Daily									
2026	2.2740274	3.8831169	0.1404138	0.1309242	0.2713380	0.1291907	0.0605599	0.1897506	820.7353820320054
Annual									
2026	0.4150100	0.7086688	0.0256255	0.0238936	0.0495192	0.0235773	0.0110521	0.0346294	135.88210868162403

2. Emissions Summary - HRA

2.3 Construction Emissions by Year, Mitigated

Year	ROG	NOx	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	CO_2e
Daily - Summer (Max)									
2026	0.4777492	11.354105	0.2317570	1.8606963	1.9073408	0.2158466	0.8951083	0.9417528	2531.308332415587
Daily - Winter (Max)									
2026	59.960647	9.0828013	0.1949099	1.8606963	1.9073408	0.1814121	0.8951083	0.9417528	2530.896457181226
Average Daily									
2026	1.9663812	3.7279863	0.0694526	0.1309242	0.2003769	0.0648841	0.0605599	0.1254440	820.7353820320054
Annual									
2026	0.3588645	0.6803575	0.0126751	0.0238936	0.0365687	0.0118413	0.0110521	0.0228935	135.88210868162403

5.3. Construction Vehicles - HRA

5.3.1 Unmitigated

Phase Name	Trip Type	One-Way Trips per Day	Miles per Trip	Vehicle Mix
Site Preparation				
Site Preparation	Worker	7.5	1	LDA,LDT1,LDT2
Site Preparation	Vendor		1	HHDT,MHDT
Site Preparation	Hauling	0	1	HHDT
Site Preparation	Onsite truck			HHDT
Grading				
Grading	Worker	10	1	LDA,LDT1,LDT2
Grading	Vendor		1	HHDT,MHDT
Grading	Hauling	10.4	1	HHDT
Grading	Onsite truck			HHDT
Building Construction				
Building Construction	Worker	32.59746	1	LDA,LDT1,LDT2
Building Construction	Vendor	6.6282707	1	HHDT,MHDT
Building Construction	Hauling	1.38	1	HHDT
Building Construction	Onsite truck			HHDT
Paving				
Paving	Worker	12.5	1	LDA,LDT1,LDT2
Paving	Vendor		1	HHDT,MHDT
Paving	Hauling	0	1	HHDT
Paving	Onsite truck			HHDT
Architectural Coating				
Architectural Coating	Worker	6.519492	1	LDA,LDT1,LDT2
Architectural Coating	Vendor		1	HHDT,MHDT
Architectural Coating	Hauling	0	1	HHDT
Architectural Coating	Onsite truck			HHDT
Trenching				
Trenching	Worker	5	1	LDA,LDT1,LDT2
Trenching	Vendor		1	HHDT,MHDT
Trenching	Hauling	0	1	HHDT
Trenching	Onsite truck			HHDT

5.3. Construction Vehicles - HRA

5.3.2 Mitigated

Phase Name	Trip Type	One-Way Trips per Day	Miles per Trip	Vehicle Mix
Site Preparation				
Site Preparation	Worker	7.5	1	LDA,LDT1,LDT2
Site Preparation	Vendor		1	HHDT,MHDT
Site Preparation	Hauling	0	1	HHDT
Site Preparation	Onsite truck			HHDT
Grading				
Grading	Worker	10	1	LDA,LDT1,LDT2
Grading	Vendor		1	HHDT,MHDT
Grading	Hauling	10.4	1	HHDT
Grading	Onsite truck			HHDT
Building Construction				
Building Construction	Worker	32.59746	1	LDA,LDT1,LDT2
Building Construction	Vendor	6.6282707	1	HHDT,MHDT
Building Construction	Hauling	1.38	1	HHDT
Building Construction	Onsite truck			HHDT
Paving				
Paving	Worker	12.5	1	LDA,LDT1,LDT2
Paving	Vendor		1	HHDT,MHDT
Paving	Hauling	0	1	HHDT
Paving	Onsite truck			HHDT
Architectural Coating				
Architectural Coating	Worker	6.519492	1	LDA,LDT1,LDT2
Architectural Coating	Vendor		1	HHDT,MHDT
Architectural Coating	Hauling	0	1	HHDT
Architectural Coating	Onsite truck			HHDT
Trenching				
Trenching	Worker	5	1	LDA,LDT1,LDT2
Trenching	Vendor		1	HHDT,MHDT
Trenching	Hauling	0	1	HHDT
Trenching	Onsite truck			HHDT

Attachment 2: Project Construction Emissions and Health Risk Calculations

271 El Camino Real, San Bruno, 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 (µg/m^3)	Fugitive PM2.5 (µg/m^3)	Infant/Child	(-)	(µg/m^3)
2026	0.0908	0.3110	16.15	0.02	0.40
Total	-	-	**16.15**		-
Maximum	0.0908	0.3110	**-**	**0.02**	**0.40**

Maximum Impacts at MEI Location - With Mitigation

Emissions Year	Maximum Concentrations		Cancer Risk (per million)	Hazard Index	Maximum Annual PM2.5 Concentration
	Exhaust PM10/DPM (µg/m^3)	Fugitive PM2.5 (µg/m^3)	Infant/Child	(-)	(µg/m^3)
2026	0.0450	0.2104	8.01	0.01	0.25
Total	-	-	**8.01**	-	-
Maximum	0.0450	0.2104	**-**	**0.01**	**0.25**

Maximum Impacts at Stratford School

Construction Year	Unmitigated Emissions			
	Maximum Concentrations		Child Cancer Risk (per million)	Maximum Annual PM2.5 Concentration (µg/m^3)
	Exhaust PM10/DPM (µg/m^3)	Fugitive PM2.5 (µg/m^3)		
2026	0.0240	0.0239	1.69	0.048
Total	-	-	**1.69**	-
Maximum	0.0240	0.0239	**-**	**0.048**

271 El Camino Real, San Bruno, 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 ($g/s/m^2$)
2026	Construction	0.0256	CON_DPM	51.3	0.02190	2.76E-03	2,295	1.20E-06
Total		***0.0256***		***51.3***	***0.0219***	***0.0028***		

Construction Hours

hr/day =	9	(7am - 4pm)
days/yr =	260	
hours/year =	2340	

DPM Construction Emissions and Modeling Emission Rates - With Mitigation

Construction Year	Activity	DPM (ton/year)	Area Source	DPM Emissions (lb/yr)	(lb/hr)	(g/s)	Modeled Area (m^2)	DPM Emission Rate ($g/s/m^2$)
2026	Construction	0.0127	CON_DPM	25.4	0.01083	1.37E-03	2,295	5.95E-07
Total		***0.0127***		***25.4***	***0.0108***	***0.0014***		

Construction Hours

hr/day =	9	(7am - 4pm)
days/yr =	260	
hours/year =	2340	

271 El Camino Real, San Bruno, CA

PM2.5 Fugitive Dust Emissions for Modeling - Unmitigated

Construction Year	Activity	Area Source	PM2.5 Emissions (ton/year)	(lb/yr)	(lb/hr)	(g/s)	Modeled Area (m^2)	PM2.5 Emission Rate $g/s/m^2$
2026	Construction	CON_FUG	0.0163	32.7	0.01397	1.76E-03	2,295	7.67E-07
Total			***0.0163***	***32.7***	***0.0140***	***0.0018***		

Construction Hours

hr/day =	9	(7am - 4pm)
days/yr =	260	
hours/year =	2340	

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

Construction Year	Activity	Area Source	PM2.5 Emissions (ton/year)	(lb/yr)	(lb/hr)	(g/s)	Modeled Area (m^2)	PM2.5 Emission Rate $g/s/m^2$
2026	Construction	CON_FUG	0.0111	22.1	0.00945	1.19E-03	2,295	5.19E-07
Total			***0.0111***	***22.1***	***0.0094***	***0.0012***		

Construction Hours

hr/day =	9	(7am - 4pm)
days/yr =	260	
hours/year =	2340	

271 El Camino Real, San Bruno, 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

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)
0	0.25	-0.25 - 0*	2026	0.0777	10	1.06	2026	0.0777	-	-
1	1	0 - 1	2026	0.0777	10	12.75	2026	0.0777	1	0.22
2	1	1 - 2		0.0000	10	0.00		0.0000	1	0.00
3	1	2 - 3		0.0000	3	0.00		0.0000	1	0.00
4	1	3 - 4		0.0000	3	0.00		0.0000	1	0.00
5	1	4 - 5		0.0000	3	0.00		0.0000	1	0.00
6	1	5 - 6		0.0000	3	0.00		0.0000	1	0.00
7	1	6 - 7		0.0000	3	0.00		0.0000	1	0.00
8	1	7 - 8		0.0000	3	0.00		0.0000	1	0.00
9	1	8 - 9		0.0000	3	0.00		0.0000	1	0.00
10	1	9 - 10		0.0000	3	0.00		0.0000	1	0.00
11	1	10 - 11		0.0000	3	0.00		0.0000	1	0.00
12	1	11 - 12		0.0000	3	0.00		0.0000	1	0.00
13	1	12 - 13		0.0000	3	0.00		0.0000	1	0.00
14	1	13 - 14		0.0000	3	0.00		0.0000	1	0.00
15	1	14 - 15		0.0000	3	0.00		0.0000	1	0.00
16	1	15 - 16		0.0000	3	0.00		0.0000	1	0.00
17	1	16-17		0.0000	1	0.00		0.0000	1	0.00
18	1	17-18		0.0000	1	0.00		0.0000	1	0.00
19	1	18-19		0.0000	1	0.00		0.0000	1	0.00
20	1	19-20		0.0000	1	0.00		0.0000	1	0.00
21	1	20-21		0.0000	1	0.00		0.0000	1	0.00
22	1	21-22		0.0000	1	0.00		0.0000	1	0.00
23	1	22-23		0.0000	1	0.00		0.0000	1	0.00
24	1	23-24		0.0000	1	0.00		0.0000	1	0.00
25	1	24-25		0.0000	1	0.00		0.0000	1	0.00
26	1	25-26		0.0000	1	0.00		0.0000	1	0.00
27	1	26-27		0.0000	1	0.00		0.0000	1	0.00
28	1	27-28		0.0000	1	0.00		0.0000	1	0.00
29	1	28-29		0.0000	1	0.00		0.0000	1	0.00
30	1	29-30		0.0000	1	0.00		0.0000	1	0.00
Total Increased Cancer Risk						**13.81**				**0.22**

