TOWN OF MORAGA, CALIFORNIA

South Camino Pablo Annexation Project

INITIAL STUDY & MITIGATED NEGATIVE DECLARATION

JUNE 2020



Camino Pablo Subdivision

Initial Study/Mitigated Negative Declaration

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California Environmental Quality Act (CEQA) Environmental Checklist Form

1. Project Title: South Camino Pablo Annexation Project

2. Lead Agency Name and Address:

Town of Moraga Planning Department 329 Rheem Boulevard Moraga, CA 94556

3. Contact Person and Phone Number:

Ben Noble, Contract Planner (510) 529-8820 bnoble@bnplanning.com

4. Project Location:

Camino Pablo at Tharp Drive, Town of Moraga Assessor's Parcel Number (APN) 258-290-023

The project site is located on the southern edge of the Town of Moraga on the east side of Camino Pablo between Sanders Ranch Road and Knoll Drive, about 1.7 miles south of the Moraga Town Center. The site is bordered on the south and west by single-family homes and on the north and east by open space ranch land. The site is located in unincorporated Contra Costa County, but is within the Urban Limit Line and Sphere of Influence for the Town of Moraga.

5. Project Sponsor's Name and Address:

Dobbins Properties, LLC 1520 Kettleman Lane, Suite A-1 Lodi, CA 95242

Contact: Matt Dobbins (209) 339-4700 mdobbins@jbtproperties.com

6. General Plan Designation:

Contra Costa County:	Agricultural Lands (AL)
<u>Town of Moraga</u> :	Residential, 1 Dwelling Unit Per Acre (1-DUA), Open Space (OS)

7. Zoning:

Contra Costa County:	A-2 (Agriculture)
<u>Town of Moraga</u> :	(Proposed) 3-DUA PD (Residential, 3 Dwelling Units Per Acre, Planned Development), OS (Open Space)

8. Description of Project:

Background

This document is an Initial Study (IS) prepared pursuant to the California Environmental Quality Act (CEQA). The IS has been prepared in accordance with Section 15063 of the *CEQA Guidelines* and will be used by the Town of Moraga (Lead Agency) decision makers to support adoption of a Mitigated Negative Declaration (MND) in accordance with Title 6 of the *CEQA Guidelines*.

Environmental review of the proposed project was originally conducted in 2014 and 2015, but the Initial Study was never published and circulated for public review. After a long hiatus, the applicant submitted a new application in 2019 for a slightly modified project. The basic site plan and proposed 13 homes remain the same. A new environmental review of the project was performed to update the prior analysis, address subsequent regulatory changes, and make other appropriate revisions. Some of the original analysis remained valid and has been incorporated into this document. In addition to significant revisions to the prior analysis, this Initial Study incorporates three new environmental resource topics that were added to the *CEQA Guidelines* on December 28, 2018: energy, tribal cultural resources, and wildfire.

Project Overview

Dobbins Properties, LLC (applicant) is proposing to develop an 8.5-acre residential subdivision of 13 single-family homes on the southern portion of the property. The proposed project would also permanently preserve 15.4 acres on the northern portion of the property. The proposed project includes the annexation of the property into the Town of Moraga. The property is currently within unincorporated Contra Costa County, but is within the Urban Limit Line (ULL) and Sphere of Influence (SOI) for the Town of Moraga. Figure 1 shows the project location and Figure 2 provides an aerial overview of the site.

The most southern portion of the project site (6.26 acres) has a Town of Moraga General Plan designation of Residential, 1 Dwelling Unit Per Acre (1-DUA). The General Plan designates the remainder of the site (17.64 acres) as Open Space (OS), also referred to as Non-MOSO Open Space. The proposed project includes two single-family homes on 1.84 acres of the Non-MOSO Open Space area.

The entire site has a County zoning designation of A-2 (Agriculture), with a minimum lot size of 5 acres) and is designated Agricultural Lands (AL) in the Contra Costa County General Plan.

The proposed project consists of 13 single-family two-story detached homes on individual lots ranging in size from 15,105 square feet to 40,027 square feet, with an average size of approximately 22,367 square feet. A total of six accessory dwelling units (ADUs) are included, one each on Lots 1, 2, 4, 5, 6, and 10.

As shown on the Conceptual Development Plan (Figure 3), the homes would be located at the southern end of the site on 8.5 acres, and the remaining approximately 15.40 acres of the site (Parcel A) would be preserved as permanent open space. The proposed project would be situated on the lower elevations of the site. The project design is intended to retain the natural features of the land to the extent feasible and minimize the visibility of the homes as seen from Camino Pablo



Project Site Location

Source: Douglas Herring & Associates



Aerial Overview of Site and Surroundings



Conceptual Site Plan

Source: dk Consulting

(and from Tharp Drive close to its connection with Camino Diablo) thorough design and placement of the homes and project landscaping. An objective is also to maintain some hillsides views above the development area. As shown on the preliminary grading plan on Figure 4, the pad elevations would range from 570 feet to 620 feet above mean sea level (msl), while the hillside above the homes rises to approximately 705 feet msl.

The homes would be accessed from a new private street (Street "A") that would intersect with Camino Pablo, opposite Tharp Drive, creating a new four-way intersection, The project street would terminate at a cul-de-sac and would have a sidewalk on the north/east side of the street.

The project would require a General Plan Amendment to change the portion of the proposed development area currently designated as Open Space (OS) and Residential, 1 Dwelling Unit Per Acre (1-DUA) to Residential, 3 Dwelling Units Per Acre (3-DUA). The boundary between the OS and 3-DUA designations would also be adjusted to better accommodate the street entry and lot configuration there, increasing the OS area by 0.35 acres. Following the General Plan Amendment, the property would have a total of 17.75 acres with an OS designation and 6.15 acres designated 3-DUA. Lots 1 and 2 would remain designated as Non-MOSO Open Space. The 8.5-acre development area would have a gross density of 1.53 dwelling units per acre (du/ac). Lots 3 through 13, landscaped areas along Camino Pablo, and the project street would be zoned 3-DUA Planned Development (PD). The remainder of the site would be zoned Non-MOSO Open Space, including Lots 1 and 2.

The project also includes a General Plan Amendment to change Camino Pablo from "major arterial" to a "collector." Camino Pablo is proposed to be designated as a bike route after the Sanders Ranch intersection to the southern terminus of Camino Pablo. The applicant would install 'Share the Road' signage and stripping to benefit bicyclists and their safety.

It is anticipated that project construction would commence in 2022 and likely require about one grading season (April 15 to October 15) to complete the grading, infrastructure, and finished lots, before construction of homes and their driveways starts.

The sequencing of construction would start with construction staking. Construction fencing would be installed along the project perimeter, and erosion and sediment controls placed to protect the street and any nearby storm drain inlets. The ground would then be cleared and the topsoil removed and stockpiled for later use. Under the direction of the geotechnical engineer, landslides and any unsuitable soils would be excavated and removed. The ground would then be built back up as 'engineered fill' and cut or filled as necessary to create the proposed street subgrade and the building pads at the desired finish elevations. It is anticipated that the amount of cut and fill would result in a balanced site, meaning that no surplus soil resulting from the rough grading operation would have to be exported from the project. In the event that some soil does have to be exported, the surplus material would be conveyed for placement on the adjacent property. Therefore, it is anticipated that no rough grading material will be transported on public roadways. The retaining walls would then be constructed and backfilled. Erosion and sediment control measures would be placed and repositioned as necessary throughout the grading operation and as the construction progresses.

After rough grading is complete, the utilities would be constructed. These include the sanitary sewer, storm drain, water, irrigation sleeves, and joint trenches (gas, electricity, cable and

telephone), together with their various appurtenances, structures, and house laterals. Base-rock would be placed and compacted, and concrete curb, gutter, and sidewalk poured. Base rock would then be placed and compacted between the curbs, and the asphalt pavement rolled out to create the finished street surface. The signing and striping would then be placed. The bioretention filters would be constructed with all the necessary appurtenances for water inflow and outflow being built and tested.

The existing Camino Pablo curb, asphalt dike, and concrete walkway would be demolished and the street widened. The new curb, gutter, and walkway would be poured and the street pavement widened. Signing and striping would be installed.

The applicant intends to have the irrigation system and landscape planted adjoining Camino Pablo and the new project street entry early in the project construction. The Camino Pablo landscaping can be installed once the rough and finish grading for the bioretention swale and the frontage area are completed. The landscaping can be watered by hand or truck until the water lines have been constructed and water is available from EBMUD for the irrigation system.

Existing Site Conditions

The project site is located on a single parcel (APN 258-290-029). The project site encompasses approximately 23.90 acres of land area on an undeveloped hillside property consisting entirely of non-native grassland that has been used for cattle grazing for the past century by the Carr families. Much of the ranch was recently acquired by EBMUD, with the assistance of the John Muir Trust. There are no existing trees or structures on the site. Existing views of the site are shown on Figures 5 and 6.

The site is part of a larger ranch property extending to the east and northeast that is owned by the Carr family. Residences, a barn, and other agricultural buildings are located on the other side of the ridge that runs along the east side of the project site. This developed portion of the Ranch property is approximately 800 feet east of the proposed development area.

As shown on the topographic survey presented on Figure 7, the site is characterized by large, undulating hillsides and knolls. Elevations range from 554 feet msl on the southwestern edge of the site in the location of proposed Lot 12 to 742 feet msl on the eastern boundary of the proposed open space parcel. Some of the existing northerly slopes near the top of the site are steep, in excess of 45-percent gradient, such as above proposed Lots 2 and 3. To stabilize the site, slide conditions affecting the development area would be repaired. All regraded slopes would not exceed 3:1 (except a 2:1 slope on Parcel C (approximately 17,000 square feet in size) to keep retaining walls there to no more than 4 feet in height). The average slope of the entire site is currently 30.4 percent. and would be 29.3 percent after grading.

Proposed Homes

The proposed subdivision would be developed with custom homes, each having a unique architectural design in styles ranging from Mediterranean to contemporary. Ten of the 13 homes would have two stories, while homes on Lots 7, 8, and 9 would be single-level. The homes would range in size from 3,570 square feet on Lot 12 to 5,474 square feet on Lot 2, including garage space and accessory dwelling units where proposed building footprints are articulated to create design variation and homes are horizontally massed to minimize view obstruction. Average



Preliminary Grading Plan

ROPOSED	EXISTING
10	110
 	EX.SS
	W
=>:====	

PAD ELEVATION SPOT ELEVATION STREET SLOPE

C3 TREATMENT AREA EXISTING SLIDE AREA

JURISDICTIONAL AREA P.S.D.E PCL SSMH BOW/FOW TC

CB

GB



PRIVATE STORM DRAIN EASEMENT PARCEL SANITARY SEWER MANHOLE BACK OF WALK/FRONT OF WALK TOP OF CURB CATCH BASIN GRADE BREAK

Source: dk Consulting





Existing Site Conditions

Source: Douglas Herring & Associates



Existing Site Conditions

Source: Douglas Herring & Associates



Site Topography

setbacks between the walls of adjoining homes vary between 24 and 89 feet. Homes are generally not aligned to be parallel to one another.

Roof forms are varied, including gable roofs with intersecting gables, multi-element hip roofs, shed roofs, and flat garden roofs. The home on Lot 11 would have multiple shed roofs, some of which would be curved. Homes would have attached three-car garages except those on lots 1, 9, 11, 12, and 13, which would have two-car garages.

Reflective of the various architectural styles, a variety of exterior building materials would be employed on the homes, including Hardie Board wood siding, stucco, cedar shingles, stucco shingles, brick veneer, and stone veneer. The homes would be painted in a range of earth tones, including taupe with brown trim and accents, sand and light brown with green trim/accents, sea foam green with white trim/accents, dark taupe with light brown trim and doors, and sage green with brown trim, among other similar combinations. Roofing materials would also vary, and would include red clay tiles, composition shingles of varying colors, and standing-seam metal painted off-white. All windows would be energy-efficient and sound-reducing double-paned windows with fiberglass sashes. The architectural designs, building materials, and colors would be subject to design review approval by the Town.

In addition to the energy-efficient windows, the project would include numerous other features supportive of energy efficiency and sustainability. Each home would include the following:

- Ultra low-flow plumbing fixtures;
- Gray water pipes to accommodate a future in-house gray water recycling unit or the receipt of gray water from the Central Contra Costa Sanitary District (CCCSD) or another outside source;
- Water-efficient native landscaping and irrigation;
- Photovoltaic power, with most roofs oriented to the south and southwest for maximum solar exposure;
- Solar water heating;
- Energy-efficient ('Star rated")appliances;
- Exterior building shell designed with advanced framing techniques to enhance the insulated envelopes;
- Recycled material for exterior skin, where appropriate;
- Roofing materials with 50-year life.

Site Plan

Vehicle access to the project would be from a single private street intersecting Camino Pablo, as shown on Figure 3. The new street, temporarily designated as Street "A," would be aligned opposite of Tharp Drive, creating a new four-way intersection. Street "A" would have a width of 36 feet within a right-of-way (ROW) of 56 feet. The ROW would include landscaped swales on each side that would be used for stormwater treatment and also would be planted with street trees. The swales would be 9 feet wide on the south/west side of the street and 5 feet wide on the opposite side, which would also include a 6-foot-wide sidewalk.

Near the site entrance Street "A" would have an uphill gradient of 5.65 percent that would increase to 15 percent adjacent to lots 1 and 2, then would begin leveling off, reaching a gradient of about 1.9 percent near Lot 3, then further leveling to a grade of 1 percent for the remainder of the street. The cul-de-sac terminating Street "A" would have a radius of 45 feet.

Grading, Stormwater, and Wastewater

A hillside with a north/south alignment runs along the eastern side of the project property. In the northern half of the property (the proposed open space parcel), the hillside veers slightly east, off the project parcel, reaching an elevation of over 800 feet msl. The crest of the hillside on the project site is not a Town-designated Major MOSO Ridgeline, Minor MOSO Ridgeline, Significant Non-MOSO Ridgeline, or Other Non-MOSO Ridgeline, each designated by the Town for special protections under its Hillside and Ridgeline Regulations approved in April, 2018. No such designated ridgeline is visible from the project property. The entire property is defined instead as a "Hillside Area."

Previous landslides have been mapped along this hillside both within and adjacent to the project site, and remedial grading is required to eliminate potential landslide hazards within the proposed development area. However, hillside contours that characterize the local topography would be retained. Project grading would extend onto the adjoining property and would slightly lower this hillside crest running along and just outside the east side of the project parcel from the current elevation of approximately705 feet msl to 702 feet msl. A grading easement would be required for this off-property grading onto the two adjoining properties, one owned by the Scott Carr family and the other by the John Hoover family (also owners of the project property).

In addition to the remedial grading, discussed in more detail in Section VI, Geology and Soils, the proposed development would be protected by strategically located keyways and subdrains, as well as a 15-foot-wide debris bench extending along the uphill side of the development area. A concrete V-ditch would extend along the base of the debris bench, discharging into the storm drain system.

In order to retain the existing hillside contours and general landforms on the site as much as possible, retaining walls would be constructed along the development margins. They would also be installed on some of the individual lots in order to accommodate the homes and outdoor yards, while minimizing grading in accommodating a debris bench. The retaining wall for the debris bench running along the back of lots 1 through 5 would range in height from 1 to 3.9 feet. A retaining wall along Camino Pablo, at the base of lots 9 through 13, would range in height from 1.2 to 4 feet. These retaining walls would be landscaped with a variety of ornamental trees, shrubs, and grasses that would obscure the walls upon maturity. Uniform 4-foot-high retaining walls are proposed along the uphill sides of the homes on lots 1 through 5, while downhill walls are proposed on lots 9 through 12. In addition, short lengths of retaining walls would be strategically placed at various locations on lots 1 through 5 and 9 through 13, with heights ranging between 1.2 feet and 4 feet.

Post-development slopes would be graded to reflect the existing overall character of the hillside slopes and existing landforms on the project site. Grading activities on the site would remove existing non-native grasses, but graded areas outside of the planned building pads, retaining walls and landscaped areas would be reseeded with native grasses and returned to the original visual condition. The grading is expected to be balanced on site, requiring no import or export of soil. At

most there could be a small imbalance. If necessary, export or import of fill will be secured on the adjoining Carr property. No hauling on public streets would be required.

The proposed project includes connecting to an existing storm drain system which currently collects the runoff from the undeveloped site. This storm drain system flows through the adjacent Subdivision 3279 and outfalls into Moraga Creek. A portion of the existing public storm drain runs through three private properties before reaching the public right-of-way in Butterfield Place, which in turn continues to Tharp Drive. The applicant will confirm public drainage rights are in place across the three private properties. Otherwise, applicant would construct a new storm drain from S. Camino Pablo along Tharp Drive to connect to the existing system near the intersection of Tharp Drive and Butterfield Place.

The stormwater runoff from the site would be treated by bioretention basins and discharged into the proposed storm drain system onsite before exiting into the existing storm drain system that releases into Moraga Creek. The remaining portion of the site would remain as undeveloped and would continue to discharge into an existing v-ditch, located adjacent to Camino Pablo, and finally into the existing storm drain system.

As currently proposed, stormwater runoff would continue to flow from the east side of the property down the natural hillside and the proposed graded bank and would be intercepted by a concrete ditch on a drainage terrace behind or through Lots 1 - 6. This ditch would convey runoff from the self-treating hillside to the outfall storm drain at Camino Pablo, bypassing the bioretention filters. Below this bench and ditch the proposed graded bank would continue down to the rear yards of Lots 1-6. Where practicable without the need for cross-lot storm drain easements, a separate rearyard storm drain system would capture the runoff from the hillside and rear yard pervious areas and convey it to the storm drain system, bypassing the bioretention filters. In other cases, runoff from the pervious and impervious areas would be commingled and conveyed to bioretention filters adjacent to the street. In the flatter (uphill) part of the street, runoff from the street itself and runoff from some of the lots on the east side of the street would be diverted to bioretention filters next to both sides of the project street. Where the street is too steep to permit the construction of a viable bioretention filter, lot and hillside runoff would spill over into the street and would be captured by an inlet near the intersection of the street and Camino Pablo. It would then be conveyed to the large bioretention filter along Camino Pablo. Lots on the west side of the street would drain downhill to the Camino Pablo bioretention filter, while lots on the south side of the property would drain southerly to a concrete ditch and storm drain which would convey the runoff to this bioretention filter. After treatment and storage, runoff from the bioretention filters would be discharge to an outfall storm drain and conveyed off-site.

Wastewater would be collected in an 8-inch sanitary sewer line running under Street "A" that would connect to an existing sewer line under Tharp Drive that conveys sewage to other interceptors and community collections systems, ultimately discharging at the Central Contra Costa Sanitary District (CCCSD) wastewater treatment plant in Martinez.

Water would be supplied to the proposed homes via an 8-inch-diameter water line located under Street "A" that would connect with an existing water main in Camino Pablo.

The project would underground the electric power distribution line that extends alongside the project site's Camino Pablo frontage, then transition back to an overhead line near Sanders Ranch

Road. The power lines within the proposed subdivision would also be placed underground, consistent with the Moraga Design Guidelines.

Landscaping and Open Space

While Parcel A would be preserved as open space and areas disturbed during grading would be revegetated with native grasses, the proposed development area would be landscaped with native trees and other plants, as shown on Figure 8. Clusters of coast live oak (*Quercus agrifolia*), California lilac (*Ceanothus 'Ray Hartman'*), and eastern redbud (*Cercis canadensis*) trees planted at the site entrance and along the Camino Pablo frontage would provide visual screening of the proposed homes from offsite vantage points. Chinese pistache (*Pistachia chinensis*) and strawberry trees (*Arbutus 'Marina'*) would be planted alongside the length of Street "A".

The site entrance would also be landscaped with Hidcote Blue (*Lavandula a. 'Hidcote Blue'*), wild California rose (*Rosa californica*), pink-flowering currant (*Ribes sanguineum 'Claremont'*), Japanese privet (*Ligustrum japonicum 'Texanum'*), and Howard McMinn manzanita (*Arctostaphylus 'Howard McMinn'*) shrubs; deergrass (*Muhlenbergia rigens*); and groundcovers of emerald carpet Manzanita (*Arctostaphylos 'Emerald Carpet'*) and California lilac (*Ceanothus 'Anchor Bay'*). The bio-retention areas would be planted with Berkeley sedge (*Carex divulsa*) and California gray rush (*Juncus patens 'Elk Blue'*). Additional plantings along Camino Pablo would include Mound San Bruno coffeeberry (*Rhamnus californica 'Mound San Bruno '*) and Howard McMinn Manzanita (*Arctostaphylos d. 'Howard McMinn'*) shrubs.

The retaining wall extending across the uphill margin of the proposed development would be landscaped with deer grass (*Muhlengbergia rigens*), island snap dragon (*Galvezia speciose 'Fire Cracker'*), and salvia Clevelandii (*Salvia clevelandii 'Winifred Gilman'*). The retaining wall extending along the back of lots 9 through 12 would also be landscaped with island snap dragon and deer grass.

The undeveloped rear portions of the large residential lots would be vegetated with a natural oak knoll habitat seed mix that would include native California brome (*Bromus carinatus*), blue wildrye (*Elymus glaucus*), California barley (*Hordeum californicum*), Idaho fescue (*Festuca idahoensis*), purple needlegrass (*Nassella pulchra*), native pine bluegrass (*Poa secunda*), white yarrow (*Achillea millefolium*), California poppy (*Eschscholzia californica*), sky lupine (*Lupinus nanus*), blue-eyed grass (*Sisyrinchium bellum*), and narrow-leaved mule ears (*Wyethia angustifolia*).

The front yards would be separated from the rear yards by 6-foot-tall solid fences with horizontal clear heart 1x6 redwood planks supported on 4x6 redwood posts and 2x6 redwood caps and trim. Matching solid gates would provide outdoor access between the front and rear yards. In general, open wire mesh fences with 4x6 redwood posts and 2x6 redwood caps and trim would separate the rear yards of the individual lots at most locations. However, where necessary to maintain privacy, solid privacy fences would also be used along a portion of the property line, primarily adjacent to the houses.

A 6-foot-high wood "good neighbor" (privacy) fence would be erected along the southern property boundary that would be constructed of 4x6 redwood posts, overlapping vertical 1x6 redwood boards, and 2x4 redwood caps. This fence would maintain the privacy of the existing residential homes located immediately to the south of the project site. An open wire fence would be erected



Landscape Plan

Source: Camp & Camp Associates

along the rear of lots 9 through 13, adjacent to Camino Pablo, separating the rear yards from the landscaped slope lining Camino Pablo.

Camino Pablo is a Scenic Corridor under the Town General Plan. The landscape slope behind the Camino Pablo sidewalk would reach a mature height within 7 years from planting. Applicant proposes to plant early in the construction of the site. The landscaping would be irrigated by water truck until EBMUD water is hooked up.

Camino Pablo Improvements

As part of the project, Camino Pablo would be widened from Tharp Drive south to the southern end of the project site frontage. The existing right-of-way, which varies between roughly 46 feet and 59 feet would be expanded to a 68-foot right-of-way that would be dedicated to the Town of Moraga by the project property owner. The existing 28-foot-wide roadway would be expanded to 36 feet, and would include a curb and gutter on both sides. The existing 8-foot-wide sidewalk extending along the project site frontage would be replaced with a new, slightly relocated 8-footwide sidewalk.

Planning Approvals

<u>General Plan Amendment</u>: The project would require approval of a General Plan Amendment (GPA) by the Town Council to change the General Plan land use designation of the site from Residential-1 DUA and Non-MOSO OS to Residential-3 DUA and to adjust the boundary between the Open Space (OS) and 3-DUA designations. The existing and proposed General Plan designations are shown on Figure 9. The GPA would also change the designation of Camino Pablo south of Tharp Drive from 'Arterial' to 'Collector.'

<u>Zoning Amendment</u>: The project site is currently within unincorporated Contra Costa County, and does not have an existing Town of Moraga zoning designation. The project would require rezoning of the site to a Planned Development 3-DUA Per Acre (3-DUA PD) zoning district and Non-MOSO Open Space, subject to approval by the Town Council, pursuant to Chapter 8.48 of the Moraga Municipal Code. The existing and proposed zoning districts are shown on Figure 10.

<u>Subdivision Map</u>: The project would require approval of a Vesting Tentative Subdivision Map and recording of a Final Subdivision Map, in accordance with the Subdivision Map Act, *California Government Code* Sections 66410 *et. seq.*

<u>Development Plan</u>: The project would require approval of a Conceptual Development Plan, General Development Plan, and Precise Development Plan pursuant to Title 8, Chapter 8.48 of the *Moraga Municipal Code*.

<u>Grading Permit</u>: The project would require City Council approval of a Grading Permit pursuant to Title 14, Chapter 14.416 of the *Moraga Municipal Code*.

