HARKER SCHOOL BUCKNALL CAMPUS CONSTRUCTION EMISSIONS & HEALTH RISK ASSESSMENT

San José, California

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Prepared for:

Patrick Kallas
Project Manager
David J. Powers & Associates, Inc.
1871 The Alameda, Suite 200
San José, CA 95126

Prepared by:

Zachary Palm
Jordyn Bauer

ILLINGWORTH & RODKIN, INC.
Acoustics • Air Quality
429 East Cotati Avenue
Cotati, CA 94931
(707) 794-0400

I&R Project#: 25-022

Introduction

The purpose of this report is to address the potential construction air quality and health risk impacts associated with the proposed school additions at the Harker Bucknall Campuis located at 4300 Bucknall Road in San José, California. Air quality impacts would be associated with demolition of the existing land uses and construction of the new buildings and infrastructure. Air pollutant emissions associated with construction of the project were predicted using appropriate computer models. In addition, the potential health risks associated with construction 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 District (Air District).[1]

Project Description

The approximately 8.9-acre project site is currently developed with the existing Harker Bucknall School. The proposed project would demolish the existing library and portable classroom building and construct new additions to the Harker School referred to in this report as Project A and Project B.

Project A includes demolition of the existing library building and a portable classroom building to construct a new two-story multi-purpose building totaling approximately 32,671 square feet (sf) with one-level of underground parking. The underground parking would include 33 parking spaces totaling 21,543-sf. Reconfiguration of the parking lot would also occur and would create a total of 97 parking spaces.

Project B would include the construction of a one-story addition to an existing building totaling approximately 4,300-sf.

Construction of Project A is anticipated to occur from June 2026 through August 2027 and construction of Project B is anticipated to occur from January 2028 through June 2028.

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

[1] Also known as the Bay Area Air Quality Management District (BAAQMD), *2022 CEQA Guidelines*, April 2023.

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.

Air Pollutants of Concern

There are two categories of pollutants analyzed for California Environmental Quality Act (CEQA) compliance; criteria pollutants and toxic air contaminants (TACs). Criteria pollutants are those which have ambient air quality standards established by either the federal government (i.e., US EPA) or the State. TACs are pollutants that are known to either increase cancer risk or have non-cancer health impacts in high concentrations.

Criteria Pollutants – Ozone and Particulate Matter

High ozone concentrations in the air basin are caused by the cumulative emissions of reactive organic gases (ROG) and nitrogen oxides (NO_X). These precursor pollutants react under certain meteorological conditions to form ozone. Controlling the emissions of these precursor pollutants is the focus of the Bay Area's attempts to reduce ambient ozone concentrations. The highest ozone concentrations in the Bay Area occur in the eastern and southern inland valleys downwind of existing air pollutant sources. High ozone concentrations aggravate respiratory and cardiovascular diseases, reduce 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 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. Due to the adverse health effects caused by $PM_{2.5}$ exposure even at low concentrations, the Air District has developed health risk thresholds to address exposure to increased $PM_{2.5}$ concentrations caused by projects.[2]

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 seventy

[2] Bay Area Air District, *2022 CEQA Air Quality Guidelines*, Appendix A, p40.

percent of the cancer risk from TACs (based on the Bay Area average).[3] 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 the Air District's CEQA guidance.[4]

The Air District also considers $PM_{2.5}$ to be a TAC due to the adverse health effects caused by $PM_{2.5}$ exposure even at low concentrations. As a result, they have developed CEQA health risk thresholds to address exposure to increased concentrations of $PM_{2.5}$.[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 the children located in the adjacent school buildings. There are also single- and multi-family residences surrounding the project site. There are also infants and children located at the Alka Montessori to the northeast of the project site. This project would introduce new school receptors to the area.

Regulatory Setting

Federal Regulations

The United States Environmental Protection Agency (EPA) sets NAAQS and emission standards for mobile sources, which include on-road (highway) motor vehicles such trucks, buses, and automobiles, and non-road (off-road) vehicles and equipment used in construction, agricultural, industrial, and mining activities (such as bulldozers and loaders). The EPA also sets nationwide fuel standards.

[3] CARB, *Summary: Diesel Particulate Matter Health Impacts*, Web: https://ww2.arb.ca.gov/resources/summary-diesel-particulate-matter-health-impacts#footnote1_7yob8j5.
[4] 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.
[5] Bay Area Air District, 2022 CEQA Air Quality Guidelines, Appendix A, p40.

In the past twenty years, the EPA has established a number of emission standards for on- and non-road heavy-duty diesel engines used in trucks and other equipment. This was done in part because diesel engines are a significant source of NO_X and particulate matter ($PM_{2.5}$) and because the EPA has identified DPM as a probable carcinogen. Implementation of the heavy-duty diesel on-road vehicle standards and the non-road diesel engine standards are estimated to reduce particulate matter and NO_X emissions from diesel engines up to 95 percent in 2030 when the heavy-duty vehicle fleet is completely replaced with newer heavy-duty vehicles that comply with these emission standards.[6]

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

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

State Regulations

The California Air Resources Board (CARB) has set statewide ambient air quality standards (CAAQS) and emission standards for on-road and off-road mobile sources that are more stringent than those adopted by the EPA. Several of these regulatory programs affect medium and heavy-duty diesel trucks that represent the bulk of DPM emissions from California highways. These regulations include the solid waste collection vehicle (SWCV) rule, in-use public and utility fleets, and the heavy-duty diesel truck and bus regulations. In 2008, CARB approved a regulation to reduce emissions of DPM and NO_X from on-road heavy-duty diesel fueled vehicles.[7] The regulation requires affected vehicles to meet specific performance requirements between 2014 and 2023, with all affected diesel vehicles required to have 2010 model-year engines or equivalent by 2023. Advanced Clean Cars and Advanced Clean Cars II (ACC II) that will require new all new cars and light trucks sold in California will be zero-emission vehicles by 2035.

