4. Environmental Evaluation

4.1 CHAPTER ORGANIZATION

This chapter of the Draft EIR is made up of 11 sub-chapters, which evaluate the direct, indirect, and cumulative environmental impacts of the proposed project. The following sections describe the format of the environmental analysis, the thresholds of significance and the methodology of the cumulative impact analysis.

4.2 FORMAT OF THE ENVIRONMENTAL ANALYSIS

Each sub-chapter is organized into the following sections:

- Environmental Setting provides a description of the existing environmental conditions, providing a baseline against which the impacts of the proposed project can be compared, and an overview of federal, State, regional and local laws and regulations relevant to each environmental issue.
- Thresholds of Significance refer to the quantitative or qualitative standards, performance levels, or criteria used to compare the existing setting with and without the proposed project to determine whether the impact is significant. These thresholds are based primarily on the CEQA Guidelines Appendix F, Energy Conservation, and Appendix G, Environmental Checklist, as amended per Assembly Bill 52 (Tribal Cultural Resources) and the California Supreme Court in a December 2015 opinion [*California Building Industry Association (CBIA) v. Bay Area Air Quality Management District (BAAQMD)*, 62 Cal. 4th 369 (No. S 213478)], and also may reflect established health standards, ecological tolerance standards, public service capacity standards, or guidelines established by agencies or experts.
- Impact Discussion gives an overview of the potential impacts of the proposed project and explains why impacts were found to be significant or less than significant prior to mitigation. This subsection also includes a discussion of cumulative impacts to the proposed project. Impacts and mitigation measures are numbered consecutively within each topical analysis and begin with an acronymic or abbreviated reference to the impact section. The environmental effects of the proposed project are analyzed for potential significant impacts in the following environmental issue areas, which are organized with the listed abbreviations:
  - Aesthetics (AES)
  - Air Quality (AQ)
  - Biological Resources (BIO)
  - Cultural Resources (CULT)
  - Geology and Soils (GEO)
  - Greenhouse Gas Emissions (GHG)
  - Hazards and Hazardous Materials (HAZ)
  - Hydrology and Water Quality (HYDRO)
  - Noise (NOISE)
  - Transportation and Circulation (TRANS)
  - Utilities and Service Systems (UTIL)

4.3 THRESHOLDS OF SIGNIFICANCE

As noted above, the significance criteria are identified before the impact discussion subsection, under the subsection, "Thresholds of Significance." For each impact identified, a level of significance is determined using the following classifications:

- *Significant (S)* impacts include a description of the circumstances where an established or defined threshold would be exceeded.
- *Less-than-significant (LTS)* impacts include effects that are noticeable, but do not exceed established or defined thresholds, or are mitigated below such thresholds.
- *No impact* describes the circumstances where there is no adverse effect on the environment.

For each impact identified as being significant, the EIR identifies mitigation measures to reduce, eliminate, or avoid the adverse effect. If the mitigation measures would reduce the impact to a less-than-significant level successfully, this is stated in the EIR. However, significant and unavoidable (SU) impacts are described where mitigation measures would not diminish these effects to less-than-significant levels.

4.4 CUMULATIVE IMPACT ANALYSIS

A cumulative impact consists of an impact created as a result of the combination of the project evaluated in the EIR, together with other reasonably foreseeable projects causing related impacts. Section 15130 of the CEQA Guidelines requires an EIR to discuss cumulative impacts of a project when the project's incremental effect is "cumulatively considerable." Used in this context, cumulatively considerable means that the incremental effects of an individual project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects.

Where the incremental effect of a project is not "cumulatively considerable," a lead agency need not consider that effect significant, but must briefly describe its basis for concluding that the effect is not cumulatively considerable. Where the cumulative impact caused by the project's incremental effect and the effects of other reasonably foreseeable projects is not significant, the EIR must briefly indicate why the cumulative impact is not significant.

The cumulative impacts discussions in Chapters 4.1 through 4.11 explain the geographic scope of the area affected by each cumulative effect (e.g., immediate project vicinity, city, county, watershed, or air basin). The geographic area considered for each cumulative impact depends upon the impact that is being analyzed. For example, in assessing aesthetic impacts, the pertinent geographic study area is the vicinity of the areas of new development under the proposed project from which the new development can be publicly viewed and may contribute to a significant cumulative visual effect. In assessing macro-scale air quality impacts, on the other hand, all development within the air basin contributes to regional emissions of criteria pollutants, and basin-wide projections of emissions is the best tool for determining the cumulative effect.

The CEQA Guidelines Section 15130 outlines two approaches to analyzing cumulative impacts. The first is the "list" approach, which requires a listing of past, present and reasonably anticipated future projects producing related or cumulative impacts. The second is the "projections-based" approach wherein the relevant growth projections contained in an adopted General Plan or related planning document designed to evaluate regional or area-wide conditions are summarized. A reasonable combination of the two approaches may also be used. The cumulative impact analysis in this Draft EIR relies on a projections approach supplemented by the list approach that, when considered with the effects of the proposed project, may result in cumulative effects.

The City of Cupertino has identified two projects that are in the vicinity of the proposed project and the City of Los Altos has identified one project. These projects are evaluated in conjunction with the proposed project in this Draft EIR. As shown in Table 4-1, the two projects would result in a total of 25 multi-family residential units and 1,412 square feet of development for retail use.

TABLE 4-1 CUMULATIVE PROJECTS IN THE VICINITY OF THE PROPOSED PROJECT

Project Name/Location	Approximate Distance from Project (miles)	Project Type	Project Size	Time Frame
Foothill Live/Work (10121 North Foothill Boulevard, Cupertino)	1.5	Live/Work	6 townhome units (5 with have detached workspaces)	Expected to be complete by Fall 2017
Foothill Apartments (10310 North Foothill Boulevard, Cupertino)	1.2	Residential	15 apartment units	Building Permits applied for as of March 2017
Mixed-Use Project (1540 Miramonte Avenue, Los Altos)	1.2	Mixed Use	1,412 square feet retail 4 apartment units	N/A

Notes:
a. According to the City of Los Altos, this project was approved on April 12, 2016. The permits status is "pending" and the anticipated completion status is "N/A".
Source: City of Cupertino, March 2017, and the City of Los Altos, Current Projects, https://www.losaltosca.gov/communitydevelopment/page/development, accessed September 5, 2017.

In addition to the three upcoming residential/mixed-use projects shown in Table 4-1, the Santa Clara Valley Water District (SCVWD) is sponsoring the Permanente Creek Flood Protection Project.[1] The goal of the SCVWD project is to provide flood protection to homes and businesses in the Permanente Creek watershed using a natural flood protection approach. As such, the Permanente Creek Flood Protection Project includes improvements to flood protection, as well as structural repair, sediment reduction and habitat restoration. As part of this Permanente Creek Flood Protection Project, a flood detention basin is being constructed at the Rancho San Antonio County Park. Impacts to the vicinity of improvement project as a result of construction include intermittent trail and parking lot closures at Rancho San Antonio County Park, located southwest of the project site (see Figure 3-1 in Chapter 3, Project Description). Construction trucks for the Permanente Creek Flood Protection Project do not use Cristo Rey Drive, but rather use the Pacific Gas and Electric (PG&E) maintenance road that routes trucks on to Cal Oak Way. According to the

[1] Santa Clara Valley Water District (SCVWD), Rancho San Antonio County Park detention basin, Permanente Creek Flood Protection Project, http://valleywater.org/ranchosanantonio/, accessed on March 30, 2017.

SCVWD, construction began in December 2016 and is anticipated to be completed in December 2018.[2] However, the grading and off-haul to Gate of Heaven Catholic Cemetery was anticipated to be completed by the end of 2017.[3]

With respect to projections, this EIR relies on the estimated growth in the San José Water Company (SJWC) service area and San José/Santa Clara Water Pollution Control Plant (SJ/SCWPCP) service area for the cumulative impacts to water supply and wastewater generation and treatment capacity.

[2] Santa Clara Valley Water District (SCVWD), Rancho San Antonio County Park detention basin, Permanente Creek Flood Protection Project, http://valleywater.org/ranchosanantonio/, accessed on March 30, 2017.

[3] City of Cupertino, Public Works Department, March 30, 2017.

4.1 AESTHETICS

This chapter includes an evaluation of the potential environmental consequences on visual resources from construction and operation of the proposed project. Additionally, this chapter describes the environmental setting, including regulatory framework and existing aesthetic character of the project area, and identifies mitigation measures, if required, that would avoid or reduce significant impacts.

4.1.1 ENVIRONMENTAL SETTING

4.1.1.1 REGULATORY FRAMEWORK

This section summarizes key local regulations related to aesthetics concerning the proposed project. There are no federal or State regulations pertaining to aesthetics that apply to the proposed project.

Local Regulations

City of Cupertino General Plan

The Cupertino General Plan titled "Community Vision 2040" includes policies that are relevant to aesthetics and applicable to the proposed project. The policies are identified in Chapter 3, Land Use and Community Design, of the General Plan and listed in Table 4.1-1.

TABLE 4.1-1 POLICIES OF CUPERTINO COMMUNITY VISION 2040 RELEVANT TO AESTHETICS

Policy Number	Policy
Chapter 3, Land Use and Community Design (LU)	
Policy LU-3.3	**Building Design.** Ensure that building layouts and design are compatible with the surrounding environment and enhance the streetscape and pedestrian activity.
Policy LU-7.1	**Public Art**. Stimulate opportunities for the arts through development and cooperation with agencies and the business community.
Policy LU-12.4	**Hillside Views.** The Montebello foothills at the south and west boundary of the valley floor provide a scenic backdrop, adding to the City's scale and variety. While it is not possible to guarantee an unobstructed view of the hills from every vantage point, an attempt should be made to allow views of the foothills from public gathering places.
Policy LU-27.1	**Compatibility.** Ensure that new development within and adjacent to residential neighborhoods is compatible with neighborhood character.
Policy LU-27.2	**Relationship to the Street.** Ensure that new development in and adjacent to neighborhoods improve the walkability of neighborhoods by providing inviting entries, stoops and porches along the street frontage, compatible building design and reducing visual impacts of garages.
Policy LU-27.3	**Entries.** Define neighborhood entries through architecture, or landscaping appropriate to the character of the neighborhood. Gates are discouraged because they isolate developments from the community.
Policy LU-27.7	**Protection.** Protect residential neighborhoods from noise, traffic, light and visually intrusive effects from more intense development with landscape buffers, site design, setbacks and other appropriate measures.

Source: Cupertino Community Vision 2040.

City of Cupertino Municipal Code

The following provisions of the City of Cupertino Municipal Code (CMC) help minimize visual impacts associated with new development projects:

- Title 19 of the Municipal Code sets forth the City's Zoning Ordinance, which, among other purposes, is intended to assure the orderly and beneficial development of the city, attain a desirable balance of residential and employment opportunities, and promote efficient urban design and arrangement. The Zoning Ordinance sets forth the standards requiring architectural and site review and stipulating aesthetic criteria for new development. For instance, a proposed development should ensure compatibility to adjacent uses in terms of architectural style and building size. Additionally, the Zoning Ordinance sets forth development standards related to aesthetics including fencing (Chapter 19.48) and signage (Chapter 19.104).
- Under Chapter 19.168, Architectural and Site Review, the Approval Body, defined as either the Director of Community Development and his/her designee, the Planning Commission or City Council depending upon context, is responsible for the review of architectural and site designs of buildings within the city to promote and ensure compliance with the goals and objectives identified in the General Plan. Pursuant to Section 19.168.030, the findings for architectural and site review are as follows:
  - The proposal, at the proposed location, will not be detrimental or injurious to property or improvements in the vicinity, and will not be detrimental to the public health, safety, general welfare, or convenience;
  - The proposal is consistent with the purposes of this [Architectural and Site Review] chapter, the General Plan, any specific plan, zoning ordinances, applicable planned development permit, conditional use permits, variances, subdivision maps or other entitlements to use which regulate the subject property including, but not limited to, adherence to the following specific criteria:

    a. Abrupt changes in building scale should be avoided. A gradual transition related to height and bulk should be achieved between new and existing buildings.

    b. In order to preserve design harmony between new and existing buildings and in order to preserve and enhance property values, the materials, textures and colors of new buildings should harmonize with adjacent development by being consistent or compatible with design and color schemes, and with the future character of the neighborhood and purposes of the zone in which they are situated. The location, height, and materials of walls, fencing, hedges, and screen planting should harmonize with adjacent development. Unsightly storage areas, utility installations, and unsightly elements of parking lots should be concealed. The planting of ground cover or various types of pavements should be used to prevent dust and erosion, and the unnecessary destruction of existing healthy trees should be avoided. Lighting for development should be adequate to meet safety requirements as specified by the engineering and building departments, and provide shielding to prevent spill- over light to adjoining property owners.

c. The number, location, color, size, height, lighting and landscaping of outdoor advertising signs and structures shall minimize traffic hazards and shall positively affect the general appearance of the neighborhood and harmonize with adjacent development.

d. With respect to new projects within existing residential neighborhoods, new development should be designed to protect residents from noise, traffic, light and visually intrusive effects by use of buffering, setbacks, landscaping, walls and other appropriate design measures.

- Title 18, Subdivision Regulations, establishes the standards that regulate and control the division of land within Cupertino for the preservation of the public safety and general welfare. The ordinance provides standards to support orderly growth and development, ensure appropriate design and construction, promote and protect open space, offer adequate traffic circulation, and install necessary infrastructure.
- Title 14, Street, Sidewalks and Landscaping, provides development standards related to aesthetics such as street improvements, encroachments, and use of the City's right-of-ways, landscaping, and undergrounding utilities.

4.1.1.2 EXISTING CONDITIONS

Visual Character

The project site is located in a highly developed setting near the fringe of the Cupertino's southern border and in close proximity to undeveloped land in Santa Clara County. The visual and aesthetic character of the project site and the prominent visual features of the regional landscape are described below. An aerial view of the project site and surrounding land uses is shown on Figure 3-2 in Chapter 3, Project Description, of this Draft EIR.

Visual Features of the Project Site

The natural topography of the project site varies and several gentle to moderate slopes are present throughout the project site. The project site elevations range from approximately 320 feet above mean sea level on the northwest portion of the site to approximately 440 feet above mean sea level on the southeast portion of the site. In general, the project site largely slopes downward to the west or northwest towards Permanente Creek. As of 1991 the 51.5-acre project site has been developed with one- and two-story single and duplex villas located throughout the site and one- to and three-story healthcare facilities, commons buildings, and independent living apartments. The project site includes native and non-native landscaping, and includes some maintained (mowed) grassy areas and several thousand trees ranging in height from approximately 5 to 80 feet.[1] The developed areas of the project site are within the existing tree canopy.

[1] Arborist Report, The Forum at Rancho San Antonio, HortScience, April 20, 2017, page 2.

Visual Features of the Areas Surrounding the Project Site

The project site, as stated above, has a naturally hilly topography, as does the surrounding area. Due to the hilly topography of the project site and surrounding area, long range or panoramic views are limited to certain areas surrounding the project site. The project site is bounded by I-280 to the north which is roughly 100 feet below the overall elevation of the project site. The Maryknoll religious institute to the east is made up of open grassy areas, sloping hillsides, and a two- to three-story building with two approximately 50-foot towers surrounded by native and non-native trees ranging from approximately 15 to 60 feet in height. In general, the Maryknoll religious institute has a slightly higher elevation than the project site where their building is, but lower where their orchards are located. The adjacent Oak Valley Neighborhood to the south and southwest is comprised of one- and two-story, single-family housing. These homes are generally at the same elevation as the project site at the northern portion of the site's southern border where the project site is separated by the emergency access road, but has a lower elevation at the southern portion of the site's southern border where the project site is separated by the underdeveloped grassy area. The Rancho San Antonio County Park/Open Space Preserve to the southwest and west is made up of a 289-acre park and a 3,988- open space preserve, which provides 2,300 acres of trails and other recreational features in the foothills of the Coastal Range. The portion of the park adjacent to the project site includes grassy open spaces, multi-use trails, and surface parking lots with native and non-native landscaping. This portion of the park is at a lower elevation than the project site.

Scenic Vistas

Scenic corridors are defined as an enclosed area of landscape, viewed as a single entity that includes the total field of vision visible from a specific point, or a series of points along a linear transportation route. Public view corridors are areas in which short-range, medium-range, and long-range views are available from publicly accessible viewpoints, such as from city streets. Scenic vistas are generally interpreted as long-range views of a specific scenic feature (e.g., open space lands, mountain ridges, bay, or ocean views). The General Plan does not designate any areas in Cupertino as scenic corridors or vistas, recognizes the foothills (i.e., Montebello) as a scenic backdrop and provides Policy LU-12.4 to ensure its protection as a scenic element. For purposes of this analysis, the views of the foothills of the Coastal Range, including the Montebello Ridge, to the southwest, and ridgelines of the Santa Cruz Mountains to the north are considered scenic vistas.

Existing Viewsheds

Viewsheds refer to the visual qualities of a geographical area that are defined by the horizon, topography, and other natural features that give an area its visual boundary and context, or by development that has become a prominent visual component of the area. Public views are those which can be seen from vantage points that are publicly accessible, such as streets, freeways, parks, and vista points. These views are generally available to a greater number of persons than private views. Private views are those views that can be seen from vantage points located on private property. Private views are not necessarily considered to be impacted when interrupted by land uses on adjacent properties.

The proposed project includes renovations and additions to existing buildings and the development of a new memory care facility that would not be visible from public viewing points outside of the project site;

as such, these areas are not discussed further in this chapter. Rather this chapter is focused on the potential new development on the project site that would be visible from public viewing points and could result in a potentially significant aesthetic impact under CEQA. This includes the proposed new independent living villas, described as the Cristo Rey Drive Villas, in Chapter 3, Project Description. As shown on Figure 3-11 in Chapter 3, these villas would be on the underdeveloped and maintained grassy areas on the southern portion of the project site adjacent to residential units in the Oak Valley Neighborhood. The existing conditions of the project site from publically accessible viewing locations on Cristo Rey Drive and the Rancho San Antonio County Park/Open Space Preserve are discussed in detail below and the locations of these viewpoints are depicted on Figure 4.1-1 and Figure 4.1-2, respectively.

Views from Cristo Rey Drive

Views 1, 2, and 3 on Figure 4.1-1 show three perspectives looking northwest toward the project site from Cristo Rey Drive just after the entrance to the Rancho San Antonio County Park/Open Space Preserve. As shown from View 1, the natural topography combined with the existing trees lining the Maryknoll religious institute and the project site on the right of the road obstruct any existing distant views of the Santa Cruz Mountains. Views of the Rancho San Antonio County Park/Open Space Preserve are visible in the foreground and the foothills of the Coastal Range can be seen in the background to the left of the road from View 1. The intersection of Cristo Rey Drive/Oak Valley Road can be seen in View 2. As shown from View 2, the foothills of the Coastal Range can be seen in the background and the oak tree and open grassy area of the project site where the Cristo Rey Drive Villas are proposed can be seen in the foreground. View 3 is just past the oak tree shown in View 2 and extends to the entrance of The Forum. Similar to View 2, View3 shows the foothills of the Coastal Range in the background and the open grassy area of the project site where the Cristo Rey Drive Villas are proposed in the foreground.

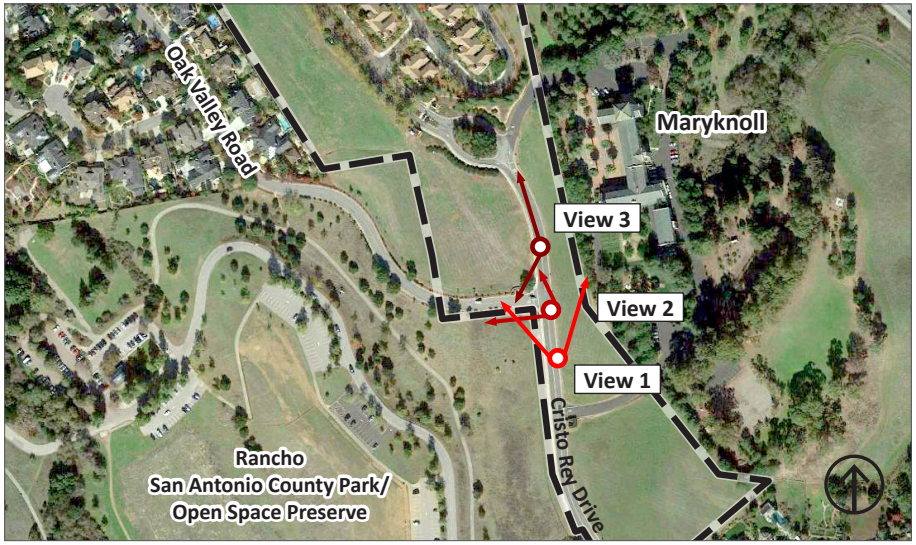
Views from the Rancho San Antonio County Park/Open Space Preserve

Views 4, 5, and 6 on Figure 4.1-2 show three perspectives looking toward the project site from the Rancho San Antonio County Park/Open Space Preserve. View 4 is facing the project site from a surface parking lot in the park and shows the park and multi-modal trail in the foreground and the tower of the Maryknoll religious institute can be seen in the background. As seen in View 4, the natural topography and existing trees obstruct views of the project site where the Cristo Rey Drive Villas are proposed. View 5 is also facing the project site from a surface parking lot in the park and shows the park in the foreground and the project site where the Cristo Rey Drive Villas are proposed, as well as the existing trees and buildings on the project site can be seen in the background. As shown from View 5, the natural topography combined with the existing project trees and buildings on the project site obstruct any existing distant views of the Santa Cruz Mountains. View 6 is taken from the road in the park. As shown from View 6, the park can be seen in the foreground, portions of the open grassy area of the project site where the Cristo Rey Drive Villas are proposed can be seen in the middleground, and the existing trees on the project site and the Maryknoll religious institute can be seen in the background. Similar to View 5, the natural topography combined with the existing trees and buildings on the project site as well as the Maryknoll religious institute also obstruct any existing distant views of the Santa Cruz Mountains.

View 1

View 2

View 3



Project Site

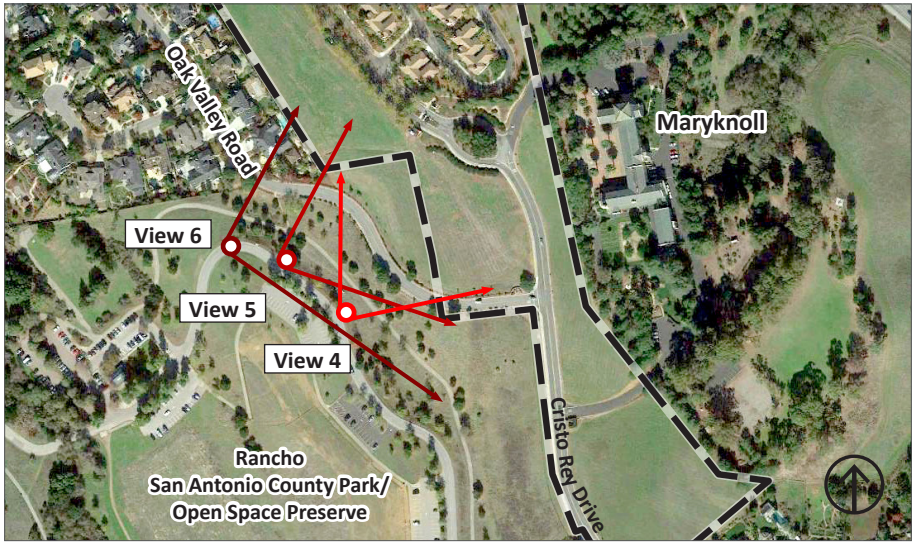
Source: Google Earth Professional, 2017; PlaceWorks, 2017.

Figure 4.1-1
Views of Project Site from Cristo Rey Drive

View 4

View 5

View 6



Project Site

Source: Google Earth Professional, 2017; PlaceWorks, 2017.

Figure 4.1-2

Views of Project Site from Rancho San Antonio County Park/ Open Space Preserve

4.1.2 THRESHOLDS OF SIGNIFICANCE

An Initial Study was prepared for the proposed project (see Appendix A of this Draft EIR). Based on the analysis contained in the Initial Study it was determined that development of the proposed project would not result in significant environmental impacts pursuant to the following significance standards and therefore, are not discussed in this chapter.

- Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings and historic buildings within a State scenic highway.
- Create a new source of substantial light or glare that would adversely affect day or nighttime views in the area.

Based on the Initial Study it was determined that the proposed project could result in a potentially significant aesthetic impact if it would:

1. Have a substantial adverse effect on a scenic vista.
2. Substantially degrade the existing visual character or quality of the site and its surroundings.

4.1.3 IMPACT DISCUSSION

AES-1 The proposed project would not have an adverse effect on a scenic vista.

As previously discussed in Section 4.1.1.2, Existing Conditions, in the area surrounding the project site the existing scenic viewsheds are defined by views of foothills of the Coastal Range, including the Montebello Ridge, to the southwest, and ridgelines of the Santa Cruz Mountains to the north, that are visible from Cristo Rey Drive or the Rancho San Antonio County Park/Open Space Preserve. As shown on Figures 4.1-1 and 4.1-2, the natural topography and existing mature trees on the site and adjacent properties limit the open views of these scenic resources; however, the viewshed could be potentially affected by the proposed project if the future development blocks or obstructs the view of the scenic resources. In other words, while the proposed Cristo Rey Drive Villas and new landscaping would be visible from public viewing locations, this alone does not create a significant impact to a scenic resource under CEQA.

The proposed Cristo Rey Drive Villas would be limited to one story in height, which would be well below the existing tree canopy. Therefore, the introduction of this project component would not obstruct any views of the Santa Cruz Mountains. Additionally, the section of Cristo Rey Drive, a public street, in the vicinity of the project site is not considered a scenic viewing destination point. It is primarily used by residents, employees, and guests of The Forum and residents of Oak Valley Neighborhood. Drivers approaching the project site and the Oak Valley Neighborhood would experience a partial obstruction of the views of the foothills of the Coastal Range while entering either location. No other obstruction would occur and similar views would continue to be visible throughout the area. Considering this and the fact that this section of Cristo Rey Drive is not considered a destination public viewing point, impacts to scenic vistas from the proposed Cristo Rey Drive Villas would be *less than significant*.

The proposed project includes employee parking and construction staging that would occur in temporary facilities both on and off the project site. See Figure 3-13 and Figure 3-14 in Chapter 3, Project Description, of this Draft EIR. These staging areas would not include any structures that would have the potential to block or obstruct a scenic vista. Construction parking and equipment staging would be temporary and no impacts would occur.

Significance Without Mitigation: Less Than Significant

AES-2 The proposed project would not substantially degrade the existing visual character or quality of the site and its surroundings.

While the proposed Cristo Rey Drive Villas that would be visible from public viewing locations would represent a change to the existing visual character of the site from the existing open grassy field to a row of one-story villas and associated landscaping covering the majority of the area, the proposed project would be consistent with the overall character of the surrounding Oak Valley Neighborhood and the existing development on The Forum property. In compliance with General Plan Policy LU-27.2, the proposed project would protect the Oak Valley Neighborhood from intrusive visual effects by providing landscaping and setbacks approximately 25 feet or greater from the property line between the proposed villas and the existing, off-site, single-family homes to the south.[2] In addition, the proposed project would grade the site of the Cristo Rey Drive Villas, which would reduce the elevation and subsequently reduce the visibility of the Cristo Rey Drive Villas from the Oak Valley Neighborhood.

The existing density and height under the proposed project would be consistent with the existing development on the project site. Furthermore, the proposed project would be subject to the City's discretionary review processes, including the Development Permit and Architectural and Site Approval Review, in accordance with CMC Section 19.168.030. During the Architectural and Site Approval Review, the proposed project would be required to comply with the General Plan policies listed in Table 4.1-1 above, including Policy LU-3.3 which requires the building layouts and design are compatible with the surrounding environment. Policy LU-27.2 and LU-27.3, also requires the proposed project to include inviting entries through architecture, or landscaping appropriate to the character of the neighborhood as well as compatible building design. Compliance with the City's design review process would ensure the proposed project would be compatible with the visual setting of the surrounding area. Therefore, development of the proposed project would not substantially degrade the visual quality of the site or its surroundings and associated impacts would be *less-than-significant*.

The proposed project includes employee parking and construction staging that would occur in temporary facilities both on and off the project site. See Figure 3-13 and Figure 3-14 in Chapter 3, Project Description, of this Draft EIR. While the off-site construction parking and equipment staging would be partially visible through the trees from Cristo Rey Drive, these uses would be temporary and no impacts would occur with respect to substantially degrading a the existing visual character of the area.

Significance Without Mitigation: Less Than Significant

[2] Cupertino Municipal Code, Title 19, Zoning, Chapter 19.76, Quasi-Public Building (BQ), Site Development Regulations.

AES-3 Implementation of the proposed project, in combination with past, present and reasonably foreseeable projects, would not result in significant cumulative impacts with respect to aesthetics.

The cumulative impact analysis for aesthetics includes past, present and reasonably foreseeable projects within the immediate vicinity of the project site. A cumulative impact would be considered significant if, taken together with past, present and reasonably foreseeable projects in the identified area, it would result in a substantial adverse effect on a designated scenic vista or if it would result in a substantial degradation of the visual quality or character in the vicinity of the project site. As discussed in Chapter 4, Environmental Evaluation, there are two residential projects on Foothill Boulevard in close proximity to the project site. However, these two sites are not visible to or from the project site and would have no bearing on cumulative aesthetic impacts. Also, the Permanente Creek Flood Protection Project would not result in any structures that when combined with the proposed project would alter the visual setting of the vicinity.

Furthermore, as described above, the CMC contains provisions that require design review approval for projects with the potential to affect the aesthetic qualities of the project's site or surroundings. Similar to the proposed project, other projects proximate to the proposed project would be required to be in conformance with General Plan policies that call for development to be compatible with the character of their surroundings. The uniform application of these regulations and policies would ensure that all development proximate to the project site is compatible with its surroundings upon approval. Additionally, while there are no designated scenic vistas in the city, the design review requirement as well as subsequent California Environmental Quality Act (CEQA) review of projects subject to CEQA would give the City the opportunity to evaluate projects' potential impacts on scenic resources prior to approval. Therefore, implementation of the proposed project would have a *less-than-significant* cumulative impact with respect to visual character and scenic vistas.

Significance Without Mitigation: Less Than Significant

4.2 AIR QUALITY

This chapter includes an evaluation of the potential environmental consequences associated with the construction and operation of the proposed project that are related to air quality. Additionally, this chapter describes the environmental setting, including regulatory framework and the existing air quality setting and baseline conditions, and identifies mitigation measures, if required, that would avoid or reduce significant impacts.

This chapter is based on the methodology recommended by the Bay Area Air Quality Management District (BAAQMD) for project-level review. The analysis focuses on air pollution from regional emissions and localized pollutant concentrations from buildout of the proposed project. In this chapter "emissions" refers to the actual quantity of pollutant, measured in pounds per day or tons per year and "concentrations" refers to the amount of pollutant material per volumetric unit of air. Concentrations are measured in parts per million (ppm), parts per billion (ppb), or micrograms per cubic meter ($\mu g/m^3$). Construction criteria air pollutant emissions modeling is included in Appendix C, Air Quality and Greenhouse Gas Modeling, of this Draft EIR. The health risk assessment (HRA) is included in Appendix D, Health Risk Assessment, of this Draft EIR.

4.2.1 ENVIRONMENTAL SETTING

4.2.1.1 REGULATORY FRAMEWORK

Federal, State, and local air districts have passed laws and regulations intended to control and enhance air quality. Land use in the city is subject to the rules and regulations imposed by the United States Environmental Protection Agency (USEPA), the California Air Resources Board (CARB), the California Environmental Protection Agency (CalEPA) and BAAQMD. The regulatory framework that is potentially applicable to the proposed project is also summarized below.

Federal and State Regulations

Ambient air quality standards have been adopted at federal and state levels for criteria air pollutants. In addition, both the federal and State governments regulate the release of toxic air contaminants (TACs). Cupertino is in the San Francisco Bay Area Air Basin and is subject to the rules and regulations imposed by the BAAQMD, the national Ambient Air Quality Standards (AAQS) adopted by the USEPA, and the California AAQS adopted by CARB. Federal, State, regional, and local laws, regulations, plans, or guidelines that are potentially applicable to the proposed project are summarized below.

Ambient Air Quality Standards

The Clean Air Act was passed in 1963 by the United States Congress and has been amended several times. The 1990 amendments represent the latest in a series of federal efforts to regulate the protection of air quality in the United States. The Clean Air Act allows states to adopt more stringent standards or to include other pollutants. The California Clean Air Act, signed into law in 1988, requires all areas of the state to achieve and maintain the California AAQS by the earliest practical date. The California AAQS tend to be more restrictive than the National AAQS.

AIR QUALITY

The National and California AAQS are the levels of air quality considered to provide a margin of safety in the protection of the public health and welfare. They are designed to protect "sensitive receptors" most susceptible to further respiratory distress, such as asthmatics, the elderly, very young children, people already weakened by other disease or illness, and persons engaged in strenuous work or exercise. Healthy adults can tolerate occasional exposure to air pollutant concentrations considerably above these minimum standards before adverse effects are observed. Both California and the federal government have established health-based AAQS for seven air pollutants, which are shown in Table 4.2-1. These pollutants are ozone (O_3), nitrogen dioxide (NO_2), carbon monoxide (CO), sulfur dioxide (SO_2), coarse inhalable particulate matter (PM_{10}), fine inhalable particulate matter ($PM_{2.5}$), and lead (Pb). In addition, the State has set standards for sulfates, hydrogen sulfide, vinyl chloride, and visibility-reducing particles.

TABLE 4.2-1 AMBIENT AIR QUALITY STANDARDS FOR CRITERIA POLLUTANTS

Pollutant	Averaging Time	California Standard[a]	Federal Primary Standard[b]	Major Pollutant Sources
Ozone (O_3)[c]	1 hour	0.09 ppm	*	Motor vehicles, paints, coatings, and solvents.
	8 hours	0.070 ppm	0.070 ppm	
Carbon Monoxide (CO)	1 hour	20 ppm	35 ppm	Internal combustion engines, primarily gasoline-powered motor vehicles.
	8 hours	9.0 ppm	9 ppm	
Nitrogen Dioxide (NO_2)	Annual Arithmetic Mean	0.030 ppm	0.053 ppm	Motor vehicles, petroleum-refining operations, industrial sources, aircraft, ships, and railroads.
	1 hour	0.18 ppm	0.100 ppm	
Sulfur Dioxide (SO_2)	Annual Arithmetic Mean	*	0.030 ppm	Fuel combustion, chemical plants, sulfur recovery plants, and metal processing.
	1 hour	0.25 ppm	0.075 ppm	
	24 hours	0.04 ppm	0.14 ppm	
Respirable Coarse Particulate Matter (PM_{10})	Annual Arithmetic Mean	20 µg/m^3	*	Dust and fume-producing construction, industrial, and agricultural operations, combustion, atmospheric photochemical reactions, and natural activities (e.g., wind-raised dust and ocean sprays).
	24 hours	50 µg/m^3	150 µg/m^3	
Respirable Fine Particulate Matter ($PM_{2.5}$)[d]	Annual Arithmetic Mean	12 µg/m^3	12 µg/m^3	Dust and fume-producing construction, industrial, and agricultural operations, combustion, atmospheric photochemical reactions, and natural activities (e.g., wind-raised dust and ocean sprays).
	24 hours	*	35 µg/m^3	
Lead (Pb)	30-Day Average	1.5 µg/m^3	*	Present source: lead smelters, battery manufacturing & recycling facilities. Past source: combustion of leaded gasoline.
	Calendar Quarter	*	1.5 µg/m^3	
	Rolling 3-Month Average	*	0.15 µg/m^3	

TABLE 4.2-1 AMBIENT AIR QUALITY STANDARDS FOR CRITERIA POLLUTANTS

Pollutant	Averaging Time	California Standard[a]	Federal Primary Standard[b]	Major Pollutant Sources
Sulfates (SO_4)[e]	24 hours	25 µg/m^3	*	Industrial processes.
Visibility Reducing Particles	8 hours	ExCo =0.23/km visibility of 10≥ miles	No Federal Standard	Visibility-reducing particles consist of suspended particulate matter, which is a complex mixture of tiny particles that consists of dry solid fragments, solid cores with liquid coatings, and small droplets of liquid. These particles vary greatly in shape, size and chemical composition, and can be made up of many different materials such as metals, soot, soil, dust, and salt.
Hydrogen Sulfide	1 hour	0.03 ppm	No Federal Standard	Hydrogen sulfide (H_2S) is a colorless gas with the odor of rotten eggs. It is formed during bacterial decomposition of sulfur-containing organic substances. Also, it can be present in sewer gas and some natural gas, and can be emitted as the result of geothermal energy exploitation.
Vinyl Chloride	24 hour	0.01 ppm	No Federal Standard	Vinyl chloride (chloroethene), a chlorinated hydrocarbon, is a colorless gas with a mild, sweet odor. Most vinyl chloride is used to make polyvinyl chloride (PVC) plastic and vinyl products. Vinyl chloride has been detected near landfills, sewage plants, and hazardous waste sites, due to microbial breakdown of chlorinated solvents.

Notes: ppm: parts per million; µg/m^3; micrograms per cubic meter; *Standard has not been established for this pollutant/duration by this entity.

a. California standards for O_3, CO (except 8-hour Lake Tahoe), SO_2 (1 and 24 hour), NO_2, and particulate matter (PM_{10}, $PM_{2.5}$, and visibility reducing particles), are values that are not to be exceeded. All others are not to be equaled or exceeded. California ambient air quality standards are listed in the Table of Standards in Section 70200 of Title 17 of the California Code of Regulations.

b. National standards (other than O_3, PM, and those based on annual arithmetic mean) are not to be exceeded more than once a year. The O_3 standard is attained when the fourth highest 8-hour concentration measured at each site in a year, averaged over three years, is equal to or less than the standard. For PM_{10}, the 24-hour standard is attained when the expected number of days per calendar year with a 24-hour average concentration above 150 µg/m^3 is equal to or less than one. For $PM_{2.5}$, the 24-hour standard is attained when 98 percent of the daily concentrations, averaged over three years, are equal to or less than the standard.

c. On October 1, 2015, the national 8-hour ozone primary and secondary standards were lowered from 0.075 to 0.070 ppm.

d. On December 14, 2012, the national annual $PM_{2.5}$ primary standard was lowered from 15 µg/m^3 to 12.0 µg/m^3. The existing national 24-hour $PM_{2.5}$ standards (primary and secondary) were retained at 35 µg/m^3, as was the annual secondary standard of 15 µg/m^3. The existing 24-hour PM_{10} standards (primary and secondary) of 150 µg/m^3 also were retained. The form of the annual primary and secondary standards is the annual mean, averaged over 3 years.

e. On June 2, 2010, a new 1-hour SO_2 standard was established and the existing 24-hour and annual primary standards were revoked. The 1-hour national standard is in units of parts per billion (ppb). California standards are in units of parts per million (ppm). To directly compare the 1-hour national standard to the California standard the units can be converted to ppm. In this case, the national standard of 75 ppb is identical to 0.075 ppm.

Source: 2016, April. Proposed Short-Lived Climate Pollutant Reduction Strategy. https://www.arb.ca.gov/cc/shortlived/meetings/04112016/proposedstrategy.pdf

California has also adopted a host of other regulations that reduce criteria pollutant emissions, including:

- AB 1493: Pavley Fuel Efficiency Standards
- Title 20 California Code of Regulations (CCR): Appliance Energy Efficiency Standards

- Title 24, Part 6, CCR: Building Energy Efficiency Standards
- Title 24, Part 11, CCR: Green Building Standards Code

Tanner Air Toxics Act and Air Toxics "Hot spot" Information and Assessment Act

Public exposure to TACs is a significant environmental health issue in California. California regulates TACs primarily through Assembly Bill (AB) 1807 (Tanner Air Toxics Act) and AB 2588 (Air Toxics "Hot Spot" Information and Assessment Act of 1987). The Tanner Air Toxics Act sets up a formal procedure for CARB to designate substances as TACs. Once a TAC is identified, CARB adopts an "airborne toxics control measure" for sources that emit designated TACs. To date, CARB has established formal control measures for 11 TACs that are identified as having no safe threshold. CARB has promulgated the specific rules to limit TAC emissions, including, but not limited to 13 California Code of Regulations (CCR) Chapter 10, Section 2485, Airborne Toxic Control Measure to Limit Diesel-Fueled Commercial Motor Vehicle Idling and 13 CCR Section 2477 and Article 8, Airborne Toxic Control Measure for In-Use Diesel-Fueled Transport Refrigeration Units (TRU) and TRU Generator Sets and Facilities Where TRUs Operate.

Regional Regulations

Bay Area Air Quality Management District

BAAQMD is the agency responsible for assuring that the National and California AAQS are attained and maintained in the San Francisco Bay Area Air Basin (SFBAAB), which is one of 15 air basins in the State. The San Francisco Bay Area Air Basin comprises all of Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, and Santa Clara counties; the southern portion of Sonoma County; and the southwestern portion of Solano County.

BAAQMD prepares air quality management plans (AQMPs) to attain ambient air quality standards in the San Francisco Bay Area Air Basin. BAAQMD prepares ozone attainment plans for the National O_3 standard and clean air plans for the California O_3 standard. BAAQMD prepares these AQMPs in coordination with Association of Bay Area Governments (ABAG) and the Metropolitan Transportation Commission (MTC). BAAQMD adopted the 2017 *Clean Air Plan, Spare the Air, Cool the Climate* on April 19, 2017, making it the most recent adopted comprehensive plan. The 2017 *Clean Air Plan* incorporates significant new scientific data, primarily in the form of updated emissions inventories, ambient measurements, new meteorological episodes, and new air quality modeling tools.

Bay Area Clean Air Plan

The 2017 Clean Air Plan updates the Bay Area's ozone plan, which is based on the "all feasible measures" approach to meet the requirements of the California Clean Air Act. Additionally, it sets a goal of reducing health risk impacts to local communities by 20 percent by 2020. Furthermore, the 2017 Clean Air Plan also lays the groundwork for reducing greenhouse gas (GHG) emissions in the Bay Area to meet the State's 2030 GHG reduction target and 2050 GHG reduction goal. A comprehensive multipollutant control strategy has been developed to be implemented in the next 3 to 5 years to address public health and climate change and to set a pathway to achieve the 2050 vision. The control strategy includes 85 control measures to reduce emissions of ozone, particulate matter, TACs, and GHG from a full range of emission

sources. The 2017 Clean Air Plan also provides a framework for the SFBAAB to achieve attainment of the National and California AAQS. Areas that meet AAQS are classified attainment areas, and areas that do not meet these standards are classified nonattainment areas. The air pollutant of concern and their attainment status is discussed in the following section.

Air Pollutants of Concern

Criteria Air Pollutants

The pollutants emitted into the ambient air by stationary and mobile sources are categorized as primary and/or secondary pollutants. Primary air pollutants are emitted directly from sources. Carbon monoxide (CO), reactive organic gases (ROG), nitrogen oxides (NO_x), sulfur dioxide (SO_2), coarse inhalable particulate matter (PM_{10}), fine inhalable particulate matter ($PM_{2.5}$), and lead (Pb) are primary air pollutants. Of these, CO, SO_2, NO_2, PM_{10}, and $PM_{2.5}$ are "criteria air pollutants," which means that AAQS have been established for them. ROG and NO_x are criteria pollutant precursors that form secondary criteria air pollutants through chemical and photochemical reactions in the atmosphere. Ozone (O_3) and nitrogen dioxide (NO_2) are the principal secondary pollutants. Each of the primary and secondary criteria air pollutants and its known health effects is described here.

- **Carbon Monoxide (CO)** is a colorless, odorless, toxic gas produced by incomplete combustion of carbon substances, such as gasoline or diesel fuel. CO is a primary criteria air pollutant. CO concentrations tend to be the highest during winter mornings with little or no wind, when surface-based inversions trap the pollutant at ground levels. Because CO is emitted directly from internal combustion engines, motor vehicles operating at slow speeds are the primary source of CO in the air basin. Emissions are highest during cold starts, hard acceleration, stop-and-go driving, and when a vehicle is moving at low speeds. New findings indicate that CO emissions per mile are lowest at about 45 miles per hour (mph) for the average light-duty motor vehicle and begin to increase again at higher speeds. When inhaled at high concentrations, CO combines with hemoglobin in the blood and reduces its oxygen-carrying capacity. This results in reduced oxygen reaching the brain, heart, and other body tissues. This condition is especially critical for people with cardiovascular diseases, chronic lung disease, or anemia, as well as for fetuses. Even healthy people exposed to high CO concentrations can experience headaches, dizziness, fatigue, unconsciousness, and even death.[1] The San Francisco Bay Area Air Basin is designated under the National and California AAQS as being in attainment of CO criteria levels.[2]
- **Reactive Organic Gases (ROGs)** are compounds composed primarily of hydrogen and carbon atoms. Internal combustion associated with motor vehicle usage is the major source of ROGs. Other sources of ROGs include evaporative emissions from paints and solvents, the application of asphalt paving, and the use of household consumer products such as aerosols. Adverse effects on human health are not caused directly by ROGs, but rather by reactions of ROGs to form secondary pollutants such as O_3.

[1] Bay Area Air Quality Management District (BAAQMD). 2017, Revised. California Environmental Quality Act Air Quality Guidelines.

[2] California Air Resources Board (CARB). December 2015. Area Designations Maps: State and National. http://www.arb.ca.gov/desig/adm/adm.htm.

There are no AAQS established for ROGs. However, because they contribute to the formation of O_3, BAAQMD has established a significance threshold for this pollutant.

- **Nitrogen Oxides (NO_x)** are a by-product of fuel combustion and contribute to the formation of O_3, PM_{10}, and $PM_{2.5}$. The two major components of NO_x are nitric oxide (NO) and nitrogen dioxide (NO_2). The principal component of NO_x produced by combustion is NO, but NO reacts with oxygen to form NO_2, creating the mixture of NO and NO_2 commonly called NOx. NO_2 acts as an acute irritant and in equal concentrations is more injurious than NO. At atmospheric concentrations, however, NO_2 is only potentially irritating. There is some indication of a relationship between NO_2 and chronic pulmonary fibrosis. Some increase in bronchitis in children (two and three years old) has also been observed at concentrations below 0.3 ppm. NO_2 absorbs blue light; the result is a brownish-red cast to the atmosphere and reduced visibility. NO_2 is a colorless, odorless gas formed from atmospheric nitrogen and oxygen when combustion takes place under high temperature and/or high pressure.[5] The San Francisco Bay Area Air Basin is designated an attainment area for NO_2 under the National and California AAQS.[6]

- **Sulfur Dioxide (SO_2)** is a colorless, pungent, irritating gas formed by the combustion of sulfurous fossil fuels. It enters the atmosphere as a result of burning high-sulfur-content fuel oils and coal and from chemical processes at chemical plants and refineries. Gasoline and natural gas have very low sulfur content and do not release significant quantities of SO_2. When SO_2 forms sulfates (SO_4) in the atmosphere, together these pollutants are referred to as sulfur oxides (SO_x). Thus, SO_2 is both a primary and secondary criteria air pollutant. At sufficiently high concentrations, SO_2 may irritate the upper respiratory tract. At lower concentrations and when combined with particulates, SO_2 may do greater harm by injuring lung tissue.[3] The San Francisco Bay Area Air Basin is designated an attainment area for SO_2 under the National and California AAQS.[4]

- **Suspended Particulate Matter (PM_{10} and $PM_{2.5}$)** consists of finely divided solids or liquids such as soot, dust, aerosols, fumes, and mists. Two forms of fine particulates are now recognized and regulated. Inhalable coarse particles, or PM_{10}, include the particulate matter with an aerodynamic diameter of 10 microns (i.e., 10 millionths of a meter or 0.0004 inch) or less. Inhalable fine particles, or $PM_{2.5}$, have an aerodynamic diameter of 2.5 microns or less (i.e., 2.5 millionths of a meter or 0.0001 inch).

  Some particulate matter, such as pollen, occurs naturally. In the San Francisco Bay Area Air Basin most particulate matter is caused by combustion, factories, construction, grading, demolition, agricultural activities, and motor vehicles. Extended exposure to particulate matter can increase the risk of chronic respiratory disease. PM_{10} bypasses the body's natural filtration system more easily than larger particles and can lodge deep in the lungs. The USEPA's scientific review concluded that $PM_{2.5}$ penetrates even more deeply into the lungs, and this is more likely to contribute to health effects—at concentrations well below current PM_{10} standards. These health effects include premature death in people with heart or lung disease, nonfatal heart attacks, irregular heartbeat, aggravated asthma, decreased lung function, and increased respiratory symptoms (e.g., irritation of the airways, coughing,

[3] Bay Area Air Quality Management District (BAAQMD). 2017, Revised. California Environmental Quality Act Air Quality Guidelines.

[4] California Air Resources Board (CARB). December 2015. Area Designations Maps: State and National. http://www.arb.ca.gov/desig/adm/adm.htm.

or difficulty breathing). Motor vehicles are currently responsible for about half of particulates in the San Francisco Bay Area Air Basin. Wood burning in fireplaces and stoves is another large source of fine particulates.[7]

Both PM_{10} and $PM_{2.5}$ may adversely affect the human respiratory system, especially in people who are naturally sensitive or susceptible to breathing problems. These health effects include premature death; increased hospital admissions and emergency room visits (primarily the elderly and individuals with cardiopulmonary disease); increased respiratory symptoms and disease (children and individual with asthma); and alterations in lung tissue and structure and in respiratory tract defense mechanisms. There has been emerging evidence that even smaller particulates with an aerodynamic diameter of <0.1 microns or less (i.e., ≤0.1 millionths of a meter or <0.000004 inch), known as ultrafine particulates (UFPs), have human health implications, because UFPs toxic components may initiate or facilitate biological processes that may lead to adverse effects to the heart, lungs, and other organs. However, the USEPA or CARB have yet to adopt AAQS to regulate these particulates. Diesel particulate matter (DPM) is also classified a carcinogen by CARB. The San Francisco Bay Area Air Basin is designated nonattainment under the California AAQS for PM_{10} and nonattainment under both the National and California AAQS for $PM_{2.5}$.[5]

- **Ozone (O_3)** is commonly referred to as "smog" and is a gas that is formed when ROGs and NO_x, both by-products of internal combustion engine exhaust, undergo photochemical reactions in the presence of sunlight. O_3 is a secondary criteria air pollutant. O_3 concentrations are generally highest during the summer months when direct sunlight, light winds, and warm temperatures create favorable conditions to the formation of this pollutant. O_3 poses a health threat to those who already suffer from respiratory diseases as well as to healthy people. O_3 levels usually build up during the day and peak in the afternoon hours. Short-term exposure can irritate the eyes and cause constriction of the airways. Besides causing shortness of breath, it can aggravate existing respiratory diseases such as asthma, bronchitis, and emphysema. Chronic exposure to high ozone levels can permanently damage lung tissue. O_3 can also damage plants and trees and materials such as rubber and fabrics.[6] The San Francisco Bay Area Air Basin is designated nonattainment of the 1-hour California AAQS and 8-hour California and National AAQS for O_3.[7]

Toxic Air Contaminants

At the time of the last update to the TAC list in December 1999, CARB had designated 244 compounds as TACs.[8] Additionally, CARB has implemented control measures for a number of compounds that pose high risks and show potential for effective control measures. The majority of the estimated health risks from

[5] On January 9, 2013, the EPA issued a final rule to determine that the SFBAAB had attained the 24-hour $PM_{2.5}$ National AAQS. This action suspended federal and State Implementation Plan planning requirements for the Bay Area. However, the SFBAAB will continue to be designated nonattainment for the National 24-hour $PM_{2.5}$ standard until BAAQMD submits a redesignation request and a maintenance plan to the EPA and the EPA approves the proposed redesignation.

[6] Bay Area Air Quality Management District (BAAQMD). 2017, Revised. California Environmental Quality Act Air Quality Guidelines.

[7] California Air Resources Board (CARB). December 2015. Area Designations Maps: State and National. http://www.arb.ca.gov/desig/adm/adm.htm.

[8] California Air Resources Board, 1999. Final Staff Report: Update to the Toxic Air Contaminant List.

TACs can be attributed to relatively few compounds; the most important compounds being particulate matter from diesel-fueled engines.

Diesel Particulate Matter

In 1998, CARB identified DPM as a TAC. Previously, the individual chemical compounds in diesel exhaust were considered TACs. Almost all diesel exhaust particles are 10 microns or less in diameter. Because of their extremely small size, these particles can be inhaled and eventually trapped in the bronchial and alveolar regions of the lungs. According to BAAQMD, PM emitted from diesel engines contributes to more than 85 percent of the cancer risk within the San Francisco Bay Area Air Basin and cancer risk from TACs is highest near major diesel PM sources.[9]

Attainment Status of the SFBAAB

As previously stated, the areas that meet AAQS are classified attainment areas, and areas that do not meet these standards are classified nonattainment areas. Severity classifications for O_3 range from marginal, moderate, and serious to severe and extreme. The attainment status for the SFBAAB is shown in Table 4.2-2. The SFBBA is currently designated a nonattainment area for California and National O_3, California and National $PM_{2.5}$, and California PM_{10} AAQS.

