3.2 Air Quality

This section describes the regulatory setting and environmental setting for air quality in the City of Menlo Park as it pertains to the Project. The Project site is within the Specific Plan area for the El Camino Real/Downtown Specific Plan (Specific Plan). Since the Project's site plan and development parameters are consistent with the Specific Plan, the programmatic Specific Plan EIR is applicable to this Project. In accordance with Section 15128 and 15183.3(d) of the CEQA Guidelines, this section is limited to those effects that were either not analyzed in the Specific Plan EIR or for which uniformly applicable development policies or standards would not provide substantial mitigation. No comments related to air quality were received in response to the NOP.

Existing Conditions

Regulatory Setting

Air quality within the San Francisco Bay Area Air Basin (SFBAAB) is addressed through the efforts of various federal, state, regional, and local government agencies, including the U.S. Environmental Protection Agency (EPA), California Air Resources Board (ARB), and Bay Area Air Quality Management District (BAAQMD). EPA has established federal air quality standards for which ARB and BAAQMD have primary implementation responsibility. ARB and BAAQMD are also responsible for ensuring that state air quality standards are met.

Federal

Although state and federal standards have been established for criteria pollutants, no ambient standards exist for toxic air contaminant (TAC) or hazardous air pollutants (HAP). The Clean Air Act Amendments of 1990 made controlling air toxic emissions a national priority, by which Congress mandated that the EPA regulate 188 air toxics. In EPA's latest rule, Control of Emissions of Hazardous Air Pollutants from Mobile Sources,[1] it identified a group of 93 compounds emitted from mobile sources that are listed in their Integrated Risk Information System (IRIS). IRIS is a comprehensive database of specific substances known to cause human health effects.

State

Toxic Air Contaminant Regulation

California TACs are primarily regulated through the Toxic Air Contaminant Identification and Control Act (Tanner Act) and the Air Toxics Hot Spots Information and Assessment Act of 1987 (Hot Spots Act). In the early 1980s, ARB established a statewide comprehensive air toxics program to reduce exposure to air toxics. The Tanner Act created California's program to reduce exposure to air toxics. The Hot Spots Act supplements the Tanner Act by requiring a statewide air toxics inventory, notification of people exposed to a significant health risk, and facility plans to reduce these risks. ARB has designated nearly 200 compounds as TACs. Additionally, ARB has implemented control measures for a number of compounds that pose high risks and show potential for effective control.

1 Federal Registry, Vol. 72, No. 37, page 8430, February 2007.

In September 2000, ARB approved a comprehensive Diesel Risk Reduction Plan to reduce emissions from both new and existing diesel-fueled engines and vehicles. The goal of the plan is to reduce diesel particulate matter (DPM) emissions and the associated health risk by 75 percent in 2010 and by 85 percent by 2020. The ARB's Diesel Risk Reduction Plan identifies 14 measures that ARB has been implementing since 2000. Because the ARB measures would be enacted before any phase of construction, the Project would be required to comply with applicable diesel control measures.

California Air Resources Board's Air Quality and Land Use Handbook: A Community Health Perspective

In April 2005, ARB issued a guidance document on air quality and land use, *Air Quality and Land Use Handbook: A Community Health Perspective*, which recommends that sensitive land uses not be located within 500 feet of a freeway or other high-traffic roadway. It also recommends that a site-specific health risk assessment for all sensitive uses within 500 feet of a freeway or other high-traffic roadway be performed as a way to more accurately evaluate the risk.[2]

Traffic-related studies indicate that additional cancer and non-cancer health risks are attributable to roadway proximity; such studies form the basis for ARB's advisory recommendation of the 500-foot buffer.[3] Additional non-cancer health risks occur within 1,000 feet of freeways and high-traffic roadways. The highest concentration of emissions dissipates rapidly within the first 300 feet. According to ARB, California freeway studies also show an approximately 70-percent dropoff in particulate pollution levels at 500 feet, and lifetime cancer risk from exposure to DPM is expected to be lowered proportionately.[4] The guidance manual does not provide a quantitative acceptable threshold of risks from diesel exhaust from freeways in its recommendations of buffer distances between freeways and sensitive land uses. The ARB guidance acknowledges the need to balance this recommendation with other state and local policies addressing housing and transportation needs, the benefits of urban infill, community economic development priorities, and other quality of life issues.

Local

Bay Area Air Quality Management District. BAAQMD has local air quality jurisdiction over projects in San Mateo County. Responsibilities of the air district include overseeing stationary source emissions, approving permits, maintaining emissions inventories, maintaining air quality stations, overseeing agricultural burning permits, and reviewing air quality–related sections of environmental documents required by CEQA. BAAQMD is also responsible for establishing and enforcing local air quality rules and regulations that address the requirements of federal and state air quality laws and for ensuring that the appropriate ambient air quality standards are met.

BAAQMD has adopted advisory emission thresholds to assist CEQA lead agencies in determining the level of significance of a project's emissions, which are outlined in its 2011 *California Environmental Quality Act Air Quality Guidelines* (BAAQMD CEQA Guidelines).[5]

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2 California Air Resources Board. 2005. *Air Quality and Land Use Handbook: A Community Health Perspective*. April 2005. Available: http://www.arb.ca.gov/ch/handbook.pdf. Accessed: October 2013.

3 California Air Resources Board. 2005. *Air Quality and Land Use Handbook: A Community Health Perspective*. April 2005. Available: http://www.arb.ca.gov/ch/handbook.pdf. Accessed: October 2013.

4 California Air Resources Board. 2005. *Air Quality and Land Use Handbook: A Community Health Perspective*. April 2005. Available: http://www.arb.ca.gov/ch/handbook.pdf. Accessed: October 2013.

5 Bay Area Air Quality Management District. 2011. *California Environmental Quality Act Air Quality Guidelines.* May. San Francisco, CA.

The CEQA Guidelines state that, where available, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the determinations of environmental impact. In 1999 the BAAQMD developed guidelines for determining significance for local projects titled *Bay Area Air Quality Management District California Environmental Quality Act Air Quality Guidelines*.[6]

In June 2010, the BAAQMD revised the Guidelines to include revised thresholds of significance based on substantial evidence to assist in the review of projects under CEQA. These thresholds were overturned by a Superior Court decision issued on March 5, 2012 but upheld in a later Court of Appeal decision. However, due to ongoing legal activity the District's latest CEQA Guidelines, published in May 2012, contain no references to the adopted thresholds of significance.