CARB has also adopted and implemented regulations to reduce DPM and NO_X emissions from in-use (existing) and new off-road heavy-duty diesel vehicles (e.g., loaders, tractors, bulldozers, backhoes, off-highway trucks, etc.).[8] The regulations apply to diesel-powered off-road vehicles with engines 25 horsepower (hp) or greater. The regulations are intended to reduce particulate matter and NO_X exhaust emissions by imposing limits on idling, requiring vehicles to be report to CARB's DOORS online reporting system, restringing the adding of older vehicles into fleets and banning older Tiered engines, and requiring owners to turn over their fleet (replace older

[6] USEPA, 2000. *Regulatory Announcement, Heavy-Duty Engine and Vehicle Standards and Highway Diesel Fuel Sulfur Control Requirements*. EPA420-F-00-057. December.
[7] Available online: http://www.arb.ca.gov/msprog/onrdiesel/onrdiesel.htm. Accessed: November 21, 2014.
[8] CARB, Web: https://ww2.arb.ca.gov/resources/fact-sheets/overview-amendments-use-road-diesel-fueled-fleets-regulation

equipment with newer equipment) or retrofit existing equipment in order to achieve specified fleet-averaged emission rates.[9] Implementation of this regulation, in conjunction with stringent federal off-road equipment engine emission limits for new vehicles, significantly reduces emissions of DPM and NO_X in order to help reduce the health risk throughout California.

To address the issue of diesel emissions in the state, CARB developed the *Risk Reduction Plan to Reduce Particulate Matter Emissions from Diesel-Fueled Engines and Vehicles*[10]. In addition to requiring more stringent emission standards for new on-road and off-road mobile sources and stationary diesel-fueled engines to reduce particulate matter emissions by 90 percent, a significant component of the plan involves application of emission control strategies to existing diesel vehicles and equipment. Many of the measures of the Diesel Risk Reduction Plan have been approved and adopted, including the Federal on-road and non-road emission standards for new diesel engines, as well as adoption of regulations for ULSD fuel in California.

2022 Building Energy Efficiency Standards

The California Energy Commission's 2022 Building Energy Efficiency Standards,[11] also known as Title 24, Part 6, focuses on reducing energy consumption and GHG emissions in new buildings. These standards emphasize heat pumps, electric-ready requirements for new homes, and expanded solar photovoltaic (PV) and battery storage mandates. They also strengthen ventilation standards to improve indoor air quality. This now includes installing air filtration systems with a Minimum Efficiency Reporting Value (MERV) 13 standard for all residential and nonresidential land uses.

Project Air Quality Conditions

The project is located in Santa Clara County, which is in the San Francisco Bay Area Air Basin. Ambient air quality standards have been established at both the State and federal level. The Bay Area meets all federal ambient air quality standards with the exception of ground-level ozone and fine particulate matter ($PM_{2.5}$), and all State air quality standards with the exception of ground-level ozone, respirable particulate matter (PM_{10}), and $PM_{2.5}$.[12]

Bay Area Air District

The Bay Area Air District 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.

[9] CARB, Web: https://ww2.arb.ca.gov/our-work/programs/truckstop-resources/road-zone/road-diesel-regulation
[10] California Air Resources Board, 2000. *Risk Reduction Plan to Reduce Particulate Matter Emissions from Diesel-Fueled Engines and Vehicles*. October.
[11] California Energy Commission, *2022 Building Energy Efficiency Standards for Residential and Nonresidential Buildings*, August 2022. Web: https://www.energy.ca.gov/sites/default/files/2022-12/CEC-400-2022-010_CMF.pdf
[12] The Bay Area has attained the carbon monoxide (CO) standard and monitoring data from the last 30 years show relatively low concentrations throughout the Bay Area. Therefore, CO is no longer an air quality issue in the area.

The Air District is the lead agency in developing plans to address attainment and maintenance of the NAAQS and CAAQS. The District also has authority to permit stationary sources of emissions that could be constructed or installed by the proposed project, such as emergency generators. The Air District 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.

The Air District'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.[13] The program examines TAC emissions from point sources, area sources, and on-road and off-road mobile sources with an emphasis on diesel exhaust, which is a major contributor to airborne health risk in California. The CARE program is an on-going program that encourages community involvement and input. The technical analysis portion of the CARE program has been implemented in three phases that includes an assessment of the sources of TAC emissions, modeling and measurement programs to estimate concentrations of TAC, and an assessment of exposures and health risks. 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 the Air District as impacted communities. They include Eastern San Francisco, Richmond/San Pablo, Western Alameda, San José, Vallejo, Concord, and Pittsburgh/Antioch. The project site is not within any of the 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.[14] The Air District has identified several overburdened areas within its boundaries. The project site is not within an overburdened area as the Project site is scored at the 6th percentile on CalEnviroScreen.[15]

Furnaces and Boilers and Water Heaters

In 2023, the Air District adopted the proposed amendments to Rules 9-4 and 9-6 that are intended to reduce emissions of NOx from residential and commercial water heaters. These amended rules will affect Bay Area households that use natural gas appliances by, essentially, prohibiting the installation of new natural gas-fired furnaces and water heaters. The rules require appliances that do not emit NOx. Currently, the only zero-NOx appliances available are electric appliances. Implementation begins in 2027, where only zero-NOx water heaters can be sold or installed, in 2029 where only zero-NOx furnaces can be sold or installed, and 2031 where only zero-NOx large commercial heaters can be sold or installed. Note that electric appliances would have zero emission of other criteria pollutants and zero emissions of direct GHG.