TABLE 4.2-2 ATTAINMENT STATUS OF CRITERIA POLLUTANTS IN THE SAN FRANCISCO BAY AREA AIR BASIN

Pollutant	State	Federal
Ozone – 1-hour	Nonattainment	Nonattainment
Ozone – 8-hour	Nonattainment	Classification revoked (2005)
PM_{10}	Nonattainment	Unclassified/Attainment
$PM_{2.5}$	Nonattainment	Nonattainment[a]
CO	Attainment	Unclassified/Attainment
NO_2	Attainment	Unclassified/Attainment
SO_2	Attainment	Attainment
Lead	Attainment	Attainment
Sulfates	Attainment	Unclassified/Attainment
All others	Unclassified/Attainment	Unclassified/Attainment

a. In December 2014, US EPA issued final area designations for the 2012 primary annual $PM_{2.5}$ National AAQS. Areas designated "unclassifiable/attainment" must continue to take steps to prevent their air quality from deteriorating to unhealthy levels. The effective date of this standard is April 15, 2015

Source: California Air Resources Board, 2016, Area Designations: Activities and Maps, http://www.arb.ca.gov/desig/adm/adm.htm, April 20, 2017; Bay Area Air Quality Management District. 2016. Air Quality Standards and Attainment Status, http://www.baaqmd.gov/research-and-data/air-quality-standards-and-attainment-status, January 12, 2016.

[9] Bay Area Air Quality Management District, 2014, Improving Air Quality & Health in Bay Area Communities, Community Air Risk Evaluation Program Retrospective & Path Forward (2004-2013), April.

Regulation 7, Odorous Substances

BAAQMD's Regulation 7, Odorous Substances, places general limitations on odorous substances and specific emission limitations on certain odorous compounds. Odors are also regulated under BAAQMD Regulation 1, Rule 1-301, Public Nuisance, which states that "no person shall discharge from any source whatsoever such quantities of air contaminants or other material which cause injury, detriment, nuisance or annoyance to any considerable number of persons or the public; or which endangers the comfort, repose, health or safety of any such persons or the public, or which causes, or has a natural tendency to cause, injury or damage to business or property." Under BAAQMD's Rule 1-301, a facility that receives three or more violation notices within a 30-day period can be declared a public nuisance.

Local Regulations

City of Cupertino General Plan

The Cupertino General Plan, Community Vision 2040, includes policies that are relevant to air quality and applicable to the proposed project. The policies are primarily identified in General Plan Chapter 6, Environmental Resources and Sustainability and are listed in Table 4.2-3, Policies of Cupertino Community Vision 2040 Relevant to Air Quality.

TABLE 4.2-3 POLICIES OF CUPERTINO COMMUNITY VISION 2040 RELEVANT TO AIR QUALITY

Policy Number	Policy
Chapter 6, Environmental Resources and Sustainability (ES)	
Policy ES-3.1	**Green Building Design.** Set standards for the design and construction of energy and resource conserving/efficient building.
Policy ES-4.1	**New Development.** Minimize the air quality impacts of new development projects and air quality impacts that affect new development.
Policy ES-4.3	**Use of Open Fires and Fireplaces.** Discourage high pollution fireplace use.

Source: Cupertino Community Vision 2040.

4.2.1.2 EXISTING CONDITIONS

Air quality in the San Francisco Bay Area Air Basin is determined by such natural factors as topography, meteorology, and climate, in addition to the presence of existing air pollution sources and ambient conditions.[10] The discussion below identifies the natural factors in the San Francisco Bay Area Air Basin that affect air pollution.

10 Bay Area Air Quality Management District (BAAQMD). 2017, Revised. California Environmental Quality Act Air Quality Guidelines.

San Francisco Bay Area Air Basin Conditions

Meteorology

The San Francisco Bay Area Air Basin is characterized by complex terrain, consisting of coastal mountain ranges, inland valleys, and bays, which distort normal wind flow patterns. The Coast Range[11] splits in the Bay Area, creating a western coast gap, the Golden Gate, and an eastern coast gap, the Carquinez Strait, which allows air to flow in and out of the Bay Area and the Central Valley. The climate is dominated by the strength and location of a semi-permanent, subtropical high-pressure cell. During the summer, the Pacific high-pressure cell is centered over the northeastern Pacific Ocean, resulting in stable meteorological conditions and a steady northwesterly wind flow. Upwelling of cold ocean water from below the surface because of the northwesterly flow produces a band of cold water off the California coast. The cool and moisture-laden air approaching the coast from the Pacific Ocean is further cooled by the presence of the cold water band, resulting in condensation and the presence of fog and stratus clouds along the Northern California coast. In the winter, the Pacific high-pressure cell weakens and shifts southward, resulting in wind flow offshore, the absence of upwelling, and the occurrence of storms. Weak inversions coupled with moderate winds result in a low air pollution potential.

Wind Patterns

During the summer, winds flowing from the northwest are drawn inland through the Golden Gate and over the lower portions of the San Francisco Peninsula. Immediately south of Mount Tamalpais in Marin County, the northwesterly winds accelerate considerably and come more directly from the west as they stream through the Golden Gate. This channeling of wind through the Golden Gate produces a jet that sweeps eastward and splits off to the northwest toward Richmond and to the southwest toward San José when it meets the East Bay hills. Wind speeds may be strong locally in areas where air is channeled through a narrow opening, such as the Carquinez Strait, the Golden Gate, or the San Bruno gap.

The air flowing in from the coast to the Central Valley, called the sea breeze, begins developing at or near ground level along the coast in late morning or early afternoon and the sea breeze deepens and increases in velocity while spreading inland. Under normal atmospheric conditions, the air in the lower atmosphere is warmer than the air above it. In the winter, the San Francisco Bay Area Air Basin frequently experiences stormy conditions with moderate to strong winds, as well as periods of stagnation with very light winds. Winter stagnation episodes (i.e., conditions where there is little mixing, which occurs when there is a lack of or little wind) are characterized by nighttime drainage flows in coastal valleys. Drainage is a reversal of the usual daytime air-flow patterns; air moves from the Central Valley toward the coast and back down toward the Bay from the smaller valleys within the San Francisco Bay Area Air Basin.

Temperature

Summertime temperatures in the San Francisco Bay Area Air Basin are determined in large part by the effect of differential heating between land and water surfaces. On summer afternoons, the temperatures at the coast can be 35 degrees Fahrenheit cooler than temperatures 15 to 20 miles inland; at night, this

11 The Coast Ranges traverses California's west coast from Humboldt County to Santa Barbara County.

contrast usually decreases to less than 10 degrees Fahrenheit. In the winter, the relationship of minimum and maximum temperatures is reversed. During the daytime the temperature contrast between the coast and inland areas is small, whereas at night the variation in temperature is large.

Precipitation

The San Francisco Bay Area Air Basin is characterized by moderately wet winters and dry summers. Winter rains (November through March) account for about 75 percent of the average annual rainfall. The amount of annual precipitation can vary greatly from one part of the San Francisco Bay Area Air Basin to another, even within short distances. In general, total annual rainfall can reach 40 inches in the mountains, but it is often less than 16 inches in sheltered valleys. During rainy periods, ventilation (rapid horizontal movement of air and injection of cleaner air) and vertical mixing (an upward and downward movement of air) are usually high, and thus pollution levels tend to be low (i.e., air pollutants are dispersed more readily into the atmosphere rather than accumulate under stagnant conditions). However, during the winter, frequent dry periods do occur, where mixing and ventilation are low and pollutant levels build up.

Wind Circulation

Low wind speed contributes to the buildup of air pollution because it allows more pollutants to be emitted into the air mass per unit of time. Light winds occur most frequently during periods of low sun (fall and winter, and early morning) and at night. These are also periods when air pollutant emissions from some sources are at their peak, namely, commuter traffic (early morning) and wood-burning appliances (nighttime). The problem can be compounded in valleys, when weak flows carry the pollutants up-valley during the day, and cold air drainage flows move the air mass down-valley at night. Such restricted movement of trapped air provides little opportunity for ventilation and leads to buildup of pollutants to potentially unhealthful levels.

Inversions

An inversion is a layer of warmer air over a layer of cooler air. Inversions affect air quality conditions significantly because they influence the mixing depth (i.e., the vertical depth in the atmosphere available for diluting air contaminants near the ground). There are two types of inversions that occur regularly in the San Francisco Bay Area Air Basin. Elevation inversions[12] are more common in the summer and fall, and radiation inversions[13] are more common during the winter. The highest air pollutant concentrations in the San Francisco Bay Area Air Basin generally occur during inversions.

Ambient Air Quality

Existing levels of ambient air quality and historical trends and projections in the vicinity of Cupertino have been documented by measurements made by the BAAQMD. In addition to 24 permanent monitoring stations located around the Bay Area, BAAQMD has a special monitoring station located in Cupertino at

[12] When the air blows over elevated areas, it is heated as it is compressed into the side of the hill/mountain. When that warm air comes over the top, it is warmer than the cooler air of the valley.

[13] During the night, the ground cools off, radiating the heat to the sky.

the Monta Vista Park on Foothill Boulevard. Data was not available for O_3, NO_2, PM_{10}, or $PM_{2.5}$ for years 2014 and 2015 from the Cupertino station, so data from the next nearest station, San José—Jackson Street Monitoring Station, was used. Data from these stations are summarized in Table 4.2-4. The data show occasional violations of the State and federal O_3 standards. The federal $PM_{2.5}$ and State PM_{10} standards have been exceeded twice in the last five years. The State and federal CO and NO_2 standards have not been exceeded in the last five years in the vicinity of the city.

TABLE 4.2-4 AMBIENT AIR QUALITY MONITORING SUMMARY

	Number of Days Threshold Were Exceeded and Maximum Levels During Such Violations				
Pollutant/Standard	**2011**	**2012**	**2013**	**2014**	**2015**
Ozone (O_3)[a]					
State 1-Hour ≥ 0.09 ppm	0	0	0	0	2
State 8-hour ≥ 0.07 ppm	0	0	1	0	0
Federal 8-Hour > 0.075 ppm	0	0	1	0	0
Maximum 1-Hour Conc. (ppm)	0.086	0.83	0.91	0.089	0.94
Maximum 8-Hour Conc. (ppm)	0.067	0.067	0.077	0.066	0.081
Carbon Monoxide (CO)[a]					
State 8-Hour > 9.0 ppm	0	0	*	*	*
Federal 8-Hour ≥ 9.0 ppm	0	0	*	*	*
Maximum 8-Hour Conc. (ppm)	0.95	0.73	*	*	*
Nitrogen Dioxide (NO_2)[a]					
State 1-Hour ≥ 0.18 (ppm)	0	0	0	0	0
Maximum 1-Hour Conc. (ppb)	42.5	44.7	41.9	58.4	49.3
Coarse Particulates (PM_{10})					
State 24-Hour > 50 µg/m^3	0	0	0	1	1
Federal 24-Hour > 150 µg/m^3	0	0	0	0	0
Maximum 24-Hour Conc. (µg/ m^3)	28.9	41.5	33.5	54.7	58.0
Fine Particulates ($PM_{2.5}$)[a]					
Federal 24-Hour > 35 µg/m^3	*	*	*	2	2
Maximum 24-Hour Conc. (µg/m^3)	30.5	27.5	38.9	60.4	49.4

Notes: ppm: parts per million; ppb: parts per billion; µg/m^3: or micrograms per cubic meter; * = insufficient data; NA = Not Available

a. Data from Cupertino Monitoring Station for years 2011 -2013. Data for O_3, NO_2, PM_{10}, and $PM_{2.5}$ for years 2014 and 2015 from the San José Jackson Street Monitoring Station.

Source: California Air Resources Board, 2016, Air Pollution Data Monitoring Cards (2011, 2012, 2013, 2014, and 2015), Accessed May 20, 2017, http://www.arb.ca.gov/adam/index.html.

Emissions

The 51.5-acre project site is currently developed with a variety of residential and healthcare services in the community. As of 1991, the project site has 656,590 square feet of gross building area, comprised of 60 one- and two-story single and duplex villas with 319 independent living units totaling 402,640 square feet and garage space totaling 130,400 square feet, which are located throughout the site; a 72,750 square feet healthcare center with 40 rooms for assisted living support, 18 rooms for memory care, and a 48-bed skilled nursing facility; and a 40,000 square feet commons building with administrative/emergency room, community/commons room, and fitness center. These current land uses generate long-term air pol-

lutant emissions from the burning of fossil fuels in cars (mobile sources); energy used for cooling, heating, and cooking (energy); and landscape equipment use (area sources).

Sensitive Receptors

Some land uses are considered more sensitive to air pollution than others due to the types of population groups or activities involved. Sensitive population groups include children, the elderly, the acutely ill, and the chronically ill, especially those with cardiorespiratory diseases. Residential areas are also considered sensitive receptors to air pollution because residents (including children and the elderly) tend to be at home for extended periods of time, resulting in sustained exposure to any pollutants present. Other sensitive land uses include retirement facilities, hospitals, and schools. Recreational land uses are considered moderately sensitive to air pollution. Although exposure periods are generally short, exercise places a high demand on respiratory functions, which can be impaired by air pollution. In addition, noticeable air pollution can detract from the enjoyment of recreation. Industrial, commercial, retail, and office areas are considered the least sensitive to air pollution. Exposure periods are relatively short and intermittent, since the majority of the workers tend to stay indoors most of the time. In addition, the working population is generally the healthiest segment of the population. The nearest off-site sensitive receptors proximate to the project site include the abutting residents of the single-family homes to the south and west along Black Oak Way and Oak Valley Road. On-site sensitive receptors include existing residents of the senior living facilities at The Forum. These existing sensitive receptors are exposed to criteria air pollutant emissions from nearby mobile and stationary sources. According to BAAQMD's database of existing stationary and mobile sources, Interstate 280 was identified as the existing mobile source; no stationary sources were identified within 1,000 feet of the project site.

4.2.2 THRESHOLDS OF SIGNIFICANCE

4.2.2.1 CEQA GUIDELINES APPENDIX G

Based on the Initial Study and comments received during the scoping process it was determined that the proposed project could result in a potentially significant air quality impact if it would:

1. Conflict with or obstruct implementation of the applicable air quality plan.
2. Violate any air quality standard or contribute substantially to an existing or projected air quality violation.
3. Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors).
4. Expose sensitive receptors to substantial pollutant concentrations.
5. Create objectionable odors affecting a substantial number of people.

4.2.2.2 BAAQMD THRESHOLDS

The BAAQMD CEQA Air Quality Guidelines were prepared to assist in the evaluation of air quality impacts of projects and plans proposed within the Bay Area. The guidelines provide recommended procedures for evaluating potential air impacts during the environmental review process, consistent with CEQA requirements, and include recommended thresholds of significance, mitigation measures, and background air quality information. They also include recommended assessment methodologies for air toxics, odors, and greenhouse gas emissions. In June 2010, the BAAQMD's Board of Directors adopted CEQA thresholds of significance and an update of the CEQA Guidelines. These thresholds are designed to establish the level at which the District believed air pollution emissions would cause significant environmental impacts under CEQA.

In May 2011, the updated BAAQMD CEQA Air Quality Guidelines were amended to include a risk and hazards threshold for new receptors and modified procedures for assessing impacts related to risk and hazard impacts; however, this later amendment regarding risk and hazards was the subject of the December 17, 2015, California Supreme Court decision in *California Building Industry Association v BAAQMD*[14], which clarified that CEQA does not require an evaluation of impacts of the environment on a project. The Supreme Court also found, however, that CEQA requires an analysis of exposing people to environmental hazards in specific circumstances, including the location of development near airports, the location of schools near sources of toxic contamination, and certain exemptions for infill and workforce housing and of a project's potentially significant exacerbating effects on existing environmental hazards. The Supreme Court also held that public agencies remain free to conduct this analysis regardless of whether it is required by CEQA. To account for these updates, BAAQMD published a new version of the Guidelines dated May 2017, which includes revisions made to address the Supreme Court's opinion. This latest version of the BAAQMD CEQA Guidelines was used to prepare the analysis in this EIR.

Criteria Air Pollutant Emissions and Precursors

Regional Significance Criteria

The BAAQMD's criteria for regional significance for projects that exceed the screening thresholds are shown in Table 4.2-5. Criteria for both the construction and operational phases of the project are shown.

[14] *California Building Industry Association v. Bay Area Air Quality Management District 62 Cal. 4th 369 (No. S 213478).*

TABLE 4.2-5 BAAQMD REGIONAL (MASS EMISSIONS) CRITERIA AIR POLLUTANT SIGNIFICANCE THRESHOLDS

	Construction Phase	Operational Phase	
Pollutant	Average Daily Emissions (lbs/day)	Average Daily Emissions (lbs/day)	Maximum Annual Emissions (Tons/year)
ROG	54	54	10
NO_x	54	54	10
PM_{10}	82 (Exhaust)	82	15
$PM_{2.5}$	54 (Exhaust)	54	10
PM_{10} and $PM_{2.5}$ Fugitive Dust	Implement BMPs[a]	None	None

Notes: BMPs = Best Management Practices
a. Implementation of the BAAQMD construction best management practices is considered to result in construction-related fugitive dust emissions that are acceptable.
Source: Bay Area Air Quality Management District. 2017. CEQA Guidelines May 2017.

Fugitive Dust Significance Criteria

The BAAQMD's criteria for regional significance for projects that exceed the screening thresholds are shown above in Table 4.2-5. Criteria for both the construction and operational phases of the project are shown. Implementation of the BAAQMD construction best management practices is considered to result in construction-related fugitive dust emissions that are acceptable.

CO Hotspots

Congested intersections have the potential to create elevated concentrations of CO, referred to as CO hotspots. The significance criteria for CO hotspots are based on the California AAQS for CO, which are 9.0 ppm (8-hour average) and 20.0 ppm (1-hour average). With the turnover of older vehicles, introduction of cleaner fuels, and implementation of control technology, the San Francisco Bay Area Air Basin is in attainment of the California and National AAQS, and CO concentrations in the San Francisco Bay Area Air Basin have steadily declined. Because CO concentrations have improved, the BAAQMD does not require a CO hotspot analysis if the following criteria are met:

- The project is consistent with an applicable congestion management program established by the County Congestion Management Agency for designated roads or highways, the regional transportation plan, and local congestion management agency plans.
- The project would not increase traffic volumes at affected intersections to more than 44,000 vehicles per hour.
- The project traffic would not increase traffic volumes at affected intersection to more than 24,000 vehicles per hour where vertical and/or horizontal mixing is substantially limited (e.g. tunnel, parking garage, bridge underpass, natural or urban street canyon, below-grade roadway).

Community Risk and Hazards

The BAAQMD's significance thresholds for local community risk and hazard impacts apply to both the siting of a new source and to the siting of a new receptor. Local community risk and hazard impacts are associated with TACs and $PM_{2.5}$ because emissions of these pollutants can have significant health impacts at the local level. The proposed project would generate TACs and $PM_{2.5}$ during construction activities that could elevate concentrations of air pollutants at the nearby residential sensitive receptors. The thresholds for construction-related local community risk and hazard impacts are the same as for project operations. The BAAQMD has adopted screening tables for air toxics evaluation during construction.[15] Construction-related TAC and $PM_{2.5}$ impacts should be addressed on a case-by-case basis, taking into consideration the specific construction-related characteristics of each project and proximity to off-site receptors, as applicable.[16] The proposed project involves an update to the existing continuing care retirement community (CCRC), including renovations, additions and new construction, and would not be a source of operational TACs and $PM_{2.5}$.

Since neither the City of Cupertino nor Santa Clara County currently has a qualified risk reduction plan, a site-specific analysis of TACs and $PM_{2.5}$ impacts on sensitive receptors was conducted. The thresholds identified below are applied to the project's construction and operational phases.

Community Risk and Hazards: Project

Project-level emissions of TACs or $PM_{2.5}$ from individual sources that exceed any of the thresholds listed below are considered a potentially significant community health risk:

- An excess cancer risk level of more than 10 in one million, or a noncancer (i.e., chronic or acute) hazard index greater than 1.0 would be a significant project contribution.
- An incremental increase of greater than 0.3 micrograms per cubic meter ($\mu g/m^3$) annual average $PM_{2.5}$ from a single source would be a significant project contribution. [17]

Community Risk and Hazards: Cumulative

Cumulative sources represent the combined total risk values of each of the individual sources within the 1,000-foot evaluation zone. A project would have a cumulative considerable impact if the aggregate total of all past, present, and foreseeable future sources within a 1,000-foot radius from the fence line of a source or location of a receptor, plus the contribution from the project, exceeds any of the following:

- An excess cancer risk level of more than 100 in one million or a chronic noncancer hazard index (from all local sources) greater than 10.0.
- 0.8 µg/m3 annual average $PM_{2.5}$.[18]

[15] Bay Area Air Quality Management District (BAAQMD). 2010. Screening Tables for Air Toxics Evaluations during Construction.

[16] Bay Area Air Quality Management District (BAAQMD). 2017, Revised. California Environmental Quality Act Air Quality Guidelines.

[17] Bay Area Air Quality Management District (BAAQMD). 2017, Revised. California Environmental Quality Act Air Quality Guidelines.

In February 2015, Office of Environmental Health Hazard Assessment adopted new health risk assessment guidance that includes several efforts to be more protective of children's health. These updated procedures include the use of age sensitivity factors to account for the higher sensitivity of infants and young children to cancer causing chemicals, and age-specific breathing rate.[19]

4.2.3 IMPACT DISCUSSION

This air quality evaluation was prepared in accordance with the requirements of CEQA to determine if significant air quality impacts of the proposed project. Construction-related criteria air pollutants emissions associated with the proposed project were calculated using the California Emissions Estimator Model (CalEEMod), Version 2016.3.1. Construction emissions associated with the proposed project are based on the construction schedule provided by the project applicant. An HRA was conducted for the proposed project using Lakes Environmental AERMOD View (ISCST3 air dispersion model) (see Appendix D, Health Risk Assessment) of this Draft EIR).

AQ-1 The proposed project would not conflict with or obstruct implementation of the applicable air quality plan.

Large projects that exceed regional employment, population, and housing planning projections have the potential to be inconsistent with the regional inventory compiled as part of the 2017 Clean Air Plan. As identified in the Initial Study (see Appendix A of this the Draft EIR), the proposed project would not have the potential to substantially affect housing, employment, or population projections within the region, which are the basis of the 2017 Clean Air Plan projections. Therefore, under CEQA Guidelines Section 15206, the proposed project is not considered a regionally significant project that would affect regional vehicle miles traveled (VMT) and warrant intergovernmental review by ABAG[20] and MTC.[21] Additionally, the net increase in regional emissions generated by the proposed project would not exceed the BAAQMD's emissions thresholds (see impact discussion AQ-2 below). These thresholds are established to identify projects that have the potential to generate a substantial amount of criteria air pollutants. Because the proposed project would not exceed these thresholds, the proposed project would not be considered by the BAAQMD to be a substantial emitter of criteria air pollutants. Therefore, the proposed project would not conflict with or obstruct implementation of the 2017 Clean Air Plan, and impacts would be considered *less than significant*.

Significance Without Mitigation: Less Than Significant

[18] Bay Area Air Quality Management District (BAAQMD). 2017, Revised. California Environmental Quality Act Air Quality Guidelines.

[19] Office of Environmental Health Hazard Assessment (OEHHA). 2015, February. Air Toxics Hot Spots Program Guidance Manual for the Preparation of Health Risk Assessments.

[20] Association of Bay Area Governments (ABAG), Regional Clearinghouse http://abag.ca.gov/planning/clearinghouse.html. Accessed March 30, 2017.

[21] Metropolitan Transportation Commission (MTC), Air Quality Conformity, http://www.mtc.ca.gov/planning/air_quality/. Accessed March 30, 2017.

AQ-2 The proposed project would not violate any air quality standard or contribute substantially to an existing or projected air quality violation.

BAAQMD has identified thresholds of significance for criteria pollutant emissions and criteria air pollutant precursors, including reactive organic gases (ROG), oxides of nitrogen (NO_x), coarse inhalable particulate matter (PM_{10}), and fine inhalable particulate matter ($PM_{2.5}$). Development projects below these significant thresholds (listed in Table 4.2-5) are not expected to generate sufficient criteria pollutant emissions to violate any air quality standard or contribute substantially to an existing or projected air quality violation.

Construction Emissions

Construction activities produce combustion emissions from various sources, such as on-site heavy-duty construction vehicles, vehicles hauling materials to and from the site, and motor vehicles transporting the construction crew. Site preparation activities produce fugitive dust emissions (PM_{10} and $PM_{2.5}$) from demolition and soil-disturbing activities, such as grading and excavation. Air pollutant emissions from construction activities on-site would vary daily as construction activity levels change. Construction activities associated with the proposed project would result in emissions of ROG, NOx, CO, PM_{10}, and $PM_{2.5}$.

Fugitive Dust

Ground-disturbing activities during project construction could generate fugitive dust (PM_{10} and $PM_{2.5}$) that if left uncontrolled could expose the areas downwind of the construction sites to air pollution from the construction dust. Fugitive PM_{10} is typically the most significant source of air pollution from the dust generated from construction. The amount of fugitive dust generated during construction would be highly variable and is dependent on the amount of material being demolished, the type of material, moisture content, and meteorological conditions. As described under Section 4.2.2, Thresholds of Significance, BAAQMD does not provide a quantitative threshold for construction-related fugitive dust emissions, and a project's fugitive dust emissions are considered to be acceptable with the implementation of BAAQMD's best management practices. In other words, there could be a significant impact if the best management practices are not enforced. For this reason, the project's fugitive dust emissions with the incorporation of BAAQMD best management practices are quantified for reference in Table 4.2-6.

TABLE 4.2-6 THE FORUM CONSTRUCTION-RELATED CRITERIA AIR POLLUTANT EMISSIONS ESTIMATES

	Criteria Air Pollutants (tons/year)[a]					
Year	ROG	NO_x	Fugitive PM_{10}[b]	Exhaust PM_{10}	Fugitive $PM_{2.5}$[b]	Exhaust $PM_{2.5}$
2018 Construction Phase 1	<1	3	<1	<1	<1	<1
2019 Construction Phase 1	<1	1	<1	<1	<1	<1
2020 Construction Phase 1	1	<1	<1	<1	<1	<1
2020 Construction Phase 2	<1	<1	<1	<1	<1	<1
	Criteria Air Pollutants (average pounds/day)[a]					
	ROG	NO_x	Fugitive PM_{10}[b]	Exhaust PM_{10}	Fugitive $PM_{2.5}$[b]	Exhaust $PM_{2.5}$

TABLE 4.2-6 THE FORUM CONSTRUCTION-RELATED CRITERIA AIR POLLUTANT EMISSIONS ESTIMATES

	Criteria Air Pollutants (tons/year)[a]					
Year	ROG	NO_x	Fugitive PM_{10}[b]	Exhaust PM_{10}	Fugitive $PM_{2.5}$[b]	Exhaust $PM_{2.5}$
Average Daily Construction Emissions at all Construction Phases[c]	5	12	1	1	<1	1
BAAQMD Average Daily Project-Level Threshold	54	54	Implement BMPs	82	Implement BMPs	54
Exceeds Average Daily Threshold	**No**	**No**	**NA**	**No**	**NA**	**No**

Notes: BMP = Best Management Practices; NA = not applicable.

a. Construction phasing is based on the preliminary information provided by the project applicant. Where specific information regarding project-related construction activities was not available, construction assumptions were based on CalEEMod defaults, which are based on construction surveys conducted by South Coast Air Quality Management District of construction equipment and phasing for comparable projects.

b. Includes implementation of best management practices for fugitive dust control required by the Bay Area Air Quality Management District (BAAQMD). Implementation of the BAAQMD construction best management practices is considered to result in construction-related fugitive dust emissions that are acceptable. See Mitigation Measure AQ-2.

c. Average daily emissions are based on the construction emissions divided by the total number of active construction days. The total number of construction days is estimated to be 694 days.

Source: CalEEMod 2016.3.1. Emissions may not total to 100 percent due to rounding.

Impact AQ-2: Uncontrolled fugitive dust (PM_{10} and $PM_{2.5}$) could expose the areas that are downwind of construction sites to air pollution from construction activities without the implementation of BAAQMD's best management practices.

Mitigation Measure AQ-2: The project applicant shall require their construction contractor to comply with the following BAAQMD best management practices for reducing construction emissions of uncontrolled fugitive dust (coarse inhalable particulate matter [PM_{10}] and fine inhalable particulate matter [$PM_{2.5}$]):

- Water all active construction areas at least twice daily or as often as needed to control dust emissions. Watering should be sufficient to prevent airborne dust from leaving the site. Increased watering frequency may be necessary whenever wind speeds exceed 15 miles per hour. Reclaimed water should be used whenever possible.
- Pave, apply water twice daily or as often as necessary to control dust, or apply (non-toxic) soil stabilizers on all unpaved access roads, parking areas, and staging areas at construction sites.
- Cover all trucks hauling soil, sand, and other loose materials or require all trucks to maintain at least 2 feet of freeboard (i.e., the minimum required space between the top of the load and the top of the trailer).
- Sweep daily (with water sweepers using reclaimed water if possible) or as often as needed all paved access roads, parking areas, and staging areas at the construction site to control dust.
- Sweep public streets daily (with water sweepers using reclaimed water if possible) in the vicinity of the project site, or as often as needed, to keep streets free of visible soil material.
- Hydro-seed or apply non-toxic soil stabilizers to inactive construction areas.
- Enclose, cover, water twice daily, or apply non-toxic soil binders to exposed stockpiles (e.g., dirt, sand).
- Limit vehicle traffic speeds on unpaved roads to 15 miles per hour.
- Replant vegetation in disturbed areas as quickly as possible.

- Install sandbags or other erosion control measures to prevent silt runoff from public roadways.

The City of Cupertino Building Division official or his/her designee shall verify compliance that these measures have been implemented during normal construction site inspections.

Significance With Mitigation: Less Than Significant

Construction Exhaust Emissions

Construction emissions are based on the preliminary construction schedule developed for the proposed project. The proposed project site would be developed in two phases. Activities that would take place are demolition, hauling, site preparation, grading, building construction, paving, and architectural coating. Construction activities were conservatively modeled to begin in January 2018 and continue to August 2020. Although the second phase of the construction process (multi-purpose room) may occur beyond 2020, earlier dates were used to create a more conservative emissions estimate, as construction equipment and techniques are expected to increase in efficiency in the future. To determine potential construction-related air quality impacts, criteria air pollutants generated by project-related construction activities are compared to the BAAQMD significance thresholds. Average daily emissions are based on the annual construction emissions divided by the total number of active construction days. As shown above in Table 4.2-6, criteria air pollutant emissions from construction equipment exhaust would not exceed the BAAQMD average daily thresholds. Therefore, construction-related criteria pollutant emissions from exhaust would be *less than significant*.

Significance Without Mitigation: Less Than Significant

Operational Emissions

Long-term air pollutant emissions generated by an industrial development are typically associated with the burning of fossil fuels in cars and trucks (mobile sources); energy use for cooling, heating, and manufacturing (energy); and landscape equipment (area sources). The primary source of long-term criteria air pollutant emissions generated by the proposed project would be emissions from project-generated vehicle trips. The proposed project would generate a net total of 188 average daily weekday trips. Table 4.2-7 identifies the net increase in criteria air pollutant emissions associated with the proposed project compared to the baseline operation.

As shown in Table 4.2-7, the net increase in operational emissions generated by the project would not exceed the BAAQMD daily or annual thresholds. Consequently, the proposed project would not cumulatively contribute to the nonattainment designations of the San Francisco Bay Area Air Basin, and regional operational phase air quality impacts would be *less than significant*.

TABLE 4.2-7 THE FORUM CRITERIA AIR POLLUTANTS EMISSIONS FORECAST

	Criteria Air Pollutants (average lbs/day)			
Category	ROG	NOx	PM_{10}	$PM_{2.5}$
Net Change from Existing to Proposed Project (Average pounds per day)				
Area	4	<1	<1	<1
Energy	<1	<1	<1	<1
On-Road Mobile Sources	<1	<1	1	<1
Total	4	1	1	<1
BAAQMD Average Daily Project-Level Threshold	54	54	82	54
Exceeds Average Daily Threshold?	No	No	No	No
Net Change from Existing to Proposed Project (Annual Emissions in tons per year)				
	Criteria Air Pollutants (tons/year)			
Category	ROG	NOx	PM_{10}	$PM_{2.5}$
Net Change	1	<1	<1	<1
BAAQMD Annual Project-Level Threshold	10 tpy	10 tpy	15 tpy	10 tpy
Exceeds Annual Threshold	No	No	No	No

Notes: typ = tons per year
a. New buildings would be constructed to the 2016 Building Energy Efficiency Standards (effective January 1, 2017).
b. Average daily emissions are based on the annual operational emissions divided by 365 days.
c. Emergency generators are operated intermittently throughout the year during times of periodic testing and maintenance (typically once a week or once a month for less than 1 hour per day). Therefore, the proposed emergency generator would produce nominal average daily emissions and was omitted from the emissions forecast for the operational phase of the project.
Source: CalEEMod 2016.3.1 Based on year 2022 emission rates. Emissions may not total to 100 percent due to rounding.

Significance Without Mitigation: Less Than Significant

AQ-3 The proposed project would not result in a cumulatively considerable net increase of any criteria pollutant for which the project region is nonattainment under an applicable federal or State ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors).

This section analyzes potential impacts related to air quality that could occur from a combination of the proposed project with other past, present, and reasonably foreseeable projects within the San Francisco Bay Area Air Basin. The San Francisco Bay Area Air Basin is currently designated a nonattainment area for

National and California O_3, National and California $PM_{2.5}$, and California PM_{10} AAQS.[22] Any project that produces a significant project-level regional air quality impact in an area that is in nonattainment is considered to add to the cumulative impact. Therefore, the proposed project's contribution to cumulative air quality impacts is considered significant if it would exceed BAAQMD's regional criteria air pollutant thresholds for O_3, $PM_{2.5}$, and PM_{10}, as shown in Table 4.2-5 in Section 4.2.2, Thresholds of Significance. The proposed project's contribution to criteria pollutants for which the project region is nonattainment under an applicable federal or State ambient air quality standards is described under impact discussion AQ-2 above and AQ-4 below.

As described in impact discussion AQ-2 above, the proposed project would not have a significant long-term operational phase impact, and emissions of O_3, $PM_{2.5}$, and PM_{10}, would be below BAAQMD's regional standards of significance. Impact discussion AQ-2 also describes construction emissions, and demonstrates that emissions of O_3, $PM_{2.5}$, and PM_{10}, would not exceed BAAQMD's thresholds with the implementation of Mitigation Measure AQ-2, which requires BAAQMD's construction best management practices for fugitive dust.

As described in impact discussion AQ-4 below, the proposed project would not have a significant long-term operational phase impact, and emissions of $PM_{2.5}$, TACs, and CO would be below BAAQMD's standards of significance. Impact discussion AQ-4 also describes construction emissions, and demonstrates that emissions of construction exhaust $PM_{2.5}$ and TACs would not exceed BAAQMD's thresholds with the implementation of Mitigation Measure AQ-4, which requires Level 3 Diesel Particulate Filters for all equipment of 50 horsepower or more.

Accordingly, prior to implementation of Mitigation Measure AQ-2 and AQ-4, the proposed project's cumulative contribution to the nonattainment designations of the San Francisco Bay Area Air Basin would be potentially *significant*.

Impact AQ-3: Construction of the proposed project would cumulatively contribute to the non-attainment designations of the SFBAAB.

Mitigation Measure AQ-3: Implement Mitigation Measures AQ-2 and AQ-4.

Significance With Mitigation: Less Than Significant

AQ-4 The proposed project would not expose sensitive receptors to substantial concentrations of air pollution.

The proposed project could expose sensitive receptors to elevated pollutant concentrations if it would cause or contribute significantly to elevated pollutant concentration levels. Unlike regional emissions, localized emissions are typically evaluated in terms of air concentration rather than mass so they can be more readily correlated to potential health effects.

[22] California Air Resources Board. 2015. Air Basin Attainment Designations.

Construction

Off-Site Community Risk and Hazards During Construction

The proposed project would elevate concentrations of TACs and construction exhaust $PM_{2.5}$ in the vicinity of sensitive residential land uses (i.e., receptors) during construction activities. The nearest off-site sensitive receptors proximate to the project site include the abutting single-family residences to the south and west along Black Oak Way and Oak Valley Road. On-site sensitive receptors include existing residents of The Forum. Construction activities would occur near these sensitive receptor locations. Consequently, and HRA of TACs and construction exhaust $PM_{2.5}$ was prepared for the proposed project and is included in Appendix D, Health Risk Assessment, of this Draft EIR.

Sources evaluated in the HRA include off-road construction equipment and heavy-duty diesel trucks along the truck route based on the 32-month construction duration and off-road equipment list provided by the project applicant. The USEPA AERMOD air dispersion modeling program and the latest HRA guidance from Office of Environmental Health Hazard Assessment were used to estimate excess lifetime cancer risks, chronic non-cancer hazard indices, and the $PM_{2.5}$ maximum annual concentrations at the nearest sensitive receptors. Results of the analysis are shown in Table 4.2-8.

TABLE 4.2-8 CONSTRUCTION HEALTH RISK ASSESSMENT RESULTS – UNMITIGATED

	Project Level Risk		
Receptor	Cancer Risk (per million)	Chronic Hazards	Construction Exhaust $PM_{2.5}$ ($\mu g/m^3$) [a]
Maximum Exposed Off-Site Resident	19.7	0.06	0.10
Maximum Exposed On-Site Resident	2.07	0.18	0.63
Threshold	10	1.0	0.3 $\mu g/m^3$
Exceeds Threshold	**Yes**	**No**	**Yes**

Notes: Cancer risk calculated using 2015 Office of Environmental Health Hazard Assessment HRA guidance.
a. Senior housing from year 2020 represents the highest maximum annual $PM_{2.5}$ concentration.
Source: PlaceWorks, 2017.

The results of the HRA are based on the maximum sensitive receptor concentration over a 32-month construction exposure period for off-site receptors, assuming 24-hour outdoor exposure, and averaged over a 70-year lifetime. Risk is based on the updated Office of Environmental Health Hazard Assessment Guidance:

- Cancer risk for the maximum exposed off-site resident, at the single-family residence to the southwest of the project along Black Oak Way and Oak Valley Road, from unmitigated construction activities related to the proposed project were calculated to be 19.7 in a million and would exceed the 10 in a million significance threshold. Using the 2015 Office of Environmental Health Hazard Assessment guidance, the calculated total cancer risk for the off-site residents incorporates the individual risk for infant and childhood exposures into one risk value. However, the calculated cancer risks for seniors at The Forum were calculated to be 2.07 in a million, which would not exceed the 10 in a million significance threshold.

- For non-carcinogenic effects, the hazard index identified for each toxicological endpoint totaled less than one for both on-site and off-site sensitive receptors from the proposed project. Therefore, chronic non-carcinogenic hazards would not exceed acceptable limits.
- The highest construction exhaust $PM_{2.5}$ annual concentration of 0.63 µg/m3 for on-site residences at The Forum, which would be above the BAAQMD significance threshold of 0.3 µg/m3. The determined $PM_{2.5}$ annual concentrations at the off-site residences were calculated to be 0.10 µg/m3, which would not exceed the 0.3 µg/m3 significance threshold.

Consequently, prior to mitigation, impacts would be potentially *significant* because the proposed project would expose sensitive receptors to substantial concentrations of air pollutant emissions during construction.

Impact AQ-4: Construction activities of the project could expose sensitive receptors to substantial concentrations of TAC and construction exhaust $PM_{2.5}$.

> Mitigation Measure AQ-4: During construction, the construction contractor(s) shall use construction equipment fitted with Level 3 Diesel Particulate Filters for all equipment of 50 horsepower or more.
>
> The construction contractor shall maintain a list of all operating equipment in use on the project site for verification by the City of Cupertino Building Division official or his/her designee. The construction equipment list shall state the makes, models, and number of construction equipment on-site. Equipment shall be properly serviced and maintained in accordance with manufacturer recommendations. The construction contractor shall ensure that all non-essential idling of construction equipment is restricted to five minutes or less in compliance with Section 2449 of the California Code of Regulations, Title 13, Article 4.8, Chapter 9. Prior to issuance of any construction permit, the construction contractor shall ensure that all construction plans submitted to the City of Cupertino Planning Division and/or Building Division clearly show the requirement for Level 3 Diesel Particulate Filters for construction equipment over 50 horsepower.

Mitigation Measure AQ-4 would reduce the project's localized construction emissions. The mitigated health risk values were calculated and are summarized in Table 4.2-9. The results indicate that, with implementation of Mitigation Measure AQ-4, cancer risk and $PM_{2.5}$ would not exceed the BAAQMD's significance thresholds for sensitive residential receptors.

TABLE 4.2-9 CONSTRUCTION HEALTH RISK ASSESSMENT RESULTS – MITIGATED

	Project Level Risk		
Receptor	Cancer Risk (per million)	Chronic Hazards	Construction Exhaust $PM_{2.5}$ ($\mu g/m^3$)[a]
Maximum Exposed Off-Site Resident	6.6	0.02	0.03
Maximum Exposed On-Site Resident	0.46	0.04	0.10
Threshold	10	1.0	0.3 $\mu g/m^3$
Exceeds Threshold	**No**	**No**	**No**

Notes: Cancer risk calculated using 2015 Office of Environmental Health Hazard Assessment HRA guidance. Risks incorporate Mitigation Measure AQ-4, which includes construction equipment with Level 3 Diesel Particulate Filters for equipment over 50 horsepower.
a. Residence from year 2020 represents the highest maximum annual $PM_{2.5}$ concentration.
Source: PlaceWorks, 2017.

For non-carcinogenic effects, the hazard index identified for each toxicological endpoint totaled less than one for off-site residents. Therefore, chronic non-carcinogenic hazards are within acceptable limits. In addition, $PM_{2.5}$ annual concentrations would not exceed the BAAQMD significance thresholds for off-site or on-site residents. Likewise, the results of the HRA indicate that the incremental cancer risk for off-site residents close to the project site during the construction period is 6.6 per million, and 0.46 for on-site residents, which does not exceed the cancer risk threshold. Consequently, the proposed project's cumulative contribution to the nonattainment designations of the San Francisco Bay Area Air Basin and impacts would be less than significant with mitigation.

Significance With Mitigation: Less Than Significant

Operation

Off-Site Community Risk and Hazards During Operation

The proposed project would not create new major sources of TACs or $PM_{2.5}$ during the operational phase. Siting sensitive receptors proximate to existing sources of TACs and $PM_{2.5}$ would not exacerbate the existing environmental hazard of exposing residents to these emissions.BAAQMD has developed screening tools to identify stationary and mobile sources of TACs and $PM_{2.5}$ in the vicinity of sensitive land uses (e.g., residential), and developed screening thresholds for assessing potential health risks from these sources. According to BAAQMD's database of existing stationary and mobile sources, Interstate 280 was identified as the existing mobile source; no stationary sources were identified within 1,000 feet of the project site. Accordingly, the long-term $PM_{2.5}$ and TAC exposure to future residents of the project would be *less than significant*.

Significance Without Mitigation: Less than significant.

CO Hotspots

Areas of vehicle congestion have the potential to create pockets of CO called hotspots. These pockets have the potential to exceed the State one-hour standard of 20 parts per million (ppm) or the eight-hour standard of 9.0 ppm. Because CO is produced in the greatest quantities from vehicle combustion and does not readily disperse into the atmosphere, adherence to ambient air quality standards is typically demonstrated through an analysis of localized CO concentrations. Hotspots are typically produced at intersections, where traffic congestion is highest because vehicles queue for longer periods and are subject to reduced speeds. The proposed project would generate an increase of 188 average daily trips, which would not increase traffic volumes at affected intersections by more than 44,000 vehicles per hour or 24,000 vehicles per hour where vertical and/or horizontal mixing is substantially limited. As a result, trips associated with the proposed project would not exceed the screening criteria of the BAAQMD. Localized air quality impacts related to mobile-source emissions would therefore be *less than significant*.

Significance Without Mitigation: Less Than Significant

AQ-5 The proposed project would not create objectionable odors affecting a substantial number of people.

Construction and operation of the proposed project would not generate substantial odors or be subject to odors that would affect a substantial number of people. The type of facilities that are considered to have objectionable odors include wastewater treatments plants, compost facilities, landfills, solid waste transfer stations, fiberglass manufacturing facilities, paint/coating operations (e.g., auto body shops), dairy farms, petroleum refineries, asphalt batch plants, chemical manufacturing, and food manufacturing facilities. Residential uses are not associated with foul odors that constitute a public nuisance. Therefore, *no impact* would occur and no mitigation measures are required.

Significance Without Mitigation: No Impact

AQ-6 The proposed project, in combination with past, present, and reasonably foreseeable projects, would not cumulatively contribute to air quality impacts in the San Francisco Bay Area Air Basin.

The impact discussion above is based on a cumulative setting because all development within the San Francisco Bay Area Air Basin contributes to regional emissions of criteria pollutants, and basin-wide projections of emissions is the best tool for determining the cumulative effect. As discussed above Mitigation Measures AQ-2, AQ-3 and AQ-4 are required to reduce the project's contribution to regional air quality impacts. Therefore, no further discussion on cumulative impacts is necessary.

Significance With Mitigation: Less Than Significant

4.3 BIOLOGICAL RESOURCES

This chapter includes an evaluation of the potential environmental consequences on biological resources from construction and operation of the proposed project. Additionally, this chapter describes the environmental setting, including regulatory framework and existing biological resources in the vicinity of the proposed project, and identifies mitigation measures, if required, that would avoid or reduce significant impacts.

Biological resources associated with the proposed project were identified through a review of available background information. Available documentation was reviewed to provide information on general resources in the central Santa Clara County area, presence of sensitive natural communities, and the distribution and habitat requirements of special-status species which have been recorded from or are suspected to occur in the project vicinity, including a record search conducted by the California Natural Diversity Data Base (CNDDB) of the California Department of Fish and Wildlife (CDFW) and mapping of habitat types prepared as part of the Classification and Assessment with Landsat of Visible Ecological Groupings (CALVEG)[1] habitat mapping program by the United States Department of Agriculture Forest Service (USDA).

In addition, this chapter includes information from the arborist reports that were prepared by HortScience, Inc. dated April 20, 2017, June 30, 2017, and August 16, 2017, and the Biological Resources Assessment prepared by WRA Consultants dated July 2017. These reports are included in Appendix E, Biological Resources Data, of this Draft EIR.

4.3.1 ENVIRONMENTAL SETTING

4.3.1.1 REGULATORY FRAMEWORK

This section summarizes existing federal, State, regional, and local policies and regulations that apply to biological resources.

State and Federal Regulations

In addition to the environmental protections provided by the California Environmental Quality Act (CEQA), other State and federal regulations have been enacted to provide for the protection and management of sensitive biological resources. State and federal agencies have a lead role in the protection of biological resources under their permit authority set forth in various statues and regulations. The United States Fish and Wildlife Service (USFWS) is responsible for administering the Migratory Bird Treaty Act (MBTA) and the federal Endangered Species Act (ESA) for freshwater and terrestrial species.

[1] The CALVEG system was initiated in January 1978 by the Region 5 Ecology Group of the US Forest Service to classify California's existing vegetation communities for use in statewide resource planning. CALVEG maps use a hierarchical classification on the following categories: forest; woodland; chaparral; shrubs; and herbaceous.

At the State level, the CDFW is responsible for administration of the California Endangered Species Act (CESA), and for protection of streams, waterbodies, and riparian corridors through the Streambed Alteration Agreement process under Section 1600-1616 of the California Fish and Game Code. Sections 3500-3516, 4700, 5050, and 5515 of the California Fish and Game Code address Fully Protected species.

Special-status species are plants and animals that are legally protected under the ESA/CESA or other regulations, as well as other species that are considered rare enough by the scientific community and trustee agencies to warrant special consideration, particularly with regard to protection of isolated populations, nesting or denning locations, communal roosts, and other essential habitat. Species with legal protection under the ESA/CESA often represent major constraints to development, particularly when they are wide-ranging or highly sensitive to habitat disturbance and where proposed development would result in a "take" of these species. A take is a term used in the ESA to include, "harass, harm, pursue, hunt, shoot, wound, kill trap, capture, or collect, or to attempt to engage in any such conduct."

The primary information source on the distribution of special-status species in California is the CNDDB inventory, which is maintained by the Natural Heritage Division of the CDFW. Occurrence data is obtained from a variety of scientific, academic, and professional organizations, private consulting firms, and knowledgeable individuals, and is entered into the inventory as expeditiously as possible. The presence of a population of species of concern in a particular region is an indication that an additional population may occur at another location within the region, if habitat conditions are suitable. However, the absence of an occurrence in a particular location does not necessarily mean that special-status species are absent from the area in question, only that no data has been entered into the CNDDB inventory. Detailed field surveys are generally required to provide a conclusive determination of the presence or absence of sensitive resources from a particular location, unless suitable habitat is determined to be absent.

In addition to species-oriented management, protecting habitat on an ecosystem-level is increasingly recognized as vital to the protection of natural diversity in the state. The CNDDB also monitors the locations of natural communities that are considered rare or threatened, known as sensitive natural communities. The CNDDB has compiled a list of sensitive natural communities that are given a high inventory priority for mapping and protection. Although these natural communities have no legal protective status under the ESA/CESA, they are provided some level of protection under the CEQA Guidelines. A project would normally be considered to have a significant effect on the environment if it would substantially affect a sensitive natural community, such as a riparian woodland, native grassland, or coastal salt marsh. Further loss of a sensitive natural community could also be interpreted as substantially diminishing habitat, depending on the relative abundance, quality and degree of past disturbance, and the anticipated impacts.

Local Regulations

City of Cupertino General Plan

The Cupertino General Plan titled “Community Vision 2040” includes policies that are relevant to the protection of biological resources and applicable to the proposed project. The policies are identified in Chapter 6, Environmental Resources and Sustainability, of the General Plan and listed below in Table 4.3-1.

TABLE 4.3-1 POLICIES OF CUPERTINO COMMUNITY VISION 2040 RELEVANT TO BIOLOGICAL RESOURCES

Policy Number	Policy
Chapter 6, Environmental Resources and Sustainability (ES)	
Policy ES-5.2	**Development near Sensitive Areas.** Encourage the clustering of new development away from sensitive areas such as riparian corridors, wildlife habitat and corridors, public open space preserves and ridgelines. New developments in these areas must have a harmonious landscaping plan approved prior to development.
Policy ES-5.3	**Landscaping in and near Natural Vegetation.** Preserve and enhance existing natural vegetation, landscape features and open space when new development is proposed within existing natural areas. When development is proposed near natural vegetation, encourage the landscaping to be consistent with the palate of vegetation found in the natural vegetation.
Policy ES-5.6	**Recreation and Wildlife.** Provide open space linkages within and between properties for both recreational and wildlife activities, most specifically for the benefit of wildlife that is threatened, endangered or designated as species of special concern.

Source: Cupertino Community Vision 2040.

City of Cupertino Municipal Code

The following provisions of the City of Cupertino Municipal Code (CMC) help to minimize adverse effects to biological resources as a result of development in Cupertino:

- Chapter 14.15, Landscape Ordinance, implements the California Water Conservation in Landscaping Act of 2006 by establishing new water-efficient landscaping and irrigation requirements. In general, any building or landscape projects that involve more than 2,500 square feet of landscape area are required to submit a Landscape Project Submittal to the Director of Community Development for approval. Existing and established landscapes over 1 acre, including cemeteries, are required to submit water budget calculations and audits of established landscapes.
- Chapter 14.18, Protected Trees, provides regulations for the protection, preservation, and maintenance of trees of certain species and sizes. Removal of a protected tree requires a permit from the City. "Protected" trees include trees of a certain species and size in all zoning districts; heritage trees in all zoning districts; any tree required to be planted or retained as part of an approved development application, building permit, tree removal permit, or code enforcement action in all zoning districts; and approved privacy protection planting in R-1 zoning districts. Protected trees include trees of the following species that have a minimum single trunk diameter of 10 inches (31-inch circumference) or a minimum multi-trunk diameter of 20 inches (63-inch circumference) measured as 4.5 feet from the natural grade: native oak tree species (*Quercus spp.*), including coast live oak (*Quercus agrifolia*), valley oak (*Quercus lobata*), black oak (*Quercus kelloggii*), blue oak (*Quercus douglasii*), and interior live oak (*Quercus wislizeni*); California buckeye (*Aesculus californica*); big leaf maple (*Acer macrophyllum*); deodar cedar (*Cedrus deodara*); blue atlas cedar (*Cedrus atlantica* 'Glauca'); bay laurel or California bay (*Umbellularia californica*); and western sycamore (*Platanus racemosa*).

4.3.1.2 EXISTING CONDITIONS

This section describes the existing conditions of the plant and wildlife resources in Cupertino and the project area. The following descriptions are based on available background data[2] and review of aerial photographs of the project site and surrounding vicinity, as well as site visits by staff from HortScience on January 27 and 30, 2017, June 15, 2017, July 20, 2017 and August 7, 2017, and WRA Consultants on January 27, 2017. See Appendix E of this Draft EIR.

