

APPENDIX B
Health Risk Assessment

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Villa Del Sol Mixed-Use Residential Project

Health Risk Assessment

prepared for

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1 Executive Summary and Project Description

1.1 Introduction

This Health Risk Assessment (HRA) analyzes the possible health effects associated with toxic air contaminant (TAC) emissions from State Route (SR) 130 (also known as Alum Rock Avenue), stationary sources within 1,000 feet of the project site, and the nearby major streets on the proposed Villa Del Sol Mixed-Use Residential project located at 1936 Alum Rock Avenue in San José, California. The report was prepared by Rincon Consultants, Inc., under contract to Circlepoint.

1.2 Executive Summary

The project would involve the construction of a five-story mixed-use development with a total of 185 below-market-rate residential units on an approximately 1.49-acre site. Materials stored on the site would be removed as part of the project. The project would include 24 studio units, 75 one-bedroom units, 76 two-bedroom units, and 10 three-bedroom units. The project would also provide a lobby, three landscaped courtyards, three recreation areas, a fitness room, and an open space area. Proposed residences would sit atop a ground-level parking structure and ground-level commercial uses fronting Alum Rock Avenue. This HRA includes the results of site-specific air dispersion modeling to determine whether health risks to future residents of the proposed project from SR 130 would exceed the Bay Area Air Quality Management District's (BAAQMD) health risk criteria for residences. BAAQMD has health risk criteria for cancer risk, non-cancer risk (i.e., chronic and acute), and annual average PM_{2.5} concentration. Cancer risk is expressed as the maximum number of new cancer cases projected to occur in a population of one million people due to exposure to a cancer-causing substance. Typically, cancer risk is analyzed over a specific exposure duration, such as the average residency. Thirty years is the exposure duration scenario recommended by BAAQMD for residential receptors in the *Air Toxics NSR Program Health Risk Assessment Guidelines* (BAAQMD 2016). Potential acute health risks include severe symptoms that develop rapidly and lead quickly to a health issue due to exposure to a harmful substance, whereas chronic health risks include health crises, such as lung inflammation, immune suppression, and immune sensitization, which develop due to exposure to low levels of a harmful substance over a long period of time.

The California Air Resources Board's (CARB) *Air Quality and Land Use Handbook: A Community Health Perspective* recommends that local agencies avoid siting new, sensitive land uses within specific distances of potential sources of TACs, such as freeways, high-traffic roads, distribution centers, railroads, and ports (CARB 2005). Specifically, CARB recommends that local agencies avoid siting new, sensitive land uses within 500 feet of a freeway. The primary concern is the effect of diesel exhaust particulate, a TAC, on sensitive uses. The primary source of diesel exhaust particulates near the project site is truck/bus traffic traveling long SR 130. In addition to diesel exhaust particulates from SR 130, this analysis also examined five other vehicle exhaust pollutants of concern that are emitted from both diesel and gasoline-fueled vehicles: acrolein, acetaldehyde, formaldehyde, benzene, and 1,3-butadiene.

A screening-level health risk assessment in accordance with BAAQMD guidelines was first conducted to identify major sources within 1,000 feet of the project site. The BAAQMD's Screening Analysis for the project resulted in a cancer risk that exceeds the 10 in one million threshold of significance included in the BAAQMD May 2017 *CEQA Air Quality Guidelines* (BAAQMD 2017a). Therefore, a refined analysis using air dispersion modeling was completed using the U.S. Environmental Protection Agency's (USEPA) AERMOD dispersion model and CARB's Hotspots Analysis and Reporting Program Version (HARP) risk analysis tool. This analysis determined that the maximally exposed individual receptor (MEIR) on the project site would be exposed to a high end (95-percentile), 30-year excess cancer risk of approximately 2.8 in one million, which is below the BAAQMD recommended health risk criteria of 10 excess cases of cancer in one million individuals (BAAQMD 2017a). Potential acute and chronic health risks for on-site residential units were determined to be below the BAAQMD hazard index of 1.0 and the annual average concentration of particulate matter less than 2.5 microns in diameter (PM_{2.5}) would be below the BAAQMD threshold of 0.3 µg/m³. Furthermore, the aggregate total of all sources, including nearby major streets, rail, and stationary sources, would not exceed BAAQMD cumulative thresholds.

1.3 Project Summary

Project Location

The project site encompasses approximately 1.49 acres (64,904 square feet) on a generally level, rectangular site at 1936 Alum Rock Avenue, on the south side of Alum Rock Road west of its intersection with McCreery Avenue. Tierra Encantada Way lies perpendicular to the west of the project site. The site is currently unpaved and used as an outdoor storage area. Adjacent land uses include mixed-use development to the west, an outdoor storage area to the east, single family residences to the south, and commercial development to the north across Alum Rock Avenue. Thompson Creek is approximately 50 feet east of the site. Figure 1 shows the project site's regional location and Figure 2 shows an aerial view of the project site and surrounding area.

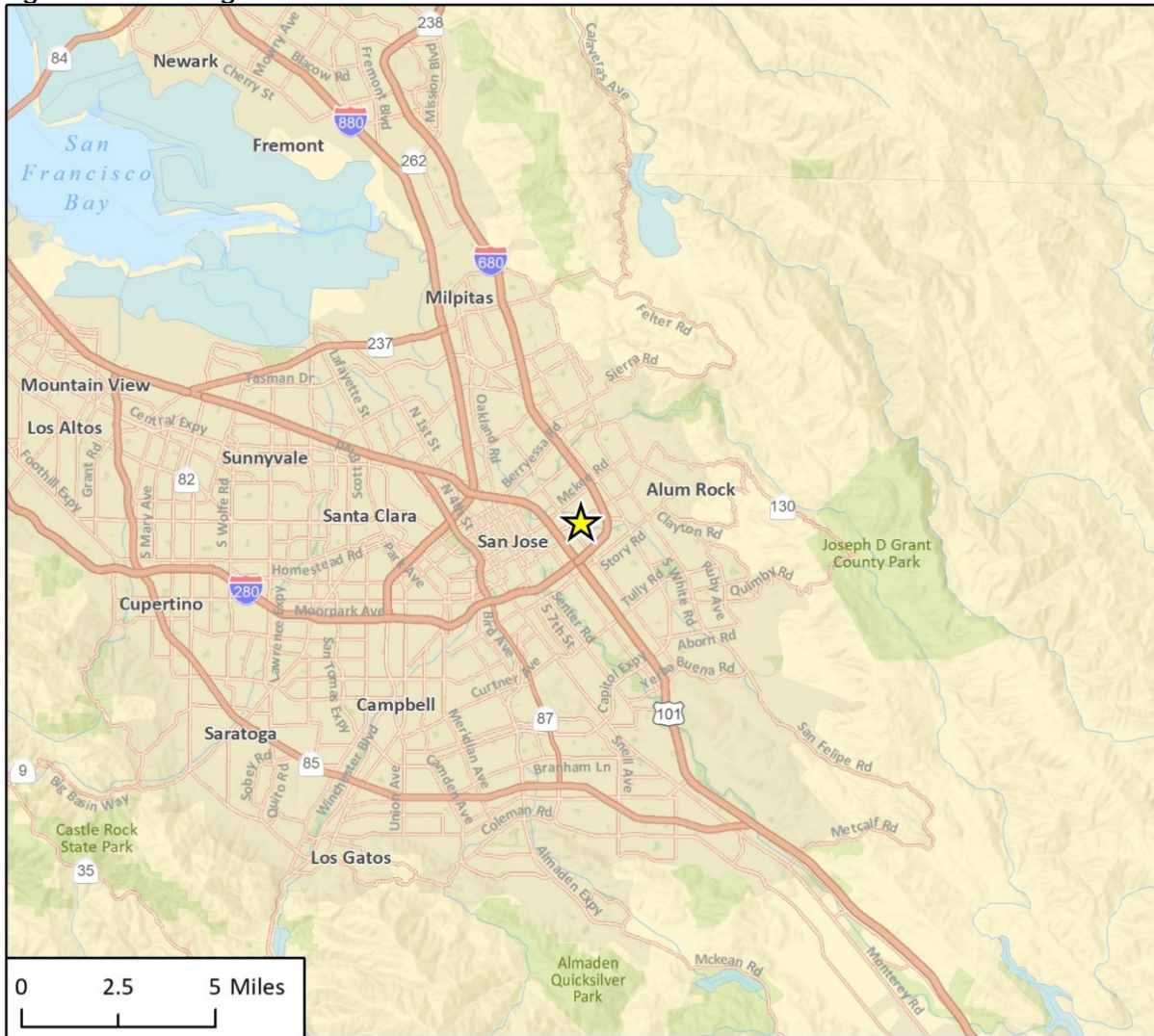
Project Description

The project would involve construction of a five-story mixed-use residential development with a total of 185 units on the approximately 1.49-acre site. The project would include 24 studio units, 75 one-bedroom units, 76 two-bedroom units, and 10 three-bedroom units. The project would also provide a lobby, three landscaped courtyards, three recreation areas, a fitness room, and an open space area. In addition to the residential component the project would include approximately 3,000 square feet of commercial space along Alum Rock Avenue. A total of 11 parking spaces would be provided to serve the commercial development. A ground level parking garage with 116 spaces would be constructed below the residential floors and access to the site would be provided from a private drive off of Alum Rock Avenue and a second driveway off of Tierra Encantada Way. Approximately 190 bicycle parking spaces would be included on the site.