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[13] See Bay Area Air District: https://www.baaqmd.gov/community-health/community-health-protection-program/community-air-risk-evaluation-care-program.
[14] See Bay Area Air District: https://www.baaqmd.gov/~/media/dotgov/files/rules/reg-2-permits/2021-amendments/documents/20210722_01_appendixd_mapsofoverburdenedcommunities-pdf.pdf?la=en.
[15] OEHAA, CalEnviroScreen 4.0 Maps https://oehha.ca.gov/calenviroscreen/report/calenviroscreen-40

Air District CEQA Air Quality Guidelines

In June 2010, the Air District adopted thresholds of significance to assist in the review of projects under CEQA. In 2023, the Air District revised the *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 Air District 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.[16] Air quality impacts and health risks are considered potentially significant if they exceed these thresholds.

The Air District 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). The Air District 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.

Table 1. Bay Area Air District CEQA Significance Thresholds

Criteria Air Pollutant	**Construction Thresholds Average Daily Emissions (lbs./day)**			
ROG	54			
NO_x	54			
PM_{10}	82 (Exhaust)			
$PM_{2.5}$	54 (Exhaust)			
CO	Not Applicable			
Fugitive Dust (PM_{10}/$PM_{2.5}$)	Best Management Practices (BMPs)*			
Health Risks and Hazards	**Single Sources / Individual Projects**		**Combined Sources (Cumulative from all sources within 1000-foot zone of influence)**	
Excess Cancer Risk	>10 in a million	OR Compliance with Qualified Community Risk Reduction Plan	>100 in a million	OR Compliance with Qualified Community Risk Reduction Plan
Hazard Index	>1.0		>10.0	
Incremental annual $PM_{2.5}$	>0.3 µg/m^3		>0.8 µg/m^3	
Note: ROG = reactive organic gases, 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. * The Air District 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.				

Source: Bay Area Air District, 2022

[16] Bay Area Air District, 2023. *2022 CEQA Guidelines*. April.

San José Envision 2040 General Plan

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

Applicable Goals – Air Pollutant Emission Reduction

Goal MS-10 Minimize emissions from new development.

Applicable Policies – Air Pollutant Emission Reduction

MS-10.1 Assess projected air emissions from new development in conformance with the Air District CEQA Guidelines and relative to state and federal standards. Identify and implement feasible air emission reduction measures.

MS-10.2 Consider the cumulative air quality impacts from proposed developments for proposed land use designation changes and new development, consistent with the region's Clean Air Plan and State law.

MS-10.3 Promote the expansion and improvement of public transportation services and facilities, where appropriate, to both encourage energy conservation and reduce air pollution.

MS-10.5 In order to reduce vehicle miles traveled and traffic congestion, require new development within 2,000 feet of an existing or planned transit station to encourage the use of public transit and minimize the dependence on the automobile through the application of site design guidelines and transit incentives.

MS-10.7 Encourage regional and statewide air pollutant emission reduction through energy conservation to improve air quality.

MS-10.11 Enforce the City's wood-burning appliance ordinance to limit air pollutant emissions from residential and commercial buildings.

MS-10.13 As a part of City of San José Sustainable City efforts, educate the public about air polluting household consumer products and activities that generate air pollution. Increase public awareness about the alternative products and activities that reduce air pollutant emissions.

Applicable Goals – Toxic Air Contaminants

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

Applicable Policies – Toxic Air Contaminants

MS-11.1 Require completion of air quality modeling for sensitive land uses such as new residential developments that are located near sources of pollution such as freeways and industrial uses. Require new residential development projects and projects categorized as sensitive receptors to incorporate effective mitigation into project designs or be located an adequate distance from sources of toxic air contaminants (TACs) to avoid significant risks to health and safety.

MS-11.2 For projects that emit toxic air contaminants, require project proponents to prepare health risk assessments in accordance with Air District-recommended procedures as part of environmental review and employ effective mitigation to reduce possible health risks to a less than significant level. Alternatively, require new projects (such as, but not limited to, industrial, manufacturing, and processing facilities) that are sources of TACs to be located an adequate distance from residential areas and other sensitive receptors.

MS-11.4 Encourage the installation of appropriate air filtration at existing schools, residences, and other sensitive receptor uses adversely affected by pollution sources.

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

Actions – Toxic Air Contaminants

MS-11.6 Develop and adopt a comprehensive Community Risk Reduction Plan that includes: baseline inventory of TACs and $PM_{2.5}$, emissions from all sources, emissions reduction targets, and enforceable emission reduction strategies and performance measures. The Community Risk Reduction Plan will include enforcement and monitoring tools to ensure regular review of progress toward the emission reduction targets, progress reporting to the public and responsible agencies, and periodic updates of the plan, as appropriate.

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

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

Applicable Goals – Construction Air Emissions

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

Applicable Policies – Construction Air Emissions

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

Applicable Actions – Construction Air Emissions

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

MS-13.5 Prevent silt loading on roadways that generates particulate matter air pollution by prohibiting unpaved or unprotected access to public roadways from construction sites.

MS-13.6 Revise grading ordinance and condition grading permits to require that graded areas be stabilized from the completion of grading to commencement of construction.

Project Construction Period Emissions

CalEEMod was used to estimate emissions from Project construction that include 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 Modeling</u>

Land Use Inputs

The proposed project would be constructed in separate Projects, with the Project A multi-purpose building construction starting before the Project B classroom addition. Separate CalEEMod runs were conducted for each Project. The land uses for each Project were entered into CalEEMod as described in Table 2.

Table 2. Project Land Uses Entered into CalEEMod

Project Land Uses	Size	Units	Square Feet	Acreage
Project A - Multi-Purpose Building (2026 - 2027)				
Elementary School	32.671	1,000-sf	32,671	3.22
Enclosed Parking with Elevator	33	Parking Spaces	21,543	
Parking Lot	97	Parking Spaces	-	
Project B - Classroom Addition (2028)				
Elementary School	4.3	1,000-sf	4,300	0.15

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, were based on information provided by the project applicant for Project A and a blend of defaults and information provided by the applicant for Project B (included in *Attachment 1*). The construction schedule assumed that the earliest start date for the Project A multi-purpose building would be June 2026 and for the Project B classroom addition would be January 2028, with the total project being built over a period of approximately 25 months, or 443 construction workdays. There is no expected overlap of the Project A and Project B construction periods. The earliest full year of operation was assumed to be 2029.