Biological Communities

The majority of land within the Cupertino city boundary, including the project site vicinity, has been urbanized and now supports roadways, structures, other impervious surfaces, areas of turf, and ornamental landscaping. Remnant native trees are scattered throughout the urbanized areas, together with non-native trees, shrubs, and groundcovers. The developed areas within the city boundary are bordered by natural areas supporting a cover of grassland, chaparral and brush lands, with woodlands and forest in the western portion of the city. Using data from the CALVEG mapping program and the data provided in the Biological Resources Assessment prepared for the project, the majority of the project site is mapped as landscape defined as "urban" by CALVEG. In general, urbanized areas tend to have low to poor wildlife habitat value due to replacement of natural communities, fragmentation of remaining open space areas and parks, and intensive human disturbance. The areas along the north, northeast, southeast and south borders of the project site contain land classified as "annual grass," a habitat type characterized by having optimum habitat for a range of species. In addition, the project site includes a stormwater retention basin near the north border of the project site. The distribution of biological communities on the project site is shown on Figure 4.3-1 and listed by total acreage is as follows:

- Developed/Landscaped: 38.02 acres
- Non-native Annual Grasslands: 8.16 acres
- Stormwater Retention Basin: 0.07 acres

A description of each of the three biological communities that make up the project site is provided below.

Developed/Landscaped Areas

Landscaped vegetation in these communities consists of many native and non-native, ornamental trees and shrubs, including eucalyptus (*Eucalyptus sp.)*, coast redwood (*Sequoia sempervirens*), Atlas cedar (*Cedrus atlantica*), privet (*Ligustrum sp.),* bottlebrush tree (*Callistemon citrinus),* manzanita (*Arctostaphylos* spp.), and oleander (*Nerium oleander*). The understory consist of landscaped shrubs, lawn, and wood chips, and in some areas, non-native weedy species including rip gut brome (*Bromus diandrus*), Italian fescue (*Festuca perennis*), Bermuda buttercup *(Oxalix pescarpe)*, hoary mustard (*Hirschfeldia incana*), Carolina geranium (*Geranium carolinianum*), and yellow star thistle (*Centaurea solstitialis*).

[2] For a complete list of sources consulted, see the Biological Resources Assessment prepared by WRA dated July 2017 located in Appendix E, Biological Resources Data, of this Draft EIR.

Source: WRA Environmental Consultants, 2017; PlaceWorks, 2017.

Figure 4.3-1
Vegetation Habitat Types

Non-native Annual Grasslands

The area of the project site that currently contains grassland is maintained as manicured open space and does not contain any natural wildland areas. Non-native annual grasslands are areas of dense to sparse cover of non-native annual grasses, often associated with native annual forb species. Non-native annual grasslands in the project site are dominated by a variety of non-native and invasive grasses and forbs including Italian fescue, wild oat (*Avena fatua)*, ripgut brome, hoary mustard, spring vetch (*Vicia sativa*), broad leaf filaree (*Erodium botrys*), red stemmed filaree (*Erodium cicutarium*), common fiddleneck *(Amsinckia intermedia*), yellow star-thistle, and clover (*Trifolium* spp.). Non-native annual grasslands are not sensitive biological communities.

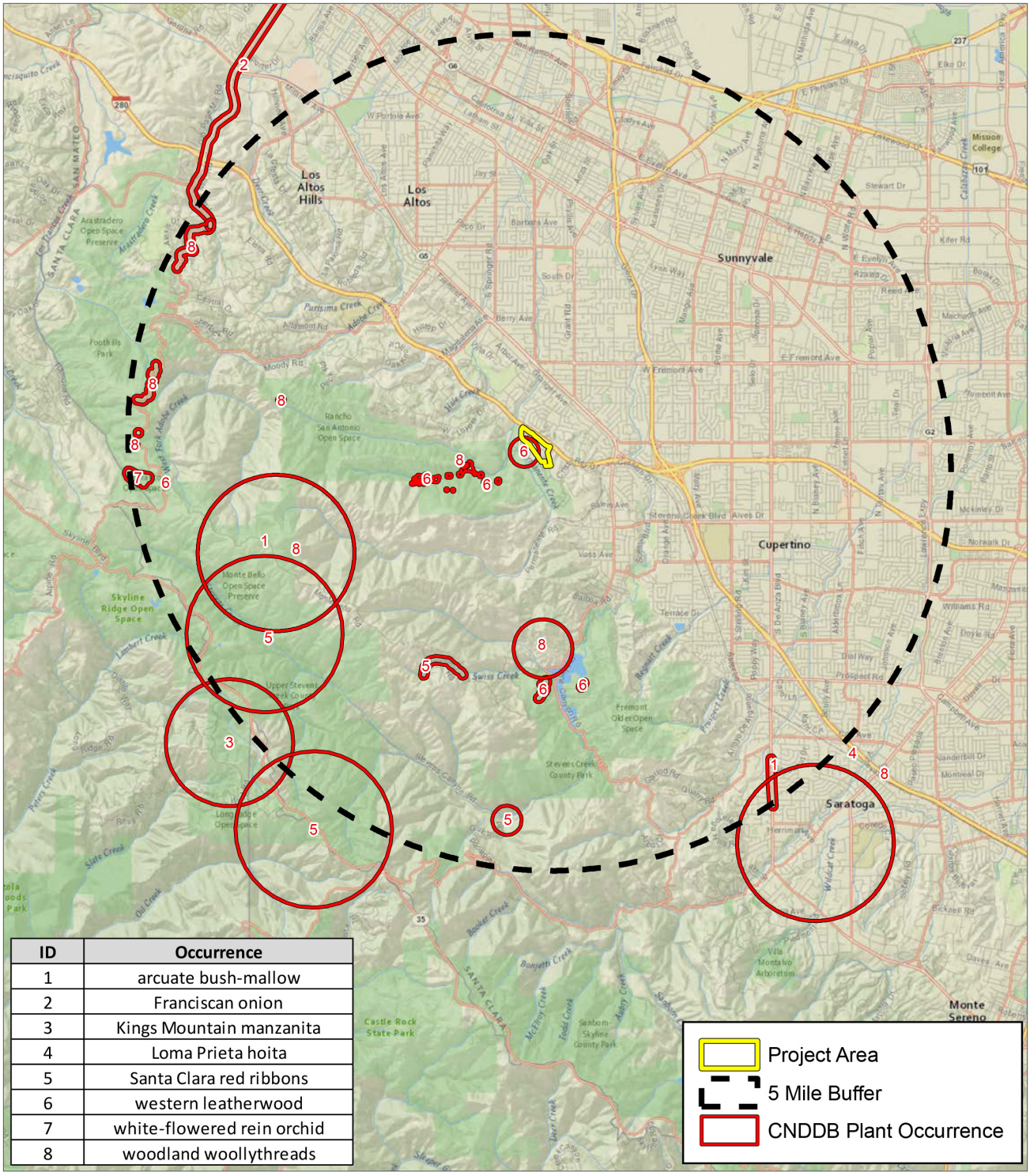
Stormwater Retention Basin

The water from the stormwater retention basin on the project site flows over land for a short distance between storm drains, creating a vegetation community that is best described as Cattail Marsh (*Typha angustifolia, domingensis, latifolia*) Herbaceous Alliance. Cattail marshes have a California Rarity rating of S5, which does not meet the CDFW criteria for a sensitive community. Stormwater management features that were created in dry land are typically considered to be exempt from regulation under Section 404 of the Clean Water Act based on the definition of "waters of the United States" in 33 Code of Federal Regulations Section 328.3, which states that *"Waste treatment systems, including treatment ponds or lagoons designed to meet the requirements of Clean Water Act…are not water of the United States."* Based on a review of available aerial photography, it appears that the stormwater retention feature was created on otherwise dry land when the Forum was originally constructed. Stormwater management features are areas constructed to collect water to comply with stormwater management provisions of the Clean Water Act, and are within the scope of this exemption. Based on this exclusion and because no changes to the function of the stormwater retention basin, which is to temporarily retain stormwater from surrounding developed areas, would occur under the proposed project, the stormwater retention basin on the project site should be considered exempt from the Clean Water Act.

Special-Status Plant Species

Figure 4.3-2 represents mapped data from the California Natural Diversity Database (CNDDB) for special-status plant species for a 5-mile area surrounding the project site and shows that the project site has the potential to have suitable habitat for a special-status shrub commonly known as the western leatherwood. However, based on the conclusions of the Biological Resources Assessment prepared for the project site, it was determined that the site is unsuitable for all special-status plant species.[3]

[3] Appendix B of the Biological Resources Assessment contains lists of special-status plant species occurring within the vicinity of the project site and Appendix C provides a list of observed plant species on the project site. See Appendix E of this Draft EIR.



ID	Occurrence
1	arcuate bush-mallow
2	Franciscan onion
3	Kings Mountain manzanita
4	Loma Prieta hoita
5	Santa Clara red ribbons
6	western leatherwood
7	white-flowered rein orchid
8	woodland woollythreads

Source: WRA Environmental Consultants, 2017; PlaceWorks, 2017.

Figure 4.3-2
Special-Status Plant Species

All identified species were considered unlikely to occur on the project site for one or more of the following reasons:

- Common plants which are nearly always associated with the special-status species, and which indicate the presence of suitable, intact habitat, are absent from the project site.
- Specific soil and other habitat characteristics are absent from the project site.
- Management/maintenance of the project site (e.g., mowing, landscaping) precludes the species.
- Hydrologic conditions necessary to support the species are absent from the project site.

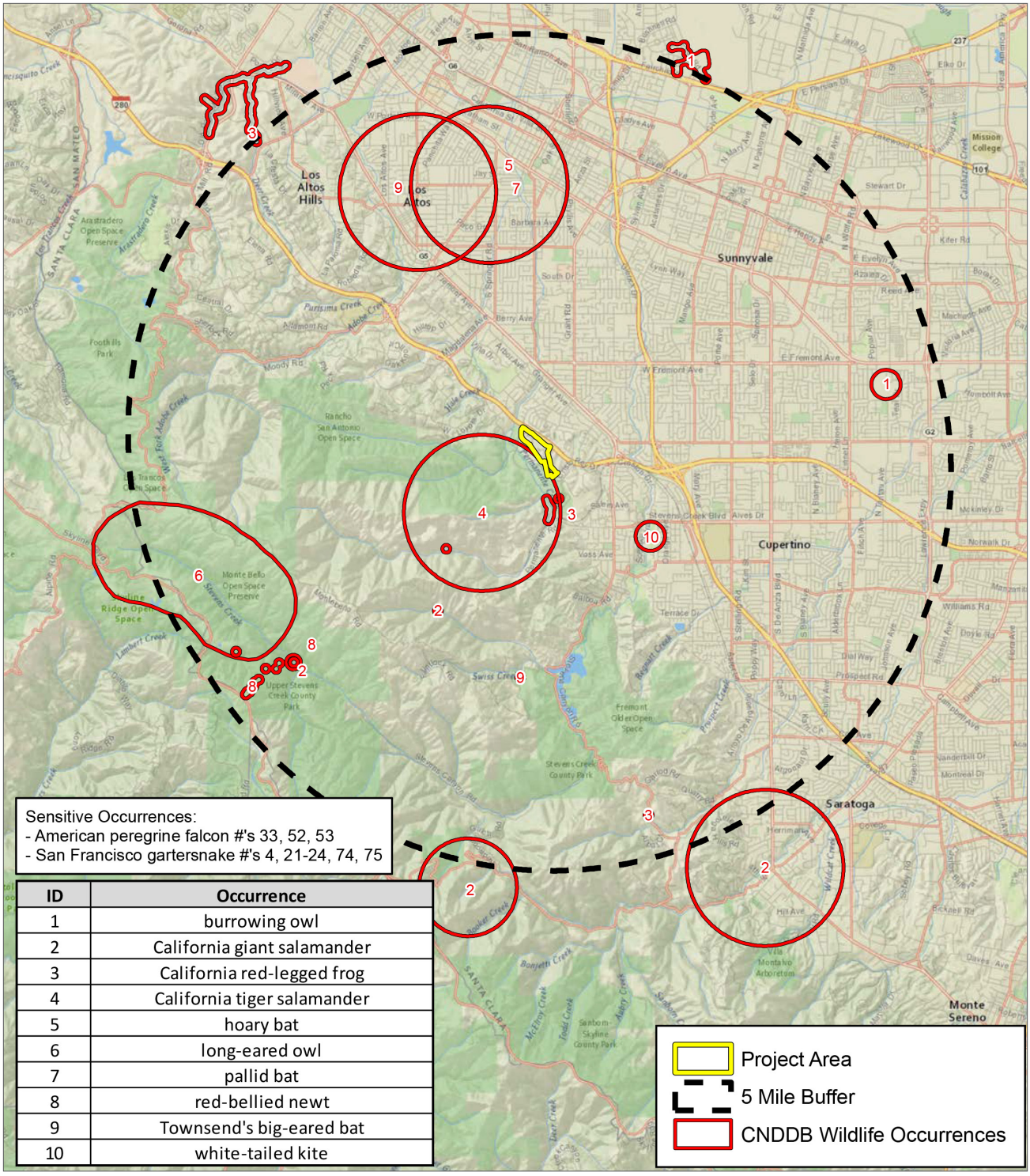
Existing conditions on and near the project site are developed and primarily dominated by landscaped and non-native vegetation. Based on a review of historical aerial photographs, as well as the observed species present in non-native annual grassland areas, all of the areas of proposed improvements have been subject to historic disturbance, including mass grading. These conditions do not lend themselves to presence of rare plant populations, and rare plant species are not anticipated to be present prior to or during project construction.

Special-Status Wildlife Species

The diversity of urban wildlife depends on the extent and type of landscaping and remaining open space, as well as the proximity to natural habitat. Trees and shrubs used for landscaping provide nest sites and cover for wildlife adapted to developed areas. Urban areas, including the project site, can also provide habitat for several species of native mammals such as the California ground squirrel (*Otospermophilus beecheyi*), Botta's pocket gopher (*Thomomys bottae*), black-tailed deer (*Odocoileus hemionus*), western harvest mouse (*Reithrodontomys megalotis*), raccoon (*Procyon lotor*), striped skunk (*Mephitis mephitis*) and wild turkey (*Melegaris gallopavo*). However, none of these species are afforded any projection by the CDFW or the USFWS. Therefore, the following discusses the potential for special-status wildlife species to occur on the project site.

Figure 4.3-3 represents mapped data from CNDDB and shows the project site is also adjacent to and near habitat that has the potential to support special-status wildlife species. The two species in close proximity to the project site include the California tiger salamander *(Ambystoma californiense) and* the California red-legged frog *(Rana draytonii),* which are both considered special-status animal species. Based on the conclusions of the Biological Resources Assessment prepared for the project site, it was determined that the site is unsuitable for 49 of the 58 of the special-status wildlife species with the potential to occur on the project site,[4] including the California tiger salamander *(Ambystoma californiense) and* the California red-legged frog *(Rana draytonii).*

[4] Appendix B of the Biological Resources Assessment contains lists of special-status wildlife species occurring within the vicinity of the project site and Appendix C provides a list of observed wildlife species on the project site. See Appendix E of this Draft EIR.



ID	Occurrence
1	burrowing owl
2	California giant salamander
3	California red-legged frog
4	California tiger salamander
5	hoary bat
6	long-eared owl
7	pallid bat
8	red-bellied newt
9	Townsend's big-eared bat
10	white-tailed kite

Source: WRA Environmental Consultants, 2017; PlaceWorks, 2017.

0 2
Scale (Miles)

Figure 4.3-3
Special-Status Wildlife Species

For the species determined to have no potential to occur or those determined to be unlikely to occur at the site, habitat features may be entirely absent, or some elements of suitable habitat may be present (e.g., trees potentially suitable for nesting). However, the land-use on or surrounding the site, the distance from known ranges or documented occurrences, and/or the lack of other required habitat elements on the project site preclude these species. Elements which are required to support special-status species, but are not found on the project site include: vernal pools, soils to support host plants, sandy beaches or alkaline flats, vegetation communities (e.g. marshes, or old growth fir forests), and downed trees or unmaintained buildings.

The special-status species that have been observed and have a moderate to high potential to occur on the project site include: white-tailed kite (*Elanus leucurus*), Nuttall's woodpecker (*Picoides buttallii*), oak titmouse (*Baeolophus inornatus*), burrowing owl (*Athene cunicularia*), Allen's hummingbird (*Selasphorus sasin*), Lawrence's goldfinch (*Spinus lawrencei*), and San Francisco dusky-footed woodrat (*Neotoma fuscipes annectens*).

Protected Nesting Birds

Additionally, there is a possibility that birds could nest in trees and other landscaping on the project site. The nests of most bird species are protected under the MBTA when in active use and raptor species protected under the MBTA and California Fish and Game Code (CFGC) could nest on the project site. Common and generalist raptors such as red-shouldered hawk (*Buteo lineatus*) were observed foraging on the project site. Urban-adapted passerine species including Anna's hummingbird (*Calypte anna*), California towhee (*Melozone crissalis*), dark-eyed junco (*Junco hyemalis*), cedar waxwing (*Bombycilla cedrorum*), acorn woodpecker (*Melanerpes formicivorus*), and American crow (*Corvus brachyrhynchos*), as well as the nonnative European starling (*Sturnus vulgaris*), were also observed in developed and landscaped portions of the project site. Woody vegetative cover (e.g., trees, shrubs), which occurs throughout the project site and in the immediate adjacent areas, may support nesting of species that are more typically observed in woodlands including Nuttall's woodpecker (*Picoides nuttallii*), a special-status bird species. Passerine species associated with open grassland habitats, such as western bluebird (*Sialia mexicana*) and song sparrow (*Melospiza melodia*), were observed on the project site. The project site does contain habitat that may support nesting of these species to the south of existing buildings. The stormwater retention basin on the project site southeast of Paloma Court contains emergent vegetation that may provide foraging and nesting for wren species observed on the site. The stormwater retention basin is not large enough to support colonial nesting birds such as tricolored blackbird (*Agelaius tricolor*).

Wildlife Corridors

Wildlife corridors are landscape features that provide connectivity on larger scales between areas of suitable habitat or on smaller scales between habitats and resources such as cover or food that may otherwise be isolated. Corridors must be unobstructed and contain the proper biological communities such that transient and local animals may access them. A sufficient lack of stressors or disturbances within the corridor is also necessary in order for the corridor to be successful. Corridors vary by species due to species' unique habitat requirements, life histories, size, tolerance of disturbance, and movement patterns. Some species, particularly flying species, can use "stepping stone" dispersal habitats, or closely

spaced pockets of habitat can be used by certain species during dispersal between larger core habitat areas.

Above all, wildlife corridors must link two areas of core habitat and should not direct wildlife to developed areas or areas that are otherwise void of core habitat. The project site is dominated by developed areas interspersed with naturalized vegetation communities unsuitable for most non-urban-adapted wildlife species. In addition, the project site does not contain a riparian or stream corridor for aquatic species. The project site is part of a larger region of urban development in western Santa Clara County and prevents direct land connection to large, continuous, undeveloped habitat areas. The project site is located at the margins of this developed area, adjacent to large areas of open space which may be utilized as both core habitat and for wildlife movement. However, the project site does not provide a corridor providing a link between two areas of core habitat, and is therefore not considered to support or contribute to a wildlife movement corridor. No viable wildlife movement corridor exists on the project site for mammalian, reptile, or amphibian species.

The project site contains various mature native and non-native trees species that have the potential to support foraging and nesting of a wide variety of native and non-native birds. Although the project site is predominantly developed, and trees are landscaped and maintained regularly, foraging habitat is present for many wintering and migratory birds. Trees and shrubs on the project site provide foraging habitat and may act as a movement corridor for overwintering and other migratory birds.

Protected Trees

This discussion describes the results of the Arborist Reports prepared for the existing trees on the site and the trees that as identified as protected or "*Specimen"* trees per the Protected Trees Ordinance (CMC Chapter 14.18) described in the regulatory setting above.

While several thousand trees exist on the project site, in accordance with City practices, the Arborist Reports prepared for the project site (see Appendix E of this Draft EIR) [5] included a survey of trees in the areas proposed for development, as trees in the areas outside the development area would not be impacted. Out of the trees in the development area, 327 trees representing 23 species (types) were evaluated. The most common species evaluated was London plane (*Platanus x hispanica*), with 70 trees. There were 32 Coast live oaks (*Quercus agrifolia),* 40 Aleppo pine (*Pinus halepensis*), 30 Coast redwoods (*Sequoia sempervirens),* 21 Crape myrtle (*Lagerstroemia indica*), 17 Purpleleaf plum (*Prunus cerasifera),* 20 red ironbark *(Eucalyptus sideroxylon),* and 12 Chinese pistache *(Pistacia chinensis).* All other identified species consisted of ten or fewer trees.

The professional arborist evaluated the health and structural condition of the 327 trees in the proposed development applying a scale of 1 to 5, with 1 being the poorest condition and 5 being a good condition. These are defined as follows:

- Good Condition:

[5] This discussion combines the results of the April 2017 Arborist Report and the August 2017 Addendum. Both reports are included in Appendix E of this Draft EIR.

- 5: A healthy, vigorous tree, reasonably free of signs and symptoms of disease, with good structure and form typical of the species.
- 4: Tree with slight decline in vigor, small amount of twig dieback, minor structural defects that could be corrected.

- Fair Condition:
  - 3: Tree with moderate vigor, moderate twig and small branch dieback, thinning of crown, poor leaf color, moderate structural defects that might be mitigated with regular care.
- Poor Condition:
  - 2: Tree in decline, epicormic growth, extensive dieback of medium to large branches, significant structural defects that cannot be abated.
  - 1: Tree in severe decline, dieback of scaffold branches and/or trunk; most of foliage from epicormics; extensive structural defects that cannot be abated.

A majority of the trees were in good (approximately 60 percent) and fair (approximately 35 percent) condition, with only 22 trees (approximately 10 percent) in poor condition. Tree sizes ranged from 4 to 26 inches in diameter, with an average trunk diameter of 11 inches (of approximately 240 single-trunk trees).

Out of the 327 trees surveyed, the Arborist Reports identified 142 trees, including 25 protected trees, that would be directly impacted by development and would require removal, and 185 trees, including 16 protected trees, that would be preserved. The professional arborist assigned a preservation suitability rating for each of the 142 trees of either "high", "moderate" or "low". Suitability for preservation considers the health, age, and structural condition of the tree, and its potential to remain an asset to the site for years to come. Preservation suitability ratings are defined as follows:

- High: Trees with good health and structural stability that have the potential for longevity at the site.
- Moderate: Trees with somewhat declining health and/or structural defects than can be abated with treatment. The tree will require more intense management and monitoring, and may have shorter life span than those in 'high' category.
- Low: Tree in poor health or with significant structural defects that cannot be mitigated. Tree is expected to continue to decline, regardless of treatment. The species or individual may have characteristics that are undesirable for landscapes, and generally are unsuited for use areas

Of the 142 trees in the proposed development areas subject to removal, 25 of the trees qualify as protected trees. Impacts to protected trees are discussed in Section 4.3.3, Impact Discussion, below.

4.3.2 THRESHOLDS OF SIGNIFICANCE

An Initial Study was prepared for the proposed project (see Appendix A of this Draft EIR). Based on the analysis contained in the Initial Study it was determined that development of the proposed project would not result in significant environmental impacts per the following significance standards and therefore, are not discussed in this chapter.

- Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the California Department of Fish and Wildlife or US Fish and Wildlife Service.
- Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.), through direct removal, filling, hydrological interruption, or other means.
- Conflict with an adopted Habitat Conservation Plan, Natural Community Conservation Plan or other approved local, regional, or State habitat conservation plan.

Based on the Initial Study and comments received during the scoping process it was determined that the proposed project could result in a potentially significant impact to biological resources if it would:

1. Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service.
2. Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites.
3. Conflict with any local ordinances or policies protecting biological resources, such as a tree preservation policy or ordinance.

4.3.3 IMPACT DISCUSSION

BIO-1	**The proposed project would not have a substantial adverse effect, either directly or through habitat modifications, on a plant or animal population, or essential habitat, defined as a candidate, sensitive or special-status species.**

Special-Status Plant Species

As shown on Figure 4.3-2, the project site is mapped as a location that may contain suitable habitat for a type of shrub commonly known as the western leatherwood, which is a special-status plant species. However, this species was not encountered on the project site during field investigation that took place in January 2017. Furthermore, as discussed under the existing conditions section, the project site and property near the project site are developed and primarily dominated by landscaped and non-native vegetation and all of the areas of proposed improvements have been subject to historic disturbance, including mass grading. These conditions do not lend themselves to presence of rare plant populations, and rare plant species are not anticipated to be present prior to or during project construction. The location where the off-site temporary construction employee parking and equipment staging would occur is not mapped as suitable habitat for this special-status plant species. Therefore, impacts to special-status plant species are *less than significant*.

Special-Status Wildlife Species

As shown on Figure 4.3-3, the project site and the off-site construction staging area is mapped as a location that may contain suitable habitat for the California tiger salamander *(Ambystoma californiense)* and the California red-legged frog *(Rana draytonii)*, which are special-status wildlife species. In addition, the special-status wildlife species that have been observed and have a moderate to high potential to occur on the project site and the off-site construction staging area include: burrowing owl (*Athene cunicularia*), San Francisco dusky-footed woodrat (*Neotoma fuscipes annectens*), white-tailed kite (*Elanus leucurus*), Nuttall's woodpecker (*Picoides buttallii*), oak titmouse (*Baeolophus inornatus*), Allen's hummingbird (*Selasphorus sasin*), and Lawrence's goldfinch (*Spinus lawrencei*). A discussion and impact conclusion for each of these species is provided below.

California tiger salamander (Ambystoma californiense)

The occurrence of this species was documented in 1893, but the documentation is questionable based upon date of the occurrence and lack of additional occurrences since. It is most likely that this documented occurrence is likely a misidentification. Furthermore, there are no wetlands or vernal pools suitable for breeding are not present in the vicinity surrounding the project site or on the project site to support CTS. The next closest documented occurrence is 6.5 miles north of the project site. Therefore, this species is unlikely to occur in the project site or surrounding area. Accordingly, impacts to the California tiger salamander *(Ambystoma californiense)* are *less than significant* and no mitigation measures are required.

California red-legged frog (Rana draytonii)

The California red-legged frog (*Rana draytonii*) prefer deep, quiet pools in creeks, rivers, or lakes below 1,500 meters (4,921 feet) in elevation. Habitat requirements include fresh emergent or dense riparian vegetation, especially willows adjacent to shorelines. This species is documented in Permanente Creek south of the project site; however, there is no suitable aquatic habitat within or near the project site to support breeding. The stormwater retention basin does not pond for sufficient period or depth to support California red-legged frog. Additionally, there are significant barriers to dispersal between occupied California red-legged frog occurrences and the project site such as developed roads subject to heavy vehicle traffic and housing developments. Therefore, it is determined that California red-legged frog is unlikely to occur on the project site. Accordingly, impacts to the California red-legged frog (*Rana draytonii*) are *less than significant* and no mitigation measures are required.

Burrowing owl (Athene cunicularia)

Western burrowing owl inhabits open areas with sparse or non-existent tree or shrub canopies; typical habitat is annual or perennial grassland, although human-modified areas such as agricultural land and airports are also used. Burrowing owl is dependent on burrowing mammals to provide the burrows that are characteristically used for shelter and nesting. In northern California, this species is typically found in close association with California ground squirrel. Anthropogenic substrates such as pipes or debris piles may also be occupied in place of burrows. In the San Francisco Bay Area, the species is generally resident year-round, and shows strong site fidelity. The nearest documented occurrence is less than 5 miles east of

the project site. This species is unlikely to occupy most of the developed and landscaped areas of the site; however, there is a portion of the project site and immediately adjacent areas to the south that contain open grassland and small mammal burrows that could potentially support nesting of this species. While no temporary or permanent loss of burrowing owl habitat due to project construction or operation is anticipated, if owls are present during construction, individuals may be directly impacted by vehicle traffic, or they may be flushed from protective burrows by vehicle traffic or ground disturbance. Accordingly, this is a *potentially significant* impact warranting mitigation.

Impact BIO-1a: Construction of the proposed project may directly impact nesting or overwintering individual *burrowing owls (Athene cunicularia)* through ground disturbance and vehicle traffic if they are present in the grassland habitat in the southern portion of the project site.

> Mitigation Measure BIO-1a: For construction activities occurring within the proposed areas of development, one pre-construction survey no more than 14 days prior to initial ground disturbance shall be performed in accordance with the California Department of Fish and Wildlife (CDFW) *Staff Report on Burrowing Owl Mitigation*. The pre-construction survey shall include suitable habitat and surrounding accessible areas up to 200 feet of proposed construction activities and be conducted prior to the start of initial ground disturbance, regardless of time of year. If burrowing owls are documented during the nesting period (March 1 through August 31), an appropriate no-disturbance buffer per the CDFW *Staff Report on Burrowing Owl Mitigation* shall be placed around active burrows until young have fledged the nest. If burrowing owl is detected during the non-nesting season or following the determination the nest is no longer active and the occupied burrow(s) cannot be avoided, a burrowing owl exclusion plan shall be prepared and implemented. A qualified biologist shall determine if visual barriers or other measures are suitable for occupied burrows which can be avoided.
>
> Significant With Mitigation: Less Than Significant

San Francisco dusky-footed woodrat (Neotoma fuscipes annectens)

This subspecies of the dusky-footed woodrat occurs in the Coast Ranges between the San Francisco Bay and the Salinas River. Occupied habitats are variable and include forest, woodland, riparian areas, and chaparral. Woodrats feed on woody plants, but will also consume fungi, grasses, flowers and acorns. Foraging occurs on the ground and in bushes and trees. This species constructs robust stick houses/structures in areas with moderate cover and a well-developed understory containing woody debris. Breeding takes place from December to September. Individuals are active year-round, and generally nocturnal. Within the project site, San Francisco dusky-footed woodrat houses were observed in oleander and holly-leaved cherry (*Prunus ilicifolia*) along the extreme western edge of the project site. This location would not be removed or altered as a result of project construction or operation; however, construction activities could cause disturbance. Accordingly, this is a *potentially significant* impact warranting mitigation.

Impact BIO-1b: Construction of the proposed project may indirectly impact the San Francisco dusky-footed woodrat *(Neotoma fuscipes annectens)* through construction related activities that occur near the woodrat houses.

Mitigation Measure BIO-1b: The construction contractor shall install orange construction fencing to limit construction crews from entering the habitats of the San Francisco dusky-footed woodrat *(Neotoma fuscipes annectens)* adjacent to the work area.

Significant With Mitigation: Less Than Significant

White-tailed kite (Elanus leucurus)

The white-tailed kite (*Elanus leucurus*) is a resident in agricultural areas, grasslands, scrub habitats, wet meadows, and emergent wetlands throughout the lower elevations of California. Nests are constructed mostly of twigs and placed in small to large trees, often at habitat edges. This species preys upon a variety of small mammals and other vertebrates. This species has been documented to nest within 2 miles of the project site. Grasslands and ruderal communities within and adjacent to the project site provide foraging habitat, and large trees or shrubs adjacent to these areas provide nesting habitat. Landscape trees throughout portions of the project site are disturbed and provide poor nesting habitat, although nesting is possible. No nest structures were observed on the project site during the site visit. However, it is possible that nesting may occur within or adjacent to the project site; therefore, construction activities could cause disturbance. Accordingly, this is a *potentially significant* impact warranting mitigation.

Nuttall's woodpecker (Picoides buttallii)

The Nuttall's woodpecker (*Picoides buttallii*), common in much of its range, is a year-round resident throughout most of California west of the Sierra Nevada. Typical habitat is oak or mixed woodland, and riparian areas. Nesting occurs in tree cavities, principally those of oaks and larger riparian trees. This species forages on a variety of arboreal invertebrates. This species was observed on the project site. Additionally, this species can be common in urban forest environments, and trees around the buildings on the project site may contain cavities suitable for nesting; therefore, construction activities could cause disturbance. Accordingly, this is a *potentially significant* impact warranting mitigation.

Oak titmouse (Baeolophus inornatus)

This relatively common species is a year-round resident throughout much of California including most of the coastal slope, the Central Valley and the western Sierra Nevada foothills. Its primary habitat is woodland dominated by oaks. Local populations have adapted to woodlands of pines and/or junipers in some areas. The oak titmouse (*Baeolophus inornatus*) nests in tree cavities, usually natural cavities or those excavated by woodpeckers, though they may partially excavate their own. Seeds and arboreal invertebrates make up the birds' diet. This species has been documented to occur throughout Cupertino and western Santa Clara County. Additionally, this species can be found in urban forest environments, and trees on the project site could support nesting of this species; therefore, construction activities could cause disturbance. Accordingly, this is a *potentially significant* impact warranting mitigation.

Allen's hummingbird (Selasphorus sasin)

Allen's hummingbird (*Selasphorus sasin*), common in many portions of its range, is a summer resident along the majority of California's coast and a year-round resident in portions of coastal southern California and the Channel Islands. Breeding occurs in association with the coastal fog belt, and typical habitats used

include coastal scrub, riparian, woodland and forest edges, and eucalyptus and cypress groves. It feeds on nectar, as well as insects and spiders. Although the project site does not contain coastal scrub, riparian habitat or cypress groves, the trees onsite could potentially support this species and this species is often observed in suburban environments. Allen's hummingbird (*Selasphorus sasin*) has been documented to occur within the Cupertino and western Santa Clara County. However, it is possible that nesting may occur within or adjacent to the project site; therefore, construction activities could cause disturbance. Accordingly, this is a *potentially significant* impact warranting mitigation.

Lawrence's goldfinch (Spinus lawrencei)

This generally uncommon species is endemic as a breeder to arid woodland habitats in the Central Valley and coastal foothills of California, as well as northern Baja California. Annual distribution within the breeding range can be highly erratic. Wintering occurs in the greater southwest region, including southern California. Suitable woodland habitat is frequently dominated by oaks, and annual native plants are an important food resource. The project site contains trees that could simulate a woodland habitat to support foraging and potential nesting of this species. The project site is also east of suitable habitat that may support this species; therefore, this species may be observed onsite. Occurrences have been documented around the project site. Therefore, construction activities could cause disturbance. Accordingly, this is a *potentially significant* impact warranting mitigation.

Impact BIO-1c: Construction of the proposed project may directly (destroy active nests) or indirectly (cause disturbance that results in nest abandonment) result in an impact to special-status nesting birds including the white-tailed kite (*Elanus leucurus*), Nuttall's woodpecker (*Picoides buttallii*), oak titmouse (*Baeolophus inornatus*), Allen's hummingbird (*Selasphorus sasin*), and the *Lawrence's goldfinch (Spinus lawrencei)* and other native nesting birds protected by the Migratory Bird Treaty Act and California Fish and Game Code.

Mitigation Measure BIO-1c: Nests of special-status and other native birds shall be protected when in active use, as required by the federal Migratory Bird Treaty Act and the California Fish and Game Code. If ground disturbance from construction activities and any required tree removal occur during the nesting season (February 15 and August 15), a qualified biologist shall be required to conduct surveys prior to tree removal or ground disturbance from construction activities. Surveys shall encompass the entire construction area and the surrounding 500 feet. Preconstruction surveys are not required for tree removal or construction activities outside the nesting period. If construction or tree removal would occur during the nesting season (February 15 to August 15), preconstruction surveys shall be conducted no more than 14 days prior to the start of tree removal or ground disturbance from construction activities. Preconstruction surveys shall be repeated at 14-day intervals until construction has been initiated in the area after which surveys can be stopped. Locations of active nests containing viable eggs or young birds shall be documented and protective measures implemented under the direction of the qualified biologist until the nests no longer contain eggs or young birds. Protective measures shall include establishment of clearly delineated exclusion zones (i.e., demarcated by identifiable fencing, such as orange construction fencing or equivalent) around each nest location as determined by a qualified biologist, taking into account the species of birds nesting, their tolerance for disturbance and proximity to existing development. In general, exclusion zones shall be a minimum of 300 feet for raptors and 75 feet for passerines and other birds. The active nest within an

exclusion zone shall be monitored on a weekly basis throughout the nesting season to identify signs of disturbance and confirm nesting status. The radius of an exclusion zone may be increased by the qualified biologist if project activities are determined to be adversely affecting the nesting birds. Exclusion zones may be reduced by the qualified biologist and in consultation with California Department of Fish and Wildlife, if necessary. The protection measures shall remain in effect until the young have left the nest and are foraging independently or the nest is no longer active.

Significance With Mitigation: Less Than Significant

BIO-2 The proposed project would not interfere substantially with the movement of any native resident or migratory fish or wildlife species, their wildlife corridors or nursery sites.

The proposed project would result in a significant impact if it would impede the movement or migration of wildlife. The project site and the offsite construction staging area is located in an urbanized area, bordered primarily by existing roadways and other urban uses. The project site does not provide a corridor providing a link between two areas of core habitat, and is therefore not considered to support or contribute to a wildlife movement corridor. Although the southwestern portion of the project site abuts the Rancho San Antonio County Park/Open Space Preserve, the open space area in this area of the project site does not contain high value habitat and is isolated among roadways and urbanized areas. These site conditions preclude the presence of any important wildlife movement corridors across the site. In addition, the site contains no creeks or aquatic habitat that would support fish. No viable wildlife movement corridor exists on the project site for mammalian, reptile, or amphibian species.

The project site and the off-site construction staging area contains various mature native and non-native trees species that have the potential to support foraging and nesting of a wide variety of native and non-native birds. Although the project site is predominantly developed, and trees are landscaped and maintained regularly, foraging habitat is present for many wintering and migratory birds. Trees and shrubs on the project site provide foraging habitat and may act as a movement corridor for overwintering and other migratory birds. However, the value of the project area in supporting the movement and migration of bird species does not differ from the value provided by any other developed area.

With implementation of the proposed project, wildlife species common in urban habitat would continue to move through the area, both during and after construction. Some species common in open grasslands and suburban habitats would most likely be displaced with the elimination of some of the existing non-native grassland cover, scattered trees, and ornamental landscape trees and shrubs on the site, but these are species that are relatively abundant in urban areas, and their loss or displacement would not be considered a significant impact. Therefore, this would be considered a *less-than-significant* impact on wildlife movement.

Significance Without Mitigation: Less Than Significant

BIO-3 The proposed project would not conflict with any local ordinances or policies protecting biological resources, such as a tree preservation ordinance.

As described below, the proposed project in general would not conflict with any relevant goals and policies in the City of Cupertino General Plan related to protection of biological and wetland resources:

- Policy ES-5.2 encourages the clustering of new development away from sensitive areas such as riparian corridors, wildlife habitat and corridors, public open space preserves and ridgelines. Although the project would develop existing grasslands, the grassland area does not contain any sensitive habitat of special concern.
- Policy ES-5.3 calls for the preservation and enhancement of existing natural vegetation, landscape features, and open space when new development is preserved in existing natural areas. As described above, the project site currently contains open space and vegetated areas, but these areas are currently landscaped and are not in their natural state. The project site is previously disturbed, is developed for private use, and is located within an urban area and therefore does not serve as a natural open space area. The proposed project site would provide landscaping throughout the project site's interior and the surrounding perimeter and would comply with City's Landscape Ordinance. Proposed landscaping would be consistent with the surrounding Northern California landscape and would include native and/or adaptive, and drought resistant plant materials. The majority of plantings would be drought tolerant grasses, shrubs, and trees that, once established, would be adapted to a dry summer and intermittent rain in the winter season.
- Policy ES-5.6 calls for open space linkages within and between properties, most specifically to benefit threatened or endangered wildlife and species of concern. As described under Impact BIO-1, the project site is not recorded as containing any special-status wildlife species. In addition, the majority of the project site is already developed and the project site is located in an urban area. Therefore, development of the project site is not expected to disrupt any important wildlife linkages.

The City of Cupertino's Protected Trees Ordinance (CMC Chapter 14.18), provides regulations for the protection, preservation, and maintenance of trees of certain species and sizes. As previously described under the existing conditions section, the Arborist Report prepared for the proposed project identified 25 trees that are proposed for removal that qualify as *Specimen* trees per the Protected Trees Ordinance. Specimen trees that would be removed as part of the proposed project including their species, size, condition and preservation suitability rating are listed in Table 4.3-2.

TABLE 4.3-2 PROTECTED TREES TO BE REMOVED BY THE PROPOSED PROJECT

Arborist Report Tree No.	Species	Trunk Diameter (inches)	Condition Poor/Fair/Good[a]	Suitability for Preservation (Low/Moderate/High)[b]
71	Coast live oak	10, 9, 9, 7	4	High
72	Coast live oak	11, 11, 10, 7	4	Moderate
73	Coast live oak	11, 10, 10	3	Moderate
74	Coast live oak	21	4	High
81	Coast live oak	15	4	High
109	Coast live oak	13, 14	4	Moderate
153	Coast live oak	10	3	Moderate
154	Coast live oak	10	2	Low
155	Coast live oak	12	4	Moderate
157	Coast live oak	26, 19, 18	3	Moderate
175	Deodar cedar	14	4	High
176	Coast live oak	11	4	High
177	Coast live oak	8	4	High
178	Coast live oak	6	4	Moderate
189	Coast live oak	10	5	High
192	Coast live oak	23, 18	3	Moderate
195	Coast live oak	12	4	Moderate
196	Coast live oak	10, 5	4	Moderate
261	Coast live oak	15, 11	4	High
264	Coast live oak	12, 9, 7	4	Moderate
265	Coast live oak	7, 7, 5, 5, 5, 5, 5, 4, 4, 4	2	Low
266	Coast live oak	14, 10, 9	4	Moderate
269	Deodar cedar	10	3	Moderate
270	Deodar cedar	13	4	Moderate
342	Coast live oak	15	5	High
345	Coast live oak	16	4	High

Notes:

a. Tree Condition Ratings:

Good Condition:

5: A healthy, vigorous tree, reasonably free of signs and symptoms of disease, with good structure and form typical of the species;

4*:* Tree with slight decline in vigor, small amount of twig dieback, minor structural defects that could be corrected.

Fair Condition:

3: Tree with moderate vigor, moderate twig and small branch dieback, thinning of crown, poor leaf color, moderate structural defects that might be mitigated with regular care.

Poor Condition:

2: Tree in decline, epicormic growth, extensive dieback of medium to large branches, significant structural defects that cannot be abat-

TABLE 4.3-2 PROTECTED TREES TO BE REMOVED BY THE PROPOSED PROJECT

Arborist Report Tree No.	Species	Trunk Diameter (inches)	Condition Poor/Fair/Good[a]	Suitability for Preservation (Low/Moderate/High)[b]

ed;
1: Tree in severe decline, dieback of scaffold branches and/or trunk; most of foliage from epicormics; extensive structural defects that cannot be abated.

b. Tree Preservation Rating:
High Suitability: Trees with good health and structural stability that have the potential for longevity at the site;
Moderate Suitability: Trees with somewhat declining health and/or structural defects than can be abated with treatment. The tree will require more intense management and monitoring, and may have shorter life span than those in 'high' category;
Low Suitability: Tree in poor health or with significant structural defects that cannot be mitigated. Tree is expected to continue to decline, regardless of treatment. The species or individual may have characteristics that are undesirable for landscapes, and generally are unsuited for use areas.

Source: HortScience, 2017, *Arborist Report, The Forum at Rancho San Antonio*, Tree Assessment and Tree Removals tables.

Removal of a protected tree is permitted by the City, with approval of a tree removal permit. In some circumstances, the City requires tree management plans and tree replacement. The removal of trees protected under the City's Protected Trees Ordinance is considered a *significant* impact.

Impact BIO-3: Proposed development would result in removal of trees protected under City ordinance.

Mitigation Measure BIO-3: The proposed project shall comply with the City of Cupertino's Protected Trees Ordinance (CMC Section 14.18). A tree removal permit shall be obtained for the removal of any "protected tree," and replacement plantings shall be provided as approved by the City. If permitted, an appropriate in-lieu fee may be paid to the City of Cupertino as compensation for "protected trees" removed by the proposed project, where sufficient land area is not available on-site for adequate replacement and when approved by the City.

In addition, a Tree Protection and Replacement Program (Program) shall be developed by a Certified Arborist prior to project approval and implemented during project construction to provide for adequate protection and replacement of "protected trees," as defined by the City's Municipal Code. The Program shall include the following provisions:

- Adequate measures shall be defined to protect all trees to be preserved. These measures should include the establishment of a tree protection zone (TPZ) around each tree to be preserved. For design purposes, the TPZ shall be located at the dripline of the tree or 10 feet, whichever is greater. If necessary, the TPZ for construction-tolerant species (i.e., London planes, coast live oaks, and coast redwoods) may be reduced to 7 feet.
- Temporary construction fencing shall be installed at the perimeter of TPZs prior to demolition, grubbing, or grading. Fences shall be 6-foot chain link or equivalent, as approved by the City of Cupertino. Fences shall remain until all construction is completed. Fences shall not be relocated or removed without permission from the consulting arborist.
- No grading, excavation, or storage of materials shall be permitted within TPZs. Construction trailers, traffic, and storage areas shall remain outside fenced areas at all times.
- Underground services including utilities, sub-drains, water or sewer shall be routed around the TPZ. Where encroachment cannot be avoided, special construction techniques such as hand dig-

ging or tunneling under roots shall be employed where necessary to minimize root injury. Irrigation systems must be designed so that no trenching will occur within the TPZ.

- Construction activities associated with structures and underground features to be removed within the TPZ shall use the smallest equipment, and operate from outside the TPZ. The consulting arborist shall be on-site during all operations within the TPZ to monitor demolition activity.
- All grading, improvement plans, and construction plans shall clearly indicate trees proposed to be removed, altered, or otherwise affected by development construction. The tree information on grading and development plans should indicate the number, size, species, assigned tree number and location of the dripline of all trees that are to be retained/preserved. All plans shall also include tree preservation guidelines prepared by the consulting arborist.
- The demolition contractor shall meet with the consulting arborist before beginning work to discuss work procedures and tree protection. Prior to beginning work, the contractor(s) working in the vicinity of trees to be preserved shall be required to meet with the consulting arborist at the site to review all work procedures, access routes, storage areas, and tree protection measures.
- All contractors shall conduct operations in a manner that will prevent damage to trees to be preserved. Any grading, construction, demolition or other work that is expected to encounter tree roots shall be monitored by the consulting arborist. If injury should occur to any tree during construction, it should be evaluated as soon as possible by the consulting arborist so that appropriate treatments can be applied.
- Any plan changes affecting trees shall be reviewed by the consulting arborist with regard to tree impacts. These include, but are not limited to, site improvement plans, utility and drainage plans, grading plans, landscape and irrigation plans, and demolition plans.
- Trees to be preserved may require pruning to provide construction clearance. All pruning shall be completed by a Certified Arborist or Tree Worker. Pruning shall adhere to the latest edition of the ANSI Z133 and A300 standards as well as the *Best Management Practices -- Tree Pruning* published by the International Society of Arboriculture.
- Any root pruning required for construction purposes shall receive the prior approval of and be supervised by the consulting arborist.
- Any demolition or excavation within the dripline or other work that is expected to encounter tree roots should be approved and monitored by the consulting arborist. Roots shall be cut by manually digging a trench and cutting exposed roots with a sharp saw.
- Tree(s) to be removed that have branches extending into the canopy of tree(s) to remain must be removed by a qualified arborist and not by construction contractors. The qualified arborist shall remove the tree in a manner that causes no damage to the tree(s) and understory to remain. Tree stumps shall be ground 12 inches below ground surface.
- All tree work shall comply with the Migratory Bird Treaty Act as well as California Fish and Game Code Sections 3503 through 3513 to not disturb nesting birds. To the extent feasible, tree pruning and removal shall be scheduled outside of the breeding season. Breeding bird surveys shall be conducted prior to tree work. Qualified biologists shall be involved in establishing work buffers for active nests.

- All recommendations for tree preservation made by the applicant's consulting arborist shall be followed.

Significance With Mitigation: Less Than Significant

BIO-4 The proposed project in combination with past, present, and reasonably foreseeable projects, would not result in significant cumulative impacts with respect to biological resources.

The geographic scope of the cumulative analysis for biological resources considers the surrounding incorporated and unincorporated lands, and the region. The potential impacts of proposed development on biological resources tend to be site-specific, and the overall cumulative effect would be dependent on the degree to which significant vegetation and wildlife resources are protected on a particular site. This includes preservation of well-developed native vegetation (native grasslands, oak woodlands, riparian woodland, etc.), populations of special-status plant or animal species, and wetland features (including freshwater seeps and tributary drainages). At the same time, cumulative development can contribute incrementally to regionwide impacts, such as reductions in the amount of existing wildlife habitat, particularly for birds and larger mammals.

As discussed in Chapter 4, Environmental Evaluation, the cumulative development projects within the city are located in urbanized areas of the city and contain limited biological resource value. The Permanente Creek Flood Protection Project is currently under construction and includes habitat restoration. New development in the region would result in further conversion of existing natural habitats to urban and suburban conditions, limiting the existing habitat values of the surrounding area. This could include reduction in essential habitat for special-status species, removal of mature native trees and other important wildlife habitat features, and obstruction of important wildlife movement corridors.

As described above, the project site is mapped as containing suitable habitat for the western leatherwood shrub and contains land classified as "annual grass." However, the grassland area of the project site is landscaped and does not contain any natural wildlands or observed special-status species. The project site is previously disturbed, is developed for private use, and is located within an urban area and therefore does not serve as a wildlife corridor. Impacts associated with tree removal and potential impacts to nesting birds would be mitigated to less-than-significant levels, as described above. Given the relatively low natural resource quality of the project site and the project's mitigation of on-site impacts to less-than-significant levels, the proposed project would result in a *less-than-significant* cumulative impact on biological resources.

Significance Without Mitigation: Less Than Significant

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4.4 CULTURAL AND TRIBAL CULTURAL RESOURCES

This chapter includes an evaluation of the potential environmental consequences on cultural resources from construction and operation of the proposed project. Cultural resources include historically and architecturally significant resources, as well as archaeological resources, paleontological resources, and Tribal Cultural Resources (TCR) as defined under Assembly Bill 52 (AB 52). Additionally, this chapter describes the environmental setting, including regulatory framework and existing cultural resources on the project site, and identifies mitigation measures, if required, that would avoid or reduce significant impacts.

4.4.1 ENVIRONMENTAL SETTING

4.4.1.1 REGULATORY FRAMEWORK

This section summarizes the existing State regulations that apply to cultural resources. There are no federal, regional, or local policies or regulations regarding this subject.

California Environmental Quality Act

Public Resources Code Section 21083.2 provides for protection of unique archaeological resources. Preservation of unique archaeological sites is the preferred treatment (21083.2[b]) however, if sites are not be preserved in place, mitigation measures shall be required as provided in 21083.2(c).

Section 21084.1 addresses the issue of historical resources, which includes prehistoric Native American resources, historical-era archaeological deposits, buildings, structures, objects, and districts. Historical resources are defined as resources that are listed in or determined to be eligible for listing in the California Register of Historical Resources. It also includes resources included in a local register of historical resources or otherwise determined to be historically significant under Section 5024.1.

Section 15064.5 of the CEQA Guidelines states that a project that may cause a substantial adverse change in the significance of a historical resource is a project that may have a significant effect on the environment. The CEQA Guidelines define four ways that a property can qualify as a historical resource for purposes of CEQA compliance:

- The resource is listed in or determined eligible for listing in the California Register of Historical Resources, as determined by the State Historical Resources Commission.
- The resource is included in a local register of historical resources, as defined in Section 5020.1(k) of the Public Resources Code, or identified as significant in a historical resource survey meeting the requirements of Section 5024.1(g) of the Public Resources Code, unless the preponderance of evidence demonstrates that it is not historically or culturally significant.
- The lead agency determines the resource to be significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California, as supported by substantial evidence in light of the whole record.

- The lead agency determines that the resource may be a historical resource as defined in Public Resources Code Sections 5020.1(j) or 5024.1 (CEQA Guidelines Section 15064.5) which means, in part, that it may be eligible for the California Register.

In addition, Public Resources Code Section 21083.2 and Sections 15064.5(c), 15064(f), and 15126.4(b) of the CEQA Guidelines specify lead agency responsibilities to determine whether a project may have a significant effect on unique archaeological resources. If it can be demonstrated that a project will damage a unique archaeological resource, the lead agency may require reasonable efforts for the resources to be preserved in place or left in an undisturbed state. Preservation in place is the preferred approach to mitigation. The Public Resources Code also details required mitigation if unique archaeological resources are not preserved in place.

Section 15064.5(d) and (e) of the CEQA Guidelines specifies procedures to be used in the event of a discovery of Native American human remains on non-federal land. Section 15064.5(d) addresses procedures when an initial study identifies the existence or probable likelihood of Native American human remains within a project area. Section 15064.5(e) provides guidance for accidental discovery of any human remains after a project is already under way. These provisions protect such remains from disturbance, vandalism, and inadvertent destruction, establish procedures to be implemented if Native American skeletal remains are discovered during construction of a project, and establish the Native American Heritage Commission (NAHC) as the authority to identify the Most Likely Descendant (MLD) and mediate any disputes regarding disposition of such remains.

Health and Safety Code Sections 7052 and 7050.5

Section 7052 of the Health and Safety Code states that the disinterment of remains known to be human, without authority of law, is a felony. Section 7050.5 requires that construction or excavation be stopped in the vicinity of discovered human remains until the county coroner can determine whether the remains are those of a Native American. If determined to be Native American, the coroner must contact the NAHC.

Assembly Bill 52

Assembly Bill 52 (AB 52), which took effect on July 1, 2015, amends CEQA and adds standards of significance that relate to Native American consultation and the protection of TCR under CEQA.