<u>Design Review</u>: Pursuant to Title 8, Chapter 8.72, Article 2 of the *Moraga Municipal Code*, design review approval would be required prior to issuance of building permits.

Other Approvals

<u>Contra Costa County Building Department</u>: The project would also require a grading permit and building permits from the Contra Costa County Building Department, which functions as the building department for the Town of Moraga.

<u>Contra Costa County Local Agency Formation Commission (LAFCo)</u>: The requested annexation of the approximately 24-acre project site into the Town of Moraga would require approval by LAFCo. LAFCo would also need to approve annexation of the site into the service boundaries of the Central Contra Costa Sanitary District (CCCSD) and the East Bay Municipal Utilities District (EBMUD). Annexation would occur following project approvals.

<u>San Francisco Bay Area Regional Water Quality Control Board (RWQCB)</u>: The project would also require filing of a Notice of Intent (NOI) to the San Francisco Bay Area Regional Water Quality Control Board and preparation of a Stormwater Pollution Prevention Plan (SWPPP). The SWPPP addresses control of stormwater pollution during construction through implementation of Best Management Practices (BMPs).

9. Site Description and Surrounding Land Uses:

The proposed project site is located at the southeastern edge of the Town of Moraga off of Camino Pablo, at the intersection of Camino Pablo and Tharp Drive, as shown on Figure 1. Regional freeway access to the site is from State Route 24 via Moraga Road from the north, passing through the City of Lafayette (approximately 6 miles), or via Moraga Way from the northwest, passing through the City of Orinda (approximately 6 miles).

Aside from residential development located immediately to the south and west of the site, open space extends for miles to the south, east, and west of the site. The project site is located about 3 miles west of Rocky Ridge, one of several northwest/southeast-trending ridges enclosing San Ramon Valley, located about 6.5 miles to the east. Several peaks along the ridge rise to elevations between approximately 1,100 feet and 1,300 feet msl, and form prominent visual backdrops from many vantage points within Moraga. Upper San Leandro Reservoir lies about one-half mile to the south, nestled between the Berkeley Hills and the San Leandro Hills.

The project site is located on a single parcel (APN 258-290-023). The project site encompasses approximately 23.9 acres of land area on an undeveloped hillside property consisting entirely of non-native grassland that has been used for cattle grazing for the past century. There are no structures on the site and there is just a single tree. Existing views of the site are shown on Figures 5 and 6.

The site is part of a larger ranch property extending to the east and northeast that is owned by the Carr family, which has a residence, barn, and other agricultural buildings on the other side of the ridge that runs along the east side of the project site. This developed property is approximately 800 feet east of the proposed development area.

As shown on the topographic survey presented on Figure 7, the site is characterized by large, undulating hillsides and knolls. Elevations range from about 554 feet msl on the southwestern edge of the site in the location of proposed Lot 12 to about 742 feet msl on the eastern boundary of the



Existing and Proposed General Plan Designations

Source: dk Consulting



Existing and Proposed Zoning Designations

Source: dk Consulting

proposed open space parcel. Existing slopes on the site are steep, in excess of 45-percent gradient in some locations, such as above proposed Lots 2 and 3.

The site is bordered on the south by single-family homes that are part of the small Skyview Subdivision that is within unincorporated Contra Costa County. A much more extensive area of single-family residential development extends to the west and northwest. Moraga Creek flows through this development, about 960 feet northwest of the proposed subdivision. Figure 11-a shows existing residential development along the west side of Camino Pablo, opposite the proposed development. Rancho Laguna Park, a small neighborhood park shown on Figure 11-b, is located just south of the Skyview neighborhood, approximately 700 feet from the project site.

Other than nearby residences, there are no sensitive receptors in the immediate vicinity of the project site. The nearest non-residential sensitive receptors include Rancho Laguna Park, located at 2101 Camino Pablo, about 700 feet south of the site, and Camino Pablo Elementary School, located at 1111 Camino Pablo, about 3,200 feet (0.61 mile) northwest of the site.



a) Existing single-family homes located on Camino Pablo, opposite the project site.



Neighboring Land Use

ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED:

The environmental factors checked below would be potentially affected by this project, involving at least one impact that is a "Potentially Significant Impact" as indicated by the checklist on the following pages.



DETERMINATION:

On the basis of the initial evaluation:

- □ I find that the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.
- I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.
- □ I find that the proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.
- □ I find that the proposed project MAY have a "potentially significant impact" or "potentially significant unless mitigated" impact on the environment, but at least one effect 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on the attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.
- □ I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.

Signature

Date

Printed name

For

EVALUATION OF ENVIRONMENTAL IMPACTS:

<u>I. AESTHETICS</u> — Would the project:

	Potentially Significant Impact	Less-Than- Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Have a substantial adverse effect on a scenic vista?			\mathbf{X}	

<u>Explanation</u>: The project site is located at the edge of an interface between suburban residential development and open space. Located outside the southeastern boundary of the Town of Moraga, the site is currently undeveloped open space grazing land located at the edge of a series of large hillsides rising up from the Moraga valley floor. These hillsides, which rise to elevations of over 1,000 feet in the site vicinity, extend to the east and north of the project site, while established residential neighborhoods of single-family homes are located immediately to the south and west of the site. Views of the site are depicted on Figures 5 and 6, while Figure AES-1, below, shows surrounding residential development.

Public views of the project site are visible from Camino Pablo along an approximately 1,500-foot stretch of the roadway, from north of Sanders Ranch Road to just south of the site. More constrained public views of the site can be seen from Tharp Drive, as shown on Figure AES-1(b). Camino Pablo is designated as a Scenic Corridor in the *Moraga 2002 General Plan* and Municipal Code Title 8 (Planning and Zoning). Views of the project site and surrounding hillsides from Camino Pablo are therefore considered a scenic vista and are the focus of the visual impact analysis in this section.

Private views of the project site are also visible from surrounding residential properties, including homes in the Skyview Subdivision, on Camino Pablo directly opposite the project site, and within the Tharp Drive neighborhood. This Initial Study, however, only considers potential impacts to public views visible from roadways, sidewalks, and other publicly accessible vantage points.

The project site meets the Town's definition of a hillside area, and is subject to all of the Town's design-related policies, standards, and guidelines for hillside development. Policies in section CD8 of the General Plan Community Design Element call for new development to retain the natural character of hillside area to the extent possible. Moraga Municipal Code Chapter 8.136 establishes special findings for hillside development. Moraga Design Guidelines Section 4 (Protect Ridgelines and Hillside Areas) contains design guidelines for site and building design in hillside areas.

The Moraga General Plan and Municipal Code also contains design-related requirements for development within the vicinity designated ridgelines (see General Plan Figure CD-1 for the location of these ridgelines). There are no designated ridgelines on or near the project site. Town policies and regulations for designated ridgelines therefore do not apply to the proposed project.



a) Typical residential development in adjacent Skyview Subdivision, located immediately south of project site.



Figure ASE-1

Existing Visual Conditions in Site Vicinity

Source: Douglas Herring & Associates

The proposed project would be required to demonstrate consistency with the Town's designrelated policies and guidelines as part of the entitlement process, which would include Design Review approval by the Design Review Board. See Section X, Land Use and Planning, for further discussion of the Town's Design Review policies. Based on a preliminary review of the Town's policies and design guidelines for scenic corridor development, the project appears consistent with these requirements; the Town will conduct a detailed analysis as part of the project entitlement process.

The proposed project would substantially alter existing views of the project site. However, because the proposed development would be restricted to the southern portion of the site and to the lower elevations of the site, the impact would be limited. Roughly 70 feet of undeveloped hillside would rise directly behind the highest proposed home, while well over 100 feet of undeveloped hillside would form a backdrop to the northern half of the site. The magnitude of the visual changes would be greatest, by far, along and adjacent to Camino Pablo, where the lower elevations of the site are most prominent. The changes would be much less visible from other locations. For example, as viewed from Tharp Drive at distances of a few hundred feet or more from Camino Pablo, the lower portions of the hillsides, where the new development would be located, are largely obscured from view (for example, see Figure AES-1(b)). The upper hillsides that are visible would remain unchanged as grass-covered open space that is verdant green during the rainy season and golden brown during the dry season.

Even from the vantage points along Camino Pablo where the most noticeable visual changes would occur from implementation of the proposed project, the terrain of the hillside would serve to reduce the visibility of the project and lessen its visual impact. With a site frontage along Camino Pablo and Sanders Ranch Road of roughly 3,200 feet, only about 800 feet of the frontage would be adjacent to the proposed new development. Thus, drivers and pedestrians approaching the site along Camino Pablo or Sanders Ranch Road from the north would still have an undeveloped hillside to their left along much of the site frontage. As they approached closer to Tharp Drive, the new development would be plainly visible but would not dominate the viewshed from any but the most proximate vantage points.

A series of photo-realistic visual simulations of the proposed project were prepared by a consultant hired by the project applicant. The Town of Moraga retained the services of Square One Productions, Inc. to perform an independent peer review of the accuracy of the simulations. Square One Productions has an established 30-year track record of creating spatially accurate computer-generated visualizations for urban planning and architecture. Square One identified some shortcomings with the initial simulations that were addressed through two rounds of revisions. The locations of the viewpoints for the simulations are shown on Figure AES-2. The corrected simulations are shown on Figures AES-3 through AES-5, each of which shows an existing view of the project site along with a second image that has a photo-realistic simulation of the proposed homes and landscaping on the same view, for Before and After views.

The applicant has also prepared a detailed fly-through model of the proposed project. Still views of the model are provided in Exhibit 1.¹ The fly-through model will be used to evaluate project conformance with design requirements during the project entitlement process.

¹ Fly-through can be viewed at <u>https://dkengin.com/projects/camino-pablo-private/</u>.



Figure AES-2

Vantage Points for Visual Simulations



a) Existing conditions, viewing south along Camino Pablo.



Figure ASE-3

Existing and Proposed Conditions Viewed from Vantage Point 1

Source: Robert Becker



a) Existing conditions, viewing north along Camino Pablo at southern edge of project site.



Figure ASE-4

Existing and Proposed Conditions Viewed from Vantage Point 2

Source: Robert Becker



b) Proposed conditions, viewing east from Tharp Drive, near Camino Pablo.

Figure ASE-5

Existing and Proposed Conditions Viewed from Vantage Point 3

Source: Robert Becker
The vantage points for the visual simulations in Figures AES-3 through AES-5 were selected by Town staff as public locations where the maximum visual impact of the project would be experienced. As the simulations demonstrate, only portions of the project would be visible even at locations with the most unrestricted views of the site. From most locations, only a few homes would be visible, and only portions of the homes would be visible. Furthermore, the views would be substantially softened by the proposed trees and other landscaping.

For example, Figure AES-3(a) shows the existing view along Camino Pablo approaching the site from the north (Vantage Point 1), several hundred feet from the proposed homes, and Figure AES-3(b) shows a visual simulation of the project as viewed from the same vantage point. As the simulation shows, only a few of the homes would be visible from this vantage point. A few more homes would be visible from further away, but they would appear smaller from the greater distance, and would occupy a smaller portion of the total viewshed, which would include a backdrop of higher tree-covered hillsides further to the south, as well as the dense row of mature trees flanking the west side of the roadway. The proposed landscaping would substantially enhance the portion of the frontage of the site along Camino Pablo that would be developed, as shown on the Vantage Point 2 simulation (Figure AES-4(b)).

All of the homes closest to Camino Pablo would be set back more than 100 feet from the roadway, the edge of which would be landscaped with trees and shrubs that would provide visual screening. Some of the homes would be set back more than 200 feet. These setbacks would substantially reduce the prominence of the homes as seen from Camino Pablo. In addition, the homes would step up the hillside, such that a majority of them would not be visible from the roadway at close quarters. This is illustrated on the representative view from the southern end of the project, shown with both existing and simulated project conditions on Figure AES-4.

From public vantage points, the visual changes introduced by the proposed project would be the most noticeable at and near the intersection of Tharp Drive with Camino Pablo, as shown on Figure AES-5. As depicted on the simulation, filtered views of four of the proposed homes would be visible from this vantage point and, viewing more toward the south, an additional two or three of the homes would likely be visible. As illustrated, the contoured landforms and generous landscaping and trees would substantially screen offsite views of the homes, rendering them much less obtrusive than they would be absent these features. Even from this close-up vantage point, the upper portion of the hillside rising above the proposed subdivision would be plainly visible and would not be altered by the project.

The assessment of visual impacts is inherently subjective. However, in 2018 the Town adopted new design guidelines as part of the Hillsides and Ridgelines project that identifies design features desired for hillside development. Project consistency with these guidelines should be considered when evaluating the aesthetic impacts of a proposed project. Below is a brief discussion of the proposed project's conformance with these guidelines.

In compliance with Design Guideline RH1.3, the project would exhibit design variation that minimizes repetitive forms and contributes to a more organic design aesthetic. Lot sizes would be varied, ranging 15,000 square feet to 40,000 square feet, with variation in lot configuration and shape. Building placement on lots and setbacks are varied, with the average of the distance between adjacent homes ranging from 24 feet to 89 feet. The floor area of homes ranges from 3,570 square feet to 5,474 square feet and home heights range from 18.5 feet to 33 feet. As shown on Exhibit 2,

Architectural Plans, each home would be custom designed with unique massing, floor plans, elevations, roof design, and exterior materials and colors.

Design Guideline RH1.4 calls for homes to be clustered if doing so will maximize the amount of preserved open space and better maintain the predominantly natural character of the hillside. The proposed project would comply with this guideline by locating development in the southwest corner of the site and preserving 15.4 acres (64 percent of the project site) as publicly-visible permanent open space.

The Design Guidelines call for new subdivisions to minimize the visibility of new streets from scenic corridors (RH2.1), locate new streets to follow the natural contours of the land (RH2.2), and minimize the width of new streets (RH2.4). As shown in the project grading plan, the new street is generally perpendicular to the site contour lines, except where necessary to intersect with Camino Pablo at a right angle. As demonstrated in the photosimulation and 3D model, the majority of the length of the new street would not be visible from Camino Pablo as it will be screened by landscaping and homes on the downhill lots. The new street would be 36 feet in width, the minimum required by Section 98-4.002 in Town of Moraga Ordinance No. 57.

Design Guideline RH3.4 calls for hillside homes to exhibit a stepped design that follows the natural terrain and does not stand out vertically from the hillside. Uphill lots 1 through 6 feature a spit pads so that homes would appear to be built part way into the hillside with a height that appears lower than actual height when viewed from Camino Pablo. Downhill lots 11,12, 13 also feature a split pad design to minimize the visual prominence of homes when viewed from Camino Pablo.

Design Guideline RH4.5 states that building designs should incorporate techniques to effectively reduce the appearance of mass, bulk and volume where visible from a public place or neighboring property. As described above, the proposed project would feature split pad designs to minimize the appearance of mass when viewed from Camino Pablo. The split pad design would give the impression of second stories stepped back from the front of the home. On uphill lots, ground level floor area is built into the hillside, reducing visible building volume. Homes generally have a horizontal profile oriented parallel to the natural site contours. Building materials and colors contribute to a natural appearance that blend into the natural setting.

Design Guideline RH6.1 calls for landscaping to maintain the natural appearance of the hillside, blend structures with the natural setting, and screen structures from public and private views. As demonstrated in the 3D model and photosimulations, landscaping along the Camino Pablo frontage will provide appropriately filtered views of homes with naturalistic clusters that avoid a linear appearance. Deciduous trees below evergreen trees will provide year round screening of the homes. Trees and shrubs on lots will complement the homes and maintain some views of the hillside above the up-slope homes.

In addition to project conformance with applicable design guidelines, a visual impact assessment should consider the visual quality of a scene and the degree to which the public values a particular viewshed. A visual impact should also consider the social relationship of the impact. For example, a visual change to the environment may be considered significant when viewed from a public gathering place, such as a public park or beach. That same visual change could be considered less than significant when viewed from a longer distance by motorists on a highway. The of a visual change is another important consideration. For example, the visual effect of constructing a residential subdivision adjacent to an existing neighborhood is very different from the effect the same subdivision would have if it were constructed in the context of an entirely undeveloped environment.

All of these considerations are relevant to the evaluation of the visual impacts of the proposed Camino Pablo subdivision. On the one hand, the project would convert open space, which is highly valued by the community, as demonstrated by the Moraga Open Space Ordinance, to another use, replacing approximately 8.0 acres of open space with single-family homes, landscaping, and an access street. On the other hand, the site is already flanked on the south, west, and northwest by residential development of about the same density as that proposed. The project would thus be similar to infill development, and would function to unify the isolated Sky View Subdivision to the south with the larger subdivision to the northwest.

Aside from the few private residences with direct views of the site, the majority of viewers that would be affected by the visual changes introduced by the project would consist of motorists traveling along Camino Pablo, most of whom would be traveling to/from the Sky View Subdivision, to/from Rancho Laguna Park, located just to the south of the Sky View Subdivision, or turning into or out of Tharp Drive. A smaller number of viewers would be pedestrians walking along Camino Pablo or Tharp Drive, who would have a greater period of exposure due to their slower travel speed. They would also be freer to focus on the hillside views than driving motorists, who must focus on the roadway. While the period of exposure would be brief for motorists, it can be presumed that most of these viewers would be local residents who would experience the view along Camino Pablo on a regular and frequent basis.

With passing motorists comprising the greatest number of affected viewers of the changed conditions at the project site, the visual impact to these viewers would not constitute a substantial adverse effect. The motorists would be passing quickly by the site, and the view of the site would not be the focus of their attention. The changes would be consistent and compatible with existing surrounding development and they would not be sweeping in scope. Much of the project site's frontage along Camino Pablo and Sanders Ranch Road would remain unchanged, as would be majority of the hillside rising behind the proposed subdivision. The majority of the scenic qualities of the project site would be retained after completion of the project.

These conclusions would also apply to the smaller number of pedestrian viewers who would pass by or near the site, notwithstanding the fact that they would experience more sustained views of the site. While street-level views of the site are pleasant, they do not constitute a particularly high quality scenic vista. The most scenic component of the site—the rising hillsides—would remain unchanged. While the changes to the lower elevations of the southern end of the site would be transformed, this area would be developed with attractively designed and articulated homes surrounded by appealing landscaping. And as previously noted, the homes would be substantially screened by the proposed trees and other landscaping. These changes would not comprise a substantial adverse change. Therefore, for all of the foregoing considerations, the project would have a *less-than-significant impact* on a scenic vista.

		Potentially Significant Impact	Less-Than- Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
b)	Substantially damage scenic resources, including but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?				\boxtimes

<u>Explanation</u>: There are no State-designated scenic highways in the vicinity of the project site.² Furthermore, there are no trees, rock outcroppings, or historic buildings on the project site. Therefore, the project would have no effect on scenic resources.

	Potentially Significant Impact	Less-Than- Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
c) Substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from publicly accessible vantage points.) If the project is in an urban area, would the project conflict with applicable zoning and other regulations governing scenic quality?			X	

Explanation: The description and analysis presented above in Section I(a) is equally applicable to the consideration of the project's potential impact on the visual quality of the project site and its surroundings. As noted in that discussion, the project site is currently undeveloped open space grazing land covered with non-native grasses and weeds, located on the flanks of a large hillside that rises up from Moraga Valley. The valley floor has been previously developed with single-family residential neighborhoods and an elementary school.

The project site is aesthetically appealing due to its natural state and the hilly topography. The upper hillsides provide the greatest degree of visual appeal, and they would remain unchanged following implementation of the proposed project. As illustrated in the existing views represented on Figures AES-3 through AES-5, the up-close views of the area proposed for development have less inherent appeal, being comprised of embankments covered by weedy grasses and areas of disturbed soil.

In the present case, the salient question is whether the project would *substantially degrade the existing visual character or quality of the site and its surroundings*. As discussed in more detail in Section I(a), the project would develop the lower elevations of the southern end of the site with attractively designed single-family homes with articulated massing to integrate with the site's terrain contours. The homes have been custom-designed, each having its own unique aesthetic. The homes and the proposed grading of the site have been designed to give the homes a low profile

² California Department of Transportation, Officially Designated State Scenic Highways, accessed October 12, 2015 at: <u>http://www.dot.ca.gov/hq/LandArch/scenic/schwy.htm</u>.

on the site despite their large sizes; they would be stepped into the hillside. The home sites and public rights-of-way would be landscaped with ornamental trees and other landscaping consistent and compatible with that found in the adjoining residential neighborhoods.

In addition, the project would be subject to Design Review approval by the Design Review Board and would be required to comply with the applicable provisions of the *Town of Moraga Design Guidelines*, which contain many specific requirements intended to minimize the visual impacts of new development, protect ridgelines and hillside areas, complement existing landscaping in the Town, ensure that the scale of new development is compatible with adjacent neighborhoods, and much more. These include guidelines governing the retention of natural topographic features and scenic qualities through sensitive site planning, architectural design, and landscaping. Furthermore, as discussed in more detail in Section I(a), the project would be required to demonstrate conformance with the design guidelines pertaining to scenic corridors, as Camino Pablo is a designated Scenic Corridor.

More than half the site would be preserved as permanent open space, including the upper hillsides that are most visible from offsite locations. While the developed area would be substantially transformed from grassland to residential neighborhood, the development would be similar to and compatible with the existing residential development located immediately to the south and west of the site. These changes would not constitute a substantial degradation of the existing visual quality of the site or its surroundings. In some respects, the addition of many trees to the site, along with other landscaping, would improve the aesthetics of the currently barren hillside. Therefore, this would be a *less-than-significant impact*. Also see Section I(a) for additional discussion of this impact.

		Potentially Significant Impact	Less-Than- Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
d)	Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?			X	

<u>Explanation</u>: The proposed project would not result in the introduction of a substantial source of new glare. The proposed homes would not be covered in reflective surfaces and the amount of fenestration would be typical to that common in residential developments. While large concentrations of parked cars can provide new sources of daytime glare on sunny days, all of the homes would have enclosed (mostly three-car) garages, and there would not be a significant concentration of parked cars anywhere on the site. The introduction of numerous trees throughout the site and new landscaping along Camino Pablo would further limit any emanation of glare from the site. Given the minimal amounts of glare that could be created by the project, the project would have a negligible glare effect on offsite properties.

The project would introduce new nighttime light sources from street lights and from interior and exterior lighting of the proposed homes. However, nighttime lighting of this nature is contained by window coverings, fixture shades, and intervening building surfaces and landscaping, and does not create significant nighttime glare. This type of lighting is also an inherent and widely accepted aspect of any type of occupied human development.

Both the *Moraga 2002 General Plan* and the *Town of Moraga Design Guidelines* contain guidelines for exterior lighting of new development. In general, lighting must be related to the design of the structure and must be directed inward and downward such that it does not spill onto adjacent residential properties. The General Plan calls for pedestrian-oriented lighting within scenic corridors. At the time of this environmental review, specific lighting plans had not yet been developed for the project. However, as previously noted, the project will require Design Review approval by the Design Review Board, which will ensure that the project conforms with the lighting guidelines set forth in the General Plan and the *Town of Moraga Design Guidelines*.

Given that the amount of new development proposed is limited and it would consist of singlefamily residential development, which is not typically associated with substantial amounts of nighttime lighting or daytime glare, the project's light and glare impacts would be *less than significant*.

II. AGRICULTURAL RESOURCES — In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Land Evaluation and Site Assessment Model (1997) prepared by the California Dept. of Conservation as an optional model to use in assessing impacts on agriculture and farmland. In determining whether impacts to forest resources, including timberland, are significant environmental effects, lead agencies may refer to information compiled by the California Department of Forestry and Fire Protection regarding the State's inventory of forest land, including the Forest and Range Assessment project and the Forestry Legacy Assessment project, and forest carbon measurement methodology provided in Forest Protocols adopted by the California Air Resources Board. Would the project:

	Potentially Significant Impact	Less-Than- Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?				X

<u>Explanation</u>: The project site is designated "Grazing Land" on the maps prepared pursuant to the Farmland Mapping and Monitoring Program (FMMP) by the Department of Conservation (DOC), a department of the California Resources Agency.³ The DOC updates the maps every two years; the most recent map was prepared in 2016 and published in 2018. Since the project site does not contain any Prime Farmland, Unique Farmland, or Farmland of Statewide Importance, there is no potential for conversion of these types of farmlands and no impact.

³ California Department of Conservation, Division of Land Resource Protection, Farmland Mapping and Monitoring Program, "Contra Costa County Important Farmland 2016" (map), August 2018.