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 provided and estimated demolition material to be exported, the provided and estimated soil imported and/or exported to the site, and the provided and estimated amount of asphalt and 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 demolition and grading were estimated by CalEEMod using the provided and estimated demolition and soil volumes. The provided and estimated amount of asphalt/concrete was converted to daily one-way trips, assuming two trips per delivery. These values are shown in the project construction equipment worksheet included in *Attachment 1*.

Summary of Computed Construction Emissions

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

Table 3. Construction Period Emissions - Uncontrolled

Year	ROG	NOx	PM_{10} Exhaust	$PM_{2.5}$ Exhaust
Construction Emissions (Tons)				
2026 (Project A)	0.05	0.48	0.02	0.02
2027 (Project A)	0.20	0.33	0.01	0.01
2028 (Project B)	0.03	0.09	<0.01	<0.01
Average Daily Construction Emissions (pounds/day)				
2026 (153 construction workdays)	0.60	6.32	0.21	0.20
2027 (172 construction workdays)	2.34	3.84	0.08	0.07
2028 (118 construction workdays)	0.55	1.57	0.05	0.05
Air District 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 Air District 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 Jose General Policy MS-10.1 specifies that projects should assess projected air emissions from new developments in conformance with the Air District CEQA Guidelines and relative to state and federal standards and identify and implement feasible air emission reduction measures requires construction projects to implement these measures. The project would be required to implement the BMPs recommended by the Air District, which are consistent with and have been adopted by the City as Standard Permit Conditions (per General Plan policies MS 10.1, MS 13.1, and MS 13.4) during all phases of construction to reduce dust and other particulate matter emissions.

Standard Permit Conditions: **Include measures to control dust and exhaust during construction.**

The following measures shall be implemented during all phases of construction to control dust and exhaust at the project site:

1. Water all exposed surfaces (e.g., parking areas, staging areas, soil piles, graded areas, and unpaved access roads) two times per day.

2. Cover all haul trucks transporting soil, sand, or other loose material off-site.

3. Remove all visible mud or dirt track out onto adjacent public roads at least once per day using wet power vacuum street sweepers. The use of dry power sweeping is prohibited.

4. Limit all vehicle speeds on unpaved roads to 15 mph.

5. Pave all new roadways, driveways, and sidewalks as soon as possible.

6. Lay building pads as soon as possible after grading unless seeding or soil binders are used.

7. Suspend all excavation, grading, and/or demolition activities when average wind speeds exceed 20 mph.

8. Wash off all trucks and equipment, including their tires, prior to leaving the site.

9. Treat unpaved roads providing access to sites located 100 feet or further from a paved road with a 6- to 12-inch layer of compacted layer of wood chips, mulch, or gravel.

10. Minimize idling time either by shutting equipment off when not in use or reducing the time of idling to no more than 2 minutes (A 5-minute limit is required by the state airborne toxics control measure [Title 13, Sections 2449(d)(3) and 2485 of the California Code of Regulations]). Provide clear signage that posts this requirement for workers at all access points to the site.

11. Maintain and properly tune all construction equipment in accordance with the manufacturer's specifications. Check all equipment by a certified mechanic and record a determination of running in proper condition prior to operation.

12. Post a publicly visible sign with the name and phone number of an on-site construction coordinator to contact regarding dust complaints. The on-site construction coordinator shall respond and take corrective action within 48 hours. The sign shall also provide the City's Code Enforcement Complaints email and number and the Air District's General Air Pollution Complaints number to ensure compliance with applicable regulations.

The City's required Standard Permit Conditions are consistent with Air District -recommended basic BMPs for reducing fugitive dust contained in the Air District CEQA Air Quality Guidelines. For this analysis, only the basic set of BMPs are required as the Project emissions and $PM_{2.5}$ impacts were below the Air District thresholds. Enhanced BMPs would be required as mitigation if air quality impacts were found to be significant.

Project Construction Health Risk Impacts

Health risk impacts were addressed by predicting increased cancer risk, the increase in annual $PM_{2.5}$ concentrations, and by computing the Hazard Index (HI) for non-cancer health risks. The risk impacts from the project are the combination of risks from construction sources. These sources include on-site construction activity and construction truck hauling. To evaluate the increased cancer risks from the project, a 30-year exposure period was used, per Air District guidance,[17] with the sensitive receptors being exposed to project construction emissions during this timeframe.

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

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

Modeled Sensitive Receptors

Receptors for this assessment included locations where sensitive populations would be present for extended periods of time (i.e., chronic exposures). This includes the nearby residences and Alka Montessori near the site as shown in Figure 1. Residential receptors are assumed to include all receptor groups (i.e., third trimester, infants, children, and adults) with almost continuous exposure to project emissions. Infant and child receptors are assumed to be present at the nearby Alka Montessori school. Like the residential receptors, almost continuous exposure to project emissions was assumed for these child and infant receptors. While there are additional sensitive receptors

[17] Bay Area Air District, Appendix E of the 2022 *CEQA Air Quality Guidelines*, April 2023

within 1,000 feet of the project site, the receptors chosen are adequate to identify maximum impacts from the project.

Health Risk from Project Construction

The primary health risk impact issues associated with construction projects are increased cancer risks associated with diesel exhaust (i.e., DPM), which is a known TAC, and exposure to high ambient concentrations of fine particulate matter (i.e., $PM_{2.5}$) that includes dust and equipment exhaust. DPM poses both a potential health and nuisance impact to nearby receptors. A health risk assessment of the project construction activities was conducted that evaluated potential health effects to nearby sensitive receptors from construction emissions of DPM and $PM_{2.5}$.[18] This assessment included dispersion modeling to predict the offsite concentrations resulting from project construction, so that lifetime cancer risks and non-cancer health effects could be estimated.