Projects subject to AB 52 are those that file a notice of preparation for an EIR or notice of intent to adopt a negative or mitigated negative declaration on or after July 1, 2015. As of July 1, 2016, the Governor's Office of Planning and Research (OPR) developed guidelines and the Native American Heritage Commission (NAHC) informed tribes which agencies are in their traditional area. In response to these guidelines, a discussion of impacts to TCRs has been added to Section 4.4.2, Thresholds of Significance, further in this chapter. A TCR is defined under AB 52 as a site, feature, place, cultural landscape that is geographically defined in terms of size and scope, sacred place, and object with cultural value to a California Native American tribe that are either included or eligible for inclusion in the California Register of Historic Resources or included a local register of historical resources, or if the City, acting as the lead agency, supported by substantial evidence, chooses at its discretion to treat the resource as a TCR.

AB 52 requires the CEQA lead agency to begin consultation with a California Native American Tribe that is traditionally and culturally affiliated with the geographic area of the proposed project, if the Tribe requests in writing to be informed by the lead agency through formal notification of the proposed projects in the area. The consultation is required before the determination of whether a negative declaration, mitigated negative declaration, or EIR is required. In addition, AB 52 includes time limits for certain responses regarding consultation. CEQA Section 21084.3 has been added, which states that "public agencies shall, when feasible, avoid damaging effects to any tribal cultural resources." Information shared by tribes as a result of AB 52 consultation shall be documented in a confidential file, as necessary, and made part of a lead agencies administrative record. [1]

Public Resources Code Section 5097

Public Resources Code Section 5097 specifies the procedures to be followed in the event of the unexpected discovery of human remains on non-federal public lands. The disposition of Native American burials falls within the jurisdiction of the NAHC, which prohibits willfully damaging any historical, archaeological, or vertebrate paleontological site or feature on public lands.

4.4.1.2 EXISTING CONDITIONS

This section provides an overview of the history of Cupertino and of resources of paleontological, archeological, and historical significance that may be affected by the proposed project.

Methods

The cultural resources analysis conducted by Tom Origer & Associates on July 24, 2013 for the General Plan Update EIR consists of archival research at the Northwest Information Center at Sonoma State University, examination of the library and files, field inspection, and contact with the Native American community.[2]

Records searches were conducted to identify cultural resources within the city. Records searches were conducted at the Northwest Information Center (NWIC) of the California Historical Resources Information System, Sonoma State University, Rohnert Park; the California NAHC, Sacramento; and the University of California Museum Of Paleontology (UCMP), Berkeley. The NWIC, an affiliate of the State of California Office of Historic Preservation, is the official State repository of cultural resources records and reports for Santa Clara County. The NAHC maintains the Sacred Lands File, which includes the locations of sites with cultural significance to Native American groups. The UCMP's database includes information on locations where fossils have been identified, the taxa of fossils found at a particular location, and the geological formations associated with a fossil locality.

[1] California Public Resources Code, Section 21074.

[2] City of Cupertino, certified General Plan Amendment, Housing Element Update, and Associated Rezoning EIR, State Clearinghouse Number 2014032007. December 4, 2014.

As part of the records search, the following State and local inventories were reviewed for cultural resources:

- California Inventory of Historic Resources;
- California Historical Landmarks;
- California Points of Historical Interest;
- Directory of Properties in the Historic Property Data File. The directory includes the listings of the National Register of Historic Places, National Historic Landmarks, the California Register of Historical Resources, California Historical Landmarks, and California Points of Historical Interest; and
- City of Cupertino General Plan.

Publications, maps, historical aerial photographs, including an examination of the library and project files at Tom Origer & Associates, and internet sites were reviewed for archaeological, ethnographic, and historical information about the proposed project site and its vicinity. The purpose of this review was to identify known cultural resources within the city and its surroundings.

Historical Overview

This section describes the prehistory and ethnography, history, and paleontology of Cupertino as determined by the records searches and literature review described above.

Prehistory and Ethnography

Archaeological evidence indicates that human occupation of California began at least 12,000 years ago. Early occupants appear to have had an economy based largely on hunting, with limited exchange, and social structures based on extended family units. Later, milling technology and an inferred acorn economy were introduced. This diversification of economy appears coeval with the development of sedentism,[3] population growth, and expansion. Sociopolitical complexity and status distinctions based on wealth are also observable in the archaeological record, as evidenced by an increased range and distribution of trade goods (e.g., shell beads, obsidian tool stone), which are possible indicators of both status and increasingly complex exchange systems.

At the time of European settlement, the Cupertino area was situated within the area controlled by the Tamyen linguistic group of the Ohlone/Costanoan, near the linguistic boundary with the Ramaytush group. The Ohlone/Costanoan hunter-gatherers lived in rich environments that allowed for dense populations with complex social structures.[4] They settled in large, permanent villages about which were distributed seasonal camps and task-specific sites. Primary village sites were occupied throughout the year and other sites were visited in order to procure particular resources that were especially abundant or

[3] Sedentism means the transition from a nomadic lifestyle to a society which remains in one place.

[4] Barrett, S. 1908 The Ethno-Geography of the Pomo and Neighboring Indians. University of California Publications in American Archaeology and Ethnology Vol. 6, No. 1. University of California Press, Berkeley.

Kroeber, A. 1925 Handbook of the Indians of California. Bureau of American Ethnology, Bulletin 78, Smithsonian Institution, Washington, D.C.

available only during certain seasons. Sites often were situated near fresh water sources and in ecotones where plant life and animal life were diverse and abundant.

General History

Colonel Juan Bautista de Anza's party passed through the arroyo of San Joseph de Cupertino during exploration in March of 1776. One year later, the first Christian baptisms began in the Santa Clara Valley. Despite rampant disease and humiliation, recruitment escalated at the missions of the San Francisco Bay area. By the end of 1795, all of the Tamyen/Tamien villages had been abandoned and their former inhabitants baptized.

During the 19th century, the area was planted with vineyards and orchards by early European settlers and flourished well enough to draw more settlers to the area. Due to French and European vineyards failing in the late 1870s by *phylloxera*, California vineyards and wines did well, leading small communities to have wide-scale development and expansion. By the 1890s, *phylloxera* had spread from Europe, and the community shifted toward more fruit production.

Before the community at the crossroads of Stevens Creek Road and Saratoga-Sunnyvale Road (De Anza Boulevard) changed their name to Cupertino in 1904, it was known simply as West Side. 'Cupertino' was taken from John T. Doyle's naming his winery Cupertino after the name given to the nearby creek by Petrus Font during De Anza's 1776 expedition.

By the 1920s, Cupertino had a population of about 500, and development of the area centered around the agricultural economy, with a focus on wineries, canneries, and fruit drying and packing facilities. The Permanente Corporation was formed in 1939 to provide cement for the construction of Shasta Dam, with a huge plant and quarry just west of Cupertino. During the war, the plant also made record shipments of cement to the Pacific theatres. As the gateway to the Pacific theatre, the San Francisco Bay area experienced a post-war population boom, which in turn created a need for urban planning. In 1955, Cupertino was incorporated as Santa Clara County's 13th city in part to combat the annexation encroachment by the surrounding cities of Santa Clara, San José, Sunnyvale, and Los Altos.

In the 1960s, Cupertino transitioned from farming to industry and commercial expansion. This transition was done in anticipation, rather than as a reaction. One early successful example of this is the coalition of families that created Vallco park, which currently includes the Vallco Fashion Park.

Today, Cupertino is part of Silicon Valley, a world-renowned high-technology center and is home to many companies at the forefront of innovation.

Project Site Conditions

The majority of the City of Cupertino is on recent alluvium deposits of the Holocene (11,700 years ago to present). Holocene deposits are too recent to contain fossils. The western edge of Cupertino heading into the hills contains quaternary non-marine terrace and Plio-Pleistocene non marine deposits. These deposits date from the late Pleistocene (126,000 – 11,700 years ago) and the Pliocene/Pleistocene boundary (around 2,588,000 years ago).

Portions of the project site are underlain by manmade fills constructed as part of the original site development. Pliocene-Pleistocene-age Santa Clara formation is a sequence of continental sedimentary rock that underlies the entire property. The project site is on the southwestern flank of a northwest-trending anticline developed within the oldest facies (Searsville member) of the Santa Clara formation. Soil and colluvium overlie Quaternary alluvial deposits and Santa Clara formation in the project area, except were removed by previous grading activities.[5]

Based on the data compiled for the City of Cupertino's General Plan EIR, no cultural resources have been identified on the project site. However, the presence of Pleistocene deposits that are known to contain fossils indicates that the project site could contain paleontological resources or previously undiscovered archaeological resources.

Tribal Cultural Resources

The City of Cupertino has not received any request from any Tribes in the geographic area with which it is traditionally and culturally affiliated to be notified about projects in the city nor has the City received any requests for consultation pursuant to CEQA Section 21080.3.1.

4.4.2 THRESHOLDS OF SIGNIFICANCE

An Initial Study was prepared for the proposed project (see Appendix A of this Draft EIR). Based on the analysis contained in the Initial Study it was determined that development of the proposed project would not result in significant environmental impacts per the following significance standards and therefore, are not discussed in this chapter.

- Cause a substantial adverse change in the significance of a historical resource as defined in Section 15064.5.

Based on the Initial Study it was determined that the proposed project could result in a potentially significant cultural and tribal cultural resource impact if it would:

1. Cause a substantial adverse change in the significance of an archaeological resource[6] pursuant to Section 15064.5.
2. Directly or indirectly destroy a unique paleontological resource or site, or unique geologic feature.
3. Disturb any human remains, including those interred outside of formal cemeteries.
4. Cause a substantial adverse change in the significance of a Tribal Cultural Resource, defined in Public Resources Code Section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American Tribe, and that is:

[5] Cornerstone Earth Group, 2017, *Geotechnical and Geologic Hazard Investigation, The Forum Senior Community Update*, pages 15 to 16.

[6] As required by Public Resource Code Section 21083.2(a), an EIR shall only address unique archaeological resources.

- Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code Section 5020.1(k), or
- A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resource Code Section 5024.1. In applying the criteria set forth in subdivision (c) of the Public Resource Code Section 5024.1 for the purposes of this paragraph, the lead agency shall consider the significance to a California Native American tribe.

4.4.3 IMPACT DISCUSSION

CULT-1	The proposed project would not have the potential to cause substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5.

Although no known archaeological resources or ethnographic sites have been recorded at the project site or the location of the off-site construction employee parking and equipment staging area, historical and pre-contact archaeological deposits that meet the definition of historical resource under CEQA Section 21084.1 or CEQA Guidelines Section 15064.5 could be present at the project site and could be damaged or destroyed by ground-disturbing construction activities (e.g., site preparation, grading, excavation, and trenching for utilities) associated with the proposed project. Should this occur, the ability of the deposits to convey their significance, either as containing information about prehistory or history, or as possessing traditional or cultural significance to Native American or other descendant communities, would be materially impaired.

The probability of discovering buried archaeological resources is lowest in areas of the project site that are already developed with roadways and buildings, and highest in the areas of the project site currently containing undeveloped grasslands. Site preparation and construction activities in the undeveloped areas of the project site could disturb subsurface archaeological deposits, including unrecorded Native American prehistoric archaeological materials. This is considered a *potentially significant* impact.

Impact CULT-1: Construction of the proposed project would have the potential to cause a significant impact to an unknown archaeological resource pursuant to CEQA Guidelines Section 15064.5.

Mitigation Measure CULT-1: If any prehistoric or historic subsurface cultural resources are discovered during ground-disturbing activities, all work within 50 feet of the resources shall be halted and a qualified archaeologist shall be consulted. If the resource is a tribal resource – whether historic or prehistoric – the City shall make a good faith effort to contact the appropriate tribe(s) through outreach to the Native American Heritage Commission to evaluate the resource and determine appropriate avoidance, preservation, or mitigation measures. If the resource is non-tribal and if tribal where no affiliated tribes respond to the City's outreach efforts, the archaeologist shall assess the significance of the find according to CEQA Guidelines Section 15064.5. If any find is determined to be significant, representatives from the City and the archaeologist would meet to determine the appropriate avoidance measures or other appropriate mitigation. All significant cultural materials

recovered shall be, as necessary and at the discretion of the consulting archaeologist, subject to scientific analysis, professional museum curation, and documentation according to current professional standards. In considering any suggested mitigation proposed by the consulting archaeologist or tribes to mitigate impacts to tribal and non-tribal cultural resources, historical resources or unique archaeological resources, the City, in response to tribe(s) recommendations where appropriate, shall determine whether avoidance is necessary and feasible in light of factors such as the nature of the find, proposed project design, costs, and other considerations. If avoidance is infeasible, other appropriate measures (e.g., data recovery) may be instituted. Work may proceed on other parts of the project site while mitigation for tribal cultural resources, historical resources or unique archaeological resources is being carried out.

Significance With Mitigation: Less Than Significant

CULT-2 The proposed project would not have the potential to directly or indirectly destroy a unique paleontological resource or site, or unique geologic feature.

No paleontological resources have been identified on the project site or the location of the off-site construction employee parking and equipment staging area. However, because the proposed project requires substantial excavation that could reach significant depths below the ground surface where no such excavation has previously occurred, there could be fossils of potential scientific significance and other unique geologic features that have not yet been recorded. Such ground-disturbing construction associated with development under the proposed project could cause damage to, or destruction of, paleontological resources or unique geologic features.

As with archaeological resources, as described under Impact CULT-1, the probability of discovering buried paleontological resources is lowest in areas of the project site that are already developed with roadways and buildings, and highest in the areas of the project site currently containing undeveloped grasslands. Site preparation and construction activities in the undeveloped areas of the project site could disturb subsurface paleontological resources. This is considered a *potentially significant* impact.

Impact CULT-2: Construction of the proposed project would have the potential to directly or indirectly affect an unknown unique paleontological resource or site, or unique geologic feature.

Mitigation Measure CULT-2: In the event that fossils or fossil-bearing deposits are discovered during construction, excavations within 50 feet of the find shall be temporarily halted or diverted. The contractor shall notify a qualified paleontologist to examine the discovery. The paleontologist shall document the discovery as needed, in accordance with Society of Vertebrate Paleontology standards (Society of Vertebrate Paleontology 1995), evaluate the potential resource, and assess the significance of the finding under the criteria set forth in CEQA Guidelines Section 15064.5. The paleontologist shall notify the appropriate agencies to determine procedures that would be followed before construction is allowed to resume at the location of the find. If the project proponent determines that avoidance is not feasible, the paleontologist shall prepare an excavation plan for mitigating the effect of the project

based on the qualities that make the resource important. The excavation plan shall be submitted to the City for review and approval prior to implementation.

Significance With Mitigation: Less Than Significant

CULT-3	The proposed project would not have the potential to disturb any human remains, including those interred outside of formal cemeteries.

There are no known human remains of the project site or the location of the off-site construction employee parking and equipment staging area. However, the potential to unearth unknown remains during ground-disturbing activities associated with the construction of the project could occur. Descendant communities may ascribe religious or cultural significance to such remains, and may view their disturbance as an unmitigable impact.

As described under Impacts CULT-1 and CULT-2, the probability of discovering buried human remains is lowest in areas of the project site that are already developed with roadways and buildings, and highest in the areas of the project site currently containing undeveloped grasslands. Site preparation and construction activities in the undeveloped areas of the project site could disturb subsurface human remains interred outside of formal cemeteries. Any human remains encountered during ground-disturbing activities associated with the proposed project would be subject to federal, State, and local regulations to ensure no adverse impacts to human remains would occur in the unlikely event human remains are found.

Health and Safety Code Section 7050.5 and the CEQA Guidelines Section 15064.5(e) contain the mandated procedures of conduct following the discovery of human remains. According to the provisions in CEQA, if human remains are encountered at the site, all work in the immediate vicinity of the discovery shall cease and necessary steps to ensure the integrity of the immediate area shall be taken. The Santa Clara County Coroner shall be notified immediately. The Coroner shall then determine whether the remains are Native American. If the Coroner determines the remains are Native American, the Coroner shall notify the Native American Heritage Commission (NAHC) within 24 hours, who would, in turn, notify the person the NAHC identifies as the Most Likely Descendants (MLD) of any human remains. Further actions shall be determined, in part, by the desires of the MLD. The MLD has 48 hours to make recommendations regarding the disposition of the remains following notification from the NAHC of the discovery. If the MLD does not make recommendations within 48 hours, the owner shall, with appropriate dignity, reinter the remains in an area of the property secure from further disturbance. Alternatively, if the owner does not accept the MLD's recommendations, the owner or the descendent may request mediation by the NAHC.

Therefore, with the mandatory regulatory procedures described above, potential impacts related to the potential discovery or disturbance of any human remains accidently unearthed during construction activities associated with the proposed project would be *less than significant* and no mitigation measures would be required.

Significance Without Mitigation: Less Than Significant

CULT-4	**The proposed project would not cause a substantial adverse change in the significance of a Tribal Cultural Resource, defined in Public Resources Code Section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American Tribe, and that is: 1) Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code Section 5020.1(k), or 2) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resource Code Section 5024.1. In applying the criteria set forth in subdivision (c) of the Public Resource Code Section 5024.1 for the purposes of this paragraph, the lead agency shall consider the significance to a California Native American tribe.**

As discussed under Impacts CULT-1 and CULT-3, no known archeological resources, ethnographic sites, or Native American remains are located on the project site or the location of the off-site construction employee parking and equipment staging area. However, as discussed under Impact CULT-1, the project site could contain undiscovered subsurface archaeological deposits, including unrecorded Native American prehistoric archaeological materials. In addition, as discussed under impact discussion CULT-3, ground-disturbing activities associated with the proposed project have the potential to unearth unknown human remains. Therefore, although no known TCR have been identified on the project site, the proposed project has the potential to disturb subsurface deposits possessing traditional or cultural significance to Native American or other descendant communities. This is considered a *potentially significant* impact.

Impact CULT-4: Construction of the proposed project would have the potential to cause a significant impact to an unknown TCR as defined in Public Resources Code 21074.

Mitigation Measure CULT-4: Implement Mitigation Measure CULT-1.

Significance With Mitigation: Less Than Significant

CULT-5	**The proposed project, in combination with past, present, and reasonably foreseeable projects, would not result in cumulative impacts with respect to cultural resources.**

Development under the proposed project, in conjunction with buildout of the city and the region, has the potential to adversely affect archaeological resources, paleontological resources, human remains, and TCR through their destruction or disturbance during ground-disturbing activities. Impacts to cultural resources tend to be site specific and are assessed on a site-by-site basis. The significance of the impacts would depend largely on what, if any, cultural resources occur on or near the sites of the related projects that

are developed in the cumulative setting. Similar to the proposed project, such determinations would be made on a case-by-case basis and, if necessary, the applicants of the related projects would be required to comply with applicable federal, State, and local regulations and implement appropriate mitigation measures. Development of the proposed project would comply with federal and State laws protecting cultural resources. Implementation of Mitigation Measures CULT-1, CULT-2, and CULT-4 identified above would ensure that archaeological and paleontological resources, if discovered on the project site, are protected, and that discovered human remains and TCRs are handled appropriately. Thus, given that the proposed project's cultural resources impacts are less than significant with mitigation, the proposed project's impacts to cultural resources would not be cumulatively considerable. Therefore, cumulative impacts to cultural resources would be *less than significant*.

Significance Without Mitigation: Less Than Significant

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4.5 GEOLOGY AND SOILS

This chapter includes an evaluation of the potential environmental consequences associated with the construction and operation of the proposed project that are related to geology and soils. Additionally, this chapter describes the environmental setting, including regulatory framework and existing geological conditions, and identifies mitigation measures, if required, that would avoid or reduce significant impacts.

Some of the information evaluated in this chapter was derived from a recent geotechnical study of the project site, *Geotechnical and Geologic Hazard Investigation*, dated April 14, 2017 and prepared by Cornerstone Earth Group. A copy of this report is included as Appendix F, Geotechnical Data, of this Draft EIR. The chapter was prepared by a California Registered Geologist.

4.5.1 ENVIRONMENTAL SETTING

4.5.1.1 REGULATORY FRAMEWORK

The State of California as well as the City of Cupertino have established laws and regulations that pertain to geology and soils. There are no federal or regional laws or regulations related to geology and soils that are applicable to the proposed project. The following laws and regulations are relevant to the California Environmental Quality Act (CEQA) review process for the proposed project.

State Regulations

The California Building Code (CBC), known as the California Building Standards Code, is found in Title 24 of the California Code of Regulations. The CBC incorporates the International Building Code, a model building code adopted across the United States. Current State law requires every local agency enforcing building regulations, such as cities and counties, to adopt the provisions of the CBC within 180 days of its publication. The publication date of the CBC is established by the California Building Standards Commission. The most recent building standard adopted by the legislature and used throughout the state is the 2016 version of the CBC, which took effect on January 1, 2017. The CBC, as adopted by local cities or counties, is often modified with more restrictive amendments that are based on local geographic, topographic, or climatic conditions. These codes provide minimum standards to protect property and public safety by regulating the design and construction of excavations, foundations, building frames, retaining walls, and other building elements to mitigate the effects of seismic shaking and adverse soil conditions.[1] It also regulates grading activities, including drainage and erosion control.

[1] California Building Standards Commission, http://www.bsc.ca.gov/codes.aspx , accessed on March 20, 2014.

Local Regulations

City of Cupertino General Plan

The Cupertino General Plan titled "Community Vision 2040" includes policies that are relevant to aesthetics and applicable to the proposed project. The policies are identified in Chapter 7, Health and Safety, of the General Plan and listed in Table 4.5-1.

TABLE 4.5-1 POLICIES OF CUPERTINO COMMUNITY VISION 2040 RELEVANT TO GEOLOGY AND SOILS

Policy Number	Policy
Chapter 7, Health and Safety (HS)	
Policy HS-5.1	**Seismic and Geologic Review Process.** Evaluate new development proposals within mapped potential hazard zones using a formal seismic/geologic review process. Use Table HS-3 of this Element to determine the level of review required.

Source: Cupertino Community Vision 2040.

City of Cupertino Municipal Code

The following provisions of the Municipal Code apply to building structure and safety with regards to reducing impacts related to geologic hazards:

- Chapter 16.04, Building Code, of Title 16, Buildings and Construction includes the City of Cupertino 2013 CBC, adopted by reference, as the basis for the City's Building Code. A number of additional building-related requirements were appended to the CBC as it was adopted. The Cupertino Building Code prohibits most uses of structural plain concrete in structures assigned to Seismic Design Category C, D, E, or F. The following provides a discussion of additional chapters in Title 16 that include provisions to minimize impacts related to geology, soils, and seismicity.
- Chapter 16.08, Excavations, Grading and Retaining Walls, includes provisions that govern construction-related excavation and grading. Section 16.08.110 requires the preparation and submittal of Interim Erosion and Sediment Control Plans for all projects subject to City-issued grading permits, and Sections 16.08.120, Engineering Geological Reports, and 16.08.130, Soils and Engineering Reports, give the City the discretionary authority to require geological engineering and soils engineering investigations where potential geological hazards warrant.

  Additionally, Sections 16.08.170, Grading Permit – Approval, and 16.08.180, Grading Permit – Denial, set forth the standards for issuing and denying grading permits. Specifically, grading permits are denied where such activity could interfere with a drainage system, if the area is subject to geological or flood hazards to the extent that no reasonable amount of corrective work can eliminate or sufficiently reduce the hazard to human life or property, and where the interim plan is inadequate to certain sediment on-site or control erosion.
- Chapter 16.12, Soils and Foundations, requires the conduct of a detailed soils investigation for proposed subdivision construction projects that are subject to the Cupertino Building Code.

For a complete discussion on soil erosion prevention as it relates to water quality, see Chapter 4.8, Hydrology and Water Quality, of this Draft EIR.

4.5.1.2 EXISTING CONDITIONS

This section includes a discussion of the existing geologic, soil, and seismic conditions pertaining to the project site.

Site Geology[2]

The project site is located with a broad zone of generally northwest-trending lineaments and topographic features. The strongest geomorphic lineaments in the vicinity are associated with the base of the steep mountain slopes approximately 1,200 feet southwest of the project site, where the mountain front forms an abrupt, linear contact with flat-lying terraces deposits and underlying Santa Clara formation.

Permanente Creek follows a linear trend southwest of the project site. The 1-mile-long creek channel section is bordered on the southwest by a series of prominent linear fronts and faceted ridge spurs.

Topographic features on and around the project site also have a northwest trend. The two northwest-trending drainage swales, one located on and another immediately south of, the project site may be considered to be linear drainages, at least over a distance of about 1,800 feet. However, trenching indicates that they are not fault controlled. No other lineaments, scarps, or topographic features indicative of recent faulting are identified on the project site.

Soils[3]

Portions of the project site are underlain by manmade fills constructed as part of the original site development. Fills are reported to be derived from Santa Clara formation (QTsc) soils or a mixture of Santa Clara formation and colluvium (Qc). Fills were generally placed within the former drainage ravine that trended east-west across the project site, and additional minor fills associated with the original building pad were also made. Fills were reported to be compacted to at least 92 percent relative compaction in building and roadway areas.

Pliocene-Pleistocene-age Santa Clara formation is a sequence of continental sedimentary rock that underlies the entire property. The project site is on the southwestern flank of a northwest-trending anticline developed within the oldest facies (Searsville member) of the Santa Clara formation. As encountered in subsurface exploration on the property, the Santa Clara formation consists of interbedded sequences of non-marine clay, silt, sand, and gravel, which are poorly to well stratified with laminae and beds varying from 1 inch to 10 or more feet in thickness. Most recognizable beds observed in trenches

[2] Cornerstone Earth Group, 2017, *Geotechnical and Geologic Hazard Investigation, The Forum Senior Community Update*, pages 14 to 15.

[3] Cornerstone Earth Group, 2017, *Geotechnical and Geologic Hazard Investigation, The Forum Senior Community Update*, pages 15 to 16.

and recent borings are from 5 to 10 feet thick and internally stratified with fine- or coarse-grained, discontinuous thin lenses. The fine-grained materials vary from highly plastic, very stiff clay to sandy silt interbedded with fine- to coarse-grained sand layers. The coarse-grained beds are typically coarse-grained sand, with lesser amounts of silty sand and clayey gravelly sand. Cobbles and boulders are up to 1 to 2 feet in size, and include deeply weather greywacke sandstone, mudstone, volcanic and/or metamorphic clasts that are weak and friable. Lesser amounts of hard, strong chert, metamorphic rock, and greenstone clasts are also present. The poor to moderate sorting, bed lenticularity, abrupt changes in grain size, buttress unconformities, and channels filled with coarse sediment indicate that the Searsville facies was deposited in an alluvial fan environment. The sands and sandy gravel deposits represent channel deposits and the silty sands and clayey silts are overbank materials deposited adjacent to stream channels. The Santa Clara formation materials are typically uncemented, but are moderate well consolidated and dense. No clean, loose sand or gravel zones were encountered during site investigations.

Soil and colluvium overlie Quaternary alluvial deposits and Santa Clara formation in the project area, except were removed by previous grading activities. The soil is characteristically clay or sandy clay of moderate to high plasticity and high dry strength. Fine- and coarse-grained sand and fine gravel locally compose about 10 to 15 percent of the volume, and some areas contain up to 30 percent gravel. The soil and colluvium are generally a few to several feet in thickness on the steeper hillslopes and are local deeper on lower, gentler slopes and hillside swales.

Landslides

Landslides are gravity-driven movements of earth materials that may include rock, soil, unconsolidated sediment, or combinations of such materials. The rate of landslide movement can vary considerably. Some move rapidly as in a soil or rock avalanche, while other landslides creep or move slowly for extended periods of time. The susceptibility of a given area to landslides depends on many variables, although the general characteristics that influence landslide hazards are well understood. The factors that influence the probability of a landslide and its relative level of risk include the following:

- Slope Material: Loose, unconsolidated soils and soft, weak rocks are more hazardous than are firm, consolidated soils or hard bedrock.
- Slope Steepness: Most landslides occur on moderate to steep slopes.
- Structure and Physical Properties of Materials: This includes the orientation of layering and zones of weakness relative to slope direction.
- Water Content: Increased water content increases landslide hazard by decreasing friction and adding weight to the materials on a slope.
- Vegetation Coverage: Abundant vegetation with deep roots promote slope stability.
- Proximity to Areas of Erosion or Man-made Cuts: Undercutting slopes can greatly increase landslide potential.
- Earthquake Ground Motions: Strong seismic ground motions can trigger landslides in marginally stable slopes or loosen slope materials, and also increase the risk of future landslides.

The project site is located in a rolling hillside area, with gentle to moderate slopes underlain by bedrock materials at a shallow depth. The project site is not located in an area considered susceptible to earthquake triggered landsliding. Therefore, the potential for static and seismically-induced landsliding at the project is considered to be low.[4]

Lateral Spreading

Lateral spreading typically occurs as a form of horizontal displacement of relatively flat-lying alluvial material toward an open or "free" face such as an open body of water, channel, or excavation. In soils, this movement is generally due to failure along a weak plane, and may often be associated with liquefaction. As cracks develop within the weakened material, blocks of soil are displaced laterally toward the open face. Cracking and lateral movement may gradually propagate away from the face as blocks continue to break free.

While the project site terrain is hilly, the soils encountered as part of the geotechnical report prepared for the proposed project are relatively stiff or dense and are not susceptible to liquefaction. Therefore, the potential for lateral spreading to impact project site development is considered to be low.[5]

Liquefaction

Liquefaction generally occurs in areas where moist, fine-grained, cohesionless sediment or fill materials are subjected to strong, seismically induced ground shaking. Under certain circumstances, the ground shaking can temporarily transform an otherwise solid, granular material to a fluid state. Liquefaction is a serious hazard because buildings in areas that experience liquefaction may subside and suffer major structural damage. Liquefaction is most often triggered by seismic shaking, but it can also be caused by improper grading, landslides, or other factors. In dry soils, seismic shaking may cause soil to consolidate rather than flow, a process known as densification.

The soils encountered as part of the geotechnical report prepared for the proposed project are stiff cohesive and dense granular soils. This finding is consistent with Association of Bay Area Governments (ABAG) mapping for the project site. Therefore, the potential for liquefaction to impact project site development is considered to be low.[6]

[4] Cornerstone Earth Group, 2017, *Geotechnical and Geologic Hazard Investigation, The Forum Senior Community Update*, page 23.

[5] Cornerstone Earth Group, 2017, *Geotechnical and Geologic Hazard Investigation, The Forum Senior Community Update*, page 23.

[6] Cornerstone Earth Group, 2017, *Geotechnical and Geologic Hazard Investigation, The Forum Senior Community Update*, page 22.

Unstable Geologic Units

Expansive soils can change dramatically in volume depending on moisture content. When wet, these soils can expand; conversely, when dry, they can contract or shrink. Sources of moisture that can trigger this shrink-swell phenomenon can include seasonal rainfall, landscape irrigation, utility leakage, and/or perched groundwater. Expansive soil can develop wide cracks in the dry season, and changes in soil volume have the potential to damage concrete slabs, foundations, and pavement. Special building/structure design or soil treatment are often needed in areas with expansive soils.

The soils encountered as part of the geotechnical report prepared for the proposed project were moderately to highly expansive.[7]

4.5.2 THRESHOLDS OF SIGNIFICANCE

An Initial Study was prepared for the proposed project (see Appendix A of this Draft EIR). Based on the analysis contained in the Initial Study it was determined that development of the proposed project would not result in significant environmental impacts per the following significance standards and therefore, are not discussed in this chapter.

- Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:
  - Surface rupture along a known active fault, including those faults identified on recent Alquist-Priolo Earthquake Fault Zoning Maps issued by the State Geologist, or active faults identified through other means (i.e. site-specific geotechnical studies, etc.).
  - Strong seismic ground shaking.
  - Seismic-related ground failure, including liquefaction.
  - Landslides.
- Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater.

Based on the Initial Study it was determined that the proposed project could result in a potentially significant impact related to geology and soils if it would:

1. Result in substantial soil erosion or the loss of topsoil.
2. Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the Project, and potentially result in on- or off-site landsliding, lateral spreading, subsidence, liquefaction, or collapse.
3. Be located on expansive soil, as defined in Section 1803.5.3 of the California Building Code, creating substantial risks to life or property.

[7] Cornerstone Earth Group, 2017, *Geotechnical and Geologic Hazard Investigation, The Forum Senior Community Update*, page 25.

4.5.3 IMPACT DISCUSSION

GEO-1 The proposed project would not result in substantial soil erosion or the loss of topsoil.

Construction of the proposed project would include grading and building demolition activities that have the potential to result in soil erosion and/or loss of topsoil. Substantial soil erosion or loss of topsoil during construction could undermine structures and minor slopes, and this could be a concern during buildout of the proposed project. Grading activities associated with the proposed project would be subject to applicable regulations, including Municipal Code Section 16.08.110, which requires the preparation and submittal of Interim Erosion and Sediment Control Plans for all projects subject to City-issued grading permits. In addition, Sections 16.08.120, Engineering Geological Reports, and 16.08.130, Soils and Engineering Reports, give the City the discretionary authority to require geological engineering and soils engineering investigations where potential geological hazards warrant. Under Sections 16.08.170, Grading Permit – Approval, and 16.08.180, Grading Permit – Denial, grading permits may be denied if the area is subject to hazards to the extent that no reasonable amount of corrective work can eliminate or sufficiently reduce the hazard to human life or property, and where interim plans is inadequate for sediment on-site or control erosion.

Based on the geotechnical evaluation completed for the proposed project, grading and shoring activities would have the potential to result in erosion, and erosion control measures would be required to reduce erosion. This is considered a significant impact.

Impact GEO-1: During temporary shoring, perched water conditions may result in erosion of granular layers, which could create ground subsidence and deflections.

Mitigation Measure GEO-1a: The project contractor shall attempt to cut the excavation as close to neat lines as possible. Where voids are created, they must be backfilled as soon as possible with sand, gravel, or grout.

Mitigation Measure GEO-1b: The project contractor shall follow all recommendations in *Geotechnical and Geologic Hazard Investigation*, dated April 14, 2017 and prepared by Cornerstone Earth Group (or any updated versions) and submit final grading plans to Cornerstone Earth Group (or another geotechnical consultant as approved by the City) for review and recommendations.

Significance With Mitigation: Less Than Significant

GEO-2 The proposed project would not result in a significant impact related to development on unstable geologic units and soils or result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse.

The geotechnical investigation prepared for the proposed project previously collected geological/ geotechnical data for the site and collected additional information by drilling, logging, and testing

exploratory borings. The investigation concluded that the potential for landslides, lateral spreading, liquefaction as well as subsidence and collapse is very low at the project site. However, the project is located on hilly terrain and involves substantial grading. The geotechnical investigation identifies that the in-situ moisture contents for the subsurface range from approximately 3 percent under to 8 percent over the laboratory optimum in the upper 10 to 20 feet of the soil profile. In addition, repetitive rubber-tire loading could destabilize the soils, and perched groundwater may be encountered during excavations. As such, impacts related to unstable soils are considered *significant*.

Impact GEO-2: Implementation of the proposed project could result in destabilized soils.

Mitigation Measure GEO-2: The project contractor shall implement the following subgrade stabilization recommendations in *Geotechnical and Geologic Hazard Investigation*, dated April 14, 2017 and prepared by Cornerstone Earth Group (or any updated versions):

- Scarification and Drying. The subgrade shall be scarified to a depth of 6 to 9 inches and allowed to dry to near optimum conditions, if sufficient dry weather is anticipated to allow sufficient drying. More than one round of scarification shall be conducted if needed to break up the soil clods.
- Chemical Treatment. Where the unstable area exceeds about 5,000 to 10,000 square feet and/or site winterization is desired, chemical treatment with quicktime, kiln-dust, or cement may be more cost-effective than removal and replacement. Recommended chemical treatment depths will typically range from 12 to 18 inches, depending on the magnitude of the instability.

Significance With Mitigation: Less Than Significant

GEO-3	**The proposed project would not create substantial risks to life or property as a result of its location on expansive soil, as defined Section 1803.5.3 of the California Building Code, creating substantial risks to life or property.**

Expansive soils can undergo dramatic changes in volume in response to variations in soil moisture content. When wet, these soils can expand; conversely, when dry, they can contract or shrink. Sources of moisture that can trigger this shrink-swell phenomenon can include seasonal rainfall, landscape irrigation, utility leakage, and/or perched groundwater. Expansive soil can develop wide cracks in the dry season, and changes in soil volume have the potential to damage concrete slabs, foundations, and pavement. Special building/structure design or soil treatment are often needed in areas with expansive soils. Per the project geotechnical report, moderately to highly expansive surficial soils were encountered in the surficial soils that blanket the site. The adverse effects of expansive soils can be avoided through proper subsoil preparation, drainage, and foundation design.

Mitigation would be required to ensure that potential damage for planned structures as a result of expansive soils is reduced. This is considered a *significant* impact.

Impact GEO-3: Expansive soils on the project site could create a substantial risk to the proposed project.

Mitigation Measure GEO-3: Slabs-on-grade shall have sufficient reinforcement and shall be supported on a layer of non-expansive fill. Foundations shall extend below the zone of seasonal moisture fluctuation. Moisture changes in the surficial soils shall be limited by using positive drainage away from buildings as well as by limiting landscaping watering. The project contractor shall follow all grading and foundation recommendations in *Geotechnical and Geologic Hazard Investigation*, dated April 14, 2017 and prepared by Cornerstone Earth Group (or any updated versions).

Significance With Mitigation: Less Than Significant

GEO-4	**The proposed project, in combination with past, present, and reasonably foreseeable projects, would result in less than significant cumulative impacts with respect to geology and soils.**

Any new construction associated with the proposed project or in the surrounding vicinity would be required to meet the latest standards set forth in the CBC. The CBC requirements, along with requirements in the City's Municipal Code, ensure that any development on unstable soil or expansive soil is regulated to minimize potential hazards. In addition, the City's Municipal Code requires the preparation and submittal of Interim Erosion and Sediment Control Plans for all projects subject to City-issued grading permits, which would minimize the removal of topsoil, avoid overly steep cut and/or fill slopes, and protect existing vegetation during grading operations. Moreover, in combination with foreseeable development in the surrounding area, implementation of the proposed project would not change the geology or soil characteristics of the project area as a whole. Therefore, there would be a *less-than-significant* cumulative impact related to geology and soils.

Significance Without Mitigation: Less Than Significant

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4.6 GREENHOUSE GAS EMISSIONS

This chapter evaluates the potential for land use changes associated with adopting and implementing the proposed project to cumulatively contribute to greenhouse gas (GHG) emissions impacts. Because no single project is large enough individually to result in a measurable increase in global concentrations of GHG emissions, global warming impacts of a project are considered on a cumulative basis. This analysis in this chapter is based on the methodology recommended by the Bay Area Air Quality Management District (BAAQMD). The proposed project is evaluated using BAAQMD's project-level review criteria, based on the preliminary information available. GHG emissions are based on average daily trips (ADT) for the on-road transportation emissions section and energy use based on CalEEMod 2016.3.1 defaults. The GHG emissions modeling is included in Appendix C, Air Quality and Greenhouse Gas Data, of this Draft EIR.

4.6.1 ENVIRONMENTAL SETTING

4.6.1.1 GREENHOUSE GASES AND CLIMATE CHANGE

Human activities contribute to global climate change by adding large amounts of heat-trapping gases, known as GHG, to the atmosphere. The primary source of GHGs is fossil fuel use. The Intergovernmental Panel on Climate Change (IPCC) has identified four major GHG—water vapor, carbon dioxide (CO_2), methane (CH_4), and ozone (O_3)—that may cause an increase in global average temperatures observed within the 20th and 21st centuries. Other GHGs identified by the IPCC that contribute to global warming to a lesser extent include nitrous oxide (N_2O), sulfur hexafluoride (SF_6), hydrofluorocarbons, perfluorocarbons, and chlorofluorocarbons.[1,2] The major GHGs are briefly described as follows:

- Carbon dioxide (CO_2) enters the atmosphere through the burning of fossil fuels (oil, natural gas, and coal), solid waste, trees and wood products, and respiration, and also as a result of other chemical reactions (e.g., manufacture of cement). Carbon dioxide is removed from the atmosphere (sequestered) when it is absorbed by plants as part of the biological carbon cycle.
- Methane (CH_4) is emitted during the production and transport of coal, natural gas, and oil. Methane emissions also result from livestock and other agricultural practices and from the decay of organic waste in municipal landfills and water treatment facilities.
- Nitrous oxide (N_2O) is emitted during agricultural and industrial activities as well as during combustion of fossil fuels and solid waste.
- Fluorinated gases are synthetic, strong GHGs that are emitted from a variety of industrial processes. Fluorinated gases are sometimes used as substitutes for ozone-depleting substances. These gases are typically emitted in smaller quantities, but because they are potent GHGs, they are sometimes referred to as high global warming potential gases.

[1] Intergovernmental Panel on Climate Change, 2001. Third Assessment Report: Climate Change 2001, New York: Cambridge University Press.

[2] Water vapor (H2O) is the strongest GHG and the most variable in its phases (vapor, cloud droplets, ice crystals). However, water vapor is not considered a pollutant because it is considered part of the feedback loop of changing radiative forcing rather than a primary cause of change.

- **Chlorofluorocarbons (CFCs)** are GHGs covered under the 1987 Montreal Protocol and used for refrigeration, air conditioning, packaging, insulation, solvents, or aerosol propellants. Since they are not destroyed in the lower atmosphere (troposphere, stratosphere), CFCs drift into the upper atmosphere where, given suitable conditions, they break down ozone. These gases are also ozone-depleting gases and are therefore being replaced by other compounds that are GHGs covered under the Kyoto Protocol.
- **Hydrofluorocarbons (HFCs)** contain only hydrogen, fluorine, and carbon atoms. They were introduced as alternatives to ozone-depleting substances to serve many industrial, commercial, and personal needs. HFCs are emitted as by-products of industrial processes and are also used in manufacturing. They do not significantly deplete the stratospheric ozone layer, but they are strong GHGs.[3,4]
- **Perfluorocarbons (PFCs)** are a group of human-made chemicals composed of carbon and fluorine only. These chemicals (predominantly perfluoromethane [CF_4] and perfluoroethane [C_2F_6]) were introduced, along with HFCs, as alternatives to the ozone-depleting substances. In addition, PFCs are emitted as by-products of industrial processes and are used in manufacturing. PFCs do not harm the stratospheric ozone layer, but they have a high global warming potential.
- **Sulfur Hexafluoride (SF_6)** is a colorless gas soluble in alcohol and ether, slightly soluble in water. SF_6 is a strong GHG used primarily in electrical transmission and distribution systems as an insulator.
- **Hydrochlorofluorocarbons (HCFCs)** contain hydrogen, fluorine, chlorine, and carbon atoms. Although ozone-depleting substances, they are less potent at destroying stratospheric ozone than CFCs. They have been introduced as temporary replacements for CFCs and are also GHGs.

GHGs are dependent on the lifetime, or persistence, of the gas molecule in the atmosphere. Some GHGs have a stronger greenhouse effect than others. These are referred to as high global warming potential gases. The global warming potential or "GWP" is used to convert GHGs to carbon dioxide (CO_2) equivalence (CO_2e) to show the relative potential that different GHGs have to contribute to the greenhouse effect. For example, under IPCC's Fourth Assessment Report GWP values for methane (CH_4), a project that generates 10 metric tons (MT) of CH_4 would be equivalent to 250 MT of CO_2.[5] Specific climate change impacts that could affect the proposed project include water supply, wildfire risks, health impacts, and energy demand.[6]

[3] United States Environmental Protection Agency, 2017. Greenhouse Gas Emissions, http://www.epa.gov/climatechange/ghgemissions/gases.html.

[4] Intergovernmental Panel on Climate Change, 2001. Third Assessment Report: Climate Change 2001, New York: Cambridge University Press.

[5] CO2-equivalence is used to show the relative potential that different GHGs have to retain infrared radiation in the atmosphere and contribute to the greenhouse effect. The global warming potential of a GHG is also dependent on the lifetime, or persistence, of the gas molecule in the atmosphere.

[6] California Climate Change Center. 2012. Our Changing Climate 2012, Vulnerability & Adaptation to the Increasing Risks from Climate Change in California. July.

4.6.1.2 REGULATORY FRAMEWORK

This section summarizes key federal, State and City regulations and programs related to GHG emissions resulting from the proposed project.

Federal GHG Emissions Laws

The United States Environmental Protection Agency (USEPA) announced on December 7, 2009, that GHG emissions threaten the public health and welfare of the American people and that GHG emissions from on-road vehicles contribute to that threat.[7] To regulate GHGs from passenger vehicles, the USEPA was required to issue an endangerment finding. The finding identifies emissions of six key GHGs—CO_2, CH_4, N_2O, hydrofluorocarbons, perfluorocarbons, and SF_6. The first three are applicable to the project's GHG emissions inventory because they constitute the majority of GHG emissions and, per BAAQMD guidance, are the GHG emissions that should be evaluated as part of a project's GHG emissions inventory. The following summarize the federal regulations:

- US Mandatory Report Rule for GHGs (2009): Requires substantial emitters of GHG emissions (large stationary sources, etc.) to report GHG emissions data. Facilities that emit 25,000 MT or more of CO_2e per year are required to submit an annual report.
- Update to Corporate Average Fuel Economy Standards (2010 to2012): Automakers are required to cut GHG emissions in new vehicles by roughly 25 percent by 2016 (resulting in a fleet average of 35.5 miles per gallon by 2016). Rulemaking to adopt these new standards was completed in 2010. California agreed to allow automakers who show compliance with the national program to also be deemed in compliance with state requirements. The federal government issued new standards in 2012 for model years 2017 to 2025 that will require a fleet average of 54.5 miles per gallon in 2025. However, the USEPA is currently reexamining the 2017 to 2025 emissions standards.
- USEPA Regulation of Stationary Sources under the Clean Air Act (Ongoing): Pursuant to its authority under the Clean Air Act, the USEPA has been developing regulations for new stationary sources such as power plants, refineries, and other large sources of emissions. Pursuant to the 2013 Climate Action Plan, the USEPA was directed to develop regulations for existing stationary sources.

State GHG Emissions Laws

GHG Emissions Reduction Legislation

Current State of California guidance and goals for reductions in GHG emissions are generally embodied in Executive Order S-03-05, Assembly Bill 32 (AB 32), Senate Bill 32 (SB 32), Executive Order B-30-15, and Senate Bill 375 (SB 375). These State laws and other key legislation aimed at reducing GHG emissions in the California are summarized as follows:

- Executive Order S-03-05: Signed June 1, 2005, the following GHG reduction targets for the state included, 2000 levels by 2010, 1990 levels by 2020, and 80 percent below 1990 levels by 2050.

[7] US Environmental Protection Agency. 2009, December. EPA: Greenhouse Gases Threaten Public Health and the Environment. https://yosemite.epa.gov/opa/admpress.nsf/0/08d11a451131bca585257685005bf252.

- Assembly Bill 32: Also known as the Global Warming Solutions Act (2006), was signed August 31, 2006, in order to reduce California's contribution of GHG emissions. AB 32 follows the 2020 tier of emissions reduction targets established in Executive Order S-03-05. Under AB 52, CARB prepared the *2008 Climate Change Scoping Plan* and the *2014 Climate Change Scoping Plan, and as discussed further below, has released the Draft 2017 Climate Change Scoping Plan.*
- Executive Order B-30-15: Signed April 29, 2015, this executive order sets a goal of reducing statewide GHG emissions to 40 percent below 1990 levels by the year 2030 and required an update to CARB's 2014 Scoping Plan.
- Senate Bill 32 and Assembly Bill 197: Signed September 2016, these Bills made the 2030 goal under Executive Order B-30-15 a statewide mandated legislative target. AB 197 established a joint legislative committee on climate change policies and required CARB to prioritize direction emissions reductions.[8] Pursuant to these requirements on January 20, 2017, CARB released the *Draft 2017 Climate Change Scoping Plan Update*, which includes the potential regulations and programs, including strategies consistent with AB 197 requirements, to achieve the 2030 target. CARB has adoption hearings planned for June 2017. The *Draft 2017 Scoping Plan* establishes a new emissions limit of 260 $MMTCO_2e$ for the year 2030, which corresponds to a 40 percent decrease in 1990 levels by 2030. The *Draft 2017 Scoping Plan* identified local governments as essential partners in achieving the State's long-term GHG reduction goals and identified local actions to reduce GHG emissions, including to achieve emissions of no more than 6 $MTCO_2e$ or less per capita by 2030 and 2 $MTCO_2e$ or less per capita by 2050. For projects undergoing CEQA environmental review, CARB states that lead agencies may develop evidenced-based bright-line numeric thresholds—consistent with the current Scoping Plan and the State's long-term GHG goals—and projects that exceed those thresholds may be required to incorporate either on-site design features and mitigation measures that avoid or minimize project emissions to the degree feasible, or a performance-based metric using a climate action plan or other plan to reduce GHG emissions is appropriate.[9]
- Senate Bill 1383: Signed September 19, 2016, SB 1383 is a supplement the GHG reduction strategies in the Scoping Plan to consider short-lived climate pollutants, including black carbon and CH_4. Black carbon is the light-absorbing component of fine particulate matter (PM) produced during incomplete combustion of fuels (e.g., on- and off-road transportation, residential wood burning, charbroiling, and industrial processes). SB 1383 requires CARB, no later than January 1, 2018, to approve and begin implementing a comprehensive strategy to reduce emissions of short-lived climate pollutants to achieve the following reductions below 2013 levels by 2030, including CH_4 by 40 percent, hydrofluorocarbon gases by 40 percent, and black carbon by 50 percent. This Bill also establishes targets for reducing organic waste in landfills. In response to SB 1383, CARB adopted the *Final Proposed Short-Lived Climate Pollutant Strategy* on March 14, 2017.
- Senate Bill 375: Also known as the Sustainable Communities and Climate Protection Act, was adopted in 2008 to connect the Scoping Plan's GHG emissions reductions targets for the transportation sector to local land use decisions that affect travel behavior. Its intent is to reduce GHG emissions from light-duty trucks and automobiles (excludes emissions associated with goods movement) by aligning

[8] Rather than the previously-used market-based cap-and-trade program for large stationary, mobile, and other sources.
[9] California Air Resources Board. 2017, January 20. The 2017 Climate Change Scoping Plan Update: The Proposed Strategy for Achieving California's 2030 Greenhouse Gas Target. https://www.arb.ca.gov/cc/scopingplan/2030sp_pp_final.pdf.

regional long-range transportation plans, investments, and housing allocations to local land use planning to reduce VMT and vehicle trips. Specifically, SB 375 required CARB to establish GHG emissions reduction targets for each of the 18 regions in California managed by a metropolitan planning organization (MPO). The Metropolitan Transportation Commission (MTC) is the MPO for the nine-county San Francisco Bay Area region. MTC's targets are a 7 percent per capita reduction in GHG emissions from 2005 by 2020, and 15 percent per capita reduction from 2005 levels by 2035. SB 375 requires CARB to periodically update the targets, no later than every 8 years.

The 2020 targets are less than the 2035 targets because a significant portion of the built environment in 2020 has been defined by decisions that have already been made. In general, the 2020 scenarios reflect that more time is needed for large land use and transportation infrastructure changes. Most of the reductions in the interim are anticipated to come from improving the efficiency of the region's transportation network. The targets would result in 3 $MMTCO_2e$ of reductions by 2020 and 15 $MMTCO_2e$ of reductions by 2035. Based on these reductions, the passenger vehicle target in CARB's Scoping Plan (for AB 32) would be met.[10]

- Assembly Bill 1493: Also known as Pavley I, is a clean-car standard that reduces GHG emissions from new passenger vehicles (light-duty auto to medium-duty vehicles) from 2009 through 2016 and is anticipated to reduce GHG emissions from new passenger vehicles by 30 percent in 2016. California implements the Pavley I standards through a waiver granted to California by the USEPA. In 2012, the EPA issued a Final Rulemaking that sets even more stringent fuel economy and GHG emissions standards for model year 2017 through 2025 light-duty vehicles (see also the discussion on the update to the CAFE standards under Federal Laws, above). In January 2012, CARB approved the Advanced Clean Cars program (formerly known as Pavley II) for model years 2017 through 2025. The program combines the control of smog, soot, and global warming gases and requirements for greater numbers of zero-emission vehicles into a single package of standards.
- Executive Order S-01-07: Signed on January 18, 2007, the state set a new low carbon fuel standards for transportation fuels sold within the state.
- Executive Order B-16-2012: Signed on March 23, 2012, the State identified that CARB, the California Energy Commission), the Public Utilities Commission, and other relevant agencies to work with the Plug-in Electric Vehicle Collaborative and the California Fuel Cell Partnership to establish benchmarks to accommodate zero-emissions vehicles in major metropolitan areas, including infrastructure to support them (e.g., electric vehicle charging stations).
- Senate Bills 1078, 107, and X1-2, and Executive Order S-14-08: A major component of California's Renewable Energy Program is the renewable portfolio standard established under Senate Bill 1078 and 107. Executive Order S-14-08 was signed in November 2008, which expanded the state's Renewable Energy Standard to 33 percent renewable power by 2020. This standard was adopted by the legislature in 2011 (SB X1-2). The increase in renewable sources for electricity production will decrease indirect GHG emissions from development projects because electricity production from renewable sources is generally considered carbon neutral.

[10] California Air Resources Board. 2010, August. Proposed Regional Greenhouse Gas Emission Reduction Targets for Automobiles and Light Trucks Pursuant to Senate Bill 375. Staff Report.