* Third trimester of pregnancy

Hazard Index	Maximum Fugitive PM2.5	Total PM2.5
0.02	0.046	0.12

271 El Camino Real, San Bruno, 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

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*	2026	0.0908	10	1.23	2026	0.0908	-	-				
1	1	0 - 1	2026	0.0908	10	14.91	2026	0.0908	1	0.26		0.02	0.311	0.40
2	1	1 - 2		0.0000	10	0.00		0.0000	1	0.00				
3	1	2 - 3		0.0000	3	0.00		0.0000	1	0.00				
4	1	3 - 4		0.0000	3	0.00		0.0000	1	0.00				
5	1	4 - 5		0.0000	3	0.00		0.0000	1	0.00				
6	1	5 - 6		0.0000	3	0.00		0.0000	1	0.00				
7	1	6 - 7		0.0000	3	0.00		0.0000	1	0.00				
8	1	7 - 8		0.0000	3	0.00		0.0000	1	0.00				
9	1	8 - 9		0.0000	3	0.00		0.0000	1	0.00				
10	1	9 - 10		0.0000	3	0.00		0.0000	1	0.00				
11	1	10 - 11		0.0000	3	0.00		0.0000	1	0.00				
12	1	11 - 12		0.0000	3	0.00		0.0000	1	0.00				
13	1	12 - 13		0.0000	3	0.00		0.0000	1	0.00				
14	1	13 - 14		0.0000	3	0.00		0.0000	1	0.00				
15	1	14 - 15		0.0000	3	0.00		0.0000	1	0.00				
16	1	15 - 16		0.0000	3	0.00		0.0000	1	0.00				
17	1	16-17		0.0000	1	0.00		0.0000	1	0.00				
18	1	17-18		0.0000	1	0.00		0.0000	1	0.00				
19	1	18-19		0.0000	1	0.00		0.0000	1	0.00				
20	1	19-20		0.0000	1	0.00		0.0000	1	0.00				
21	1	20-21		0.0000	1	0.00		0.0000	1	0.00				
22	1	21-22		0.0000	1	0.00		0.0000	1	0.00				
23	1	22-23		0.0000	1	0.00		0.0000	1	0.00				
24	1	23-24		0.0000	1	0.00		0.0000	1	0.00				
25	1	24-25		0.0000	1	0.00		0.0000	1	0.00				
26	1	25-26		0.0000	1	0.00		0.0000	1	0.00				
27	1	26-27		0.0000	1	0.00		0.0000	1	0.00				
28	1	27-28		0.0000	1	0.00		0.0000	1	0.00				
29	1	28-29		0.0000	1	0.00		0.0000	1	0.00				
30	1	29-30		0.0000	1	0.00		0.0000	1	0.00				
Total Increased Cancer Risk						**16.15**				**0.26**				

* Third trimester of pregnancy

271 El Camino Real, San Bruno, CA - Construction Impacts - With 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 ($\mu g/m^3$)
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	Infant/Child DPM Conc (ug/m3) Annual	Infant/Child Age Sensitivity Factor	Infant/Child Cancer Risk (per million)	Adult - Exposure Information: Modeled DPM Conc (ug/m3) Year	Adult Modeled DPM Conc (ug/m3) Annual	Adult Age Sensitivity Factor	Adult Cancer Risk (per million)	Maximum Hazard Index	Maximum Fugitive PM2.5	Maximum Total PM2.5
0	0.25	-0.25 - 0*	2026	0.0385	10	0.52	2026	0.0385	-	-			
1	1	0 - 1	2026	0.0385	10	6.32	2026	0.0385	1	0.11	0.01	0.031	0.07
2	1	1 - 2		0.0000	10	0.00		0.0000	1	0.00			
3	1	2 - 3		0.0000	3	0.00		0.0000	1	0.00			
4	1	3 - 4		0.0000	3	0.00		0.0000	1	0.00			
5	1	4 - 5		0.0000	3	0.00		0.0000	1	0.00			
6	1	5 - 6		0.0000	3	0.00		0.0000	1	0.00			
7	1	6 - 7		0.0000	3	0.00		0.0000	1	0.00			
8	1	7 - 8		0.0000	3	0.00		0.0000	1	0.00			
9	1	8 - 9		0.0000	3	0.00		0.0000	1	0.00			
10	1	9 - 10		0.0000	3	0.00		0.0000	1	0.00			
11	1	10 - 11		0.0000	3	0.00		0.0000	1	0.00			
12	1	11 - 12		0.0000	3	0.00		0.0000	1	0.00			
13	1	12 - 13		0.0000	3	0.00		0.0000	1	0.00			
14	1	13 - 14		0.0000	3	0.00		0.0000	1	0.00			
15	1	14 - 15		0.0000	3	0.00		0.0000	1	0.00			
16	1	15 - 16		0.0000	3	0.00		0.0000	1	0.00			
17	1	16-17		0.0000	1	0.00		0.0000	1	0.00			
18	1	17-18		0.0000	1	0.00		0.0000	1	0.00			
19	1	18-19		0.0000	1	0.00		0.0000	1	0.00			
20	1	19-20		0.0000	1	0.00		0.0000	1	0.00			
21	1	20-21		0.0000	1	0.00		0.0000	1	0.00			
22	1	21-22		0.0000	1	0.00		0.0000	1	0.00			
23	1	22-23		0.0000	1	0.00		0.0000	1	0.00			
24	1	23-24		0.0000	1	0.00		0.0000	1	0.00			
25	1	24-25		0.0000	1	0.00		0.0000	1	0.00			
26	1	25-26		0.0000	1	0.00		0.0000	1	0.00			
27	1	26-27		0.0000	1	0.00		0.0000	1	0.00			
28	1	27-28		0.0000	1	0.00		0.0000	1	0.00			
29	1	28-29		0.0000	1	0.00		0.0000	1	0.00			
30	1	29-30		0.0000	1	0.00		0.0000	1	0.00			
Total Increased Cancer Risk						**6.85**				**0.11**			

* Third trimester of pregnancy

271 El Camino Real, San Bruno, CA - Construction Impacts - With Mitigation
Maximum DPM Cancer Risk and PM2.5 Calculations From Construction
Impacts at Off-Site MEI Location - 1.5 meter receptor height

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	Maximum		
	Exposure				Age	Cancer	Modeled		Age	Cancer			
Exposure	Duration		DPM Conc (ug/m3)		Sensitivity	Risk	DPM Conc (ug/m3)		Sensitivity	Risk	Hazard	Fugitive	Total
Year	(years)	Age	Year	Annual	Factor	(per million)	Year	Annual	Factor	(per million)	Index	PM2.5	PM2.5
0	0.25	-0.25 - 0*	2026	0.0450	10	0.61	2026	0.0450	-	-			
1	1	0 - 1	2026	0.0450	10	7.39	2026	0.0450	1	0.13	0.01	0.210	0.25
2	1	1 - 2		0.0000	10	0.00		0.0000	1	0.00			
3	1	2 - 3		0.0000	3	0.00		0.0000	1	0.00			
4	1	3 - 4		0.0000	3	0.00		0.0000	1	0.00			
5	1	4 - 5		0.0000	3	0.00		0.0000	1	0.00			
6	1	5 - 6		0.0000	3	0.00		0.0000	1	0.00			
7	1	6 - 7		0.0000	3	0.00		0.0000	1	0.00			
8	1	7 - 8		0.0000	3	0.00		0.0000	1	0.00			
9	1	8 - 9		0.0000	3	0.00		0.0000	1	0.00			
10	1	9 - 10		0.0000	3	0.00		0.0000	1	0.00			
11	1	10 - 11		0.0000	3	0.00		0.0000	1	0.00			
12	1	11 - 12		0.0000	3	0.00		0.0000	1	0.00			
13	1	12 - 13		0.0000	3	0.00		0.0000	1	0.00			
14	1	13 - 14		0.0000	3	0.00		0.0000	1	0.00			
15	1	14 - 15		0.0000	3	0.00		0.0000	1	0.00			
16	1	15 - 16		0.0000	3	0.00		0.0000	1	0.00			
17	1	16-17		0.0000	1	0.00		0.0000	1	0.00			
18	1	17-18		0.0000	1	0.00		0.0000	1	0.00			
19	1	18-19		0.0000	1	0.00		0.0000	1	0.00			
20	1	19-20		0.0000	1	0.00		0.0000	1	0.00			
21	1	20-21		0.0000	1	0.00		0.0000	1	0.00			
22	1	21-22		0.0000	1	0.00		0.0000	1	0.00			
23	1	22-23		0.0000	1	0.00		0.0000	1	0.00			
24	1	23-24		0.0000	1	0.00		0.0000	1	0.00			
25	1	24-25		0.0000	1	0.00		0.0000	1	0.00			
26	1	25-26		0.0000	1	0.00		0.0000	1	0.00			
27	1	26-27		0.0000	1	0.00		0.0000	1	0.00			
28	1	27-28		0.0000	1	0.00		0.0000	1	0.00			
29	1	28-29		0.0000	1	0.00		0.0000	1	0.00			
30	1	29-30		0.0000	1	0.00		0.0000	1	0.00			
Total Increased Cancer Risk						**8.01**				**0.13**			