Construction

Project construction is expected to commence in summer 2021 with full buildout completed by January 2023. Site preparation would occur in September 2021 and grading would occur starting in October 2021 and continue for the next two to three months, with building construction beginning in December 2021. The project would require approximately 2,318 cubic yards (CY) of export

Figure 1 Regional Location



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 Project Location

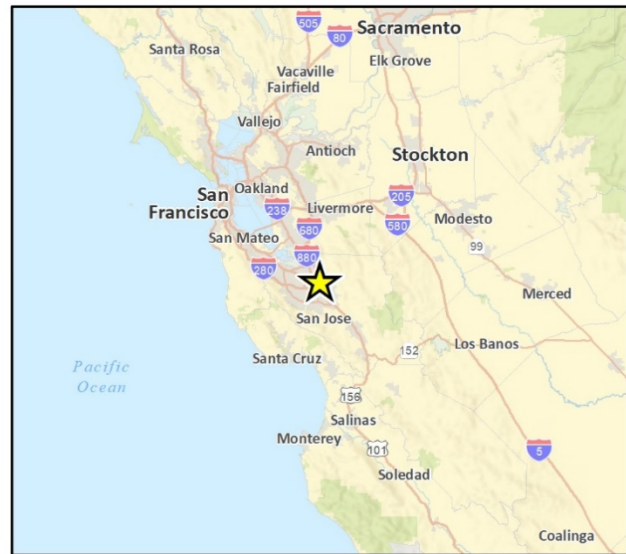


Fig. 1. Regional Location

Figure 2 Project Site



material from the site. Approximately 807 CY would be exported during demolition and 1,511 CY would be exported during grading. The approximately 3,614 CY of cut volume during site preparation would be used as fill on the site. Figure 3 shows the site plan for the project.

Sustainability Features

The project would include green building features such as energy-efficient appliances, construction of southwest facing resident courtyards, and modular construction.

Figure 3 Proposed Site Plan



2 Air Quality Background

2.1 Local Climate and Meteorology

The project site is in the San Francisco Bay Area Air Basin (Air Basin), which is bounded by the Pacific Ocean to the west and includes all of Napa, Marin, San Francisco, Contra Costa, Alameda, San Mateo, and Santa Clara counties, the southern portion of Sonoma County, and the western portion of Solano County. Local meteorology and a wide range of emission sources influence air quality in the Air Basin, including dense population centers, substantial vehicular traffic, and industry. The City of San José is located in the southern portion of the Air Basin and the proximity to the Pacific Ocean and San Francisco Bay influence the climate in the city and surrounding region. The Santa Cruz Mountains and Diablo Mountain Range on either side of the South Bay restrict air dispersion, and this alignment of the terrain also channels winds from the north to south, carrying pollution from the northern Peninsula toward San José. The annual high temperature is approximately 73°F, while the annual low temperature is approximately 51°F (United States Climate Data 2020). The average temperature is 62°F and the average annual precipitation is 15 inches. Winds play a large role in controlling climate in the area, and annual average winds range between five and ten miles per hour in this region (BAAQMD 2017a).

Stationary and mobile sources are the primary source of air pollutant emissions in the Air Basin. Stationary sources can be divided into two major subcategories: point and area sources. Point sources occur at a specific location and are often identified by an exhaust vent or stack. Examples include boilers or combustion equipment that produce electricity or generate heat. Area sources are widely distributed and include such sources as residential and commercial water heaters, painting operations, lawn mowers, agricultural fields, landfills, and some consumer products. Mobile sources refer to emissions from motor vehicles, including tailpipe and evaporative emissions, and are classified as either on-road or off-road. On-road sources may be legally operated on roadways and highways. Off-road sources include aircraft, ships, trains, and self-propelled construction equipment. The natural environment can also generate air pollutants, such as when high winds suspend fine dust particles.

2.2 Air Pollutants of Concern

The BAAQMD monitors air pollutant levels to ensure that air quality standards are met and, if they are not met, develops strategies to meet the standards. The primary air pollutants of concern in the Air Basin include the following:

OZONE

Commonly referred to as “smog,” ozone results from a chemical reaction that takes place in the atmosphere among ozone precursors (reactive organic gases and oxides of nitrogen) under the photochemical influence of sunlight. Nitrogen oxides are formed during the combustion of fuels, while reactive organic compounds are formed during combustion and evaporation of organic solvents. Various factors affect this process, including the quantity of gases present, the volume of air available for dilution, the temperature, and the intensity of ultraviolet light. Worst case conditions for ozone formation occur in the summer and early fall on warm, windless, sunny days. The major effects of photochemical smog are aggravation of respiratory diseases, eye irritation,

visibility reduction, and vegetation damage. Motor vehicles are the greatest source of ozone precursors in the Bay Area, and the groups most sensitive to ozone include children, the elderly, people with respiratory disorders, and people who exercise strenuously outdoors.

SUSPENDED PARTICLES

PM₁₀ is small particulate matter measuring no more than 10 microns in diameter, while PM_{2.5} is fine particulate matter measuring no more than 2.5 microns in diameter. Both PM₁₀ and PM_{2.5} are composed mostly of dust particles, nitrates, and sulfates. The characteristics, sources, and potential health effects associated with the small particulates (those between 2.5 and 10 microns in diameter) and fine particulates (PM_{2.5}) can be very different. The small particulates generally come from windblown dust and dust kicked up from mobile sources. The fine particulates are generally associated with combustion processes and form in the atmosphere as a secondary pollutant through chemical reactions. PM₁₀ is a by-product of fuel combustion and wind erosion of soil and unpaved roads, and it is directly emitted into the atmosphere through these processes. Chemical reactions in the atmosphere also create PM₁₀. Fine particulate matter poses a serious health threat to all groups, but particularly to the elderly, children, and those with respiratory problems. More than half of the fine particulate matter that is inhaled into the lungs remains there, which can cause permanent lung damage. These materials can damage health by interfering with the body's mechanisms for clearing the respiratory tract or by acting as carriers of an absorbed toxic substance.

Diesel engine fuel combustion forms an important fraction of the particulate matter emission inventory, as particulates in diesel emissions are very small and readily respirable. The particles have hundreds of chemicals adsorbed onto their surfaces, including many known or suspected mutagens and carcinogens. The Office of Environmental Health Hazard Assessment (OEHHA) reviewed and evaluated the potential for diesel exhaust to affect human health, and the associated scientific uncertainties (CARB 1998). Based on the available scientific evidence, it was determined that a level of diesel PM exposure, below which no carcinogenic effects are anticipated, has not been identified. The Scientific Review Panel that approved the OEHHA report determined that, based on studies to date, 3×10^{-4} micrograms per cubic meter ($\mu\text{g}/\text{m}^3$) is a reasonable estimate of the unit risk for diesel PM. This means that a person exposed to a diesel PM concentration of $1 \mu\text{g}/\text{m}^3$ continuously over the course of a lifetime has a 3 per 10,000 chance (or 300 in one million chance) of contracting cancer due to this exposure. In 2000 the statewide estimated average concentration of diesel PM was $1.26 \mu\text{g}/\text{m}^3$ for indoor and outdoor ambient air. If diesel PM concentrations remained the same, about 380 excess cancers per one million population could be expected (CARB 2000). Therefore, these particulate emissions have been determined by CARB to be a TAC.

Diesel PM emissions are estimated to be responsible for about 70 percent of the total ambient air toxics risk. In addition to these general risks, diesel PM can also be responsible for elevated localized or near-source exposures ("hot-spots"). Depending on the activity and nearness to receptors, these potential risks can range from small to 1,500 per million or more (CARB 2000).