		Potentially Significant Impact	Less-Than- Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
b) (Conflict with existing zoning for agricultural use, or a Williamson Act contract?			X	

Explanation: The project property is not under a Williamson Act contract. Although the project property is currently zoned by Contra Costa County for agricultural use, the proposed project would include annexation into the Town of Moraga and rezoning of the site to open space and low-density residential use. This zoning would be consistent and compatible with the existing zoning for the residential properties located immediately to the south and west of the project site. The project is also consistent with Moraga General Plan land use designations for the property, which are 3-DUA (Residential, 3 Dwelling Units Per Acre) and OS (Open Space). As described in more detail in the project description, the proposed subdivision would generally be within the area designated 3-DUA and the portion of the site that would remain undeveloped is within the area designated OS. This area would be permanently protected with a deed restriction, and would continue to be used for cattle grazing, consistent with its current use. Cattle grazing would also continue on the adjacent property to the east, which is land owned by the East Bay Municipal Utility District (EBMUD) that is leased to the Carr family for cattle grazing. The proposed clustering of the residential development adjacent to the existing Sky View residential subdivision to the south would support continued agricultural activities on project Parcel A and on the adjacent property.

The majority of the project property would be rezoned to Open Space, which would be consistent and compatible with ongoing agricultural grazing of the site. While approximately 6.15 acres of the 23.90-acre site would be rezoned from agricultural use to residential use, the proposed project would not conflict with the agricultural zoning or agricultural use of the adjoining property to the east, and it would be compatible with the existing residential uses to the west and south. The proposed rezoning would therefore have a *less-than-significant impact* on zoning for agricultural use.

		Potentially Significant Impact	Less-Than- Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
<i>c)</i>	Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code Section 12220(g)), timberland (as defined in Public Resources Code Section 4526), or timberland zoned Timberland Production (as defined by Government Code Section 51104(g))?				X

Explanation: Public Resources Code Section 12220(g) defines forest land as land that can support 10-percent native tree cover of any species, including hardwoods, under natural conditions, and that allows for management of one or more forest resources, including timber, aesthetics, fish and wildlife, biodiversity, water quality, recreation, and other public benefits. The project site is not

zoned as forest land and there is no forest land on the site. The proposed project would therefore have no impact on forest or timber land.

	Potentially Significant Impact	Less-Than- Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
d) Result in the loss of forest lar forest land to a non-forest use?	I or conversion of			\boxtimes

Explanation: As discussed above, there is no forest land on the project site as defined in Public Resources Code Section 12220(g). Therefore, there would be no impact due to the loss or conversion of forest land.

		Potentially Significant Impact	Less-Than- Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
e)	Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland to non-agricultural use or conversion of forest land to non-forest use?			X	

<u>Explanation</u>: The project would convert approximately 8.5 acres of grazing land to a nonagricultural use. This represents less than 0.0054 percent of the 157,701 acres of grazing land extant in Contra Costa County, based on the most recent data available from the DOC,⁴ and it represents approximately 0.00004 percent of the State's 19,228,787 acres devoted to grazing land in 2012.⁵ Dry grazing land does not have the same importance or economic value to the County and the State as irrigated Prime Farmland, Unique Farmland, or Farmland of Statewide Importance. The conversion of a minute portion of the available grazing land in Contra Costa County would not have a perceptible effect on the County's agricultural production.

The majority of the project site—17.75 acres—would be permanently protected as open space with a deed restriction, allowing for the continued use of this portion of the site for cattle grazing, which would also support grazing on the adjacent Carr Ranch. In 2016 this 604-acre ranch property was incorporated into the John Muir Land Trust (JMLT) program, which permanently protects watershed and other open space lands in the East Bay. The property was purchased by the JMLT and deeded to the East Bay Municipal Utility District (EBMUD) for watershed management. The Carr family now leases the property from EBMUD, which allows it to continue its long-standing grazing practices.

⁴ California Department of Conservation, Division of Land Resource Protection, Farmland Mapping and Monitoring Program, Table A-5: Contra Costa County 2014-2016 Land Use Conversion, Accessed April 15, 2019 at: <u>https://www.conservation.ca.gov/dlrp/fmmp/Pages/ContraCosta.aspx</u>.

⁵ California Department of Conservation, Division of Land Resource Protection, Farmland Mapping and Monitoring Program, *California Farmland Conversion Report 2015*, Table 3: California Farmland Conversion Summary, 2010-2012 Land Use Conversion, September 2015.

The project's protection of most of the site for continued cattle grazing would also be consistent with Contra Costa County's Right to Farm Ordinance, which recognizes that that when non-agricultural land uses occur next to agricultural operations, agricultural nuisance complaints can occur that may lead to pressures to cease or curtail their operations. The purpose of the ordinance is to clarify the circumstances under which agricultural operations may be considered a nuisance and to promote a good neighbor policy by requiring notification of purchasers and users of property adjacent to or near agricultural operations of the inherent potential problems associated with such purchase or residential use. As indicated by the ordinance, agricultural operations and processing that are conducted or maintained on agricultural land for commercial purposes, and in a manner consistent with proper and accepted customs and standards, are not to be considered a nuisance. Section 820-6.006 of the Contra Costa County Municipal Code requires property transfers to include a disclosure regarding the Right to Farm Ordinance and the vested right of existing adjacent agricultural operations to continue as a high priority and favored use. This notification of future project residents would provide further support to the ongoing use of the surrounding lands to the north and east for agricultural purposes.

For the reasons enumerate above, the project would have a *less-than-significant impact* due to the conversion of farmland to a non-agricultural use.

III. AIR QUALITY — *Where available, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the following determinations. Would the project:*

	Potentially Significant Impact	Less-Than- Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Conflict with or obstruct implementation of the applicable air quality plan?				\mathbf{X}

<u>Explanation</u>: The Bay Area Air Quality Management District's (BAAQMD) 2017 Bay Area Clean Air Plan/Regional Climate Protection Strategy (CAP/RCPS), adopted in April 2017, provides a roadmap for BAAQMD's efforts over the next few years to reduce air pollution and protect public health and the global climate.⁶ The CAP/RCPS includes the Bay Area's first-ever comprehensive RCPS, which identifies potential rules, control measures, and strategies that BAAQMD can pursue to reduce GHG in the Bay Area. Measures of the 2017 CAP addressing the transportation sector are in direct support of *Plan Bay Area 2040*, which was prepared by the Association of Bay Area Governments and the Metropolitan Transportation Commission and includes the region's Sustainable Communities Strategy and the 2040 Regional Transportation Plan. Highlights of the *2017 Clean Air Plan* control strategy include:

⁶ Bay Area Air Quality Management District, *Final 2017 Clean Air Plan*, April 19, 2017. Accessed April 4, 2019 at: <u>http://www.baaqmd.gov/~/media/files/planning-and-research/plans/2017-clean-air-plan/attachment-a_-proposed-final-cap-vol-1-pdf.pdf?la=en</u>

- Limit Combustion: Develop a region-wide strategy to improve fossil fuel combustion efficiency at industrial facilities, beginning with the three largest sources of industrial emissions: oil refineries, power plants, and cement plants.
- **Stop Methane Leaks:** Reduce methane emissions from landfills, and oil and natural gas production and distribution.
- **Reduce Exposure to Toxics:** Reduce emissions of toxic air contaminants by adopting more stringent limits and methods for evaluating toxic risks at existing and new facilities.
- Put a Price on Driving: Implement pricing measures to reduce travel demand.
- Advance Electric Vehicles: Accelerate the widespread adoption of electric vehicles.
- **Promote Clean Fuels:** Promote the use of clean fuels and low or zero carbon technologies in trucks and heavy-duty vehicles.
- Accelerate Low-Carbon Buildings: Expand the production of low-carbon, renewable energy by promoting on-site technologies such as rooftop solar and ground-source heat pumps.
- **Support More Energy Choices:** Support of community choice energy programs throughout the Bay Area.
- Make Buildings More Efficient: Promote energy efficiency in both new and existing buildings.
- Make Space and Water Heating Cleaner: Promote the switch from natural gas to electricity for space and water heating in Bay Area buildings.

When a public agency contemplates approving a project where an air quality plan consistency determination is required, BAAQMD recommends that the agency analyze the project with respect to the following questions: (1) Does the project support the primary goals of the air quality plan; (2) Does the project include applicable control measures from the air quality plan; and (3) Does the project disrupt or hinder implementation of any 2017 CAP control measures? If the first two questions are concluded in the affirmative and the third question concluded in the negative, the BAAQMD considers the project consistent with air quality plans prepared for the Bay Area.

Any project that would not support the 2017 CAP goals would not be considered consistent with the 2010 CAP. The recommended measure for determining project support of these goals is consistency with BAAQMD CEQA thresholds of significance. As discussed in Sections III(b) through (d), below, the proposed project would not exceed the BAAQMD significance thresholds with incorporation of standard construction mitigation measures; therefore, the proposed project would support the primary goals of the 2017 CAP.

To address the second question—whether the project incorporates all feasible control measures in the air quality plan—the 85 control measures (not including 11 Further Study Measures) included in the 2017 CAP control strategy were reviewed to determine relevance to the proposed project. They include 40 measures for stationary and area sources that are not applicable to the proposed project. Most of the mobile source measures pertain to on-road heavy-duty vehicles, vehicle fleets, or recreational vehicles, and are similarly inapplicable to the project.

The CAP includes 23 transportation control measures that include improvements to public transit and a variety of programs to reduce traffic, such as employer trip-reduction programs, promotion of ride sharing, expansion of bicycle facilities, congestion pricing on bridges and toll roads, market-rate pricing of parking, educational outreach, and more. None of these measures would be directly applicable to the project. One measure (TR22) pertains to construction and farming equipment, but it requires implementation by the BAAQMD, calling for financial and other incentives for early deployment of electric vehicles and to retrofit or upgrade diesel engines, which is beyond the scope of the proposed project. Similarly, none of the energy or building control measures would pertain to the project. However, the project would include the introduction of new landscape trees along the Camino Pablo frontage of the site and along the proposed access street, which would further BAAQMD's goal set forth in control measure NW2, which encourages urban tree planting. Therefore, the project would be consistent with the control measures presented in the 2017 CAP. Additionally, it would not disrupt or hinder implementation of any 2017 CAP control measures. Therefore, the proposed project would conflict with or obstruct implementation of the applicable air quality plan.

	Potentially Significant Impact	Less-Than- Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
b) Result in a cumulatively considerable net increase of any criteria pollutant for which the region is non- attainment under an applicable federal or state ambient air quality standard?		X		

<u>Explanation</u>: Analyzed air quality pollutants include: carbon monoxide (CO), reactive organic gases (ROG), nitrogen oxides (NO_x), sulfur dioxide (SO₂), particulate matter equal to or less than 10 micrometers in diameter (coarse particulates or PM_{10}), and particulate matter equal to or less than 2.5 micrometers in diameter (fine particulates or $PM_{2.5}$). Diesel particulate matter (DPM) is also a concern with regard to health risk.

The air quality analysis is based on the air quality impact assessment guidelines adopted by the Bay Area Air Quality Management District (BAAQMD) in June 2010 and updated in May 2011, May 2012, and May 2017.⁷

Project Construction Impacts

Construction activities for any sizeable project have the potential to result in short-term but significant adverse air quality impacts. BAAQMD's *CEQA Air Quality Guidelines* establish new thresholds of significance for construction emissions of 54 pounds per day (pounds/day) for ROG, $PM_{2.5}$, and NO_x , and 82 pounds/day for PM_{10} . These are the same thresholds applicable to operational emissions. The PM_{10} and $PM_{2.5}$ thresholds apply to exhaust emissions only, not ground disturbance or fugitive dust. The CalEEMod (California Emissions Estimator Model Version 2016.2.2)⁸ was used to quantify proposed project construction emissions of criteria pollutants. The

⁷ Bay Area Air Quality Management District (BAAQMD), California Environmental Quality Act Air Quality Guidelines, May 2017.

⁸ California Air Resources Board, *California Emissions Estimator Model User's Guide*, November 9, 2017.

proposed project includes construction of 13 single-family homes with an average size of 4,483 square feet on approximately 8.5 acres with an average lot size of 22,367 square feet. The proposed project is expected to involve the movement of approximately 61,800 cubic yards of soil material as a result of contour grading, but grading would largely be balanced on site. In the event of a small imbalance, export or import of fill will be secured on the adjoining Carr property, and no hauling on public streets would be required. The grading and site preparation activities are expected to take approximately 19 months, commencing in 2022. The proposed project includes construction of 13 single-family homes with an average size of 3,500 square feet on approximately 8 acres.

Table AQ-1, based on the CalEEMod results presented in Appendix A, provides the estimated short-term unmitigated construction emissions that would be associated with the proposed project and compares those emissions to the BAAQMD's significance thresholds for construction-related emissions. The construction emissions inventory is based on conservative assumptions associated with the construction duration, intensity of equipment usage, and type/amount of equipment. Therefore, actual construction emissions are likely to be less than the estimated values. As shown in Table AQ-1, criteria air pollutant emissions from construction activities would be well under the BAAQMD significance thresholds, even with the conservative assumptions. The construction phases (i.e., site preparation, grading, building construction, paving, etc.) are sequential (i.e., do not generally occur simultaneously). Thus, the average daily construction emissions were determined as the total construction emissions divided by the number of construction days and then compared to the BAAQMD significance thresholds.

Table AQ-1

Emission Source	ROG	NO _x	PM 10	PM2.5	СО
Daily Construction Emissions	4.27	23.9	1.14	1.07	18.5
Significance Thresholds	54	54	82	54	
Significant Impact?	No	No	No	No	No

Estimated Unmitigated Average Daily Construction Emissions (pounds)

Source: CalEEMod Version 2016.2.2

BAAQMD recommends implementation of the District's Basic Construction Mitigation Measures for all projects, whether or not construction-related emissions would exceed applicable thresholds of significance. The BAAQMD Basic Construction Mitigation Measures are listed in Table 8-2 of the BAAQMD *CEQA Air Quality Guidelines*. Therefore, although the proposed project would be well under the BAAQMD significance thresholds and, accordingly, the project is not expected to generate substantial construction-phase emissions, absent implementation of the BAAQMD's Basic Construction Mitigation Measures, the project's effects of construction-generated criteria pollutants would be considered a *potentially significant impact*. Implementation of the controls listed in Mitigation Measure AQ-1, which incorporates the Basic Construction Mitigation Measures, would reduce the project's construction-related air quality impacts to a less-thansignificant level. **Mitigation Measure AQ-1:** The project applicant shall require the construction contractor to reduce the severity of project construction fugitive dust and combustion exhaust impacts by complying with the following control measures:

- All exposed surfaces (e.g., parking areas, staging areas, soil piles, graded areas, and unpaved access roads) shall be watered two times per day.
- All haul trucks transporting soil, sand, or other loose material off-site shall be covered.
- All visible mud or dirt track-out onto adjacent public roads shall be removed using wet power vacuum street sweepers at least once per day. The use of dry power sweeping is prohibited.
- All vehicle speeds on unpaved roads shall be limited to 15 mph.
- All roadways, driveways, and sidewalks to be paved shall be completed as soon as possible. Building pads shall be laid as soon as possible after grading unless seeding or soil binders are used.
- Idling times shall be minimized either by shutting equipment off when not in use or reducing the maximum idling time to 5 minutes (as required by the California airborne toxics control measure Title 13, Section 2485 of California Code of Regulations [CCR]). Clear signage shall be provided for construction workers at all access points.
- All construction equipment shall be maintained and properly tuned in accordance with the manufacturer's specifications. All equipment shall be checked by a certified visible emissions evaluator.
- Post a publicly visible sign with the telephone number and person to contact at the Lead Agency regarding dust complaints. This person shall respond and take corrective action within 48 hours. The BAAQMD's phone number shall also be visible to ensure compliance with applicable regulations.

Table AQ-2 provides the estimated short-term construction emissions that would occur during project construction, factoring in the implementation of Mitigation Measure AQ-1 (as well as Mitigation Measure AQ-2, which is required as a result of the health impact analysis presented in Section III-d, below).

Table AQ-2

Emission Source	ROG	NO _x	PM ₁₀	PM _{2.5}	CO
Daily Construction Emissions	3.17	26.9	0.43	0.43	18.5
Significance Thresholds	54	54	82	54	
Significant Impact?	No	No	No	No	No

Estimated Mitigated Average Daily Construction Emissions (pounds)

Source: CalEEMod Version 2013.2.2

Based on the CalEEMod results for proposed project construction and using standard fuel consumption estimates, construction activities would require 36,450 gallons of diesel fuel and 5,830 gallons of gasoline.⁹ This includes all off-road construction equipment, hauling, vendor, and worker trips over a 320-working-day construction period. For the finishing phase of construction, some electricity may be used (e.g., for power tools and work lighting). While this electricity usage cannot be quantified at this time, it is anticipated to be relatively minor compared to normal building operations. When not in use, electric equipment would be powered off so as to avoid unnecessary energy consumption. Natural gas would not be used during construction.

Project Operational Impacts

The proposed project would be located in a region that experiences occasional violations of adopted standards for ozone, PM_{10} , and $PM_{2.5}$. Operation of new development therefore has the potential to contribute to these violations. Operational air emissions from the project would be generated primarily from autos driven by residents and visitors, from delivery and service trucks, and from building energy usage. Emissions could also be generated by lawn mowers, gas-powered leaf blowers, barbeques, fireplaces, and other common residential sources. Evaporative emissions from architectural coatings and consumer cleaning/maintenance products are other typical sources of emissions from residential uses.

The air quality analysis follows the methodology presented in the BAAQMD *CEQA Air Quality Guidelines* to evaluate the potential impacts. The thresholds of significance applied to assess project-level operational air quality impacts are:

- Average daily operational emissions of 54 pounds per day for ROG, $PM_{2.5}$, and NO_x , and 82 pounds per day for PM_{10} ; or
- Annual emissions of 10 tons per year of ROG, NO_x, or PM_{2.5} or 15 tons per year of PM₁₀.

⁹ Fuel usage is estimated using the CalEEMod output for CO₂, and a kgCO₂/gallon conversion factor, as cited in the U.S. Energy Information Administration Voluntary Reporting of Greenhouse Gases Program, Accessed April 4, 2019 at: <u>https://www.epa.gov/sites/production/files/2015-11/documents/emission-factors 2011.pdf.</u>

The CalEEMod was used to estimate emissions that would be associated with motor vehicle use, space and water heating, and landscape maintenance emissions expected to occur after construction of the project is complete and operational. The project land use types and size and other project-specific information (i.e., 13 single-family homes with an average size of 4,483 square feet for a total of 61,850 square feet on approximately 8.5 acres) were input into the model.¹⁰ Unless otherwise noted, the CalEEMod defaults for Contra Costa County were used. CalEEMod provides emissions for transportation, area sources,¹¹ electricity consumption, natural gas combustion, electricity usage associated with water usage and wastewater discharge, and solid waste land filling and transport. Fireplaces, if proposed for installation in the proposed project, must use natural gas/propane only.¹² The applicant would also use low-ROG coatings and finishes, as required by the BAAQMD.¹³

The estimated annual vehicle miles traveled would be 357,245 miles, requiring approximately 16,090 gallons of gasoline. Annual electricity and natural gas consumption were calculated using the demand factors provided in CalEEMod. The proposed project's residences lighting energy consumption was estimated to be approximately 66,580 kilowatt-hours (kWh) of electricity per year and natural gas consumption was estimated to be approximately 0.52 billion British Thermal Units (BTU) per year.

The maximum daily trip rates used in the air quality analysis to determine the maximum daily operational emissions were 160 daily trips (or 12.31 trips per unit) based on the Fehr & Peers *Camino Pablo Subdivision Transportation Analysis*, dated November 17, 2016 and the Institute of Transportation Engineers' *Trip Generation Manual* (9th Edition). Estimated maximum daily and annual operational emissions that would be associated with the proposed project are presented in Tables AQ-3 and AQ-4, respectively, and are compared to BAAQMD's thresholds of significance. As indicated in Tables AQ-3 and AQ-4, the estimated proposed project operational emissions would be well below the BAAQMD's significance thresholds. Therefore, the project would have a *less-than-significant operational impact* on air quality.

The RCH Group air quality consultant revisited their analysis in June 2020 to address project changes since 2015 that included the addition of six accessory dwelling units (ADUs) on Lots 1, 2, 4, 5, 6, and 10.¹⁴ RCH Group found that while the revised proposed project would potentially increase the operational emissions compared to the original proposed project, the addition of the six ADUs would not materially alter the conclusions of the air quality analysis summarized in this

¹⁰ Although the air quality modeling did not include the six accessory dwelling units (ADUs) that were added to the project subsequent to the completion of the air modeling, the RCH Group air quality consultant confirmed that the addition of the six ADUs would not materially alter the conclusions of the air quality analysis summarized in this section.

¹¹ Includes operational emissions associated with hearths (natural gas/propane fireplaces), consumer products (various solvents used in non-industrial applications, which typically include cleaning supplies, kitchen aerosols, and toiletries), area architectural coatings, and landscaping equipment.

¹² On July 9, 2008, the BAAQMD adopted Regulation 6, Rule 3: Wood-Burning Devices to reduce the harmful emissions that come from wood smoke. The Rule requires cleaner-burning (e.g., natural gas) USEPA-certified stoves and inserts in new construction.

¹³ Emissions of volatile organic compounds (VOC as ROG) due to the use of architectural coatings are regulated by the limits contained in Regulation 8: Organic Compounds, Rule 3: Architectural Coatings (Rule 8-3). Rule 8-3 was recently revised to include more stringent VOC limit requirements. The revised VOC architectural coating limits, which became effective on January 1, 2011, are projected to result in a 32-percent reduction of VOC emissions associated with architectural coating applications in the Bay Area. The applicant shall use paints and solvents with a VOC content of 100 grams per liter or less for interior and 150 grams per liter or less for exterior surfaces.

¹⁴ RCH Group, *Moraga Camino Pablo Air Quality* [memo], June 16, 2020.

section and the operational emissions impacts would continue to be less than significant. The conclusions about project-generated noise presented above remain valid.

Emission Category	ROG	NO _x	PM 10	PM2.5	СО
Area	1.55	0.26	0.03	0.03	1.05
Energy	0.02	0.13	< 0.01	0.01	0.06
Mobile	0.28	1.07	0.77	0.21	2.75
Total Daily Emissions	1.85	1.46	0.80	0.25	3.86
Significance Thresholds	54	54	82	54	
Significant Impact?	No	No	No	No	No

Table AQ-3Estimated Maximum Daily Operational Emissions (pounds)

Source: CalEEMod Version 2013.2.2

Table AQ-4 Estimated Annual Average Daily Operational Emissions (tons)

Emission Category	ROG	NO _x	PM ₁₀	PM2.5	CO
Area	0.28	<0.01	<0.01	<0.01	0.09
Energy	< 0.01	0.02	<0.01	<0.01	0.01
Mobile	0.04	0.19	0.13	0.04	0.47
Total Annual Emissions	0.32	0.22	0.14	0.04	0.57
Significance Thresholds	10	10	15	10	
Significant Impact?	No	No	No	No	No

Source: CalEEMod Version 2013.2.2

Cumulative Impacts

Construction emissions from the project would result in the generation of air pollutants in the project area and in the immediate vicinity, and would incrementally add to cumulative emissions. With implementation of the mitigation identified for the project construction emissions, the cumulative impact from construction would also be reduced to a less-than-significant level.

The project's ongoing operations would also add to ozone precursor emissions on a regional basis and would incrementally add to PM₁₀, PM_{2.5}, and CO emissions on a local basis. As noted in BAAQMD's CEQA Air Quality Guidelines, air pollution is, by its very nature, largely a cumulative impact. No single project is sufficient in size, by itself, to result in nonattainment of ambient air quality standards. Instead, a project's individual emissions contribute to existing cumulatively significant adverse air quality impacts. According to the *CEQA Air Quality Guidelines*, if a project's contribution to the cumulative impact is considerable, then the project's impact on air quality would be considered significant. The *CEQA Air Quality Guidelines* state that if a project would exceed the identified significance thresholds, its emissions would be cumulatively considerable. Conversely, if a project is determined to have less-than-significant project-level emissions, then it would also have a *less-than-significant* cumulative air quality impact.

The operational impacts are effectively project-level as well as cumulative impacts. As discussed in the preceding subsection, operation of the proposed project would have a less-than-significant impact on air quality. Therefore, the project would also have a *less-than-significant cumulative impact* on air quality.

		Potentially Significant Impact	Less-Than- Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
c)	Expose sensitive receptors to substantial pollutant concentrations?		\boxtimes		

Explanation: Health risk from exposure to air pollutants is evaluated based on the potential for exposure to PM_{2.5} and toxic air contaminants (TACs), the two emission types that pose the most significant threat to human health.¹⁵ According to BAAQMD, more than 80 percent of the inhalation cancer risk from TACs in the Bay Area is from diesel engine emissions.¹⁶ TACs are a set of airborne pollutants that may pose a present or potential hazard to human health, and are separated into carcinogens and non-carcinogens. State and local regulatory programs are intended to limit exposure to TACs and the associated health risk. Both TACs and diesel particulate matter (DPM) are emitted by trucks, cars, construction equipment, and other mobile sources. They are

¹⁵ Toxic air contaminants (TACs) are a broad class of compounds known to cause morbidity or mortality. TACs are found in ambient air, especially in urban areas, and are caused by industry, agriculture, fuel combustion, and commercial operations (e.g., gasoline service stations, dry cleaners). TACs are typically found in low concentrations, even near their source (e.g., diesel particulate matter near a freeway). Because chronic exposure can result in adverse health effects, TACs are regulated at the regional, State, and federal level.