* Third trimester of pregnancy

271 El Camino Real, San Bruno, CA - Construction Impacts - Without Mitigation
Maximum DPM Cancer Risk and PM2.5 Calculations From Construction
Impacts at Stratford School - 1 meter - Child Exposure

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

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

Where: C_{air} = concentration in air ($\mu g/m^3$)
SCAF = School Child Adjustment Factor (unitless) for source operation and exposures different than 8 hours/day
= (24/SHR) x (7days/SDay) x (SCHR/8 hrs)
SHR = Hours/day of emission source operation
SDay = Number of days per week of source operation
SCHR = School operation hours while emission source in operation
8-Hr BR = Eight-hour breathing rate (L/kg body weight-per 8 hrs)
A = Inhalation absorption factor
EF = Exposure frequency (days/year)
10^{-6} = Conversion factor

Values

	Infant	Child
Age -->	**0 - <2**	**2 - <16**
Parameter		
ASF =	10	3
DPM CPF =	1.10E+00	1.10E+00
8-Hr BR* =	1200	520
SCHR =	9	9
SHR =	9	9
SDay =	5	5
A =	1	1
EF =	250	250
AT =	70	70
SCAF =	4.20	4.20

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

Construction Cancer Risk by Year - Maximum Preschool Impact Receptor Location

Exposure Year	Exposure Duration (years)	Age	Child - Exposure Information: DPM Conc (ug/m3) Year	Child - Exposure Information: DPM Conc (ug/m3) Annual	Age* Sensitivity Factor	Child Cancer Risk (per million)	Maximum Hazard Index	Maximum Fugitive PM2.5	Maximum Total PM2.5
1	1	3 - 4	2025	0.0240	3	1.69	0.005	0.02	0.05
Total Increased Cancer Risk						**1.69**			

* Children assumed to be 3 years of age with 1 year of exposure to construction emissions

Attachment 3: Cumulative Health Risk Screening Information and Calculations

File Name: Local Roadways 2026.EF
CT-EMFAC2021 Version: 1.0.2.0
Run Date: 12/13/2024 2:44:17 PM
Area: San Mateo (SF)
Analysis Year: 2026
Season: Annual

==

Vehicle Category	VMT Fraction Across Category	Diesel VMT Fraction Within Category	Gas VMT Fraction Within Category
Truck 1	0.021	0.387	0.588
Truck 2	0.010	0.811	0.133
Non-Truck	0.969	0.010	0.926

==

Road Type: Major/Collector
Silt Loading Factor: CARB 0.032 g/m2
Precipitation Correction: CARB P = 74 days N = 365 days

==

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

Pollutant Name	35 mph
PM2.5	0.001245
TOG	0.017434
Diesel PM	0.000264

==

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

Pollutant Name	Emission Factor
TOG	0.811109

==

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

Pollutant Name	Emission Factor
PM2.5	0.002050

==

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

Pollutant Name	35 mph
PM2.5	0.005354

===

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

Pollutant Name	Emission Factor
PM2.5	0.015426

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

File Name: Local Roadways 2027.EF
CT-EMFAC2021 Version: 1.0.2.0
Run Date: 12/13/2024 2:46:24 PM
Area: San Mateo (SF)
Analysis Year: 2027
Season: Annual

==

Vehicle Category	VMT Fraction Across Category	Diesel VMT Fraction Within Category	Gas VMT Fraction Within Category
Truck 1	0.021	0.387	0.573
Truck 2	0.010	0.801	0.132
Non-Truck	0.969	0.010	0.924

==

Road Type: Major/Collector
Silt Loading Factor: CARB 0.032 g/m2
Precipitation Correction: CARB P = 74 days N = 365 days

==

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

Pollutant Name	35 mph
PM2.5	0.001169
TOG	0.016396
Diesel PM	0.000246

==

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

Pollutant Name	Emission Factor
TOG	0.789502

==

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

Pollutant Name	Emission Factor
PM2.5	0.002050

==

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

Pollutant Name	35 mph
PM2.5	0.005353

==

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

Pollutant Name	Emission Factor
PM2.5	0.015525

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

271 El Camino Real, San Bruno, CA - El Camino Real Traffic - TACs & PM2.5
AERMOD Risk Modeling Parameters and Maximum Concentrations
at Project MEI Receptors (1.5 meter receptor height)

Emission Year	2026
Receptor Information	Project MEI receptors
Number of Receptors	2
Receptor Height	1.5 meters
Receptor Distances	At Project MEI location

Meteorological Conditions	
BAAQMD San Francisco International Airpo	2013 - 2017
Land Use Classification	Urban
Wind Speed	Variable
Wind Direction	Variable

Construction MEI Cancer Risk Maximum Concentrations

Meteorological	Concentration (µg/m3)		
Data Years	DPM	Exhaust TOG	Evaporative TOG
2013 - 2017	0.0009	0.0720	0.0957

Construction MEI PM2.5 Maximum Concentrations

Meteorological	PM2.5 Concentration (µg/m3)		
Data Years	Total PM2.5	Fugitive PM2.5	Vehicle PM2.5
2013 - 2017	0.1012	0.0960	0.0052

271 El Camino Real, San Bruno, CA - El Camino Real Traffic Cancer Risk
Impacts at Project MEIs - 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*	2026	10	0.0009	0.0720	0.0957	0.012	0.006	0.0004	0.02
1	1	0 - 1	2026	10	0.0009	0.0720	0.0957	0.143	0.068	0.0053	0.22
2	1	1 - 2	2027	10	0.0009	0.0720	0.0957	0.143	0.068	0.0053	0.22
3	1	2 - 3	2028	3	0.0009	0.0720	0.0957	0.022	0.011	0.0008	0.03
4	1	3 - 4	2029	3	0.0009	0.0720	0.0957	0.022	0.011	0.0008	0.03
5	1	4 - 5	2030	3	0.0009	0.0720	0.0957	0.022	0.011	0.0008	0.03
6	1	5 - 6	2031	3	0.0009	0.0720	0.0957	0.022	0.011	0.0008	0.03
7	1	6 - 7	2032	3	0.0009	0.0720	0.0957	0.022	0.011	0.0008	0.03
8	1	7 - 8	2033	3	0.0009	0.0720	0.0957	0.022	0.011	0.0008	0.03
9	1	8 - 9	2034	3	0.0009	0.0720	0.0957	0.022	0.011	0.0008	0.03
10	1	9 - 10	2035	3	0.0009	0.0720	0.0957	0.022	0.011	0.0008	0.03
11	1	10 - 11	2036	3	0.0009	0.0720	0.0957	0.022	0.011	0.0008	0.03
12	1	11 - 12	2037	3	0.0009	0.0720	0.0957	0.022	0.011	0.0008	0.03
13	1	12 - 13	2038	3	0.0009	0.0720	0.0957	0.022	0.011	0.0008	0.03
14	1	13 - 14	2039	3	0.0009	0.0720	0.0957	0.022	0.011	0.0008	0.03
15	1	14 - 15	2040	3	0.0009	0.0720	0.0957	0.022	0.011	0.0008	0.03
16	1	15 - 16	2041	3	0.0009	0.0720	0.0957	0.022	0.011	0.0008	0.03
17	1	16-17	2042	1	0.0009	0.0720	0.0957	0.002	0.001	0.0001	0.00
18	1	17-18	2043	1	0.0009	0.0720	0.0957	0.002	0.001	0.0001	0.00
19	1	18-19	2044	1	0.0009	0.0720	0.0957	0.002	0.001	0.0001	0.00
20	1	19-20	2045	1	0.0009	0.0720	0.0957	0.002	0.001	0.0001	0.00
21	1	20-21	2046	1	0.0009	0.0720	0.0957	0.002	0.001	0.0001	0.00
22	1	21-22	2047	1	0.0009	0.0720	0.0957	0.002	0.001	0.0001	0.00
23	1	22-23	2048	1	0.0009	0.0720	0.0957	0.002	0.001	0.0001	0.00
24	1	23-24	2049	1	0.0009	0.0720	0.0957	0.002	0.001	0.0001	0.00
25	1	24-25	2050	1	0.0009	0.0720	0.0957	0.002	0.001	0.0001	0.00
26	1	25-26	2051	1	0.0009	0.0720	0.0957	0.002	0.001	0.0001	0.00
27	1	26-27	2052	1	0.0009	0.0720	0.0957	0.002	0.001	0.0001	0.00
28	1	27-28	2053	1	0.0009	0.0720	0.0957	0.002	0.001	0.0001	0.00
29	1	28-29	2054	1	0.0009	0.0720	0.0957	0.002	0.001	0.0001	0.00
30	1	29-30	2055	1	0.0009	0.0720	0.0957	0.002	0.001	0.0001	0.00
Total Increased Cancer Risk								0.65	0.306	0.024	**0.98**

* Third trimester of pregnancy

Hazard Index	Maximum Fugitive PM2.5	Total PM2.5
0.00017	0.10	0.10

271 El Camino Real, San Bruno, CA - El Camino Real Traffic - TACs & PM2.5
AERMOD Risk Modeling Parameters and Maximum Concentrations
at Onsite MEI Receptor (5.5 & 8.5 meter receptor height)

Emission Year	2027
Receptor Information	Onsite MEI receptor
Number of Receptors	11
Receptor Height	5.5 & 8.5 meters
Receptor Distances	At Onsite MEI location

Meteorological Conditions	
BAAQMD San Francisco International Airpo	2013 - 2017
Land Use Classification	Urban
Wind Speed	Variable
Wind Direction	Variable

Construction MEI Cancer Risk Maximum Concentrations

Meteorological	Concentration (µg/m3)			
Data Years	DPM	Exhaust TOG	Evaporative TOG	
2013 - 2017	0.0011	0.0758	0.1046	1st Floor
2013 - 2017	0.0008	0.0401	0.0552	2nd Floor