CARB staff have conducted risk characterization scenarios to determine the potential excess cancer risks involved when individuals are near various sources of diesel engine emissions, ranging from school buses to high volume freeways. The purpose of the risk characterization was to estimate, through air dispersion modeling, the cancer risk associated with typical diesel-fueled engine or vehicle activities based on modeled PM concentration at the point of maximum impact. The study included various sources of diesel PM emissions, including idling school buses, truck stops, low- and high-volume freeways, and other sources. High-volume freeways (20,000 trucks per day) were estimated to cause 800-1,700 per million potential excess cases of cancers, while low-volume

freeways (2,000 trucks per day) were estimated to cause about 100-200 per million potential excess cases of cancers (CARB 2000).

OTHER VEHICLE-RELATED TACS

Several other pollutants that are a public health concern are emitted by vehicle exhausts. The USEPA has identified six pollutants of highest priority: diesel particulate matter, acrolein, acetaldehyde, formaldehyde, benzene, and 1,3-butadiene. The latter five pollutants are part of the total organic gases emitted by diesel and gasoline fueled vehicles. A brief description of each of these chemicals follows:

- **Acrolein** is the simplest unsaturated aldehyde. It is a widely produced substance with a piercing, disagreeable, acrid smell similar to that of burning fat. Acrolein is an unstable toxic substance that can burn the nose and throat and is a severe pulmonary irritant. It is a flammable and poisonous substance prepared industrially by the oxidation of propene. Small amounts of acrolein are formed and enter the air when trees, tobacco, other plants, gasoline, and oil are burned.
- **Acetaldehyde**, sometimes known as ethanol, is an organic chemical compound used as an intermediate in the production of acetic acid, certain esters, and a number of other chemicals. It is a flammable liquid with a fruity smell. Acetaldehyde is a toxic when applied externally for prolonged periods, an irritant, and a probable carcinogen.
- **Formaldehyde** is an organic chemical compound containing a terminal carbonyl group. It is produced in the atmosphere by the action of sunlight and oxygen on atmospheric methane and other hydrocarbons, becoming a part of smog. Additionally, formaldehyde is an intermediate in the oxidation (or combustion) of methane as well as other carbon compounds including automobile exhaust. Formaldehyde is a flammable substance that can be toxic, allergenic, and carcinogenic. It is naturally made in small amounts in human bodies and is found in small amounts in household sources, such as fiberglass, carpets, permanent press fabrics, paper products, and some household cleaners.
- **Benzene**, or benzol, is an organic chemical compound and a known carcinogen. It is a colorless and highly flammable liquid with a sweet smell and a relatively high melting point. Benzene is an important industrial solvent and precursor in the production of drugs, plastics, synthetic rubber, and dyes. Benzene is a natural constituent of crude oil and may be synthesized from other compounds present in petroleum. It is found in gasoline and cigarette smoke. Natural sources of benzene include emissions from volcanoes and forest fires.
- **1,3-Butadiene** is an important industrial chemical used in the production of synthetic rubber (about 75% of manufactured 1,3-butadiene), which is then used primarily in the production of automobile tires. It is a colorless gas with a mild gasoline-like odor. Gasoline contains small amounts that are exhausted into the air after the combustion process. It is a carcinogen, highly irritative, and flammable.

2.3 Air Quality Regulation

Federal and state governments have established ambient air quality standards for the protection of public health. The USEPA is the federal agency designated to administer air quality regulation, while CARB is the state equivalent in the California Environmental Protection Agency (CalEPA). Regional or county-level Air Quality Management Districts (AQMDs) provide local management of air quality. CARB has established air quality standards and is responsible for the control of mobile emission

sources, while the regional AQMDs are responsible for enforcing standards and regulating stationary sources.

BAAQMD has jurisdiction over the Air Basin, which includes Santa Clara County. The BAAQMD is primarily responsible for assuring that the national and State ambient air quality standards are attained and maintained in the Bay Area. The BAAQMD is also responsible for adopting and enforcing rules and regulations concerning air pollutant sources, issuing permits for stationary sources of air pollutants, inspecting stationary sources of air pollutants, responding to citizen complaints, monitoring ambient air quality and meteorological conditions, awarding grants to reduce motor vehicle emissions, conducting public education campaigns, as well as many other activities.

TOXIC AIR CONTAMINANTS

The Air Toxic “Hot Spots” Information and Assessment Act of 1987 (AB 2588) seeks to identify and evaluate risk from air toxics sources but does not directly regulate air toxics emissions. Under AB 2588, toxic air contaminants (TAC) emissions from individual facilities are quantified and prioritized. “High priority” facilities are required to perform a health risk assessment and, if specific thresholds are violated, are required to communicate the results to the public in the form of notices and public meetings. Although TACs and PM_{2.5} tend to be localized and are found in relatively low concentrations in ambient air, exposure to low concentrations over long periods can result in increased risk of cancer and/or adverse health effects in local communities. BAAQMD’s *CEQA Air Quality Guidelines* include risk and hazard thresholds that are intended to apply to projects that would site new permitted or non-permitted sources in proximity to receptors and for projects that would site new sensitive receptors in proximity to permitted or non-permitted sources of TACs or PM_{2.5} emissions. According to BAAQMD, for any proposed project that includes the siting of new receptors, an analysis of risk should be conducted following guidance developed by BAAQMD described in *Recommended Methodology for Screening and Modeling Local Risks and Hazards* version 3.0 (2012a).

2.4 Sensitive Receptors

BAAQMD defines sensitive receptors as facilities or land uses that include members of the population that are particularly sensitive to the effects of air pollutants, such as children, the elderly, and the chronically ill. These facilities include residences, school playgrounds, child-care centers, retirement homes, and convalescent homes. Because the project involves the building of multi-family residential units, the project would include sensitive receptors.

3 Impact Analysis

3.1 Methodology

3.1.1 Risk and Hazard Screening

BAAQMD provides community risk and hazards screening tools for agencies to use in deciding whether there should be further environmental review of a project. According to the BAAQMD, the screening tools provide conservative estimates of health risk and PM_{2.5} concentrations. A more refined analysis, including site-specific dispersion modeling, should be conducted for more accurate (and usually lower) risk and hazard estimates (BAAQMD 2012a). The screening tools provide estimates for PM_{2.5} concentrations, cancer risk, chronic hazard risk, and acute hazard risk from stationary, rail, roadway, and highway sources. The risk and hazard screening analysis process includes the following steps:

1. Identify emissions sources (permitted sources, highways, rail, and major roadways) within 1,000 feet of the project's fence line using BAAQMD screening tools. If there are no sources within 1,000 feet of the project, then there is no significant impact for risk and hazards and no further analysis is needed. If emissions sources exist within 1,000 feet of the project, proceed to Step 2 to conduct initial conservative screening.
2. If emissions sources are present within 1,000 feet of the project site, conduct initial conservative screening using BAAQMD screening tools, comparing each source's estimated cancer risk, PM_{2.5}, and hazard values to applicable thresholds. Sum all of the sources' impacts for comparison to applicable cumulative thresholds. If the risk and hazard estimates for an individual source and/or the cumulative impacts are below BAAQMD's thresholds of significance, then there is no significant impact for risk and hazards and no further analysis is needed. If thresholds are exceeded, then proceed to Step 3 to conduct advanced screening for more refined estimates.
3. If emissions sources present within 1,000 feet of the project site have risk and hazards above BAAQMD thresholds using the method described in Step 2, conduct advanced screening for more refined estimates. To refine estimates, scale highway and roadway risk and PM_{2.5} values to reflect actual traffic and distances from the project using BAAQMD methods from the Modeling Report (BAAQMD 2012a). If the refined risk and hazard estimates are below applicable thresholds, then there is no significant impact for risk and hazards and no further analysis is needed. If thresholds are exceeded, then proceed to Step 4 to conduct refined modeling analysis.
4. If emissions sources present within 1,000 feet of the project site have refined risk and hazards estimates above BAAQMD thresholds as determined in Step 3, conduct refined modeling analysis. For highways and major roadways, use local traffic and meteorology data to model risk and hazards using BAAQMD methods from the Modeling Report (BAAQMD 2012a). If the risk and hazard estimates with refined modeling are below thresholds, then there is no significant impact for risk and hazards and no further analysis is needed. If thresholds are exceeded, then risk reduction strategies should be implemented.

A screening HRA was conducted for the proposed project to identify health risks from permitted stationary sources, highways, major roadways, and rail sources within 1,000 feet of the project site.

The results of the screening HRA are discussed in the Air Quality and Greenhouse Gas Study prepared for the project (Rincon Consultants, Inc. 2020) and summarized in this HRA. One permitted emission source was identified within 1,000 feet of the project's fence line using BAAQMD's *Permitted Stationary Source Risk and Hazards* mapping tool (BAAQMD 2017b). The San José Dental Surgery Center (Source 19418) is located immediately adjacent to the project site's western boundary at 1988 Alum Rock Avenue. Generators located at the source are associated with a cancer risk of 0.770 in one million, and no non-cancer hazard index or PM_{2.5} concentration (BAAQMD 2017b). Health risk associated with this permitted stationary source was confirmed in a Stationary Source Risk & Hazards Screening Report generated in March 2020 and approved by BAAQMD.