Construction Emissions

The CalEEMod model provided total 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 from all construction periods were estimated to be 0.03 tons (50 pounds) and controlled fugitive dust emissions ($PM_{2.5}$), which reflect application of the City's Standard Permit Conditions, to be 0.03 tons (59 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.

Dispersion Modeling

The U.S. EPA AERMOD dispersion model was used to predict concentrations of DPM and $PM_{2.5}$ concentrations at sensitive receptors in the vicinity of the project construction area. The AERMOD dispersion model is an Air District-recommended model for use in modeling analysis of these types of emission activities for CEQA projects.[19] 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),[20] one for Project A and one for Project B. 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

[18] DPM is identified by California as a toxic air contaminant due to the potential to cause cancer.
[19] Bay Area Air District, 2012, *Recommended Methods for Screening and Modeling Local Risks and Hazards, Version 3.0.* May.
[20] 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

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 sources. 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.

AERMOD Inputs and Meteorological Data

The modeling used a five-year meteorological data set (2013-2017) from the San José Airport prepared for use with the AERMOD model by the Air District. The wind rose for San José Airport is shown in Figure 1. Construction emissions were modeled as occurring Monday through Friday between 8:00 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 - 2028 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 residences.[21] A receptor height of 3 feet (1 meter) was used to represent the breathing height of infants and children at Alka Montessori.

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

The maximum increased cancer risks were calculated using the modeled TAC concentrations combined with the Air District 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. Infant and child exposures were assumed to occur at the nearby Alka Montessori.

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 annual $PM_{2.5}$ concentration and HI values are based on an annual maximum risk for the entirety of the project.

[21] Bay Area Air District, *Appendix E of the 2022 CEQA Air Quality Guidelines.* April 202.3

The maximum modeled annual DPM and $PM_{2.5}$ concentrations were identified at nearby receptors to find the maximally exposed individuals (MEI). Results of this assessment indicated that the construction MEI was located on the first floor (5 feet above ground) at a residence south of the project site. The location of the MEI and nearby receptors are shown in Figure 1. Table 4 summarizes the maximum cancer risks, $PM_{2.5}$ concentrations, and HI for project's construction activities at the MEI. *Attachment 2* to this report includes the emission calculations used for the construction area source modeling and the cancer risk calculations.

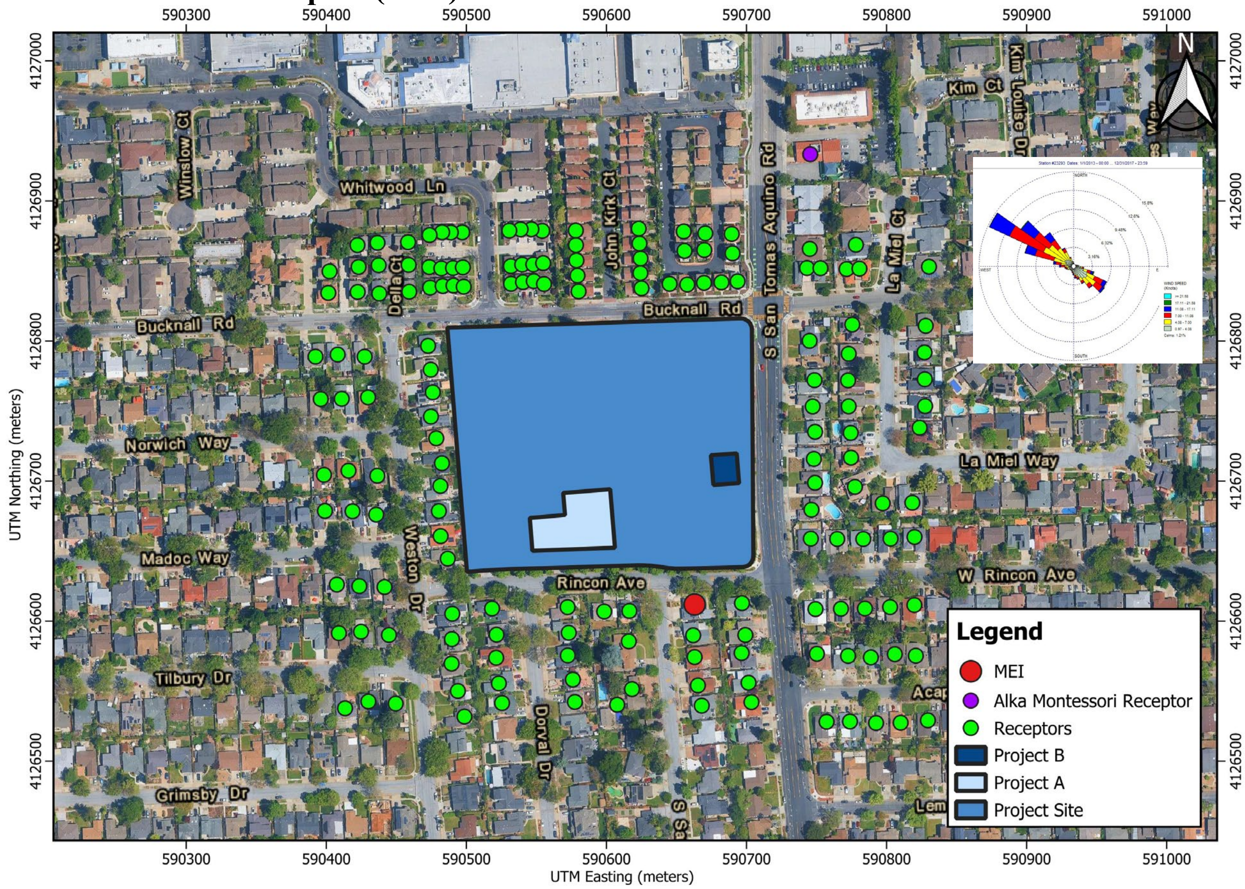
Health risk impacts are shown in Table 4. The project exceeds the Air District's single-source threshold for cancer risk from project construction. However, with the implementation of *Control Measure AQ-1,* the project no longer exceeds the cancer risk threshold. It should be noted that the annual $PM_{2.5}$ concentration shown in Table 4 reflects the inclusion of BMPs for dust control to comply with the City's Standard Permit Conditions.