Construction MEI PM2.5 Maximum Concentrations

Meteorological	PM2.5 Concentration (µg/m3)			
Data Years	Total PM2.5	Fugitive PM2.5	Vehicle PM2.5	
2013 - 2017	0.1112	0.1058	0.0054	1st Floor
2013 - 2017	0.0588	0.0559	0.0029	2nd Floor

271 El Camino Real, San Bruno, CA - El Camino Real Traffic Cancer Risk
Impacts at Onsite MEI - 5.5 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*	2027	10	0.0011	0.0758	0.1046	0.015	0.006	0.0005	0.02
1	1	0 - 1	2027	10	0.0011	0.0758	0.1046	0.181	0.071	0.0058	0.26
2	1	1 - 2	2028	10	0.0011	0.0758	0.1046	0.181	0.071	0.0058	0.26
3	1	2 - 3	2029	3	0.0011	0.0758	0.1046	0.028	0.011	0.0009	0.04
4	1	3 - 4	2030	3	0.0011	0.0758	0.1046	0.028	0.011	0.0009	0.04
5	1	4 - 5	2031	3	0.0011	0.0758	0.1046	0.028	0.011	0.0009	0.04
6	1	5 - 6	2032	3	0.0011	0.0758	0.1046	0.028	0.011	0.0009	0.04
7	1	6 - 7	2033	3	0.0011	0.0758	0.1046	0.028	0.011	0.0009	0.04
8	1	7 - 8	2034	3	0.0011	0.0758	0.1046	0.028	0.011	0.0009	0.04
9	1	8 - 9	2035	3	0.0011	0.0758	0.1046	0.028	0.011	0.0009	0.04
10	1	9 - 10	2036	3	0.0011	0.0758	0.1046	0.028	0.011	0.0009	0.04
11	1	10 - 11	2037	3	0.0011	0.0758	0.1046	0.028	0.011	0.0009	0.04
12	1	11 - 12	2038	3	0.0011	0.0758	0.1046	0.028	0.011	0.0009	0.04
13	1	12 - 13	2039	3	0.0011	0.0758	0.1046	0.028	0.011	0.0009	0.04
14	1	13 - 14	2040	3	0.0011	0.0758	0.1046	0.028	0.011	0.0009	0.04
15	1	14 - 15	2041	3	0.0011	0.0758	0.1046	0.028	0.011	0.0009	0.04
16	1	15 - 16	2042	3	0.0011	0.0758	0.1046	0.028	0.011	0.0009	0.04
17	1	16-17	2043	1	0.0011	0.0758	0.1046	0.003	0.001	0.0001	0.00
18	1	17-18	2044	1	0.0011	0.0758	0.1046	0.003	0.001	0.0001	0.00
19	1	18-19	2045	1	0.0011	0.0758	0.1046	0.003	0.001	0.0001	0.00
20	1	19-20	2046	1	0.0011	0.0758	0.1046	0.003	0.001	0.0001	0.00
21	1	20-21	2047	1	0.0011	0.0758	0.1046	0.003	0.001	0.0001	0.00
22	1	21-22	2048	1	0.0011	0.0758	0.1046	0.003	0.001	0.0001	0.00
23	1	22-23	2049	1	0.0011	0.0758	0.1046	0.003	0.001	0.0001	0.00
24	1	23-24	2050	1	0.0011	0.0758	0.1046	0.003	0.001	0.0001	0.00
25	1	24-25	2051	1	0.0011	0.0758	0.1046	0.003	0.001	0.0001	0.00
26	1	25-26	2052	1	0.0011	0.0758	0.1046	0.003	0.001	0.0001	0.00
27	1	26-27	2053	1	0.0011	0.0758	0.1046	0.003	0.001	0.0001	0.00
28	1	27-28	2054	1	0.0011	0.0758	0.1046	0.003	0.001	0.0001	0.00
29	1	28-29	2055	1	0.0011	0.0758	0.1046	0.003	0.001	0.0001	0.00
30	1	29-30	2056	1	0.0011	0.0758	0.1046	0.003	0.001	0.0001	0.00
Total Increased Cancer Risk								0.82	0.322	0.026	**1.17**

* Third trimester of pregnancy

Hazard Index	Maximum Fugitive PM2.5	Total PM2.5
0.00022	0.11	0.111

271 El Camino Real, San Bruno, CA - El Camino Real Traffic Cancer Risk
Impacts at Onsite MEI - 8.5 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	0.0008	0.0401	0.0552	0.011	0.003	0.0003	0.01
1	1	0 - 1	2027	10	0.0008	0.0401	0.0552	0.136	0.038	0.0031	0.18
2	1	1 - 2	2028	10	0.0008	0.0401	0.0552	0.136	0.038	0.0031	0.18
3	1	2 - 3	2029	3	0.0008	0.0401	0.0552	0.021	0.006	0.0005	0.03
4	1	3 - 4	2030	3	0.0008	0.0401	0.0552	0.021	0.006	0.0005	0.03
5	1	4 - 5	2031	3	0.0008	0.0401	0.0552	0.021	0.006	0.0005	0.03
6	1	5 - 6	2032	3	0.0008	0.0401	0.0552	0.021	0.006	0.0005	0.03
7	1	6 - 7	2033	3	0.0008	0.0401	0.0552	0.021	0.006	0.0005	0.03
8	1	7 - 8	2034	3	0.0008	0.0401	0.0552	0.021	0.006	0.0005	0.03
9	1	8 - 9	2035	3	0.0008	0.0401	0.0552	0.021	0.006	0.0005	0.03
10	1	9 - 10	2036	3	0.0008	0.0401	0.0552	0.021	0.006	0.0005	0.03
11	1	10 - 11	2037	3	0.0008	0.0401	0.0552	0.021	0.006	0.0005	0.03
12	1	11 - 12	2038	3	0.0008	0.0401	0.0552	0.021	0.006	0.0005	0.03
13	1	12 - 13	2039	3	0.0008	0.0401	0.0552	0.021	0.006	0.0005	0.03
14	1	13 - 14	2040	3	0.0008	0.0401	0.0552	0.021	0.006	0.0005	0.03
15	1	14 - 15	2041	3	0.0008	0.0401	0.0552	0.021	0.006	0.0005	0.03
16	1	15 - 16	2042	3	0.0008	0.0401	0.0552	0.021	0.006	0.0005	0.03
17	1	16-17	2043	1	0.0008	0.0401	0.0552	0.002	0.001	0.0001	0.00
18	1	17-18	2044	1	0.0008	0.0401	0.0552	0.002	0.001	0.0001	0.00
19	1	18-19	2045	1	0.0008	0.0401	0.0552	0.002	0.001	0.0001	0.00
20	1	19-20	2046	1	0.0008	0.0401	0.0552	0.002	0.001	0.0001	0.00
21	1	20-21	2047	1	0.0008	0.0401	0.0552	0.002	0.001	0.0001	0.00
22	1	21-22	2048	1	0.0008	0.0401	0.0552	0.002	0.001	0.0001	0.00
23	1	22-23	2049	1	0.0008	0.0401	0.0552	0.002	0.001	0.0001	0.00
24	1	23-24	2050	1	0.0008	0.0401	0.0552	0.002	0.001	0.0001	0.00
25	1	24-25	2051	1	0.0008	0.0401	0.0552	0.002	0.001	0.0001	0.00
26	1	25-26	2052	1	0.0008	0.0401	0.0552	0.002	0.001	0.0001	0.00
27	1	26-27	2053	1	0.0008	0.0401	0.0552	0.002	0.001	0.0001	0.00
28	1	27-28	2054	1	0.0008	0.0401	0.0552	0.002	0.001	0.0001	0.00
29	1	28-29	2055	1	0.0008	0.0401	0.0552	0.002	0.001	0.0001	0.00
30	1	29-30	2056	1	0.0008	0.0401	0.0552	0.002	0.001	0.0001	0.00
Total Increased Cancer Risk								0.62	0.170	0.014	**0.80**

* Third trimester of pregnancy

Hazard Index	Maximum Fugitive PM2.5	Total PM2.5
0.00017	0.06	0.06

271 El Camino Real, San Bruno, CA - Off-Site Residential
Cumulative Operation - El Camino Real
DPM Modeling - Roadway Links, Traffic Volumes, and DPM Emissions
Year = 2026

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	Line Area Area (sq m)	Area (sq ft)	Emission (g/s/m2)	Emission (lb/hr/ft2)	Initial Vertical height (m)	(Sigma z) Initial Vertical Dimension
DPM_NB_ECR	El Camino Real Northbound	NB	3	702.5	0.44	17.0	55.7	3.4	35	17,680	11,923	128,342	1.978E-09	1.458E-09	6.8	3.16
DPM_SB_ECR	El Camino Real Southbound	SB	3	704.5	0.44	17.0	55.7	3.4	35	17,680	11,957	128,708	1.978E-09	1.458E-09	6.8	3.16
									Total	35,360						

Emission Factors

Speed Category	1	2	3	4
Travel Speed (mph)	35			
Emissions per Vehicle (g/VMT)	0.00026			

Emisson Factors from CT-EMFAC2021

2026 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	3.87%	684	2.19E-05	9	6.64%	1174	3.76E-05	17	6.48%	1145	3.67E-05
2	3.23%	570	1.83E-05	10	8.06%	1426	4.56E-05	18	3.90%	689	2.21E-05
3	2.58%	456	1.46E-05	11	6.32%	1117	3.58E-05	19	2.28%	404	1.29E-05
4	0.97%	171	5.48E-06	12	7.61%	1345	4.31E-05	20	1.16%	204	6.54E-06
5	0.97%	171	5.48E-06	13	7.12%	1259	4.03E-05	21	2.74%	485	1.55E-05
6	2.26%	399	1.28E-05	14	6.64%	1174	3.76E-05	22	4.84%	855	2.74E-05
7	4.52%	798	2.56E-05	15	6.16%	1088	3.48E-05	23	3.39%	599	1.92E-05
8	3.25%	575	1.84E-05	16	4.22%	746	2.39E-05	24	0.81%	143	4.56E-06
								Total		17,680	