SR 130 (Alum Rock Avenue) runs immediately north of the project site. Other roadways within 1,000 feet of the project site include McCreery Avenue (approximately 280 feet to the west), Sunset Avenue (approximately 440 feet to the east), and San Antonio Street (approximately 810 feet to the south). The project site is over 0.5 mile from nearby freeway mainlines and associated ramps, including Interstate 680 (I-680) to the south and east and Highway 101 to the west. There are no rail lines within 1,000 feet of the project site. Cancer risk and PM_{2.5} annual average concentration from highways and major streets were provided by BAAQMD in a screening health risk report dated May 1, 2020 (BAAQMD 2020).

3.1.2 Refined Risk Modeling

Site-specific air dispersion modeling was conducted for SR 130 because highways were the only sources that exceeded BAAQMD thresholds based on the screening analysis prepared for the project and SR 130 is the only highway within 1,000 feet of the project site. Mobile source TACs associated with vehicle traffic on SR 130 were estimated based on the methodology developed by the UC Davis-Caltrans Air Quality Project, Estimating Mobile Source Air Toxics Emissions [MSAT]: A Step-By-Step Project Analysis Methodology (2006). This spreadsheet application was designed to generate the total amount of the six pollutants of concern described in Section 2.2, *Air Pollutants of Concern*, based on total organic gases emission factors and particulate emission factors from EMFAC2017. The UC Davis-Caltrans spreadsheet contained speciation factors from CARB, and the USEPA's Motor Vehicle Emission Simulator (MOVES) was used to supplement missing values for acrolein (USEPA 2014). These emission and speciation factors were then multiplied against traffic volumes for SR 130 to obtain total emissions from SR 130 within 0.5 mile of the project site. No freeway on- or off-ramps are located within 500 feet of the project site; therefore, emissions from ramps were not modeled. Emission factors for this study were based on grams per mile. Spreadsheet outputs adapted from the UC Davis-Caltrans MSAT model and composite emission rates are contained in Appendix A.

The posted speed limit along SR 130 in the vicinity of the project site is 30 miles per hour (mph). Emissions factors for speeds between 20 and 30 mph were reviewed. The worst reasonable case speed (i.e., highest emission levels) was 20 mph for all vehicle classes (heavy duty trucks, light duty trucks, and cars) for both particulate matter and total organic gas emissions. This maximum reasonable case speed was assumed in calculation of vehicle emissions from SR 130.

Traffic volumes for SR 130 were obtained from the project-specific traffic analysis (Hexagon 2020). Traffic volumes along SR 130 for the cumulative plus project scenario were used to account for health risk associated with project-generated traffic along the roadway. According to the project-specific traffic analysis, the Annual Average Daily Traffic (AADT) volume along SR 130 in the vicinity of the project site under the cumulative plus project scenario is 18,300 vehicles. Neither the project-specific traffic analysis nor the Caltrans *2018 Annual Average Daily Truck Traffic on the California*

State Highway System (2018) provide truck traffic estimates for SR 130 in the vicinity of the project site. The nearest truck traffic estimates for SR 130 provided by Caltrans are collected approximately 2.9 miles east of the project site, are over 10 years old, and are unlikely to be representative of truck traffic near the project. Therefore, truck traffic percentages from nearby freeways, including U.S. 101 to the west of the project site and I-680 to the east of the project site, were averaged to provide a reasonable estimation of truck traffic volumes along SR 130. Because SR 130 in the vicinity of the project site has a posted speed limit of 30 mph, numerous traffic signals, narrower lanes, and travels predominantly through commercial and residential areas of the city, it is anticipated that this averaging of truck traffic percentages from surrounding freeways—which serve as major regional transportation corridors—provides a conservative estimate of truck traffic along SR 130.

Additionally, Valley Transportation Authority (VTA) operates a rapid bus service along SR 130 in the vicinity of the project site (Rapid 522). According to VTA, the Rapid 522 route includes 58 eastbound trips and 57 westbound trips along SR 130 in front of the project site each weekday. Therefore, the truck traffic percentage along SR 130 was adjusted to account for these additional heavy duty vehicle trips. This adjustment would be expected to result in a conservative estimate of vehicle emissions along the transit corridor, as an estimated 75 percent of VTA's buses are diesel hybrid electric and, consequently, would be expected to result in lower diesel particulate emissions than other diesel-fueled heavy duty vehicles (Bay City News 2018).

To assess health risk on the project site, 17 representative sensitive receptor locations throughout the project site were chosen, including outdoor common areas and at the proposed residences. Health risks at the sensitive receptor locations were analyzed on each floor of the proposed five-story residential building. Receptors on the project site were modeled for each of the five floors by adding eleven feet for each floor above the ground level elevation at each receptor point, consistent with the building elevations provided for the project. Because proposed residences would sit atop either ground-level parking or ground-level commercial uses, the lowest level residences on the project site would sit approximately 11 feet above ground level. The lowest level residences fronting SR 130, above the proposed commercial uses, would sit approximately 22 feet above ground level. The Point of Maximum Impact (PMI), which is typically at the border of the source (freeway fence), was not calculated since it is not relevant to the analysis given the specific location of the residences. A receptor grid was used to evaluate whether sensitive receptor locations reflected the pattern of exposure on the project site. Evaluation of the grid receptors confirmed that the selected sensitive receptor locations captured the greatest impacts at the project site. Figure 4 depicts the sources (SR 130), receptor grid, and sensitive receptors.

The American Meteorological Society/USEPA air dispersion model, AERMOD, was used to calculate the concentrations of source emissions at the project site. AERMOD is a steady-state, multiple-source, Gaussian dispersion model designed for use with emission sources situated in terrain where ground elevations can exceed the stack heights of the emission sources. The AERMOD model requires hourly meteorological data consisting of wind vector, wind speed, temperature, stability class, and mixing height. Specific meteorology and terrain for the site were included in the model using the meteorological data set from N.Y. Mineta San José International Airport station, and U.S. Geological Survey (USGS) Digital Elevation Model (DEM) data for the San José East quadrant. N.Y. Mineta San José International Airport is approximately 3.5 miles west of the project site¹. SR 130

¹ The project site is approximately 2.2 miles northwest of Reid-Hillview Airport, for which a meteorological data set is available. However, preliminary model runs using Reid-Hillview Airport Station meteorological data indicated that approximately 50 percent of hourly data was missing from the data set. Consequently, data from N.Y. Mineta San José International Airport Station was used to provide more comprehensive meteorological data. This was also determined to result in a slightly more conservative estimate of health risk on the project site.

varies in elevation between approximately 26 and 30 meters above mean sea level (amsl) along the length of the approximately one-mile segment modeled. The project site's base elevation varies from approximately 27 to 29 meters amsl. The dispersion model considers these differences in topography. The presence of buildings and other structures disturbs downwind air flow. However, building downwash is only calculated for point sources and not appropriate to include in AERMOD for this HRA. A flagpole height of 1.5 meters was selected to represent the average height of an adult, consistent with BAAQMD guidance (BAAQMD 2012). SR 130 was modeled as a series of volume sources in AERMOD. AERMOD provides X/Q ($CHI/Q = \text{chi}/q = \chi/q$) values, the concentration estimated by the air quality model, based on an emission rate of one gram per second.

Version 19121 of CARB's Hot Spots Analysis and Reporting Program (HARP) 2.0 was used to calculate the potential risk values associated with the worst case one-hour and average annual toxic emission concentrations across the project site. HARP 2.0 considers early life exposure adjustment factors when calculating chronic, acute, and carcinogenic health risk. Risk was assessed by including all mandatory minimum pathways in the risk analysis. To identify the exposure concentration at the nearest proposed residence, BAAQMD recommended assumptions about an individual's time at the residence were used. Carcinogenic health risks are based on an adult resident present at the proposed residential units for the BAAQMD-recommended lifetime residency period of 30 years and the recommended fraction of time at home assumptions for age bins greater and less than 16 years of age (BAAQMD 2016). To provide a conservative assessment of health risk impacts, the 95-percentile breathing rates were used. Toxicity values for the pollutants of concern were acquired from the OEHHA (2015) *Air Toxics Hot Spots Program Risk Assessment Guidelines, Appendix L: OEHHA/ARB Approved Health Values for Use in Hot Spot Facility Risk Assessments and Inhalation RELs* as of November 2019.