According to the BAAQMD website, lead agencies may continue to rely on the 1999 thresholds of significance but may also use the BAAQMD's updated CEQA Guidelines for assistance in identifying potential mitigation measures and may also reference the District's CEQA Thresholds Options and Justification Report, which supports the 2010 thresholds and contains substantial evidence supporting those thresholds. The BAAQMD provided a recommendation that lead agencies determine appropriate air quality thresholds of significance based on substantial evidence in the record.

The proposed 2010 thresholds and screening criteria provide a more conservative estimate of potential air quality impacts than the 1999 thresholds and screening criteria. Accordingly, use of the BAAQMD thresholds will not understate the impacts of the project's air quality emissions, and represent the best scientifically based information available. Based on the substantial evidence in the record, the BAAQMD's 2010 thresholds were utilized for the purposes of analyzing potential air quality impacts of the Project.

While the BAAQMD is no longer recommending its significance thresholds for use by local agencies at this time, the BAAQMD thresholds are well grounded on air quality regulations, scientific evidence, and scientific reasoning concerning air quality and GHG emissions. Use of these thresholds is appropriate to determine significance in the environmental review of this Project and allows a rigorous standardized approach for determining whether the Project would cause a significant air quality impact. BAAQMD's Justification Report, found in Appendix D of the BAAQMD's May 2011 CEQA Guidelines, explains the agency's reasoning for adopting the thresholds.[7]

The court case *California Building Industry Assoc. v. Bay Area Air Quality Management District* (Dec. 17, 2015) Cal.4th (BIA vs. BAAQMD) reduced the scope of what is considered to be an environmental impact under CEQA. CBIA challenged the District's adoption of new CEQA guidance, including thresholds for determining whether a project's exposure to existing levels of toxic air contaminants would result in a significant impact. The Court of Appeal upheld the District's thresholds and dismissed the claim that the guidance itself was subject to CEQA. The Supreme Court accepted the case for review, but limited its examination to the question of whether CEQA requires "an analysis of how existing environmental conditions will impact future residents or users (receptors) of a proposed project." After reviewing the CEQA statute and Section 15126.2(a) of the CEQA Guidelines, the Court concluded that "CEQA generally does not require an analysis of how existing environmental conditions will impact a project's future users or residents."

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6 Bay Area Air Quality Management District. 1999. *BAAQMD CEQA Guidelines: Assessing the Air Quality Impacts of Projects and Plans.* May. San Francisco, CA.

7 Bay Area Air Quality Management District. 2011. *California Environmental Quality Act Air Quality Guidelines.* May. San Francisco, CA.

The Court however, did not exclude all consideration of existing conditions from CEQA. An agency must "evaluate existing conditions in order to assess whether a project could exacerbate hazards that are already present." In addition, in footnote, the Court explained that CEQA does not prohibit an agency from considering as part of an environmental review how existing conditions might impact a project's future users or residents. However, it stopped short of suggesting that the agency should determine the significance of such impacts and require mitigation.

The Court identified several exceptions to this "general rule" that CEQA does not apply to impacts of the environment on the project. All of them are statutory provisions in CEQA that specifically require consideration of impacts of the environment. They include consideration of projects near airports (Section 21096 – noise and safety hazards), school construction projects (Section 21151.8 - noise, safety, toxic air contaminants), and statutory exemptions for housing projects (Sections 21159.21, 21159.22, 21159.23, and 21159.24) and transit priority projects (Section 21151.1).

City of Menlo Park. Local jurisdictions, such as the City of Menlo Park (City), have the authority to address air pollution issues through their land use decision-making processes. Specifically, the City is responsible for assessing the potential for and mitigating air quality problems that result from its land use decisions. The City is also responsible for the implementation of transportation control measures, as outlined in the Clean Air Plan.

In accordance with CEQA requirements and the CEQA review process, the City assesses the air quality impacts of new development projects, requires mitigation of potentially significant air quality impacts by conditioning discretionary permits, and monitors and enforces the implementation of such mitigation measures. The City uses the BAAQMD CEQA Guidelines as its guidance document for the environmental review of plans and development proposals within its jurisdiction.

Menlo Park General Plan. The Menlo Park General Plan (General Plan) guides development and use of land within the City. Several goals and policies would be expected to contribute to improving air quality. However, the following goal and policy from the Open Space and Conservation Element is most relevant to the Project.[8]

> **Goal OSC5:** Ensure Healthy Air Quality and Water Quality. Enhance and preserve air quality in accord with State and regional standards, and encourage the coordination of total water quality management including both supply and wastewater treatment.
>
> *Policy OSC5.1*: Air and Water Quality Standards. Continue to apply standards and policies established by the Bay Area Air Quality Management District (BAAQMD), San Mateo Countywide Water Pollution Prevention Program (SMCWPPP), and City of Menlo Park Climate Action Plan through the California Environmental Quality Act (CEQA) process and other means as applicable.

Environmental Setting

Air Quality Background

The City is located within the SFBAAB, an area surrounded by mountains that confine the movement of air and the pollutants it contains. This area includes all of Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, Santa Clara, the western half of Solano, and the southern half of Sonoma Counties. The regional climate within the SFBAAB is considered semi-arid and is characterized by warm summers, mild winters, infrequent seasonal rainfall, moderate daytime on-shore breezes, and moderate

[8] City of Menlo Park. 2013. *Menlo Park General Plan, Open Space/Conservation, Noise and Safety Elements*. Adopted May 21.

humidity. A wide range of meteorology and emissions sources—such as dense population centers, heavy vehicular traffic, and industrial activity—primarily influence the air quality within the SFBAAB.

Air pollutant emissions within the SFBAAB are generated from stationary, area-wide, mobile, and natural sources. Stationary sources can be divided into two major subcategories: point and area sources. *Point sources* occur at an identified location and are usually associated with manufacturing and industry. Examples are boilers and combustion equipment that produce electricity or generate heat. *Area sources* consist of many smaller point sources that are widely distributed. Examples of area sources include residential and commercial water heaters, painting operations, portable generators, lawn mowers, agricultural fields, landfills, and consumer products, such as barbeque lighter fluid and hair spray. Construction activities that create fugitive dust, through activities such as excavation and grading, also contribute to area source emissions. 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. Air pollutants can also be generated by the natural environment, such as when fine dust particles are pulled off the ground surface and suspended in the air during high winds.