¹⁶ Bay Area Air Quality Management District (BAAQMD), California Environmental Quality Act Air Quality Guidelines, pages 5-3, May 2017.

also emitted by stationary sources that require permitting by the BAAQMD, which requires source controls.

Project impacts related to increased health risk can occur either by introducing a new sensitive receptor, such as a residential use, in proximity to an existing source of TACs or by introducing a new source of TACs, such as construction activities, with the potential to adversely affect existing sensitive receptors in the project vicinity. The BAAQMD recommends using a 1,000-foot radius around a project site for purposes of identifying community health risk from siting a new sensitive receptor or a new source of TACs. A lead agency should enlarge the radius if an unusually large source or sources of hazardous emissions that might affect a project lies outside the 1,000-foot radius.

The proposed project would create a new short-term emission source of DPM due to construction activities.¹⁷ Studies have demonstrated that DPM from diesel-fueled engines is a human carcinogen and that chronic (long-term) inhalation exposure to DPM poses a chronic health risk. However, construction activities associated with the proposed project would be short-term in duration (6 to 12 months) and health impacts would be expected to be low. Nevertheless, there are existing sensitive receptors (residences) located within 1,000 feet of the project site and these residences are located to the east of the project which is generally downwind given the southwesterly wind direction. Also, recent changes to the California Office of Environmental Health Hazard Assessment (OEHHA)'s Air Toxics Hot Spots Program Guidance Manual for Preparation of Health Risk Assessments¹⁸ incorporate age-sensitivity factors reflecting the greater sensitivity of infants and small children to air pollutants. Therefore, based on professional judgement and in order to be conservative (overestimate), it is assumed that the unmitigated health impacts would be *potentially significant*. Implementation of Mitigation Measure AO-1 1 (Basic Construction Mitigation Measures) and Mitigation Measure AQ-2, which incorporates the Enhanced Construction Mitigation Measures, would reduce combustion emissions (approximately 60 percent lower PM_{2.5} emissions, as shown on Tables AQ-1 and AQ-2) such that health impacts on existing residence due to proposed project construction would be a less than significant impact on existing residential receptors with incorporation of the identified mitigation measures.

Mitigation Measure AQ-2: The project applicant shall require the construction contractor to reduce the severity of project construction combustion exhaust impacts by complying with the following control measures:

• Where access to alternative sources of power are available, portable diesel engines shall be prohibited; and

¹⁷ In August 1998, CARB identified particulate emissions from diesel-fueled engines as a toxic air contaminant. CARB developed the *Risk Reduction Plan to Reduce Particulate Matter Emissions from Diesel-Fueled Engines and Vehicles*. The document represents a proposal to reduce diesel particulate emissions, with the goal to reduce emissions and the associated health risk by 75 percent in 2010 and by 85 percent in 2020. The program aims to require the use of state-of-the-art catalyzed diesel particulate filters and ultra-low sulfur diesel fuel on diesel-fueled engines.

Diesel particulate matter (DPM) is the most complex of diesel emissions. Diesel particulates, as defined by most emission standards, are sampled from diluted and cooled exhaust gases. This definition includes both solid and liquid material that condenses during the dilution process. The basic fractions of DPM are elemental carbon; heavy hydrocarbons derived from the fuel and lubricating oil and hydrated sulfuric acid derived from the fuel sulfur. DPM contains a large portion of the polycyclic aromatic hydrocarbons found in diesel exhaust. Diesel particulates include small nuclei particles of diameters below 0.04 micrometers (μ m) and their agglomerates of diameters up to 1 μ m.

¹⁸ Office of Environmental Health Hazard Assessment, Air Toxics Hot Spots Program Guidance Manual for Preparation of Health Risk Assessments, March 6, 2015.

- Off-road construction equipment shall meet or exceed either CARB Tier 2 off-road emission standards, and
- Off-road construction equipment shall meet or exceed CARB Level 2 Verified Diesel Emissions Control Strategy. Acceptable options for reducing emissions include the use of late model engines, low-emission diesel products, alternative fuels, engine retrofit technology, after-treatment products, add-on devices such as particulate filters, and/or other options as such are available.

The proposed project would introduce new sensitive receptors to the project site.¹⁹ Sensitive receptors are people most susceptible to poor air quality, and include children, the elderly, the infirm, or others with medical conditions susceptible to poor air quality (e.g., asthma, bronchitis, chronic respiratory disease). Land uses that are generally considered to be sensitive receptors include residences of all types, schools and school yards, parks and playgrounds, daycare centers, nursing homes, and medical facilities.

The BAAQMD initiated the Community Air Risk Evaluation (CARE) program in 2004 to identify communities where significant sources of TACs were located in proximity to sensitive populations. The BAAQMD strongly recommends that impacted communities develop, adopt, and implement Community Risk Reduction Plans. Based on the latest CARE maps published by BAAQMD, the project site is not located in or near an identified Impacted Community.²⁰ The proposed project is adjacent to the Town of Moraga, which is not part of the seven CARE program impacted communities in the Bay Area. The health impacts in the Bay Area, as determined both by pollution levels and by existing health vulnerabilities in a community, are a cancer risk of approximately 160 cancers per million persons.²¹

The BAAQMD provides screening tools and recommended procedures for evaluating the potential health risk associated with proposed land use development.²² For new receptor projects, such as the proposed residential subdivision, lead agencies should review the risks from nearby roadways, freeways, and stationary sources. The BAAQMD's *CEQA Air Quality Guidelines* include standards and methods for determining the significance of cumulative health risk impacts. The method for determining cumulative health risk requires the tallying of health risk from permitted stationary sources, rail activities, and roadways in the vicinity of a proposed project (i.e., within a 1,000-foot radius), then adding the proposed project impacts due to construction and operations to determine whether the cumulative health risk thresholds are exceeded. These evaluations are described below.

¹⁹ As previously noted, in June 2010 the BAAQMD's adopted thresholds of significance were challenged in a lawsuit (California Building Industry Association v Bay Area Air Quality Management District). On December 15, 2015, the California Supreme Court (S213478) concluded that agencies subject to CEQA generally are not required to analyze the impact of existing environmental conditions on a project's future users or residents. Nevertheless, a qualitative analysis of the health impacts from existing sources on the proposed residents is presented in this Initial Study.

²⁰ Bay Area Air Quality Management District (BAAQMD), Community Air Risk Evaluation Program: Impacted Areas, accessed April 4, 2019 at: <u>http://www.baaqmd.gov/plans-and-climate/community-air-risk-evaluation-care-program</u>.

²¹ Bay Area Air Quality Management District, Improving Air Quality & Health in Bay Area Communities, Community Air Risk Program Retrospective & Path Forward (2004-2013), April 2014.

²²Bay Area Air Quality Management District (BAAQMD), Recommended Methods for Screening and Modeling Local Risks and Hazards, Version 3.0, May 2012.

Stationary Sources of TACs

BAAQMD has developed a geo-referenced database of permitted emissions sources throughout the San Francisco Bay Area, and has developed the *Stationary Source Risk & Hazard Analysis Tool* for estimating cumulative health risks from permitted sources.²³ Permitted sources of TACs include facilities such as oil refineries, gas stations, dry cleaners, crematories, landfills, wastewater treatment plants, hospitals, and coffee roasters, among many others. No permitted source is located within approximately 1,000 feet of the project site. The nearest identified source is located about 1.5 miles northwest of the project site. Therefore, there is little potential for future residents of the proposed project to be exposed to elevated TAC levels from this source.

Freeway, Roadway, and Railway Sources of TACs

BAAQMD has also developed a geo-referenced database of highways throughout the San Francisco Bay Area and has developed the *Highway Screening Analysis Tool* and *Rail Screening Analysis Tool* for estimating cumulative health risks from highways and rail activities. Highway 24 is considered a significant source of TACs and PM_{2.5}, but this freeway is approximately 5.5 miles north of the project site, and poses no health risk to the project. No rail activities are located within 1,000 feet of the project site.

Other major roadways are only considered to have a potential cancer risk or chronic health hazard risk if they have a traffic volume of at least 10,000 average annual daily traffic (AADT). Data collected by the Moraga Public Works Department in March 2013 determined that Camino Pablo had a daily traffic volume of 4,725 vehicles between Hodges Drive and Canyon Road. This stretch of Camino Pablo, which is more than one-half mile north of the project site, serves a much greater number of homes (easily four times as many) than the section between Tharp Drive and Hodges Drive (near the project site). The Fehr & Peers *Camino Pablo Subdivision Transportation Analysis*, dated November 17, 2016 determined that Camino Pablo north of Tharp Drive currently has a total of 1,170 AADT and would have 1,320 AADT in the future. Therefore, the traffic on Camino Pablo is well below the threshold of 10,000 AADT for posing a potential cancer risk or chronic health hazard risk.

Based on all of the foregoing considerations, there is no evidence that occupants of the proposed project would be exposed to a significant source of TACs or $PM_{2.5}$ or otherwise expose sensitive receptors to substantial pollutant concentrations. This would be a *less-than-significant health impact* on the future residents of the proposed homes.

²³ Bay Area Air Quality Management District (BAAQMD), *Stationary Source Screening Analysis Tool*, updated May 30, 2012.

		Potentially Significant Impact	Less-Than- Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
d)	Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?			X	

<u>Explanation</u>: Though offensive odors from stationary and mobile sources rarely cause any physical harm, they still remain unpleasant and can lead to public distress, generating citizen complaints to local governments. The occurrence and severity of odor impacts depend on the nature, frequency, and intensity of the source; wind speed and direction; and the sensitivity of receptors. Generally, odor emissions are highly dispersive, especially in areas with higher average wind speeds. However, odors disperse less quickly during inversions or during calm conditions, which hamper vertical mixing and dispersion.

The BAAQMD's significance criteria for odors are subjective and are based on the number of odor complaints generated by a project. Generally, the BAAQMD considers any project with the potential to frequently expose members of the public to objectionable odors to cause a significant impact. With respect to the proposed project, diesel-fueled construction equipment exhaust would generate some temporary odors curing project construction. However, these emissions typically dissipate quickly and would be unlikely to affect a substantial number of people. The project would not introduce a new operational source of objectionable odors to the area.

Odor impacts can also result from siting a new sensitive receptor near an existing odor source. Examples of land uses that have the potential to generate considerable odors include but are not limited to wastewater treatment plants, landfills, refineries, and chemical plants. The BAAQMD recommends odor screening distances for a variety of land uses in the BAAQMD *CEQA Air Quality Guidelines*. Projects that would site a new receptor farther than the applicable screening distance from an existing odor source would not likely result in a significant odor impact. The odor screening distances are not used as absolute screening criteria, rather as information to consider along with the odor parameters and complaint history. The odor screening distances for a sewage treatment plant, refinery, and chemical plant are 2 miles.²⁴ The proposed project is not within the odor screening distances for a sewage treatment plant, refinery, or other odor-producing sources. Therefore, odor impacts associated with the location of the proposed project would be less than significant.

²⁴ Bay Area Air Quality Management District, CEQA Air Quality Guidelines, Table 3-3: Odor Screening Distances, May 2017.

IV. BIOLOGICAL RESOURCES — Would the project:

	Potentially Significant Impact	Less-Than- Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
a) 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?		X		

<u>Explanation</u>: The information presented in Section IV is based on biological surveys and a number of reports prepared by Zentner and Zentner (Zentner).^{25 26, 27} At the request of the Town, the first two reports, prepared in 2014, as well as a jurisdictional wetland delineation discussed in Section IV(c), were independently peer reviewed by Wood Biological Consulting, Inc. (Wood Biological).²⁸ Zentner subsequently prepared the *Camino Pablo Special-Status Habitat and Species Analysis* report in October 2015 in response to the comments submitted by Wood Biological. All of these reports and the peer review by Wood Biological are presented in Appendix B.

Due to the passage of time since the original evaluations were performed, a new biological survey of the project property was conducted the biological consulting firm of Olberding Environmental, Inc. (Olberding) on April 18, 2019, the results of which are also reflected in this section.²⁹ In addition to conducting a general habitat and wildlife survey, Olberding Environmental performed a reconnaissance-level raptor survey and reconnaissance-level burrowing owl (*Athene cunicularia*) survey. Furthermore, Zentner (now Zentner Planning & Ecology) prepared an Alameda Whipsnake survey and a California Red-Legged Frog survey in October 2019.^{30, 31} These reports are also included in Appendix B.

Existing Habitat

The project site is dominated by grassland and non-native annual grassland vegetation, with a few small pockets of ruderal vegetation. Some native grass is present in a small strip (approximately 12 feet wide and 120 feet long) of native creeping wildrye (*Elymus triticoides*), located alongside Camino Pablo between the adjacent sidewalk and an existing fence-line that runs parallel to the

²⁵ Zentner and Zentner, Camino Pablo Special-Status Habitat and Species Analysis, Project 1004DPL, October 2015.

²⁶ Zentner and Zentner, Camino Pablo Property Biotic Resources Assessment, March 2014.

²⁷ Zentner and Zentner, Camino Pablo Special-Status Plant Species Assessment, Project 1004DPL, May 2014.

²⁸ Wood Biological Consulting, Inc., Biological Peer Review, South Camino Pablo Annexation Project, Moraga, August 27, 2015.

²⁹ Olberding Environmental, Inc., Biological Resources Analysis Report for the Camino Pablo Property, Contra Costa County, California, May 2019.

³⁰ Zentner Planning & Ecology, Camino Pablo Project, Alameda Whipsnake (Masticophis lateralis euryxanthus) Surveys, Project No. 1004, October 2019.

³¹ Zentner Planning & Ecology. Camino Pablo Project, California Red-Legged Frog (Rana draytonii) Non-Breeding Season Surveys, Project No. 1004, October 2019.

road approximately 15 feet east of the sidewalk. A few very small seasonal wetlands are also associated with seeps or gullies on the northern portion of the property.

The non-native annual grasses and forbs on the site are primarily composed of wild oats (*Avena fatua*), Italian ryegrass (*Festuca perennis*), soft chess brome (*Bromus hordeaceus*), ripgut brome (*Bromus diandrus*), with areas of bindweed (*Convolvulus arvensis*), red-stem filaree (*Erodium cicutarium*), creeping wildrye (*Elymus triticoides*), and rose clover (*Trifolium hirtum*). This grassland composition is characteristic of most of the grasslands in the region, the majority of which have been subjected to relatively heavy grazing since the Spanish first brought cattle into the area in the 1700's and have had a wide variety of grazing regimes since that period. Once established, these non-native grasses are very difficult to remove and their establishment has some broad ramifications to the habitat in general. One of the primary effects of annual grassland is on soil structure. Annual grasslands have dense, shallow roots that dry the upper soil zones, whereas the native perennial grasses have long, deep roots. While these deep roots helped hold the soils on California's steep slopes, the shallow-rooted annual grasses leave the soils, especially the upper layers vulnerable. This often leads to erosion, particularly slumps and gully erosion as is found on the project site, especially on the very steep west-facing slopes of the property.

A couple of slumps on the northern portion of the site contain small pockets of relatively steep north- or northwest-facing slopes. These older slump areas contain a scattering of native vegetation including primarily purple needlegrass (*Stipa pulchra*), creeping wildrye (*Elymus triticoides*), buttercup (*Ranunculus californicus*), common fiddleneck (*Amsinckia intermedia*), soap plant (*Chlorogalum pomeridianum*), and sun cup (*Taraxia ovate*).

A few small pockets of ruderal vegetation are also present on the project site in areas that have been relatively heavily disturbed by more recent slump or slide activity and areas where cattle tend to congregate, such as ridge tops. As shown on Figure BIO-1, the ruderal vegetation found in the slide and slump areas tends to be found in the uppermost portion of these areas, especially near adjacent property where the land use management is different than on the project site. The ruderal vegetation is dominated by black mustard (*Brassica nigra*) but also includes ryegrass, ripgut, wild oats, bristly ox-tongue (*Helminthotheca echioides*), Italian thistle (*Carduus pycnochephalus*), spring vetch (*Vicia sativa*), and summer mustard (*Hirschfeldia incana*). This assemblage also includes invasive exotics, i.e., non-native species that can invade and dominate habitats containing native species.

Two ephemeral drainage features are located on the western edge of the site, one about 250 feet south of Sanders Ranch Road and the other about 400 feet north of this roadway. Dominant vegetation within both drainages is consistent with the composition of the annual grassland on the rest of the site, and consists primarily of Italian rye grass, Mediterranean barley (*Hordeum marinum*), wild oat, creeping wildrye, and Ripgut brome. Other species observed include curly dock (*Rumex crispus*), milk thistle (*Silybum marianum*), filaree, and ribwort plantain (*Plantago lanceolata*). The southernmost drainage also had a single arroyo willow growing within the channel.

Based on biological surveys of the site, wildlife at the site appears limited to common suburban/rural species. Mammals would include coyote (*Canis latrans*), mule deer (*Odocoileus hemionus*), raccoon (*Procyon lotor*), striped skunk (*Mephitis mephitis*), and lagomorphs (rabbits) such as black-tailed jackrabbit (*Lepus californicus*). The coyotes and other predators, such as red-



Figure BIO-1

Existing Plant Communities and Wetlands on the Project Site

Source: Zentner and Zentner

tailed hawk (*Buteo jamaicensis*) and red-shouldered hawk (*Buteo lineatus*), prey on the small mammals that appear to be common on-site, including California vole (*Microtus californicus*) and deer mouse (*Peromyscus maniculatus*). Other birds commonly found in this type of grassland habitat include mourning dove (*Zenaida macroura*), western meadowlark (*Sturnella neglecta*), turkey vulture (*Cathartes aura*), killdeer (*Charadrius vociferous*), and American kestrel (*Falco sparverius*).

While there is no nesting habitat for most birds, including raptors, the grasslands do provide good foraging habitat for raptors such as white-tailed kite (*Elanus leucurus*), Cooper's hawk (*Accipiter cooperii*), loggerhead shrike (*Lanius ludovicianus*), American Kestrel, red-shouldered hawk, and, especially, red-tailed hawk. Common reptiles likely present include western fence lizard (*Sceloperus occidentalis*), southern alligator lizard (*Gerrhonotus multicarinatus*), gopher snake (*Pituophis melanoleucus*), and western rattlesnake (*Crotalus viridis*). In addition, there is habitat for ground-nesting birds such as the California horned lark (*Eremophila alpestris actia*), but excluding the burrowing owl (*Athene cunicularia*). There are no observations of burrowing owls within five miles of the project site and burrowing owls have not been observed on the project site during site surveys. Additionally, relatively few burrowing mammal burrows, including ground squirrel burrows that are favored by burrowing owls, were observed on the site. Therefore, it is unlikely that this species occurs on the project site. Ground-nesting birds were not observed on the site during surveys, but could move in prior to project construction.

As discussed in more detail in Section IV(c), there are also four small seasonal wetland areas in the northern portion of the site.

Special-Status Species

Special-status species are plants and animals that are legally protected under the California and Federal Endangered Species Acts (CESA and FESA, respectively) or other regulations, and species that are considered rare by the scientific community (for example, the California Native Plant Society (CNPS)). Special-status species are defined as:

- Plants and animals that are listed or proposed for listing as threatened or endangered under the CESA (Fish and Game Code §2050 et seq.; 14 CCR §670.1 et seq.) or the FESA (50 CFR 17.12 for plants; 50 CFR 17.11 for animals; various notices in the Federal Register [FR] for proposed species);
- Plants and animals that are candidates for possible future listing as threatened or endangered under the FESA (50 CFR 17; FR Vol. 64, No. 205, pages 57533-57547, October 25, 1999); and under the CESA (California Fish and Game Code §2068);
- Plants and animals that meet the definition of endangered, rare, or threatened under the California Environmental Quality Act (CEQA) (14 CCR §15380) that may include species not found on either State or Federal Endangered Species lists;
- Plants occurring on Lists 1A, 1B, 2, 3, and 4 of CNPS' Electronic Inventory (CNPS 2015). The California Department of Fish and Wildlife (CDFW) recognizes that Lists 1A, 1B, and 2 of the CNPS inventory contain plants that, in the majority of cases, would qualify for State listing, and CDFW requests their inclusion in EIRs. Plants occurring on CNPS Lists 3 and 4 are "plants about which more information is necessary," and "plants of limited distribution," respectively (CNPS 2015). Such plants may be included as special-status species on a case by case basis due to local significance or recent biological information;

- Migratory non-game birds of management concern listed by U.S. Fish and Wildlife Service (Migratory Non-game Birds of Management Concern in the United States: The 1995 list; Office of Migratory Bird Management; Washington D.C.; Sept. 1995);
- Animals that are designated as "species of special concern" by CDFW (2010);
- Animal species that are "fully protected" in California (Fish and Game Codes 3511, 4700, 5050, and 5515).

Zentner reviewed CDFW's California Natural Diversity Database (CNDDB) to identify recorded occurrences of special-status animal and plant species within 5 miles of the project site. Although no special-status plants or animals have been recorded on the project site, 19 plants and 12 wildlife species have been recorded within 5 miles of the site. They are listed in Tables BIO-1 and BIO-2, respectively, along with their habitat requirements and their potential to occur on the project site. Details on the characteristics and habitats of these species are provided in the biological assessment prepared by Zentner, included in Appendix B.

Table BIO-1

Special-Status Plant Species Occurrences Within 5 Miles of the Project Site

Common Name and <i>Scientific name</i>	Status**	General Habitat Description	Occurrence on the Project Site**			
Species Listed as Threatened or Endangered						
Pallid Manzanita Arctostaphylos pallida	FT, CE, CRPR 1B.1	Habitat: Broadleaved upland forest, Chaparral, Cismontane woodland, Closed-cone coniferous forest, Coastal scrub. <u>Elevation</u> : 185-465 meters. <u>Blooms</u> : Perennial shrub; December-March.	Absent. Habitat for this species is absent from the site.			
San Francisco popcorn-flower Plagiobothrys diffusus	CE, CRPR 1B.1	Habitat: Coastal prairie, Valley & foothill grassland. <u>Elevation</u> : 60-360 meters. <u>Blooms</u> : Annual herb; March-June.	Absent. The project site is outside the range for this species.			
Presidio clarkia Clarkia franciscana	FE, CE, CRPR 1B.1	Habitat: Coastal scrub, Ultramafic, Valley & foothill grassland. <u>Elevation</u> : 25-335 meters. <u>Blooms</u> : Annual herb; May-July.	Absent. Out of range.			

Common Name and <i>Scientific name</i>	Status**	General Habitat Description	Occurrence on the Project Site**
	Other	Special-Status Plants	
Bent-flowered fiddleneck Amsinckia lunaris	CRPR 1B.2	<u>Habitat</u> : Cismontane woodland, Valley & foothill grassland. <u>Elevation</u> : 3-500 meters. <u>Blooms</u> : Annual herb; March-June.	Unlikely. Not observed during surveys.
Round-leaved filaree California macrophylla	CRPR 1B.2	Habitat: Cismontane woodland, Valley & foothill grassland. <u>Elevation</u> : 15-1200 meters. <u>Blooms</u> : Annual herb; March-May.	Unlikely. Not observed during surveys.
Mt. Diablo fairy-lantern <i>Calochortus pulchellus</i>	CRPR 1B.2	Habitat: Occurs on woody or brushy slopes in chaparral, cismontane woodland, riparian woodland, and valley and foothill grasslands. <u>Elevation</u> : 30-840 meters. <u>Blooms</u> : Bulbiferous herb; April-June.	Unlikely. Not observed during surveys.
Woodland woolythread Monolopia gracilens	CRPR 1B.2	Habitat: Broadleaved upland forest, Chaparral, Cismontane woodland, North coast coniferous forest, Ultramafic, Valley & foothill grassland <u>Elevation</u> : 100-1200 meters. <u>Blooms</u> : Annual herb; February-July.	Unlikely. Marginal habitat; not observed during surveys.
Most beautiful jewel flower Streptanthus alpidus ssp. peramoenus	CRPR 1B.2	<u>Habitat</u> : Chaparral, Cismontane woodland, Ultramafic, Valley & foothill grassland. <u>Elevation</u> : 95-1000 meters. <u>Blooms</u> : Annual herb; March-October	Unlikely. Marginal habitat; not observed during surveys.
Northern California black walnut Juglans hindsii	CRPR 1B.1	Habitat: Riparian forest, Riparian woodland. Elevation: 0-440 meters. Blooms: Perennial deciduous tree; April- May.	Absent. Habitat for this species is absent from the site.