Figure 4 Map of Sources and Receptors



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Fig X Sources and Receptors

3.2 Significance Thresholds

This analysis uses BAAQMD's *CEQA Air Quality Guidelines* (2017a) for significance thresholds. These thresholds are closely aligned with widely accepted cancer and non-cancer significance thresholds described by the California Air Pollution Control Officers Association (CAPCOA) in *Health Risk Assessments for Proposed Land Use Projects* (2009) and OEHHA's *Air Toxics Hot Spots Program Guidance Manual for Preparation of Health Risk Assessments* (2015). In addition to cancer risk, BAAQMD recommends thresholds for non-carcinogenic hazards and PM_{2.5}. Non-carcinogenic hazards include chronic and acute effects. Acute effects are due to short-term exposure, while chronic effects are due to long-term exposure to a substance. For chronic and acute risks, the hazard index is calculated as the summation of the hazard quotients for all chemicals to which an individual would be exposed. In addition to evaluating health risk from all individual sources, BAAQMD also recommends to assess the cumulative impact from nearby sources. BAAQMD significance thresholds for individual sources and for cumulative sources are presented below.

INDIVIDUAL SOURCE THRESHOLDS

If impacts due to emissions of TACs or PM_{2.5} from any individual source within a 1,000-foot radius of the project's fence line would exceed any of the BAAQMD thresholds listed below, the project would result in a significant impact:

- Non-compliance with a Community Risk Reduction Plan;
- An excess cancer risk level of more than 10 in one million, or a non-cancer (i.e., chronic or acute) hazard index greater than 1.0; or
- Annual average PM_{2.5} concentration greater than 0.3 µg/m³.

To provide a perspective on risk, the American Cancer Society (2018) reports that in the U.S., men have about a 40 in 100 chance (0.40 probability) and women about a 38 in 100 chance (0.38) of developing cancer during a lifetime. Based on this background cancer risk level in the general population, application of a 10 in a million excess risk limit means that the contribution from an individual toxic hazard should not cause the resultant cancer risk for the exposed population to exceed 0.40001 for men or 0.38001 for women.

CUMULATIVE SOURCE THRESHOLDS

A project would result in a cumulatively considerable impact if the aggregate total of all past, present, and foreseeable future sources within a 1,000-foot radius from the project site's boundary would exceed any of the following thresholds:

- Non-compliance with a Community Risk Reduction Plan;
- An excess cancer risk level of more than 100 in one million or a chronic non-cancer hazard index (from all local sources) greater than 10.0; or
- Annual average PM_{2.5} concentration greater than 0.8 µg/m³.

3.3 Results

3.3.1 Risk and Hazard Screening Analysis Results

STATIONARY SOURCES

One permitted stationary source, a generator at the San José Dental Surgery Center immediately to the west, was identified within 1,000 feet of the project site. As shown in Table 1, permitted point sources within 1,000 feet of the project site would not cause associated cancer risk, non-cancer risk, and PM_{2.5} concentrations to exceed BAAQMD individual thresholds. Therefore, based on BAAQMD data and methodologies, impacts related to cancer risk, non-cancer hazards, and PM_{2.5} concentrations from stationary sources would not be significant. Table 1 summarizes the findings from the screening analysis of stationary sources that are subsequently used as part of the cumulative analysis.

Table 1 Screening Data for Stationary Sources

BAAQMD Source ID Number	Type	Distance to Project Site (feet)	Cancer Risk (in 1 million)	PM _{2.5} Concentration (µg/m ³)	Increased Non-Cancer Risk (Chronic Hazard Index)
19418	Generator	20	0.77	-- ¹	-- ¹
BAAQMD Individual Source Screening Threshold			10	0.3	1
Individual Threshold Exceeded?			No	No	No

¹ The BAAQMD Stationary Source Screening Analysis Tool did not provide a PM_{2.5} concentration or non-cancer chronic or acute hazard index value for this source.

Source: BAAQMD 2020, BAAQMD 2017b

HIGHWAYS AND ROADWAYS

The maximum health risk and PM_{2.5} concentrations on the project site associated with highways, major roadways, and rail sources are reported in Table 2. While the BAAQMD screening health risk report identified a health risk associated with rail sources, there are no rail sources located within 1,000 feet of the project site. Health risk associated with rail sources as reported by BAAQMD is included to provide a conservative analysis. As shown in Table 2, health risk and PM_{2.5} concentrations on the project site from major roadways and rail in the vicinity of the project site would not exceed BAAQMD thresholds. However, TAC emissions from highway sources would expose future residents to PM_{2.5} concentrations in excess of BAAQMD thresholds and a cancer risk greater than 10 in one million.² Because highway sources would exceed BAAQMD's individual source screening threshold for cancer risk and PM_{2.5}, refined risk modeling analysis was prepared for highway sources.

Table 2 Screening Data for Existing Highways and Roadways

Source	Cancer Risk (in 1 million)	PM _{2.5} Concentration (µg/m ³)
Highway	32.68	0.65
Major Roadways	2.20	0.05

² It should be noted that the risk and hazard impacts in the BAAQMD's screening tools do not necessarily represent actual CEQA environmental impacts. Screening tools typically provide a conservative approximation of impacts, and exceedance of thresholds in the screening analysis simply indicates that further, refined health risk analysis is warranted.

Railways ¹	1.01	<0.01
BAAQMD Individual Source Screening Threshold	10	0.3
Screening Threshold Exceeded?	Yes	Yes

Note: BAAQMD Screening Data does not include acute or chronic risk information

¹ While BAAQMD screening health risk report identified a health risk associated with rail sources, there are no rail sources located within 1,000 feet of the project site. Health risk associated with rail sources as reported by BAAQMD is included to provide a conservative analysis.

Source: BAAQMD 2020

3.3.2 Refined Risk Modeling Results

Based on the screening analysis, refined risk modeling including site-specific air dispersion modeling was conducted for the highway source (SR 130) near the project site. Potential health risks were modeled for 17 sensitive receptor locations (5 outdoor and 12 indoor), as shown in Figure 4. Although all multiple floors were modeled at each of 12 indoor sensitive receptor locations, only the highest risk level at the MEIR is displayed in Table 3. Carcinogenic health risk would not exceed the significance criterion of 10 excess cancer cases per one million at any of the residential receptor locations. For a 30-year exposure, the highest excess cancer risk would be 2.83 in one million on the first floor residences located on the western edge of the project site. The difference in risk levels between the screening level results shown in Table 2 and the refined risk modeling results shown in Table 3 is due to the fact that the refined risk modeling takes into account local topography, meteorological data, and up-to-date source-specific traffic data. Additionally, the calculations used in the screening analysis do not necessarily include source specific release parameters nor do they account for actual distances from receptors. A more refined analysis using source specific parameters, site specific meteorological data, site specific building dimensions and locations, and actual locations of source and receptors would be expected to result in lower and more accurate values than the conservative values estimated from the screening tools (BAAQMD 2017a). Potential acute and chronic health risks were below BAAQMD’s health risk criteria of 1.0 and the PM_{2.5} concentration was also below 0.3 µg/m³ for all sensitive receptors. See Appendix A for more detailed accounting of the risk at each modeled receptor.

Table 3 Health Risks from State Route 130 at Sensitive Receptors

Scenario	Cancer Risk (in 1 million)	Chronic Hazard Index	Acute Hazard Index	PM _{2.5} µg/m ³ annual average ²
Maximum Exposed Individual Receptor ¹	2.83	0.003	0.004	0.001
BAAQMD Individual Significance Threshold	10	1	1	0.3
Individual Source Threshold Exceeded?	No	No	No	No

¹Although all floor levels were modeled for each sensitive receptor, this table displays the highest risk level identified for all the sensitive receptors. The MEIR for cancer and chronic health risk was located on the first floor at location R12, while the MEIR for acute health risk was located on the third floor at location R6. Refer to Appendix A for complete model results.

²PM_{2.5} concentrations are assumed to equal diesel PM concentrations as modeled in HARP 2.

3.3.3 Cumulative Impacts

The aggregate total of all past, present, and foreseeable future sources within a 1,000-foot radius from the fence line of the project site is summarized in Table 4. The cumulative cancer risk, chronic non-cancer hazard index, and annual average PM_{2.5} concentration would not exceed BAAQMD cumulative thresholds.

Table 4 Cumulative Impacts

Source	Cancer Risk (in one million)	Chronic Hazard Index	PM _{2.5} Concentration (µg/m ³)
Stationary Source – ID 19418 ¹	0.77	--	--
Highway – SR 130	2.83	0.003	0.001
Major Roadways ³	2.20	--	0.05
Rail ^{3,4}	1.01	--	<0.01
Cumulative Total	6.81	0.003	0.06
<i>BAAQMD Cumulative Threshold</i>	<i>100</i>	<i>10.0</i>	<i>0.8</i>
Threshold Exceeded?	No	No	No

¹Stationary source cancer risk, chronic hazard index, and annual average PM_{2.5} are based the screening values from Table 1.