2026 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	3.87%	684	2.20E-05	9	6.64%	1174	3.77E-05	17	6.48%	1145	3.68E-05
2	3.23%	570	1.83E-05	10	8.06%	1426	4.58E-05	18	3.90%	689	2.21E-05
3	2.58%	456	1.46E-05	11	6.32%	1117	3.59E-05	19	2.28%	404	1.30E-05
4	0.97%	171	5.49E-06	12	7.61%	1345	4.32E-05	20	1.16%	204	6.56E-06
5	0.97%	171	5.49E-06	13	7.12%	1259	4.04E-05	21	2.74%	485	1.56E-05
6	2.26%	399	1.28E-05	14	6.64%	1174	3.77E-05	22	4.84%	855	2.75E-05
7	4.52%	798	2.56E-05	15	6.16%	1088	3.49E-05	23	3.39%	599	1.92E-05
8	3.25%	575	1.85E-05	16	4.22%	746	2.40E-05	24	0.81%	143	4.58E-06
								Total		17,680	

271 El Camino Real, San Bruno, CA - Off-Site Residential
Cumulative Operation - El Camino Real
PM2.5 Modeling - Roadway Links, Traffic Volumes, and PM2.5 Emissions
Year = 2026

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	Area (sq m)	Area (sq ft)	Emission (g/s/m2)	Emission (lb/hr/ft2)	Initial Vertical height (m)	(Sigma z) Initial Vertical Dimension
PM2.5_NB_ECR	El Camino Real Northbound	NB	3	702.5	0.44	17.0	56	1.3	35	17,680	11,923	128,342	9.33E-09	6.88E-09	2.6	1.21
PM2.5_SB_ECR	El Camino Real Southbound	SB	3	704.5	0.44	17.0	56	1.3	35	17,680	11,957	128,708	9.33E-09	6.88E-09	2.6	1.21
									Total	35,360						

Emission Factors - PM2.5

Speed Category	1	2	3	4
Travel Speed (mph)	35			
Emissions per Vehicle (g/VMT)	0.001245			

Emisson Factors from CT-EMFAC2021

2026 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%	198	2.99E-05	9	7.12%	1258	1.90E-04	17	7.44%	1315	1.98E-04
2	0.41%	73	1.10E-05	10	4.38%	774	1.17E-04	18	8.23%	1455	2.20E-04
3	0.38%	67	1.01E-05	11	4.65%	822	1.24E-04	19	5.73%	1012	1.53E-04
4	0.18%	31	4.70E-06	12	5.89%	1041	1.57E-04	20	4.30%	761	1.15E-04
5	0.45%	80	1.21E-05	13	6.17%	1090	1.65E-04	21	3.25%	575	8.68E-05
6	0.85%	150	2.26E-05	14	6.05%	1069	1.61E-04	22	3.31%	586	8.84E-05
7	3.73%	660	9.97E-05	15	7.06%	1248	1.88E-04	23	2.49%	440	6.63E-05
8	7.76%	1372	2.07E-04	16	7.18%	1270	1.92E-04	24	1.87%	331	5.00E-05
								Total		17,680	

2026 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%	198	3.00E-05	9	7.12%	1258	1.91E-04	17	7.44%	1315	1.99E-04
2	0.41%	73	1.11E-05	10	4.38%	774	1.17E-04	18	8.23%	1455	2.20E-04
3	0.38%	67	1.01E-05	11	4.65%	822	1.24E-04	19	5.73%	1012	1.53E-04
4	0.18%	31	4.71E-06	12	5.89%	1041	1.58E-04	20	4.30%	761	1.15E-04
5	0.45%	80	1.22E-05	13	6.17%	1090	1.65E-04	21	3.25%	575	8.70E-05
6	0.85%	150	2.27E-05	14	6.05%	1069	1.62E-04	22	3.31%	586	8.87E-05
7	3.73%	660	1.00E-04	15	7.06%	1248	1.89E-04	23	2.49%	440	6.65E-05
8	7.76%	1372	2.08E-04	16	7.18%	1270	1.92E-04	24	1.87%	331	5.01E-05
								Total		17,680	

271 El Camino Real, San Bruno, CA - Off-Site Residential
Cumulative Operation - El Camino Real
TOG Exhaust Modeling - Roadway Links, Traffic Volumes, and TOG Exhaust Emissions
Year = 2026

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	Area (sq m)	Area (sq ft)	Emission (g/s/m2)	Emission (lb/hr/ft2)	Initial Vertical height	(Sigma z) Initial Vertical Dimension
TEXH_NB_ECR	El Camino Real Northbound	NB	3	702.5	0.44	17.0	56	1.3	35	17,680	11,923	128,342	1.31E-07	9.63E-08	2.6	1.21
TEXH_SB_ECR	El Camino Real Southbound	SB	3	704.5	0.44	17.0	56	1.3	35	17,680	11,957	128,708	1.31E-07	9.63E-08	2.6	1.21
									Total	35,360						

Emission Factors - TOG Exhaust

Speed Category	1	2	3	4
Travel Speed (mph)	35			
Emissions per Vehicle (g/VMT)	0.01743			

Emisson Factors from CT-EMFAC2021

2026 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%	198	4.19E-04	9	7.12%	1258	2.66E-03	17	7.44%	1315	2.78E-03
2	0.41%	73	1.55E-04	10	4.38%	774	1.64E-03	18	8.23%	1455	3.08E-03
3	0.38%	67	1.41E-04	11	4.65%	822	1.74E-03	19	5.73%	1012	2.14E-03
4	0.18%	31	6.58E-05	12	5.89%	1041	2.20E-03	20	4.30%	761	1.61E-03
5	0.45%	80	1.70E-04	13	6.17%	1090	2.31E-03	21	3.25%	575	1.22E-03
6	0.85%	150	3.17E-04	14	6.05%	1069	2.26E-03	22	3.31%	586	1.24E-03
7	3.73%	660	1.40E-03	15	7.06%	1248	2.64E-03	23	2.49%	440	9.29E-04
8	7.76%	1372	2.90E-03	16	7.18%	1270	2.68E-03	24	1.87%	331	6.99E-04
								Total		17,680	

2026 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%	198	4.21E-04	9	7.12%	1258	2.67E-03	17	7.44%	1315	2.79E-03
2	0.41%	73	1.55E-04	10	4.38%	774	1.64E-03	18	8.23%	1455	3.09E-03
3	0.38%	67	1.41E-04	11	4.65%	822	1.74E-03	19	5.73%	1012	2.15E-03
4	0.18%	31	6.60E-05	12	5.89%	1041	2.21E-03	20	4.30%	761	1.61E-03
5	0.45%	80	1.70E-04	13	6.17%	1090	2.31E-03	21	3.25%	575	1.22E-03
6	0.85%	150	3.18E-04	14	6.05%	1069	2.27E-03	22	3.31%	586	1.24E-03
7	3.73%	660	1.40E-03	15	7.06%	1248	2.65E-03	23	2.49%	440	9.32E-04
8	7.76%	1372	2.91E-03	16	7.18%	1270	2.69E-03	24	1.87%	331	7.01E-04
								Total		17,680	

271 El Camino Real, San Bruno, CA - Off-Site Residential
Cumulative Operation - El Camino Real
TOG Evaporative Emissions Modeling - Roadway Links, Traffic Volumes, and TOG Evaporative Emissions
Year = 2026

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	Area (sq m)	Area (sq ft)	Emission (g/s/m2)	Emission (lb/hr/ft2)	Initial Vertical height	(Sigma z) Initial Vertical Dimension
TEVAP_NB_ECR	El Camino Real Northbound	NB	3	702.5	0.44	17.0	56	1.3	35	17,680	11,923	128,342	1.74E-07	1.28E-07	2.6	1.21
TEVAP_SB_ECR	El Camino Real Southbound	SB	3	704.5	0.44	17.0	56	1.3	35	17,680	11,957	128,708	1.74E-07	1.28E-07	2.6	1.21
									Total	35,360						

Emission Factors - PM2.5 - Evaporative TOG

Speed Category	1	2	3	4
Travel Speed (mph)	35			
Emissions per Vehicle per Hour (g/hour)	0.81111			
Emissions per Vehicle per Mile (g/VMT)	0.02317			

Emisson Factors from CT-EMFAC2021

2026 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%	198	5.57E-04	9	7.12%	1258	3.54E-03	17	7.44%	1315	3.69E-03
2	0.41%	73	2.05E-04	10	4.38%	774	2.18E-03	18	8.23%	1455	4.09E-03
3	0.38%	67	1.87E-04	11	4.65%	822	2.31E-03	19	5.73%	1012	2.84E-03
4	0.18%	31	8.75E-05	12	5.89%	1041	2.93E-03	20	4.30%	761	2.14E-03
5	0.45%	80	2.26E-04	13	6.17%	1090	3.06E-03	21	3.25%	575	1.62E-03
6	0.85%	150	4.21E-04	14	6.05%	1069	3.01E-03	22	3.31%	586	1.65E-03
7	3.73%	660	1.86E-03	15	7.06%	1248	3.51E-03	23	2.49%	440	1.24E-03
8	7.76%	1372	3.86E-03	16	7.18%	1270	3.57E-03	24	1.87%	331	9.30E-04
								Total		17,680	