Toxic Air Contaminants

TAC is a general term for a diverse group of air pollutants that can adversely affect human health, but have not had ambient air quality standards established for them. TACs lack ambient air quality standards for a variety of reasons (e.g., insufficient data on toxicity, association with particular workplace exposures rather than general environmental exposure, etc.). TAC effects tend to be local rather than regional. The majority of the estimated health risks from TACs can be attributed to relatively few compounds, the most important being particulate matter from diesel-fueled engines.

TACs are generated by a number of sources, including: stationary sources, such as dry cleaners, gas stations, auto body shops, and combustion sources; mobile sources, such as diesel trucks, ships, and trains; and area sources, such as farms, landfills, and construction sites. Adverse health effects of TACs can be carcinogenic (cancer-causing), short-term (acute) non-carcinogenic, and long-term (chronic) non-carcinogenic. Direct exposure to these pollutants has been shown to cause cancer, birth defects, damage to the brain and nervous system, and respiratory disorders.

Although National Ambient Air Quality Standards (NAAQS) and California Ambient Air Quality Standards (CAAQS) have been established for criteria pollutants, no ambient standards exist for TACs. Many pollutants are identified as TACs because of their potential to increase the risk of developing cancer or because of their acute or chronic health risks. For TACs that are known or suspected carcinogens, ARB has consistently found that there are no levels or thresholds below which exposure is risk-free. Individual TACs vary greatly in the risks they present. At a given level of exposure, one TAC may pose a hazard that is many times greater than another. TACs are identified and their toxicity is studied by the California Office of Environmental Health Hazard Assessment (OEHHA).

Diesel Particulate Matter

The primary TAC of concern associated with the Project is DPM, which is generated primarily by diesel-fueled engines. In August 1998, following a 10-year scientific assessment process, ARB identified DPM from diesel-fueled engines as TACs. Compared to other air toxics ARB has identified, DPM emissions are estimated to be responsible for about 70 percent of the total ambient air toxics risk.[9] OEHHA guidance indicates that particulate matter of 10 microns in diameter or smaller (PM10) should be used as a surrogate for DPM when evaluating health risks associated with DPM.[10]

Sensitive Receptors

The NAAQS and CAAQS apply at publicly accessible areas, regardless of whether those areas are populated. The BAAQMD generally defines a sensitive receptor as a facility or land use that houses or attracts members of the population who are particularly sensitive to the effects of air pollutants, such as children, the elderly, and people with illnesses.[11] Examples of sensitive receptors include residences, hospitals, and schools. BAAQMD has determined that construction activities occurring at distances of greater than 1,000 feet from a sensitive receptor likely do not pose a significant health risk. Sensitive receptors located within 1,500 feet of the Project site are provided in Table 3.2-1. Although BAAQMD has determined that construction activities occurring at distances of greater than 1,000 feet from a sensitive receptor likely do not pose a significant health risk, sensitive receptors at distances as great as 1,500 feet were identified to capture the health risks at the nearest schools, daycares, etc. This approach was adopted to provide a conservative and comprehensive analysis of health risks at all nearby sensitive receptor locations, even those greater than 1,000 feet from the Project site, since a number of schools and daycares are located just outside the 1,000-foot radius.

Table 3.2-1. Sensitive Receptors within 1,500 Feet of the Project Site

Receptor	Distance of Nearest Receptor to Project
Residences	100 feet northeast
Residences	100 feet east
Residences	300 feet southwest
Residences	600 feet northwest
Crane Place-HUD-Seniors	1,200 feet southwest
Nativity Catholic School	800 feet northeast
Trinity School	1,300 feet east
Menlo School	1,400 feet southwest
Menlo Children's Center	1,500 feet east

Source: Google Earth. 2015. Assessment of the project site by ICF International. June.

9 California Air Resources Board. 2000. *Risk Reduction Plan to Reduce Particulate Matter Emissions from Diesel-Fueled Engines and Vehicles*. Sacramento, CA. Prepared by Stationary Source Division and Mobile Source Control Division.

10 Office of Environmental Health Hazard Assessment. 2015. *Air Toxics Hot Spots Program Guidance Manual for the Preparation of Risk Assessments*. February. Available: <http://oehha.ca.gov/air/hot_spots/hotspots2015.html>. Accessed: June 8, 2015.

11 Bay Area Air Quality Management District. 2011. *California Environmental Quality Act Air Quality Guidelines.* May. San Francisco, CA.

Environmental Impacts

This section describes the impact analysis relating to air quality for the Project. It describes the methods used to determine the impacts of the Project and lists the thresholds used to conclude whether an impact would be significant. Measures to mitigate (i.e., avoid, minimize, rectify, reduce, eliminate, or compensate for) significant impacts accompany each impact discussion where necessary.

Thresholds of Significance

In accordance with Appendix G of the CEQA Guidelines, the Project would be considered to have a significant effect if it would result in any of the conditions listed below.

- Conflict with or obstruct implementation of the applicable air quality plan.
- Violate any air quality standard or substantially contribute to an existing or projected air quality violation.
- Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is a nonattainment area for an applicable federal or state ambient air quality standard.
- Expose sensitive receptors to substantial pollutant concentrations.
- Create objectionable odors affecting a substantial number of people.

CEQA Guidelines further indicate that the significance criteria established by the applicable air quality management or air pollution control district may be relied on to make these significance determinations.

As indicated below, this analysis focuses solely on the evaluation of potential health risks to new and existing adjacent sensitive receptors from exposure to construction-related emissions and does not evaluate the remainder of Project emissions which are adequately addressed in the Specific Plan EIR.

Local Air District Thresholds

The following section summarizes BAAQMD's thresholds and presents substantial evidence regarding the basis upon which they were developed, as well as describes how they are used to determine whether Project construction emissions would cause increased risk to human health.