Additionally, modeling was conducted to predict cancer risks, non-cancer health hazards, and maximum $PM_{2.5}$ concentrations associated with construction activities at the Alka Montessori. The maximum increased cancer risks were adjusted using infant and child exposure parameters, as previously described. Health risks impact from construction activities at the Alka Montessori receptors do not exceed significance thresholds and are shown in Table 4.

Table 4. Project Health Risk Impacts at the Off-Site MEI

Source		Cancer Risk (per million)	Annual $PM_{2.5}$ ($\mu g/m^3$)	Hazard Index
Residential Impacts				
Project Construction	Uncontrolled	**13.65 (infant)**	0.16	0.01
	Controlled	1.87 (infant)	0.12	<0.01
	Air District Single-Source Threshold	***>10.0***	***>0.3***	***>1.0***
Exceed Threshold?	Uncontrolled	***Yes***	*No*	*No*
	Controlled	*No*	*No*	*No*
Alka Montessori Impacts				
Project Construction	Uncontrolled	0.43 (infant)	<0.01	<0.01
	Air District Single-Source Threshold	***>10.0***	***>0.3***	***>1.0***
Exceed Threshold?	Uncontrolled	*No*	*No*	*No*

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



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

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., the influence area). These sources include railways, highways, busy surface streets, and stationary sources identified by the Air District.

A review of the project area using the Air District's geographic information systems (GIS) screening maps identified the existing health risks from nearby roadways and stationary sources at the MEI. Large local roadways and four existing stationary sources of TACs were identified with the potential to affect the project MEI. Figure 2 shows the sources affecting the MEI. Health risk impacts from these sources upon the MEI are reported in Table 5. Details of the cumulative screening and health risk calculations are included in *Attachment 3.*

Figure 2. Locations of Project Site, MEI, and Nearby TAC and $PM_{2.5}$ Sources

Local Roadways – Nearby Large Roadways

The project site is located near S. San Tomas Aquino Road and multiple smaller intersecting streets. Cancer risk, $PM_{2.5}$ concentrations, and HI associated with traffic on the nearby roadways were estimated using the Air District screening values provided via GIS data files (i.e., raster files).[22] The Air District raster files provide screening-level cancer risk, $PM_{2.5}$ concentrations, and HI for roadways within the Bay Area and were produced using AERMOD and 20x20-meter emissions grid. The raster file uses EMFAC2021 data for vehicle emissions and fleet mix for roadways and includes Appendix E of the Air District's CEQA Air Quality Guidance for risk assessment assumptions. These estimates represent conservative risks reflective of 2022 conditions and are meant to provide a conservative estimate of future conditions. The estimates do not reflect the increased proportion of zero emission motor vehicles that will result in lower future emissions.[23] These screening values are considered higher than values that would be obtained with refined modeling methods. The raster data are based on region-wide emissions rather than just those that occur within 1,000 feet of the project. More information regarding the assumptions used to develop the screening layers can be found in Sections 6 and 7 in Appendix E of the Air District's

[22] Bay Area Air District, *Health Risk Screening and Modeling*, 2022. Web: https://www.baaqmd.gov/plans-and-climate/california-environmental-quality-act-ceqa/ceqa-tools/health-risk-screening-and-modeling

[23] Bay Area Air District, *2022 CEQA Air Quality Guidelines Appendix E, Section 9*, April 2023

2022 CEQA guidance.[24] Screening-level cancer risk, $PM_{2.5}$ concentration, and HI for the cumulative roadway impacts at the MEI are listed in Table 5.

Bay Area Air District Permitted Stationary Sources

Permitted stationary sources of air pollution near the project site were identified using the Air District's *Permitted Stationary Sources 2022* GIS website, which identifies the location of nearby stationary sources and their estimated risk and hazard impacts, including emissions and adjustments to account for OEHHA guidance.[25] Four sources were identified using this tool; one "no data" source which was treated as a "generic case" for worst-case risk screening purposes and three gasoline dispensing facilities (GDFs). The Air District GIS website provided screening risks and hazards for the generic source but not the GDFs. A stationary source information request was submitted to the Air District in order to estimate health risk impacts from the GDFs.

The screening risk and hazard levels provided by the Air District for the stationary sources were adjusted for distance using the Air District's *Distance Adjustment Multiplier Tool for Generic Sources*. For the GDFs, the CARB's *Gasoline Station Risk Screening Tool* was used. The Air District provided the gasoline throughputs for the GDFs near the project site.[26] The provided throughputs along with the distance between the receptors and the GDFs, and the region for the gas stations was input into the CARB tool to calculate the cancer risks and hazard indexes. Health risk impacts from the stationary sources upon the MEI are reported in Table 5.

Summary of Cumulative Health Risk Impact at the Off-Site MEI

Table 5 reports both the project and cumulative health risk impacts at the sensitive receptors most affected by the project (i.e., the MEI). The project exceeds the Air District's single-source threshold for cancer risk from project construction. However, with the implementation of *Control Measure AQ-1,* the project no longer exceeds the cancer risk threshold. The project does not exceed any cumulative-source significance thresholds.

[24] Bay Area Air District, *2022 CEQA Air Quality Guidelines Appendix E*, April 2023. https://www.baaqmd.gov/~/media/files/planning-and-research/ceqa/ceqa-guidelines-2022/appendix-e-recommended-methods-for-screening-and-modeling-local-risks-and-hazards_final-pdf.pdf?la=en

[25] Bay Area Air District, https://baaqmd.maps.arcgis.com/apps/webappviewer/index.html?id=845658c19eae4594b9f4b805fb9d89a3

[26] Email from Bay Area Air District CEQA Team, March 12, 2025. Subject: "Re_ Public Records Request No_ 2025-02-0149 CRM_0444283."