- Senate Bill 350: Signed in September 2015, SB 350 establishes tiered increases to the renewable portfolio standard of 40 percent by 2024, 45 percent by 2027, and 50 percent by 2030. SB 350 seeks to double the energy efficiency savings in electricity and natural gas through energy efficiency and conservation measures.

California Building Code: Building Energy Efficiency Standards

Energy conservation standards for new residential and non-residential buildings were adopted in June 1977 and most recently revised in 2016 (Title 24, Part 6, of the California Code of Regulations). Title 24 requires the design of building shells and building components to conserve energy. The standards are updated periodically to allow for consideration and possible incorporation of new energy efficiency technologies and methods. On June 10, 2015, the California Energy Commission adopted the 2016 Building Energy Efficiency Standards, which went into effect on January 1, 2017. The 2016 Building Energy Efficiency Standards continues to improve upon the previous 2013 Standards for new construction of, and additions and alterations to, residential and nonresidential buildings. Under the 2016 Standards, residential and nonresidential buildings are 28 and 5 percent more energy efficient than the 2013 Standards, respectively.[11] While the 2016 standards do not achieve zero net energy, they do get very close to the State's goal and make important steps toward changing residential building practices in California. The 2019 standards will take the final step to achieve zero net energy for newly constructed residential buildings throughout California.[12]

California Building Code: CALGreen

On July 17, 2008, California Green Building Standards Code (24 California Code of Regulations, Part 11, known as "CALGreen") were adopted as part of the California Building Standards Code. CALGreen established planning and design standards for sustainable site development, energy efficiency (in excess of the California Energy Code requirements), water conservation, material conservation, and internal air contaminants.[13] The mandatory provisions of the 2016 CalGreen building standards became effective on January 1, 2017.

2006 Appliance Efficiency Regulations

Adopted by the California Energy Commission on October 11, 2006, the 2006 Appliance Efficiency Regulations (Title 20, California Code of Regulations, Sections 1601 through 1608) were, and approved by the California Office of Administrative Law on December 14, 2006. The regulations include standards for both federally regulated appliances and non–federally regulated appliances. Though these regulations are now often viewed as "business-as-usual," they exceed the standards imposed by all other states and they reduce GHG emissions by reducing energy demand.

[11] California Energy Commission. 2015. 2016 Building Energy Efficiency Standards, Adoption Hearing Presentation. http://www.energy.ca.gov/title24/2016standards/rulemaking/documents/ June 10.

[12] California Energy Commission. 2015. 2016 Building Energy and Efficiency Standards Frequently Asked Questions. http://www.energy.ca.gov/title24/2016standards/rulemaking/documents/2016_Building_Energy_Efficiency_Standards_FAQ.pdf.

[13] The green building standards became mandatory in the 2010 edition of the code.

Solid Waste Regulations

California's Integrated Waste Management Act of 1989 (AB 939), Public Resources Code 40050 et seq.) set a requirement for cities and counties throughout the state to divert 50 percent of all solid waste from landfills by January 1, 2000, through source reduction, recycling, and composting. In 2008, the requirements were modified to reflect a per capita requirement rather than tonnage. To help achieve this, the act requires that each city and county prepare and submit a source reduction and recycling element. AB 939 also established the goal for all California counties to provide at least 15 years of ongoing landfill capacity. AB 341 (Chapter 476, Statutes of 2011) increased the statewide goal for waste diversion to 75 percent by 2020 and requires recycling of waste from commercial and multifamily residential land uses.

The California Solid Waste Reuse and Recycling Access Act (AB 1327, California Public Resources Code Sections 42900 et seq.) requires areas to be set aside for collecting and loading recyclable materials in development projects. The act required the California Integrated Waste Management Board to develop a model ordinance for adoption by any local agency requiring adequate areas for collection and loading of recyclable materials as part of development projects. Local agencies are required to adopt the model or an ordinance of their own. Section 5.408 of the CalGreen Code also requires that at least 50 percent of the nonhazardous construction and demolition waste from nonresidential construction operations be recycled and/or salvaged for reuse.

AB 1826, signed on October of 2014, requires businesses to recycle their organic waste on and after April 1, 2016, depending on the amount of waste they generate per week. This law also requires that on and after January 1, 2016, local jurisdictions implement an organic waste recycling program to divert organic waste generated by businesses, including multifamily residential dwellings that consist of five or more units. Organic waste means food waste, green waste, landscape and pruning waste, nonhazardous wood waste, and food-soiled paper waste that is mixed in with food waste.

Water Efficiency Regulations

The 20x2020 Water Conservation Plan was issued by the Department of Water Resources (DWR) in 2010 pursuant to Senate Bill 7, which was adopted during the 7th Extraordinary Session of 2009 to 2010 and therefore dubbed "SBX7-7." SBX7-7 mandated urban water conservation and authorized the DWR to prepare a plan implementing urban water conservation requirements (20x2020 Water Conservation Plan). In addition, it required agricultural water providers to prepare agricultural water management plans, measure water deliveries to customers, and implement other efficiency measures. SBX7-7 requires urban water providers to adopt a water conservation target of 20 percent reduction in urban per capita water use by 2020 compared to 2005 baseline use.

The Water Conservation in Landscaping Act of 2006 (AB 1881) requires local agencies to adopt the updated DWR model ordinance or equivalent. AB 1881 also requires the California Energy Commission, in consultation with the department, to adopt, by regulation, performance standards and labeling requirements for landscape irrigation equipment, including irrigation controllers, moisture sensors, emission devices, and valves to reduce the wasteful, uneconomic, inefficient, or unnecessary consumption of energy or water.

Regional Regulations

Plan Bay Area: Strategy for a Sustainable Region

Plan Bay Area 2040 is the Bay Area's Regional Transportation Plan (RTP)/Sustainable Community Strategy (SCS). *Plan Bay Area 2040* was adopted jointly by the Association of Bay Area Governments (ABAG) and MTC on July 26, 2017. *Plan Bay Area 2040* lays out a development scenario for the region, which, when integrated with the transportation network and other transportation measures and policies, would reduce GHG emissions from transportation (excluding goods movement) beyond the per capita reduction targets identified by CARB. *Plan Bay Area 2040* is a limited and focused update to the 2013 *Plan Bay Area*, with updated planning assumptions that incorporate key economic, demographic, and financial trends from the last several years. *Plan Bay Area 2040* remains on track to meet a 16 percent per capita reduction of GHG emissions by 2035 and a 10 percent per capita reduction by 2020 from 2005 conditions.[14]

Local Regulations

City of Cupertino General Plan

The Cupertino General Plan titled "Community Vision 2040" includes policies that are relevant to GHG emissions and applicable to the proposed project. The policies are identified in Chapter 6, Environmental Resources Sustainability, Chapter 5, Mobility, and Chapter 8, Infrastructure, of the General Plan and listed in Table 4.6-1.

TABLE 4.6-1 POLICIES OF CUPERTINO COMMUNITY VISION 2040 RELEVANT TO GHG EMISSIONS

Policy Number	Policy
Chapter 5, Mobility Element (M)	
Policy M-8.2	**Land Use.** Support development and transportation improvements that help reduce greenhouse gas emissions by reducing per capita Vehicle Miles Traveled (VMT), reducing impacts on the City's transportation network and maintaining the desired levels of service for all modes of transportation.
Chapter 6 , Environmental Resources and Sustainability (ES)	
Policy ES-1.1	**Principles of Sustainability.** Incorporate the principles of sustainability into Cupertino's planning, infrastructure and development process in order to improve the environment, reduce greenhouse gas emissions and meet the needs of the community without compromising the needs of future generations.
Policy ES-2.1	**Conservation and Efficient Use of Energy Resources.** Encourage the maximum feasible conservation and efficient use of electrical power and natural gas resources for new and existing residences, businesses, industrial and public uses.
Policy ES-3.1	**Green Building Design.** Set standards for the design and construction of energy and resource conserving/efficient building.
Chapter 8, Infrastructure (INF)	
Policy INF-4.13	**Energy and Water Conservation**. Encourage energy and water conservation in all existing and new residential development. ▪ Strategy 1. Enforcement of Title 24. The City will continue to enforce Title 24 requirements for energy

[14] Metropolitan Transportation Commission (MTC) and Association of Bay Area Governments (ABAG). 2017, March. *Plan Bay Area 2040.*

TABLE 4.6-1 POLICIES OF CUPERTINO COMMUNITY VISION 2040 RELEVANT TO GHG EMISSIONS

Policy Number	Policy
	conservation and will evaluate utilizing some of the other suggestions as identified in the Environmental Resources/ Sustainability element. ▪ Strategy 2. Sustainable Practices. The City will continue to implement the Landscape Ordinance for water conservation and the Green Building Ordinance (adopted in 2013) that applies primarily to new residential and nonresidential development, additions, renovations, and tenant improvements of ten or more units. To further the objectives of the Green Building Ordinance, the City will evaluate the potential to provide incentives, such as waiving or reducing fees, for energy conservation improvements at affordable housing projects (existing or new) with fewer than ten units to exceed the minimum requirements of the California Green Building Code. This City will also implement the policies in its climate action plan to achieve residential-focused greenhouse gas emission reductions and further these community energy and water conservation goals.
Policy INF-5.44	**Reducing Waste.** Meet or exceed Federal, State and regional requirements for solid waste diversion through implementation of programs. ▪ Strategy 6. Construction Waste. Encourage recycling and reuse of building materials during demolition and construction of City, agency and private projects.

Source: Cupertino's Community Vision 2040.

Cupertino Climate Action Plan

The Cupertino Climate Action Plan (CAP) is a strategic planning document that identifies sources of GHG emissions within the City's boundaries, presents current and future emissions estimates, identifies a GHG reduction target for future years, and presents strategic goals, measures, and actions to reduce emissions from the energy, transportation and land use, water, solid waste, and green infrastructure sectors. The emissions reduction strategies developed by the City follows the BAAQMD's CEQA Guidelines[15] and the corresponding criteria for a Qualified Greenhouse Gas Emissions Reduction Program as defined by the BAAQMD, which in turn were developed to comply with the requirements of AB 32 and achieve the goals of the CARB Scoping Plan. A qualified GHG emissions reduction strategy adopted by a local jurisdiction should include the elements below, as described in CEQA Guidelines Section 15183.5. The following BAAQMD's CEQA Guidelines[16] provide the methodology to determine whether a GHG reduction program meets these requirements:

- Quantify GHG emissions, both existing and projected over a specified time period, resulting from activities within a defined geographic area.
- Establish a level, based on substantial evidence, below which the contribution to GHG emissions from activities covered by the plan would not be cumulatively considerable.
- Identify and analyze the GHG emissions resulting from specific actions or categories of actions anticipated within the geographic area.

[15] Bay Area Air Quality Management. May 9 2017. Updated CEQA Guidelines. http://www.baaqmd.gov/~/media/files/planning-and-research/ceqa/ceqa_guidelines_may2017-pdf.pdf?la=en

[16] Bay Area Air Quality Management. May 9 2017. Updated CEQA Guidelines. http://www.baaqmd.gov/~/media/files/planning-and-research/ceqa/ceqa_guidelines_may2017-pdf.pdf?la=en.

- Specify measures or a group of measures, including performance standards, which substantial evidence demonstrates, if implemented on a project-by-project basis, would collectively achieve the specified emissions level.
- Establish a mechanism to monitor the plan's progress toward achieving the level and to require amendment if the plan is not achieving specified levels.
- Be adopted in a public process following environmental review.
- The City's CAP meets BAAQMD guidelines as follows:
  - The CAP quantifies citywide GHG emissions, both existing and projected over the specified time period, resulting from activities within the city as defined by the City's General Plan.
  - The CAP establishes a level, based on substantial evidence, below which the contribution of emissions from activities covered by the plan would not be cumulatively considerable.
  - CAP policy provisions reduce emissions to 15 percent below 2005 levels by 2020.
  - CAP policy provisions reduce emissions to 35 percent below 2005 levels by 2030.
  - CAP policy provisions provide a foundation for the City to reach the goal of reducing emissions to 80 percent below 1990 levels by 2050.
  - The CAP identifies and analyzes the emissions resulting from specific actions or categories of actions anticipated within the city.
  - The CAP specifies measures or a group of measures, including performance standards.
  - The CAP establishes a mechanism to monitor its progress toward achieving the level and to require amendment if the plan is not achieving specific levels.

The reduction measures proposed in the CAP build on inventory results and key opportunities prioritized by City staff, members from the community, and elected officials. The strategies in the CAP consist of measures and actions that identify the steps the City will take to support reductions in GHG emissions. The City of Cupertino will achieve these reductions in GHG emissions through a mix of voluntary programs and new strategic standards. The standards presented in the CAP respond to the needs of development, avoiding unnecessary regulation, streamlining new development, and achieving more efficient use of resources. Community-wide measures from the CAP that are applicable to the proposed project are shown in Table 4.6-2 below.

TABLE 4.6-2 POLICIES OF CUPERTINO CLIMATE ACTION PLAN

Policy Number	Policy
Goal 1	**Reduce Energy Use.** Increase energy efficiency in existing homes and buildings and increase use of renewable energy community-wide.
Measure C-E-4	**Energy Assurance & Resiliency Plan**. Develop a long-term community-wide energy conservation plan that considers future opportunities to influence building energy efficiency through additional or enhanced building regulations.
Measure C-E-5	**Community-wide Solar Photovoltaic Development**. Encourage voluntary community-wide solar photovoltaic development through regulatory barrier reduction and public outreach campaigns.
Goal 2	**Encourage Alternative Transportation.** Support transit, carpooling, walking, and bicycling as viable transportation modes to decrease the number of single occupancy vehicle trips within the community.
Measure C-T-3	**Transportation Demand Management**. Provide informational resources to local businesses subject to SB 1339 transportation demand management program requirements and encourage additional voluntary participation in the program.
Goal 3	**Conserve Water.** Promote the efficient use and conservation of water in buildings and landscapes.
Measure C-W-1	**SB-X7-7**. Implement water conservation policies contained within Cupertino's Urban Water Management Plan to achieve 20 percent per capita water reductions by 2020.
Goal 4	**Reduce Solid Waste**. Strengthen waste reduction efforts through recycling and organics collection and reduced consumption of materials that otherwise end up in landfills.
Measure C-SW-3	**Construction and Demolition Waste Diversion Program.** Continue to enforce diversion requirements in City's Construction & Demolition Debris Diversion and Green Building Ordinances.

Source: City of Cupertino Climate Action Plan, 2014.

City of Cupertino Municipal Code

The following provisions of the Cupertino Municipal Code (CMC) apply to building structure and safety with regards to reducing impacts related to GHG emissions:

- Chapter 16.58, Green Building Ordinance, includes the CALGreen requirements with local amendments for projects in the city. As part of the City's Green Building Ordinance, the City of Cupertino requires new construction over certain sizes (greater than 9 residential units or 25,000 square feet of non-residential development and greater) to build to Leadership in Energy and Environmental Design (LEED) or alternative reference standards. The LEED construction and/or other types of equivalent green building verification systems typically require enhanced building energy efficiency, which reduces heating and cooling requirements of a building and therefore also reduces GHG emissions.
- Chapter 16.72, Recycling and Diversion of Construction and Demolition Waste, establishes regulations to comply with the California Waste Management Act of 1989. The City of Cupertino has adopted construction and demolition debris diversion requirements that are consistent with the new requirements under CALGreen for mandatory construction recycling. Construction and demolition debris recycling requirements vary by project type. Pursuant to the Chapter 16.72, projects that involve the construction, demolition, or renovation of 3,000 square feet or more are required to adhere to the City's construction and demolition diversion requirements. Applicants for any covered project are required to recycle or divert (recycle or salvage) at least 60 percent of all generated construction and demolition debris tonnage. Applicants are required to prepare and submit a Waste Management Plan to the Public Works Department that outlines:

- The estimated volume or weight of project construction and demolition debris, by material type, to be generated.
- The maximum volume or weight of such materials that can feasibly be diverted via reuse or recycling.
- The vendor that the applicant proposes to use to haul the materials (consistent with the provisions of Municipal Code Chapter 6.24).
- The facility to which the materials will be hauled (approved by the City).
- The estimated volume or weight of construction and demolition debris that will be land-filled.

4.6.1.3 EXISTING CONDITIONS

The project site is developed with The Forum of Rancho San Antonio, a continuing care retirement community (CCRC), including assisted and independent living facilities on a 51.5-acre site. The site currently generates GHG emissions from natural gas use for energy, heating and cooking, vehicle trips associated with the CCRC land uses, as well as area sources such as landscaping equipment and consumer cleaning products. The site also generates indirect emissions associate with electricity use, water use and wastewater generation and solid waste disposal.

4.6.2 THRESHOLDS OF SIGNIFICANCE

4.6.2.1 CEQA GUIDELINES APPENDIX G

The proposed project would result in a significant impact to greenhouse gas emissions if it would:

1. Generate greenhouse gas emissions, either directly or indirectly, that may a significant effect on the environment.
2. Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases.

4.6.2.2 BAAQMD SIGNIFICANCE CRITERIA

BAAQMD has a tiered approach for assessing GHG emissions impacts of a project. If a project is within the jurisdiction of an agency that has a "qualified" GHG reduction strategy, the project can assess consistency of its GHG emissions impacts with the reduction strategy. BAAQMD has adopted screening criteria and significance criteria for development projects that would be applicable for the proposed project. If a project exceeds the BAAQMD Guidelines' GHG screening-level sizes, the project would be required to conduct a GHG emissions analysis using the BAAQMD significance criteria of 1,100 MT of CO_2e per year.

4.6.3 IMPACT DISCUSSION

Global climate change is not confined to a particular project area and is generally accepted as the consequence of global industrialization over the last 200 years. A typical project, even a very large one, does not generate enough greenhouse gas emissions on its own to influence global climate change

significantly; hence, the issue of global climate change is, by definition, a cumulative environmental impact. Therefore, the GHG chapter measures a project's contribution to the cumulative environmental impact.

GHG-1 The proposed project would not directly or indirectly generate GHG emissions that may have a significant impact on the environment.

Development under the proposed project would contribute to global climate change through direct and indirect GHG emissions from transportation sources, energy (natural gas and purchased energy), water use and wastewater generation, waste generation, and other, off-road equipment (e.g., landscape equipment, construction activities). The following is a discussion of the project's contribution to GHG emissions during both the construction and operation phases.

Construction

BAAQMD does not have thresholds of significance for construction-related GHG emissions, which are one-time, short-term emissions and therefore would not significantly contribute to long-term cumulative GHG emissions impacts of the proposed project. One-time, short-term emissions are converted to average annual emissions by amortizing them over the service life of a building. For buildings in general, it is reasonable to look at a 30-year time frame, since this is a typical interval before a new building requires the first major renovation.[17] The net increase in emissions generated by the proposed project was evaluated using the California Emissions Estimator Model (CalEEMod), Version 2016.3.1. Construction was conservatively assumed to take place in two phases over 32 months beginning in January 2018.

As shown in Table 4.6-3, when evaluated over an average 30-year project lifetime, average annual construction emissions from the proposed project would represent a nominal source of GHG emissions and would not exceed BAAQMD's *de minimis* bright-line threshold of 1,100 $MTCO_2e$/year. Accordingly, construction GHG emissions from the proposed project would be *less than significant* and no mitigation measures are required.

TABLE 4.6-3 THE FORUM GHG EMISSIONS – CONSTRUCTION PHASE

Category	GHG Emissions ($MTCO_2e$/Year)
2018	420
2019	198
2020 (Phase 1)	50
2020 (Phase 2)	72
Total Construction Emissions (Years 2018 to 2020)	**741**
30-Year Project Life Construction[a]	**25**

Note: Emissions may not total to 100 percent due to rounding.
a. The construction evaluation is amortized over the 30-year estimated life of the proposed project.
Source: CalEEMod 2016.3.1.

[17] International Energy Agency, 2008, Energy Efficiency Requirements in Building Codes, Energy Efficiency Policies for New Buildings, March.

Operation

The total and net increase of GHG emissions that are associated with the proposed project are shown in Table 4.6-4. As shown in Table 4.6-4, development of the proposed project would result in a net increase of GHG emissions of 351 metric tons of carbon dioxide equivalent ($MTCO_2e$) per year. The increase in GHG emissions would not exceed BAAQMD's bright-line screening threshold of 1,100 $MTCO_2e$. Therefore, project-related GHG emissions during the operational phase of the proposed project would be *less than significant* and no mitigation measures are required.

TABLE 4.6-4 PROJECT GHG EMISSIONS – OPERATIONAL PHASE

	GHG Emissions ($MTCO_2e$/Year)	
	Buildout Year 2022 MT/year	Percentage
Net Change		
Area	1	2%
Energy[a]	181	32%
On-Road Mobile Sources	127	61%
Waste	32	3%
Water/Wastewater	10	2%
Total	**351**	**100%**
BAAQMD Bright-Line Threshold	1,100 $MTCO_2e$/ Year	
Exceeds Bright-Line Threshold?	**No**	

Note: Emissions may not total to 100 percent due to rounding. New buildings would be constructed to the 2016 Building Energy Efficiency Standards (effective January 1, 2017) at minimum.

a. Future new buildings are assumed to achieve the 2016 Building Energy Efficiency Standards which are 5 percent more energy efficient for nonresidential structures and 28 percent more energy efficient for residential buildings compared to the 2013 Building Energy Efficiency Standards. Under the Building Energy Efficiency Standards, multi-family buildings four stories and higher are regulated under the non-residential standards. Also, note that additional reductions may be achieved for the memory care building with compliance with CMC Chapter 16.58, Green Building Ordinance, which requires the new memory care facility at approximately 38,000 square feet to build to LEED or an alternative reference standard. These additional savings are not included in this analysis.

Source: CalEEMod 2016.3.1.

Significance Without Mitigation: Less Than Significant

GHG-2 Implementation of the proposed project would not conflict with an applicable plan, policy, or regulation of an agency adopted for the purpose of reducing the emissions of GHGs.

The following discusses project consistency to applicable plans adopted for the purpose of reducing GHG emissions, which include CARB's Scoping Plan, *Plan Bay Area*, and the City of Cupertino Climate Action Plan.

CARB Scoping Plan

In accordance with State law described in Section 4.6.1.2, Regulatory Setting, CARB developed the State's Climate Change Scoping Plan (2008, 2014 and Draft 2017) to outline the state's strategy to return reduce state's GHG emissions to return to 40 percent below 1990 levels by 2030. The CARB Scoping Plan is applicable to state agencies and is not directly applicable to cities/counties and individual projects. Nonetheless, the Scoping Plan has been the primary tool that is used to develop performance-based and efficiency-based CEQA criteria and GHG reduction targets for climate action planning efforts.

The project's GHG emissions shown in Table 4.6-3 in impact discussion GHG-1 above, include reductions associated with statewide strategies. Statewide strategies to reduce GHG emissions include the low carbon fuel standards, California Appliance Energy Efficiency regulations, California Renewable Energy Portfolio standard, changes in the Corporate Average Fuel Economy standards, and other early action measures as necessary to ensure the State is on target to achieve the GHG emissions reduction goals of AB 32. Furthermore, the additions, renovations and new buildings would achieve the current Building Energy Efficiency Standards and pursuant to CMC Chapter 16.58, Green Building Ordinance, the new memory care facility at approximately 38,000 square feet would be required to build to LEED or an alternative reference standard. Likewise, the proposed project would be constructed in conformance with CALGreen, which requires high-efficiency water fixtures for indoor plumbing and water efficient irrigation systems. The proposed project would not conflict any statewide strategies to reduce GHG emissions. Therefore, impacts would be *less than significant*.

Plan Bay Area

The proposed project would be consistent with the overall goals of *Plan Bay Area 2040* in concentrating new development in locations where there is existing infrastructure as the proposed project would result in new additions and renovations to improve the existing facilities and add and new development the existing CCRC. Therefore, the proposed project would not conflict with the land use concept plan in *Plan Bay Area 2040* and impacts would be *less than significant*.

City of Cupertino Climate Action Plan

Similar to the discussions under the CARB Scoping Plan and *Plan Bay Area* above, the proposed project would be consistent with the overall goals of the Cupertino CAP, which is the City's strategic planning document to reduce GHG emissions. As an infill project on the existing CCRC campus, the proposed project would support efforts to reduce GHG emissions from VMT. The additions, renovations and new buildings would achieve the current Building Energy Efficiency Standards and would be constructed in conformance with CALGreen, which requires high-efficiency water fixtures for indoor plumbing and water efficient irrigation systems that would improve energy efficiency 33.5 percent over the 2008 standard. The proposed buildings would comply with Title 24 solar requirements and would meet solar ready requirements are associated with Title 24. While the requirements under Title 24 don't require installation of solar-energy systems, the buildings are built to accept the installation of such a system. Additionally, pursuant to CMC Chapter 16.58, Green Building Ordinance, the new memory care facility at

approximately 38,000 square feet would be required to build to LEED or an alternative reference standard. The proposed project would be subject to the Bay Area's Commuter Benefits Program, which requires all employers in the BAAQMD's jurisdiction with 50 or more full-time employees to offer commuter benefits to their employees. The proposed project would comply with SB X7-7, which requires California to achieve a 20 percent reduction in urban per capita water use by 2020. The proposed project would implement best management practices for water conservation to achieve the City's water conservation goals. Furthermore, the proposed project would comply with the City's Construction and Demolition Debris Diversion Ordinance, which requires applicable construction projects to divert 60 percent of construction waste. Prior to receiving a final building inspection, a construction recycling report would be submitted to show the tons recycled and disposed by material type. The proposed project would not conflict any strategies to reduce GHG emissions in the CAP and impacts would be *less than significant*.

In summary, the proposed project, an infill project within an existing CCRC campus would not conflict with an applicable plan, policy, or regulation of an agency adopted for the purpose of reducing GHG emissions.

Significance Without Mitigation: Less Than Significant

GHG-3	**Implementation of the proposed project, in combination with past, present, and reasonably foreseeable projects, would not result in significant cumulative impacts with respect to GHG emissions.**

As described above, GHG emissions related to the proposed project are not confined to a particular air basin but are dispersed worldwide. Therefore, the analysis under impact discussion GHG-1 and GHG-2 above, also addresses cumulative impacts.

Significance Without Mitigation: Less Than Significant

4.7 HAZARDS AND HAZARDOUS MATERIALS

This chapter includes an evaluation of the potential environmental consequences associated with the construction and operation of the proposed project that are related to the release of hazardous materials into the environment. Additionally, this chapter describes the environmental setting, including regulatory framework and existing conditions, and identifies mitigation measures, if required, that would avoid or reduce significant impacts.

Some of the information in this chapter was derived from a recent Phase 1 Environmental Site Assessment (ESA) of the project site dated April 13, 2017 and the Soil Quality Evaluation Letter dated November 8, 2017 prepared by Cornerstone Earth Group. A copy of these reports are included as Appendix G, Hazards and Hazardous Materials Data,, of this Draft EIR. This chapter was prepared under the supervision of a California Registered Engineer.

4.7.1 ENVIRONMENTAL SETTING

4.7.1.1 REGULATORY FRAMEWORK

Hazardous materials refer generally to hazardous substances, hazardous waste, and other materials that exhibit corrosive, poisonous, flammable, and/or reactive properties and have the potential to harm human health and/or the environment. Hazardous materials are used in products (e.g., household cleaners, industrial solvents, paint, pesticides) and in the manufacturing of products (e.g., electronics, newspapers, plastic products). Hazardous materials can include petroleum, natural gas, synthetic gas, acutely toxic chemicals, and other toxic chemicals that are used in agriculture, commercial, and industrial uses; businesses; hospitals; and households. Accidental releases of hazardous materials have a variety of causes, including highway incidents, warehouse fires, train derailments, shipping accidents, and industrial incidents.

The term “hazardous materials” as used in this section includes all materials defined in the California Health and Safety Code:

> “A material that, because of its quantity, concentration, or physical or chemical characteristics, poses a significant present or potential hazard to human health and safety or to the environment if released into the workplace or the environment. ‘Hazardous materials’ include, but are not limited to, hazardous substances, hazardous waste, and any material that a handler or the unified program agency has a reasonable basis for believing that it would be injurious to the health and safety of persons or harmful to the environment if released into the workplace or the environment.”

The term includes chemicals regulated by the United States Department of Transportation (USDOT), the United States Environmental Protection Agency (USEPA), the California Department of Toxic Substances Control (DTSC), the California Governor’s Office of Emergency Services (CalOES), and other agencies as hazardous materials, wastes, or substances. “Hazardous waste” is any hazardous material that has been discarded, except those materials specifically excluded by regulation. Hazardous materials that have been intentionally disposed of or inadvertently released fall within the definition of “discarded” materials and

can result in the creation of hazardous waste. Hazardous wastes are broadly characterized by their ignitability, toxicity, corrosivity, reactivity, radioactivity, or bioactivity. Federal and State hazardous waste definitions are similar, but contain enough distinctions that separate classifications are in place for federal Resource Conservation and Recovery Act (RCRA) hazardous wastes and State non-RCRA hazardous wastes. Hazardous wastes require special handling and disposal because of their potential to impact public health and the environment. Some materials are designated "acutely" or "extremely" hazardous under relevant statutes and regulations.

Hazardous materials and wastes can pose a significant actual or potential hazard to human health and the environment when improperly treated, stored, transported, disposed of, or otherwise managed. Many federal, State, and local programs that regulate the use, storage, and transportation of hazardous materials and hazardous waste are in place to prevent these unwanted consequences. These regulatory programs are designed to reduce the danger that hazardous substances may pose to people and businesses under normal daily circumstances and as a result of emergencies and disasters.

Federal Regulations

The following federal agencies oversee hazards and hazardous materials concerns.

United States Environmental Protection Agency

The USEPA laws and regulations ensure the safe production, handling, disposal, and transportation of hazardous materials. Laws and regulations established by the USEPA are enforced in Santa Clara County by the California Environmental Protection Agency (CalEPA).

United States Department of Transportation

The USDOT has the regulatory responsibility for the safe transportation of hazardous materials between states and to foreign countries. The USDOT regulations govern all means of transportation, except for those packages shipped by mail, which are covered by United States Postal Service regulations. The federal Resource Conservation and Recovery Act of 1976 imposes additional standards for the transport of hazardous wastes.

Occupational Safety and Health Administration

The Occupational Safety and Health Administration (OSHA) oversees the administration of the Occupational Safety and Health Act, which requires specific training for hazardous materials handlers, provision of information to employees who may be exposed to hazardous materials, and acquisition of material safety data sheets from materials manufacturers. The material safety data sheets describe the risks, as well as proper handling and procedures, related to particular hazardous materials. Employee training must include response and remediation procedures for hazardous materials releases and exposures.

State Regulations

California Health and Safety Code and Code of Regulations

California Health and Safety Code Chapter 6.95 and California Code of Regulations, Title 19, Section 2729 set out the minimum requirements for business emergency plans and chemical inventory reporting. These regulations require businesses to provide emergency response plans and procedures, training program information, and a hazardous material chemical inventory disclosing hazardous materials stored, used, or handled on-site. A business which uses hazardous materials or a mixture containing hazardous materials must establish and implement a business plan if the hazardous material is handled in certain quantities.

California Environmental Protection Agency

One of the primary agencies that regulate hazardous materials is the CalEPA. The State, through CalEPA, is authorized by the USEPA to enforce and implement certain federal hazardous materials laws and regulations. The California DTSC, a department of the CalEPA, protects California and Californians from exposure to hazardous waste, primarily under the authority of the RCRA and the California Health and Safety Code.[1] The DTSC requirements include the need for written programs and response plans, such as Hazardous Materials Business Plans. The DTSC programs include dealing with aftermath clean-ups of improper hazardous waste management, evaluation of samples taken from sites, enforcement of regulations regarding use, storage, and disposal of hazardous materials, and encouragement of pollution prevention.

California Division of Occupational Safety and Health

Like OSHA at the federal level, the California Division of Occupational Safety and Health (CalOSHA) is the responsible State-level agency for ensuring workplace safety. The CalOSHA assumes primary responsibility for the adoption and enforcement of standards regarding workplace safety and safety practices. In the event that a site is contaminated, a Site Safety Plan must be crafted and implemented to protect the safety of workers. Site Safety Plans establish policies, practices, and procedures to prevent the exposure of workers and members of the public to hazardous materials originating from the contaminated site or building.

California Emergency Management Agency

The California Emergency Management Agency (CalEMA) was established as part of the Governor's Office on January 1, 2009 – created by Assembly Bill 38 (Nava), which merged the duties, powers, purposes, and responsibilities of the former Governor's Office of Emergency Services with those of the Governor's Office of Homeland Security. The CalEMA is responsible for the coordination of overall State agency response to major disasters in support of local government. The agency is responsible for assuring the State's readiness to respond to and recover from all hazards – natural, manmade, emergencies, and disasters –

[1]Hazardous Substance Account, Chapter 6.5 (Section 25100 et seq.) and the Hazardous Waste Control Law, Chapter 6.8 (Section 25300 et seq.) of the Health and Safety Code.

and for assisting local governments in their emergency preparedness, response, recovery, and hazard mitigation efforts.

California Department of Forestry and Fire Protection

The California Department of Forestry and Fire Protection (CAL FIRE) has mapped fire threat potential throughout California.[2] The CAL FIRE ranks fire threat based on the availability of fuel and the likelihood of an area burning (based on topography, fire history, and climate). The rankings include no fire threat, moderate, high, and very high fire threat. Additionally, the CAL FIRE produced the *2012 Strategic Fire Plan for California*, which contains goals, objectives, and policies to prepare for and mitigate for the effects of fire on California's natural and built environments.[3]

California Fire Code

California Code of Regulations, Title 24, also known as the California Building Standards Code, contains the California Fire Code (CFC), included as Part 9 of that Title. Updated every three years, the CFC includes provisions and standards for emergency planning and preparedness, fire service features, fire protection systems, hazardous materials, fire flow requirements, and fire hydrant locations and distribution. Similar to the CBC, the CFC is generally adopted on a jurisdiction-by-jurisdiction basis, subject to further modification based on local conditions.

California Department of Transportation and California Highway Patrol

Two State agencies have primary responsibility for enforcing federal and State regulations and responding to hazardous materials transportation emergencies: the California Highway Patrol (CHP) and the California Department of Transportation (Caltrans). Caltrans manages more than 50,000 miles of California's highway and freeway lanes, provides intercity rail services, permits more than 400 public-use airports and special-use hospital heliports, and works with local agencies. Caltrans is also the first responder for hazardous material spills and releases that occur on those highway and freeway lanes and intercity rail services.

The CHP enforces hazardous materials and hazardous waste labeling and packing regulations designed to prevent leakage and spills of materials in transit and to provide detailed information to cleanup crews in the event of an accident. Vehicle and equipment inspection, shipment preparation, container identification, and shipping documentation are all part of the responsibility of the CHP, which conducts regular inspections of licensed transporters to assure regulatory compliance. In addition, the State of California regulates the transportation of hazardous waste originating or passing through the State.

[2] California Department of Forestry and Fire Protection, http://www.fire.ca.gov/fire_prevention/fire_prevention_wildland_zones, accessed on March 20, 2017.

[3] California Department of Forestry and Fire Protection, *2012 Strategic Fire Plan for California,* http://www.calfire.ca.gov/about/about_StrategicPlan, accessed on March 20, 2017.

Common carriers are licensed by the CHP, pursuant to the California Vehicle Code, Section 32000. This section requires licensing every motor (common) carrier who transports, for a fee, in excess of 500 pounds of hazardous materials at one time and every carrier, if not for hire, who carries more than 1,000 pounds of hazardous material of the type requiring placards. Common carriers conduct a large portion of the business in the delivery of hazardous materials.

Senate Bill 705

In October 2011, the California legislature signed into law Senate Bill (SB) 705, which requires each gas corporation to develop a plan for the safe and reliable operation of its commission-regulated gas pipeline facility. In compliance with SB 705, Pacific Gas and Electric Company (PG&E) has developed the *Pacific Gas and Electric Company Gas Safety Plan*. The 2017 plan reports on PG&E progress in operating safely and reliably and shows that, since 2011, PG&E has reduced its response time to gas odor events (from 33 minutes to 20 minutes), reduced its leak backlog, replaced over 175 miles of pipeline (compared to 9 miles in 2011), hydrotested over 835 miles of pipeline (compared to 0 miles in 2011), installed 268 automated valves (compared to 0 in 2011), replaced over 435 miles of gas distribution mainline (compared to 27 in 2011), and opened a Gas Control Center.[4] The Gas Control Center was opened in 2013 and allows PG&E to monitor in real time thousands of miles of gas pipeline.

Federal and State Hazardous Materials-Specific Programs and Regulations

Polychlorinated Biphenyls

The USEPA prohibited the use of polychlorinated biphenyls (PCBs) in the majority of new electrical equipment starting in 1979, and initiated a phase-out for much of the existing PCB-containing equipment. The inclusion of PCBs in electrical equipment and the handling of those PCBs are regulated by the provisions of the Toxic Substances Control Act, 15 United States Code Section 2601 *et seq*. Relevant regulations include labeling and periodic inspection requirements for certain types of PCB-containing equipment and outline highly specific safety procedures for their disposal. The State of California likewise regulates PCB-laden electrical equipment and materials contaminated above a certain threshold as hazardous waste; these regulations require that such materials be treated, transported, and disposed accordingly. At lower concentrations for non-liquids, regional water quality control boards may exercise discretion over the classification of such wastes.

CalOSHA's Lead in Construction Standard is contained in Title 8, Section 1532.1 of the California Code of Regulations. The regulations address all of the following areas: permissible exposure limits; exposure assessment; compliance methods; respiratory protection; protective clothing and equipment; housekeeping; medical surveillance; medical removal protection; employee information, training, and certification; signage; record keeping; monitoring; and agency notification.

[4] Pacific Gas & Electric, 2017, *Pacific Gas and Electric Company Gas Safety Plan*, page 2.

Regional Regulations

San Francisco Bay Regional Water Quality Control Board

The Porter-Cologne Water Quality Act[5] established the State Water Resources Control Board (SWRCB) and divided the state into nine regional basins, each under the jurisdiction of a Regional Water Quality Control Board (RWQCB). The San Francisco Bay Region (Region 2) is the Regional Water Quality Control Board (San Francisco Bay RWQCB) which regulates water quality in the Project Study Area. The San Francisco Bay RWQCB has the authority to require groundwater investigations when the quality of groundwater or surface waters of the state is threatened, and to require remediation actions, if necessary.

Bay Area Air Quality Management District

The Bay Area Air Quality Management District (BAAQMD) has primary responsibility for control of air pollution from sources other than motor vehicles and consumer products (which are the responsibility of CalEPA and California Air Resources Board [CARB]). The BAAQMD is responsible for preparing attainment plans for non-attainment criteria pollutants, control of stationary air pollutant sources, and the issuance of permits for activities including demolition and renovation activities affecting asbestos containing materials (District Regulation 11, Rule 2) and lead (District Regulation 11, Rule 1).

Santa Clara County Department of Environmental Health

The routine management of hazardous materials in California is administered under the Unified Hazardous Waste and Hazardous Materials Management Program ("Unified Program"), and most of the City of Cupertino's hazardous materials programs are administered and enforced under the Unified Program.[6] The CalEPA has granted responsibilities to the Santa Clara County Department of Environmental Health (DEH) Hazardous Materials Compliance Division (HMCD) for implementation and enforcement of hazardous material regulations under the Unified Program as a Certified Unified Program Agency. The HMCD also enforces additional hazardous materials storage requirements in accordance with the Santa Clara County Hazardous Materials Storage Ordinance and Toxic Gas Ordinance.[7]

Under authority from the San Francisco Bay RWQCB, the Santa Clara County DEH implements the Local Oversight Program to oversee the investigation and remediation of leaking underground storage tanks (USTs) in Santa Clara County, including the City of Cupertino.

Businesses storing hazardous materials over threshold quantities are required to submit Hazardous Materials Business Plans to the HMCD. A HMBP must include measures for safe storage, transportation, use, and handling of hazardous materials. A HMBP must also include a contingency plan that describes the facility's response procedures in the event of a hazardous materials release.

[5] California Water Code Sections 13000 *et seq*.

[6] California Health and Safety Code, Chapter 6.11, Sections 25404-25404.8.

[7] Santa Clara County Ordinance Code, Division B11, Chapters XIII – XIV.

Santa Clara County Fire Department

The Santa Clara Fire Department (SCCFD) implements hazardous materials programs for the City of Cupertino as a Participating Agency within the Unified Program.[8] The HMCD also enforces storage, handling, and dispensing requirements for hazardous materials and other regulated materials according to the City of Cupertino Hazardous Materials Storage Ordinance, described below.[9]

Santa Clara County Office of Emergency Services

The Santa Clara County Office of Emergency Services has adopted an Emergency Operations Plan (EOP),[10] which identifies emergency response programs related to hazardous waste incidents.

Local Regulations

City of Cupertino General Plan

The Cupertino General Plan titled "Community Vision 2040" includes policies that are relevant to hazards and hazardous materials and applicable to the proposed project. The policies are identified in Chapter 7, Health and Safety, of the General Plan and listed in Table 4.7-1.

TABLE 4.7-1 POLICIES OF CUPERTINO COMMUNITY VISION 2040 RELEVANT TO HAZARDS AND HAZARDOUS MATERIALS

Policy Number	Policy
Chapter 7, Health and Safety (HS)	
Policy HS-3.3	**Emergency Access.** Ensure adequate emergency access is provided for all new hillside development.
Policy HS-3.4	**Private Residential Electronic Security Gates.** Discourage the use of private residential electronic security gates that act as a barrier to emergency personnel.
Policy HS-6.1	**Hazardous Materials Storage and Disposal.** Require the proper storage and disposal of hazardous materials to prevent leakage, potential explosions, fire or the release of harmful fumes. Maintain information channels to the residential and business communities about the illegality and danger of dumping hazardous material and waste in the storm drain system or in creeks.

Source: Cupertino Community Vision 2040.

City of Cupertino Municipal Code

Chapter 9.12, Hazardous Materials Storage, in Title 9, Health and Sanitation, of the City of Cupertino Municipal Code (CMC) contains the standards for the protection of health, life, resources, and property through prevention and control of unauthorized discharges of hazardous materials in the City of

[8] Santa Clara County Fire Department, http://www.sccfd.org/fire-prevention/hazmat, accessed on June 20, 2017.

[9] Cupertino City Code, Chapter 9.12. *Hazardous Materials Storage.*

[10] Santa Clara County, 2017, *County of Santa Clara Emergency Operations Plan*, https://www.sccgov.org/sites/oes/PlansPublications/Documents/emergency-operations-plan-jan-2017.pdf, accessed on June 20, 2017.

Cupertino. The Hazardous Materials Storage Ordinance regulates the storage, handling, and dispensing requirements for hazardous materials and other regulated materials in the city. Under Section 9.12.012, any person, firm or corporation which stores any material regulated by the City is required to have a current Hazardous Materials Storage Permit.

City of Cupertino Emergency Response Plan

The City of Cupertino Office of Emergency Services is responsible for coordinating agency response to disasters or other large-scale emergencies in the City of Cupertino with assistance from the Santa Clara County Office of Emergency Services and the SCCFD. The Cupertino Emergency Operations Plan (EOP)[11] establishes policy direction for emergency planning, mitigation, response, and recovery activities within the city. The Cupertino EOP addresses interagency coordination, procedures to maintain communications with County and State emergency response teams, and methods to assess the extent of damage and management of volunteers. The Cupertino EOP uses the Standardized Emergency Management System as required by California Government Code Section 8607(a) for managing responses to multi-agency and multi-jurisdiction emergencies in California, including those related to hazardous materials.

4.7.1.2 EXISTING CONDITIONS

This section describes existing conditions related to hazardous materials that may exist on the project site. California Government Code Section 65962.5 requires the CalEPA to compile and maintain specified lists of hazardous material release sites. CEQA requires the lead agency to consult the lists compiled pursuant to Government Code Section 65962.5 to determine whether a project site is identified.[12] The required lists of hazardous material release sites are commonly referred to as the "Cortese List" after the legislator who authored the legislation. Because the statute was enacted more than 20 years ago, some of the provisions refer to agency activities that were conducted many years ago and are no longer being implemented and, in some cases, the information required in the Cortese List does not exist. Those requesting a copy of the Cortese Lists are now referred directly to the appropriate information resources contained on internet websites hosted by the boards or departments referenced in the statute, including DTSC's online EnviroStor database and the SWRCB's online GeoTracker database. These two databases include hazardous material release sites, along with other categories of sites or facilities specific to each agency's jurisdiction. The project site is not included on a list of hazardous materials sites complied pursuant to Government Code Section 65962.5.

A project-specific Phase I ESA dated April 13, 1017 and a Soil Quality Evaluation Letter dated November 8, 2017 prepared by Cornerstone Earth Group (see Appendix G of this Draft EIR) did not find documentation or physical evidence of soil, groundwater, or soil gas impairments or residual pesticides associated with the use or past use of the project site.[13]

[11] City of Cupertino, Office of Emergency Services. *Emergency Operations Plan.* September 2005.

[12] California Public Resources Code Section 21092.6

[13] Cornerstone Earth Group, 2017. *Phase 1 Environmental Site Assessment, The Forum at Rancho San Antonio, Cupertino, California*, pages 4 to 5, and *Soil Quality Evaluation Letter, The Forum at Rancho San Antonio Project*, page 2.

The project site is currently developed with a fully operational continuing care retirement community that was constructed starting in 1991. Therefore, the project site does not contain any asbestos-containing materials (ACM) or lead-based paint (LBP), which have been regulated in construction since the early 1970s.

CAL FIRE has mapped the relative fire risk in areas of significant population, based on development density and proximate fire threat. Levels of risk are indicated as "Little or No Threat," "Moderate," "High," "Very High," and "Extreme." The project site is not located in an area designated by CAL FIRE as Extreme or Very High threat to people from wildland fire. The project site is within the Non-Very High Fire Hazard Severity Zones (Non-VHFHSZ) in Local Responsibility Area (LRA).[14] Additionally, there are no moderate, high, or very high fire hazard severity zones in the State Responsibility Areas in the vicinity of the project site.

A Pacific Gas & Electric (PG&E) gas pipeline crosses the southern portion of the project site in a general northeast-to-southwest direction.

4.7.2 THRESHOLDS OF SIGNIFICANCE

An Initial Study was prepared for the proposed project (see Appendix A of this Draft EIR). Based on the analysis contained in the Initial Study it was determined that development of the proposed project would not result in significant environmental impacts per the following significance standards and therefore, are not discussed in this chapter.

- Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials.
- Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school.
- Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, create a significant hazard to the public or the environment.
- Be located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport it results in a safety hazard for people residing or working in the project area.
- Be within the vicinity of a private airstrip and result in a safety hazard for people residing or working in the project area.
- Expose people or structures to a significant risk of loss, injury, or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands.

[14] California Department of Forestry and Fire Protection, 2008, Very High Fire Hazard Severity Zones in LRA, http://www.fire.ca.gov/fire_prevention/fhsz_maps/FHSZ/santa_clara/Cupertino.pdf, accessed February 28, 2017.

Based on the Initial Study and comments received during the scoping process it was determined that the proposed project could result in a potentially significant impact related to hazards and hazardous materials if it would:

1. Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment.
2. Impair implementation of, or physically interfere with, an adopted emergency response plan or emergency evacuation plan.

4.7.3 IMPACT DISCUSSION

HAZ-1 The proposed project would not create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment.

The proposed project would result in a significant impact if construction and operation of the proposed project would create conditions where hazardous materials could easily contaminate surrounding soil, water, or air. The most likely scenario would be from rainwater runoff spreading contaminated waste; stormwater runoff is discussed in Chapter 4.8, Hydrology and Water Quality, of this Draft EIR. Other hazardous releases that could result from the project site would be as a result of the accidental release of hazardous materials used during the construction or operation of the proposed project.

The proposed project is a continuing care retirement community, and would not involve the routine transport or disposing of hazardous materials. Project operation would involve the use of small amounts of hazardous materials for cleaning and maintenance purposes, such as cleansers, degreasers, pesticides, and fertilizers. These potentially hazardous materials would not be of a type or be present in sufficient quantities to pose a significant hazard to public health and safety or the environment. Furthermore, such substances would be used, transported, stored, and disposed of in accordance with applicable federal, State, and local laws, policies, and regulations. Any businesses that transport, generate, use, and/or dispose of hazardous materials in Cupertino are subject to existing hazardous materials regulations, such as those implemented by Santa Clara County Department of Environmental Health (DEH) Hazardous Materials Compliance Division (HMCD), and hazardous materials permits from the Santa Clara Fire Department (SCCFD). The SCCFD also conducts inspections for fire safety and hazardous materials management of businesses and multi-family dwellings, in accordance with the City of Cupertino Hazardous Materials Storage Ordinance in Title 9, Health and Sanitation, Chapter 9.12, Hazardous Materials Storage. In addition, Policy HS-6.1 of the City's General Plan requires the proper storage and disposal of hazardous materials to prevent related hazards.

On a short-term basis, construction activities at the project site would also involve the use of hazardous materials, such as petroleum-based fuels for maintenance and construction equipment, and coatings used in construction, which would be transported to the site periodically by vehicle and would be present temporarily during construction. These potentially hazardous materials would not be of a type or occur in sufficient quantities on-site to pose a significant hazard to public health and safety or the environment,

and their use during construction would be short-term. Additionally, as with proposed project operation, the use, transport, and disposal of construction-related hazardous materials would be required to conform to existing laws and regulations. Compliance with applicable laws and regulations governing the use, storage, and transportation of hazardous materials would ensure that all potentially hazardous materials are used and handled in an appropriate manner, and would minimize the potential for safety impacts to occur.

As described in Section 4.7.1.2, Existing Conditions, all of the existing buildings on the project site were developed beginning in 1991; thus, the buildings would not contain ACM and LBP.

In addition, as described in Section 4.7.1.2, Existing Conditions, a PG&E gas pipeline crosses the project site in the vicinity of the proposed independent living villas off of Cristo Rey Drive. The proposed villas are sited to avoid the PG&E gas pipeline easement such that none of the proposed villas would directly overlie the easement for the gas pipeline. In addition, PG&E maintains a gas safety plan in compliance with SB 705. The proposed project would not create or exacerbate any hazards associated with the gas pipeline.

Also discussed previously in Section 4.7.1.2 above, the project-specific Phase I ESA dated April 13, 1017 and a Soil Quality Evaluation Letter dated November 8, 2017 prepared by Cornerstone Earth Group (see Appendix G of this Draft EIR) did not find documentation or physical evidence of soil, groundwater, or soil gas impairments or residual pesticides associated with the use or past use of the project site.[15]

For these reasons and because the proposed project would not involve the ongoing use of significant types or quantities of hazardous materials, impacts related to the reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment is considered to be *less than significant* and no mitigation measures are required.

Significance Without Mitigation: Less Than Significant

HAZ-2 The proposed project would not impair implementation of, or physically interfere with, an adopted emergency response plan or emergency evacuation plan.

The proposed project would result in a significant impact if it would create features that would physically interfere with emergency evacuation, or otherwise impair the implementation of the City's EOP. The City of Cupertino Office of Emergency Services is responsible for coordinating agency response to disasters or other large-scale emergencies in Cupertino, with assistance from the Santa Clara County Office of Emergency Services and the SCCFD. The Cupertino EOP establishes policy direction for emergency planning, mitigation, response, and recovery activities within the city. The Cupertino EOP addresses interagency coordination, procedures to maintain communications with county and State emergency response teams, and methods to assess the extent of damage and management of volunteers.

[15] Cornerstone Earth Group, 2017. *Phase 1 Environmental Site Assessment, The Forum at Rancho San Antonio, Cupertino, California*, pages 4 to 5, and *Soil Quality Evaluation Letter, The Forum at Rancho San Antonio Project*, page 2.

Policy HS-3.3 of the City's General Plan requires adequate emergency access for new hillside development, and Policy HS-3.4 discourages the private residential use of electronic security gates that could act as a barrier to emergency personnel.

The proposed project would not block roads and would not impede emergency access to surrounding properties or neighborhoods. Emergency vehicle access would be provided at two points: one located on Via Esplendor and the other at one new access point off of Cristo Rey Drive near the main entrance point. All other components of the proposed project would continue to be accessed from the main entryway off of Cristo Rey Drive. Emergency vehicle access would be maintained and provided at the existing main access point and the new access point, as well as the existing emergency-vehicle-only access point connecting Stonehaven Drive to Via Esplendor on the southwest portion of the site.

During demolition and construction, vehicles, equipment, and materials would be staged and stored on a portion of the project site. The construction site and staging areas would be clearly marked, and construction fencing would be installed to prevent disturbance and safety hazards. No staging would occur in the public right-of-way. A combination of on- and off-site parking facilities for construction workers would be designated during demolition, grading, and construction. See Figures 3-12 and 3-13 in Chapter 3, Project Description, of this Draft EIR.

The proposed project would not physically interfere with emergency evacuation, and the City will continue to implement its EOP regardless of whether the proposed project is approved. Therefore, the proposed project would not interfere with an adopted emergency response plan, or emergency evacuation plan and impacts would be *less than significant*.

Significance Without Mitigation: Less Than Significant

HAZ-3 The proposed project, in combination with past, present, and reasonably foreseeable projects, would result in less than significant cumulative impacts with respect to hazards and hazardous materials.

As described under impact discussions HAZ-1 and HAZ-2, development allowed by the proposed project would not interfere with implementation of emergency response plans. The proposed project does not include any physical or operational features that, considered along with other cumulative development, would affect the City's emergency response planning or evacuation. Since impacts associated with hazardous materials, are, by their nature, focused on specific sites or areas, the significant-but-mitigable impact on the project site associated with previous agricultural use would not contribute to a cumulative increase in hazards in the city. Therefore, the potential for cumulative impacts associated with safety and hazards would be *less than significant* and no mitigation measures are required.