Health-Based Thresholds for Project-Generated Pollutants of Human Health Concern

All criteria pollutants are associated with some form of health risk (e.g., asthma, asphyxiation). Adverse health effects associated with criteria pollutant emissions are highly dependent on a multitude of interconnected variables (e.g., cumulative concentrations, local meteorology and atmospheric conditions, the number and characteristics of exposed individuals, such as age and gender). Moreover, ozone precursors (reactive organic gases [ROG] and nitrogen oxides [NO_X]) affect air quality on a regional scale. Health effects related to ozone are therefore the product of emissions generated by numerous sources throughout a region. Existing models have limited sensitivity to small changes in criteria pollutant concentrations, and as such, translating Project-generated criteria pollutants to specific health effects would produce meaningless results. In other words, minor increases in regional air pollution from Project -generated ROG and NO_X would have nominal or negligible impacts on human health.[12] As such, an analysis of impacts to human health associated with Project-generated regional

[12] As an example, the BAAQMD's Multi-Pollutant Evaluation Method (MPEM) requires a 3 to 5-percent increase in regional ozone precursors to produce a material change in modeled human health impacts. Based on 2008 ROG and NO_X emissions in the Bay Area, a 3 to 5-percent increase equates to over 20, pounds per day or ROG and NO_X.

emissions is not included in the Project-level analysis. Increased emissions of ozone precursors (ROG and NO_X) generated by the Project could increase photochemical reactions and the formation of tropospheric ozone, which, at certain concentrations, could lead to respiratory symptoms (e.g., coughing), decreased lung function, and inflammation of airways. While these health effects are associated with ozone, the impacts are a result of cumulative and regional ROG and NO_X emissions, and the incremental contribution of the Project to specific health outcomes from criteria pollutant emissions would be limited and cannot be solely traced to the Project.

Localized pollutants generated by a project can directly affect adjacent sensitive receptors; therefore, the analysis of Project-related impacts on human health focuses only on those localized pollutants with the greatest potential to result in a significant, material impact on human health. This approach is consistent with the current state-of-practice and published guidance by BAAQMD,[13] the California Air Pollution Control Officers Association (CAPCOA),[14] OEHHA,[15] and ARB.[16] Accordingly, the analysis of Project-related impacts to human health focuses only on those pollutants with the greatest potential to result in a significant, material impact on human health, which are (1) locally concentrated respirable particulate matter with a diameter of 2.5 microns or less (PM2.5) and (2) DPM.[17] This analysis does not include impacts associated with locally concentrated carbon monoxide (CO) as these impacts were analyzed in the Program EIR and were found to be less than significant. BAAQMD thresholds of significance for each pollutant are identified below and summarized in Table 3.2-2.

Table 3.2-2. BAAQMD Thresholds for PM2.5 Concentration and DPM Health Risks

Analysis	Threshold
Localized PM2.5 Concentrations	Failure to implement emissions control practices PM2.5 increase of greater than 0.3 μg/m^3 (project) PM2.5 increase of greater than 0.8 μg/m^3 (cumulative)
Health Risks from Localized DPM Concentrations	Increased cancer risk of 10 in 1 million (project) Increased HI greater than 1.0 (project) Increased cancer risk of 100 in 1 million (cumulative) Increased HI greater than 10.0 (cumulative)

Source: Bay Area Air Quality Management District 2011. *California Environmental Quality Act Air Quality Guidelines.* May. San Francisco, CA.

Analysis requirements for construction- and operation-related pollutant emissions are contained in the BAAQMD's CEQA Guidelines, which contain thresholds of significance for PM2.5 and TACs (DPM) and

13 Bay Area Air Quality Management District. 2011. *California Environmental Quality Act Air Quality Guidelines.* May. San Francisco, CA.

14 California Air Pollution Control Officers Association. 2009. *Health Risk Assessments for Proposed Land Use Projects.* CAPCOA Guidance Document. July. Available: <http://www.capcoa.org/>.

15 Office of Environmental Health Hazard Assessment. 2015. *Air Toxics Hot Spots Program Guidance Manual for the Preparation of Risk Assessments*. February. Available: <http://oehha.ca.gov/air/hot_spots/hotspots2015.html>. Accessed: June 8, 2015.

16 California Air Resources Board. 2000. *Risk Reduction Plan to Reduce Particulate Matter Emissions from Diesel-Fueled Engines and Vehicles*. Sacramento, CA. Prepared by Stationary Source Division and Mobile Source Control Division.

17 DPM is the primary TAC of concern for mobile sources. Of all controlled TACs, emissions of DPM are estimated to be responsible for about 70 percent of the total ambient TAC risk. Given the risks associated with DPM, tools and factors for evaluating human health impacts from Project-generated DPM have been developed and are readily available. Conversely, tools and techniques for assessing Project-specific health outcomes as a result of exposure to other TAC (e.g., benzene) remain limited. These limitations impede the ability to evaluate and precisely quantify potential public health risks posed by TAC exposure.

are presented in Table 3.2-2. As discussed above, the Supreme Court decided in the BIA vs. BAAQMD court case that CEQA requires analysis of existing environmental hazards when the project exacerbates those existing environmental hazards. Since construction of the Project would exacerbate existing environmental hazards (i.e., PM2.5 concentrations and DPM health risks), the analysis considers the combined effect of Project emissions and adjacent mobile/stationary/rail emissions as a cumulative impact.

Localized PM2.5 Concentrations

BAAQMD adopted an incremental PM2.5 concentration-based significance threshold, where a *substantial* contribution at the project level is defined as total (exhaust and fugitive) PM2.5 concentrations exceeding 0.3 micrograms per cubic meter ($\mu g/m^3$). Additionally, BAAQMD considers projects to have a cumulatively considerable PM2.5 impact if concentrations from all local sources, including project-related sources, exceed 0.8 $\mu g/m^3$. BAAQMD's PM2.5 thresholds apply to both new receptors and new sources, and are indicated in Table 3.2-2.

Health Risks from Localized Diesel Particulate Matter Concentrations

DPM is a form of localized particulate matter (PM) that is generated by diesel equipment and vehicle exhaust. Consistent with OEHHA guidance, all PM10 exhaust associated with off-road construction equipment was assumed to be DPM.[18] DPM has been identified as TAC and is particularly concerning as long-term exposure can lead to cancer, birth defects, and damage to the brain and nervous system. BAAQMD has adopted incremental cancer and hazard thresholds to evaluate receptor exposure to DPM emissions, as indicated in Table 3.2-2. The *substantial* DPM threshold defined by BAAQMD is 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. The air district also considers a project to have a cumulatively considerable DPM impact if it results in excess cancer risk levels of more than 100 in 1 million or hazard index (HI) greater than 10.0. For this analysis, all PM10 exhaust from off-road equipment during construction was assumed to be DPM, consistent with OEHHA guidance.