Common Name and Scientific name	Status**	General Habitat Description	Occurrence on the Project Site**
Santa Clara red ribbons Clarkia concinna ssp. automixa	CRPR 4.3	Habitat:Occurs in chaparral and cismontane woodlands.Elevation:90-1500 meters.Blooms:Annual herb; April-July.	Absent. Habitat for this species is absent from the site.
Western leatherwood Dirca occidentalis	CRPR 1B.2	Habitat: Occurs in mesic areas within broadleaved upland forest, closed cone coniferous forest, chaparral, cismontane woodland, North Coast coniferous forest, riparian scrub, and riparian woodland. <u>Elevation</u> : 25-425 meters. <u>Blooms</u> : Perennial deciduous shrub; January- April.	Absent. Habitat for this species is absent from the site.
Fragrant fritillary <i>Fritillaria liliacea</i>	CRPR 1B.2	Habitat: Coastal prairie, Coastal scrub, Ultramafic, Valley & foothill grassland. <u>Elevation</u> : 3-410 meters. <u>Blooms</u> : Perennial bulbiferous herb; February-April.	Unlikely. Not observed during site surveys.
Diablo helianthella Helianthella castanea	CRPR 1B.2	<u>Habitat</u> : Broadleaved upland forest, Chaparral, Cismontane woodland, Coastal scrub, Valley & foothill grassland. <u>Elevation</u> : 60-130 meters. <u>Blooms</u> : Perennial herb; March-June.	Unlikely. Marginal habitat; not observed during surveys.
Loma Prieta Hoita <i>Hoita strobilina</i>	CRPR 1B.1	Habitat: Occurs in chaparral cismontane woodland, and riparian woodland, often on serpentine. <u>Elevation</u> : 30-860 meters. <u>Blooms</u> : Perennial herb; May-October.	Absent. Habitat for this species is absent from the site.

Common Name and Scientific name	Status**	General Habitat Description	Occurrence on the Project Site**
Slender-leaved pondweed Stuckenia filiformis	CRPR 2B.2	Habitat: Marsh & swamp, wetland. Elevation: 300-2150 meters. Blooms: Perennial rhizomatous, aquatic herb; May-July.	Absent. Habitat for this species is absent from the site.
Oregon meconella <i>Meconella oregana</i>	CRPR 1B.1	Habitat: Coastal prairie, Coastal scrub. Elevation: 250-620 meters. Blooms: Annual herb; March-April.	Unlikely. Not observed during surveys.
Tiburon buckwheat Eriogonoum luteolum var. caninum	CRPR 1B.2	Habitat: Chaparral, Cismontane woodland, Coastal prairie, Ultramafic, Valley & foothill grassland. <u>Elevation</u> : 3-250 meters. <u>Blooms</u> : Annual herb; April-December.	Unlikely. Fall survey needed to confirm presence or absence from the site. Based on the distance from any other known locations, the historic nature of nearby records, and the diminished suitability of the habitat due to grazing, Olberding concluded that Tiburon buckwheat did not have potential to occur on the site. Olberding believed that with all the surveys over the years in this area this plant would have been detected if it were present.
Marin knotweed Polygonum marinese	CRPR 3.1	Habitat: Brackish marsh, Marsh & swamp, Salt marsh, Wetland. Elevation: 0-10 meters. Blooms: Annual herb; April-October.	Absent. Out of range; habitat for this species is absent from the site.
Oval-leaved viburnum Viburnum ellipticum	CRPR 2B.3	Habitat: Occurs in chaparral, cismontane woodland, and lower montane coniferous forest. <u>Elevation</u> : 215-1400 meters. <u>Blooms</u> : Perennial deciduous shrub; May- June	Absent. Habitat for this species is absent from the site.

Source: Zentner & Zentner, 2015

**Explanation of Occurrence Designations and Status Codes

Present: Species observed on the site at time of field surveys or during recent past. Likely: Species not observed on the project site, but it may reasonably be expected to occur there on a regular basis.

Possible: Species not observed on the project site, but potentially suitable habitat occurs on the project site for the species. Unlikely: Species not observed on the project site, habitats of the site are considered unsuitable or marginal for the species, and/or the species is not known to occur in the project site vicinity

Absent: Species not observed on the project site, and precluded from occurring there because habitat requirements are not met.

STATUS	CODES			
FE	Federally Endangered		CE	California Endangered
FT	Federally Threatened		CT	California Threatened
FPE	Federally Endangered (Proposed)		CR	California Rare
FC	Federal Candidate	СР	Californi	a Protected
			CSC	California Species of Special Concern
CRPR	California Rare Plant Rank			
1A	Plants Presumed Extinct in California	3	Plants ab	out which we need more
1B	Plants Rare, Threatened, or Endangered	1 in		information - a review list
	California and elsewhere		4	Plants of limited distribution - a watch list
2	Plants Rare, Threatened, or Endangered	1 in		
	California, but more common elsewher	e		

CNPS Extensions

- .1 Seriously endangered in California
- .2 Fairly endangered in California
- .3 Not very endangered in California

Table BIO-2

Special-Status Wildlife Species Occurrences Within 5 Miles of the Project Site

Common Name and Scientific name	Status**	General Habitat Description	Occurrence on the Project Site**			
Species Listed as Threatened or Endangered						
California red-legged frog <i>Rana draytonii</i>	FT, CT, CSC, SA	Aquatic, Artificial flowing waters, Artificial standing waters, Freshwater marsh, Marsh & swamp, Riparian forest, Riparian scrub, Riparian woodland, Sacramento/San Joaquin flowing waters, Sacramento/San Joaquin standing waters, South coast flowing waters, South coast standing waters, wetland.	Unlikely. No breeding habitat on site.			
Alameda whipsnake Masticophis lateralis euryxanthus	FT, CT	Chaparral, Cismontane woodland, Coastal scrub, Valley & foothill grassland.	Unlikely. No core habitat; edge of critical habitat; adjacent to development; no movement corridor.			

Common Name and Scientific name	Status**	General Habitat Description	Occurrence on the Project Site**
Bay checkerspot butterfly Euphydryas editha bayensis	FT, SA	Coastal dunes, Ultramafic (serpentine), Valley & foothill grassland; All habitat is on shallow serpentine-derived or similar soil. Primary host plant is dwarf plantain (Plantago erecta) or secondary hosts Indian paintbrush/purple owls clover (Castilleja exserta spp. exerta).	Absent. Requires serpentine outcrops and specific host plants, both absent from the site.
California	Species of S	Special Concern and Prote	ected Species
Foothill yellow-legged frog <i>Rana boylii</i>	SA	Aquatic, Chaparral, Cismontane woodland, Coastal scrub, Klamath/North coast flowing waters, Lower montane coniferous forest, Meadow & seep, Riparian forest, Riparian woodland, Sacramento/San Joaquin flowing waters; partly- shaded, shallow streams & riffles with a rocky substrate in a variety of habitats.	Unlikely. No breeding habitat.
Cooper's hawk Accipiter cooperii	SA	Cismontane woodland, Riparian forest, Riparian woodland, Upper montane coniferous forest.	Absent. No breeding habitat on site; potential for foraging only.
Alameda song sparrow Melospiza melodia pusillula	CSC, SA	Salt marsh.	Absent. No habitat present on site.
Golden eagle Aquila chrysaetos	CP, SA	Broadleaved upland forest, Cismontane woodland, Coastal prairie, Great Basin grassland, Great Basin scrub, Lower montane coniferous forest, Pinon & juniper woodlands, Upper montane coniferous forest, Valley & foothill grassland.	Absent. No breeding habitat on site; potential for foraging only.

Common Name and Scientific name	Status**	General Habitat Description	Occurrence on the Project Site**
Pallid bat Antrozous pallidus	CSC, SA	Chaparral, Coastal scrub, Desert wash, Great Basin grassland, Great Basin scrub, Mojavean desert scrub, Riparian woodland, Sonoran desert scrub, Upper montane coniferous forest, Valley & foothill grassland.	Absent. No roosting or breeding habitat is present on site.
Hoary bat <i>Lasiurus cinereus</i>	SA	Broadleaved upland forest, Cismontane woodland, Lower montane coniferous forest, North coast coniferous forest	Absent. No roosting or breeding habitat is present on site.
Berkeley kangaroo rat Dipodomys heermanni berkeleyensis	None	Chaparral, Cismontane woodland.	Absent. No roosting or breeding habitat is present on site.
American badger Taxidea taxus	CSC, SA	Alkali marsh, Alkali playa, Alpine, Alpine dwarf scrub, Bog & fen, Brackish marsh, Broadleaved upland forest, Chaparral, Chenopod scrub, Cismontane woodland, Closed-cone coniferous forest, Coastal bluff scrub, Coastal dunes, Coastal prairie, Coastal scrub, Desert dunes, Desert wash, Freshwater marsh, Great Basin grassland, Great Basin scrub, Interior dunes, Ione formation, Joshua tree woodland, Limestone, Lower montane coniferous forest, Marsh & swamp, Meadow & seep, Mojavean desert scrub, North coast coniferous forest, Old growth, Pavement plain, Redwood, Riparian forest, Riparian scrub, Riparian woodland, Salt marsh, Sonoran thorn woodland, Ultramafic, Upper montane coniferous	Unlikely. Not observed during surveys; no signs of potential burrows observed.

Common Name and <i>Scientific name</i>	Status**	* General Habitat Occurrence on the I Description Site**	
		forest, Upper Sonoran scrub, Valley & foothill grassland.	
Obscure bumblebee Bombus caliginosus	SA	Grassy coastal prairies and coast range meadows.	Unlikely. Not observed during site surveys; marginal habitat on site.

Source: Zentner & Zentner, 2015

****Explanation of Occurrence Designations and Status Codes**

Present: Species observed on the project site at time of field surveys or during recent past. Likely: Species not observed on the project site, but it may reasonably be expected to occur there on a regular basis. Possible: Species not observed on the project site, but potentially suitable habitat occurs on the project site for the species. Unlikely: Species not observed on the project site, habitats of the site are considered unsuitable or marginal for the species, and/or the species is not known to occur in the project site, and precluded from occurring there because habitat requirements are not met.

STATUS CODES

517105	CODES			
FE	Federally Endangered		CE	California Endangered
FT	Federally Threatened		CT	California Threatened
FPE	Federally Endangered (Proposed)		CR	California Rare
FC	Federal Candidate	CP	Californi	a Protected
CSC	California Species of Special Concern	SA	Special A	nimal
			-	

In addition to the recorded occurrences of special-status plant species within 5 miles of the project site, listed in Table BIO-1, Zentner determined that there is potential habitat on the site for the special-status plant species listed in Table BIO-3.

Table BIO-3

Other Special-Status Plant Species Potentially Occurring on the Project Site

Common Name and Scientific name	Status**	General Habitat Description	Occurrence on the Project Site**	
Species Listed as Threatened or Endangered				
Santa Cruz tarplant Holocarpha macradenia	FT, CE, CRPR 1B.1	Habitat: Coastal prairie, Coastal scrub, Valley & foothill grassland. <u>Elevation</u> : 10-220 meters. <u>Blooms</u> : Annual herb; June-October.	Possible. Fall survey needed to confirm absence or presence.	

Common Name and Scientific name	Status**	General Habitat Description	Occurrence on the Project Site**		
	Other Special-Status Plants				
Big tarplant Blepharizonia plumosa	CRPR 1B.1	Habitat: Valley & foothill grassland. <u>Elevation</u> : 30-505 meters. <u>Blooms</u> : Annual herb; July-October.	Possible. Fall survey needed to confirm absence or presence.		
Congdon's tarplant Centromadia parryi ssp. congdonii	CRPR 1B.1	<u>Habitat</u> : Valley & foothill grassland. <u>Elevation</u> : 0-230 meters. <u>Blooms</u> : Annual herb; May-November.	Possible. Fall survey needed to confirm absence or presence.		
California pony's foot Dichondra donelliana	CRPR A1	Habitat: Open slopes and moist fields. <u>Elevation</u> : Unknown. <u>Blooms</u> : Perennial herb; January-March.	Present. Observed on site.		
Tiburon buckwheat Eriogonum luteolum var. caninum	CRPR 1B.2	Habitat: Broadleaved upland forest, Chaparral, Cismontane Coastal prairie, Ultramafic, Valley & foothill grassland. <u>Elevation</u> : 3-250 meters. <u>Blooms</u> : Annual herb; April-December.	Unlikely. Fall survey needed to confirm absence or presence.		
Mt. Diablo buckwheat Eriogonum truncatum	CRPR 1B.1	Habitat: Chaparral, Coastal scrub, Valley & foothill grassland. <u>Elevation</u> : 3-350 meters. <u>Blooms</u> : Annual herb; April-December.	Unlikely. Fall survey needed to confirm absence or presence.		
San Joaquin spearscale Atriplex joaquinana	CRPR 1B.2	Habitat: Alkali playa, Chenopod scrub, Meadow & seep, Valley & foothill grassland. <u>Elevation</u> : 1-835 meters. <u>Blooms</u> : Annual herb; April-October.	Unlikely. Fall survey needed to confirm absence or presence.		

Source: Zentner & Zentner, 2015

**Explanation of Occurrence Designations and Status Codes

Present: Species observed on the site at time of field surveys or during recent past.

Likely: Species not observed on the project site, but it may reasonably be expected to occur there on a regular basis. Possible: Species not observed on the project site, but potentially suitable habitat occurs on the project site for the species. Unlikely: Species not observed on the project site, habitats of the site are considered unsuitable or marginal for the species, and/or the species is not known to occur in the project site vicinity Absent: Species not observed on the project site, and precluded from occurring there because habitat requirements are not met.

STATU	JS CODES			
FE	Federally Endangered		CE	California Endangered
FT	Federally Threatened		CT	California Threatened
FPE	Federally Endangered (Proposed)		CR	California Rare
FC	Federal Candidate	CP	Californ	ia Protected
			CSC	California Species of Special Concern
CRPR	California Rare Plant Rank			
1A	Plants Presumed Extinct in California	3	Plants al	bout which we need more
1B	Plants Rare, Threatened, or Endangered	in		information - a review list
	California and elsewhere		4	Plants of limited distribution - a watch list
2	Plants Rare, Threatened, or Endangered	in	A1	Species currently known from two or less
	California, but more common elsewhere			regions in Alameda and Contra Costa Counties
CNPS E	Extensions			
.1	Seriously endangered in California			
.2	Fairly endangered in California			
.3	Not very endangered in California			

The CNDDB search identified four special-status habitats that are known to occur in the region, including serpentine bunchgrass, valley needlegrass grassland, northern coastal salt marsh, and northern maritime chaparral. None of these habitats are present on the project site. There is no serpentine geology associated with the property and no chaparral vegetation found on the property. While there is a scattering of needlegrass and other native forbs, there are neither enough of them nor are they found in a high enough density on the property to qualify as a special-status habitat. Northern coastal salt marsh is primarily found around the margins of the San Francisco Bay and is characterized by pickleweed (*Salicornia pacifica*), which is not found on the property.

Special-Status Plants. Although no special-status plant species were observed on the site during the site surveys by Zentner biologists—conducted on January 2, 2014 and April 14, 2014—the project site provides potentially suitable habitat for San Joaquin spearscale (*Atriplex joaquinana*), big tarplant (*Blepharizonia plumosa*), Congdon's tarplant (*Centromadia parryi ssp. congdonii*), Santa Cruz tarplant (*Holocarpha macradenia*), Tiburon buckwheat (*Eriogonum luteolum var. caninum*), and Mount Diablo buckwheat (*Eriogonum truncatum*). Olberding Environmental biologists also determined that three additional special-status plant species—bent-flowered fiddleneck (*Amsinckia lunaris*), Mt. Diablo fairy lantern (*Calochortus pulchellus*), and Diablo helianthella (*Helianthella castanea*)—have a moderate potential to occur on the site. In addition, though initial surveys indicated that California pony's foot (*Dichondra donelliana*) was observed outside the proposed development area, it's possible that this species could encroach into the development area. If any of these species are present, construction activities could result in the loss of these special-status species, which would be a *potentially significant adverse impact*. Implementation of the following mitigation would reduce the impact to a less-than-significant level:

Mitigation Measure BIO-1: Prior to Town issuance of a grading permit, special-status plant surveys shall be conducted for all species for which the project site provides potentially suitable habitat, as listed in Table BIO-1 of the Initial Study/Mitigated Negative Declaration prepared for the proposed project. The site surveys shall be conducted in appropriate habitats during the appropriate period in which the species are most identifiable. These surveys shall be in compliance with all survey guidelines published by the California Department of Fish and Wildlife (CDFW) (2009), U.S. Fish and Wildlife Service (USFWS) (1996), and California Native Plant Society (CNPS) (2001). If the survey finds that there are no special-status plants on the property or within the proposed project site, then there would be no further mitigation and the project may proceed, provided all other applicable permits and authorizations are obtained for the project.

If special-status plant species are found, the biologist shall fill out a California Natural Diversity Data Base (CNDDB) form for each special-status plant species identified and submit it to CDFW. The special-status plant populations shall be mapped and enumerated, and disturbance of the plants shall be avoided to the extent practicable. If avoidance is not practicable while otherwise obtaining the project's objectives, then the following measures shall be implemented:

- 1. Prior to site disturbance within the project area, a qualified botanist shall collect the seeds, propagules, and top soils, or other parts of the plant that would ensure successful replanting of the population elsewhere. The seeds, propagules, or other plantable portion of all plants shall be collected at the appropriate time of the year.
- 2. Half of the seeds and top soils collected shall be appropriately stored in long-term storage at a botanic garden or museum (for example, Rancho Santa Ana Botanic Garden). The other half of the seeds, propagules, or other plantable portion of all plants shall be planted at the appropriate time of year (late fall months) in a protected area on- or off-site that will not be impacted by the project.
- 3. This protected area shall be fenced with permanent fencing (for example, chain link fencing) to ensure protection of the species. The applicant shall hire a qualified biologist to conduct annual monitoring surveys of the transplanted plant population for a five-year period and shall prepare annual monitoring reports reporting the success or failure of the transplanting effort. These reports shall be submitted to the Town no later than December 1st each monitoring year.
- 4. If the seeding/transplanting effort fails, the stored seeds and top soils shall be taken out of long-term storage and sown in another location (either onsite or offsite) deemed suitable by the Town. This seeding effort shall then be monitored for an additional three-year period to ensure survivorship of the new population, with annual monitoring reports submitted to the Town by December 1st of each monitoring year.

In lieu of the above prescribed mitigation, as allowed in writing by the Town, mitigation requirements may be satisfied via the
purchase of qualified mitigation credits or the preservation of offsite habitat.

Nesting Birds. Site disturbance during construction of the project also has the potential to adversely ground-nesting birds that could be nesting on the site. As previously noted, there is suitable nesting habitat on or directly adjacent to the project site for California horned lark, other ground nesting birds (excluding burrowing owls), and other migratory nesting birds. These birds are protected under the Migratory Bird Treaty Act (50 CFR 10.13) and their nest, eggs, and young are protected under California Fish and Game Code Sections 3503, 3503.5, 3800, and 3513. Project construction disturbance could result in the loss of nesting habitat, disturbance to nesting birds, and possibly death of adults and/or young. Any project-related impacts on the nesting success of these species would be considered a *significant adverse impact*. These impacts could be mitigated to a level considered less than significant by implementation of the following mitigation measure:

Mitigation Measure BIO-2: If construction would commence anytime during the nesting/breeding season of the California horned lark or other bird species listed in the Migratory Bird Treaty Act (typically February through September 15th), a pre-construction survey of the project vicinity for nesting birds shall be conducted by a qualified biologist experienced with the nesting behavior of bird species of the region. The survey shall determine if active nests are present within the planned area of disturbance or within 250 feet of the construction zone. The survey shall be performed no more than 14 days prior to the commencement of construction activities that would occur during the nesting/breeding season. If ground disturbance activities are delayed following a survey, then an additional preconstruction survey shall be conducted such that no more than two weeks will have elapsed between the last survey and the commencement of ground disturbance activities.

If active nests are found in areas that could be directly or indirectly affected by the project, a no-disturbance buffer zone shall be created around active nests and maintained until September 15th or until a qualified biologist determines that all young have fledged. The size of the buffer zones and types of construction activities restricted within them shall be determined through consultation with the California Department of Fish and Wildlife (CDFW), taking into account factors such as the following:

- Noise and human disturbance levels at the construction site at the time of the survey and the noise and disturbance expected during the construction activity;
- Distance and amount of vegetation or other screening between the construction site and the nest; and
- Sensitivity of individual nesting species and behaviors of the nesting birds.

The buffer zone around an active nest shall be established in the field with orange construction fencing or another appropriate barrier and construction personnel shall be instructed on the sensitivity of nest areas. The qualified biologist shall serve as a construction monitor during those periods when construction activities would occur near active nest areas of special-status bird species to ensure that no impacts on these nests occur.

<u>Alameda Whipsnake.</u> Habitat for the Alameda whipsnake (*Masticophis lateralis euryxanthus*), which is both a State and federal Threatened species, is known to occur in Contra Costa and Alameda counties, and has been associated with western San Joaquin and northern Santa Clara counties. The core habitat consists of open-canopied shrub communities, including coastal scrub and chaparral, often with rock outcroppings on south-, southeast-, east-, and southwest-facing slopes. Rock outcrops are an important element of its habitat, providing protection from predators and habitat for prey species such as western fence lizard. There is no core habitat for the whipsnake on the project site. However, the project site is within the Critical Habitat (Unit 2) for this species, as designated by the USFWS.

Because the site does not contain any elements of core habitat and is within but near the edge of critical habitat located adjacent to residential developments on three sides that block whipsnake movement, Zentner concluded that Alameda whipsnake (AWS) is not likely to occur on the project site despite its inclusion in Critical Habitat. However, Zentner noted that USFWS data indicate that Alameda whipsnakes venture up to 500 feet into adjacent habitats from their home ranges, and could not rule out the possible movement of the whipsnake onto the project site during construction.

To further assess this possibility, and in accordance with recommendations by Olberding Environmental, Zentner (now renamed Zentner Planning and Ecology) retained the services of Baercat Compliance to conduct a series of three surveys of the project site for AWS in July and August 2019.³² The surveys were performed by Jill Grant, an expert field herpetologist with over 20 years of experience. An additional four surveys were subsequently performed in August 2019 by Zentner biologists with amphibian and reptile expertise.³³ In some of the surveys, the biologists walked the entire project property in transects to allow complete visual coverage of the site, supplemented with binoculars when necessary to maximize AWS detection. During some surveys, the northern portion of the property was being grazed by large Angus bulls, and for safety purposes this area was surveyed by binoculars during those times. All but one of the surveys was conducted during warm temperatures (74 to 86 degrees Fahrenheit) conducive to AWS activity.

Although the remains of king (*Lampropeltis californiae*) and gopher (*Pituophis catenifer catenifer*) snakes were observed during the surveys, no signs of AWS were found. Both the Zentner and Baercat reports concluded that AWS is very unlikely to occur on the site for the following reasons:

• There is no core habitat on or near the project site;

³² Baercat Compliance, Alameda Whipsnake Survey, South Camino Pablo Annexation Project Subdivision #9396, Town of Moraga, California, August 2019.,

³³ Zentner Planning and Ecology, Camino Pablo Project, Alameda Whipsnake (Masticiphis lateralis euryxanthus) Surveys, Project No. 1004, October 2019.

- There is an abundance of AWS predators in the area, which is frequented by a variety of raptors, and the encountered remains of other snake species demonstrate the value of the site to snake predators;
- There is a low base of potential prey for AWS, such as western fence lizards;
- The predominantly tall grassland habitat would make it difficult for the whipsnake to visually hunt prey, and there is little habitat for the snake to retreat/hide from aerial predators because there is no chaparral or scrub cover, few burrows or deep cracks, and only one tree on the project site;
- The fog-induced climate is not conducive to AWS because it does not generate the higher temperatures needed, according to the U.S. Fish and Wildlife Service (USFWS), for early morning emergence and maximum foraging activity;
- Additionally, the landscaped edges of the northern and southern boundary of the site are detrimental to the AWS, especially nearby redwood trees, as they form a closed canopy with uniformly cool conditions that would not allow the whipsnake to reach their preferred internal temperature range needed for hunting and digestion, which is higher than for other snake species;
- The project site is bordered on the west by a busy roadway (Camino Pablo) and a welltraveled recreational trail that offer superior basking sites but are conducive to a snake's demise by car or bicycle impact or predation from off-leash domestic animals, and there are no suitable retreat opportunities from these threats;
- The closest recorded sighting of AWS is more than 1.5 miles from the site, where more suitable habitat is available; and
- The site is regularly and intensively grazed by cattle, which is not conducive to foraging by the AWS. (Zentner concluded that the skeletons of other snake species that were observed on the site were likely from snakes captured by raptors from nearby areas and brought to the site to be consumed.)