Table 5. Cumulative Health Risk Impacts at the Project MEIs

Source		Cancer Risk (per million)	Annual $PM_{2.5}$ (µg/m^3)	Hazard Index
Project Impacts				
Project Construction	Uncontrolled	**13.65 (infant)**	0.16	0.01
	Controlled	1.87 (infant)	0.12	<0.01
Air District Single-Source Threshold		***>10.0***	***>0.3***	***>1.0***
Exceed Threshold?	Uncontrolled	***Yes***	*No*	*No*
	Controlled	*No*	*No*	*No*
Cumulative Impacts				
Cumulative Roadways – Air District GIS Screening Data		6.59	0.17	0.02
GeoRestoration Inc (Facility ID #23035, Remediation Services), MEI at 830 feet.		-	-	-
Central Gas (Facility ID #112339-1, Gas Dispensing Facility), MEI at +1,000 feet.		0.97	-	0.03
Campbell Shell (Facility ID #110793-1, Gas Dispensing Facility), MEI at +1,000 feet.		0.26	-	0.01
ARCO Facility #05370 (Facility ID 112157-1, Gas Dispensing Facility), MEI at +1,000 feet.		0.37	-	0.01
Cumulative Total	Uncontrolled	21.84	0.33	0.08
	Controlled	10.06	0.29	<0.08
Air District Cumulative Source Threshold		***>100***	***>0.8***	***>10.0***
Exceed Threshold?	Uncontrolled	*No*	*No*	*No*
	Controlled	*No*	*No*	*No*

Control Measure AQ-1: Use construction equipment that has low diesel particulate matter exhaust emissions.

Implement a feasible plan to reduce DPM emissions by 30 percent such that increased cancer risk and annual $PM_{2.5}$ concentrations from construction would be reduced below TAC significance levels as follows:

1. All construction equipment larger than 25 horsepower used at the site for more than two continuous days or 20 hours total shall meet U.S. EPA Tier 4 final 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 30 percent or greater. Elements of the plan could include a combination of some of the following measures:

- Installation of electric power lines during early construction phases to avoid use of diesel generators and compressors,
- Use of electrically-powered equipment,
- Forklifts and aerial lifts used for exterior and interior building construction shall be electric or propane/natural gas powered,
- Change in construction build-out plans to lengthen phases, and
- Implementation of different building techniques that result in less diesel equipment usage.

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

Effectiveness of Control Measure AQ-1

CalEEMod was used to compute emissions associated with these control measures assuming that all equipment met U.S. EPA Tier 4 final engine standards. With these implemented, the project's construction maximum cancer risk levels (assuming infant exposure) would be reduced by 86 percent to 1.87 per million. As a result, the project's construction risks would be reduced below the Air District single-source thresholds.

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

The City's General Plan Policy MS-11.1 requires new residential development projects and projects categorized as sensitive receptors to incorporate effective mitigation into project designs to avoid significant risks to health and safety. The Air District's recommended thresholds for health risks and hazards, shown in Table 1, are used to evaluate on-site exposure. Therefore, a health risk assessment was completed to assess the impact that the existing TAC sources would have on the new proposed sensitive receptors (new students) that the project would introduce. The same TAC sources identified above were used in this health risk assessment.[27] 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>Project Construction</u>

Project students could occupy the existing school buildings during project construction and occupy Project A during Project B construction. Therefore, it was assumed that the existing classrooms and Project A would have sensitive receptors during project construction. The construction analysis for the students was conducted in the same manner as described above for the off-site MEI. Receptors were placed within each classroom building and were spaced every 23 feet (7 meters). Project impacts were modeled at receptor heights of 1.0 meter (3 feet) and 4.0 meters (13 feet) to represent the breathing heights of children on the first and second floors of nearby school buildings. Maximum increased cancer risks were calculated for the students at the project site using the maximum modeled TAC concentrations. The cancer risk and $PM_{2.5}$ exposure concentration were calculated for elementary school aged children for 9 hours/day, 250 days/year (5 days/week for 50 weeks/year). Maximum construction impacts would occur at the same receptor location to the north of Project A but on two different floors, as shown in Figure 3. The cancer risk on-site MEI would occur on the second floor (13 feet above ground) and the $PM_{2.5}$ on-site MEI would occur on the first floor (3 feet above ground). The project construction health risk impacts at the existing school buildings are shown in Table 6. Details of the on-site construction emission calculations, dispersion modeling, and cancer risk calculations are contained in *Attachment 2.*

[27] 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.

Since *Control Measure AQ-1* was necessary for the off-site analysis, the only scenario that was analyzed for the on-site student receptors was a scenario that included *Control Measure AQ-1*.

<u>Nearby Local Roadways</u>

The roadway screening impacts were conducted in the same manner as described above for the cumulative analysis. However, the screening risk impacts shown in the Air District raster data indicated cancer risks that exceed the Air District single-source threshold. As a result, dispersion modeling of the S. San Tomas Aquino Road was required.

Traffic Emissions Modeling

This analysis involved the development of DPM, organic TACs, and $PM_{2.5}$ emissions for traffic on S. San Tomas Aquino Road 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 (Santa Clara County), type of road (major/collector), the default CT-EMFAC2021 traffic mix for Santa Clara County, year of analysis (2029 - operational start year), and season (annual).