The health risk impact thresholds are developed based on the cancer and non-cancer risk limits for new and modified sources adopted in the BAAQMD Regulation 2, Rule 5, and the U.S. Environmental Protection Agency (EPA) Significant Impact Level (SIL) for PM2.5 emissions. The EPA SIL is a measure of whether a source may cause or contribute to a violation of NAAQS. Health risks due to toxic emissions from construction, though temporary, can still result in substantial public health impacts due to increases in cancer and non-cancer risks. Applying quantitative thresholds allows a rigorous standardized method of determining when a construction project will cause a significant increase in health risks. The cumulative health risk thresholds are based on EPA guidance for conducting air toxics analyses and making risk management decisions at the facility- and community-scale level and are also consistent with the ambient cancer risk (background cancer risk from all existing sources) in the most pristine portions of the Bay Area based on the BAAQMD's recent regional modeling analysis and the non-cancer Air Toxics Hot Spots (ATHS) mandatory risk reduction levels.

[18] Office of Environmental Health Hazard Assessment. 2015. *Air Toxics Hot Spots Program Guidance Manual for the Preparation of Risk Assessments*. February. Available: <http://oehha.ca.gov/air/hot_spots/hotspots2015.html>. Accessed: June 8, 2015.

Methods for Analysis

Impacts related to all thresholds with the exception of exposure of sensitive receptors to substantial pollutant concentrations were adequately evaluated in the Specific Plan EIR. These topics are discussed in the *Infill Environmental Checklist* (Appendix 1-1) and the Specific Plan EIR. Consequently, this analysis focuses on the evaluation of potential health risks to new and existing adjacent sensitive receptors from exposure to construction-related TAC emissions and does not evaluate the remainder of project emissions or impacts. The primary TAC of concern associated with the Project is DPM, which is generated primarily by diesel-fueled engines and is classified as a carcinogen by ARB.

The BAAQMD has developed guidance for estimating risk and hazards impacts entitled *Recommended Methods for Screening and Modeling Local Risks and Hazards* that includes instructions on characterizing hazard and risk and mitigating impacts. BAAQMD recommends characterizing potential health effects associated with exposure to PM2.5 emissions, as well as analyzing local community risk and hazard impacts associated with DPM exposure for both new sources and new receptors.

The project would generate TAC emissions near existing and new receptors. Thus, consistent with BAAQMD requirements, a risk and hazards impact assessment was performed using EPA's most recent dispersion model, AERMOD (version 14134), acute and chronic risk assessment values presented by OEHHA,[19] as well as assumptions for model inputs from BAAQMD's *Recommended Methods for Screening and Modeling Local Risks and* Hazards.[20] The human health risk assessment (HRA) takes into account OEHHA's most recent *Air Toxics Hot Spots Program Guidance Manual for the Preparation of Risk Assessments* guidance and calculation methods, which was adopted by OEHHA in March 2015.[21] The risk and hazard assessment consists of three parts: a DPM and PM2.5 inventory, air dispersion modeling, and risk calculations. A description of each of these parts follows.

DPM and PM2.5 Inventory

DPM and PM2.5 emissions from construction were assessed and quantified using standard and accepted software tools, techniques, and emission factors. This section describes the primary assumptions and key methods used to quantify emissions and estimate potential impacts.

Construction of the project would generate emissions of DPM and PM2.5 that would result in potential long-term health risks in the study area. Emissions would originate from mobile and stationary construction equipment exhaust, fugitive dust from construction equipment activity (PM2.5 only), employee vehicle exhaust and road dust, and heavy-duty diesel truck exhaust and road dust. It is expected that construction would occur between from October 2016 to December 2018, for a total of approximately 27 months.

Construction-related DPM and PM2.5 emissions from heavy-duty equipment and on-road vehicles were estimated using the California Emissions Estimator Model (CalEEMod), version 2013.2.2, using construction activity and scheduling provided by the Project Sponsor. Equipment inventory data, including equipment type, horsepower, and load factors, were provided by the Project Sponsor. The

[19] Office of Environmental Health Hazard Assessment. 2015. *Air Toxics Hot Spots Program Guidance Manual for the Preparation of Risk Assessments*. February. Available: <http://oehha.ca.gov/air/hot_spots/hotspots2015.html>. Accessed: June 8, 2015.

[20] Bay Area Air Quality Management District. 2012. *Recommended Methods for Screening and Modeling Local Risks and Hazards.* May. San Francisco, CA.

[21] Ibid.

analysis assumes 8-hour workdays and a 5-day workweek (Monday–Friday) during all construction work. Emissions were estimated for each phase of activity based on activity data (e.g., construction phasing schedule and average equipment hours of operation) provided by the Project Sponsor. Default values from CalEEMod were used for other construction equipment parameters, including engine load factors. Emissions were combined for overlapping construction activities.

As noted above, with respect to construction activities, all PM10 exhaust from off-road equipment during construction was assumed to be DPM, consistent with OEHHA guidance.[22]

Appendix 3.2, *Air Quality Modeling Details,* contains the construction modeling details.

Air Dispersion Modeling

The HRA used EPA's AERMOD model, version 14134, to model annual DPM and PM2.5 concentrations at nearby receptors. The source emission rates (in grams per second) were estimated for off-road construction equipment and on-road haul trucks. Additional modeling inputs, including source characteristics (e.g., release height, initial dispersion) were based on published guidance from OEHHA[23], BAAQMD,[24] and the San Joaquin Air Pollution Control District (SJVAPCD).[25] Where BAAQMD guidance is not available, SJVAPCD guidance is used because detailed HRA/dispersion modeling guidance is provided. Emissions-associated construction activities were treated as individual elevated area sources equal to the area of each phase of construction. Key modeling parameters are presented in Appendix 3.2.

A receptor is defined as a point where a person (resident or worker) may be located for a given period of time. With respect to risk and hazard cancer health effects, all locations where a person could be located for extended periods of time, such as a residence or workplace, need to be identified. Sensitive receptor locations were placed at the locations identified in Table 3.2-1 and in a 20-meter grid out to 1,000 feet surrounding the Project site to identify the highest concentration of DPM and PM2.5. The grid was placed out to 1,000 feet consistent with BAAQMD guidance; BAAQMD has determined that construction activities occurring at distances of greater than 1,000 feet from a sensitive receptor likely do not pose a significant health risk. Additional receptors were placed out to 1,500 feet to capture the nearest schools, daycares, etc. (see Table 3.2-1).

Risk Calculations

OEHHA has established health risk thresholds for both cancer and non-cancer health effects. The BAAQMD recommends a maximum incremental cancer risk significance threshold of 10 in 1 million (1.0×10^{-5}) and recommends that other lead agencies use this significance threshold when approving permits for new or modified stationary sources. A cancer risk significance threshold of 10 in 1 million (1.0×10^{-5}) is also consistent with the threshold established by the State of California as a level posing no significant risk for exposures to carcinogens regulated under the Safe Drinking Water and Toxic Enforcement Act (Proposition 65). Refer to Appendix 3.2 for cancer risk calculation details.