Significance Without Mitigation: Less Than Significant

4.8 HYDROLOGY AND WATER QUALITY

This chapter includes an evaluation of the potential environmental consequences associated with the construction and operation of the proposed project that are related to hydrology and water quality. Additionally, this chapter describes the environmental setting, including regulatory framework and existing conditions, and identifies mitigation measures, if required, that would avoid or reduce significant impacts.

Some of the information in this chapter is based on preliminary grading and drainage plans prepared by BKF Engineering dated April 28, 2017. These are included in Appendix H, Preliminary Grading Plans, of this Draft EIR. This chapter was prepared by a California Registered Engineer.

4.8.1 ENVIRONMENTAL SETTING

4.8.1.1 REGULATORY FRAMEWORK

This section summarizes existing federal, State, regional, and local policies and regulations that apply to hydrology and water quality.

Federal Programs and Regulations

Clean Water Act

Under the Clean Water Act (CWA) of 1977, the United States Environmental Protection Agency (USEPA) seeks to restore and maintain the chemical, physical, and biological integrity of the nation's waters. The statute employs a variety of regulatory and non-regulatory tools to reduce direct pollutant discharges into waterways, finance municipal wastewater treatment facilities, and manage polluted runoff. The CWA authorizes the USEPA to implement water quality regulations. The National Pollutant Discharge Elimination System (NPDES) permit program under Section 402(p) of the CWA controls water pollution by regulating stormwater discharges into the waters of the United States (US). California has an approved state NPDES program. The USEPA has delegated authority for water permitting to the State Water Resources Control Board (SWRCB), which has divided the state into nine regional basins, each under the jurisdiction of a Regional Water Quality Control Board (RWQCB).

Sections 401 and 404 of the CWA are administered through the Regulatory Program of the United States Army Corps of Engineers (USACE) and regulate the water quality of all discharges of fill or dredged material into waters of the US including wetlands and intermittent stream channels. Section 401, Title 33, Section 1341, of the CWA sets forth water-quality certification requirements for "any applicant applying for a federal license or permit to conduct any activity including, but not limited to, the construction or operation of facilities, which may result in any discharge into the navigable waters." If there are ephemeral drainages and wetlands identified within the Project Study Area, construction and other activities may require the acquisition of a permit from the USACE under Section 404 of the CWA and water quality certification from the San Francisco Bay Regional Water Quality Control Board (RWQCB) prior to final issuance of Section 404 permits by the USACE.

Section 303(d) of the CWA requires that each State identify water bodies or segments of water bodies that are "impaired" (i.e., not meeting one or more of the water quality standards established by the State). These waters are identified in the Section 303(d) list as waters that are polluted and need further attention to support their beneficial uses. Once the water body or segment is listed, the state is required to establish Total Maximum Daily Load (TMDL) for the pollutant causing the conditions of impairment. TMDL is the maximum amount of a pollutant that a water body can receive and still meet water quality standards. Typically, TMDL is the sum of the allowable loads of a single pollutant from all contributing point and non-point sources (NPS). The intent of the Section 303(d) list is to identify water bodies that require future development of a TMDL to maintain water quality. In accordance with Section 303(d), the RWQCB has identified impaired water bodies within its jurisdiction, and the pollutant or stressor responsible for impairing the water quality.

Federal Emergency Management Agency

The Federal Emergency Management Agency (FEMA) administers the National Flood Insurance Program (NFIP), which provides subsidized flood insurance to communities that comply with FEMA regulations, which limit development in flood plains.[1] FEMA also issues Flood Insurance Rate Maps (FIRMs) that identify which land areas are subject to flooding. These maps provide flood information and identify flood hazard zones in the community. The design standard for flood protection is established by FEMA, with the minimum level of flood protection for new development set as the 100-year flood event, also described as a flood that has a 1-in-100 chance of occurring in any given year.

National Pollutant Discharge Elimination System

As previously discussed, the NPDES permit program was established by the CWA to regulate municipal and industrial discharges to surface waters of the US from their municipal separate storm sewer systems (MS4s). Under the NPDES Program, all facilities which discharge pollutants from any point source into waters of the US are required to obtain an NPDES permit. Point source discharges include discharges from publicly owned treatment works, discharges from industrial facilities, and discharges associated with urban runoff, such as stormwater. The NPDES permit programs in California are administered by the SWRCB and the nine RWQCBs.

The proposed project lies within the jurisdiction of the San Francisco Bay RWQCB (Region 2) and is subject to the Waste Discharge Requirements (WDR) of the MS4 Permit (Order Number R2-2009-0074) and NPDES Permit Number CAS612008, as amended by Order Number R2-2011-0083. The City of Cupertino, in addition to the cities of Campbell, Los Altos, Monte Sereno, Mountain View, Palo Alto, San José, Santa Clara, Saratoga, and Sunnyvale, the towns of Los Altos Hills and Los Gatos, and the Santa Clara Valley Water District, and Santa Clara County form the Santa Clara permittees under the MS4 permit. Provision C.3 of the Municipal Regional Permit (MRP) for New Development and Redevelopment allows the permittees to use their planning authorities to include appropriate source control, site design, and

[1] Federal Emergency Management Agency's Library, *National Flood Insurance Program Description*, http://www.fema.gov/library/resultSearchTitle.do;jsessionid=DD174A565E1F55952F9B72CE7EC2818C.Worker2Library, accessed May 1, 2014.

stormwater treatment measures in new development and redevelopment projects to address both soluble and insoluble stormwater runoff pollutant discharges and prevent increases in runoff flows from new development and redevelopment projects. The goal is to be accomplished primarily through the implementation of low impact development (LID) techniques.

State Regulations

Porter-Cologne Water Quality Control Act

The Porter-Cologne Water Quality Act (Water Code Sections 13000 et seq.) is the basic water quality control law for California. This Act established the SWRCB and divided the state into nine regional basins, each under the jurisdiction of a RWQCB. The Porter-Cologne Act also authorizes the SWRCB and RWQCBs to issue and enforce WDRs, NPDES permits, Section 401 water quality certifications, or other approvals. Other State agencies with jurisdiction over water quality regulation in California include the California Department of Health Services (DHS) (for drinking water regulations), the California Department of Pesticide Regulation, and the Office of Environmental Health and Hazard Assessment.

State Water Resources Control Board

The SWRCB is the primary Sate agency responsible for the protection of California's water quality and groundwater supplies. The SWRCB is responsible for developing statewide water quality policy and exercises the powers delegated to the State by the federal government under the CWA.

Construction activities that disturb one or more acres of land that could impact hydrologic resources must comply with the requirements of the SWRCB Construction General Permit (2009-0009-DWQ) as amended by 2010-0014-DWQ. Under the terms of the permit, applicants must file Permit Registration Documents (PRDs) with the SWRCB prior to the start of construction. The PRDs include a Notice of Intent (NOI), risk assessment, site map, Stormwater Pollution Prevention Plan (SWPPP), annual fee, and a signed certification statement. The PRDs are now submitted electronically to the SWRCB via the Stormwater Multiple Application and Report Tracking System (SMARTS) website.

Applicants must also demonstrate conformance with applicable best management practices and prepare a SWPPP, containing a site map that shows the construction site perimeter, existing and proposed buildings, lots, roadways, stormwater collection and discharge points, general topography both before and after construction, and drainage patterns across the project locations. The SWPPP must list best management practices that would be implemented to prevent soil erosion and discharge of other construction-related pollutants that could contaminate nearby water resources. Additionally, the SWPPP must contain a visual monitoring program, a chemical monitoring program for nonvisible pollutants if there is a failure of the best management practices, and a sediment-monitoring plan if the site discharges directly to a water body listed on the 303(d) list for sediment. Some sites also require implementation of a Rain Event Action Plan. The updated Construction General Permit also requires applicants to comply with post-construction runoff reduction requirements.

California Fish and Game Code

The California Department of Fish and Wildlife (CDFW) protects streams, water bodies, and riparian corridors through the streambed alteration agreement process under Section 1600 to 1616 of the California Fish and Game Code. The California Fish and Game Code establishes that "an entity may not substantially divert or obstruct the natural flow or substantially change the bed, channel or bank of any river, stream or lake, or deposit or dispose of debris, waste, or other material containing crumbled, flaked, or ground pavement where it may pass into any river stream, or lake" (Fish and Game Code Section 1602(a)) without notifying the CDFW, incorporating necessary mitigation and obtaining a streambed alteration agreement. The CDFW's jurisdiction extends to the top of banks and often includes the outer edge of riparian vegetation canopy cover.

Regional Regulations

San Francisco Bay Regional Water Quality Control Board

Regional authority for planning, permitting, and enforcement is delegated to the nine RWQCBs. Each regional board is required to adopt a water quality control plan or basin plan that recognizes and reflects the regional differences in existing water quality, the beneficial uses of the region's ground and surface water, and local water quality conditions and problems. As previously stated, Cupertino is within the jurisdiction of the San Francisco Bay RWQCB (Region 2), which covers most of the Bay Area region, including Santa Clara County. The San Francisco Bay RWQCB addresses region-wide water quality issues through the Water Quality Control Plan for San Francisco Bay Region (Basin Plan), which is updated every 3 years. The Basin Plan was adopted in 1993 and has been updated to reflect the amendments adopted up through May 4, 2017.[2] The Basin Plan designates beneficial uses of the State waters within Region 2, describes the water quality that must be maintained to support such uses, and provides programs, projects, and other actions necessary to achieve the standards established in the Basin Plan.

Santa Clara Valley Water District

The Santa Clara Valley Water District (SCVWD) is a water resources agency responsible for balancing flood protection needs with the protection of natural watercourses and habitat in the Santa Clara Valley. The SCVWD serves 16 cities and 1.8 million residents, provides wholesale water supply, operates three water treatment plants, and provides flood protection along the creeks and rivers within the county. The Clean, Safe Creeks and Natural Flood Protection (CSC) Plan was approved by Santa Clara County voters in November 2000 to create a countywide special parcel tax to accomplish the following four goals:[3]

- 100-year flood protection for homes, schools, businesses, and transportation;
- Clean, safe water in Santa Clara County creeks and bays;
- Healthy creek and bay ecosystems; and
- Trails, parks, and open space along waterways.

[2] California Environmental Protection Agency (CalEPA), San Francisco Bay Area Regional Water Quality Control Board (RWQCB), http://www.waterboards.ca.gov/rwqcb2/basin_planning.shtml, accessed June 2, 2017.

[3] Santa Clara Valley Water District (SCVWD). www.valleywater.org, accessed June 2, 2017.

Santa Clara Valley Urban Runoff Pollution Prevention Program

The Santa Clara Valley Urban Runoff Pollution Prevention Program (SCVURPPP) is an association of 13 cities and towns in the Santa Clara Valley, together with the County of Santa Clara and the SCVWD. The RWQCB has conveyed responsibility for implementation of stormwater regulations to the member agencies of SCVURPPP. The SCVURPPP incorporates regulatory, monitoring, and outreach measures aimed at improving the water quality of South San Francisco Bay and the streams of the Santa Clara Valley to reduce pollution in urban runoff to the "maximum extent practicable." The SCVURPPP maintains compliance with the NPDES Permit and promotes stormwater pollution prevention within that context. Participating agencies (including the City of Cupertino) must meet the provisions of the Santa Clara County permit by ensuring that new development and redevelopment mitigate water quality impacts to stormwater runoff both during the construction and operation of projects.[4]

The SCVURPPP has successively implemented a series of comprehensive stormwater management plans for urban runoff management meeting RWQCB standards. When the NPDES permit was reissued in 2009, now known as the Municipal Regional Stormwater NPDES Permit (MRP), new design standards for runoff treatment control measures from new development and significant redevelopment were required. An amendment to the MRP was issued in 2016 (MRP; Order Number R2-2015-0049) and added Special Development Project Categories and Biotreatment Soil and Green Roof Specifications to the MRP. The current MRP also requires development of a Hydrograph Modification Management Plan (HMP) to manage increased peak runoff flows and volumes (hydromodification) and avoid erosion of stream channels and degradation of water quality caused by new and redevelopment projects. The MRP was issued to cover "surface runoff generated from various land uses in all the hydrologic sub basins in the basin which discharge into watercourses, which in turn flow into South San Francisco Bay." The latest program activities conducted by the SCVURPPP are described in the FY2015-2016 Annual Report.

Municipal Regional Stormwater NPDES Permit

As stated above, pursuant to Section 402 of the CWA and the Porter-Cologne Water Quality Control Act, municipal stormwater discharges in the City of Cupertino is subject to the WDRs of the MS4 Permit (MRP; Order Number R2-2015-0049) and NPDES Permit Number CAS612008, as amended by Order Number R2-2011-0083.

Provision C.3 of the MRP addresses post-construction stormwater management requirements for new development and redevelopment projects that add and/or replace 5,000 square feet or more of impervious area. Provision C.3 of the MRP also mandates that Cupertino require the incorporation of site design, source control, and stormwater treatment measures into development projects, minimize the discharge of pollutants in stormwater runoff and non-stormwater discharge, and prevent increases in runoff flows. Low impact development methods are the mechanisms for implementing such controls.

Provision C.3 of the MRP requires that stormwater treatment best management practices be designed using the following hydraulic sizing criteria:

[4] Santa Clara Valley Urban Runoff Pollution Prevention Program (SCVURPPP), 2017. FY 2015-2106 Annual Report.

- *Volume Hydraulic Design Basis*: Treatment systems whose primary mode of action depends on volume capacity shall be designed to treat stormwater runoff equal to: (a) The maximized stormwater capture volume for the area, on the basis of historical rainfall records, determined using the formula and volume capture coefficients set forth in Urban Runoff Quality Management, Water Environment Federation Manual of Practice Number 23/American Society of Civil Engineers Manual of Practice Number 87, (1998), pages 175-178 (e.g., approximately the 85th percentile 24-hour storm runoff event); or (b) The volume of annual runoff required to achieve 80 percent or more capture, determined in accordance with the methodology set forth in Section 5 of the California Stormwater Quality Association (CASQA)'s Stormwater Best Management Practice Handbook, New Development and Redevelopment (2003) using local rainfall data;
- *Flow Hydraulic Design Basis*: Treatment systems whose primary mode of action depends on flow capacity shall be sized to treat: (a) 10 percent of the 50-year peak flow rate; (b) the flow of runoff produced by a rain event equal to at least two times the 85th percentile hourly rainfall intensity for the applicable area, based on historical records of hourly rainfall depths; or (c) the flow of runoff resulting from a rain event equal to an intensity of at least 0.2 inches per hour; and
- *Combination Flow and Volume Design Basis*: Treatment systems that use a combination of flow and volume capacity shall be sized to treat at least 80 percent of the total runoff over the life of the project, using local rainfall data.

Effective December 1, 2011, projects must treat 100 percent of the calculated runoff (based on the sizing criteria described above) with low impact development treatment measures that include harvesting and reuse, infiltration, evapotranspiration, or biotreatment (biotreatment may only be used if the other options are infeasible). In addition, projects that create and/or replace 5,000 square feet or more of impervious surface for auto service facilities, retail gasoline outlets, restaurants, and/or surface parking lots will also be required to provide low impact development treatment of stormwater runoff.

In order to comply with Provision C.3 of the MRP, project sponsors are required to submit a Stormwater Management Plan (SWMP) with building plans, to be reviewed and approved by the City of Cupertino Public Works Department, Environmental Programs Division. The SWMP must be prepared under the direction of a licensed and qualified professional.

Santa Clara Basin Watershed Management Initiative

The Watershed Management Initiative (WMI) was initiated in 1996 by the USEPA, the SWRCB, and the San Francisco Bay RWQCB to address all sources of pollution that threaten the Bay and to protect water quality throughout Santa Clara Basin watersheds. In the past, specific issues affecting watersheds had been addressed by separate regulatory actions, resulting in a "patchwork" approach. A major aim of the WMI is to coordinate existing regulatory activities on a basin-wide scale, ensuring that problems are addressed efficiently and cost-effectively.

The Santa Clara Basin WMI consists of 34 collaborative groups from regional and local public agencies; civic, environmental, resource conservation and agricultural groups; professional and trade organizations; business and industrial sectors; and the general public. The purpose of the WMI is "to develop and implement a comprehensive watershed management program – one that recognizes that healthy

watersheds mean addressing water quality problems and quality of life issues for the people, animals, and plants that live in the watershed." The WMI has continued to develop its foundation by producing a watershed assessment report (2003), a watershed action plan (2003), plastics pollution prevention summit (2011), impacts of homelessness on creeks (2011), and educational materials to reduce water usage by the general public.[5]

Local Regulations

City of Cupertino General Plan

The Cupertino General Plan titled "Community Vision 2040" includes policies that are relevant to hydrology and water quality and applicable to the proposed project. The policies are identified in Chapter 6, Environmental Resources and Sustainability Element, of the General Plan and listed in Table 4.1-1.

TABLE 4.1-1 POLICIES OF CUPERTINO COMMUNITY VISION 2040 RELEVANT TO HYDROLOGY AND WATER QUALITY

Policy Number	Policy
Chapter 6, Environmental Resources and Sustainability Element (ES)	
Policy ES-7.1	**Natural Water Bodies and Drainage Systems.** In public and private development, use low impact development (LID) principles to mimic natural hydrology, minimize grading and protect or restore natural drainage systems.
Policy ES-7.2	**Reduction of Impervious Surfaces.** Minimize stormwater runoff and erosion impacts resulting from development and use low impact development (LID) designs to treat stormwater or recharge groundwater.
Policy ES-7.3	**Pollution and Flow Impacts.** Ensure that surface and groundwater quality impacts are reduced through development review and volunteer efforts.
Policy ES-7.4	**Watershed Based Planning.** Review long-term plans and development projects to ensure good stewardship of watersheds.

Source: Cupertino Community Vision 2040.

City of Cupertino Municipal Code

The following provisions of the City of Cupertino Municipal Code (CMC) contain directives pertaining to hydrology and water quality issues:

- Chapter 3.36, Storm Drainage Service Charge, outlines the requirements for the payment of fees to conserve and protect the City's storm drainage system from the burden placed on it by the increasing flow of nonpoint source runoff and to otherwise meet the requirements developed by the Santa Clara Valley Non-Point Source Control and Stormwater Management Program established to comply with the CWA, California Environmental Protection Agency (CalEPA) regulations and the City's NPDES permits. The specific purpose of the storm drainage service charges established pursuant to this chapter is to derive revenue which shall only be used for the acquisition, construction, reconstruction, maintenance, and operation of the storm drainage system of the City to repay principal and interest on any bonds which may hereafter be issued for said purposes, to repay loans or advances which may

[5] Santa Clara Basin Watershed Management Initiative (WMI), 2013. http://www.scbwmi.org/ accessed April 4, 2014.

hereafter be made for said purposes and for any other purpose set forth in Section 3.36.160. However, said revenue shall not be used for the acquisition or construction of new local street storm sewers or storm laterals as distinguished from main trunk, interceptor, and outfall storm sewers.

- Chapter 14.15, Landscape Ordinance, implements the California Water Conservation in Landscaping Act of 2006 by establishing new water-efficient landscaping and irrigation requirements. In general, any building or landscape projects that involve more than 2,500 square feet of landscape area are required to submit a Landscape Project Submittal to the Director of Community Development for approval. Existing and established landscapes over 1 acre, including cemeteries, are required to submit water budget calculations and audits of established landscapes.

4.8.1.2 EXISTING CONDITIONS

Climate

Located within the city of Cupertino, the project site is within a Mediterranean-type climate zone, with almost all precipitation falling between the months of October and May. Due to the Santa Cruz Mountains to the west, there is a "rain shadow" in Cupertino, resulting in an average annual rainfall of 15.93 inches.[6] Temperatures in Cupertino tend to be fairly mild, with an average annual high of 71 degrees Fahrenheit and an average annual low of 50 degrees Fahrenheit. The hottest temperatures occur in July and August, with average maximum temperatures of 82 degrees Fahrenheit and the coldest temperatures occur in December and January with average minimum temperatures of 42 degrees Fahrenheit.

Hydrology and Surface Drainage

Watersheds

Cupertino lies within the Lower Peninsula and West Valley watersheds.[7] These two watersheds are further divided into six smaller watersheds that are within the city boundaries: 1) Permanente Creek watershed; 2) Stevens Creek watershed; 3) Calabazas Creek watershed; 4) Saratoga Creek watershed; 5) Junipero Serra Channel watershed; and 6) Sunnyvale East Channel watershed. The project site is located in the Permanente Creek watershed.

Waterways

No creeks are present on the project site. The closest creek to the project is the Permanente Creek, which flows through the northwest corner of Cupertino in a relatively unmodified natural channel. Downstream of Cupertino, the creek enters a concrete trapezoidal channel (Permanente Creek Diversion Channel) constructed by SCVWD that diverts virtually all winter flows east to Stevens Creek, preventing floodwaters from flowing north in the original creek channel through dense residential areas.

[6] Monthly Climate Summary, Cupertino, California, 2017. http://www.weather.com/weather/wxclimatology/monthly/USCA0273 accessed March 20, 2017.

[7] Santa Clara Valley Water District, 2017. *Watershed Information*. http://www.valleywater.org/Services/WatershedInformation.aspx accessed April 17, 2017.

Storm Drain Facilities

In addition to the natural drainage system, a network of storm drains collects runoff from city streets and carries it to the creeks and San Francisco Bay. The City of Cupertino Department of Public Works is responsible for the design, construction, and maintenance of City owned facilities including public streets, sidewalks, curb, gutter, storm drains. The capacity of the storm drain facilities within the city of Cupertino were evaluated and documented in the 1993 Storm Drain Master Plan, which identifies the areas within the system that do not have the capacity to handle runoff during the 10-year storm event, which is the City's design standard. The project site is not located in an area where the storm drains are potentially deficient in conveying the 10-year storm.[8]

Currently, drainage for the proposed project site is primarily via overland (sheet) flow, with catch basins and storm drains located along Cristo Rey Drive and Via Esplendor. Under historical and existing conditions, some surface water from a portion of the project site drains overland toward the southwest. Because The Forum was constructed prior to development of the adjacent residential development that now makes up the Oak Valley neighborhood, there was no adjacent development or drainage improvements required beyond what was completed for The Forum development. When the adjacent residential homes were as later developed, the developer of those homes installed drainage facilities (valley gutter and drainage inlet) along a portion of property line between adjacent homes and The Forum property. The adjacent residential development only constructed a portion of the valley gutter at 23505 Oak Valley Road and installed a drainage inlet at this location, as well as a drainage pipe under 23505 Oak Valley Road connecting to the City of Cupertino storm drain system.

In heavy rain events, some surface water at the property line of 23505 Oak Valley Road and The Forum does not reach the nearby valley gutter and does not flow into the drainage inlet. The result is overland water flow onto the property located at 23505 Oak Valley Road. No other properties have experienced overland flows onto properties due to the original installation of the valley gutter along the remainder of the common property line.

4.8.2 THRESHOLDS OF SIGNIFICANCE

An Initial Study was prepared for the proposed project (see Appendix A of this Draft EIR). Based on the analysis contained in the Initial Study it was determined that development of the proposed project would not result in significant environmental impacts per the following significance standards and therefore, are not discussed in this chapter.

- Violate any water quality standards or waste discharge requirements.
- Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level

[8] City of Cupertino General Plan Amendment, Housing Element Update, Associated Rezoning Project EIR, Table 4.8-3, *Under Capacity Storm Drainage Infrastructure*.

(the production rate of pre-existing nearby wells would drop to a level that would not support existing land uses or planned uses for which permits have been granted).

- Otherwise substantially degrade water quality.
- Place housing within a 100-year flood hazard area as mapped on a Federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map or place structures that would impede or redirect flood flows within a 100-year flood hazard area.
- Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam.
- Inundation by seiche, tsunami, or mudflow.

Based on the Initial Study it was determined that the proposed project could result in a potentially significant impact related hydrology and water quality it would:

1. Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion, siltation, or flooding on- or off-site.
2. Create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff.

4.8.3 IMPACT DISCUSSION

HYDRO-1	**The proposed project would not substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner that would result in substantial erosion, siltation, or flooding on- or off-site.**

The project site is largely developed and is currently connected to the City's storm drain system. The proposed additions, renovations and new construction would not involve the alteration of any natural drainage channels or any watercourse. Currently, as described above under the existing conditions discussion, drainage for the proposed project site is primarily via overland (sheet) flow, with catch basins and storm drains located along Cristo Rey Drive and Via Esplendor. Additionally, some surface water from a portion of the project site drains overland toward the southwest due to the timing of the development of The Forum and the later development of the adjacent residential development in Oak Valley, which did not warrant drainage improvements to the adjacent development at the time. The off-site drainage infrastructure at the adjacent residential property does not adequately contain surface water from flowing on the adjacent property at 23505 Oak Valley Road in heavy rain events. As discussed in Chapter 3, Project Description, of this Draft EIR, because the proposed project would include a total of 176,312 square feet

of impervious surfaces,[9] the proposed project would be required to include 7,052 square feet of bioretention areas.[10] The proposed project includes 9,363 square feet of bioretention areas that would be incorporated into the landscaped areas throughout the project site that would exceed the required amount by 2,311 square feet; thus, meeting the required standards to ensure runoff would be held on site and would not impact off-site locations. Additionally, the proposed project would include green roofs and raised flow-through planters that would be installed throughout the site. These additional features would collect runoff from roof areas, parking lots, sidewalks and streets for treatment and flow control prior to discharge into the internal storm drain system, which connects to the City's storm drain system in Via Esplendor, Serrano Court, and Cristo Rey Drive.

Specifically, the proposed drainage improvements are designed to intercept surface water that naturally drains toward the 23505 Oak Valley Road and carry it to a controlled drainage system. This solution would also reduce debris within the flow because the water that has historically flowed overland would be contained within pipes once The Forum's development and improvements are completed. The proposed drainage improvements at and adjacent to 23505 Oak Valley Road include the installation of new concrete valley gutter along the fence line of the property, constructing a new valley gutter where it did not previously exist, and connecting the new concrete valley gutter to the existing concrete valley gutter. The proposed improvements also include removal of the existing inlet and connecting drainage facilities on the project property directly into the existing drainage pipe to eliminate overland flows onto 23505 Oak Valley Road.

As a redundant drainage solution, the proposed improvements also include relocating the inlet and connecting it to the concrete valley gutter. This additional improvement would provide a secondary drainage option for water from the project site to drain into the valley gutter instead of across the 23505 Oak Valley Road property in the event the pipe crossing this property becomes restricted for any reason.

The drainage improvements proposed by the project are designed to maintain existing watershed sizes and provide detention such that peak flows in the existing drainage pipe crossing the 23505 Oak Valley Road property would not be increased. The proposed improvements would meet or exceed minimum design standards set by the City of Cupertino and have been reviewed by the Department of Public Works. The project applicant has agreed to conditions of approval to be included with the project requiring the drainage improvements described above.

Furthermore, the project applicant would be required, pursuant to the C.3 provisions of the MRP, to implement construction phase best management practices, post-construction design measures that encourage infiltration in pervious areas, and post-construction source control measures to help keep pollutants out of stormwater. In addition, post-construction stormwater treatment measures would be

[9] The 8,596 square feet of added impervious surface is untreated and is offset by treating 9,972 sf of existing impervious surface.

[10] Santa Clara Valley Water District Municipal Regional Stormwater NPDES Permit C.3 requires 4 percent of the proposed impervious surface be treated to control the flow of stormwater and stormwater pollutants from new development, http://www.scvurppp-w2k.com/pdfs/1516/c3_handbook_2016/SCVURPPP_C.3_Technical_Guidance_Handbook_2016_Chapters.pdf, accessed on April 14, 2017.

required since the project would create and/or replace more than 10,000 square feet of impervious surface. These measures would reduce the amount of stormwater runoff from the project to ensure off-site locations would not be exposed to run off from the proposed project.

During construction, project applicants are subject to the NPDES construction permit requirements, including preparation of a SWPPP. The SWPPP includes erosion and sediment control measures to stabilize the site, protect slopes and channels, control the perimeter of the site, minimize the area and duration of exposed soils, and protect receiving waters adjacent to the site.

Once constructed, the requirements for new development or redevelopment projects include source control measures and site design measures that address stormwater runoff and would reduce the potential for erosion or siltation. In addition, Provision C.3 of the MRP would require the project to implement stormwater treatment measures to contain site runoff, using specific numeric sizing criteria based on volume and flow rate.

With implementation of these erosion and sediment control measures and regulatory provisions to limit runoff for new development sites, the proposed project would not result in significant increases in erosion and sedimentation or contribute to flooding on-site or off-site. Therefore, construction and operation of the proposed project would have a *less-than-significant* impact with respect to drainage patterns.

Significance Without Mitigation: Less Than Significant

HYDRO-2 The proposed project would not create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff.

There are two potential impacts to stormwater runoff hydrology with urban development. Impervious surfaces, such as roads, sidewalks, and buildings prevent the natural infiltration of stormwater into the soil and thus create higher runoff volumes. In addition, more rapid transport of runoff over impermeable surfaces combined with higher runoff volumes result in elevated peak flows. This increase in flows could adversely impact stormwater drainage systems.

As described above in impact discussion HYDRO-1, the proposed project involves construction and operation of a continuing care retirement community development on an existing developed property with similar uses that are currently connected to the City's storm drain system. Because the proposed project would include a total of 176,312 square feet of impervious surfaces,[11] the proposed project would be required to include 7,052 square feet of bioretention areas.[12] However, the proposed project includes

[11] The 8,596 square feet of added impervious surface is untreated and is offset by treating 9,972 square feet of existing impervious surface.

[12] Santa Clara Valley Water District Municipal Regional Stormwater NPDES Permit C.3 requires 4 percent of the proposed impervious surface be treated to control the flow of stormwater and stormwater pollutants from new development, http://www.scvurppp-w2k.com/pdfs/1516/c3_handbook_2016/SCVURPPP_C.3_Technical_Guidance_Handbook_2016_Chapters.pdf, accessed on April 14, 2017.

9,363 square feet of bioretention areas, which is 2,311 square feet over the required amount. For these reasons, the proposed project would not result in a significant change in the volume of stormwater runoff in a manner that would exceed the capacity of the storm drain system. The bioretention areas would provide both treatment of site runoff, reduction in peak flow rates, and flow control prior to discharge to the City's storm drain system. As described in Section 4.8.1.2, Existing Conditions, above, the project site is not located in an area where the storm drains are potentially deficient in conveying the 10-year storm. The existing storm drain system would be able to handle the stormwater flow from the site and the impact to stormwater drainage systems would be less than significant. In addition, with the implementation of stormwater treatment measures, the project would not provide substantial additional sources of polluted runoff. Therefore, impacts associated with runoff as result of construction and operation of the proposed project would be *less than significant.*

Significance Without Mitigation: Less Than Significant

HYDRO-3 The proposed project, in combination with past, present, and reasonably foreseeable projects, would result in less than significant cumulative impacts with respect to hydrology and water quality.

The analysis of cumulative hydrology and water quality impacts considers the larger context of future development within the Permanente Creek Watershed and City of Cupertino, which encompasses the project site. Cumulative impacts can occur when impacts that are significant or less than significant from a proposed project combine with similar impacts from other past, present, or reasonably foreseeable future projects in a similar geographic area. Cumulative impacts could result from incremental changes that degrade water quality or contribute to drainage and flooding problems within the watershed.

Same as the proposed project, other cumulative projects within the watershed would require conformance with extensive State and local policies and regulations that would ensure hydrology and water quality impacts would be less than significant. Any new development within the watershed would be subject to City policies and ordinances, design guidelines, zoning codes and other applicable City requirements that address impacts related to hydrology and water quality. More specifically, potential changes related to stormwater flows, drainage, impervious surfaces, and flooding would be minimized or avoided by the implementation of stormwater control measures, retention, infiltration, and low impact development measures, and review by the City's Public Works Department to integrate measures to reduce potential flooding impacts. With the implementation of these measures, the impacts to water quality and hydrology would be *less than significant* for cumulative projects within the Permanente Creek Watershed. Furthermore, as listed in Chapter 4, Environmental Evaluation, of this Draft EIR, one of the cumulative projects is the Permanente Creek Flood Protection Project, which is being implemented to is to provide flood protection to homes and businesses in the Permanente Creek watershed using a natural flood protection approach.

The project site comprises a small portion of the Permanente Creek watershed and is one of many planned projects within the City of Cupertino. This project also would be subject to all of the State and local policies and regulations that would ensure hydrology and water quality impacts would be less than

significant. As such, the project's contribution would not be cumulatively considerable and the impact would be *less than significant.*

Significance Without Mitigation: Less Than Significant

4.9 NOISE

This chapter includes an evaluation of the potential environmental consequences from construction and operation of the proposed project related to noise. This chapter describes the environmental setting, including regulatory framework and existing noise conditions in the project area, and identifies mitigation measures, if required, that would avoid or reduce significant impacts. The technical data used for the analysis in this chapter is located in Appendix I, Noise Data, of this Draft EIR.

4.9.1 ENVIRONMENTAL SETTING

4.9.1.1 OVERVIEW OF NOISE FUNDAMENTALS

Noise Descriptors

The following are brief definitions of terminology used in this section:

- **Sound.** A disturbance created by a vibrating object, which when transmitted by pressure waves through a medium such as air, is capable of being detected by the human ear or a microphone.
- **Noise.** Sound that is loud, unpleasant, unexpected, or otherwise undesirable.
- **Decibel (dB).** A unit-less measure of sound on a logarithmic scale.
- **A-Weighted Decibel (dBA).** An overall frequency-weighted sound level in decibels that approximates the frequency response of the human ear.
- **Equivalent Continuous Noise Level (L_{eq}).** The mean of the noise level, energy averaged over the measurement period.
- **Statistical Sound Level (L_n).** The sound level that is exceeded "n" percent of time during a given sample period. For example, the L_{50} level is the statistical indicator of the time-varying noise signal that is exceeded 50 percent of the time (during each sampling period), which is half of the sampling time, the changing noise levels are above this value and half of the time they are below it. This is called the "median sound level." The L_{10} level, likewise, is the value that is exceeded 10 percent of the time (i.e., near the maximum) and this is often known as the "intrusive sound level." The L_{90} is the sound level exceeded 90 percent of the time and is often considered the "effective background level" or "residual noise level."
- **Day-Night Sound Level (L_{dn} or DNL).** The energy-average of the A-weighted sound levels occurring during a 24-hour period, with 10 dB added to the sound levels occurring during the period from 10:00 p.m. to 7:00 a.m.
- **Community Noise Equivalent Level (CNEL).** The energy-average of the A-weighted sound levels occurring during a 24-hour period, with 5 dB added to the levels occurring during the period from 7:00 p.m. to 10:00 p.m. and 10 dB added to the sound levels occurring during the period from 10:00 p.m. to 7:00 a.m. Note: For general community/environmental noise, CNEL and L_{dn} values rarely differ by more than 1 dB. As a matter of practice, L_{dn} and CNEL values are considered to be equivalent/interchangeable and are treated therefore in this assessment.

Characteristics of Sound

Sound is a pressure wave transmitted through the air. It is described in terms of loudness or amplitude (measured in decibels), frequency or pitch (measured in Hertz [Hz] or cycles per second), and duration (measured in seconds or minutes). The standard unit of measurement of the loudness of sound is the decibel (dB). Changes of 1 to 3 dB are detectable under quiet, controlled conditions and changes of less than 1 dBA are usually indiscernible. A 3 dB change in noise levels is considered the minimum change that is detectable with human hearing in outside environments. A change of 5 dB is readily discernable to most people in an exterior environment whereas a 10 dBA change is perceived as a doubling (or halving) of the sound.

The human ear is not equally sensitive to all frequencies. Sound waves below 16 Hz are not heard at all and are "felt" more as a vibration. Similarly, while people with extremely sensitive hearing can hear sounds as high as 20,000 Hz, most people cannot hear above 15,000 Hz. In all cases, hearing accuracy falls off rapidly above about 10,000 Hz and below about 200 Hz. Since the human ear is not equally sensitive to sound at all frequencies, a special frequency dependent rating scale is usually used to relate noise to human sensitivity. The A-weighted decibel scale (dBA) performs this compensation by discriminating against frequencies in a manner approximating the sensitivity of the human ear.

Measurement of Sound

Sound intensity is measured through the A-weighted measure to correct for the relative frequency response of the human ear. That is, an A-weighted noise level de-emphasizes low and very high frequencies of sound similar to the way a human ear de-emphasis of these frequencies. Unlike linear units such as inches or pounds, decibels are measured on a logarithmic scale, representing points on a sharply rising curve. This logarithmic scale is used to better account for the large variations in pressure amplitude (the above range of human hearing, 0 to 140 dBA, represents a ratio in pressures of 100 trillion to one). All noise levels in this analysis are relative to the industry-standard pressure reference value of 20 micropascals. Because of the physical characteristics of noise transmission and perception, the relative loudness of sound does not closely match the actual amounts of sound energy. Table 4.9-1 presents the subjective effect of changes in sound pressure levels.

TABLE 4.9-1 CHANGE IN APPARENT LOUDNESS

± 3 dB	Threshold of human perceptibility
± 5 dB	Clearly noticeable change in noise level
± 10 dB	Half or twice as loud
± 20 dB	Much quieter or louder

Source: Bies and Hansen, 2009.

In practical application, an increase of 10 dB is 10 times more intense than 1 dB, while 20 dB is 100 times more intense, and 30 dB is 1,000 times more intense. A sound as soft as human breathing is about 10 times greater than 0 dB. The decibel system of measuring sound gives a rough connection between the physical intensity of sound and its perceived loudness to the human ear. Ambient sounds generally range from 30 dBA (very quiet) to 100 dBA (very loud).

To help relate noise level values to common experience, Table 4.9-2 shows typical noise levels from noise sources. Sound levels are generated from a source and their decibel level decreases as the distance from that source increases. Sound dissipates exponentially with distance from the noise source. This phenomenon is known as "spreading loss." For a single point source, sound levels decrease by approximately 6 dB for each doubling of distance from the source. This drop-off rate is appropriate for noise generated by onsite operations from stationary equipment or activity at a project site. If noise is produced by a line source, such as highway traffic, the sound decreases by 3 dB for each doubling of distance in a hard site environment. Line source noise in a relatively flat environment with absorptive vegetation decreases by 4.5 dB for each doubling of distance.

Time variation in noise exposure is typically expressed in terms of a steady-state energy level equal to the energy content of the time varying period (called L_{eq}), or alternately, as a statistical description of the sound level that is exceeded over some fraction of a given observation period. For example, the L_{50} noise level represents the noise level that is exceeded 50 percent of the time. Half the time the noise level exceeds this level and half the time the noise level is less than this level. This level is also representative of the level that is exceeded 30 minutes in an hour. Similarly, the L_2, L_8, and L_{25} values represent the noise levels that are exceeded 2, 8, and 25 percent of the time or 1, 5, and 15 minutes per hour. These "L" values are typically used to demonstrate compliance for stationary noise sources with a city's noise ordinance, as discussed below. Other values typically noted during a noise survey are the L_{min} and L_{max}. These values represent the minimum and maximum root-mean-square noise levels obtained over the measurement period.

Certain land uses are particularly sensitive to noise and vibration. These uses include residences, schools, churches, nursing homes, hospitals, and open space/recreation areas where quiet environments are necessary for enjoyment, public health, and safety. Commercial and industrial uses are generally not considered noise- and vibration-sensitive uses, unless noise and vibration would interfere with their normal operations and business activities. Because community receptors are more sensitive to unwanted noise intrusion during the evening and at night, state law and the City of Cupertino require that, for planning purposes, an artificial dB increment be added to quiet time noise levels in a 24-hour noise descriptor called the Community Noise Equivalent Level (CNEL) or Day-Night Noise Level (L_{dn}). The CNEL descriptor requires that an artificial increment of 5 dBA be added to the actual noise level for the hours from 7:00 p.m. to 10:00 p.m. and 10 dBA for the hours from 10:00 p.m. to 7:00 a.m. The L_{dn} descriptor uses the same methodology except that there is no artificial increment added to the hours between 7:00 p.m. and 10:00 p.m. Both descriptors give roughly the same 24-hour level with the CNEL being only slightly more restrictive (i.e., higher).

TABLE 4.9-2 TYPICAL NOISE LEVELS

Common Outdoor Activities	Noise Level (dBA)	Common Indoor Activities
	110	Rock Band
Jet Flyover at 1,000 feet		
	100	
Gas Lawn Mower at three feet		
	90	
Diesel Truck at 50 feet, at 50 mph		Food Blender at 3 feet
	80	Garbage Disposal at 3 feet
Noisy Urban Area, Daytime		
	70	Vacuum Cleaner at 10 feet
Commercial Area		Normal speech at 3 feet
Heavy Traffic at 300 feet	60	
		Large Business Office
Quiet Urban Daytime	50	Dishwasher Next Room
Quiet Urban Nighttime	40	Theater, Large Conference Room (background)
Quiet Suburban Nighttime		
	30	Library
Quiet Rural Nighttime		Bedroom at Night, Concert Hall (background)
	20	
		Broadcast/Recording Studio
	10	
Lowest Threshold of Human Hearing	0	Lowest Threshold of Human Hearing

Source: Caltrans 2009.

Psychological and Physiological Effects of Noise

Noise is defined as unwanted sound, and is known to have several adverse effects on people, including hearing loss, speech and sleep interference, physiological responses, and annoyance. Physical damage to human hearing begins at prolonged exposure to noise levels higher than 85 dBA. Exposure to high noise levels affects our entire system, with prolonged noise exposure in excess of 75 dBA increasing body tensions, and thereby affecting blood pressure, functions of the heart and the nervous system. In comparison, extended periods of noise exposure above 90 dBA could result in permanent hearing damage. Based on these known adverse effects of noise, the federal government, the State of California, and many local governments have established criteria to protect public health and safety and to prevent disruption of certain human activities.

Vibration Fundamentals

Vibration is a trembling, quivering, or oscillating motion of the earth. Like noise, vibration is transmitted in waves, but in this case through the earth or solid objects. Unlike noise, vibration is typically of a frequency that is felt rather than heard.

Vibration can be either natural as in the form of earthquakes, volcanic eruptions, sea waves, or landslides, or manmade as from explosions, the action of heavy machinery or heavy vehicles such as trains. Both natural and manmade vibration may be continuous such as from operating machinery, or transient, such as from an explosion. The way in which vibration is transmitted through the earth is called propagation. Propagation of earthborn vibrations is complicated and difficult to predict because of the endless variations in the soil through which waves travel. There are three main types of vibration propagation: surface, compression and shear waves. Surface waves, or Raleigh waves, travel along the ground's surface. These waves carry most of their energy along an expanding circular wave front, similar to ripples produced by throwing a rock into a pool of water. P waves, or compression waves, are body waves that carry their energy along an expanding spherical wave front. The particle motion in these waves is longitudinal (i.e., in a "push-pull" fashion). P waves are analogous to airborne sound waves. S waves, or shear waves, are also body waves that carry energy along an expanding spherical wave front. However, unlike P waves, the particle motion is transverse or "side-to-side and perpendicular to the direction of propagation".

As vibration waves propagate from a source, the energy is spread over an ever-increasing area such that the energy level striking a given point is reduced with the distance from the energy source. This geometric spreading loss is inversely proportional to the square of the distance. Wave energy is also reduced with distance as a result of material damping in the form of internal friction, soil layering, and void spaces. The amount of attenuation provided by material damping varies with soil type and condition as well as the frequency of the wave.

As with noise, vibration can be described by both its amplitude and frequency. Amplitude may be characterized in three ways: displacement, velocity, and acceleration. Particle displacement is a measure of the distance that a vibrated particle travels from its original position and for the purposes of soil displacement is typically measured in inches or millimeters. Particle velocity is the rate of speed at which soil particles move in inches per second or millimeters per second. Particle acceleration is the rate of change in velocity with respect to time and is measured in inches per second or millimeters per second. Typically, particle velocity (measured in inches or millimeters per second) and/or acceleration (measured in gravities) are used to describe vibration. Table 4.9-3 presents the human reaction to various levels of peak particle velocity.

Vibrations also vary in frequency and this affects perception. Typical construction vibrations fall in the 10 to 30 Hz range and usually occur around 15 Hz. Traffic vibrations exhibit a similar range of frequencies; however, due to their suspension systems, buses often generate frequencies around 3 Hz at high vehicle speeds. It is less common, but possible, to measure traffic frequencies above 30 Hz.

TABLE 4.9-3 HUMAN REACTION TO TYPICAL VIBRATION LEVELS

Vibration Peak Particle Velocity (in/sec)	Vibration Velocity Level (VdB)	Human Reaction	Effect on Buildings
0.006–0.019	64-74	Threshold of perception, possibility of intrusion	Vibrations unlikely to cause damage of any type
0.08	86	Vibrations readily perceptible	Recommended upper level of vibration to which ruins and ancient monuments should be subjected
0.10	88	Level at which continuous vibration begins to annoy people	Virtually no risk of "architectural" (i.e., not structural) damage to normal buildings
0.20	94	Vibrations annoying to people in buildings	Threshold at which there is a risk to "architectural" damage to normal dwelling–houses with plastered walls and ceilings
0.4–0.6	100-104	Vibrations considered unpleasant by people subjected to continuous vibrations and unacceptable to some people walking on bridges	Vibrations at a greater level than normally expected from traffic, but would cause "architectural" damage and possibly minor structural damage

Sources: California Department of Transportation (Caltrans). 2004, June. Transportation- and Construction-Induced Vibration Guidance Manual.

4.9.1.2 REGULATORY FRAMEWORK

To limit population exposure to physically and/or psychologically damaging as well as intrusive noise levels, the federal government, the State of California, various county governments, and most municipalities in the State have established standards and ordinances to control noise.

State Regulations

State of California Code of Regulations

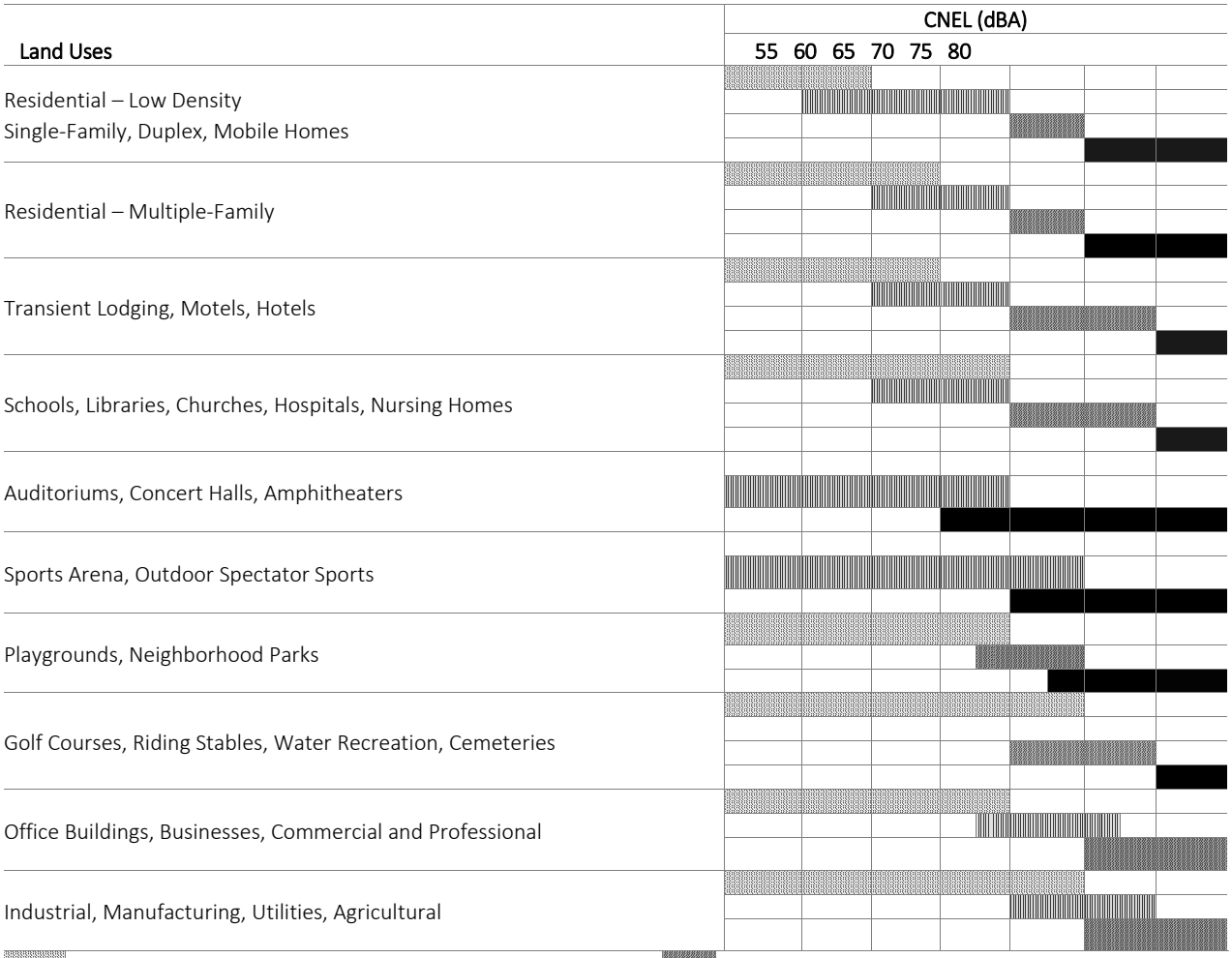
The State of California's noise insulation standards are codified in the California Code of Regulations (CCR), Title 24, Building Standards Administrative Code, Part 2, California Building Code (CBC). These noise standards are applied to new construction in California for the purpose of interior noise compatibility from exterior noise sources. The regulations specify that acoustical studies must be prepared when noise-sensitive structures, such as residential buildings, schools, or hospitals, are located near major transportation noise sources, and where such noise sources create an exterior noise level of 65 dBA CNEL or higher. Acoustical studies that accompany building plans must demonstrate that the structure has been designed to limit interior noise in habitable rooms to acceptable noise levels. For new residential buildings, schools, and hospitals, the acceptable interior noise limit for new construction is 45 dBA CNEL.

California Noise/Land Use Compatibility Matrix

The California Office of Noise Control has prepared a land use compatibility chart for community noise to provide urban planners with a tool to gauge the compatibility of land uses relative to existing and future ambient noise levels. This land use compatibility chart, reproduced below as Table 4.9-4, identifies 'normally acceptable', 'conditionally acceptable', and 'clearly unacceptable' noise levels for various land uses. A conditionally acceptable designation implies new construction or development should be

undertaken only after a detailed analysis of the noise reduction requirements for each land use is made and needed noise insulation features are incorporated in the design. By comparison, a normally acceptable designation indicates that standard construction can occur with no special noise reduction requirements.

TABLE 4.9-4 LAND USE COMPATIBILITY FOR COMMUNITY NOISE ENVIRONMENTS



Normally Acceptable:
Specified land use is satisfactory based upon the assumption that any buildings involved are of normal conventional construction, without any special noise insulation requirements.

Conditionally Acceptable:
New construction or development should be undertaken only after a detailed analysis of the noise reduction requirements is made and the needed noise insulation features included in the design. Conventional construction, but with closed windows and fresh air supply systems or air conditioning will normally suffice.

Normally Unacceptable:
New construction or development should generally be discouraged. If new construction does proceed, a detailed analysis of the noise reduction requirements must be made and needed noise insulation features included in the design.

Clearly Unacceptable:
New construction or development generally should not be undertaken.

Source: Office of Noise Control, Guidelines for the Preparation and Content of Noise Elements of the General Plan, February 1976. Included in the Governor's Office of Planning and Research, California, *General Plan Guidelines*, Appendix C, October 2003.

Local Regulations

City of Cupertino General Plan

The Cupertino General Plan titled "Community Vision 2040" includes policies that are relevant to noise, and applicable to the proposed project. The policies are identified in Chapter 7, Health and Safety, of the General Plan and listed in Table 4.9-5.

TABLE 4.9-5 POLICIES OF CUPERTINO COMMUNITY VISION 2040 RELEVANT TO NOISE

Policy Number	Policy
Chapter 7, Health and Safety (HS)	
Policy HS-8.2	**Building and Site Design.** Minimize noise impacts through appropriate building and site design.
Policy HS-8.3	**Construction and Maintenance Activities.** Regulate construction and maintenance activities. Establish and enforce reasonable allowable periods of the day, during weekdays, weekends and holidays for construction activities. Require construction contractors to use the best available technology to minimize excessive noise and vibration from construction equipment such as pile drivers, jack hammers, and vibratory rollers.
Policy HS-8.5	**Neighborhoods.** Review residents' needs for convenience and safety and prioritize them over the convenient movement of commute or through traffic where practical.
Policy HS-8.6	**Traffic Calming Solutions to Street Noise.** Evaluate solutions to discourage through traffic in neighborhoods through enhanced paving and modified street design.

Source: Cupertino Community Vision 2040.