²Results for SR 130 use the highest values from Table 3 for cancer risk, chronic hazard index, and annual average PM_{2.5} based on HARP 2 modeling.

³BAAQMD screening health risk values do not include Chronic or Acute Hazard Index data.

⁴While BAAQMD screening health risk report identified a health risk associated with rail sources, there are no rail sources located within 1,000 feet of the project site. Health risk associated with rail sources as reported by BAAQMD is included to provide a conservative analysis.

4 Conclusions

The proposed residential use of the site would not expose on-site residents to significant individual excess cancer risks associated with vehicle emissions, including diesel exhaust particulates and organic gases, based on BAAQMD health risk guidelines and existing and future vehicle travel on SR 130. In addition, combined impacts of vehicle travel on SR 130 and nearby roadways and stationary sources within 1,000 ft of the project site would not expose future residents to cancer risk in excess of BAAQMD's cumulative risk thresholds.

This analysis determines that health risk at proposed sensitive receptors on the project site would not exceed applicable BAAQMD health risk thresholds despite a number of conservative assumptions. For example, the calculated risk using air dispersion modeling is conservatively based on continuous exposure to outdoor air 24 hours per day; however, consistent with the requirements of the 2019 California Energy Code, the project would be required to include a ventilation system with Minimum Efficiency Reporting Value (MERV) 13 filters. MERV 13 filters have been demonstrated to remove approximately 90 percent of particulate matter from intake air (Singer *et al.* 2016) and, therefore, would result in a substantial reduction in health risk from the values presented in this analysis.

Furthermore, as a conservative simplifying assumption, this analysis assumes the MEIR would be exposed to the maximum health risk and PM_{2.5} concentrations from all cumulative sources. In reality, maximum health risks associated with the SR 130 are located on the western side of the project site, while maximum health risks associated with stationary sources and major roadways are distributed throughout the project site. Therefore, the cumulative analysis in this HRA conservatively concentrates the maximum potential health risks at the MEIR, despite the fact that maximum health risks from different sources would be expected occur at different points within the project site.

Current regulatory action by CARB is intended to reduce the amount of diesel exhaust particulates associated with on-road diesel trucks in the future (note that the analysis was based on year 2023 composite emission factors). Conversely, vehicle emissions are based on cumulative plus project condition traffic estimates; traffic growth that may occur in the future along this portion of SR 130 may result in increased emissions on a per mile basis, but such increases in traffic would be expected to be offset to some degree by changes in both the truck and non-diesel vehicle fleets as newer, less polluting vehicles become the majority portion of the fleet populations. Nonetheless, the results of this analysis indicate that residents at the site would not be exposed to significant individual or cumulative carcinogenic, chronic, or acute health risks or excessive PM_{2.5} concentrations associated with vehicle traffic on SR 130, nearby roadways, rail, and stationary sources.

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Appendix A

Emissions Estimates (adapted from the UC Davis-Caltrans MSAT model), AERMOD Input,
and HARP Risk Results

**AERMOD INPUT FILE CREATED BY HARP VERSION 19121

**DATE CREATED: 6/17/2020 10:41:58 AM

**

CO STARTING

TITLEONE AlumRockMixedUse

TITLETWO MixedUseProjectInSanJose

MODELOPT DFAULT CONC

AVERTIME 1 PERIOD

URBANOPT 1999107 SanJoseMSA 1.0

POLLUTID OTHER

RUNORNOT RUN

ERRORFIL "C:\Users\jsisser\Desktop\ALUMROCK2\ALUMROCK2\ALUMROCK2_AERMOD.ERR"

CO FINISHED

**

**SOURCES

SO STARTING

**SOURCES LOCATIONS

LOCATION	EB1	VOLUME	602420	4135265	30.16
LOCATION	EB2	VOLUME	602271	4135172	29.26
LOCATION	EB3	VOLUME	602127	4135086	29.16
LOCATION	EB4	VOLUME	601974	4134991	28.65
LOCATION	EB5	VOLUME	601813	4134895	26.13
LOCATION	EB6	VOLUME	601664	4134805	27.34
LOCATION	EB7	VOLUME	601507	4134706	28.05
LOCATION	EB8	VOLUME	601355	4134614	27.87
LOCATION	EB9	VOLUME	601167	4134499	27.71
LOCATION	EB10	VOLUME	601097	4134459	27.49
LOCATION	WB1	VOLUME	602416	4135282	30.22
LOCATION	WB2	VOLUME	602264	4135188	29.28
LOCATION	WB3	VOLUME	602122	4135100	29.3
LOCATION	WB4	VOLUME	601954	4135001	28.65
LOCATION	WB5	VOLUME	601803	4134907	26
LOCATION	WB6	VOLUME	601646	4134812	27.27
LOCATION	WB7	VOLUME	601501	4134725	27.85
LOCATION	WB8	VOLUME	601343	4134632	27.74
LOCATION	WB9	VOLUME	601187	4134529	27.67
LOCATION	WB10	VOLUME	601092	4134470	27.43

**SOURCES PARAMETERS

SRCPARAM	EB1	1	3.05	41.2	2.3
SRCPARAM	EB2	1	3.05	41.2	2.3
SRCPARAM	EB3	1	3.05	41.2	2.3
SRCPARAM	EB4	1	3.05	41.2	2.3
SRCPARAM	EB5	1	3.05	41.2	2.3
SRCPARAM	EB6	1	3.05	41.2	2.3
SRCPARAM	EB7	1	3.05	41.2	2.3
SRCPARAM	EB8	1	3.05	41.2	2.3
SRCPARAM	EB9	1	3.05	41.2	2.3
SRCPARAM	EB10	1	3.05	10.5	2.3
SRCPARAM	WB1	1	3.05	41.2	2.3
SRCPARAM	WB2	1	3.05	41.2	2.3

SRCPARAM WB3 1 3.05 41.2 2.3
SRCPARAM WB4 1 3.05 41.2 2.3
SRCPARAM WB5 1 3.05 41.2 2.3
SRCPARAM WB6 1 3.05 41.2 2.3
SRCPARAM WB7 1 3.05 41.2 2.3
SRCPARAM WB8 1 3.05 41.2 2.3
SRCPARAM WB9 1 3.05 41.2 2.3
SRCPARAM WB10 1 3.05 10.5 2.3

URBANSRC ALL
SRCGROUP EB1 EB1
SRCGROUP EB2 EB2
SRCGROUP EB3 EB3
SRCGROUP EB4 EB4
SRCGROUP EB5 EB5
SRCGROUP EB6 EB6
SRCGROUP EB7 EB7
SRCGROUP EB8 EB8
SRCGROUP EB9 EB9
SRCGROUP EB10 EB10
SRCGROUP WB1 WB1
SRCGROUP WB2 WB2
SRCGROUP WB3 WB3
SRCGROUP WB4 WB4
SRCGROUP WB5 WB5
SRCGROUP WB6 WB6
SRCGROUP WB7 WB7
SRCGROUP WB8 WB8
SRCGROUP WB9 WB9
SRCGROUP WB10 WB10

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ME PROFFILE "C:\Users\jsisser\Desktop\ALUMROCK2\Met Data\SJInternational\724945.PFL"

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ME UAIRDATA 23230 2009

ME SITEDATA 0 2009

ME PROFBASE 16

ME FINISHED

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**OUTPUT PATHWAY

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RECTABLE 1 1ST

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Emissions Calculations: SR 130

AADT	AADT per direction	Caltrans Truck % ^[1]	Number of daily trucks per direction	Diesel Trucks ¹	Gas Trucks ¹	LD Vehicles	LD Diesel ²	All Gas
18,300	9,150	5.76%	527	287	240	8,623	63	8,800

^[1] Average of U.S. 101 at SR 130 ahead and behind truck percentages and I-680 at SR 130 ahead and behind truck percentages, adjusted for additional daily heavy duty diesel trips due to Rapid 522 bus line.
Sources: Caltrans Caltrans 2018 Annual Average Daily Truck Traffic on the California Highway System; Hexagon 2020 Traffic Study

¹ "Translation Factors" (% of trucks that are diesel-powered; they translate Caltrans truck data into an estimate of diesel vehicles)

Diesel Proportion:	54.4%
Non-Diesel Proportion:	45.6%

Source: UC Davis-Caltrans Air Quality Project, Project-Level Mobile Source Air Toxics Analysis

² Light Duty Diesel proportion based on vehicle miles traveled for LDA, LDT1, and LDT2 for Year 2023, EMFAC2017.