2026 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%	198	5.59E-04	9	7.12%	1258	3.55E-03	17	7.44%	1315	3.71E-03
2	0.41%	73	2.06E-04	10	4.38%	774	2.18E-03	18	8.23%	1455	4.10E-03
3	0.38%	67	1.88E-04	11	4.65%	822	2.32E-03	19	5.73%	1012	2.85E-03
4	0.18%	31	8.77E-05	12	5.89%	1041	2.93E-03	20	4.30%	761	2.14E-03
5	0.45%	80	2.26E-04	13	6.17%	1090	3.07E-03	21	3.25%	575	1.62E-03
6	0.85%	150	4.22E-04	14	6.05%	1069	3.01E-03	22	3.31%	586	1.65E-03
7	3.73%	660	1.86E-03	15	7.06%	1248	3.52E-03	23	2.49%	440	1.24E-03
8	7.76%	1372	3.87E-03	16	7.18%	1270	3.58E-03	24	1.87%	331	9.32E-04
								Total		17,680	

271 El Camino Real, San Bruno, 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 = 2026

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	Area (sq m)	Area (sq ft)	Emission (g/s/m2)	Emission (lb/hr/ft2)	Initial Vertical height	(Sigma z) Initial Vertical Dimension
FUG_NB_ECR	El Camino Real Northbound	NB	3	702.5	0.44	17.0	56	1.3	35	17,680	11,923	128,342	1.71E-07	1.26E-07	2.6	1.21
FUG_SB_ECR	El Camino Real Southbound	SB	3	704.5	0.44	17.0	56	1.3	35	17,680	11,957	128,708	1.71E-07	1.26E-07	2.6	1.21
									Total	35,360						

Emission Factors - Fugitive PM2.5

Speed Category	1	2	3	4
Travel Speed (mph)	35			
Tire Wear - Emissions per Vehicle (g/VMT)	0.00205			
Brake Wear - Emissions per Vehicle (g/VMT)	0.00535			
Road Dust - Emissions per Vehicle (g/VMT)	0.01543			
tal Fugitive PM2.5 - Emissions per Vehicle (g/VMT)	0.02283			

Emisson Factors from CT-EMFAC2021

2026 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%	198	5.49E-04	9	7.12%	1258	3.48E-03	17	7.44%	1315	3.64E-03
2	0.41%	73	2.02E-04	10	4.38%	774	2.14E-03	18	8.23%	1455	4.03E-03
3	0.38%	67	1.84E-04	11	4.65%	822	2.27E-03	19	5.73%	1012	2.80E-03
4	0.18%	31	8.62E-05	12	5.89%	1041	2.88E-03	20	4.30%	761	2.11E-03
5	0.45%	80	2.22E-04	13	6.17%	1090	3.02E-03	21	3.25%	575	1.59E-03
6	0.85%	150	4.15E-04	14	6.05%	1069	2.96E-03	22	3.31%	586	1.62E-03
7	3.73%	660	1.83E-03	15	7.06%	1248	3.46E-03	23	2.49%	440	1.22E-03
8	7.76%	1372	3.80E-03	16	7.18%	1270	3.52E-03	24	1.87%	331	9.16E-04
								Total		17,680	

2026 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%	198	5.51E-04	9	7.12%	1258	3.49E-03	17	7.44%	1315	3.65E-03
2	0.41%	73	2.03E-04	10	4.38%	774	2.15E-03	18	8.23%	1455	4.04E-03
3	0.38%	67	1.85E-04	11	4.65%	822	2.28E-03	19	5.73%	1012	2.81E-03
4	0.18%	31	8.64E-05	12	5.89%	1041	2.89E-03	20	4.30%	761	2.11E-03
5	0.45%	80	2.23E-04	13	6.17%	1090	3.03E-03	21	3.25%	575	1.60E-03
6	0.85%	150	4.16E-04	14	6.05%	1069	2.97E-03	22	3.31%	586	1.63E-03
7	3.73%	660	1.83E-03	15	7.06%	1248	3.47E-03	23	2.49%	440	1.22E-03
8	7.76%	1372	3.81E-03	16	7.18%	1270	3.53E-03	24	1.87%	331	9.19E-04
								Total		17,680	

271 El Camino Real, San Bruno, CA - Off-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	Line Area Area (sq m)	Area (sq ft)	Emission (g/s/m2)	Emission (lb/hr/ft2)	Initial Vertical height (m)	(Sigma z) Initial Vertical Dimension
DPM_NB_ECR	El Camino Real Northbound	NB	3	702.5	0.44	17.0	55.7	3.4	35	17,850	11,923	128,342	1.861E-09	1.372E-09	6.8	3.16
DPM_SB_ECR	El Camino Real Southbound	SB	3	704.5	0.44	17.0	55.7	3.4	35	17,850	11,957	128,708	1.861E-09	1.372E-09	6.8	3.16
									Total	35,700						

Emission Factors

Speed Category	1	2	3	4
Travel Speed (mph)	35			
Emissions per Vehicle (g/VMT)	0.00025			

Emisson Factors from CT-EMFAC2021

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%	717	2.14E-05	9	6.62%	1182	3.53E-05	17	6.46%	1154	3.44E-05
2	3.38%	603	1.80E-05	10	8.04%	1435	4.28E-05	18	3.89%	694	2.07E-05
3	2.57%	459	1.37E-05	11	6.11%	1091	3.25E-05	19	2.28%	408	1.22E-05
4	0.96%	172	5.14E-06	12	7.59%	1355	4.04E-05	20	0.96%	172	5.14E-06
5	0.96%	172	5.14E-06	13	7.11%	1268	3.78E-05	21	2.89%	517	1.54E-05
6	2.25%	402	1.20E-05	14	6.62%	1182	3.53E-05	22	4.82%	861	2.57E-05
7	4.50%	804	2.40E-05	15	6.14%	1096	3.27E-05	23	3.54%	631	1.88E-05
8	3.25%	580	1.73E-05	16	4.21%	752	2.24E-05	24	0.80%	143	4.28E-06
								Total		17,850	

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%	717	2.15E-05	9	6.62%	1182	3.54E-05	17	6.46%	1154	3.45E-05
2	3.38%	603	1.80E-05	10	8.04%	1435	4.29E-05	18	3.89%	694	2.08E-05
3	2.57%	459	1.37E-05	11	6.11%	1091	3.26E-05	19	2.28%	408	1.22E-05
4	0.96%	172	5.15E-06	12	7.59%	1355	4.05E-05	20	0.96%	172	5.15E-06
5	0.96%	172	5.15E-06	13	7.11%	1268	3.79E-05	21	2.89%	517	1.55E-05
6	2.25%	402	1.20E-05	14	6.62%	1182	3.54E-05	22	4.82%	861	2.58E-05
7	4.50%	804	2.40E-05	15	6.14%	1096	3.28E-05	23	3.54%	631	1.89E-05
8	3.25%	580	1.73E-05	16	4.21%	752	2.25E-05	24	0.80%	143	4.29E-06
								Total		17,850	

271 El Camino Real, San Bruno, CA - Off-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	Area (sq m)	Area (sq ft)	Emission (g/s/m2)	Emission (lb/hr/ft2)	Initial Vertical height (m)	(Sigma z) Initial Vertical Dimension
PM2.5_NB_ECR	El Camino Real Northbound	NB	3	702.5	0.44	17.0	56	1.3	35	17,850	11,923	128,342	8.84E-09	6.52E-09	2.6	1.21
PM2.5_SB_ECR	El Camino Real Southbound	SB	3	704.5	0.44	17.0	56	1.3	35	17,850	11,957	128,708	8.84E-09	6.52E-09	2.6	1.21
									Total	35,700						

Emission Factors - PM2.5

Speed Category	1	2	3	4
Travel Speed (mph)	35			
Emissions per Vehicle (g/VMT)	0.001169			

Emisson Factors from CT-EMFAC2021

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%	200	2.83E-05	9	7.12%	1271	1.80E-04	17	7.43%	1327	1.88E-04
2	0.41%	74	1.05E-05	10	4.37%	781	1.11E-04	18	8.23%	1470	2.08E-04
3	0.37%	67	9.43E-06	11	4.65%	830	1.18E-04	19	5.74%	1024	1.45E-04
4	0.18%	32	4.51E-06	12	5.89%	1052	1.49E-04	20	4.31%	769	1.09E-04
5	0.46%	82	1.16E-05	13	6.16%	1100	1.56E-04	21	3.25%	581	8.23E-05
6	0.85%	151	2.14E-05	14	6.05%	1079	1.53E-04	22	3.31%	591	8.38E-05
7	3.73%	666	9.44E-05	15	7.06%	1259	1.79E-04	23	2.48%	443	6.28E-05
8	7.76%	1386	1.96E-04	16	7.19%	1283	1.82E-04	24	1.88%	335	4.74E-05
								Total		17,850	

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%	200	2.84E-05	9	7.12%	1271	1.81E-04	17	7.43%	1327	1.89E-04
2	0.41%	74	1.05E-05	10	4.37%	781	1.11E-04	18	8.23%	1470	2.09E-04
3	0.37%	67	9.45E-06	11	4.65%	830	1.18E-04	19	5.74%	1024	1.46E-04
4	0.18%	32	4.52E-06	12	5.89%	1052	1.50E-04	20	4.31%	769	1.09E-04
5	0.46%	82	1.16E-05	13	6.16%	1100	1.56E-04	21	3.25%	581	8.25E-05
6	0.85%	151	2.15E-05	14	6.05%	1079	1.53E-04	22	3.31%	591	8.41E-05
7	3.73%	666	9.47E-05	15	7.06%	1259	1.79E-04	23	2.48%	443	6.30E-05
8	7.76%	1386	1.97E-04	16	7.19%	1283	1.82E-04	24	1.88%	335	4.76E-05
								Total		17,850	