It is important to note that with the recent Supreme Court decision regarding the assessment of the environment's impacts on proposed projects (*California Building Industry Association (CBIA) v. Bay Area Air Quality Management District (BAAQMD)*, 62 Cal. 4th 369 (No. S 213478) issued December 17, 2015), it is generally no longer the purview of the CEQA process to evaluate the impact of existing environmental conditions on any given project. As a result, while the noise from existing sources is taken into account as part of the baseline, the direct effects of exterior noise from nearby noise sources relative to land use compatibility of the project is no longer a required topic for impact evaluation under CEQA. Nonetheless, for the complete understanding of the public, this noise analysis will discuss noise compatibility as it applies to the development of the proposed project. No determination of significance is required. For reference, applicable portions of the City's Health and Safety Element will be included in the Appendix. The policies shown above are generally incorporated in to the Cupertino Municipal Code Noise Regulations, shown below, which will be used to determine impact significance.

City of Cupertino Municipal Code

The City's noise regulations are implemented and enforced through the Cupertino Municipal Code (CMC), Chapter 10.48, Community Noise Control. This chapter is intended to establish citywide standards to regulate noise.

Exterior Noise Limits

CMC Section 10.48.040 states that no person shall create noise located on a property that causes the noise level at a nearby property to exceed the applicable L_{eq} limits set forth in Table 4.9-6. Additionally, Section 10.48.050 includes a correction for allowable daytime incidents, provided that the sum of the L_{eq}

limit and the duration of the exceedance does not exceed 20 (e.g., 5 dB above the L_{eq} limit is allowed for 15 minutes; 5+15=20). The allowable incremental increase over the Leq limit is provided by the L_x metric shown in Table 4.9-6. The municipal code defined "daytime" as the period from 7:00 a.m. to 8:00 p.m. on weekdays, and 9:00 a.m. to 6:00 p.m. on weekends. "Nighttime" is defined as the period from 8:00 p.m. to 7:00 am on weekdays, and 6:00 p.m. to 9:00 a.m. on weekends.

TABLE 4.9-6 MUNICIPAL CODE EXTERIOR NOISE LIMITS (DBA)

	Daytime					Nighttime
Land Use Type	L_{eq}	L13	L8	L4	L1	L_{eq}
Residential	60	65	70	75	79	50
Non-residential	65	70	75	80	84	55

Note: The Lx metric is equal to the level exceeded for x percent of the measurement period; Per municipal code section 10.48.050, the Lx metric shall use a measurement duration of 2 hours.
e.g.,: L13 is equal to the level exceeded for 13 percent (or 15 minutes) of a two-hour measurement
L8 is equal to the level exceeded for 8 percent (or 10 minutes) of a two-hour measurement
L4 is equal to the level exceeded for 4 percent (or 5 minutes) of a two-hour measurement
L1 is equal to the level exceeded for 1 percent (or 1 minute) of a two-hour measurement
Source: City of Cupertino Municipal Code, Section 10.48.040-050

Interior Noise Limits

CMC Section 10.48.054 includes standards that deal with noise produced within a multi-family dwelling, as it affects an interior noise environment of an adjoining unit. The section states that noise produced in any multiple-family dwelling unit shall not produce a noise level that, when measured at five feet from any wall in any adjoining unit, exceeds 45 dBA from 7:00 a.m. to 10:00 p.m., or 40 dBA from 10:00 p.m. to 7:00 a.m.

In addition, for multifamily dwelling interior noise, the sum of excess noise level and duration in minutes of a brief daytime incident shall not exceed ten in any two-hour period, measured at the receiving location. For example, the interior noise levels presented above can be exceeded by 9 dB for one minute within two hours, 8 dB for two minutes within two hours, 7 dB for three minutes within two hours, and so on. For this project, these standards would only apply to noise generated by a resident at the project site as it affects a different resident at the project site. Since a proposed project cannot impact itself, this noise standard will not be used to determine impact significance.

Construction Noise

The City realizes that the control of construction noise is difficult and therefore provides an exemption for this type of noise. According to CMC Section 10.48.053, grading, construction and demolition activities shall be allowed to exceed the noise limits of CMC Section 10.48.040 during daytime hours (i.e., weekdays from 7:00 a.m. to 8:00 p.m.; weekends from 9:00 a.m. to 6:00 p.m.); provided, that the equipment utilized has high-quality noise muffler and abatement devices installed and in good condition, and the activity meets one of the following two criteria:

1. No individual device produces a noise level more than 87 dBA at a distance of 25 feet; or
2. The noise level on any nearby property does not exceed 80 dBA.

Additional limitations apply to the following activities:

- Grading, street construction, demolition, or underground utility work
  - Not allowed within 750 feet of a residential area on Saturdays, Sundays
- Construction (other than street construction)
  - Prohibited during nighttime periods (i.e., weekdays from 8:00 p.m. to 7:00 a.m.; weekends from 6:00 p.m. to 9:00 a.m.), unless it meets the nighttime standards presented in Table 4.9-6.
  - Prohibited on holidays
- The use of helicopters as a part of a construction and/or demolition activity
  - Restricted to between the hours of 9:00 a.m. and 6:30 p.m. Monday through Friday only
  - Prohibited on the weekends and holidays
  - The notice shall be given at least 24 hours in advance of said usage. In cases of emergency, the 24-hour period may be waived.

Vibration Standards

The City of Cupertino nor the County of Santa Clara set quantitative vibration level standards for structural damage or annoyance. However, the Federal Transit Authority (FTA) provides criteria for acceptable levels of ground-borne vibration for various types of buildings that are sensitive to vibration, and these guidelines are often used to evaluate vibration impacts during construction. The construction-focused guidelines identify that an impact would occur if construction activities generate vibration that is strong enough to (a) physically damage buildings or (b) cause undue annoyance at sensitive receptors.

Vibration-Related Architectural Damage

The level at which groundborne vibration is strong enough to cause architectural damage has not been determined conclusively. However, structures amplify groundborne vibration, and wood-frame buildings such as typical residential structures are more affected by ground vibration than heavier buildings. The most conservative estimates are reflected in the FTA standards, shown in Table 4.9-7. The threshold of 0.2 inches/second PPV will be applied to typical residential structures surrounding the project site.

TABLE 4.9-7 FTA GROUNDBORNE VIBRATION CRITERIA: ARCHITECTURAL DAMAGE

	Building Category	PPV (in/sec)	VdB (L_v)
I.	Reinforced concrete, steel, or timber (no plaster)	0.5	102
II.	Engineered concrete and masonry (no plaster)	0.3	98
III.	Non-engineered timber and masonry buildings	0.2	94
IV.	Buildings extremely susceptible to vibration damage	0.12	90

Note: Lv (VdB): Lv is the velocity level in decibels, as measured in 1/3 octave bands of frequency over the frequency ranges of 8 to 80 Hz.
Source: FTA 2006.

Vibration-Related Human Annoyance

The human reaction to various levels of vibration is highly subjective and varies from person to person. Table 4.9-8 shows the FTA's vibration criteria to evaluate vibration-related annoyance due to resonances

of the structural components of a building. These criteria are based on extensive research that suggests humans are sensitive to vibration velocities in the range of 8 to 80 Hz. For construction activities, presumed to occur only during daytime hours, the criteria would be 78 VdB at residential land uses.

TABLE 4.9-8 FTA GROUNDBORNE VIBRATION CRITERIA: HUMAN ANNOYANCE

Land Use Category	Vibration Velocity Level (VdB)	Description
Workshop	90	Distinctly felt vibration. Appropriate to workshops and non-sensitive areas
Office	84	Felt vibration. Appropriate to offices and non-sensitive areas.
Residential- Daytime	78	Barely felt vibration. Adequate for computer equipment.
Residential- Nighttime	72	Vibration not felt, but groundborne noise may be audible inside quiet rooms.

Note: Maximum Vibration Level (in VdB) is the RMS velocity level in decibels, as measured in 1/3 octave bands of frequency over the frequency ranges of 8 to 80 Hz. RMS is the abbreviation for root-mean-square.
Source: FTA 2006.

4.9.1.3 EXISTING CONDITIONS

Existing Land Uses/Sensitive Receptors

The project site is located on an elevated section of land between Interstate-280 (I-280) to the north and Stonehaven Drive, within a predominantly residential area, to the south. As shown on Figure 4.9-1, the nearest nearby sensitive noise receptors to the project site would be the community of single-family homes to the south of the project site and the Maryknoll religious institute, which is a residential community for retired priests and other clergy members, located to the east proposed project boundary.

Principal Noise Sources

On-Road Vehicles

The primary noise source around the project area is roadway noise along I-280, which runs along and near the project site's northern boundary. In addition to I-280, major roadways running north to south include Foothill Boulevard to the east of the project site. Together, I-280 and Foothill Boulevard comprise the major roads in the project vicinity.

The Cupertino General Plan, Appendix D: Community Noise Fundamentals, includes a figure showing estimated future[1] noise contours, based on roadway noise. The figure shows that about half of the proposed project site is within the 70 dBA CNEL contour, and the other (southwestern) half is within the 65 dBA CNEL contour.

[1] Cupertino General Plan Community Vision 2015-2040

Source: Quiring, General, LLC, 2017.

Existing Structures
New Construction
Areas of Renovation
Material Staging Areas
(#) Receptor
Temporary Fire & Construction Access Road
Tire Wash
Temporary Construction Fence w/ Screen
Project Site Boundary

Figure 4.9-1
Noise Receptors

To further quantify the ambient noise environment, a traffic noise analysis was conducted on the nearest segment of I-280, based on the FHWA-RD77-108 roadway noise calculation method.[2] The 2015 average daily traffic flow data along I-280 was available through Caltrans.[3] To adjust for estimated 2017 traffic, a traffic increase of 2.64 percent per year was used, based on the 2014 to 2015 traffic trend increase. The results of this analysis are shown in Table 4.9-9.

TABLE 4.9-9 FREEWAY NOISE ANALYSIS

Roadway	Receiver	Distance (feet)	CNEL (dBA)
I-280 between Foothill Blvd and Magdalena Ave	Northeast boundary of project site	250	69
	Southwest boundary of project site	700	60

Source: Caltrans, 2015 Traffic Volumes on California State Highways

Based on this roadway noise analysis, the project site is currently exposed to roadway noise in the range of 60 to 69 dBA CNEL. These results generally agree with the Cupertino General Plan Noise Contours, which show that the project is site exposed to 65 to70 dBA CNEL. Further, there are no public or private airports within the vicinity of the project site.[4] Based on these details, it is assumed that the ambient noise environment around the project site is in the range of 60-70 dBA CNEL.

Stationary Source Noise

Secondary noise sources include stationary sources of noise, which may occur from all types of land uses. The project area is mostly developed with residential, institutional and recreational development uses, which is expected to include noise sources, such as people talking, property maintenance, and mechanical equipment noise. Stationary noise will contribute much less to the ambient noise environment compared to roadway noise.

Construction Noise

Construction activity also contributes to the noise environment of Cupertino; however, such activities are typically temporary, occurring in any one location for only a limited period of time. Larger or multi-phase construction projects may contribute to the noise environment of a particular location for a more extended period of time. Public infrastructure that requires ongoing maintenance may also result in ongoing noise impacts, though usually not at a constant location. For example, different sections of road may be repaved at different times, meaning that noise impacts from associated construction activities would, at any given time, only occur along and near the section of roadway undergoing such maintenance. Construction noise due to the proposed project, as it affects nearby sensitive receptors, will be analyzed in the impact discussion, below.

[2] Barry, T.M., and J. Regan. FHWA Traffic Noise Prediction Model. Report No. FHWA-RD-77-108. Washington, DC: Federal Highway Administration, December 1978.

[3] Caltrans, 2015 Traffic Volumes on California State Highways

[4] Airnav.com, Airport Search, 2017

Noise Compatibility

The Cupertino General Plan presents a Land Use Noise Compatibility Matrix that coincides with the California State Guidelines shown in Table 4.9-4 above. The Land Use Noise Compatibility Matrix identifies clearly acceptable, conditionally acceptable, normally unacceptable, and clearly unacceptable noise levels for various land uses. In no case would it be desirable for any land use to exceed the highest conditionally acceptable noise level shown in Table 4.9-4 above. Thus, for the purpose of residential single-family or multiple-family uses, the highest conditionally acceptable exterior noise level is 70 dBA CNEL. According to the existing noise environment described above, the project site under existing conditions is not expected to experience noise levels in excess of 70 dBA CNEL. The ambient noise level around the project site is conditionally acceptable in terms of the project site's land use type. Further, the land use designation at the project site will not change due to the proposed operations; the proposed project will not expose residents to noise levels in excess of existing conditions. No determination of significance is required.

4.9.2 THRESHOLDS OF SIGNIFICANCE

An Initial Study was prepared for the proposed project (see Appendix A of this Draft EIR). Based on the analysis contained in the Initial Study it was determined that development of the proposed project would not result in significant environmental impacts pursuant to the following thresholds of significance and, therefore, are not discussed in this chapter.

- For projects within an area covered by an airport land use plan or within 2 miles of a public airport or public use airport when such an airport land use plan has not been adopted, or within the vicinity of a private airstrip, expose people residing or working in the project area to excessive aircraft noise levels.
- For a project within the vicinity of a private airstrip, expose people residing or working in the project area to excessive noise levels.

Based on the Initial Study it was determined that the proposed project could result in a potentially significant noise impact if it would:

1. Expose persons to or generate noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies.
2. Expose persons to or generate excessive ground-borne vibration or ground-borne noise levels.
3. Create a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project.
4. Create a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project.

4.9.3 IMPACT DISCUSSION

NOISE-1	**The proposed project would not result in the exposure of persons to or generation of noise levels in excess of standards established in the local General Plan or noise ordinance, or applicable standards of other agencies.**

The proposed project could potentially increase long-term operational noise around the project site. Project-related noise increases are primarily due to stationary noise sources, and roadway noise increases. A significant stationary-source impact would occur if the activities or equipment at the project site produce noise levels at nearby sensitive receptors in excess of the local standards, shown above. For roadway noise, any audible increase will be determined as significant. Audible increases in community noise levels generally refer to a change of 3 dB or more since this level has been found to be the threshold of perceptibility in exterior environments. A change in noise level between 1 and 3 dB is considered "potentially audible", and changes in noise level of less than 1 dB are typically considered "inaudible" to the human ear except under quiet conditions in controlled environments. Note that a doubling of traffic flows (i.e., 10,000 vehicles per day to 20,000 per day) would be needed to create a 3 dB increase in traffic-generated noise levels. Only "audible" changes in noise levels at sensitive receptor locations (i.e., 3 dB or more) are considered potentially significant.

Project-Related Roadway Noise

To ascertain existing site traffic at the project site, 24-hour traffic counts were conducted at one on-site location; Cristo Rey Drive south of Capilla Way, which is the primary access to the project site. The traffic counts show that the proposed project site currently generates approximately 1,432 daily trips, with 106 trips during the peak morning hours between 7:00 a.m. to 10:00 a.m. (AM peak hour) and 104 trips during the peak evening hours between 4:00 p.m. to 7:00 p.m. (PM peak hours).

The proposed project would include up to 25 new independent villas (i.e., living dwelling units), and up to 36 additional beds in the assisted living facility, which would increase the residential capacity at the project site. An increase in resident capacity would increase the number of daily trips to and from the project site, and therefore, may result in an increase in traffic noise around the project area.

According to the proposed project's traffic data, the proposed improvements to the continuing care retirement community (CCRC) would generate up to 206 daily vehicle trips along Cristo Rey Drive, the primary access to the project site. This increase in vehicle trips is proportional to the existing number of beds and units at the project site, based in the 24-hour counts conducted along Cristo Rey Drive.

As described in greater detail in Chapter 4.10, Transportation and Circulation, the trip generation is not solely based on the residents, but factors in employee and visitor trips commonly associated with these senior facility uses. Further, this project-generated traffic is likely to be spread out throughout the day as opposed to conforming to peak hour periods (i.e., the associated traffic data indicated an increase of up to 15 trips during both the morning and evening peak hours).

Due to the additional number of project-related vehicle trips, site access roadways would experience a ambient noise increase of up to 0.6 dB from traffic.[5] Since the projected increases in project-related traffic flows is well below the commonly accepted threshold of a 3 dB increase, the proposed project would not result in notable or substantial permanent increases in community noise levels due to traffic flows. Therefore, permanent noise increases due to project-related traffic would be *less than significant* and no mitigation measures are necessary.

Project-Related Stationary Noise

The proposed improvements to the existing CCRC would generate new stationary noise at the project site, including heating, ventilation, and air conditioning units, additional landscaping equipment noise, and courtyard/common area noise. The project site is already developed as a CCRC, and the proposed project improvements will not introduce any new noise sources to the project area.

Further, the heating, ventilation, and air conditioning equipment on top of the proposed buildings would be improved from the older equipment or similar to the equipment that is being used at the existing buildings on the project site. Additionally, this equipment would be placed within appropriate sound enclosures or parapets such that the operations would not be notably different than existing conditions in and around the proposed area of improvements and would not exceed the City's exterior noise standards presented in Table 4.9-6 above.

The on-site use of recreational outdoor areas and courtyards may increase due to the proposed project. However, because the proposed project does not introduce new noise generating outdoor areas for the existing CCRC for seniors, the recreational activities in the outdoor areas and courtyards would be similar to existing conditions and would not be expected to generate high levels of sound.

In summary, noise generated by normal operations would not be notably different than existing conditions in and around the proposed area of improvements and would not exceed the City's exterior noise standards. Therefore, permanent noise increases due to project-related activities would be *less than significant* and no mitigation measures are necessary.

Significance Without Mitigation: Less Than Significant

NOISE-2 The proposed project would not expose persons to or generate excessive ground-borne vibration or ground-borne noise levels.

CEQA does not specify quantitative thresholds for what is considered "excessive" vibration or groundborne noise, nor does the City of Cupertino establish such thresholds. Therefore, based on criteria from the Federal Transit Administration (FTA), which are regarded as standard practice, a significant impact would occur if:

- The proposed project would result in ongoing exceedance of the criteria for annoyance for residential daytime (78 VdB), as presented in Table 4.9-8 above.

[5] i.e., 10*LOG ((1432+206)/1432) = 0.6 dB

- The proposed project would result in vibration exceeding the architectural damage criteria for non-engineered timber and masonry buildings (0.2 in/sec PPV), as presented in Table 4.9-7 above.

The following discusses potential vibration impacts generated by short-term construction and long-term operations that may occur under implementation of the proposed project.

Operations Vibration Impacts

The operation of the proposed project would not generate substantial levels of vibration as there are no notable sources of vibrational energy associated with the proposed project. Thus, vibration effects from operations sources would be *less than significant* and no mitigation measures are required.

Construction Vibration Impacts

The demolition and construction would occur in two construction phases over a period of approximately 5 years, subject to regulatory approval. The construction of the independent living villas would occur first and would be followed by the construction of the healthcare center, and most of the commons facilities the first construction phase and the multi-purpose room component of the commons facilities would occur in the second construction phase. The first construction phase is proposed to occur over a 27-month period, with the independent living villas occurring during the first 6 months of this phase, and the second construction phase is proposed to occur over a 5-month period, for a total construction period of 32 months. The two construction phases could occur consecutively or could have a break in between and are anticipated to be completed by the year 2022.

The effect on nearby buildings in the vicinity the project site varies depending on soil type, ground strata, and receptor-building construction. The results from vibration can range from no perceptible effects at the lowest vibration levels, to low rumbling sounds and perceptible vibrations at moderate levels, to slight structural damage at the highest levels. Vibration from construction activities rarely reaches the levels that can damage structures, but groundborne vibration and groundborne noise can reach perceptible and audible levels in buildings that are close to the construction site. Table 4.9-10 lists vibration levels for construction equipment.

As shown in Table 4.9-10, vibration generated by construction equipment has the potential to be substantial. Significant vibration impacts may occur from construction activities associated with new development under the proposed project, such as the use of large bulldozers and jackhammers.

TABLE 4.9-10 GROUNDBORNE VIBRATION LEVELS FOR CONSTRUCTION EQUIPMENT

Equipment	Approximate Root Mean Square (RMS)[a] Velocity Level at 25 Feet (VdB)	Approximate Peak Particle Velocity (PPV) Level at 25 Feet (inch/second)
Pile Driver (Impact) Upper Range	112	1.518
Pile Driver (Impact) Lower Range	104	0.644
Pile Driver (Sonic) Upper Range	105	0.734
Pile Driver (Sonic) Lower Range	93	0.170
Large Bulldozer	87	0.089
Caisson Drilling	87	0.089
Jackhammer	79	0.035
Small Bulldozer	58	0.003
Loaded Trucks	86	0.076
FTA Criteria – Human Annoyance	78[b]	—
FTA Criteria – Structural Damage	—	0.2[c]

Notes:
a. RMS velocity calculated from vibration level (VdB) using the reference of 1 micro-inch/second. RMS is the abbreviation for root-mean-square.
b. Criteria Threshold for Residential Daytime
c. Criteria Threshold for non-engineered timber and masonry buildings Source: Federal Transit Administration, Transit Noise, and Vibration Impact Assessment, 2006.

The total construction activities of the proposed project would entail demolishing certain existing buildings, renovating other buildings, and constructing new buildings, parking lots, and landscaping. The use of high-vibration equipment, such as pile drivers, would not occur.

The existing project site is not graded to the extent needed for the proposed project, so a notable amount of heavy earthwork (i.e., cut-and-fill processes) would be required during the grading sub-phase. Thus, there would be some use of vibration-inducing construction equipment such as excavators, bulldozers, graders, jackhammers, and loaders/backhoes. Following the mass grading phase, construction equipment for the building erection phase would primarily employ equipment that would not generate substantial levels of vibration, including forklifts, cranes, and haul trucks.

The demolition and grading portions of the construction are the most vibration intensive activities and would occur at the beginning of each construction phase. It is estimated that demolition and grading would take place over approximately the first 6 months of the first construction phase, and the first month of the 5-month second construction phase.

Vibration-induced Architectural Damage

To ascertain a range of receptor locations in terms of vibration exposure, this analysis used four nearby representative locations, three are along the first row of homes to the west of the project site and the fourth one is the Maryknoll religious institute, to the south. Since architectural damage from construction vibration sources can be a one-time event and since such damage is dependent on the soil type, ground strata, and receptor building construction, vibration damage distances are measured from the nearest likely location at the construction site to the façade of the nearest receptor building.

Table 4.9-11 shows the peak particle velocities of some common construction equipment and (loaded) haul trucks. Such items would be expected to be employed at the project site. There are some types of equipment that are expected to be employed on the construction site that are not listed in the following table (i.e., excavator, backhoe). The vibration levels produced by such items are estimated to be comparable to the items in the following table (i.e., excavator levels comparable to large bulldozer).

TABLE 4.9-11 ARCHITECTURAL DAMAGE VIBRATION LEVELS FROM CONSTRUCTION EQUIPMENT

	Peak Particle Velocity (inches per second)			
Equipment	Receptor 1 11018 Sycamore Dr. (112 feet)	Receptor 2 23637 Black Oak Way (200 feet)	Receptor 3 23555 Oak Valley Rd. (70 feet)	Receptor 4 Maryknoll Residence (325 feet)
Vibratory Roller	0.022	0.009	0.045	0.004
Large Bulldozer	0.009	0.004	0.019	0.002
Loaded Trucks	0.008	0.003	0.016	0.002
Jackhammer	0.004	0.002	0.007	0.001
Small Bulldozer	<0.001	<0.001	<0.001	<0.001

Notes: Distances are from the nearest portion of potential construction activity to the nearest receptor building within each land use type.
Source: Federal Transit Administration: Transit Noise and Vibration Impact Assessment, 2006.

As shown in Table 4.9-11, the proposed project-related construction activities would not result in vibration levels at nearby structures that exceed the FTA's pertinent criteria for vibration-induced architectural damage (i.e., 0.20 in/sec PPV for residential land uses). As such, construction activities are not expected to result levels that would cause vibration-induced damage at these nearby locations and these types of impacts would be *less than significant*. No mitigation measures are needed.

Vibration Annoyance

While not presenting potential impacts relative to architectural damage, some construction activities may be perceptible at the nearby receptors due to proximity to the activities. However, vibration-related construction activities would occur in the daytime when residential land uses are least susceptible to vibration levels; since many people would be away from their residences during the day.

Construction activities are typically distributed throughout the project site and would only occur for a relatively limited duration when equipment would be working in close proximity. Therefore, to represent the average vibration level, distances to the nearby receptor buildings are measured from the center of

nearest construction area. Table 4.9-12 shows the vibration levels from typical earthmoving construction equipment at the nearest nearby receptors.

TABLE 4.9-12 AVERAGE ANNOYANCE VIBRATION LEVELS FROM CONSTRUCTION EQUIPMENT

	Vibration RMS Velocity Level (VdB)			
Equipment	Receptor 1 11018 Sycamore Dr. (175 feet)	Receptor 2 23637 Black Oak Way (300 feet)	Receptor 3 23555 Oak Valley Rd. (100 feet)	Receptor 4 Maryknoll Residence (400 feet)
Vibratory Roller	69	62	76	58
Large Bulldozer	62	55	69	51
Loaded Trucks	61	54	68	50
Jackhammer	54	47	61	43
Small Bulldozer	33	26	40	22

Notes: Distances are from the center of the overall construction zone to the nearest receptor building within each land use type.
VdB referenced from 1 micro-inch/second
Source: Federal Transit Administration (FTA), Transit Noise and Vibration Impact Assessment, May 2006.

Construction-generated vibration levels would not exceed 78 VdB at any nearby off-site sensitive residential receptors. As such, no nearby receptors would experience construction-generated vibration levels that would exceed the average annoyance threshold. There may be, however, brief periods when heavy equipment would operate at or near the project boundary. During these brief periods, annoyance-connected groundborne vibration levels may be higher than the results shown in Table 4.9-12 above and, thus, may be perceptible at the nearest nearby receptor locations. However, as heavy construction equipment moves around the project site, average vibration levels at the nearest nearby structures would diminish with increasing distance between structures. Therefore, impacts related to general construction vibration annoyance would be *less than significant* and mitigation is not necessary.

Significance Without Mitigation: Less Than Significant

NOISE-3 The proposed project would not result in a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the proposed project.

As presented in impact discussion NOISE-1 above, project-generated operational noise from traffic, stationary noise sources (i.e., mechanical systems), and operational activities would not result in a substantial permanent increase in ambient noise levels. Therefore, these on-going activities would generate *less-than-significant* noise impacts. Thus, no mitigation measures are needed.

Significance Without Mitigation: Less Than Significant

NOISE-4 The proposed project would result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the proposed project.

Temporary noise would be generated during construction of the proposed project. As a result, existing uses surrounding the project site would be exposed to construction noise. In general, construction activities for the proposed project would involve construction equipment such as loaders/backhoes, paving equipment, excavators, rubber-tired dozers, graders, forklifts, welders, pavers, concrete trucks, and air compressors. The anticipated construction equipment list for each phase of development is based in the air quality and greenhouse gas emissions modeling data, included in Appendix C of this Draft EIR. Two types of short-term noise impacts could occur during construction: (1) mobile-source noise from transport of workers, material deliveries, and debris/soil haul and (2) stationary-source noise from use of construction equipment. These two types of general construction-related noise impacts are discussed in more detail below for each construction phase.

Construction Vehicles Noise

The transport of workers and equipment to the construction site would incrementally increase noise levels along site access roadways. There would be a worst-case flow of approximately 84 worker and vendor trips per day over each construction phase. This number of construction-related vehicle trips would be much less than a 5 percent increase over the current number of project-generated trips at the project site (approximately 1,432 daily trips). As such, this would result in a noise level increase of much less than 0.5 dB (in the traffic-focused CNEL noise level metric) and would, therefore, have a less than significant impact on noise receptors along the truck routes. Other phases of construction are anticipated to have less than 32 daily trips (for the aggregate of workers plus vendors plus haul-offs) and these phases would have even less of an incremental difference in noise levels along construction trip routes than the construction phases.

While individual construction vehicle pass-bys may create momentary noise levels of up to approximately 85 dBA (L_{max}) at 50 feet from the vehicle, these occurrences – although potentially audible for a few seconds – would generally be infrequent. Due to the infrequency of events, their relatively short-lived durations, and their commonality with existing truck pass-bys, construction vehicle movement noise would be *less than significant*. No mitigation is needed with respect to construction mobile source noise.

Construction Equipment Noise

Each stage of construction involves the use of different kinds of construction equipment/processes – depending on the work to be accomplished – and, therefore, has its own distinct noise characteristics. Construction activities associated with the proposed project would not require blasting or pile driving. For the construction of the proposed project, the demolition and grading phases are expected to generate the highest noise levels because they require the largest, most powerful equipment. Short-term noise can also be associated with the site preparation, building construction, and paving of any given construction project. Noise attenuation due to distance, the number and type of equipment, and the load and power requirements to accomplish tasks at each construction phase, would result in different noise levels at a

given sensitive receptor. It should be noted that the average noise levels at noise-sensitive receptors would be lower that these nominal examples. This is because the erection of the project buildings would create intervening structures and their associated noise barrier effects as the project developed over time.

As previously described under the subheading "Construction Vibration Impacts", construction activities are proposed be completed in two separate phases. Exposure to project-related construction noise as it affects sensitive receptors is presented below, separated by construction phase.

As discussed above in Section 4.9.1.2, Regulatory Framework, according to the Cupertino Municipal Code, construction activities must occur during the daytime (as defined by the municipal code) and must meet one of the following two criteria:

1. No individual device produces a noise level more than 87 dBA at a distance of 25 feet; or
2. The noise level on any nearby property does not exceed 80 dBA.

In addition, grading, street construction, demolition, or underground utility work is not allowed within 750 feet of a residential area on weekends; construction (other than street construction) is prohibited on holidays and during nighttime periods (i.e., weekdays from 8:00 p.m. to 7:00 a.m.; weekends from 6:00 p.m. to 9:00 a.m.), unless it meets the nighttime standards presented in Table 4.9-6 above.

To ascertain a range of receptor locations in terms of construction noise exposure, this analysis used four representative locations, three are along the first row of homes to the west of the project site and the fourth one is the Maryknoll religious institute, to the south.

Phase 1 Construction

Construction activities would increase noise levels on and near the project area above existing levels. Projected noise levels from project-related construction activities were calculated from the simultaneous use of all applicable construction equipment during each sub-phase at spatially averaged distances (i.e., from the center of the general construction area) to the property line of the closest receptors. The first construction phase would include the development of the independent living villas, the skilled nursing facility, the memory care facility, the community space/café, and the fitness facility. Since these project components are spread throughout the project site, the construction noise analysis presents noise exposure levels as an aggregate of all project components at their respective distance to the nearby receptors.

Using information provided by the City of Cupertino, coupled with methodologies and inputs employed in the associated air quality assessment, the expected construction equipment mix was estimated and categorized by construction activity. The associated, aggregate sound levels, grouped by construction activity, are summarized in Table 4.9-13.

TABLE 4.9-13 PHASE 1 CONSTRUCTION NOISE LEVELS

	Energy-Average (L_{eq}) Sound Levels, dBA			
Sub-Phase	Receptor 1 11018 Sycamore Dr. (175 feet)	Receptor 2 23637 Black Oak Way (230 feet)	Receptor 3 23555 Oak Valley Rd. (110 feet)	Receptor 4 Maryknoll Residence (235 feet)
Demolition	74	72	78	72
Site Prep	75	72	79	72
Grading	75	73	79	73
Construction 1a	67	65	72	65
Construction 1b	71	69	75	69
Paving	75	73	79	73

Notes: Distances are from the center of the overall construction zone to the nearest receptor building within each land use type.
Calculations performed with the FHWA's RCNM software and are included in Appendix I of this Draft EIR.

The nearest noise receptors would be the residential uses that are approximately 110 feet southwest of the proposed independent living villa (Cristo Rey Drive Villas) constructions. At this distance, composite construction noise would be reduced to a conservatively estimated level of approximately 79 dBA L_{eq} (due to distance attenuation alone).

Since construction activities would be limited to relatively small- to medium-sized equipment (i.e., bulldozers, back hoes, pavers, and a crane), would take place during the daytime hours when many people would be out of their houses, would conform to the time-of-day restrictions of the City's Municipal Code, and would not exceed 80 dBA at the nearest residence, the first construction phase noise impacts to nearby receptors would be *less than significant* and no mitigation measures are necessary.

Phase 2 Construction

Construction activities would increase noise levels on and near the proposed project area above existing levels. Projected noise levels from project-related construction activities were calculated from the simultaneous use of all applicable construction equipment during each sub-phase at spatially averaged distances (i.e., from the center of the general construction area) to the property line of the closest receptors. The second construction phase would include the development of the multi-purpose room, which is expected to last approximately 5 months.

Using information provided by the City of Cupertino, coupled with methodologies and inputs employed in the associated air quality assessment, the expected construction equipment mix was estimated and categorized by construction activity. The associated, aggregate sound levels, grouped by construction activity, are summarized in Table 4.9-14.

TABLE 4.9-14 PHASE 2 CONSTRUCTION NOISE LEVELS

	Energy-Average (L_{eq}) Sound Levels, dBA			
Sub-Phase	Receptor 1 11018 Sycamore Dr. (700 feet)	Receptor 2 23637 Black Oak Way (400 feet)	Receptor 3 23555 Oak Valley Rd. (800 feet)	Receptor 4 Maryknoll Residence (1,600 feet)
Demolition	61	66	60	54
Site Prep	61	66	60	54
Grading	61	66	60	54
Construction	55	60	54	48
Paving	59	64	58	52
Painting	50	54	48	42

Notes: Distances are from the center of the overall construction zone to the nearest receptor building within each land use type.
Calculations performed with the FHWA's RCNM software and are included in Appendix I of this Draft EIR.

The nearest noise receptors would be the residences near 23637 Black Oak Way that are approximately 400 feet southwest of the proposed multi-purpose room construction. At this distance, composite construction noise would be reduced to a conservatively estimated level of approximately 66 dBA L_{eq} due to distance attenuation alone. Noise levels from construction activities would result in lower noise levels at more distant receptors (as compared to these nearest receptors) due to increasing attenuation with increasing distances away from the sources. Since construction activities would be limited to relatively small- to medium-sized equipment (i.e., bulldozers, back hoes, pavers, and a crane), would take place during the daytime hours when many people would be out of their houses, would conform to the time-of-day restrictions of the City's Municipal Code, and would not exceed 80 dBA at the nearest residence (23637 Black Oak Way), the second construction phase noise impacts to nearby receptors would be *less than significant* and no mitigation measures are necessary.

Significance Without Mitigation: Less Than Significant

NOISE-5 The proposed project, in combination with past, present, and reasonably foreseeable projects, would not result in significant cumulative impacts with respect to noise.

A significant cumulative noise impact may occur if the proposed project's contribution to the cumulative ambient noise environment is significant (3 dBA or higher). As described in Chapter 4, Environmental Evaluation, of this Draft EIR, the nearest cumulative projects are either too far away or their respective construction impacts would not occur simultaneously with that of the proposed project. As described in impact discussion NOISE-1 through NOISE-4, construction and operation of the proposed project would not result in any significant noise impacts. Therefore, the project's incremental effect to the future cumulative noise environment is not cumulatively considerable.

Significance Without Mitigation: Less Than Significant

4.10 TRANSPORTATION AND CIRCULATION

This chapter includes an evaluation of the potential environmental consequences from construction and operation of the proposed project related to transportation and circulation. Additionally, this chapter describes the environmental setting, including regulatory framework and existing mobility conditions in the project area, and identifies mitigation measures, if required, that would avoid or reduce significant impacts. Traffic data used in this chapter is provided in Appendix J, Transportation and Circulation Data, of this Draft EIR.

4.10.1 ENVIRONMENTAL SETTING

4.10.1.1 REGULATORY FRAMEWORK

This section describes federal, State, regional, and local environmental laws and policies that are relevant to the California Environmental Quality Act (CEQA) review process for transportation and circulation.

State Regulations

Senate Bill 743

On September 27, 2013, Senate Bill (SB) 743 was signed into law. The legislature found that with the adoption of the Sustainable Communities and Climate Protection Act of 2008 (SB 375), the State had signaled its commitment to encourage land use and transportation planning decisions and investments that reduce vehicle miles traveled and thereby contribute to the reduction of greenhouse gas emissions, as required by the California Global Warming Solutions Act of 2006 (Assembly Bill 32).

SB 743 started a process that will likely change transportation impact analysis as part of CEQA compliance. Changes include the elimination of auto delay, level of service, and similar measures of vehicular capacity or traffic congestion as the basis for determining significant impacts in many parts of California (if not Statewide). The new criteria "shall promote the reduction of greenhouse gas emissions, the development of multimodal transportation networks, and a diversity of land uses" (Public Resources Code Section 21099(b)(1)). On January 20, 2016, the Governor's Office of Planning and Research (OPR) released revisions to its proposed Draft CEQA guidelines for the implementation of SB 743. Once the guidelines are prepared and certified, "automobile delay, as described solely by level of service of similar measures of vehicular capacity or traffic congestion, shall not be considered a significant impact on the environment" (Public Resources Code Section 21099(b)(2)). Certification and implementation of the guidelines are expected towards the end of 2017 or early 2018. Since OPR has not yet amended the CEQA Guidelines to implement this change, automobile delay is still considered a significant impact, and the City of Cupertino will continue to use the established level-of-service criteria (e.g., LOS A through LOS F) described under local regulations below.

Regional Regulations

Santa Clara County Congestion Management Plan

The Santa Clara Valley Transportation Authority (VTA) establishes transportation plans that are incorporated into the larger Regional Transportation Plan (RTP). In Santa Clara County, the VTA is also the Congestion Management Agency (CMA) tasked with preparing a comprehensive transportation improvement program among local jurisdictions (i.e., the CMP) that describes the strategies to reduce traffic congestion, and improve land use decision-making. VTA's latest CMP is the 2015 Congestion Management Program. The CMP contains level-of-service standards for highways and arterials. The minimum level-of-service standard for Santa Clara County is LOS E, except for grandfathered facilities that had already reached LOS F. Because the level-of-service standards for Santa Clara County were established in October of 1991, any intersection operating at LOS F prior to the established 1991 level-of-service standards is not held to the minimum standard of LOS E.[1] Member Agencies, which are the cities and County of Santa Clara, must ensure that CMP roadways operate at or better than the minimum level-of-service standard or they face losing gas tax subventions. The VTA monitors the performance of the CMP facilities at a minimum of every two years. If the minimum level-of-service standards are not met, Member Agencies must develop multimodal improvement plans to address the congestion.[2]

The VTA presents transportation impact assessment (TIA) guidelines for assessing the transportation and circulation impacts of development projects and identifying whether improvements are needed to adjacent roadways, bike facilities, sidewalks, and transit services affected by the proposed project. The TIA guidelines have been adopted by local agencies within Santa Clara County, and are applied to analyze the regional transportation system. Per the TIA guidelines, a TIA must be completed for Congestion Management Plan purposes for projects that meet or exceed the trip threshold of generating 100 or more net new weekday peak hour morning or AM (7:00 to 10:00 a.m.) and peak hour evening or PM (4:00 to 7:00 p.m.) commute times or weekend peak hour trips, including both inbound and outbound trips. As discussed in more detail below in Section 4.10-4, Impact Discussion, under TRANS-1, the proposed project would not generate more than 15 AM or PM peak hour trips and does not meet or exceed the VTA's threshold to prepare a TIA.

Local Regulations

City of Cupertino General Plan

The Cupertino General Plan titled "Community Vision 2040" includes policies that are relevant to transportation and circulation, and applicable to the proposed project. The policies are identified in Chapter 5, Mobility, of the General Plan and listed in Table 4.10-1.

[1] Santa Clara County VTA, Congestion Management Plan, 2013, page 29.
[2] Santa Clara County VTA, Congestion Management Plan, 2013, pages 29-30.

TABLE 4.10-1 POLICIES OF CUPERTINO COMMUNITY VISION 2040 RELEVANT TO TRANSPORTATION AND CIRCULATION

Policy Number	Policy
Chapter 5, Mobility Element (M)	
Policy M-1.2	**Transportation Impact Analysis.** Participate in the development of new multi-modal analysis methods and impact thresholds as required by Senate Bill 743. However, until such impact thresholds are developed, continue to optimize mobility for all modes of transportation while striving to maintain the following intersection Levels of Service (LOS) at a.m. and p.m. peak traffic hours: ▪ Major intersections: LOS D ▪ Stevens Creek Boulevard and De Anza Boulevard: LOS E+ ▪ Stevens Creek Boulevard and Stelling Road: LOS E+ ▪ De Anza Boulevard and Bollinger Road: LOS E+
Policy M-2.4	**Community Impacts.** Reduce traffic impacts and support alternative modes of transportation rather than constructing barriers to mobility. Do not close streets unless there is a demonstrated safety or over-whelming through traffic problem and there are no acceptable alternatives since street closures move the problem from one street to another.
Policy M-2.4	**Public Accessibility.** Ensure all new public and private streets are publicly accessible to improve walkability and reduce impacts on existing streets.
Policy M-3.2	**Development.** Require new development and redevelopment to increase connectivity through direct and safe pedestrian connections to public amenities, neighborhoods, shopping and employment destinations throughout the City.
Policy M-7.1	**Multi-Modal Transportation Impact Analysis.** Follow guidelines set by VTA related to transportation impact analyses, while conforming to State goals for multi-modal performance targets.
Policy M-9.2	**Reduced Travel Demand.** Promote effective TDM programs for existing and new development.

Source: Cupertino Community Vision 2040.

City of Cupertino Municipal Code

The following provisions of the City of Cupertino Municipal Code (CMC) help minimize transportation and circulation-related impacts associated with new development projects:

- Title 11, Vehicles and Traffic, establishes regulations with respect to parking, traffic, and circulation. Additionally, Title 11 establishes regulations governing roadway design features, such as speed bumps.
- Chapter 14.04, Street Improvements, requires that any person who proposes to erect, construct, add to, alter or repair any building or structure, for which a permit is required, adjacent to land of an unimproved street, must install street improvements. These improvements include, but are not limited to, street signs, curbs and gutters, driveways, sidewalks, street paving, and/or dedications and improvements of service roads, and parking facilities. Section 14.04.110, Improvements Installed Prior to Permit–Imposition of Street Improvement Reimbursement Charges, Cost of Land and Interest, requires that when street improvements are made by the City in advance of development of adjacent property, upon development the property owner must reimburse City for all costs advanced.

Cupertino Bicycle Transportation Plan

In 2016, the City of Cupertino adopted its *Bicycle Transportation Master Plan* (Bike Plan), which is a citywide plan to encourage bicycling as a safe, practical and healthy alternative to the use of the family

car. The Bike Plan illustrates Cupertino's current bicycle network, identifies gaps in the network, and proposes improvement projects to address the identified gaps.[3] The 2016 Bicycle Plan includes standards for engineering, encouragement, education, and enforcement intended to improve the bicycle infrastructure in the City to enable people to bike to work and school, to utilize a bicycle to run errands, and to enjoy the health and environmental benefits that bicycling provides cyclists of every age.

Cupertino Pedestrian Transportation Plan

The 2002 Cupertino Pedestrian Transportation Plan contains goals, policies, and specific recommendations to increase the walkability of Cupertino, including the Pedestrian Guidelines. The Pedestrian Transportation Plan is a companion document to the City of Cupertino Bicycle Transportation Plan. It includes specific recommendations to improve pedestrian conditions, which fall into three main categories: policies and programs, citywide capital projects, and site-specific recommendations.

4.10.2 EXISTING CONDITIONS AND ENVIRONMENTAL SETTING

This section describes the existing transportation facilities in the project area, including the roadway network, bicycle and pedestrian facilities, public transit network, and current intersection and roadway segment operations. This section presents the existing conditions in the project area as they relate to the selected study intersections identified above.

4.10.2.1 ROADWAY NETWORK

The project site is served by Interstate 280 (I-280), a north-south freeway that extends from US 101 in San José to I-80 in San Francisco. Within the city of Cupertino, I-280 is generally an east-west oriented eight-lane freeway with six mixed-flow lanes and two carpool lanes, which are also known as high-occupancy vehicle (HOV) lanes. These lanes restrict use to vehicles with two or more persons, motorcycles, or special vehicles during the morning and evening peak commute hours (5:00 a.m. to 9:00 a.m. and 3:00 p.m. to 7:00 p.m.). Auxiliary lanes, which run from an entrance ramp to the next exit ramp, are provided along I-280 from Winchester Boulevard to SR 85, with the exception of the segment between Wolfe Road and De Anza Boulevard. Access to/from the City of Cupertino is provided via interchanges at Foothill Boulevard, SR-85, De Anza Boulevard, Wolfe Road, Stevens Creek Boulevard, and Lawrence Expressway.

The key roadway segments within the project area are described below.

- Foothill Boulevard is a four-lane divided roadway classified in the City's General Plan Mobility Element as a "major collector" that begins at Foothill Expressway near I-280 and ends at McClellan Road in the south, where it continues as Stevens Canyon Road. Foothill Boulevard is mostly residential and provides access to I-280 via a full interchange on Foothill Expressway. Foothill Boulevard can be used to access locations north of Cupertino, such as Los Altos and Los Altos Hills.
- Cristo Rey is a two-lane undivided roadway classified in the City's General Plan Mobility Element as a "neighborhood connector" roadway. It begins at Foothill Expressway near I-280 and ends at the project site. It is the primary access road for The Forum and also provides access to the residences,

[3] City of Cupertino, 2016 Bicycle Transportation Plan, Figure 3-7: Bikeway projects.

the Maryknoll religious institute and the Rancho San Antonio Open Space Preserve. The primary roadway access to the project site is via a signalized intersection at Foothill Boulevard at Cristo Rey Drive/Starling Drive.

4.10.2.2 EXISTING BICYCLE AND PEDESTRIAN FACILITIES

The 2016 Bike Plan includes a proposed designation of a bike path connecting the project site to Henry Creek, and a bike lane on Cristo Rey Drive in the vicinity of the project site. Future developers would be required to contribute to implementing the recommended pedestrian and bike striping improvements in the project area. Bicycle facilities are categorized into the following three types of bikeways:

- Class I Bike Path: A completely separated right-of-way for the exclusive use of bicycles and pedestrians, with cross-flow minimized. Near the project site, bike paths (Class I) are provided on Stevens Creek Trail from Stevens Creek Boulevard to McClellan Road.
- Class II Bike Lane: A striped bike lane for one-way bike travel on a street or highway that is designed for the exclusive use of cyclists with certain exceptions. For instance, right-turning vehicles must merge into the lane before turning. Class II Bike Paths within the project area are along Foothill Boulevard. The Bicycle Transportation Plan proposes implementation of a Class II bike lane on Cristo Rey Drive.
- Class III Bike Route: A route where cyclists share the road with motor vehicles. These can be streets with low traffic volumes that are well-suited for bicycling or arterials where it is infeasible to widen the roadway to provide a bike lane due to right-of-way or topographical constraints. Class III bikeways may also be defined by a wide curb lane and/or use of a shared use arrow stencil marking on the pavement, known as a "sharrow." No Class III facilities are currently located in the study area.

Pedestrian facilities consist of sidewalks, crosswalks, and pedestrian signals. Pedestrian connectivity immediately surrounding the project site is provided by a mostly complete network of sidewalks and crosswalks. Sidewalks are provided along the frontage of the project site, located on the eastern side of Cristo Rey Drive. The sidewalks along Cristo Rey Drive have park strips, which act as an additional buffer between vehicles and pedestrians. Pedestrian signals and high visibility crosswalks are provided at the three roundabouts located on Cristo Rey Drive: at the southern entrance of the project site, at the existing commons building in the middle of the project site, and at Via Esplendor in the northern entrance of the project site. Pedestrians are able to cross the street in both the north to south and east to west directions at these locations.

4.10.2.3 EXISTING TRANSIT

Public transit service in Cupertino is provided by Valley Transportation Authority (VTA)-operated bus service, and Caltrain-operated commuter heavy rail service. The nearest bus route to the project site is local route 81, with a stop at Grant Road and Arboretum Drive (Stop 60672), which is located approximately 1.3 miles northeast of the project site in the City of Los Altos. The nearest Caltrain station to the project site is the Mountain View station, which is located approximately seven miles to north of the project site.

4.10.2.4 EXISITING TRIP-REDUCING FEATURES AND TRIP GENERATION

As described in Chapter 3, Project Description, of this Draft EIR, The Forum is a private, resident-owned, full-service Continuing Care Retirement Community (CCRC), which is an institutional use regulated by the State of California Department of Health Services. Part independent living, part assisted living, and part skilled nursing home, CCRCs offer a tiered approach to the aging process, accommodating residents' changing needs. Under existing conditions, The Forum includes 319 independent living units (60 detached villas with garages and 329 apartments) and a healthcare building supporting assisted living (40 beds), memory care (18 beds), a skilled nursing facility (48 beds), which when combined have a total of 106 beds. The Forum also includes associated common areas and buildings that support full-service dining, recreational, community and administrative space, and a wide range of senior health and wellness programs, services and amenities on-site for its members. The Forum records show the average age of new residents in 2017 is 79 years old. The oldest resident is 103 years old and resides in the skilled nursing facility. The average age of the residents in the combined assisted living/skilled nursing facility is 90 years old. The oldest resident in an independent living villa is 99 years old, the youngest is 62 years old and the average age is 84 years old. The average age of residents in an apartment is 85 years old and the average age is 83 years old. There is one member per unit in assisted living facility; one member per bed in the skilled nursing facility; an average of 1.5 members per independent living villa and an average of 1.2 members per apartment.

Trip Reducing Features

On-site Amenities

While providing on-site medical care as well as fitness and educational classes, The Forum also includes residential-serving land uses, such as on-site banking, a hair salon, a country store offering sundry items, and cafe/bistro offering breakfast, lunch and dinner, and recreational uses such as a pool, spa, and movie viewing space, amongst other uses. Accordingly, the residents do not need to leave the property for many activities of daily living. Residents are typically retired and do not travel during peak hour AM (7:00 to 10:00 a.m.) and PM (4:00 to 7:00 p.m.) commute times, and many residents do not drive at all given their age or medical condition. Residents do not have children; thus, typical trips associated with school drop off and pick up do not occur.

Transportation Services

The Forum provides various transportation programs for its residents and employees to minimize trips. A complete description of the *Employee and Resident Transportation and Trip Reduction Program* is included in Appendix J, Transportation and Circulation Data, of this Draft EIR. As shown in this Program, The Forum offers four options to its employees that include: 1) deducting transit or vanpool costs from taxable income, 2) transit subsidies and/or passes, 3) free or low cost bus, shuttle and vanpool services, and 4) an alternate commuter benefit that is equally effective in reducing single occupancy vehicles as options 1, 2, and 3. The Program includes a description of the design, implementation, support strategies, incentives, and benefits for each reduction option. The Forum also includes scheduled transportation that offers door-to-door service to special events, medical appointments and shopping centers, as well as other locations.

While The Forum generates fewer vehicle trips from its residents than a typical neighborhood due to the age of the residents, this fact, combined with the on-site amenities, the *Employee and Resident Transportation and Trip Reduction Program,* and the existing services reduce vehicular trips and demand for public transit services.

Trip Generation

In order to review the number of trips that occur on a typical day at the existing project site, two methods were used. The number of existing trips was estimated based on: 1) 24-hour vehicular trip counts taken at one on-site location: Cristo Rey Drive south of Capilla Way (17072 Cristo Rey Drive) on March 23, 2017, and 2) vehicular trip generation rates for both detached (with garage) and attached (no garage) senior housing, as well as assisted living facilities and CCRCs provided in the *Institution of Transportation Engineers (ITE) Trip Generation Manual*. As part of its methodology, the ITE Trip Generation rates factor in multiple components associated with the assigned use. In other words, the trip generation rate is not solely based on the residents, but factors in employee and visitor trips commonly associated with these senior facility uses. The ITE Trip Generation Manual uses a rate of 3.68 trips per dwelling unit for detached (with garage) and a rate of 3.44 trips per dwelling unit for attached (no garage) senior housing. In addition, the ITE Trip Generation Manual uses a rate of 2.66 trips per bed for assisted living facilities and 2.40 trips per dwelling unit in CCRCs. To provide a conservative estimate, this analysis applies the more conservative rates of 3.68 trips per dwelling unit to all of the 319 existing units and 2.66 trips per bed for all 106 existing beds. The existing trip generation per ITE rates and actual counts is shown in Table 4.10-2.

TABLE 4.10-2 EXISTING VEHICULAR TRIPS

		Trip Generation						
			AM Peak Hour			PM Peak Hour		
Land Use	Units	Daily	In	Out	Total	In	Out	Total
Senior Adult Housing – Independent Living[a]	319 DU	1,174	25	46	71	53	34	87
Senior Adult Housing – Assisted Living[b]	106 Beds	282	10	5	15	10	13	23
Total Estimated Existing Trips Based on ITE Rates		**1,456**	**35**	**51**	**86**	**63**	**47**	**110**
Total Trips Based on Traffic Counts[c]		**1,432**	**68**	**38**	**106**	**30**	**74**	**104**
Difference[d]		*24*	*-33*	*13*	*-20*	*33*	*-27*	*6*

Notes: DU = dwelling units

a. Trip generation for peak hour of adjacent streets based on trip generation rates in the ITE Trip Generation Manual 9th Edition, which applies 3.68 trips per dwelling unit for detached senior housing (Code 251) and 3.44 trips per dwelling unit for attached senior housing (Code 252). This analysis conservatively estimates trips using 3.68 daily trips for all 319 independent living du (60 villas and 259 apartments).

b. Trip generation for peak hour of adjacent streets based on trip generation rates in the ITE Trip Generation Manual 9th Edition, which applies 2.66 trips per bed for assisted living facilities (Code 254), 2.02 daily trips per bed in congregate care facilities (Code 253), and 2.40 daily trips per bed in a Continuing Care Retirement Communities (CCRCs). This analysis conservatively estimates trips using 2.66 daily trips for all 106 existing beds (48 Skilled Nursing Beds, 40 Assisted Living beds, and 18 Memory Care beds).

c. Driveway counts taken over a 24-hour period on Cristo Rey Drive south of Capilla Way on March 23, 2017.

d. Difference between (trip generation from existing uses based on estimates applying the ITE rates) minus (existing traffic counts).