Given the findings summarized above, Zentner concluded that Alameda whipsnake is not likely to occur on the project site despite its inclusion in Critical Habitat. However, Zentner previously noted that USFWS data indicate that Alameda whipsnakes venture up to 500 feet into adjacent habitats from their home ranges, and could not rule out the possible movement of the whipsnake onto the project site during construction. Furthermore, Jeff Olberding, the principal biologist from Olberding Environmental, who conducted the peer review of the biological assessments, questioned the survey methods that entailed looking into tall grasses with binoculars for a species that occurs on the ground, and felt that the surveys had not ruled out the possibility for AWS to occur on the site. Olberding also noted that there have been numerous recorded sightings of AWS in the project vicinity, further indicating a potential for them to occur on the site. Therefore, for purposes of this analysis, it is assumed that the whipsnake could be present during project construction. Any mortality or harm to the whipsnake that could occur during construction would be a *significant adverse impact*. Implementation of Mitigation Measures BIO-3, which also addresses California Red-Legged Frog (discussed below), would ensure potential impacts would remain less than significant:

Mitigation Measure BIO-3: The following measures shall be implemented by the project sponsor to the satisfaction of the Town to reduce potential impacts to the Alameda Whipsnake (AWS) and the California Red-Legged Frog (CRLF):

- a. The number and size of access routes and staging areas, and the total area of activity shall be limited to the minimum size necessary to achieve the project goal. Routes and boundaries shall be clearly demarcated. Heavy equipment shall be restricted to the existing roads, areas to be graded, and a haul route between graded areas only as necessary. The project plans including any proposed haul route shall be reviewed by a qualified biologist prior to approval. Equipment working in the area shall be restricted to a 10-mile-per-hour speed limit.
- b. Work activities to mass grade the development area of the project site shall be completed between April 15 and November 1.
- c. A qualified biologist who has previous experience conducting biological construction monitoring for CRLF and AWS shall conduct a preconstruction survey of the construction area for any listed species, but specifically for CRLF and AWS, within 48 hours of the onset of project work activities. If CRLF, AWS or other federally listed species are found, work on the project shall be halted and the US Fish and Wildlife Service (Service) shall be notified.
- d. Before any construction activities begin, a qualified biologist with previous project experience with CRLF and AWS monitoring, shall conduct a training session for all construction personnel. At a minimum, the training shall include a description of the CRLF and AWS and their habitat, the importance of these listed species and their habitat, the general measures that are being implemented to conserve CRLF and AWS as they relate to the project, the ramifications and consequences including potential fines and penalties of taking threatened species and the boundaries within which the project may be accomplished. Brochures, books and briefings may be used in the training session, provided that a qualified person is on hand to answer any questions. Interpretation shall be provided for non-English speaking workers.
- e. Vegetation within the areas to be graded shall be removed prior to grading immediately after the qualified biologist has surveyed and cleared the area. The qualified biologist shall be present during all vegetation removal.

- f. Once vegetation has been removed, wildlife exclusion fencing shall be installed around the construction area so that CRLF and AWS cannot move into the cleared work area. The wildlife exclusion fence shall be a minimum of 42-inches tall and the bottom 6 inches shall be buried if feasible or otherwise adequately secured to prevent listed species from crawling under the fence. Fence stakes shall face the work area. The integrity of the fence shall be checked weekly and shall be continuously maintained until all construction activities are completed to ensure that CRLF and AWS cannot get through the fence.
- g. Any vegetation outside of the perimeter exclusion fencing and within 5 feet of the fencing must be maintained such that wildlife cannot use the vegetation to gain access to work site. A qualified biologist shall be present during all vegetation cutting or removal activities.
- h. A Service-approved biologist shall be present during all work at the construction site until such time as CRLF and AWS surveys have been completed and no CRLF and AWS have been identified in the construction area, instruction of workers has been completed, and vegetation clearing has been completed. After this time, a construction monitor shall be designated to monitor on-site compliance with all minimization measures. The qualified biologist shall ensure that this individual receives training outlined above in Item (d), above, and in the identification of CRLF and AWS. The monitor and the Service-approved biologist shall have the authority to halt any action that might result in effects that exceed the levels described in these measures.
- i. To reduce the likelihood of vehicle strike, prior to the start of work each day, the qualified biologist or designated construction monitor shall survey all roads, including haul roads, within the project area to ensure that no CRLF and AWS are located in the roadways.
- j. If CRLF and AWS are found in the work area at any point, all work activity on the project shall be halted, the Service shall be notified, and the Service shall determine whether additional measures should be implemented.
- k. All material stockpiling and staging areas shall be located within project right-of-ways or at designated disturbed/developed areas outside of designated construction zones. Any debris or equipment left overnight shall be checked daily prior to use in order to avoid injury and mortality to listed species. Because CRLF and AWS

may take refuge in cavity-like structures such as pipes and may enter stored pipes and become trapped, all construction pipes, culverts, or similar structures that are stored at a construction site for one or more overnight periods shall be either securely capped prior to storage, contained within separate wildlife exclusion fencing, or thoroughly inspected by the on-site biologist and/or the on-site monitor for these animals before the pipe is subsequently buried, capped, or otherwise used or moved in any way.

- 1. All construction-related holes, capable of entrapping wildlife, shall be covered at the end of each workday in a manner that shall prevent entrapment. Prior to commencing construction activities each workday, trenches shall be thoroughly inspected for animals.
- m. During project activities, all trash that may attract predators shall be properly contained, removed from the construction area and disposed of regularly. Following construction, all trash and construction debris shall be removed from work areas.
- n. Vehicle and equipment refueling, repair, and lubrication shall only be permitted in designated areas where accidental spills shall be contained.
- o. Erosion control Best Management Practices shall be implemented in accordance to the San Francisco Bay Regional Water Quality Control Board and other agency permits. Tightly woven fiber netting or similar material shall be used for erosion control or other purposes to ensure that CRLF and AWS do not get trapped. Plastic mono-filament netting (erosion control matting) or similar material shall not be used at the project site because animals may become entangled or trapped in it.
- p. All areas temporarily disturbed by construction shall be revegetated to pre-project or native conditions, as specified in project-specific revegetation plans.
- q. Landscaping plans for the proposed development shall not include any plants categorized by the California Invasive Plant Council (Cal-IPC) as "Invasive Non-Native Plants that Threaten Wildlands in California" for the California West floristic region (Cal-IPC 2006). Landscaping plans shall be reviewed by a qualified professional to ensure that this requirement is satisfied prior to approval by the Town of Moraga. Any substitutions to landscaping plans after approval shall be subject to similar review.

California Red-Legged Frog. The California Red-legged frog (CRLF) historically ranged from Redding and Marin County, south to northern Baja California. Due to the loss and modification of habitat, predation by the non-native bullfrog, and impacted water quality, its range has been reduced to isolated drainages within coastal ranges and near-coastal foothills. The USFWS notes that the CRLF once occupied 46 counties, but is now found in only 22, with the greatest concentrations found in Monterey, San Luis Obispo, and Santa Barbara Counties. With regards to the site, Zentner's report concluded CRLF are not likely to occur on the site as there is no breeding habitat on or near the site and CRLF are not likely to move through or towards the site seeking summer habitat as there is no nearby breeding habitat. Further, movement corridors to the north, west, and south are blocked by adjacent residential development and therefore, there is no draw for CRLF to move in the direction of the site.

The Olberding Report concluded there are no seasonal pond, wetland, or riparian features within the property that hold water long enough to provide suitable habitat to support CRLF aquatic breeding and non-breeding habitat; the seasonal wetlands and drainages on the property are ephemeral and only hold a few inches of standing water within small ruts created by cattle hoof shear. Therefore, suitable aquatic breeding and non-breeding habitat is absent from the property. However, the property does contain grassland habitat that could provide suitable upland or dispersal habitat. The wetted drainages and seasonal wetlands on the property, while not suitable for breeding, may serve as dispersal corridors between the creeks and ponds that surround the property. For these reasons, according to the Olberding report, CRLF has a moderate potential to occur on the site in a dispersal capacity only.

To further assess the potential for CRLF, Zentner completed reconnaissance level surveys for the CRLF. The site and its ability to support this species were also evaluated during these surveys. Surveys were completed by Sean Micallef and Emily Mathews, biologists with Zentner Planning and Ecology who have experience identifying the species and conducting CRLF surveys. The surveys were completed on August 15, 2019 (day) and September 17, 2019 (night). The day survey began at least one hour after sunrise and the night survey began at least one hour after sunset. Surveys were completed when skies were clear to partly cloudy and the site had maximum visibility; no fog, rain, etc. No CRLF or signs of CRLF were identified on the project site during either of the surveys. Additionally, no habitat that would be favorable to the CRLF was identified on site.

While no CRLF or signs of CRLF were identified during surveys, implementation of Mitigation Measure BIO-3 would be applicable to the project and further prevent potential impacts related to CRLF.

		Potentially Significant Impact	Less-Than- Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
b)	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 U.S. Fish and Wildlife Service?				X

<u>Explanation</u>: According to the biological resources assessment by Zentner, there is no riparian habitat or other sensitive natural community present on or in proximity to the project site. There is therefore no potential for such habitats to be adversely affected by the project. Potential impacts to wetlands are addressed below.

		Potentially Significant Impact	Less-Than- Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
c) Have a substantial adverse e protected wetlands (including, k marsh, vernal pool, coastal, et removal, filling, hydrological inte means?	ffect on federally out not limited to, c.) through direct erruption, or other				\boxtimes

Explanation: Section 404 of the Clean Water Act (CWA) regulates the placement of fill in Waters of the U.S., which may include wetlands, ponds, drainages, creeks, streams, and other types of water bodies, depending on whether any such aquatic feature meets current jurisdictional standards. Compliance with Section 404 is under the regulatory oversight of the U.S. Army Corps of Engineers (Corps).

Wetlands are defined by Section 404 as: "Those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions." To be designated a wetland subject to Corps regulation, a site must have a predominance of hydrophytic vegetation, evidence of hydric soils, and wetland hydrology under normal circumstances. Wetlands are recognized as important features on a regional and national level due to their high inherent value to fish and wildlife, use as storage areas for storm and floodwaters, promotion of groundwater recharge, and their water filtration and purification functions.

To determine the full extent of jurisdictional waters on the site, Zentner performed a wetland delineation in March 2015.³⁴ The delineation was verified by the Corps on September 11, 2105. Although the Corps considers wetland delineation maps to be valid for five years from the date of verification, the agency provides an opportunity for an extension if requested prior to expiration.

³⁴ Zentner and Zentner, *Camino Pablo Section 404 Jurisdictional Delineation*, Project No. 1004DPL, March 2015.

The wetland delineation report is included in Appendix B and the verified delineation map is shown on Figure BIO-2, with detail sections shown on Figures BIO-3 and BIO-4. As shown on the figures, the jurisdictional areas on the site total 0.11 acres, including 0.092 acres of seasonal wetlands and 0.018 acres of other waters.

A total of four small seasonal wetlands occur on the property. These occur in very small areas within or at the base of the eroded drainages or as seeps on the side of the west-facing slopes. Vegetation in both these types of areas was dominated by facultative or marginally hydrophytic vegetation. This type of vegetation is consistent with areas that only pond sporadically and drain relatively quickly.

Two small drainages lie near the western edge of the site. These sparsely vegetated and eroded channels carry ephemeral runoff into an existing concrete V-ditch, which eventually drain into Moraga Creek. The little vegetation that is found within these channels is primarily upland grasses and, therefore, these features are not wetlands.

The 2019 biological resources assessment conducted by Olberding Environmental documented similar results, identifying the two ephemeral drainages on the site and seasonal wetlands supporting hydrophytic species including curly dock, Italian rye grass, and toad rush (*Juncus* bufonicus), as well as upland species such as wild oats and ripgut brome. The calculated areas of wetlands varied slightly, likely due to variations in hydrological conditions, with Olberding reporting 0.14 acre of seasonal wetlands and 0.06 acre (385 linear feet) of ephemeral drainage.

The wetlands and other waters present on the site are within the proposed permanent open space parcel on the northern portion of the site. The proposed project would not require filling these wetlands, and would not interrupt the hydrology that contributes to them or otherwise adversely affect them. The closest home, on Lot 1, would be more than 175 feet south of the nearest drainage with seasonal wetlands. Although site grading would occur as close as 30 feet to the drainage, preparation and implementation of a Stormwater Pollution Prevention Plan (SWPPP), required for compliance with the regional stormwater permit (see Section X, Hydrology and Water Quality) would include measures to prevent stormwater runoff from adversely affecting the wetlands and other waters, and there would be no direct encroachment on the drainage by construction activities. The project would have no impact on protected wetlands as defined by Section 404 of the CWA.

		Potentially Significant Impact	Less-Than- Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
d)	Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with any established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?			X	

Explanation: Wildlife corridors are generally described as pathways or habitat linkages that connect discrete areas of natural open space otherwise separated or fragmented by topography, changes in vegetation, and other natural or human induced factors such as urbanization. The fragmentation of natural habitat creates isolated "islands" of vegetation that may not provide



Figure BIO-2



Figure BIO-3

Jurisdictional Wetland Delineation Map, Detail 1

Source: Zentner and Zentner



Figure BIO-4

sufficient area or resources to accommodate sustainable populations for a number of species, which can adversely affect both genetic and species diversity. Corridors often partially or largely eliminate the adverse effects of fragmentation by 1) allowing animals to move between remaining habitats to replenish depleted populations and increase the gene pool available; 2) providing escape routes from fire, predators, and human disturbances, thus reducing the risk that catastrophic events (such as fire or disease) will result in population or species extinction; and 3) serving as travel paths for individual animals moving throughout their home range in search of food, water, mates, and other needs, or for dispersing juveniles in search of new home ranges. The project site doesn't function as a wildlife movement corridor because it is bordered by established residential communities on the west and the north, which block wildlife movement. Therefore, the proposed project would not substantially interfere with the movement of resident or migratory wildlife.

	Potentially Significant Impact	Less-Than- Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?				X

Explanation: Although Moraga has a Tree Preservation Ordinance, codified in Chapter 12.12 of the Moraga Municipal Code, that requires a permit for the removal of any "protected tree," there is just a single tree on the project site, an arroyo willow (*Salix lasiolepis*), which is located in the area that would be protected as open space; no trees would be removed or adversely affected by project development.

Additional Town of Moraga policies pertaining to biological resources are set forth in the Open Space and Conservation Element of the *Moraga 2002 General Plan* that call for the protection of open space (Policy OS1.1), major ridgelines (Policy OS1.2), wildlife areas (Policy OS2.1), riparian environments (Policy OS2.2), areas of natural significance (Policy OS2.4), wildlife corridors (Policy OS2.5), and tree-covered areas (Policy OS2.9). The proposed project would not conflict with any of these policies. The project site does not contain any riparian environments or major ridgelines designated by the Town. It would preserve more than half the site as permanent open space. Mitigation measures are identified in this IS/MND to avoid or minimize adverse impacts to wildlife that may utilize the project site. The site is not one of the areas of natural significance identified in Policy OS2.4. As discussed in Section IV(d), above, the site doesn't function as a wildlife movement corridor. The policy on tree-covered areas (Policy OS2.9) does not apply to the project site. In summary, the project would not conflict with any local policies or ordinances protecting biological resources, and there would be no impact.

		Potentially Significant Impact	Less-Than- Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
f) C C r	Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?				X

<u>Explanation</u>: There is no adopted habitat conservation or natural community conservation plan applicable to the Town of Moraga. Therefore, there would be no impacts due to conflicts with such a plan.

<u>V. CULTURAL RESOURCES</u> — *Would the project:*

	Potentially Significant Impact	Less-Than- Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Cause a substantial adverse change in the significance of a historical resource pursuant to §15064.5?		\boxtimes		

<u>Explanation</u>: There are no buildings or structures present on the project site and there is no evidence that there has ever been any type of development on the site. Historical aerial photographs dating back to 1946 and historical topographic maps dating back to 1897 were reviewed as part of this environmental review and no structures were visible in any of the photos or identified on any of the maps covering these historical periods. In addition, an archival search of the State Office of Historic Preservation Historic Property Directory (OHP HPD)—which includes listings of the California Register of Historical Resources, California State Historical Landmarks, California State Points of Historical Interest, and the National Register of Historic Places—lists no recorded buildings or structures on or adjacent to the proposed project site.³⁵ Finally, the Northwest Information Center (NWIC) at Sonoma State University, one of nine centers that comprise a component of the California Historical Resources Information System (CHRIS), reported that their base maps show no recorded buildings or structures within the proposed project area.³⁶

Based on these results, there is no indication that there are any historical resources, as defined in Section 15064.5 of the *CEQA Guidelines*, on the project site, and the Town of Moraga has not otherwise independently determined that such resources might exist on the site. While the Town therefore concludes that the project would not adversely affect an historical resource, it should be

³⁵ California Historical Resources Information System, Northwest Information Center, Sonoma State University, *Record Search Results for the Proposed Camino Pablo Subdivision, Town of Moraga, Contra Costa County, California*, NWIC File No. 15-0417, October 8, 2015.

³⁶ Ibid.

noted that in the unlikely event that historical artifacts or other resources were to be present within the confines of the site, the mitigation requirements identified in Section III(b), below, would ensure that potential impacts to such resources would be less than significant.

	Potentially Significant Impact	Less-Than- Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?		X		

Explanation: The Northwest Information Center (NWIC) at Sonoma State University was commissioned to conduct an archival search of cultural resources records and reports, maps, and literature for Contra Costa County in order to identify any known cultural resources in the project area and assess the potential for encountering previously undiscovered resources during project construction. The NWIC determined that Native American resources have been found in this part of Contra Costa County adjacent to fresh water sources, along flat portions of ridgelines, and near the interface between low-lying terrain and higher elevation foothills. Because there is a creek along the western portion of the project area and a flat portion of a ridgeline on the site, the NWIC concluded that there is a high potential for unrecorded Native American resources to be present in the proposed location for the Camino Pablo subdivision. The NWIC recommended further archival and field study by a qualified archaeologist.³⁷

Accordingly, an evaluation of the potential for significant archaeological resources to be present on the project site was performed by the archaeological consulting firm Archeo-Tec, which included additional archival research at the NWIC and reconnaissance of the project site by a qualified archaeologist.³⁸ The information presented in this section is drawn from the Archeo-Tec report presented in Appendix C.

Ethnographic Background

The project area is situated in what was historically the territory of the Bay Miwok, who occupied the interior valleys of the East Bay. The Bay Miwok were divided into five autonomous tribelets: Saclan, Chupcan, Volvon, Julpun, and Tatcan. The project site was within Saclan territory, although the Moraga area was probably also influenced by the Julpun and Tatcan tribelets.

The Bay Miwok language is part of the larger Utian language family in California and linguistic evidence suggests that the ancestors of the Bay Miwok occupied the San Ramon Valley region from as long as 1,500 years ago to as recently as 400 years ago. The largest unit of political organization for the Miwok was the tribelet. Each tribelet was an "independent and sovereign nation" and within each tribelet were several permanent settlements and many seasonally occupied camps. The size of most tribelet populations ranged between 200 and 400 people.

³⁷ Ibid.

³⁸ Archeo-Tec, Inc., Phase I Cultural Resource Report for the Camino Pablo Subdivision Project, Town of Moraga, Contra Costa County, California, February 2016.

Settlements were often located adjacent to water sources, whether permanent or seasonal. The Saclans had two villages, Jussent and Gequigmu, within a few miles of each other in the East Bay hills. Early Spanish explorers occasionally identified male village or tribal leaders; these men had obligations to the community, such as feeding visitors and taking care of those who could not help themselves. The degree of power and authority these men held, however, is unknown, and existing data from the contact period is contradictory.

The primary means of subsistence for the Bay Miwok were the collection of wild plants and the hunting of large mammals, such as deer, antelope, and tule elk. Their subsistence ranges were seldom larger than 10 miles square. The gathering of wild plants took place on a seasonal basis, with acorns being the preeminent autumn crop. Other plant foods included seeds (such as wild oats, balsam root, ripgut grass, redmaids, and buttercup), nuts (buckeye, laurel, hazelnut, and pine), roots, and greens. Women were the exclusive collectors of these food sources.

Shelters at the time of European contact were also constructed out of these grasses and boats were constructed out of harvested tules. Men contributed to the food supply by hunting and fishing for game. Larger animals were hunted with bows and obsidian-tipped arrows, and traps and snares were set for smaller mammals.

Europeans first encountered local Native American groups during a 1772 expedition led by Pedro Fages, whose party explored the San Francisco Bay and Carquinez Strait, including the Diablo and Livermore Valleys near Concord. In the spring of 1776, Captain Juan Bautista de Anza established the San Francisco Presidio and by April 1, de Anza's men had traveled through San Francisco, down the peninsula, and up the East Bay shoreline, passing through Antioch and the plains of eastern Contra Costa County toward Tracy.

The historical era in the San Francisco Bay area began with the establishment of Mission Dolores by the Spanish in 1776. During the ensuing "Mission Period" the Spanish colonizers progressively recruited and co-opted the Native American people. In addition, many died from overwork and introduced European diseases. By the beginning of the American historical period, which started with the Gold Rush in 1848, the Bay Miwok (referred to as "Costanoans" by the Spanish) had ceased to exist as an ethnic or linguistic entity.

Archival Research

As noted above, the cultural resources evaluation by Archeo-Tec included additional archival research at the NWIC. The archival search revealed that four prior archaeological investigations have been conducted within ¼-mile of the project site. In one of these investigations, Ecumene Associates performed a 1981 survey of Sanders Ranch, a large property to the north adjacent to a portion of the project site. Ecumene identified three flake scrapers at two locations within the property: one scraper approximately 510 meters to the northeast of the Camino Pablo Subdivision property and the other two approximately 750 meters to the north. No other cultural materials or soils were found in association with any of the flake scrapers.

None of the other three studies encountered any prehistoric cultural resources or significant historical resources within a mile of the project site. These three studies consisted of a survey of the property that was later developed into Rancho Laguna Park (Dietz 1979), a more intensive survey of three acres of the Sanders Ranch development that had been unavailable for study in 1981 (Little 1982), and a survey of 1,600 acres along Buckhorn and Kaiser creeks (Archeo-Tec 1987). The latter study did identify two archaeological sites, one historic and one pre- or proto-

historic, along Kaiser Creek and two prehistoric isolates along Buckhorn Creek, but all of these finds were more than a mile away from the project site, and would be unaffected by development of the proposed project.

Native American Consultation

In accordance with the requirements of Assembly Bill 52 (2014), on behalf of the Town of Moraga, Archeo-Tec initiated consultation with representatives of Native American tribes that may have tribal cultural resources in the project area. On January 18, 2016, Emily Wick of Archeo-Tec contacted the Native American Heritage Commission to formally request they search their Sacred Lands File to determine whether the project encroaches on any recorded areas of cultural importance. On February 1, 2016, Sharaya Souza reported that the Sacred Lands File search produced negative results, but advised that Archeo-Tec contact selected Native American individuals/organizations who may have knowledge of cultural resources in the area; Ms. Souza provided a list of the tribal representatives and their contact information.

Letters were sent by email to all five tribal representatives on February 9, 2016. On February 10, 2016, Michelle Staley spoke by phone with Ann Marie Sayers, Chairperson of the Mutsun Band of Costanoan. Ms. Sayers recommended both archaeological and Native American monitoring of all construction excavation, and recommended that if a burial is found, it be reburied in the open space portion of the property with an easement preventing any further disturbance. Although there was some communication with other tribal representatives, no other input regarding the project was received from the other Native American representatives contacted by Archeo-Tec.

Site Survey

On February 1, 2016, Juliana Quist of Archeo-Tec conducted a surface survey of the portion of the project site that would be developed, shown on Figure CR-1. Parcel A, which would be reserved as open space, was only partially surveyed. The survey area (parcels B, C, and D) consists of an active cow pasture best characterized as a small saddle bounded by significantly steep sloping hills. The overall surface visibility was about 20 percent due to thick grasses caused by recent El Niño rains, but areas with high cow traffic and/or erosion were muddy and clear of grass.

The survey was completed in transects spaced roughly 20 feet apart, following natural topography. Pin flags were used to demarcate sections to ensure complete coverage. The soil was a silty clay loam with almost no rocks or gravel. The land had been furrowed to prevent erosion, but recent rains had caused a few erosion channels to form. These were examined closely for archaeological material, as was the large existing channel in the southern portion of Parcel A. No artifacts of any kind were encountered anywhere on the property. No evidence was seen of any preexisting structure. Aside from a small scattering of modern trash and debris, no cultural materials were observed.

Much of the Camino Pablo Subdivision property consists of slopes greater than 10 percent. Within the areas of proposed development, only Lots 12 and 13, which are located in the western portion of Parcel D along Camino Pablo, are relatively flat. Due to the lower likelihood of human settlement or activity on steep slopes, Archeo-Tec determined that the highest potential sensitivity for archaeological sites would be within Lots 12 and 13.