271 El Camino Real, San Bruno, CA - Off-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	Area (sq m)	Area (sq ft)	Emission (g/s/m2)	Emission (lb/hr/ft2)	Initial Vertical height	(Sigma z) Initial Vertical Dimension
TEXH_NB_ECR	El Camino Real Northbound	NB	3	702.5	0.44	17.0	56	1.3	35	17,850	11,923	128,342	1.24E-07	9.14E-08	2.6	1.21
TEXH_SB_ECR	El Camino Real Southbound	SB	3	704.5	0.44	17.0	56	1.3	35	17,850	11,957	128,708	1.24E-07	9.14E-08	2.6	1.21
									Total	35,700						

Emission Factors - TOG Exhaust

Speed Category	1	2	3	4
Travel Speed (mph)	35			
Emissions per Vehicle (g/VMT)	0.01640			

Emisson Factors from CT-EMFAC2021

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%	200	3.97E-04	9	7.12%	1271	2.53E-03	17	7.43%	1327	2.64E-03
2	0.41%	74	1.47E-04	10	4.37%	781	1.55E-03	18	8.23%	1470	2.92E-03
3	0.37%	67	1.32E-04	11	4.65%	830	1.65E-03	19	5.74%	1024	2.04E-03
4	0.18%	32	6.32E-05	12	5.89%	1052	2.09E-03	20	4.31%	769	1.53E-03
5	0.46%	82	1.62E-04	13	6.16%	1100	2.19E-03	21	3.25%	581	1.15E-03
6	0.85%	151	3.00E-04	14	6.05%	1079	2.15E-03	22	3.31%	591	1.18E-03
7	3.73%	666	1.32E-03	15	7.06%	1259	2.50E-03	23	2.48%	443	8.81E-04
8	7.76%	1386	2.76E-03	16	7.19%	1283	2.55E-03	24	1.88%	335	6.65E-04
								Total		17,850	

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%	200	3.98E-04	9	7.12%	1271	2.53E-03	17	7.43%	1327	2.65E-03
2	0.41%	74	1.47E-04	10	4.37%	781	1.56E-03	18	8.23%	1470	2.93E-03
3	0.37%	67	1.33E-04	11	4.65%	830	1.65E-03	19	5.74%	1024	2.04E-03
4	0.18%	32	6.34E-05	12	5.89%	1052	2.10E-03	20	4.31%	769	1.53E-03
5	0.46%	82	1.63E-04	13	6.16%	1100	2.19E-03	21	3.25%	581	1.16E-03
6	0.85%	151	3.01E-04	14	6.05%	1079	2.15E-03	22	3.31%	591	1.18E-03
7	3.73%	666	1.33E-03	15	7.06%	1259	2.51E-03	23	2.48%	443	8.84E-04
8	7.76%	1386	2.76E-03	16	7.19%	1283	2.56E-03	24	1.88%	335	6.67E-04
								Total		17,850	

271 El Camino Real, San Bruno, CA - Off-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	Area (sq m)	Area (sq ft)	Emission (g/s/m2)	Emission (lb/hr/ft2)	Initial Vertical height	(Sigma z) Initial Vertical Dimension
TEVAP_NB_ECR	El Camino Real Northbound	NB	3	702.5	0.44	17.0	56	1.3	35	17,850	11,923	128,342	1.71E-07	1.26E-07	2.6	1.21
TEVAP_SB_ECR	El Camino Real Southbound	SB	3	704.5	0.44	17.0	56	1.3	35	17,850	11,957	128,708	1.71E-07	1.26E-07	2.6	1.21
									Total	35,700						

Emission Factors - PM2.5 - Evaporative TOG

Speed Category	1	2	3	4
Travel Speed (mph)	35			
Emissions per Vehicle per Hour (g/hour)	0.78950			
Emissions per Vehicle per Mile (g/VMT)	0.02256			

Emisson Factors from CT-EMFAC2021

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%	200	5.46E-04	9	7.12%	1271	3.48E-03	17	7.43%	1327	3.63E-03
2	0.41%	74	2.02E-04	10	4.37%	781	2.14E-03	18	8.23%	1470	4.02E-03
3	0.37%	67	1.82E-04	11	4.65%	830	2.27E-03	19	5.74%	1024	2.80E-03
4	0.18%	32	8.70E-05	12	5.89%	1052	2.88E-03	20	4.31%	769	2.10E-03
5	0.46%	82	2.23E-04	13	6.16%	1100	3.01E-03	21	3.25%	581	1.59E-03
6	0.85%	151	4.13E-04	14	6.05%	1079	2.95E-03	22	3.31%	591	1.62E-03
7	3.73%	666	1.82E-03	15	7.06%	1259	3.44E-03	23	2.48%	443	1.21E-03
8	7.76%	1386	3.79E-03	16	7.19%	1283	3.51E-03	24	1.88%	335	9.16E-04
								Total		17,850	

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%	200	5.47E-04	9	7.12%	1271	3.49E-03	17	7.43%	1327	3.64E-03
2	0.41%	74	2.02E-04	10	4.37%	781	2.14E-03	18	8.23%	1470	4.03E-03
3	0.37%	67	1.82E-04	11	4.65%	830	2.28E-03	19	5.74%	1024	2.81E-03
4	0.18%	32	8.73E-05	12	5.89%	1052	2.89E-03	20	4.31%	769	2.11E-03
5	0.46%	82	2.24E-04	13	6.16%	1100	3.02E-03	21	3.25%	581	1.59E-03
6	0.85%	151	4.14E-04	14	6.05%	1079	2.96E-03	22	3.31%	591	1.62E-03
7	3.73%	666	1.83E-03	15	7.06%	1259	3.45E-03	23	2.48%	443	1.22E-03
8	7.76%	1386	3.80E-03	16	7.19%	1283	3.52E-03	24	1.88%	335	9.18E-04
								Total		17,850	

271 El Camino Real, San Bruno, 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 = 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	Area (sq m)	Area (sq ft)	Emission (g/s/m2)	Emission (lb/hr/ft2)	Initial Vertical height	(Sigma z) Initial Vertical Dimension
FUG_NB_ECR	El Camino Real Northbound	NB	3	702.5	0.44	17.0	56	1.3	35	17,850	11,923	128,342	1.73E-07	1.28E-07	2.6	1.21
FUG_SB_ECR	El Camino Real Southbound	SB	3	704.5	0.44	17.0	56	1.3	35	17,850	11,957	128,708	1.73E-07	1.28E-07	2.6	1.21
									Total	35,700						

Emission Factors - Fugitive PM2.5

Speed Category	1	2	3	4
Travel Speed (mph)	35			
Tire Wear - Emissions per Vehicle (g/VMT)	0.00205			
Brake Wear - Emissions per Vehicle (g/VMT)	0.00535			
Road Dust - Emissions per Vehicle (g/VMT)	0.01553			
tal Fugitive PM2.5 - Emissions per Vehicle (g/VMT)	0.02293			

Emisson Factors from CT-EMFAC2021

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%	200	5.55E-04	9	7.12%	1271	3.53E-03	17	7.43%	1327	3.69E-03
2	0.41%	74	2.05E-04	10	4.37%	781	2.17E-03	18	8.23%	1470	4.09E-03
3	0.37%	67	1.85E-04	11	4.65%	830	2.31E-03	19	5.74%	1024	2.85E-03
4	0.18%	32	8.84E-05	12	5.89%	1052	2.92E-03	20	4.31%	769	2.14E-03
5	0.46%	82	2.27E-04	13	6.16%	1100	3.06E-03	21	3.25%	581	1.61E-03
6	0.85%	151	4.20E-04	14	6.05%	1079	3.00E-03	22	3.31%	591	1.64E-03
7	3.73%	666	1.85E-03	15	7.06%	1259	3.50E-03	23	2.48%	443	1.23E-03
8	7.76%	1386	3.85E-03	16	7.19%	1283	3.57E-03	24	1.88%	335	9.31E-04
								Total		17,850	

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%	200	5.56E-04	9	7.12%	1271	3.54E-03	17	7.43%	1327	3.70E-03
2	0.41%	74	2.06E-04	10	4.37%	781	2.18E-03	18	8.23%	1470	4.10E-03
3	0.37%	67	1.85E-04	11	4.65%	830	2.31E-03	19	5.74%	1024	2.85E-03
4	0.18%	32	8.87E-05	12	5.89%	1052	2.93E-03	20	4.31%	769	2.14E-03
5	0.46%	82	2.28E-04	13	6.16%	1100	3.07E-03	21	3.25%	581	1.62E-03
6	0.85%	151	4.21E-04	14	6.05%	1079	3.01E-03	22	3.31%	591	1.65E-03
7	3.73%	666	1.86E-03	15	7.06%	1259	3.51E-03	23	2.48%	443	1.24E-03
8	7.76%	1386	3.86E-03	16	7.19%	1283	3.58E-03	24	1.88%	335	9.33E-04
								Total		17,850	

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	**10/28/2024**
Contact Name	Jordyn Bauer
Affiliation	Illingworth & Rodkin, Inc.
Phone	707-794-0400 x106
Email	jbauer@illingworthrodkin.com
Project Name	271 El Camino Real
Address	271 El Camino Real
City	San Bruno
County	San Mateo
Type (residential, commercial, mixed use, industrial, etc.)	Residential
Project Size (# of units or building square feet)	35 du
Comments:	

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

1. Complete all the contact and project information requested in Table A ncomplete 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[...] e 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
995	111596-1	Unocal #0109	401 San Mateo Ave	37.17	0.16	0		Gas Dispensing Facility		2022 Dataset

Project MEI

Distance Adjustment Multiplier	Adjusted Cancer Risk Estimate	Adjusted Hazard Risk	Adjusted PM2.5
CARB TOOL	0.45	0.04000	0.0000

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
825		CARB TOOL	0.66	0.0500	0.0000