Source: PlaceWorks, 2017.

As shown in Table 4.10-2, the total daily vehicular trips estimated using the selected rates in the ITE Trip Generation Manual for both detached senior housing and assisted living facilities are similar to the actual

counts under existing conditions. Accordingly, the use of the rates for senior housing and CCRCs is appropriate for estimated future trips discussed in Section 4.10.4, Impact Discussion, below.

4.10.3 THRESHOLDS OF SIGNIFICANCE

4.10.3.1 CEQA GUIDELINES APPENDIX G

An Initial Study was prepared for the proposed project (see Appendix A of this Draft EIR). Based on the analysis contained in the Initial Study it was determined that development of the proposed project would not result in significant environmental impacts per the following significance standards and therefore, are not discussed in this chapter.

- Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks.
- Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment).
- Result in inadequate emergency access.
- Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities.
- Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings and historic buildings within a State scenic highway.

Based on the Initial Study it was determined that the proposed project could result in a potentially significant transportation impact if it would:

1. Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel, and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit.
2. Conflict with an applicable congestion management program, including, but not limited to, LOS standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways.

4.10.3.2 CITY OF CUPERTINO INTERSECTION IMPACT CRITERIA

Significance criteria are used to establish what constitutes an impact by a project. In addition to the above Appendix G, Environmental Checklist, State CEQA Guidelines, the following impact criteria for the Cupertino were used to evaluate the effects of the proposed project. Per the City of Cupertino standards, the proposed project would create a significant adverse impact on traffic conditions at a signalized intersection if, for either peak hour:

- The level of service at the intersection drops below its respective level-of-service standard (LOS D except at three specified intersections) when project traffic is added, or

- An intersection that operates below its level-of-service standard under no project conditions experiences an increase in critical-movement delay of four or more seconds, and the volume-to-capacity ratio (V/C) is increased by 0.01 or more when project traffic is added, or
- The V/C ratio is to increase by 0.01 or more at an intersection with unacceptable operations (LOS E or F) when the change in critical delay is negative (decreases). This can occur if the critical movements change.

A significant impact is said to be satisfactorily mitigated when measures are implemented that would restore intersection conditions to its level-of-service standard or to an average delay better than No Project conditions. It shall be noted that the proposed project would not generate more than 15 AM or PM peak hour trips and does not meet or exceed the VTA's threshold to prepare a TIA.

4.10.4 IMPACT DISCUSSION

TRANS-1	**The proposed project would not conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit.**

Project Operation

The proposed project would include one new access point off of Cristo Rey Drive for the proposed new villas near the main entrance point; all other components of the proposed project would continue to be accessed from the main entryway off of Cristo Rey Drive. See Figure 3-11 in Chapter 3, Project Description, of this Draft EIR. The proposed project would include the removal of 53 parking stalls (46 standard and 7 accessible). Per CMC Section 19.24.040, the proposed project includes the addition of 182 parking stalls (169 standard and 13 accessible) for a net new total 129 parking stalls (123 standard and 6 accessible). Each independent living villa would include a private driveway and garage. The healthcare center and commons facilities would include surface parking lots for residents, guests, and employees.

The proposed project would increase the number of independent living units and associated senior living facility uses as described in detail in Chapter 3, Project Description, to continue functioning as a full-service CCRC and as such would increase then number of trips to and from the project site. As previously discussed and shown in Table 4.10-2 in Section 4.10.2.4, Existing Trip-Reduction Features and Trip Generation, above, the number of existing trips was estimated based on: 1) trip rates provided in the ITE Trip Generation Manual, and 2) traffic counts taken over a 24-hour period on Cristo Rey Drive completed on March 23, 2017. A growth factor was applied to these existing traffic counts, proportional to the projected increase in the number of new independent villas and beds that the project would provide.

TABLE 4.10-3 PROJECT TRIP GENERATION

		TRIP GENERATION						
			AM PEAK HOUR			PM PEAK HOUR		
LAND USE	UNITS	DAILY	IN	OUT	TOTAL	IN	OUT	TOTAL
Senior Adult Housing – Independent Living [a]	25 DU	92	2	4	6	4	3	7
Senior Adult Housing – Assisted Living[b]	36 Beds	96	3	2	5	3	4	7
Total Estimated Project Trips Based on ITE Rates		**188**	**5**	**6**	**11**	**7**	**7**	**14**
Total Project Trips Based on Counts[c]		**206**	**10**	**5**	**15**	**4**	**11**	**15**
Difference[d]		*-18*	*-5*	*1*	*-4*	*3*	*-4*	*-1*

Notes: DU = dwelling units

a. Trip generation for peak hour of adjacent streets based on trip generation rates in the ITE Trip Generation Manual 9th Edition, which applies 3.68 trips per dwelling unit for detached senior housing (Code 251) and 3.44 trips per dwelling unit for attached senior housing (Code 252). This analysis conservatively estimates trips using 3.68 daily trips for the proposed 25 independent living dwelling units.

b. Trip generation for peak hour of adjacent streets based on trip generation rates in the ITE Trip Generation Manual 9th Edition, which applies 2.66 trips per bed for assisted living facilities (Code 254), 2.02 trips per bed in congregate care facilities (Code 253), and 2.40 daily trips per bed in Continuing Care Retirement Communities (CCRCs). This analysis conservatively estimates trips using 2.66 trips for the proposed 36 beds (10 Skilled Nursing beds, 0 Assisted Living beds, and 26 Memory Care beds). Note the project currently has 18 beds for memory care, so applying 26 new beds in the new memory care facility also projects a conservative estimate.

c. Traffic counts proportional to the number of beds and units based on the driveway counts taken over a 24-hour period on Cristo Rey Drive south of Capilla Way on March 23, 2017.

d. Difference between (trip generation for proposed uses based on ITE rates) minus (estimates based on traffic counts proportional to the number of beds and units increase).

Source: PlaceWorks, 2017.

Table 4.10-3 verifies that trip generation based on rates from the ITE Trip Generation Manual are comparable to actual traffic generated at the project site by comparing the 24-hour vehicular trip counts collected to the calculated number of estimated trips. In other words, the trip generation rates used to estimate project trips were verified by vehicular trip counts on Cristo Rey Drive. Therefore, the use of the trip generation rate estimates based on both detached senior housing and assisted living facilities presented in Table 4.10-3are representative of the number of trips that the proposed project would generate.

As shown in Table 4.10-3, the proposed project would not generate more than 15 trips under both AM and PM peak hour conditions and does not meet or exceed the VTA's TIA threshold and no off-site intersection level-of-service calculations are required. This would be the equivalent of one car added to the roadway network every 4 minutes. This would be a negligible increase in traffic volumes to the circulation system, including the roadway segments and intersections along Cristo Rey Drive, Foothill Boulevard, Homestead Road.[4] Accordingly, impacts would be *less than significant* and no mitigation would be required.

Project Construction

The transport of workers and equipment to the construction site would generate trips to and from the project site. There would be a worst-case flow of approximately 84 worker and vendor trips per day over

[4] Note that the City of Los Altos, in their response to the Notice of Preparation (NOP) of this EIR, requested that traffic counts and analysis be conducted for several additional intersections within Los Altos. However, according to the VTA's TIA methodology and the observed conditions described in this chapter, the proposed project would not generate enough peak-hour trips to impact these additional intersections, and for this reason, no further analysis of these intersections is warranted.

each construction phase. This number of construction-related vehicle trips would be much less than a 5 percent increase over the current number of project-generated trips at the project site (approximately 1,432 daily trips). Other phases of construction are anticipated to have less than 32 daily trips (for the aggregate of workers plus vendors plus haul-offs), which would have even a smaller percent increase over the current number of project-generated trips. As such, construction phase trips would have a negligible increase in traffic volumes to the circulation system, including the roadway segments and intersections along Cristo Rey Drive, Foothill Boulevard, Homestead Road. Accordingly, impacts would be *less than significant* and no mitigation would be required.

Significance Without Mitigation: Less Than Significant

TRANS-2	**The proposed project would not conflict with an applicable congestion management program, including, but not limited to, level-of-service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways.**

The VTA Congestion Management Program (CMP) TIA Guidelines (last updated in October 2014) present guidelines for assessing the transportation impacts of development projects and identifying whether improvements are needed to adjacent roadways, bike facilities, sidewalks, and transit services affected by the proposed project. As described under impact discussion TRANS-1, using the highest trip generation estimate based on rates derived from traffic counts, the project would generate 15 peak hour trips in the AM and PM peak hours (see Table 4.10-3). Therefore, the number of project trips would be well below the VTA's threshold of 100 peak hour trips that would require the preparation of a TIA per CMP requirements. This would be a negligible increase in traffic volumes to the circulation system, including the CMP roadway network. Accordingly, impacts would be *less than significant* and no mitigation would be required.

Significance Without Mitigation: Less Than Significant

TRANS-3	**The proposed project, in combination with past, present, and reasonably foreseeable projects, would not result in additional cumulatively considerable impacts.**

The analysis of the proposed project, above, addresses cumulative impacts to the transportation network in the city and its surroundings; accordingly, cumulative impacts would be the same as proposed project-specific impacts.

Significance Without Mitigation: Less Than Significant

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4.11 UTILITIES AND SERVICE SYSTEMS

This chapter includes an evaluation of the potential environmental consequences on utilities and service systems from construction and operation of the proposed project with respect to water supply and wastewater treatment and collection.

An Initial Study was prepared for the proposed project (see Appendix A of this Draft EIR). Based on the analysis contained in the Initial Study it was determined that development of the proposed project would not result in significant environmental impacts per the following significance standards and therefore, are not discussed in this chapter.

- Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board.
- Require or result in the construction of new stormwater drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects.
- Not be served by a landfill with sufficient permitted capacity to accommodate the buildout of the project's solid waste disposal needs.
- Comply with federal, state, and local statutes and regulations related to solid waste.
- Result in a substantial increase in natural gas and electrical service demands requiring new energy supply facilities and distribution infrastructure or capacity enhancing alterations to existing facilities.

Water supply and wastewater are each addressed in separate sections of this chapter. In each section, a description of the environmental setting, including regulatory framework and existing conditions, and identifies mitigation measures, if required, that would avoid or reduce significant impacts.

4.11.1 WATER SUPPLY

This section outlines the regulatory setting, describes existing conditions, and discusses potential impacts of the proposed project with regard to local water supply, treatment, and distribution.

4.11.1.1 ENVIRONMENTAL SETTING

Regulatory Framework

This section summarizes existing federal, State, regional, and local policies and regulations that apply to utilities and service systems.

Federal and State Regulations

California Urban Water Management Planning Act

Through the Urban Water Management Planning Act of 1983, the California Water Code requires all urban water suppliers within California to prepare and adopt an Urban Water Management Plan (UWMP) and update it every 5 years. This requirement applies to all suppliers providing water to more than 3,000 customers or supplying more than 3,000 acre feet per year (afy). This Act is intended to support

conservation and efficient use of urban water supplies at the local level. The Act requires that total projected water use be compared to water supply sources over a 20-year horizon, in 5-year increments, that planning occur for single and multiple dry water years, and that plans include a water recycling analysis that incorporates a description of the wastewater collection and treatment system within the agency's service area along with current and potential recycled water uses.[1]

The Water Conservation Act of 2009

The Water Conservation Act of 2009, SB X7 7,[2] enacted in 2009, requires all water suppliers to increase water use efficiency. The legislation sets an overall goal of reducing per capita water by 20 percent by 2020, with an interim goal of a 10 percent reduction in per capita water use by 2015. Effective in 2016, urban retail water suppliers who do not meet the water conservation requirements established by this bill are not eligible for state water grants or loans. The SB X7 7 requires that urban water retail suppliers determine baseline water use and set reduction targets according to specified standards, it also requires agricultural water suppliers prepare plans and implement efficient water management practices.

State Updated Model Landscape Ordinance

Under Assembly Bill 1881 (AB 1881), the updated Model Landscape Ordinance requires cities and counties to adopt landscape water conservation ordinances by January 31, 2010 or to adopt a different ordinance that is at least as effective in conserving water as the updated Model Ordinance (MO). In accordance with AB 1881, Cupertino has adopted its Landscape Ordinance on May 4, 2010. The ordinance has been in effect since June 3, 2010. See City of Cupertino Municipal Code below for a discussion of local ordinances that are required to reduce water consumption and conserve water.

CALGreen Building Code

On July 17, 2008, the California Building Standards Commission adopted the nation's first green building standards. The California Green Building Standards Code (Part 11, Title 24, known as "CALGreen") was adopted as part of the California Building Standards Code (Title 24, California Code of Regulations [CCR]) to apply to the planning, design, operation, construction, use, and occupancy of every newly constructed building or structure, unless otherwise indicated in the code, throughout the State of California. CALGreen established planning and design standards for sustainable site development, including water conservation and requires new buildings to reduce water consumption by 20 percent.[3] The mandatory provisions of the California Green Building Code Standards became effective January 1, 2011. The building efficiency standards are enforced through the local building permit process.

[1] Department of Water Resources, *About Urban Water Management,* http://www.water.ca.gov/urbanwatermanagement/, accessed on June 21, 2017.

[2] Department of Water Resources, Senate Bill SBX7-7 2009, http://www.water.ca.gov/wateruseefficiency/sb7/, accessed on June 21, 2017.

[3] The green building standards became mandatory in the 2010 edition of the California Code of Regulations.

The purpose of CALGreen is to improve public health, safety, and general welfare by enhancing the design and construction of buildings through the use of building concepts having a reduced negative impact or positive environmental impact and encouraging sustainable construction practices in the following categories:

- Planning and design.
- Energy efficiency.
- Water efficiency and conservation.
- Material conservation and resource efficiency.
- Environmental quality.

2016 California Plumbing Code

The 2016 California Plumbing Code (Part 5, Title 24, CCR) was adopted as part of the California Building Standards Code. The general purpose of the universal code is to prevent disorder in the industry as a result of widely divergent plumbing practices and the use of many different, often conflicting, plumbing codes by local jurisdictions. Among many topics covered in the code are water fixtures, potable and non-potable water systems, and recycled water systems.

Regional Regulations

Comprehensive Water Resources Management Plan

The Comprehensive Water Resources Management Plan presents the Santa Clara Valley Water District's (SCVWD) overall plan for water resource management in Santa Clara County. The SCVWD is the primary water resources agency for Santa Clara County. This Plan outlines the key water resource issues facing the county and provides a framework for understanding SCVWD's policies related to water supply, natural flood protection, and water resources stewardship. The Plan provides factsheets for all cities within Santa Clara County, that include shared responsibilities with SCVWD, Citywide Programs and Projects related to water resources management issues, and a list of related Plan Elements.

2015 Urban Water Management Plan

In compliance with the SB X7 7 and the Urban Water Management Planning Act, San José Water Company (SJWC) adopted its 2015 UWMP in June 2016. The SCVWD, which provides water supply to SJWC, also adopted its 2015 UWMP in May 2016.

Water Shortage Contingency Plan – San José Water Company

The San José Water Company developed a Water Shortage Contingency Plan in 1992 to document the measures it would take to conserve water during drought conditions. For example, the plan includes as part of its mandatory water rationing plans a list of water uses that are classified as non-essential or unauthorized. The plan was coordinated with the SCVWD and local cities and was developed in conformance with the California Water Code. The 2012 to 2015 drought prompted SJWC to update its water shortage contingency plan, which was adopted in 2015.

Local Regulations

The following provisions from the City of Cupertino Municipal Code (CMC) help conserve water resources in Cupertino.

- Chapter 16.58, Green Building Ordinance, includes the CAlGreen requirements with local amendments for projects in the city. The City's Green Building Ordinance codifies green building techniques, including measures affecting water use efficiency and water conservation. Sections 16.58.100 through 16.58.220 sets forth the standards for green building requirements by type of building. As shown on Table 101.10 in Section 16.58.220, single family and multi-family homes greater than nine homes and buildings larger than 50,000 square feet are required to be Leadership in Energy & Environmental Design (LEED)[4] Certified and buildings from 25,000 to 50,000 square feet to be Silver. Section 16.58.230 permits applicants to apply an alternate green building standard for a project in lieu of the minimum standards outlined in Section 16.58.220 that meet the same intent of conserving resources and reducing solid waste.
- Chapter 14.15, Landscaping Ordinance, establishes water-efficient landscaping standards to conserve water use on irrigation. The provisions of this chapter apply to landscaping projects that include irrigated landscape areas, exceeding 2,500 square feet when these projects are associated with new water service, subdivision improvements, grading and drainage improvements, a new construction subject to a building permit, or building additions or modifications subject to grading and drainage plan approval.

Existing Conditions

This section describes water supply sources, water supply infrastructure, water treatment facilities, as well as projected demand and supply through 2040.

SJWC has a lease agreement to operate and maintain the City of Cupertino's water system and is the municipal water utility that provides retail water service to the project site.

The City of Cupertino owns a Water Utility system which it used to operate until 1997. The City ended operations of this system and entered into a lease agreement with SJWC for operations and maintenance of its water system (designated Cupertino Water). The lease was signed on October 1, 1997 for a 25-year term; therefore, on October 1, 2017, a total of five years will remain on the lease. Section 7, Operation of Water System, of the lease states that SJWC shall "throughout the term of the lease undertake any utility plant addition, betterment, replacement, repair and perform routine and emergency maintenance of the Water System…" Section 10, Water Supply, states that SJWC "will perform and honor all supply contracts executed by the City…" It also states that "If assignment or transfer of any water right or contract is

[4] Leadership in Energy & Environmental Design (LEED) is a green building certification program that recognizes best-in-class building strategies and practices that reduce consumption energy, and water, and reduce solid waste directly diverted to landfills. LEED certified building are ranked in order of efficiency from Certified, Silver, Gold and Platinum being the highest ranking with the greatest efficiency standard. LEED Silver certified buildings typically reduce is the third highest ranking out of the four, with just being certified being the lowest and Gold and Platinum being the second highest.

deemed necessary by either SJWC or the City, the City will cooperate with SJWC in completing such assignment or transfer for the duration of the lease."

Representatives of the City and SJWC indicate that SJWC has been, and is responsible for, maintaining an adequate water supply for the Cupertino water system, and will continue to do so under the terms of the lease. Cupertino has two 500 gallon per minute (gpm) wells that are primarily kept on standby. As a result, under normal operations, all of the water for the City's Cupertino Water service area is purchased by SJWC from SCVWD. Accordingly, proposed development in both SJWC's and Cupertino Water's service areas are combined for the purposes of evaluating supply for SJWC.

SJWC has three sources of supply: local surface water, imported purchased treated surface water, and groundwater.

SJWC has "pre-1914 surface water rights" to raw water in Los Gatos Creek and local watersheds in the Santa Cruz Mountains. Prior to 1872, appropriative water rights could be acquired by taking and beneficially using water. In 1914, the California Water Code was adopted and it grandfathered in all existing water entitlements to license holders. SJWC filed for a license in 1947 and was granted license number 10933 in 1976 by the State Water Resources Control Board to draw 6,240 afy from Los Gatos Creek. [5,6] SJWC has upgraded the collection and treatment system that draws water from this watershed which has increased the capacity of this entitlement to approximately 11,200 afy for an average rain year. The surface waters from the local watersheds of the Santa Cruz Mountains provide about ten percent of the water supply depending on the amount of annual rainfall. A series of dams and automated intakes collect the water released from SJWC's lakes. The water is pumped into SJWC's Montevina water treatment plant for treatment prior to entering the distribution system. SJWC's Saratoga water treatment plant draws water from a local stream which collects water from the nearby Santa Cruz Mountains. The SJWC owns and operates its water distribution system consisting of a pipe network which lies predominantly beneath the traveled roadway in the public street rights-of-way.

In 1981, SJWC entered into a 70-year master contract with SCVWD for the purchase of treated water. This accounts for a little over 50 percent of its water supply.

SJWC has the right to withdraw groundwater from aquifers below properties within its service area boundary when in compliance with SCVWD's permitting requirements. In Santa Clara County, this right is subject to a groundwater extraction fee levied by SCVWD based on the amount of groundwater pumped into SJWC's distribution system. SJWC draws water from the Santa Clara Valley subbasin (basin) in the north part of Santa Clara County. The basin extends from near Coyote Narrows at Metcalf Road to the County's northern boundary. It is bounded on the west by the Santa Cruz Mountains and on the east by the Diablo Range; these two ranges converge at the Coyote Narrows to form the southern limit of the basin. The basin is 22 miles long and 15 miles wide, with a surface area of 225 square miles. The groundwater elevation in the basin has been steadily on the rise for the past 40 years under the

[5] One acre-foot is equal to approximately 325,821 gallons.

[6] Yarne & Associates, Inc., 2014, *City of Cupertino, California, Proposed General Plan Amendment Water Supply Evaluation*.

management of the SCVWD. On average, groundwater from the major water-bearing aquifers of the Santa Clara Valley sub-basin comprises one third of the SJWC's water supply. These aquifers are recharged naturally by rainfall and streams, and artificially by recharge ponds operated by SCVWD.

The SJWC generally uses the most economical source of water, which is largely determined by SCVWD's groundwater extraction fee rates and contracted water rates.[7]

The SJWC's service area spans 139 square miles, including most of the cities of San José and Cupertino, the entire cities of Campbell, Monte Sereno, Saratoga, the Town of Los Gatos, and parts of unincorporated Santa Clara County. Most of SJWC's customers are residential or commercial.[8] The SJWC also provides water to industrial, municipal, private fire services, and public fire protection services. The SJWC's total demand is the sum of projected metered demand plus seven percent of that amount for non-revenue water, which includes authorized unmetered uses for firefighting, main flushing and public use and unauthorized use due to meter reading discrepancies, reservoir cleaning, malfunctioning valves, leakage, and theft. The Water Supply Evaluation (WSE) prepared for the City's' General Plan[9] indicates SJWC has adequate water supply plans to meet the referenced demand forecasts. According to the SJWC 2015 Urban Water Management Plan, the 2015 water use target was estimated at 140 gallons per capita per day (gpcd) and the actual water use was 96 gpcd. The projected water use target for 2020 is 127 gpcd, the SJWC is on track to meet this demand.[10] In 2015, the SJWC's actual water supply was 35,369 acre feet (af)[11] and the projected water supply for 2020 is 47,444 af.[12]

The SJWC classifies conservation as an additional source of water which offsets potable water demand. SJWC projects an increase in conservation through 2035 to over 5,500 afy due to implementation of a more restrictive conservation program. Conservation savings are anticipated resulting from increased use of ultra-low flush toilets, high-efficiency toilets, low-flow showerheads, water efficient appliances, individual conservation, and reduction in landscape irrigation requirements.

4.11.1.2 THRESHOLDS OF SIGNIFICANCE

Based on the Initial Study (see Appendix A of this Draft EIR) it was determined that the proposed project could result in a potentially significant impact related to utilities and service systems if it would:

1. Have insufficient water supplies available to serve the project from existing and identified entitlements and resources.

[7] Yarne & Associates, Inc., 2014, *City of Cupertino, California, Proposed General Plan Amendment Water Supply Evaluation*.

[8] San José Water Company, 2016 Urban Water Management Plan, Chapter 3, System Description, page 3-1.

[9] The Water Supply Evaluation is available online at the following address: http://www.cupertinogpa.org/files/managed/Document/212/AppendixH_UtilitiesAndServiceSystemData.pdf.

[10] San José Water Company, 2016 Urban Water Management Plan, Chapter 5, Baselines and Targets, page 5-2.

[11] There are 325,851 gallons in 1 acre-foot.

[12] San José Water Company, 2016 Urban Water Management Plan, Chapter 6, System Supplies, pages 6-10.

4.11.1.3 IMPACT DISCUSSION

UTIL-1 The proposed project would have sufficient water supplies available to serve the project from existing entitlements and resources, and new or expanded entitlements are not needed.

As previously discussed, the project site is within SJWC's water utility service area . The proposed project would have a significant impact if water demand for the proposed project could not be met by SJWC's existing entitlements and water supply resources.

As shown in Table 4.14-12 of the General Plan EIR, SJWC's 2035 projected water supply is adequate to meet projected water demand during a normal water year, single-dry year, and multiple-dry years with buildout of the City's General Plan. The proposed project is consistent with the General Plan and the zoning for the project site and therefore should fit within the envelope of growth assumed as part of the General Plan EIR analysis.

The proposed project's water demand was calculated using the applicable water demand generation factors included in the WSE prepared for the General Plan EIR. Table 4.11-1 shows the proposed project's total water demand. Although the proposed project is a CCRC and not conventional residential or commercial development, residential and restaurant generation rates are used in Table 4.11-1 to ensure that this analysis assumes a conservative or "worst case" scenario. As shown in Table 4.11-1, the projected water demand for the proposed project would be 52,347 gpd or 58.64 afy.[13]

TABLE 4.11-1 WATER DEMAND FOR THE PROPOSED PROJECT

Development Type	Water Demand Generation Factor	Size	Water Demand
Residential	137.2 gpd/unit	85 units[a]	11,662 gpd
Restaurant	1.10 gpd/square foot	36,986 square feet[b]	40,685 gpd
Total Water Demand			52,347 gpd

Notes:
a. The 85 living spaces are considered dwelling units for the purposes of a conservative estimate and include in this calculation include the proposed 25 independent living villas, 24 bedrooms and 26 beds in the memory care building, and 10 beds in the nursing facility.
b. The square footage included in this analysis includes the proposed assisted living renovation in the proposed health care center and the proposed commons facility.
Source of generation factors: Water Supply Evaluation (Yarne & Associates), May 20, 2014; prepared with input from the City of Cupertino.

Table 4.14-11 of the General Plan EIR shows the actual amount of water supplied to SJWC's system from each source in 2010 and projections until 2035 and shows an increase from 137,952 afy in 2010 to 165,058 afy by 2035. Groundwater and SCVWD Treated Water projections include SJWC's plan to acquire additional water needed for development projects by installing production wells within the distribution

[13] One acre-foot is equal to approximately 325,821 gallons. 52,347 gpd / 325,851 gallons per acre-foot x 365 days per year = 58.64 afy.

system, by purchasing additional treated water from SCVWD and recycled water from the South Bay Water Recycling Program. The overall long-term strategy for groundwater, as discussed in the 2003 SCVWD Integrated Water Resource Planning Study (IWRP), is to maximize the amount of water available in the groundwater basins to protect against drought and emergencies. SCVWD attempts to maximize use of treated local and imported water when available.

As previously noted, the SJWC classifies water conservation as an additional source which offsets potable water demand. SJWC projects an increase in conservation through 2035 to over 5,500 afy conserved due to implementation of a more intensified conservation program. Conservation savings are anticipated resulting from increased use of ultra low-flush toilets, high-efficiency toilets, low-flow showerheads, water efficient appliances, individual conservation, and reduction in landscape irrigation requirements.

The SCVWD will continue to work with SJWC and other local water retailers to refine future projections of both treated water and groundwater use to ensure planning efforts are consistent. Groundwater from the basin is a substantial source of water for SJWC's entire service area. In the past five years, groundwater has been the source for approximately one-third of SJWC's total supply.

If the SJWC should experience a shortage of supply during a drought, it will activate its current Water Shortage Contingency Plan. As noted in the WSE (May 20, 2014) prepared for the City, *"although there appears to be shortages during droughts, in reality, voluntary and involuntary water conservation greatly reduces demand."* The SJWC foresees meeting all future demands.

SJWC has multiple sources of water which provide a high degree of supply reliability. For added reliability, SJWC incorporates diesel fueled generators which will operate wells and pumps in the event of power outages. SJWC also has an established well replacement program. The program identifies and replaces two wells per year based on numerous criteria, including a well's production and observed water quality problems. The replacement of older wells and optimization of existing wells will allow SJWC to maintain its groundwater supply reliability.

Compliance applicable regulations outlined in Section 4.11.1.1 would further reduce potential impacts on water supplies for SJWC. Proposed development on the project site would include the latest technology in water efficient plumbing fixtures and irrigation systems, as specified in the California Plumbing Code. Chapter 16.58 of the Municipal Code requires buildings larger than 50,000 square feet to be LEED Certified and buildings from 25,000 to 50,000 square feet to be LEED Silver certified or the equivalent of a similar ranking structure approved by the City. Chapter 14.15 of the Municipal Code establishes water-efficient landscaping standards to reduce water use for irrigation purposes.

As previously noted, the total projected increase in the SJWC demand between 2015 and 2040 (25 years) for a normal hydrologic year is 14,831afy.[14] The proposed project demand at buildout represents less than 0.4 percent of this total SJWC demand. Since the SJWC 2010 UWMP projected demand is based on general growth in its service area, it is reasonable to assume that the proposed project demand is accounted for in the overall demand forecast, given the relatively small percentage of the total demand.

[14] 156,734 afy minus 141,903 afy equals14,831 afy; see Table 4.14-5 .

Based on the foregoing reasons, there is sufficient SJWC water available to supply the demand projected for the proposed project for all existing demand and other projected increases in water demand for the next 26 years for normal, single-dry year and multiple-dry year periods. Buildout of the proposed project would not result in insufficient SJWC water supplies under normal year conditions. In addition, during single-dry year and multiple-dry years, with existing water conservation regulations and measures in place, buildout of the proposed project would not result in a significant impact on SJWC water supply. Accordingly, buildout of the proposed project would not result in insufficient water supplies from SJWC , and new or expanded entitlements would not be needed; thus, impacts would be *less than significant*.

Significance Without Mitigation: Less Than Significant

UTIL-2	**The proposed project, in combination with past, present, and reasonably foreseeable projects, would not result in significant cumulative impacts with respect to water supply.**

This section analyzes potential impacts to water supply that could occur from the proposed project in combination with other reasonably foreseeable projects in the surrounding area. The geographic scope of this cumulative analysis is the SJWC service areas. While the proposed project would contribute to an increased cumulative demand for water supply, the increased demand would not exceed the long-term supply under normal circumstances, as discussed above. Additionally, the SJWC's 2015 UWMP determines that the water supply will be sufficient to accommodate future demand in the SJWC service area, under normal circumstances. SJWC's water shortage contingency plan was modified following the 2012-2015 drought due to the increasing urgency to reduce water consumption. The revised water shortage contingency plan includes four stages (compared to five states in the 2010 water shortage contingency plan) and modified actions in the event of a water shortage. In addition, with SB X7 7 and the State, county, and local water conservation ordinances in place, each jurisdiction within the SJWC service area is required to conserve its water use through establishing water efficiency measures. The City continues to coordinate with regional water districts regarding water conservation efforts, including compliance with drought plans. This coordination and compliance would serve to reduce water use and demand overall and especially during drought years. In addition, pursuant to SB 610 and SB 221, Water Supply Assessments are required for large development projects prior to approval of each project to ensure adequate water supply for new development. Together, these regulations, policies, and other considerations would ensure that impacts under the proposed project with respect to water supply would be *less than significant*.

Significance Without Mitigation: Less Than Significant

4.11.2 WASTEWATER

This section describes the existing conditions and potential impacts of the proposed project with regard to wastewater collection and treatment facilities.

4.11.2.1 ENVIRONMENTAL SETTING

Regulatory Framework

Federal Regulations

The NPDES permit program was established in the CWA to regulate municipal and industrial discharges to surface waters of the United States. Federal NPDES permit regulations have been established for broad categories of discharges, including point-source municipal waste discharges and nonpoint-source stormwater runoff. NPDES permits generally identify effluent and receiving water limits on allowable concentrations and/or mass emissions of pollutants contained in the discharge; prohibitions on discharges not specifically allowed under the permit; and provisions that describe required actions by the discharger, including industrial pretreatment, pollution prevention, self-monitoring, and other activities. Wastewater discharge is regulated under the NPDES permit program for direct discharges into receiving waters and by the National Pretreatment Program for indirect discharges to a sewage (i.e., wastewater) treatment plant.

State Regulations

On May 2, 2006 the SWRCB adopted a General Waste Discharge Requirement (Order No. 2006-0003) for all publicly owned sanitary sewer collection systems in California with more than 1 mile of sewer pipe. The order provides a consistent statewide approach to reducing sanitary sewer overflows (SSOs) by requiring public sewer system operators to take all feasible steps to control the volume of waste discharged into the system, to prevent sanitary sewer waste from entering the storm sewer system, and to develop a Sewer System Management Plan (SSMP). The General Waste Discharge Requirement also requires that storm sewer overflows be reported to the SWRCB using an online reporting system.

The SWRCB has delegated authority to nine Regional Water Quality Control Boards to enforce these requirements within their region. The City of Cupertino is within the jurisdiction of the San Francisco Bay RWQCB.

Local Regulation

City of Cupertino Municipal Code

The following provisions from the City of Cupertino Municipal Code (CMC) help ensure wastewater treatment capacity and sewer infrastructure is adequate to serve the residents and employees of Cupertino:

- Chapter 16.58, Green Building Standards Code Adopted, describes the 2013 California Green Building Standards adopted by the City, and any local amendments made with indications of additions or

amendments to the State Standards. The Green Building Ordinance for the City of Cupertino provides minimum Green Building Requirements for new construction, and renovation and additions.

- Chapter 15.20, Sewage Disposal Systems, establishes standards for the approval, installation, and operation of individual onsite sewage disposal systems consistent with the California Regional Water Quality Board standards. The chapter sets regulation for connecting to public sanitary sewer system, including required permits, Soil Test requirement, and procedures for plan approval by the Health Officer.

Cupertino Sanitary District Operations Code

The Cupertino Sanitary District (CSD) provides sanitary sewer service for Cupertino, portions of Saratoga, Sunnyvale, Los Altos, and surrounding unincorporated Santa Clara County communities. Chapter IV of Cupertino Sanitary CSD's Operations Code requires all new buildings within the CSD to be connected to the CSD sewer system and all land development projects to include provisions for future buildings to connect to the CSD's sewer system. Article 3 of Chapter VI of the CSD's Operations Code requires a Wastewater Discharge Permit before connecting to or discharging into a CSD's sewer. The Wastewater Discharge Permit would be attached to a specific duration, which cannot exceed 5 years.

Cupertino Sanitary District Sewer System Management Plan

The Sewer System Management Plan (SSMP) was prepared in compliance with the State Water Resources Control Board (SWRCB) Order 2006-0003: Statewide General Waste Discharge Requirements for Sanitary Sewer Systems (GWDR), as revised by Order No. WQ 2008-0002.EXEC on February 20, 2008. The GWDR prohibits sanitary sewer overflows (SSOs), requires reporting of SSOs using the statewide electronic reporting system, and requires the preparation of an SSMP.

The SSMP is also required by the San Francisco Bay RWQCB. Requirements are outlined in the Sewer System Management Plan Development Guide dated July 2005 by the RWQCB in cooperation with the Bay Area Clean Water Agencies (BACWA).

The CSD is one of a number of stakeholder agencies within a local watershed area of Santa Clara County; each is accountable by permit to the State Water Resources Control Board under the Clean Water Act. These stakeholders include:

- San José/Santa Clara Water Pollution Control Plant (SJ/SC WPCP)
- Santa Clara Valley Water District
- Cities of Cupertino, Saratoga, Sunnyvale, Santa Clara, Los Altos and San José
- Santa Clara County Roads and Airports and Public Works Departments

Other stakeholders include the Santa Clara County Environmental Services Department, Department of Fish and Wildlife and several privately organized environmental groups.

Existing Conditions

Cupertino Sanitary District

The project site is served by the CSD, which is a separate governmental entity established as a special district. As an independent special district, the CSD Board of Directors is elected from the constituency within its Service Area Boundary. The CSD was formed in 1956 to provide sewer services to the cities of Cupertino, Los Altos, and Saratoga, and unincorporated areas within the service boundaries.

The CSD lies within the watershed basins of Stevens Creek and Calabazas Creek; both creeks lead to San Francisco Bay. Tributaries to Calabazas Creek are seasonal creeks which include, Rodeo Creek and Regnart Creek.

The CSD provides sewage collection, treatment and disposal services for these areas comprising approximately 15 square miles with a population of over 50,000 residents and more than 23,000 homes and businesses. The CSD owns and manages more than one million lineal feet of sewer mains, 500,000 lineal feet of sewer laterals and 17 pump stations. The collected wastewater from all areas is conveyed to the San José/Santa Clara Water Pollution Control Plant (SJ/SC WPCP), described below, through mains and interceptor lines shared with both the cities of San José and Santa Clara, pursuant to a joint use agreement.

Of the 17 pump stations, 11 are located in Cupertino, and six are located in the city of Saratoga. Wastewater pipes within the CSD's service area range from 4 to 27 inches in size, and all sewer mains are 8 inches or larger in diameter. Approximately 70 percent of the sewer mains were constructed in the 1960s, 20 percent in the 1970s, and the remaining 10 percent after 1980. A service review by the Local Agency Formation Commission of Santa Clara County in 2013 indicated that CSD considers its pipe network to be generally in good condition.[15] Primary trunk lines serving the city include 12-inch facilities in Homestead Road, 15- and 18-inch facilities along the north side of I-280, 12- and 15-inch facilities on Wolfe Road, 10-inch facilities on De Anza Boulevard, 18-inch facilities on Shetland Place, and 27-inch facilities on Pruneridge Avenue. A metered outfall to the city of Santa Clara sanitary sewer system is located on Homestead Road Near Tantau Avenue. Other minor outfalls to the city of San José are located in the southern part of Cupertino.

The existing development on the project site relies on an internal storm drain network that connects to the City's storm drain system via an 8-inch trunk line in Via Esplendor, a 6-inch trunk line in Serrano Court, and a 6-inch trunk line in Cristo Rey Drive. The Forum, as part of the original development, was required to install three sanitary sewer pump stations to pump the sewer to the crest of Cristo Rey Drive due to its location on the lower terrain of the hillside. These three pump stations are located at the end of St. Joseph Avenue (Forum Pump Station #1), on St. Joseph Avenue (Forum Pump Station # 2), and at the end of Serra Street (Forum Pump Station #3). The three lift stations were designed to handle the flow of

[15] Local Agency Formation Commission of Santa Clara County, "Special Districts Service Review: Phase 2," Adopted December 4, 2013, http://www.santaclara.lafco.ca.gov/service_reviews/2013/Phase2/3_CupertinoSD.pdf, accessed May 20, 2014.

current buildout of The Forum with a buildout capacity of 300 gallons per minute (432,000 gpd) with wet-weather peaking factor of 2.0 for each pump station. However, as of 2016, the basin where The Forum is located has a wet weather peaking factor of 2.8 per a *2016 Inflow/Infiltration Study* prepared by the CSD. Additionally, the CSD identified that the Homestead Pump Station that is downstream from the project site and serves the area south of Interstate 280 (I-280) and west of I-85 is currently operating at its capacity. Under the heavy rain conditions experienced in January and February of 2017, the Homestead Pump Station was not able to pump all the incoming flows.[16] This is considered an existing deficiency.

San José/Santa Clara Water Pollution Control Plant

As described above, the SJ/SC WPCP collects wastewater from all areas in the CSD service area. The SJ/SC WPCP cleans and treats the wastewater of approximately 1,500,000 people that live and work in the 300-square-mile area encompassing the cities of San José, Santa Clara, Milpitas, Campbell, Cupertino, Los Gatos, Saratoga and Monte Sereno. CSD entered into a master agreement with the cities of San José and Santa Clara for wastewater treatment in 1983. The agreement establishes capacity rights and obligations for the operation and operating, maintenance and capital costs of the plant by member agencies.

The San Francisco RWQCB established wastewater treatment requirements for the SJ/SC WPCP in an NPDES Permit (Order No. R2-2014-0034), adopted September 10, 2014 and effective November 1, 2014.[17] The NPDES Order sets out a framework for compliance and enforcement applicable to operation of the SJ/SC WPCP and its effluent, as well as those contributing influent to the SJ/SC WPCP. This NPDES Order currently allows dry weather discharges of up to 167 mgd utilizing an advanced, full tertiary treatment system, and peak wet weather discharges of up to 271 mgd with full tertiary treatment.[18]

The CSD is one of five tributary agencies that combined have a contractual treatment allocation agreement with the SJ/SC WPCP of 35 million gallons per day (mgd) on average. In 2015, the contributing influent from the five tributary agencies averaged 22 mgd during peak week flow.[19] In 2016, the average dry weather influent flow was 101.1 mgd and the average dry weather effluent flow was 73 mgd.[20]

The CSD has a contractual treatment allocation with the SJ/SC WPCP of 7.85 million gallon per day (mgd), on average. The daily wastewater flow to SJ/SC WPCP as of 2014 is 5.3 mgd.[21]

[16] Tanaka, Richard. Pre-Hearing Development Review Letter to Ms. Kidd, Senior Planner, 20 February 2017.

[17] San Francisco Bay Regional Water Quality Control Board, San José/Santa Clara Water Pollution Control Plant, Order No. R-2-2014-0034, National Pollutant Discharge Elimination System No. CA0037842, http://www.waterboards.ca.gov/sanfranciscobay/board_decisions/adopted_orders/2014/R2-2014-0034.pdf, page F-3, accessed March 22, 2017.

[18] San Francisco Bay Regional Water Quality Control Board, San José/Santa Clara Water Pollution Control Plant, Order No. R-2-2014-0034, National Pollutant Discharge Elimination System No. CA0037842, http://www.waterboards.ca.gov/sanfranciscobay/board_decisions/adopted_orders/2014/R2-2014-0034.pdf, page F-3, accessed March 22, 2017.

[19] City of San José, Cities of San José and Santa Clara's Response to Administrative Claim, https://www.sanJoséca.gov/ArchiveCenter/ViewFile/Item/2816, page 5, accessed March 24, 2017.

[20] San José-Santa Clara Regional Wastewater Facility, 2016 Annual Self-Monitoring Report, page 4.

[21] Tanaka, Richard. Letter to Ms. Aarti Shrivastava, Assistant City Manager. 23 May 2014.

Most of the final treated water from the SJ/SC WPCP is discharged as fresh water through Artesian Slough and into South San Francisco Bay. About 10 percent is recycled through South Bay Water Recycling pipelines for landscaping, agricultural irrigation, and industrial needs around the South Bay. Despite a steady increase in population served by the SJ/SC WPCP, influent wastewater flows at the SJ/SC WPCP have decreased since the late 1990s due to the loss of heavy industry and increased water conservation.

4.11.2.2 THRESHOLDS OF SIGNIFICANCE

Based on the Initial Study (see Appendix A of this Draft EIR) it was determined that the proposed project could result in a potentially significant impact related to utilities and service systems if it would:

1. Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?
2. Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments.

4.11.2.3 IMPACT DISCUSSION

UTIL-3	**The proposed project would not require or result in the construction of new wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects.**

As described in the existing conditions discussion above, the CSD sewer collection system directs wastewater to the SJ/SC WPCP, which is jointly owned by the cities of San José and Santa Clara. The SJ/SC WPCP NPDES permit currently allows dry weather discharges of up to 167 mgd with full tertiary treatment, and wet weather discharges of up to 271 mgd with full tertiary treatment.[22] In addition, the CSD's contractual treatment allocation with the SJ/SC WPCP is 7.85 mgd, on average, and the daily wastewater flow to SJ/SC WPCP as of 2014 was 5.3 mgd.[23]

The existing and proposed wastewater peak flow rates for the existing Forum Pump Stations #1, #2, and #3 were calculated using a 3.7 wet weather peaking factor[24] and an average wastewater demand generation rate of 100 gpd per occupants (i.e., residents and employees), which was established based on current demand.[25] The existing average daily flow rates and the wet weather peak flow rates are shown

[23] Tanaka, Richard. Letter to Ms. Aarti Shrivastava, Assistant City Manager. 23 May 2014.

[24] This is a greater wet weather peaking factor that was suggested by CSD in their preliminary review of the proposed project, which was a 2.8 peaking factor. (Tanaka, Richard. Pre-Hearing Development Review Letter to Ms. Kidd, Senior Planner, 20 February 2017).

[25] *Existing Sewer Pump Capacity for The Forum Senior Community Update*, prepared by BKF, dated June 19, 2017.

for both scenarios in Table 4.11-2. Per these calculations, the proposed project would generate an average daily flow of 17,600 gpd (or approximately 0.018 mgd) and a peak wet weather flow of 47 gpm.[26]

TABLE 4.11-2 WASTEWATER AVERAGE DAILY AND PEAK FLOW RATES: EXISTING AND EXISTING PLUS PROJECT

	Average Daily Flow Rate (gpd)_			Peak Wet Weather Flow Rate(gpm)[a]		
Forum Pump Stations	Existing	Existing Plus Proposed	Net Increase	Existing	Existing Plus Proposed	Net Increase
#1	51,000	56,600	5,600	131	145	14
#2	73,200[b]	76,400[b]	3,200	188	196	8
#3	81,081	89,881	8,800	208	231	23

Notes: gpd = gallons per day; gmp = gallons per minute
a. The peak flow is calculated by (average daily flow divided by 1,440 minutes in a day) multiplied by a wet weather peaking factor of 3.7.
b. The existing conditions include 13,200 gpd for 132 units that are located off site and not a part of the project.
Source: *Existing Sewer Pump Capacity for The Forum Senior Community Update*, prepared by BKF, dated June 19, 2017, Table 1.

As shown in Table 4.11-3, the three Forum Pump Stations that serve the existing development on the project site would not exceed the pumping flow rate at each pump station. In addition, the Homestead Pump Station capacity is calculated with an "on condition" from Forum Pump Station #3, which has a constant output during the on condition. Since these calculations indicate no increased pump capacity is required for Forum Pump Station #3, the peak flows at the Homestead Pump Station would not be affected by the proposed project.

TABLE 4.11-3 EXISTING FORUM PUMP STATION FLOWS UNDER EXISTING PLUS PROPOSED CONDITIONS

Forum Pump Stations	Pumping Flow Rate (gpm)	Existing Plus Proposed Peak Flow Rate (gpm)	Demand Met
#1	145	145	yes
#2	200	196	yes
#3	280	231	yes

Notes: gmp = gallons per minute
Source: Existing Sewer Pump Capacity for The Forum Senior Community Update, prepared by BKF, dated June 19, 2017.

Using the CSD wastewater demand projections, the proposed project's projected wastewater demand of 0.018 mgd represents 0.01 percent of the SJ/SC WPCP's allowable dry weather discharge of 167 mgd. Therefore, the wastewater flow from the proposed project would not exceed the SJ/SC WPCP's treatment limits using these projections. In addition, when added to the daily 5.3 mgd from CSD to SJ/SC WPCP, the 0.018 mgd from the proposed project would not exceed the CSD's contractual treatment allocation of 7.85 mgd.

[26] Peak wet weather flows assume a wet weather peaking factor of 3.7; (17,600 divided by 1,440 minutes in a day) times 3.7 equals 45 gallons per minute.

However, CSD demand projections use a greater wastewater generation rate that assumes "design criteria demand" rates in place of "actual demand" rates in order to calculate financial contributions to planned system improvements. Therefore, the projected wastewater demand for the proposed project would be greater than when applying actual demand rates as shown in Table 4.11-2 and Table 4.11-3. The following discussion describes the wastewater generation under the CDS criteria.

The CSD wastewater generation demand rates are 0.51 gpd per square foot for medical uses, 194 gpd for independent dwelling units, and 0.71 gpd per square foot for other uses.[27] Using this methodology, the existing 112,000 square feet of medical use (i.e., skilled nursing, assisted living and memory care facilities) and other uses (i.e., common building, multi-purpose room, fitness center) together with the 319 independent living units (60 villas and 259 apartments) generate a total average daily flow of 126,886 gpd under current conditions. The proposed project's 21,846 square feet of medical and other uses, and 25 new independent living villas would generate an average daily flow of 42,429 gpd (or approximately 0.042 mgd) and a peak wet weather flow of 109 gpm.[28] Combined the existing and proposed average daily flows would be 169,315 gpd (or approximately 0.169 mgd) and a peak wet weather flow of 435 gpm.[29] Applying the CSD rates, the proposed project would result in up to a 33 percent increase of average daily flows over existing conditions.

Using the CSD wastewater demand projections, the proposed project's projected wastewater demand of 0.042 mgd represents 0.03 percent of the SJ/SC WPCP's allowable dry weather discharge of 167 mgd. Therefore, the wastewater flow from the proposed project would not exceed the SJ/SC WPCP's treatment limits. In addition, when added to the daily 5.3 mgd from CSD to SJ/SC WPCP, the 0.042 mgd from the proposed project would not exceed the CSD's contractual treatment allocation of 7.85 mgd. As a result, impacts related to wastewater treatment facilities would be *less than significant* and no mitigation with respect to the SJ/SC WPCP facility is warranted.

As described in the existing conditions discussion above, the CSD identified that the Homestead Pump Station that is downstream from the project site and serves the area south of I-280 and west of I-85 is currently operating at capacity. Because the proposed project would result in an increase in the peak wet weather flows, the proposed project would exacerbate this existing condition. This is a significant impact warranting mitigation.

Impact UTIL-3: Implementation of the proposed project would add additional wastewater flow to the currently deficient Homestead Pump Station causing this station to exceed capacity during peak wet weather periods.

> Mitigation Measure UTIL-3: Prior to issuing grading and building permits the City shall require the project applicant to fund a fair-share contribution toward planned improvements to the Homestead

[27] *Design Criteria Sewer Calculations for Homestead Pump Station,* prepared by BKF, dated August 23, 2017.

[28] Peak wet weather flows assume a wet weather peaking factor of 3.7; (42,429 divided by 1,440 minutes in a day) times 3.7 equals 109 gallons per minute.

[29] Peak wet weather flows assume a wet weather peaking factor of 3.7; (169,315 divided by 1,440 minutes in a day) times 3.7 equals 435 gallons per minute.

Pump Station, as mutually agreed between the project applicant and Cupertino Sanitary District, to the satisfaction of the City of Cupertino Community Development Director.

Significance With Mitigation: Less Than Significant

UTIL-4	**The proposed project would not result in a determination by the wastewater treatment provider, which serves, or may serve the project, that it does not have adequate capacity to serve the project's projected demand in addition to the provider's existing commitments.**

As described under impact discussion UTIL-3, the estimated wastewater generation based on buildout of the project would be 42,429 gpd (or approximately 0.042 mgd) and a peak wet weather flow of 109 gpm.[30] The SJ/SC WPCP NPDES permit currently allows dry weather discharges of up to 167 mgd with full tertiary treatment, and wet weather discharges of up to 271 mgd with full tertiary treatment. Therefore, the 0.042 mgd wastewater flow from the proposed project when added to the daily 5.3 mgd from CSD to SJ/SC WPCP, the 0.042 mgd from the proposed project would not exceed the CSD's contractual treatment allocation of 7.85 mgd.

The CSD provided a preliminary review of the proposed project and verified they can provide sanitary sewer services to the proposed project.[31] As described in Impact UTIL-3, with implementation of Mitigation Measure UTIL-3, the project applicant and CSD would coordinate the appropriate fair-share fee to ensure the planned improvements to the Homestead Pump Station that conveys wastewater to the SJ/SC WPCP would adequately address any additional demand from the proposed project.

As a result, wastewater treatment facilities would have adequate capacity to serve the proposed project's projected demand. Therefore, the proposed project would not result in a determination that wastewater treatment providers do not have adequacy capacity to serve the proposed project and the impact would be *less than significant* with implementation of Mitigation Measure UTIL-3.

Significance With Mitigation: Less Than Significant

[30] Peak wet weather flows assume a wet weather peaking factor of 3.7; (42,429 divided by 1,440 minutes in a day) times 3.7 equals 109 gallons per minute.

[31] Tanaka, Richard. Pre-Hearing Development Review Letter to Ms. Kidd, Senior Planner, 20 February 2017.

UTIL-5 The proposed project, in combination with past, present, and reasonably foreseeable projects, would not result in a significant cumulative impacts with respect to wastewater treatment.

This section analyzes potential impacts related to wastewater treatment that could occur from the proposed project in combination with reasonably foreseeable growth within the SJ/SC WPCP service area.

Buildout of the proposed project would generate a minor increase in the volume of wastewater delivered for treatment at SJ/SC WPCP. This increase represents approximately 0.01 percent of the available treatment capacity at the SJ/SC WPCP, and it fits within the remaining contractual treatment allocation for the CSD. The SJ/SC WPCP currently uses less than its design and permitted wastewater treatment capacity. Based on the recent trends of diminishing wastewater treatment demand and the projected population growth in the service areas, cumulative wastewater treatment demand over the proposed project buildout period is far below the excess capacity of the SJ/SC WPCP. Because the cumulative demand would not substantially impact the existing or planned capacity of the wastewater treatment systems, which have sufficient capacity for wastewater that would be produced by the proposed project, the construction of new wastewater treatment facilities would not be necessary.

Additionally, future development in the cumulative setting would be subject to the development review process and would be required to mitigate any effects to wastewater treatment services on a project-by-project basis. Future development would also be required to comply with all applicable regulations and ordinances protecting wastewater treatment services as described in Section 4.11.2.1. Therefore, cumulative impacts to sanitary wastewater service would be *less than significant*.

Significance Without Mitigation: Less Than Significant