Figure CR-1

Archaeological Survey Area

Source: Douglas Herring & Associates, dk Consulting

Based on the archival search and the recommendations from the Native American consultation, Archeo-Tec concluded that there is some possibility of encountering buried archaeological resources during construction-related subsurface disturbance. If significant prehistoric cultural artifacts are buried within the footprint of disturbance, they could be damaged or destroyed during site grading and excavation activities. This would constitute a *potentially significant, adverse impact*. Implementation of the following mitigation measures would reduce this potential impact to a less-than-significant level.

- **Mitigation Measure CR-1:** During grading, excavation, or other surface disturbance of the project site areas proposed for Lots 12 and 13, a qualified archeologist shall be present to observe and monitor the activity. Representatives of the Native American organizations contacted during preparation of this Initial Study shall be offered the opportunity to monitor grading/excavation activity on Lots 12 and 13 in tandem with the archeologist, and shall receive notification at least 10 days prior to the work being performed. In the event that prehistoric or historic resources are encountered during excavation and/or grading of the site, the project sponsor shall implement Mitigation Measure CR-2.
- Mitigation Measure CR-2: In the event that prehistoric or historic resources are encountered during excavation and/or grading of any portion of the site, all activity within a 50-foot radius of the find shall be stopped, the Moraga Planning Director shall be notified, and a qualified archeologist or paleontologist shall examine the find and make appropriate recommendations. Recommendations could include collection, recordation, and analysis of any significant cultural materials. A report of findings documenting any data recovery during monitoring shall be submitted to the Planning Director.
- **Mitigation Measure CR-3:** In the event that human remains are discovered during excavation and/or grading of the site, all activity within a 50-foot radius of the site shall be stopped. The Contra Costa County Coroner shall be notified and shall make a determination as to whether the remains are Native American origin or whether an investigation into the cause of death is required. If the remains are determined to be Native American, the Coroner will notify the Native American Heritage Commission (NAHC) immediately. Once the NAHC identifies the most likely descendants, the descendants will make recommendations regarding the proper burial which shall be implemented in accordance with Section 15064.5(e) of the *CEQA Guidelines*.

	Potentially Significant Impact	Less-Than- Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
c) Disturb any human remains, including those interred outside of formal cemeteries?		X		

<u>Explanation</u>: Although it is unlikely that human remains lie buried within the project site, Mitigation Measure CR-2, identified in Section V(b), above, includes requirements for the appropriate disposition of human remains in the event they are encountered during subsurface disturbance of the site during project construction.

<u>VI. ENERGY</u> — *Would the project:*

	Potentially Significant Impact	Less-Than- Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources during project construction or operation?			X	

<u>Explanation</u>: Construction of the proposed project would require consumption of gasoline and diesel fuel by construction workers travelling to and from the site, by trucks delivering construction materials and supplies to the site, and by earthmoving, paving, and other construction equipment. Once the project is completed and occupied, gasoline and diesel fuel would continue to be consumed by residents, visitors, delivery and repair vehicles, and service providers traveling to and from the site. Electricity and natural gas would be consumed for space and water heating and landscape maintenance (i.e., electricity to control irrigation equipment), as well as the operation of household appliances and amenities that the future homeowners might use, such as hot tubs or electric vehicle charging.

The computer modeling of the project's air pollutant emissions described in detail in Section III, Air Quality, utilized standard fuel consumption estimates to determine that project construction activities would require 36,450 gallons of diesel fuel and 5,830 gallons of gasoline.³⁹ For the finishing phase of construction, some electricity may be used (e.g., for power tools and work lighting). While this electricity usage cannot be quantified at this time, it is anticipated to be relatively minor compared to normal building operations. When not in use, electric equipment would be powered off so as to avoid unnecessary energy consumption. Natural gas would not be used during construction.

³⁹Fuel usage was estimated using the CalEEMod output for CO₂, and a kgCO₂/gallon conversion factor, as cited in the U.S. Energy Information Administration Voluntary Reporting of Greenhouse Gases Program, Accessed April 4, 2019 at: <u>https://www.epa.gov/sites/production/files/2015-11/documents/emission-factors_2011.pdf.</u>

During construction of the project, the building contractor would be required by Mitigation Measure AQ-1 (see Section III-b) to limit idling time of equipment and vehicles to 5 minutes or less and maintain construction equipment and vehicles in optimal working condition. These requirements would improve air quality and would also prevent wasteful or inefficient consumption of fuel during project construction. The applicant would also be required to comply with the Town's Construction and Demolition (C&D) Debris Recycling Ordinance codified in Chapter 15.08 of the Municipal Code, which mandates recycling of 100 percent of the Portland cement, asphalt concrete, land-clearing and soils, and plant debris from all covered construction projects, which would include the proposed project. The ordinance requires diversion of at least 50 percent of all remaining C&D debris from landfill disposal. To ensure compliance, the applicant will be required to post a performance security fee of \$10,000 or 3 percent of the total project cost, whichever is less. Compliance with the ordinance would help reduce consumption of energy associated with transport, processing, and disposal of solid waste at landfills.

Annual electricity and natural gas consumption were calculated using the demand factors provided in CalEEMod. The proposed home's lighting and other electrical energy consumption was estimated to be approximately 66,580 kilowatt-hours (kWh) of electricity per year, while natural gas consumption was estimated to be approximately 0.52 million British Thermal Units (BTU) per year. Based on the number of vehicle trips estimated for project operations, the estimated annual vehicle miles traveled for the proposed project would be approximately 357,245 miles, requiring approximately 16,090 gallons of gasoline.

Once the project is completed and occupied, the Town won't have direct control over how residents consume energy, but inefficient use of energy would be minimized through the required compliance with applicable provisions of the California Green Building Standards Code, codified in Title 24 of the California Code of Regulations (CCR), and with general building energy efficiency standards, also part of Title 24, which require energy-efficient ceiling and rafter roof insulation, walls, floors, windows, doors, luminaires, heating and cooling systems, appliances, water heaters, and pool and spa systems.

Part 6 of Title 24 also sets energy and/or water efficiency standards for home appliances, including refrigerators, freezers, dishwashers, clothes washers and dryers, stoves, room and central air conditioners, space heaters, water heaters, pool heaters, plumbing fixtures, incandescent and fluorescent lamps, emergency lighting, luminaires, computers, televisions, audio and video equipment, battery charger systems, and more. There are also federal regulations pertaining to appliance efficiency, and in many cases, the California standards are the same as the federal standards. It should be noted that water efficiency contributes to energy efficiency by reducing energy requirements for treating and pumping domestic water.

Compliance with these required regulations would ensure that construction and operation of the proposed project would not result in wasteful, inefficient, or unnecessary consumption of energy resources. The project would have a *less-than-significant impact* on energy resources.

		Potentially Significant Impact	Less-Than- Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
b)	Conflict with or obstruct a State or local plan for renewable energy or energy efficiency?				X

<u>Explanation</u>: Statewide, the *Integrated Energy Policy Report* prepared by the California Energy Commission provides a blueprint for continuing to grow the California economy while reducing the environmental footprint of its energy system.⁴⁰ The State's energy system includes energy extraction, transport, conversion (such as combusting natural gas in power plants to generate electricity or producing gasoline and diesel from crude oil in refineries), and consumption for services (such as electricity for lighting, natural gas use in homes and buildings for space and water heating, pumping water to communities and crops, and gasoline and diesel to fuel cars and trucks), as well as electricity from out-of-State plants serving California.

California's electricity generation capacity is composed of multiple fuel sources, including coal, hydroelectric, natural gas, nuclear, oil, petroleum coke, waste heat, biomass, geothermal, solar photovoltaic, solar thermal, and wind. In 2018, the State had an installed generation capacity from these multiple sources of 194,727 gigawatt hours (GWh).⁴¹ The composition of California's in-State generation capacity has shifted since the 2002 passage of Senate Bill 1078, which required that 20 percent of electric production come from renewable resources by 2017. With the passage of SB X1-2 in 2011, this was increased to 33 percent renewables by 2020; it was raised again to 50 percent renewables by December 31, 2030 by SB 350, passed in 2015.

Because energy consumption is directly tied to the emissions of GHGs, and in fact, is the source of 80 percent of GHG emissions in the State,⁴² the Town of Moraga's Climate Action Plan (CAP), intended to reduce emissions of GHGs, can be viewed as a local plan for energy efficiency, and in fact it contains GHG reduction measures specifically pertaining to building and energy efficiency as well as measures to conserve water. (As noted above, water conservation has a beneficial effect on energy consumption.) As discussed in more detail in Section VIII-b, below, the project would not conflict with the Town's CAP, and therefore would not conflict with a local plan for energy efficiency.

Because the CEC's *Integrated Energy Policy Report* is intended to reduce GHG emissions by transitioning the State's energy portfolio to more renewable energy sources, it can also be viewed as a plan for renewable energy and energy efficiency on the Statewide level. As discussed in Section VI-a, above, the proposed project would be required to comply with a variety of building and appliance energy efficiency standards, which would maximize its energy efficiency. Therefore, the project would not conflict with a State plan for energy efficiency and there would be no impact.

⁴⁰ California Energy Commission, 2016 Integrated Energy Policy Report Update, February 28, 2017.

⁴¹ California Energy Commission, *California Energy Almanac*, Electric Generation Capacity & Energy, In-State Electric Generation by Fuel Type, Accessed December 23, 2019 at: <u>http://www.energy.ca.gov/almanac/ electricity_data/electric_generation_capacity.html</u>.

⁴² California Energy Commission, 2016 IEPR Update: Integrated Energy Policy Report, Publication No. CEC-100-2016-003-CMF, Chapter 1: Environmental Performance of the Electricity Generation System, 2016.

<u>VII. GEOLOGY AND SOILS</u> — Would the project:

		Potentially Significant Impact	Less-Than- Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
a)	Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:				
	i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.			X	

<u>Explanation</u>: The evaluation of the project's potential geology and soils impacts is based in part on a site-specific geotechnical investigation prepared for the project by ENGEO, Inc.⁴³ It was peer reviewed on behalf of the Town of Moraga by Hultgren-Tillis Engineers. Although the report was prepared in 2015, geological conditions on the site have not changed in the interim, and the conclusions of the report remain accurate and applicable to the site in 2020. The preliminary geotechnical investigation and subsequent geotechnical studies and updates are presented in Appendix D.

The geotechnical investigation determined that no earthquake faults are located on or near the project site. The nearest seismically active fault is the Hayward fault, located approximately 4 miles southwest of the site, while the San Andreas fault lies about 22 miles to the west.

Although no known active faults cross the project site, ENGEO conducted exploratory trenching on the site across the location of a regional thrust fault that was mapped by R.C. Crane in 1988.⁴⁴ A linear trench with an average depth of 9 feet below the ground surface (BGS) was excavated for a distance of 176 feet. The trench walls were examined by ENGEO geologists and soil scientist Dr. Glen Borchardt, who concluded that the thick colluvial soil deposits encountered were indicative of deposition and soil development that has occurred over roughly the last 40,000 years. No shears, clay gouge, or other indications of faulting were observed in the trench. ENGEO determined that there is no evidence of active faulting on the project site or in a southwest-dipping thrust fault that runs along Camino Pablo. The geotechnical investigation concluded that there is a low potential for fault rupture at the project site, and did not recommend any setbacks from the mapped inactive fault. Therefore, the potential for fault rupture at the site would be a less-thansignificant impact.

⁴³ ENGEO, Inc., Preliminary Geotechnical Report, South Camino Pablo Annexation Project, Subdivision 9396, Moraga, California, Project No. 10741.000.000, March 25, 2015.

⁴⁴ ENGEO, Inc., Preliminary Geologic Exploration, 1211 Camino Pablo Annexation Property, Moraga, California, Project No. 10741.000.000, January 21, 2014.

	Potentially Significant Impact	Less-Than- Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
ii) Strong seismic ground shaking?		X		

<u>Explanation</u>: The Town of Moraga is part of the greater San Francisco Bay Area, which is the most seismically active region in the United States. Similar to most urban locations throughout the Bay Area, the project site is potentially subject to moderate to high seismic ground shaking during an earthquake on one of the major active earthquake faults that transect the region. The Association of Bay Area Governments (ABAG) indicates that the project site is in a region that could be exposed seismic shaking with a Modified Mercalli Intensity (MMI) of 8 (Very Strong).⁴⁵

Major earthquakes in the region have occurred on the Hayward, Calaveras, and San Andreas faults during the past 200 years, and numerous minor earthquakes occur along these faults every year. At least five known earthquakes of Richter magnitude (RM) 6.5, four of them greater than RM 7.0, have occurred within the San Francisco Bay Area within the last 150 years. This includes the great 1908 San Francisco earthquake (moment magnitude 7.8) and the 1989 Loma Prieta earthquake (RM 6.9).

According to a 2014 analysis by the Working Group on California Earthquake Probabilities (WGCEP), an expert panel co-chaired by U.S. Geological Society seismologists, there is a 72 percent probability that an earthquake of magnitude 6.7 or greater will occur in the San Francisco Bay Area in the next 30 years and a 20 percent probability that an RM 7.5 earthquake will occur (starting from 2014).⁴⁶ The WGCEP estimates there is a 14.3-percent chance of an RM 6.7 quake occurring on the Hayward fault in the next 30 years. It is therefore likely that a major earthquake will be experienced in the region during the life of the project that could produce strong seismic ground shaking at the project site.

A major earthquake on any of the active faults in the region could result in very strong to violent ground shaking. The intensity of earthquake ground motion would depend upon the characteristics of the generating fault, distance of the site to the earthquake epicenter and rupture zone, magnitude and duration of the earthquake, and site-specific geologic conditions. The California Geological Survey's Interactive Probabilistic Seismic Hazards Ground Motion Interpolator (2008) indicates there is a 2-percent probability that seismic ground shaking will produce a peak horizontal ground acceleration of at least 0.911 g at the site within the next 50 years.⁴⁷ This represents a large amount of ground movement, but translates to an event that would be expected to occur once every 475 years; it also means there is a 90-percent chance this level of ground motion will not be exceeded in the next 50 years. Engineers use the estimated peak horizontal ground acceleration to design buildings for larger ground motions than are expected to occur during a 50-year interval, resulting

⁴⁵ Association of Bay Area Governments, Contra Costa County Earthquake Hazard [map], accessed August 31, 2015 at: <u>http://resilience.abag.ca.gov/earthquakes/contracosta/</u>.

⁴⁶ Edward H. Field and Members of the 2014 Working Group on California Earthquake Probabilities, U.S. Geological Survey, California Geological Survey, UCERF3: A New Earthquake Forecast for California's Complex Fault System, USGS Open File Report 2015-3009, 2015.

⁴⁷ California Department of Conservation, California Geological, Survey, Probabilistic Seismic Hazard Map Ground Motion Interpolator (2008), accessed September 22, 2016 at: <u>http://www.quake.ca.gov/gmaps/PSHA/psha_interpolator.html</u>.

in safer buildings than if they were only designed for the ground motions that we expect to occur in the next 50 years. New buildings are required to be designed in accordance with the California Building Code, which is expected allow a structure to withstand the peak horizontal ground acceleration and associated ground shaking that may occur at a project site.

In addition to the geotechnical investigation by ENGEO cited above, ENGEO subsequently performed a supplemental geotechnical and geologic exploration of the site in 2015, which included advancing five exploratory borings across the proposed development area in order to further characterize the site soils and bedrock.⁴⁸ Advanced to a depth of about 35-1/2 feet below grade, the borings were conducted in the areas of proposed lots 1, 7, 12, 13, and in front of Lot 4 (within proposed Street "A"). In addition, eight exploratory test pits were excavated across the site to depths of approximately 6 to 14 feet below grade. Collected soil samples were submitted for laboratory analysis.

The site is underlain by colluvial soils generally consisting of medium stiff to hard dark brown lean clay derived from weathering of the underlying soft bedrock. The thickness of surficial soils is typically 2 to 4 feet on upland peaks, shoulders, and spur ridges, and considerably deeper on low-lying portions of the site. For example, this soil layer is up to 27 feet thick along Camino Pablo. The soils are underlain by moderately to highly weathered Mulholland Formation bedrock consisting of claystone, siltstone, and sandstone. In many locations the bedrock is closely fractured and weak. The claystone within the Mulholland Formation at the site may have a moderate to high expansion potential.

As shown on Figure GEO-1, the site has experienced numerous prior landslides. They appear to occur as relatively shallow slumps and earth flows ranging from about 5 to 15 feet thick, and some of the slides have been recently active. To address the unstable slopes, ENGEO prepared a corrective grading plan, shown on Figure GEO-2, based on a slope stability analysis of the site under modeled seismic conditions. They calculated a "pseudo-static" seismic coefficient to be 40 percent of the geometric mean peak ground acceleration (PGA_M) of 0.632 g, based on a 15-centimeter threshold of displacement. While the plan was prepared in 2015 for a slightly different project configuration, ENGEO reviewed the current project plans and concluded that the proposed grading and site development are substantially in conformance with their previous geotechnical recommendations, including the corrective grading plan.⁴⁹

The corrective grading plan calls for over-excavation of the landslide debris and other compressible colluvium and placement of engineered fill that must receive special compaction when it occurs within the upper 5 feet of soil that will underlie the proposed residential structures. The plan also calls for excavation of keyways with subdrains at the base of slopes. They are excavated into firm, competent matter to establish a bond between existing soil and the proposed fill slope, and are backfilled with compacted, moisture conditioned fill. The proposed keyways include one 10 feet deep extending across the proposed development area, traversing lots 1 through 6. It would be 30 feet wide along most of its length, then narrow to 20 feet wide across lots 5 and 6. Another 10-foot-deep keyway would extend across the base of lots 9 through 13 that would also wrap around the southern edge of Lot 9. A keyway would also extend along the base of the slope on Lot 1, and another would extend along the southern edges of lots 6 and 7. Subdrains of 6-inch-

⁴⁸ ENGEO, Inc., Supplemental Geotechnical Exploration, South Camino Pablo Annexation Project, Subdivision 9396, Moraga, California, Project No. 10741.000.000, October 26, 2015.

⁴⁹ ENGEO, Inc., South Camino Pablo Annexation Project, Response to Comments, January 3, 2019.



Figure GEO-1

Historic Landslides on the Site

Source: dk Consulting



Figure GEO-2

Corrective Grading/Landslide Removal Plan

Source: EnGeo

diameter perforated PVC pipe surrounded by permeable aggregate should be installed along the length of each keyway and discharge to the storm drain system, though discharge volumes are expected to be low.

Additional slope stability would come from limiting slopes with more than 8 feet in vertical height to a maximum inclination of 3:1 (horizontal: vertical), while 2:1 slopes would be permitted on shorter slopes. The corrective grading plan also includes a 15-foot-wide debris bench extending along the uphill side of the development area to catch and arrest potential erosional soil slides or sloughing from the upper slopes above the proposed development area. A concrete V-ditch would extend along the outboard side of the debris bench that would discharge into the storm drain system.

The geotechnical consultant for the project concluded that with proper site preparation, the site is suitable for the proposed development. However, a strong seismic event could seriously damage the proposed project and put its occupants at risk, which would be a *potentially significant impact*. Accordingly, the following measures are recommended to reduce this impact to a less-than-significant level:

Mitigation Measure GS-1:

Prior to issuance of a grading permit, the project sponsor shall retain the services of a qualified geotechnical engineer or engineering geologist to prepare a design-level geotechnical investigation for purposes of identifying project-specific foundation and structural design features needed for the project to withstand the seismic shaking intensity expected at the site in the event of a large earthquake. The report shall confirm or clarify the site preparation recommendations related to remedial grading and slope reinforcement presented in the March 2015 Preliminary Geotechnical Report and October 2015 Supplemental Geotechnical Exploration prepared by report ENGEO, Inc. The the recommendations in preliminary supplemental and geotechnical investigation reports shall be updated or modified as appropriate to reflect the design-level geotechnical investigation to the satisfaction of the Town.

Mitigation Measure GS-2: The proposed project shall be designed and constructed in accordance with all of the site preparation, foundation design, structural design, drainage, ground improvement performance testing, pavement design, and other recommendations presented in the design-level geotechnical investigation required by Mitigation Measures GS-1, unless modified during construction, based on field conditions, by a qualified registered geotechnical or civil engineer. In addition, the final grading plans shall be reviewed by a qualified registered geotechnical or civil engineer, and any resulting additional recommendations shall be incorporated into the project. All site preparation work shall be performed under the observation of the Geotechnical Engineering firm of record. All design and construction shall conform to the requirements of the latest California Building Code. All structural design and

construction shall be subject to final approval by the Contra Costa County Building Department.

					Potentially Significant Impact	Less-Than- Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
iii)	Seismic-related liquefaction?	ground	failure,	including		\boxtimes		

Explanation: Liquefaction occurs when clean, loose, saturated, uniformly graded, fine-grained soils are exposed to strong seismic ground shaking. The soils temporarily lose strength and cohesion due to buildup of excess pore water pressure during earthquake-induced cyclic loading, resulting in a loss of ground stability that can cause building foundations to fail. Soil liquefaction may also damage roads, pavements, pipelines, and underground cables. Soils susceptible to liquefaction include saturated, loose to medium dense sand and gravel, low-plasticity silt, and some low-plasticity clay deposits.

The project site is mapped by the U.S. Geological Survey (USGS) as having a Moderate potential for liquefaction, as indicated on a large-scale regional map published by the USGS.⁵⁰ On the other hand, the site-specific supplemental geotechnical investigation for the project found that the subsurface strata at the site include stiff clays and bedrock, which are not susceptible to

liquefaction.⁵¹ However, as discussed in the preceding section, absent corrective measures, the landslide deposits and potentially compressible colluvial soils on the site could become unstable during a strong seismic event. Seismic-related slope failure could damage building foundations, pavements, and underground utilities in the event of a severe earthquake, and could result in structural failure of the proposed homes. While this would be a *potentially significant impact*, implementation of Mitigation Measures GS-1 and GS-2 would reduce the impact to a less-than-significant level.

Ground lurching is another form of potential seismic ground failure. Lurching is a result of the rolling motion imparted to the ground surface during energy released by an earthquake, and can cause ground cracks to form. The greatest potential for the formation of these cracks occurs at contacts between deep alluvium and bedrock, such as those at the margins of valley flood plains. Although the geotechnical investigation discussed in Section VI(a)(ii) concluded there is low potential for ground lurching at the site, implementation of the required corrective grading measures identified in the March 2015 Preliminary Geotechnical Report and October 2015 Supplemental Geotechnical Exploration report prepared by ENGEO would ensure that the risk of lurching would not be a significant hazard at the site.

Other forms of seismic-related ground failure are addressed in Section VI(c), below.

⁵⁰ U.S. Department of Interior, U.S. Geological Survey, Preliminary Maps of Quaternary Deposits and Liquefaction Susceptibility, Nine-County San Francisco Bay Region, California, Open File Report 00-444, 2000.

⁵¹ ENGEO, Inc., October 26, 2015, op. cit.

	Potentially Significant Impact	Less-Than- Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
iv) Landslides?		X		

Explanation: As discussed in more detail in Section VI(a)(ii), above, the steep site has experienced numerous landslides in the past, and is susceptible to additional slope failure in the future if not adequately stabilized. While this would be a *potentially significant impact*, implementation of Mitigation Measures GS-1 and GS-2 would reduce the impact to a less-than-significant level.

	Potentially Significant Impact	Less-Than- Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
b) Result in substantial soil erosion or the loss of topsoil?		\boxtimes		

Explanation: Any construction project that exposes surface soils creates a potential for erosion from wind and stormwater runoff. The potential for erosion increases on large, steep, or windy sites; it also increases significantly during rainstorms. Given the size and steepness of the proposed development area, there is potential for erosion, particularly in areas where the vegetation cover is thin.

Post-construction erosion potential at the site would be substantially reduced through the site design and erosion control measures such as hydro seeding of slopes and placement of erosion control fabric where appropriate, which would be part of the required Stormwater Pollution Prevention Plan (SWPPP) discussed in Section X-a, below. All exposed slopes would be revegetated. Site design features that would reduce erosion would include the debris bench with concrete ditch, retaining walls, limited slope inclinations, and on-site bio-retention facilities.

Construction of the project would require extensive disturbance of the site soils, which would significantly increase the potential for erosion, particularly during wet and/or windy weather. Development of the site would exceed the one-acre threshold above which the San Francisco Bay Regional Water Quality Control Board (RWQCB) requires implementation of erosion control measures as part of coverage under a Construction General Permit (CGP). The CGP is administered by the RWQCB on behalf of the State Water Resources Control Board (SWRCB).

Site grading and other soil disturbance at the site would create the potential for erosion, which could increase sedimentation in stormwater discharged from the site. Surface runoff from the site currently flows into V-ditches located adjacent to Camino Pablo and parallel to Sanders Ranch Road. Water collected in these ditches is discharged into a storm drain running under Tharp Drive that drains into Moraga Creek, which ultimately discharges into San Francisco Bay via Upper San Leandro Reservoir and San Leandro Creek. Any eroded soil or other pollutants discharged from the site could therefore adversely affect water quality in these surface waters, which would be considered a *potentially significant impact*. The impact would be reduced to a less-than-significant

level through implementation of the erosion controls and other best management practices identified in the SWPPP required for compliance with the municipal regional stormwater permit (see Section X-a).