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[22] Office of Environmental Health Hazard Assessment. 2015. *Air Toxics Hot Spots Program Guidance Manual for the Preparation of Risk Assessments*. Appendices A-F. Page D-1. February. Available: <http://oehha.ca.gov/air/hot_spots/2015/2015GMAppendicesA_F.pdf>. Accessed: June 8, 2015.

[23] Ibid.

[24] Bay Area Air Quality Management District. 2012. *Recommended Methods for Screening and Modeling Local Risks and Hazards.* May. San Francisco, CA.

[25] San Joaquin Valley Air Pollution Control District. 2015. *Final Staff Report: Update to District's Risk Management Policy to Address OEHHA's Revised Risk Assessment Guidance Document*. May 28. Available: <https://www.valleyair.org/busind/pto/staff-report-5-28-15.pdf>. Accessed: June 24, 2015.

Impacts and Mitigation Measures

Impact AQ-1: Exposure of Sensitive Receptors to Adverse Health Risks in Excess of BAAQMD Thresholds Associated with Localized DPM Concentrations during Construction. The Project would expose sensitive receptors to adverse health risks associated with localized DPM concentrations during construction. (LTS/M)

Project construction would generate DPM emissions, resulting in the exposure of nearby existing sensitive receptors (e.g., residences) to increased DPM concentrations. Cancer health risks associated with exposure to diesel exhaust are typically associated with chronic exposure, in which a 70-year exposure period is assumed. In addition, DPM concentrations, and, thus, cancer health risks, dissipate as a function of distance from the emissions source. BAAQMD has determined that construction activities occurring at distances of greater than 1,000 feet from a sensitive receptor likely do not pose a significant health risk.

As shown in Table 3.2-1, several sensitive receptors are located within 1,500 feet of the Project site. As noted above, although BAAQMD has determined that construction activities occurring at distances of greater than 1,000 feet from a sensitive receptor likely do not pose a significant health risk, health risks at the nearest schools and daycares, which are located outside the 1,000-foot radius but within a 1,500-foot radius, were analyzed to present a conservative estimate of potential risks associated with Project construction activities. Therefore, exposure to construction DPM emissions were assessed by predicting the health risks in terms of excess cancer and non-cancer hazard index (HI). The results of the HRA are summarized in Table 3.2-3 and are compared to BAAQMD's Project-level DPM thresholds. Note that Project construction emissions in Table 3.2-3 do not assume implementation of any onsite mitigation. Exceedances of BAAQMD thresholds are shown in underline. There are no exceedances at receptors located outside the 1,000-foot radius specified by BAAQMD.

Table 3.2-3. Unmitigated Project-Level Cancer and Non-Cancer Chronic (HI) Risks during Construction

Receptor	Non-Cancer HI [a]	Increased Cancer Risk (per million)
Maximum Residential Receptor	0.04	60.8
Maximum School Receptor [b]	<0.01	4.1
Maximum Daycare Receptor [b]	<0.01	3.6
Maximum Worker Receptor	0.04	5.2
BAAQMD Thresholds	1.00	10.0

a. HI = hazard index
b. Receptor located outside BAAQMD's 1,000-foot screening radius.

As shown in Table 3.2-3, construction of the Project would result in cancer risks in excess of BAAQMD's thresholds at the nearest residential receptor. This is a ***significant*** impact.

Non-cancer hazard impacts would be less than the BAAQMD's thresholds and would, therefore, be ***less than significant***.

MITIGATION MEASURES. Because DPM cancer risk from construction equipment, including both off-road vehicles and on-road trucks, would exceed BAAQMD's cancer risk threshold, this impact would be significant and would require implementation of Mitigation Measures AQ-1.1 and AQ-1.2.

AQ-1.1: Utilize Clean Diesel-Powered Off-Road Equipment during Construction to Control Off-Road Construction-Related PM2.5 and PM10 Emissions. The Project Sponsor shall ensure that all off-road diesel-powered equipment used during construction between 2016 and 2018 shall be equipped with EPA Tier 3 or cleaner engines, except for specialized construction equipment for which an EPA Tier 3 engine is not available. This requirement shall ensure construction equipment remains cleaner than the fleet-wide average. The analysis assumes emission reductions compared to a fleet-wide average Tier 2 engine between 2016 and 2018. The Project Sponsor shall also ensure that all off-road, diesel-powered equipment used during construction shall be equipped with a Level 3 Diesel Particulate Filter (DPF).

AQ-1.2: Use Modern Fleet for On-Road Material Delivery and Haul Trucks during Construction. The Project Sponsor shall ensure that all on-road heavy-duty diesel trucks with a gross vehicle weight rating of 19,500 pounds or greater used at the Project site shall comply with EPA 2007 on-road emission standards for PM10 (0.01 grams per brake horsepower-hour). These PM10 standards were phased in through the 2007 and 2010 model years on a percent of sales basis (50 percent of sales in 2007 to 2009 and 100 percent of sales in 2010). This mitigation measure assumes that all on-road heavy-duty diesel trucks shall be model year 2010 and newer, with all trucks compliant with EPA 2007 on-road emission standards. While project impacts are associated with PM2.5 concentrations and the EPA 2007 on-road emission standards address PM10 emission, the newer engine technologies that are required to meet the PM10 emission standards shall also reduce PM2.5 concentrations.

BAAQMD also requires implementation of recommended best management practices (BMPs) as mitigation measures for all proposed projects (even those with less-than-significant impacts). These BMPs are presented as Mitigation Measure AIR-1a in the Specific Plan EIR. Specific Plan EIR Mitigation Measure AIR-1a also includes BAAQMD's additional construction mitigation measures to reduce construction-related dust and exhaust emissions, which would also be implemented by the Project. Implementation of Mitigation Measure AIR-1a which would further reduce emissions of construction-related PM2.5 associated with the Project.

Mitigation Measures AQ-1.1 and AQ-1.2 and Specific Plan EIR Measure AIR-1a would substantially reduce DPM from off-road equipment exhaust (88–89-percent reduction), and Mitigation Measure AQ-1.2 would substantially reduce DPM from on-road vehicle exhaust (62–63-percent reduction). Project health risks with implementation of applicable mitigation (Mitigation Measures AIR-1a, AQ-1.1, and AQ-1.2) are shown in Table 3.2-4. There are no exceedances at receptors located outside the 1,000-foot radius specified by BAAQMD.