Speed (miles/hour)	Truck Diesel Vehicles		Light Duty Diesel Vehicles		All Gas Vehicles
	hot stabilized exhaust PM10 (grams/mile)	hot stabilized exhaust TOG (grams/mile)	hot stabilized exhaust PM (grams/mile)	hot stabilized exhaust TOG (grams/mile)	hot stabilized exhaust TOG (grams/mile)
20 mph (worst case scenario)	0.0145	0.1042	0.0105	0.0381	0.1444

Source: EMFAC2017 Emissions Database

Mobile Source Air Toxics (MSAT) Speciation Factors Based on Proportion In TOG

Analysis Year	Diesel					Non-Diesel				
	Hot Stabilized Exhaust					Hot Stabilized Exhaust				
	benzene (45201)	1,3-butadiene (43218)	Acetaldehyde (43503)	Acrolein* (43505)	Formaldehyde (43502)	benzene	1,3-butadiene	Acetaldehyde	Acrolein	Formaldehyde
2023	0.0200	0.0019	0.0735	0.0061	0.1471	0.0209	0.0046	0.0024	0.0011	0.0134
Total Daily Emissions (g/mi)	0.65	0.06	2.37	0.20	4.75	26.56	5.85	3.05	1.40	17.03

Source: UC Davis-Caltrans Air Quality Project, Project-Level Mobile Source Air Toxics Analysis

Diesel: OG profile name = Farm equipment - diesel - light&heavy

Non-Diesel: OG profile name = Cat Stabilized exhaust 2020 SSD etoh 2% O (MTBE phaseout)

* Acrolein for diesel was unavailable, so this analysis used U.S. Environmental Protection Agency Motor Vehicle Emission Simulator (MOVES2014).

Derivation of Emission Rates for SR 34 Sources

Each direction segment at	580.7 feet long		177 m long		Emissions		
	Diesel PM	Benzene	1,3-Butadiene	Acetaldehyde	Acrolein	Formaldehyde	
grams/mi/day **	4.8289	27.2039	5.9066	5.4234	1.5943	21.7774	
lbs/hour/segment	0.00005	0.000275	0.000060	0.000055	0.000016	0.000220	
lbs/day/segment	0.0012	0.0066	0.0014	0.0013	0.0004	0.0053	
lbs/year/segment ***	0.4274	2.4076	0.5227	0.4800	0.1411	1.9274	

** Total emissions per mile calculated using the above speciation factors.

*** Based on 365 day/year

HARP ID: 9901 71432 106990 75070 107028 50000

363	SENSITIV	R10ScndF	601854	4134802	NonCancel	0.00E+00	0.00E+00	2.12E-03	0.00E+00	0.00E+00	2.13E-03	1.35E-03	0.00E+00	2.18E-03	0.00E+00	0.00E+00	2.12E-03	0.00E+00	0.00E+00	2.18E-03
364	SENSITIV	R10ThrdF	601854	4134802	NonCancel	0.00E+00	0.00E+00	2.76E-03	0.00E+00	0.00E+00	2.79E-03	1.77E-03	0.00E+00	2.85E-03	0.00E+00	0.00E+00	2.76E-03	0.00E+00	0.00E+00	2.85E-03
365	SENSITIV	R10FrthF	601854	4134802	NonCancel	0.00E+00	0.00E+00	3.57E-03	0.00E+00	0.00E+00	3.60E-03	2.28E-03	0.00E+00	3.68E-03	0.00E+00	0.00E+00	3.57E-03	0.00E+00	0.00E+00	3.68E-03
366	SENSITIV	R10FfthF	601854	4134802	NonCancel	0.00E+00	0.00E+00	3.60E-03	0.00E+00	0.00E+00	3.63E-03	2.30E-03	0.00E+00	3.71E-03	0.00E+00	0.00E+00	3.60E-03	0.00E+00	0.00E+00	3.71E-03
367	SENSITIV	R10SxthF	601854	4134802	NonCancel	0.00E+00	0.00E+00	3.44E-03	0.00E+00	0.00E+00	3.47E-03	2.20E-03	0.00E+00	3.55E-03	0.00E+00	0.00E+00	3.44E-03	0.00E+00	0.00E+00	3.55E-03
368	SENSITIV	R11ScndF	601831	4134840	NonCancel	0.00E+00	0.00E+00	1.78E-03	0.00E+00	0.00E+00	1.79E-03	1.14E-03	0.00E+00	1.83E-03	0.00E+00	0.00E+00	1.78E-03	0.00E+00	0.00E+00	1.83E-03
369	SENSITIV	R11ThrdF	601831	4134840	NonCancel	0.00E+00	0.00E+00	2.17E-03	0.00E+00	0.00E+00	2.19E-03	1.39E-03	0.00E+00	2.24E-03	0.00E+00	0.00E+00	2.17E-03	0.00E+00	0.00E+00	2.24E-03
370	SENSITIV	R11FrthF	601831	4134840	NonCancel	0.00E+00	0.00E+00	2.90E-03	0.00E+00	0.00E+00	2.93E-03	1.86E-03	0.00E+00	3.00E-03	0.00E+00	0.00E+00	2.90E-03	0.00E+00	0.00E+00	3.00E-03
371	SENSITIV	R11FfthF	601831	4134840	NonCancel	0.00E+00	0.00E+00	3.01E-03	0.00E+00	0.00E+00	3.04E-03	1.93E-03	0.00E+00	3.11E-03	0.00E+00	0.00E+00	3.01E-03	0.00E+00	0.00E+00	3.11E-03
372	SENSITIV	R11SxthF	601831	4134840	NonCancel	0.00E+00	0.00E+00	2.91E-03	0.00E+00	0.00E+00	2.94E-03	1.86E-03	0.00E+00	3.00E-03	0.00E+00	0.00E+00	2.91E-03	0.00E+00	0.00E+00	3.00E-03
373	SENSITIV	Courtyar	601808	4134856	NonCancel	0.00E+00	0.00E+00	1.98E-03	0.00E+00	0.00E+00	2.00E-03	1.27E-03	0.00E+00	2.05E-03	0.00E+00	0.00E+00	1.98E-03	0.00E+00	0.00E+00	2.05E-03
374	SENSITIV	Courtyar	601817	4134842	NonCancel	0.00E+00	0.00E+00	1.87E-03	0.00E+00	0.00E+00	1.89E-03	1.20E-03	0.00E+00	1.93E-03	0.00E+00	0.00E+00	1.87E-03	0.00E+00	0.00E+00	1.93E-03
375	SENSITIV	Courtyar	601822	4134817	NonCancel	0.00E+00	0.00E+00	2.06E-03	0.00E+00	0.00E+00	2.08E-03	1.32E-03	0.00E+00	2.13E-03	0.00E+00	0.00E+00	2.06E-03	0.00E+00	0.00E+00	2.13E-03
376	SENSITIV	Courtyar	601837	4134791	NonCancel	0.00E+00	0.00E+00	2.07E-03	0.00E+00	0.00E+00	2.09E-03	1.33E-03	0.00E+00	2.14E-03	0.00E+00	0.00E+00	2.07E-03	0.00E+00	0.00E+00	2.14E-03
377	SENSITIV	Courtyar	601836	4134768	NonCancel	0.00E+00	0.00E+00	1.95E-03	0.00E+00	0.00E+00	1.97E-03	1.25E-03	0.00E+00	2.02E-03	0.00E+00	0.00E+00	1.95E-03	0.00E+00	0.00E+00	2.02E-03
378	SENSITIV	R12ScndF	601813	4134801	NonCancel	0.00E+00	0.00E+00	2.32E-03	0.00E+00	0.00E+00	2.34E-03	1.48E-03	0.00E+00	2.39E-03	0.00E+00	0.00E+00	2.32E-03	0.00E+00	0.00E+00	2.39E-03
379	SENSITIV	R12ThrdF	601813	4134801	NonCancel	0.00E+00	0.00E+00	3.09E-03	0.00E+00	0.00E+00	3.12E-03	1.98E-03	0.00E+00	3.19E-03	0.00E+00	0.00E+00	3.09E-03	0.00E+00	0.00E+00	3.19E-03
380	SENSITIV	R12FrthF	601813	4134801	NonCancel	0.00E+00	0.00E+00	3.75E-03	0.00E+00	0.00E+00	3.78E-03	2.40E-03	0.00E+00	3.87E-03	0.00E+00	0.00E+00	3.75E-03	0.00E+00	0.00E+00	3.87E-03
381	SENSITIV	R12FfthF	601813	4134801	NonCancel	0.00E+00	0.00E+00	3.72E-03	0.00E+00	0.00E+00	3.76E-03	2.38E-03	0.00E+00	3.84E-03	0.00E+00	0.00E+00	3.72E-03	0.00E+00	0.00E+00	3.84E-03
382	SENSITIV	R12SxthF	601813	4134801	NonCancel	0.00E+00	0.00E+00	3.55E-03	0.00E+00	0.00E+00	3.58E-03	2.27E-03	0.00E+00	3.67E-03	0.00E+00	0.00E+00	3.55E-03	0.00E+00	0.00E+00	3.67E-03