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

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

Required Value	User Defined Input	Instructions
Annual Throughput (gallons/year)	**4,820,000**	Enter your gas station's annual throughput in gallons of gasoline dispensed per year.
Hourly Dispensing Throughput (gallons/hour)	**1000**	The tool will calculate the maximum hourly vehicle fueling throughput based on annual throughput as defined by Table 10 of the 2020 Gasoline Service Station Industrywide Risk Assessment Technical Guidance Document (Technical Guidance). If a different value is desired please enter it into cell L4.
Hourly Loading Throughput (gallons/hour)	**8880**	The tool will calculate the maximum hourly loading throughput based on annual throughput as defined by Table 10 of the Technical Guidance. If a different value is desired please enter it into cell L5.
Meteorological Data	**San Jose**	Select appropriate meteorological data. Met sets provided include 2 rural (Redding and Lancaster) and 4 urban (Fresno, Ontario, San Diego, and San Jose) locations. Use whichever best correlates to your location. If you would like to use site-specific meteorological data please refer to the Variable Met Tool.
Distance to Nearest Resident (meters)	**300**	Enter the distance to the nearest residential receptor in meters as measured from the edge of the station canopy. Please note that the value must be between 10 and 1000 meters. The distance you input will round down to the nearest receptor distance used in the Technical Guidance (e.g., 19m will return value at 10m distance).
Distance to Nearest Business (meters)	**300**	Enter the distance to the nearest worker receptor in meters as measured from the edge of the station canopy. Please note that the value must be between 10 and 1000 meters. The distance you input will round down to the nearest receptor distance used in the Technical Guidance (e.g., 19m will return value at 10m distance).
Distance to Acute Receptor (meters)	**300**	Enter the distance where acute impacts are expected in meters as measured from the edge of the station canopy. This can be the distance to the property boundary, nearest resident, nearest worker, or any other user defined location. Please note that the value must be between 10 and 1000 meters. The distance you input will round down to the nearest receptor distance used in the Technical Guidance (e.g., 19m will return value at 10m distance).
Control Scenario	**EVR Phase I & EVR Phase II**	Select the appropriate control scenario for your gas station. Please refer to technical Guidance for an explanation of the different control scenarios. Almost all gas stations in California are equipped with EVR Phase I and EVR Phase II controls.
Include Building Downwash Adjustments	**yes**	Building downwash may over estimate risk results. High results should be investigated further through site-specific health risk assessment.

Risk Value	Results
Max Residential Cancer Risk (chances/million)	**0.45**
Max Worker Cancer Risk (chances/million)	**0.04**
Chronic HI	**0.00**
Acute HI	**0.03**

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

Required Value	User Defined Input	Instructions
Annual Throughput (gallons/year)	**4,820,000**	Enter your gas station's annual throughput in gallons of gasoline dispensed per year.
Hourly Dispensing Throughput (gallons/hour)	**1000**	The tool will calculate the maximum hourly vehicle fueling throughput based on annual throughput as defined by Table 10 of the 2020 Gasoline Service Station Industrywide Risk Assessment Technical Guidance Document (Technical Guidance). If a different value is desired please enter it into cell L4.
Hourly Loading Throughput (gallons/hour)	**8880**	The tool will calculate the maximum hourly loading throughput based on annual throughput as defined by Table 10 of the Technical Guidance. If a different value is desired please enter it into cell L5.
Meteorological Data	**San Jose**	Select appropriate meteorological data. Met sets provided include 2 rural (Redding and Lancaster) and 4 urban (Fresno, Ontario, San Diego, and San Jose) locations. Use whichever best correlates to your location. If you would like to use site-specific meteorological data please refer to the Variable Met Tool.
Distance to Nearest Resident (meters)	**250**	Enter the distance to the nearest residential receptor in meters as measured from the edge of the station canopy. Please note that the value must be between 10 and 1000 meters. The distance you input will round down to the nearest receptor distance used in the Technical Guidance (e.g., 19m will return value at 10m distance).
Distance to Nearest Business (meters)	**250**	Enter the distance to the nearest worker receptor in meters as measured from the edge of the station canopy. Please note that the value must be between 10 and 1000 meters. The distance you input will round down to the nearest receptor distance used in the Technical Guidance (e.g., 19m will return value at 10m distance).
Distance to Acute Receptor (meters)	**250**	Enter the distance where acute impacts are expected in meters as measured from the edge of the station canopy. This can be the distance to the property boundary, nearest resident, nearest worker, or any other user defined location. Please note that the value must be between 10 and 1000 meters. The distance you input will round down to the nearest receptor distance used in the Technical Guidance (e.g., 19m will return value at 10m distance).
Control Scenario	**EVR Phase I & EVR Phase II**	Select the appropriate control scenario for your gas station. Please refer to technical Guidance for an explanation of the different control scenarios. Almost all gas stations in California are equipped with EVR Phase I and EVR Phase II controls.
Include Building Downwash Adjustments	**yes**	Building downwash may over estimate risk results. High results should be investigated further through site-specific health risk assessment.

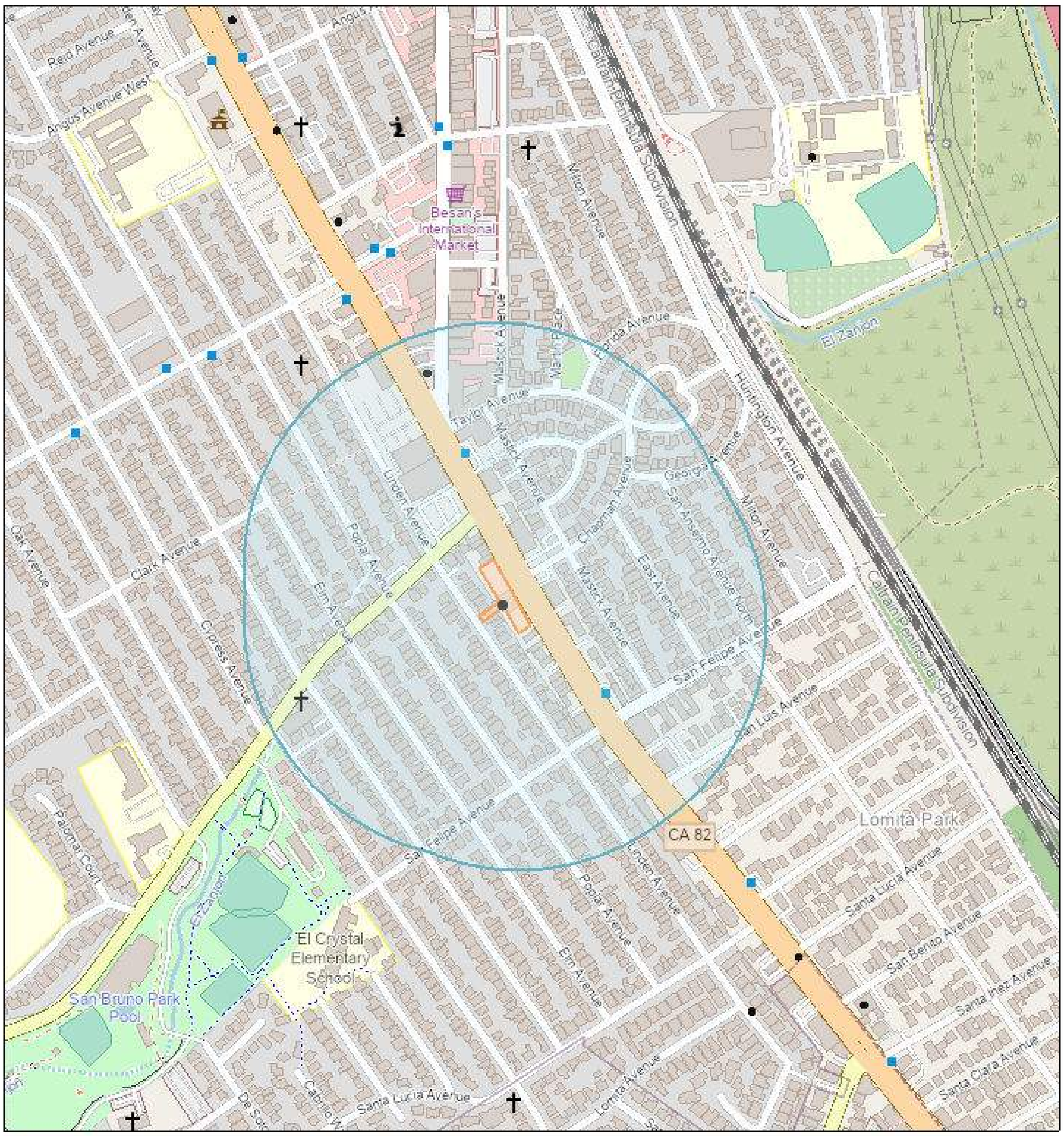
Risk Value	Results
Max Residential Cancer Risk (chances/million)	**0.66**
Max Worker Cancer Risk (chances/million)	**0.05**
Chronic HI	**0.00**
Acute HI	**0.04**

Screening Report

Area of Interest (AOI) Information

Area : 4,017,131.1 ft²

Oct 28 2024 14:50:18 Pacific Daylight Time



• Permitted Stationary Sources

1:9,028

0 0.05 0.1 0.2 mi

0 0.07 0.15 0.3 km

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

Summary

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

Permitted Stationary Sources

#	Address	Cancer_Ris	Chronic_Ha	City	County
1	401 San Mateo Ave	37.17	0.16	San Bruno	San Mateo

#	Details	Facility_I	Facility_N	Latitude	Longitude
1	Gas Dispensing Facility	111596-1	Unocal #0109	37.62	-122.41

#	NAICS	NAICS_Indu	NAICS_Sect	NAICS_Subs	PM25
1	447110	Gasoline Stations with Convenience Stores	Retail Trade	Gasoline Stations	0.00

#	State	Zip	Count
1	CA	94066	1

NOTE: A larger buffer than 1,000 may be warranted depending on proximity to significant sources.