Table 3.2-4. Mitigated Project-Level Cancer and Non-Cancer Chronic (HI) Risks during Construction

Receptor	Non-Cancer HI[a]	Increased Cancer Risk (per million)
Maximum Residential Receptor	<0.01	7.0
Maximum School Receptor[b]	<0.01	0.5
Maximum Daycare Receptor[b]	<0.01	0.4
Maximum Worker Receptor	<0.01	0.6
BAAQMD Thresholds	1.00	10.0

a. HI = hazard index

b. Receptor located outside BAAQMD's 1,000-foot screening radius.

As shown in Table 3.2-4, with implementation of Mitigation Measures AIR-1a, AQ-1.1, and AQ-1.2, cancer risks at the maximum exposed residential receptor locations would be below the BAAQMD's thresholds. Accordingly, implementation of AIR-1a, AQ-1.1, and AQ-1.2 would reduce cancer risk impacts to a ***less-than-significant*** level.

Impact AQ-2: Exposure of Sensitive Receptors to Localized PM2.5 Concentrations during Construction. The Project would not expose sensitive receptors to localized PM2.5 concentrations in excess of BAAQMD thresholds during construction. (LTS)

Project construction would generate PM2.5, resulting in the exposure of nearby existing sensitive receptors (e.g., residences) to increased PM2.5 concentrations. Exposure dissipates as a function of distance from the emissions source; thus, BAAQMD has determined that construction activities occurring at distances of greater than 1,000 feet from a sensitive receptor likely do not pose a significant health risk.

As shown in Table 3.2-1, several sensitive receptors are located within 1,500 feet of the Project site. As noted above, although BAAQMD has determined that construction activities occurring at distances of greater than 1,000 feet from a sensitive receptor likely do not pose a significant health risk, health risks at the nearest schools and daycares, which are located outside the 1,000-foot radius but within a 1,500-foot radius, were analyzed to present a conservative estimate of potential risks associated with Project construction activities. Therefore, exposure to construction PM2.5 emissions was assessed by predicting PM2.5 concentrations at these off-site receptor locations. The results of the PM2.5 analysis are summarized in Table 3.2-5 and are compared to BAAQMD's Project-level PM2.5 thresholds. Note that Project construction emissions in Table 3.2-5 do not assume implementation of any on-site mitigation. There are no exceedances at receptors located outside the 1,000-foot radius specified by BAAQMD.

Table 3.2-5. Unmitigated Project-Level PM2.5 Concentrations during Construction

Receptor	Annual Average PM2.5 Concentration ($\mu g/m^3$)[a]
Maximum Residential Receptor	0.17
Maximum School Receptor[b]	0.02
Maximum Daycare Receptor[b]	0.01
Maximum Worker Receptor	0.21
BAAQMD Threshold	0.30

[a.] $\mu g/m^3$= micrograms per cubic meter

[b.] Receptor located outside BAAQMD's 1,000-foot screening radius.

As shown in Table 3.2-5, construction of the Project would not result in PM2.5 concentrations in excess of BAAQMD's threshold for the nearest residential and worker receptors. This is a ***less-than-significant*** impact.

With implementation of Mitigation Measure AQ-1.1, additional reductions of fugitive and equipment PM2.5 exhaust would occur. For example, Tier 3 engines utilized pursuant to Mitigation Measure AQ-1.1 (see Impact AQ-1 above) would substantially reduce PM2.5 exhaust from construction equipment. Mitigation Measure AQ-1.2 (see Impact AQ-1 above) would also substantially reduce PM2.5 exhaust from haul trucks. Similarly, dust controls implemented under Specific Plan EIR Mitigation Measure AIR-1a would reduce fugitive PM2.5 by approximately 55 percent. PM2.5 concentrations with implementation of applicable mitigation (Mitigation Measures AIR-1a, AQ-1.1, and AQ-1.2). For disclosure purposes, the reductions that would occur with all applicable mitigation measures are shown in Table 3.2-6.

Table 3.2-6. Mitigated Project-Level PM2.5 Exposure during Construction

Receptor	Annual Average PM2.5 Concentration ($\mu g/m^3$)[a]
Maximum Residential Receptor	0.03
Maximum School Receptor[b]	<0.01
Maximum Daycare Receptor[b]	<0.01
Maximum Worker Receptor	0.04
BAAQMD Threshold	0.30

[a] $\mu g/m^3$= micrograms per cubic meter

[b] Receptor located outside BAAQMD's 1,000-foot screening radius.

Cumulative Impacts

Impact C-AQ-1: Exposure of Sensitive Receptors to Cumulative Health Risks during Construction. Cumulative development in the Project vicinity would not expose sensitive receptors to substantial health risks during construction (LTS/M)

BAAQMD has determined that construction activities occurring at distances of greater than 1,000 feet from a sensitive receptor likely do not pose a significant health risk. Therefore, while the project-level analysis evaluates sensitive receptors located within 1,500 feet of the project site, the cumulative impact analysis only evaluates existing sources of TACs within 1,000 feet of the project site.

There are rail and roadway sources within 1,000 feet of the Project area that generate DPM and PM2.5. These emissions contribute to elevated background concentrations of DPM and PM2.5, which, when combined with emissions from Project construction, could contribute to a cumulative health risk. Accordingly, consistent with BAAQMD's CEQA Guidelines, cumulative exposure to DPM and PM2.5 was evaluated by adding background health risks to the estimated construction health risks for the Project (see Table 3.2-7).

Background health risks to existing receptors include El Camino Real and Caltrain. Menlo Park El Camino Real/Downtown Specific Plan Draft Environmental Impact Report (Draft EIR), Chapter 4.2, Air Quality, calculated these risks.[26] The Draft EIR states the following for each source and health risk, which is summarized in Table 3.2-7.

- **El Camino Real—DPM**: "*The maximum existing incremental cancer risk from exposure to DPM concentrations along El Camino Real (100 feet from the edge of the roadway) is calculated by BAAQMD to be* ***20 in one million*** *and is based on an assumed 2-way daily traffic volume of 49,000 vehicles per day. The risk drops substantially with distance, to 0.69 per million at a distance of 200 feet.*"
- **El Camino Real—HI**: "*The chronic non-cancer hazard index from vehicle traffic on El Camino Real at the maximally exposed receptor is* ***0.48.***"

[26] Environmental Science Associates (ESA). 2011. *Menlo Park El Camino Real/Downtown Specific Plan Draft Environmental Impact Report. Chapter 4.2: Air Quality*. Prepared for the City of Menlo Park, California. April. Available: <http://www.menlopark.org/DocumentCenter/View/407>. Accessed: June 24, 2015.