363	SENSITIV	R10ScndF	601854	4134802	NonCancel	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7.91E-04	2.14E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.43E-03	0.00E+00	0.00E+00	2.43E-03
364	SENSITIV	R10ThrdF	601854	4134802	NonCancel	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7.70E-04	2.08E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.37E-03	0.00E+00	0.00E+00	2.37E-03
365	SENSITIV	R10FrthF	601854	4134802	NonCancel	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.42E-04	1.73E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.97E-03	0.00E+00	0.00E+00	1.97E-03
366	SENSITIV	R10FfthF	601854	4134802	NonCancel	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.51E-04	1.49E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.69E-03	0.00E+00	0.00E+00	1.69E-03
367	SENSITIV	R10SxthF	601854	4134802	NonCancel	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.85E-04	1.31E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.49E-03	0.00E+00	0.00E+00	1.49E-03
368	SENSITIV	R11ScndF	601831	4134840	NonCancel	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.20E-04	1.13E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.29E-03	0.00E+00	0.00E+00	1.29E-03
369	SENSITIV	R11ThrdF	601831	4134840	NonCancel	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.70E-04	1.00E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.14E-03	0.00E+00	0.00E+00	1.14E-03
370	SENSITIV	R11FrthF	601831	4134840	NonCancel	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.75E-04	7.44E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	8.46E-04	0.00E+00	0.00E+00	8.46E-04
371	SENSITIV	R11FfthF	601831	4134840	NonCancel	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.27E-04	6.14E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.98E-04	0.00E+00	0.00E+00	6.98E-04
372	SENSITIV	R11SxthF	601831	4134840	NonCancel	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.91E-04	5.16E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.86E-04	0.00E+00	0.00E+00	5.86E-04
373	SENSITIV	Courtyar	601808	4134856	NonCancel	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.41E-04	1.19E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.35E-03	0.00E+00	0.00E+00	1.35E-03
374	SENSITIV	Courtyar	601817	4134842	NonCancel	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.43E-04	1.20E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.36E-03	0.00E+00	0.00E+00	1.36E-03
375	SENSITIV	Courtyar	601822	4134817	NonCancel	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7.00E-04	1.89E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.15E-03	0.00E+00	0.00E+00	2.15E-03
376	SENSITIV	Courtyar	601837	4134791	NonCancel	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7.59E-04	2.05E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.33E-03	0.00E+00	0.00E+00	2.33E-03
377	SENSITIV	Courtyar	601836	4134768	NonCancel	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.58E-04	1.78E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.02E-03	0.00E+00	0.00E+00	2.02E-03
378	SENSITIV	R12ScndF	601813	4134801	NonCancel	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	8.78E-04	2.37E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.70E-03	0.00E+00	0.00E+00	2.70E-03
379	SENSITIV	R12ThrdF	601813	4134801	NonCancel	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7.97E-04	2.15E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.45E-03	0.00E+00	0.00E+00	2.45E-03
380	SENSITIV	R12FrthF	601813	4134801	NonCancel	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.47E-04	1.75E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.99E-03	0.00E+00	0.00E+00	1.99E-03
381	SENSITIV	R12FfthF	601813	4134801	NonCancel	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.46E-04	1.47E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.68E-03	0.00E+00	0.00E+00	1.68E-03
382	SENSITIV	R12SxthF	601813	4134801	NonCancel	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.76E-04	1.29E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.46E-03	0.00E+00	0.00E+00	1.46E-03

05/01/2020

HEALTH RISK – YR2014

RECEPTOR ID: 1 37.354906°, -121.850437°

	Type	Risk
Cancer	Highway	28.659
	Major Street	2.200
	Rail	0.942
PM2.5	Highway	0.563
	Major Street	0.052
	Rail	0.002

RECEPTOR ID: 2 37.354878°, -121.850771°

	Type	Risk
Cancer	Highway	32.683
	Major Street	2.199
	Rail	0.942
PM2.5	Highway	0.652
	Major Street	0.052
	Rail	0.002

RECEPTOR ID: 3 37.353995°, -121.849700°

	Type	Risk
Cancer	Highway	23.713
	Major Street	2.162
	Rail	1.006
PM2.5	Highway	0.452
	Major Street	0.051
	Rail	0.002

RECEPTOR ID: 4

37.353871°, -121.850009°

	Type	Risk
Cancer	Highway	23.971
	Major Street	2.165
	Rail	1.008
PM2.5	Highway	0.458
	Major Street	0.051
	Rail	0.002

METHOD/DATA

Cancer risk and PM2.5 were modeled in AERMOD for all highways/freeways and roadways >30,000 AADT (annual average daily traffic) and rail in 20 x 20 meter grid cells. The files incorporate AADT for that highway using EMFAC 2014 data for fleet mix and includes OEHHA's 2015 Air Toxics Hot Spots Guidance methods.

THRESHOLDS OF SIGNIFICANCE BASED ON CEQA GUIDANCE:

Local community risk and hazard impacts are associated with Toxic Air Contaminants (TACs) and fine particulate matter with an aerodynamic resistance diameter of 2.5 micrometers or less (PM_{2.5}) because emissions of these pollutants can have significant health impacts at the local level. If emissions of TACs or PM_{2.5} exceed any of the Thresholds of Significance, a project would result in a significant impact.

	SIGNIFICANCE THRESHOLD
CANCER	10 in a million
AMBIENT PM2.5	0.3 ug/m ³

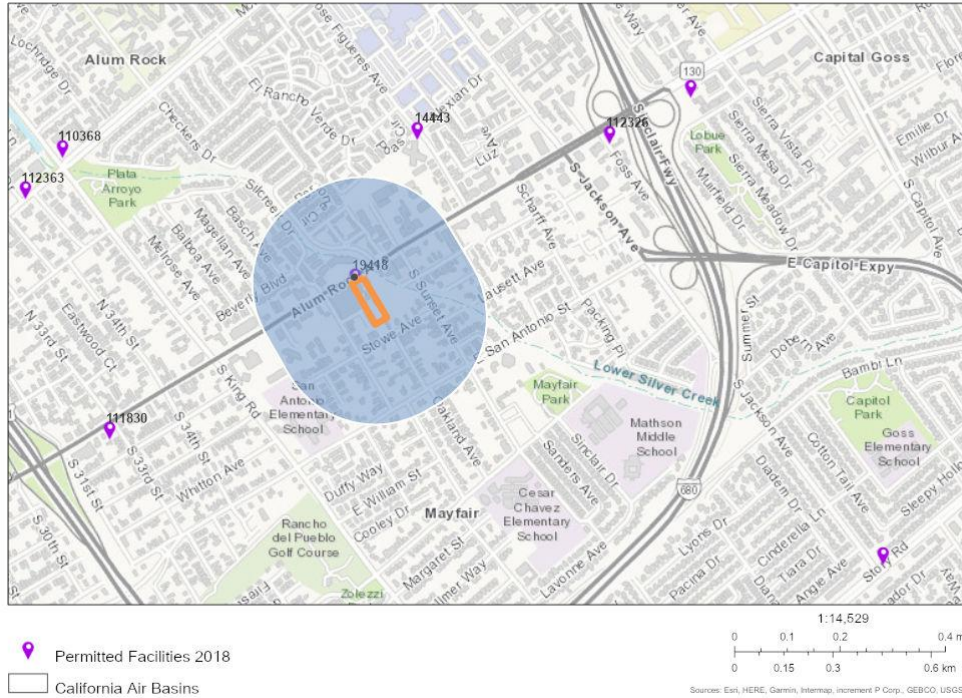


Stationary Source Risk & Hazards Screening Report

Area of Interest (AOI) Information

Area : 4,401,211.18 ft²

Mar 30 2020 11:50:10 Pacific Daylight Time



Summary

Name	Count	Area(ft ²)	Length(ft)
Permitted Facilities 2018	1	N/A	N/A

Permitted Facilities 2018

#	FACID	Name	Address	City	St	Zip	County	Cancer
1	19418	San Jose Dental Surgery Center	1998 Alum Rock Ave	San Jose	CA	95116	Santa Clara	0.770

#	Hazard	PM_25	Type	Count
1	0.000	0.000	Generators	1

Note: The estimated risk and hazard impacts from these sources would be expected to be substantially lower when site specific Health Risk Screening Assessments are conducted.

The screening level map is not recommended for evaluating sensitive land uses such as schools, senior centers, day cares, and health facilities.

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