In order 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 MEIs, the CT-EMFAC2021 model was used to develop vehicle emission factors for the year 2029 (operational year). Emissions associated with vehicle travel depend on the year of analysis because emission control technology requirements are phased-in over time. Therefore, the earlier the year analyzed in the model, the higher the emission rates utilized by CT-EMFAC2021. Year 2029 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 S. San Tomas Aquino Road was calculated based on traffic volumes counted by the City of San Jose.[28] After adding 1 percent per year due to overall regional growth, the calculated ADT on S. San Tomas Aquino Road was 12,249 vehicles. For all hours of the day, an average speed of 25 mph on S. San Tomas Aquino Road was assumed for all vehicles based on posted speed limit signs.

Hourly traffic distributions for the roadways were estimated from the average distributions of traffic on northbound and southbound State Route 85 (S.R. 85) near the interchange with Saratoga

[28] Average Daily Traffic, City of San Jose, URL: https://gisdata-csj.opendata.arcgis.com/datasets/average-daily-traffic/about

Avenue. This is the closest roadway nearby where such data exists. Hourly traffic distributions were obtained from Caltrans Performance Measurement System (PeMS). PeMS data are collected in real-time from nearly 40,000 individual detectors spanning the freeway system across all major metropolitan areas of California.[29] The average fraction of daily traffic volume each hour was calculated for S.R. 85 and applied to the daily traffic volume on S. San Tomas Aquino Road to estimate hourly traffic emission rates.

TAC and $PM_{2.5}$ concentrations were developed by inputting the emissions rates into an air quality dispersion model (AERMOD). Maximum increased lifetime cancer risk and annual $PM_{2.5}$ concentration for the roadways at the MEI were then computed using modeled TAC and $PM_{2.5}$ concentrations and the Air District methods and exposure parameters described in their CEQA guidance document.[30]

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 Air District for this type of analysis.[31] Pollutant emissions from traffic on S. San Tomas Aquino Road within one quarter mile of the project site were evaluated as RLINE sources (roadway line sources) for each opposing travel direction on the roadway. The same meteorological data 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 and heights. Receptors were plotted at each onsite school building using a grid of receptors spaced 7 meters apart. Annual TAC and $PM_{2.5}$ concentrations at the onsite receptors using 2029 emissions from traffic on S. San Tomas Aquino Road were calculated using receptor heights 3 feet (1 meter) and 13 feet (4 meters) to represent the breathing height of elementary students on the first and second floors of the school buildings.

Computed Cancer and Non-Cancer Health Impacts

The modeled maximum annual DPM and $PM_{2.5}$ concentrations were identified at the new and existing project site sensitive receptors (as shown in Figure 3). For the roadway analysis, receptors were added to the Project B site in addition to the receptors described earlier for the on-site construction analysis. The cancer risk and $PM_{2.5}$ exposure concentration were calculated for elementary school aged children for 9 hours/day, 250 days/year (5 days/week for 50 weeks/year). Results of this assessment indicated that the on-site MEI from roadway exposures was located at a Project B receptor on the first floor (3 feet above the ground) in the southeast corner of the Project B building.

The cancer risk, $PM_{2.5}$ concentration, and HI impacts from S. San Tomas Aquino Road at the on-site receptors are shown in Table 6. Figure 3 shows the roadway links modeled and receptor locations where concentrations were calculated. Details of the emission calculations, dispersion modeling, and cancer risk calculations at the onsite receptors are provided in *Attachment 3.*

[29] https://dot.ca.gov/programs/traffic-operations/mpr/pems-source
[30] Bay Area Air District, 2023. 2022 CEQA Guidelines. April.
[31] Bay Area Air District, *Appendix E of the 2022 CEQA Air Quality Guidelines,* April 2023.

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 project construction and existing TAC sources upon the project sensitive receptors (students) are reported in Table 6. The risks from the singular TAC sources are compared against the Air District single-source threshold. The risks from all the sources are then combined and compared against the Air District cumulative-source threshold. As shown, none of the existing single-sources of TAC emissions exceed the single-source threshold at the project site and also do not exceed the cumulative-source threshold when combined.

Table 6. Impacts from Nearby Sources on Project Site Receptors

Source	Cancer Risk (per million)	Annual $PM_{2.5}$ ($\mu g/m^3$)	Hazard Index
Project Construction Controlled	0.71	0.17	<0.01
S. San Tomas Aquino Road – ADT 12,249	0.64	0.08	<0.01
GeoRestoration Inc (Facility ID #23035, Remediation Services), Project Site at 660 feet.	-	-	-
Central Gas (Facility ID #112339-1, Gas Dispensing Facility), Project Site at +1,000 feet.	0.59	-	0.02
Campbell Shell (Facility ID #110793-1, Gas Dispensing Facility), Project Site at 1,000+ feet.	0.26	-	0.01
ARCO Facility #05370 (Facility ID 112157-1, Gas Dispensing Facility), Project Site at +1,000 feet.	0.15	-	0.01
Air District Single-Source Threshold	***>10.0***	***>0.3***	***>1.0***
Exceed Threshold?	*No*	*No*	*No*
Cumulative Total	<2.35	<0.25	<0.06
Air District Cumulative Source Threshold	***>100***	***>0.8***	***>10.0***
Exceed Threshold?	*No*	*No*	*No*

Figure 3. Project Sites, Nearby Cumulative Sources, and On-Site Max TAC Location

Supporting Documentation

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

Attachment 2 is the construction health risk assessment. This includes the summary of the dispersion modeling and the cancer risk calculations for construction. AERMOD dispersion modeling files for this assessment, which are quite voluminous, are available upon request and would be provided in digital format.

Attachment 3 includes the cumulative screening, modeling, and health risk calculations from sources affecting the MEI and new sensitive receptors.

Attachment 1: CalEEMod Modeling Inputs and Outputs

Attachment 2: Project Construction Dispersion Modeling Inputs and Health Risk Calculations

Attachment 3: Cumulative Screening and Health Risk Calculations from Existing TAC Sources

BAAQMD Raster Cancer Risk at MEI

BAAQMD Raster Annual $PM_{2.5}$ Concentration at MEI

BAAQMD Raster Hazard Index at MEI