- **El Camino Real—PM2.5**: *"The maximum existing annual average PM2.5 concentration along El Camino Real is calculated by BAAQMD to be* ***0.48 µg/m³*** *(micrograms per cubic meter) at a distance of 100 feet from the edge of the roadway."*
- **Caltrain—DPM**: *"Based on modeling results, the highest concentration of DPM would be approximately* ***0.16 µg/m³*** *(micrograms per cubic meter) and would occur 50 feet east (downwind) of the track centerline near the Menlo Park Caltrain Station. The maximum incremental cancer risk from exposure to DPM was calculated to be 50.9 in one million, for an outdoor location, while the indoor risk level would be about one-third lower, or about 33.9 in one million."*
- **Caltrain—HI**: *"The cumulative non-cancer hazard index from exposure to diesel particulate matter would be less than* ***0.034*** *from rail operations of Caltrain."*
- **Caltrain—PM2.5**: *"It was assumed that all PM2.5 emissions from locomotives would be diesel particulate matter (DPM); therefore, estimated DPM concentrations can be used to represent PM2.5 concentrations as well...annual average DPM concentrations at the maximally exposed individual (MEI) would be approximately* ***0.16 µg/m³*** *(micrograms per cubic meter)."*

Table 3.2-7. Background Health Risks from El Camino Real Vehicle Traffic and Caltrain Locomotives

Source	Non-Cancer Hazard Index	Increased Cancer Risk (per million)	Annual Average PM2.5 Concentration (µg/m³)[a]
El Camino Real Vehicle Traffic	0.48	20.0	0.48
Caltrain Locomotives	0.03	50.9	0.16

[a] µg/m³ = micrograms per cubic meter

Source: Environmental Science Associates (ESA). 2011. *Menlo Park El Camino Real/Downtown Specific Plan Draft Environmental Impact Report. Chapter 4.2: Air Quality*. Prepared for the City of Menlo Park, California. April. Available: <http://www.menlopark.org/DocumentCenter/View/407>. Accessed: June 24, 2015.

Two additional cumulative projects are located within the vicinity of the Project area: 133 Encinal and 1283-1295 El Camino Real. The 133 Encinal project is located more than 1,000 feet from the Project area, so it was not included in the cumulative analysis. The 1283-1295 El Camino Real project is within 1,000 feet of the Project area, but no information is available regarding construction-related impacts. The 1283-1295 El Camino Real project is also a relatively small mixed-use development with a proposed 15 dwelling units and approximately 2,000 square feet of commercial uses, and will therefore likely have minimal construction emissions of DPM and associated health risk. Assuming that the 1283-1295 El Camino Real project would have similar construction activity per-dwelling unit compared to construction activity for the Project, construction of the 1283-1295 El Camino Real project would produce the following unmitigated risks: increased cancer risk of approximately 4.5 per million; hazard index of approximately 0.003; and annual average PM2.5 concentration of approximately 0.016 µg/m³. Even at the unmitigated level, these values would not raise cumulative impacts to above BAAQMD thresholds when added to the mitigated health risks in Table 3.2-9 below (e.g. maximum health risks would be 82.4 for cancer, 0.52 for HI, and 0.69 for PM2.5 concentration).

The results of the cumulative impact assessment are summarized in Table 3.2-8. Health risks are provided for each construction phase based on the combined contribution of sources within 1,000 feet. (As noted above, although BAAQMD has determined that construction activities occurring at distances of greater than 1,000 feet from a sensitive receptor likely do not pose a significant health risk, this document analyzes health risks at the nearest schools and daycares, which are located outside the

1,000-foot radius but within a 1,500-foot radius.) Note that Project construction emissions do not assume implementation of any onsite mitigation. Exceedances of BAAQMD thresholds are shown in underline. There are no exceedances at receptors located outside the 1,000-foot radius specified by BAAQMD.

Table 3.2-8. Unmitigated Cumulative Cancer, Chronic (HI), and PM2.5 Health Risks during Project Construction

Receptor	Non-Cancer Hazard Index	Increased Cancer Risk (per million)	Annual Average PM2.5 Concentration (μg/m³)[a]
Maximum Residential Receptor	0.55	132	0.81
Maximum School Receptor[b]	0.52	75	0.66
Maximum Daycare Receptor[b]	0.51	75	0.65
Maximum Worker Receptor	0.55	76	0.85
BAAQMD Thresholds	10.00	100	0.80

a. μg/m³ = micrograms per cubic meter

b. Receptor located outside BAAQMD's 1,000-foot screening radius.

As shown in Table 3.2-8, both offsite and onsite receptors may be exposed to significant cancer risk and PM2.5 concentrations during construction. While background risks exceed BAAQMD's thresholds in some locations, the Project's incremental effect would also be cumulatively considerable without mitigation.

As discussed above, Mitigation Measures AIR-1a, AQ-1.1, and AQ-1.2 would substantially reduce DPM and PM2.5 during construction. Cumulative risks with implementation of applicable onsite mitigation are shown in Table 3.2-9. As shown, no exceedances would occur with implementation of these mitigation measures.

Table 3.2-9. Mitigated Cumulative Cancer, Chronic (HI), and PM2.5 Health Risks during Project Construction

Phase	Non-Cancer Hazard Index	Increased Cancer Risk (per million)	Annual Average PM2.5 Concentration (μg/m³)[a]
Maximum Residential Receptor	0.52	78	0.67
Maximum School Receptor[b]	0.51	71	0.64
Maximum Daycare Receptor[b]	0.51	71	0.64
Maximum Worker Receptor	0.52	72	0.68
BAAQMD Thresholds	10.00	100	0.80

a. μg/m³ = micrograms per cubic meter

b. Receptor located outside BAAQMD's 1,000-foot screening radius.

As shown in Table 3.2-9, implementation of Mitigation Measures AQ-1.1, AQ-2.1, and AQ-2.2 would reduce cumulative cancer risks and PM2.5 concentrations to below BAAQMD's cumulative threshold for all receptor locations. Accordingly, potential cumulative health risks would be ***less-than-significant with mitigation***.

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