		Potentially Significant Impact	Less-Than- Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
<i>c)</i>	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 landslide, lateral spreading, subsidence, liquefaction, or collapse?		X		

Explanation: The potential for landslide at the site is addressed in Section VI(a)(ii), above. The potential for liquefaction is discussed in Section VI(a)(iii).

Lateral spreading involves lateral ground movements caused by seismic shaking. These lateral ground movements are often associated with a weakening or failure of an embankment or soil mass overlying a layer of liquefied or weak soils. The geotechnical evaluation by ENGEO determined that since the onsite soils are unlikely to be susceptible to liquefaction, the potential for lateral spreading at the site is considered negligible.

Subsidence, or the downward movement of soils, is related to the density and compressibility of the soils. The subsurface testing of the site by ENGEO encountered colluvium that is compressible. The compressible clays are expected to result in settlement as a result of compaction due to increased loads on the site surface. ENGEO estimated that about 2 to 3 inches of settlement of the native colluvium material could occur under the proposed 30 feet of fill. The rate of settlement will depend to a large extent on the rate that groundwater can drain through the colluvium, but the geotechnical consultant estimated that the majority of the settlement will be completed within one year, though it could be substantially complete within several months. The corrective grading measures recommended by ENGEO would mitigate compressible soil settlement. While subsidence of soils could damage building foundations and site pavements, which would be a *potentially significant impact*, implementation of Mitigation Measures GS-1 and GS-2 would reduce the impact to a less-than-significant level.

Corrective grading of potentially unstable soils including construction of drained keyways, removal of compressible colluvial soils and soft sediment, and rebuilding graded slopes with compacted engineered fill would minimize the potential for unstable slopes and other ground surfaces. As required by Mitigation Measure GS-2, all excavations and other site preparation work would be overseen by the Geotechnical Engineer of record during site grading to confirm conformance with recommendations in the geotechnical investigations.

	Potentially Significant Impact	Less-Than- Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property?		X		

<u>Explanation</u>: Expansive soils have a high shrink-swell potential, and generally occur where soils have a high clay content. Expansive soils form weak support for buildings, and can amplify the effects of seismic shaking during an earthquake, posing a threat to structural stability of buildings. The preliminary geotechnical investigation for the project identifies expansive soils on the site, noting that the clayey soils and claystone units within the bedrock in the region have moderate to high plasticity and moderate to critically high expansion potential. With appropriate site preparation and building design, the hazards from expansive soils can be substantially reduced. Therefore, while the potential for expansive soils at the site could pose a risk to residents of the project, which would be a *potentially significant impact*, implementation of Mitigation Measures GS-1 and GS-2 would reduce the impact to a less-than-significant level.

		Potentially Significant Impact	Less-Than- Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
e)	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?				\mathbf{X}

Explanation: The project site is served by a municipal sewer system, and the proposed project would not require the use of a septic or alternative wastewater disposal system. Therefore, there would be no impact.

	Potentially Significant Impact	Less-Than- Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
f) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?		X		

Explanation: Paleontological resources are the fossilized remains of vertebrate or invertebrate organisms from prehistoric environments found in geologic strata. They are valued for the information they yield about the history of the earth and its past ecological settings. They are most typically embedded in sedimentary rock foundations, and may be encountered in surface rock outcroppings or in the subsurface during site grading. They can also occur in Pleistocene-era

alluvial and fluvial strata. The Moraga General Plan Environmental Impact Report (EIR) stated that no known paleontological resources or unique geological features are located in Moraga, but concluded that such resources could be encountered during ground excavation.⁵² Geological investigations of the project site indicate that soils at the site consist of Pleistocene-era colluvium.^{53, 54} Therefore, there is some potential for encountering paleontological resources on the site during project construction. Any destruction of unique paleontological resources during earthmoving activities would be a *potentially significant impact*. Implementation of the following measure would reduce this potential impact to a less-than-significant level:

Mitigation Measure GS-3: If any paleontological resources are encountered during site grading or other construction activities, all ground disturbance shall be halted, the Moraga Planning Director shall be notified, and the services of a qualified paleontologist shall be retained to identify and evaluate the scientific value of the resource(s) and, if necessary, recommend measures to document and prevent any significant adverse effects on the resource(s). Significant paleontological resources shall be salvaged and deposited in an accredited and permanent scientific institution, such as the University of California Museum of Paleontology (UCMP), and shall be recorded with the U.S. Geological Survey.

<u>VIII. GREENHOUSE GAS EMISSIONS</u> — *Would the project:*

		Potentially Significant Impact	Less-Than- Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
a) (c t	Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?			X	

Explanation: "Global warming" and "global climate change" are the terms used to describe the increase in the average temperature of the earth's near-surface air and oceans since the mid-20th century and its projected continuation. Warming of the climate system is now considered to be unequivocal, with global surface temperature increasing approximately 1.33 degrees Fahrenheit (°F) over the last 100 years. Continued warming is projected to increase global average temperature between 2 and 11°F over the next 100 years.

⁵² Town of Moraga, *Moraga 2000 General Plan Update Draft Environmental Impact Report*, Chapter 4.J, Cultural Resources, August 2000.

⁵³ ENGEO, Inc., Geologic Hazards and Mitigation Measures for the South Camino Pablo Annexation Project, Project No. 10741.000.000, August 14, 2015.

⁵⁴ ENGEO, Inc., Preliminary Geotechnical Report, South Camino Pablo Annexation Project, Subdivision 9396, Moraga, California, Project No. 10741.000.000, March 25, 2015.

Natural processes and human actions have been identified as the causes of this warming. The International Panel on Climate Change (IPCC) concludes that variations in natural phenomena such as solar radiation and volcanoes produced most of the warming from pre-industrial times to 1950 and had a small cooling effect afterward. After 1950, however, increasing greenhouse gas (GHG) concentrations resulting from human activity such as fossil fuel burning and deforestation have been responsible for most of the observed temperature increase. These basic conclusions have been endorsed by more than 45 scientific societies and academies of science, including all of the national academies of science of the major industrialized countries. Since 2007, no scientific body of national or international standing has maintained a dissenting opinion.

Increases in GHG concentrations in the earth's atmosphere are thought to be the main cause of human-induced climate change. GHGs naturally trap heat by impeding the exit of solar radiation that has hit the earth and is reflected back into space. Some GHGs occur naturally and are necessary for keeping the earth's surface inhabitable. However, increases in the concentrations of these gases in the atmosphere during the last 100 years have decreased the amount of solar radiation that is reflected back into space, intensifying the natural greenhouse effect and resulting in the increase of global average temperature.

Gases that trap heat in the atmosphere are referred to as GHGs because they capture heat radiated from the sun as it is reflected back into the atmosphere, much like a greenhouse does. The accumulation of GHGs has been implicated as the driving force for global climate change. The primary GHGs are carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (N_2O), ozone, and water vapor.

While the presence of the primary GHGs in the atmosphere are naturally occurring, CO_2 , CH_4 , and N_2O are also emitted from human activities, accelerating the rate at which these compounds occur within earth's atmosphere. Emissions of CO_2 are largely by-products of fossil fuel combustion, whereas methane results from off-gassing associated with agricultural practices and landfills. Other GHGs include hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride, and are generated in certain industrial processes. Greenhouse gases are typically reported in "carbon dioxide-equivalent" terms (CO_2e).⁵⁵

 CO_2 is the reference gas for climate change because it is the predominant GHG emitted. The effect that each of the aforementioned gases can have on global warming is a combination of the mass of their emissions and their global warming potential (GWP). GWP indicates, on a pound-for-pound basis, how much a gas is predicted to contribute to global warming relative to how much warming would be predicted to be caused by the same mass of CO_2 . CH₄ and N₂O are substantially more potent GHGs than CO_2 , with GWP of 25 and 310 times that of CO_2 , respectively.

In emissions inventories, GHG emissions are typically reported in terms of pounds or metric tons (MT) of CO_2 equivalents (CO_2e). CO_2e are calculated as the product of the mass emitted of a given GHG and its specific GWP. While CH_4 and N_2O have much higher GWP than CO_2 , CO_2 is emitted in such vastly higher quantities that it accounts for the majority of GHG emissions in CO_2e .

Fossil fuel combustion, especially for the generation of electricity and powering of motor vehicles, has led to substantial increases in CO_2 emissions (and thus substantial increases in atmospheric concentrations of CO_2). In pre-industrial times (c. 1860), concentrations of atmospheric CO_2 were

⁵⁵ Because of the differential heat absorption potential of various GHG, GHG emissions are frequently measured in "carbon dioxide-equivalents," which present a weighted average based on each gas's heat absorption (or "global warming") potential.

approximately 280 parts per million (ppm). By February of 2019, atmospheric CO₂ concentrations had increased to 412 ppm, 47 percent above pre-industrial concentrations.⁵⁶ There is international scientific consensus that human-caused increases in GHGs have contributed and will continue to contribute to global warming.

Potential global warming impacts in California may include, but are not limited to, loss in snow pack, sea level rise, more extreme heat days per year, more high ozone days, more large forest fires, and more drought years. Secondary effects are likely to include a global rise in sea level, impacts to agriculture, changes in disease vectors, and changes in habitat and biodiversity.57

For quantifying a project's GHG emissions, BAAQMD recommends that all GHG emissions from a project be estimated, including a project's direct and indirect GHG emissions from operations. Direct emissions refer to emissions produced from onsite combustion of energy, such as natural gas used in furnaces and boilers, emissions from industrial processes, and fuel combustion from mobile sources. Indirect emissions are emissions produced offsite from energy production and water conveyance due to a project's energy use and water consumption.

Because BAAQMD has not established separate thresholds of significance for construction-related emissions of GHGs, the assessment of potential GHG impacts presented addresses both construction and operational GHG emissions together, and applies the operational standards of significance to both emissions sources. CalEEMod was used to quantify GHG emissions associated with construction activities, as well as long-term operational emissions produced by motor vehicles, natural gas combustion for space and water heating, electricity use, and landscape maintenance equipment.

Emissions rates associated with electricity consumption were adjusted to account for Pacific Gas & Electric utility's projected 2020 CO2 intensity rate. This 2020 CO2 intensity rate is based, in part, on the requirement of a renewable energy portfolio standard of 33 percent by the year 2020. CalEEMod uses a default rate of 641 pounds of CO2 per megawatt of electricity produced, corresponding to the year 2008. The projected CO2 intensity rate of 290 pounds of CO2 per megawatt of electricity produced was used to represent the year (2021) in which the project would become fully operational.⁵⁸

The proposed project's estimated construction GHG emissions are presented in Table GHG-1. There is no BAAQMD CEQA significance threshold for construction-related GHG emissions, so this analysis (similar to many other analyses prepared in the San Francisco Bay Area Air Basin) amortizes the construction emissions over the lifetime of the proposed project (30 years).⁵⁹. The estimated construction GHG emissions would be 530 metric tons of CO2e, which are well below the operational significance threshold of 1,100 metric tons of CO2e per year. The 30-year amortized construction GHG emissions would be 17.7 metric tons of CO2e. Construction

⁵⁶Earth System Research Laboratory, *Recent Monthly Mean CO2 at Mauna Lora*, Accessed April 4, 2019 at: www.esrl.noaa.gov/gmd/ccgg/trends/.

⁵⁷ California Climate Change Portal. Frequently Asked Questions about Global Climate Change, Accessed April 4, 2019 at: <u>https://www.climatechange.ca.gov.</u>

⁵⁸ PG&E, Greenhouse Gas Emission Factors: Guidance for PG&E Customers, November 2015.

⁵⁹ For CEQA documents within the BAAQMD and the Town of Moraga, it is customary to amortize construction GHG emissions over a 30-year project lifetime and add the annualized GHG emissions to the operational GHG emissions, and compare the total emissions to the significance threshold.

GHG emissions are a one-time release and are, therefore, not typically expected to generate a significant contribution to global climate change in the long-term. Thus, the construction emissions from the proposed project would have a *less-than-significant impact* on climate change.

The regulations, plans, and polices adopted for the purpose of reducing GHG emissions that are directly applicable to the proposed project include Title 24 Energy Efficiency Standards for Residential and Nonresidential Buildings and the Title 24 California Green Building Standards Code. The proposed project would be developed to comply with Title 24 Energy Efficiency Standards for Residential and Nonresidential Buildings and would be required to comply with Title 24 California Green Building Standards Code.

Estimated construction and operational GHG emissions from the proposed project are presented in Table GHG-1. The proposed project would include high-efficiency lighting, reduced indoor and outdoor water use practices, solar technology, and other energy efficient project design elements. These elements were accounted for in CalEEMod and their benefits are quantified in the operational GHG emissions shown in Table GHG-1. The combined GHG construction and operational emissions would be 210 metric tons of CO2e per year, which is below the BAAQMD significance threshold of 1,100 metric tons of CO2e. The GHG construction and operational emissions would be 4.55 metric tons of CO2e per service population (approximately 49 residents) per year, which is below the BAAQMD threshold of 4.6 metric tons of CO2e per service population. Thus, the proposed project would have a *less-than-significant impact* due to construction and operational GHG emissions. Notably, the energy-efficient project design elements associated with the proposed project would reduce the GHG emissions by approximately 13 metric tons of CO2e (or a 6-percent reduction due to project design elements).

Emission Source	Annual CO2e Metric Tons
Construction (30-year amortized)	17.7
Operations: Area Sources	1.06
Operations: Energy	36.6
Operations: Mobile	143
Operations: Solid Waste	9.50
Operations: Water	1.31
Total GHG Emissions	210
BAAQMD Brightline Threshold	1,100
Potentially Significant?	No
Total GHG Emissions per Service Population	4.55
BAAQMD Efficiency Threshold	4.60
Potentially Significant?	No

Table GHG-1 Estimated Greenhouse Gas Emissions (metric tons of CO2e)

Source: CalEEMod Version 2013.2.2.
		Potentially Significant Impact	Less-Than- Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
b) C a o	Conflict with an applicable plan, policy, or regulation dopted for the purpose of reducing the emissions f greenhouse gases?				X

Explanation: The Town of Moraga has adopted a Climate Action Plan (CAP) for the purpose of reducing the emissions of greenhouse gases.⁶⁰ The CAP establishes a baseline of government and community-wide inventory of GHG emissions. The CAP is designed to achieve the goal of reducing GHG emissions by 40 percent before 2030 and thus, adhere to the AB 32 goals. The proposed project would result in a significant impact if it would be in conflict with AB 32 State goals.

The proposed project would be subject to all applicable permit and planning requirements in place or adopted by the Town of Moraga and the State of California at the time that building permits are issued. With adherence to California Green Building Standards Code, the proposed project would be consistent with plans, policies, and regulations for reduction of GHGs, and would therefore also be consistent with AB 32 and other Statewide goals for GHG reduction. Thus, the proposed project would have a *less-than-significant impact* related to a conflict with a GHG reduction plan. Lastly, because the proposed project would also utilize renewable energy, the project would reduce GHG emissions, thus lessening the amount of pollution emitted overall.

IX. HAZARDS AND HAZARDOUS MATERIALS — Would the project:

	Potentially Significant Impact	Less-Than- Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Create a significant hazard to the public or a environment through the routine transport, use, disposal of hazardous materials?	he or 🔲		X	

<u>Explanation</u>: The proposed project would not create a significant hazard through the routine transport, use, or disposal of hazardous materials. While construction of the project could entail transport and use of hazardous materials for equipment operation and maintenance, such as motor oil, transmission fluid, solvents, or construction materials, such use would be in quantities ordinarily used for their intended purposes and used in accordance with applicable law. Such use is typical of most construction projects and does not represent a significant hazard. Once construction is complete and the project is occupied, residential occupants of the site would be

⁶⁰ Town of Moraga, Town of Moraga Climate Action Plan, October 2014.

expected to store and use small containerized quantities of hazardous household, outdoor landscape care, and automotive products of a wide variety. This type of usage is typical of all residential development, and would not constitute a significant hazard to the public or the environment. Impacts would be less than significant.

		Potentially Significant Impact	Less-Than- Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
b)	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?			X	

<u>Explanation</u>: As discussed in Section VIII(a) above, the proposed project would not introduce hazardous materials beyond those generally found within residential uses, including containerized household, yard care, and automotive products. While there is potential for hazardous materials to be released to the environment as a result of spills or leaks from construction equipment and vehicles during project development, the required Stormwater Pollution Prevention Plan (SWPPP) discussed in Section X-a, below, would include provisions for proper equipment/vehicle fueling and maintenance practices, control of discharge from washing of equipment and vehicles, and a spill prevention and response plan. Implementation of the SWPPP would minimize the risk of construction upset or accident conditions causing a release of hazardous materials into the environment and would include containment provisions in the event of a spill that would ensure that any release would not create a significant *impact* related to upset or accident conditions involving the release of hazardous materials into the environment.

There are no active permitted underground storage tank facilities (UST), leaking underground storage tank (LUST) cleanup sites, or other hazardous materials release sites on the project site or within a 1,000-foot radius of the site as tracked by the State Water Resources Control Board (SWRCB) on its GeoTracker database.⁶¹ In addition, there are no hazardous waste or hazardous materials release sites within a 1,000 feet of the project site listed on the California Department of Toxic Substances Control's EnviroStor database (which includes Federal Superfund Sites, State Response Sites, Voluntary Cleanup Sites, School Cleanup Sites, Corrective Action Sites, Tiered Permit Sites, Permitted Hazardous Waste Facilities, Post Closure and Hazardous Waste Facilities, and Historical Non-Operating Hazardous Waste Facilities).⁶²

There is no known historical use of hazardous materials on or in the vicinity of the project site. Historical aerial photographs dating back to 1946 and historical topographic maps dating back to 1897 were reviewed as part of this environmental review and there was no evidence identified in any of the photos or maps examined that there has ever been any land use on the project site that

⁶¹ California Environmental Protection Agency, State Water Resources Control Board, Groundwater Ambient Monitoring & Assessment Program (GAMA), GeoTracker GAMA Groundwater Data Sources, Accessed April 3, 2019 at: https://geotracker.waterboards.ca.gov/map/?CMD=runreport&myaddress=1850+Camino+Pablo, +Moraga,+CA.

⁶² California Department of Toxic Substances Control, EnviroStor Data Base of Cleanup Sites and Hazardous Waste Permitted Facilities, accessed April 3, 2019 at: <u>https://www.envirostor.dtsc.ca.gov/public/map/?myaddress</u> =1850+Camino+Pablo,+Moraga,+CA.

could have resulted in contamination of soil or groundwater at the site. Based on this review of available information sources, the proposed project would not cause a release of hazardous materials into the environment and there would be no operational impact.

		Potentially Significant Impact	Less-Than- Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
<i>c)</i>	Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?				X

Explanation: There are no schools located within one-quarter mile of the project site. The nearest school is Camino Pablo Elementary School, located at 1111 Camino Pablo, about 3,200 feet (0.61 mile) northwest of the site. In any event, the proposed project would not emit hazardous emissions, handle hazardous materials, or generate hazardous waste. There would be no project impact on schools related to hazardous materials.

		Potentially Significant Impact	Less-Than- Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
d)	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, would it create a significant hazard to the public or the environment?				X

Explanation: As discussed in Section VIII-b, above, the EnviroStor database maintained by the California Department of Toxic Substances Control (DTSC) and the GeoTracker database maintained by the State Water Resources Control Board (SWRCB) were consulted during the environmental review of the project. These databases consolidate listings of materials release sites, hazardous materials use and storage sites, or hazardous waste generation, including those compiled pursuant to Government Code Section 65962.5. The GeoTracker database is focused on sites with the potential to adversely affect groundwater quality, while the EnviroStor database lists hazardous waste facilities and cleanup sites. In addition, the Contra Costa County Certified Unified Program Agency (CUPA), which implements within the County the hazardous waste and materials standards set by the California Environmental Protection Agency (CalEPA), DTSC, SWRCB, and other State agencies, was consulted about the project. The project site is not listed by the Contra Costa County CUPA, nor is it listed on the EnviroStor or GeoTracker databases.⁶³ Therefore, there is no potential for the project site to pose a significant hazard to the public or the environment and therefore, no impact.

⁶³ Alex McMullen, Clerical Supervisor, Contra Costa County Health Services, Hazardous Materials Programs, personal communication, April 3, 2019.

		Potentially Significant Impact	Less-Than- Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
e)	For a project 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, would the project result in a safety hazard for people residing or working in the project area?				X

Explanation: The nearest public airport to the project site is Oakland International Airport, located about 8.5 miles southwest of the project site. In addition, the Little Hands Airport, a small privately owned airport, is located about 4.7 miles to the east, and the Bishop Ranch Heliport is located in San Ramon, about 8 miles southeast of the project site. There are no airports within 2 miles of the site and the site does not fall within the planning area for an airport land use plan. There is therefore no project impact regarding a safety hazard related to airport operations.

	Potentially Significant Impact	Less-Than- Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
f) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?				\boxtimes

Explanation: The Town of Moraga adopted its *Emergency Operations Plan* (EOP) in 2018 by Town Council Resolution 49-2018.⁶⁴ The EOP is to be activated during a local, state, or national emergency by Director of Emergency Services (Town Manager) or, in the absence of the Director, by the Assistant Director of Emergency Services (Chief of Police). It is intended to integrate with the Contra Costa County emergency response plans discussed below, and includes many of the same provisions.

The EOP assigns responsibilities for emergency response and provides a framework for coordination of response and recovery efforts within the Town. It identifies personnel, equipment, facilities, supplies, and other emergency response resources available in Moraga or by agreement with other jurisdictions. The EOP identifies potential hazards or emergency conditions that may occur in the Town and includes a hazard analysis that assigns probabilities to each hazard. Potential hazards or emergency conditions in Moraga include wildfire, earthquake, severe weather, landslide, flood, and drought, among others. These hazards have been addressed elsewhere in this Initial Study in the pertinent topical sections.

The Town's primary Emergency Operations Center (EOC)—from which centralized management of an emergency response is performed—is in the Moraga Town Council Chambers at 335 Rheem Boulevard. The EOC may be moved to an alternative location at the discretion of the Director of

⁶⁴ Town of Moraga, *Emergency Operations Plan*, August 2018.

Emergency Services. The alternate EOC locations are the Moraga-Orinda Fire Station No. 42 at 555 Moraga Road and Moraga Town Hall at 329 Rheem Boulevard.

The *Contra Costa County Emergency Operations Plan* establishes policies and procedures for responding to emergencies within the County, including within the cities and towns as well as the unincorporated areas of the County.⁶⁵ It identifies procedures for a wide range of emergencies, including earthquake, flood, wildland fire, tsunami, landslide, hazardous materials incident, dam failure, explosions, infectious disease breakout, terrorist acts, national security emergency, and more. It provides for coordination during emergencies of the Emergency Operations Center (EOC) with local jurisdictions, the California Emergency Management Agency (CALEMA) Mutual Aid Region II, the California Emergency Management Agency Warning Center, the California Standardized Emergency Management System (SEMS), and the National Incident Management System (NIMS), as applicable. The plan also provides guidance on preventing future emergencies or minimizing their effects, training and preparing to handle an emergency, and steps for recovering from an emergency. Implementation of the proposed remediation project would not interfere with implementation of the Emergency Operations Plan. It would not block or disrupt access on local roadways that might be used by emergency responders or as evacuation routes.

Contra Costa County also adopted a Local Hazard Mitigation Plan (LHMP) in 2018, in compliance with the federal Disaster Mitigation Act (DMA) passed in 2000.⁶⁶ In addition to providing an assessment of risks throughout the County related to earthquake, drought, dam or levee failure, tsunami, flood, wildfire, landslide, severe weather, climate change, and various human-caused hazards, the LHMP includes specific hazard assessments and hazard mitigation plans for the city and town partners within the County. The proposed annexation of the project site and development of the site with 13 single-family homes is explicitly identified and considered in the hazard mitigation plan for the Town of Moraga. The LHMP identifies 18 hazard mitigation actions to be undertaken by the Town, such as continuing to repair and make structural improvements to storm drains and channels to mitigate flooding impacts. The proposed project would not impair implementation of any of these mitigation actions.

Although the project would cause a minor incremental increase in the population of Moraga of just 49 persons (see Section XIII, Population and Housing), this would not appreciably increase the burden on emergency responders in the event of a natural disaster or other emergency. The proposed project would therefore have a *less-than-significant impact* related to potential conflicts with adopted emergency response plans.

⁶⁵ Contra Costa County, Office of Emergency Services, Contra Costa County Emergency Operations Plan, June 16, 2015.

⁶⁶ Contra Costa County, Office of Emergency Services, Contra Costa County Hazard Mitigation Plan, January 2018.

	Potentially Significant Impact	Less-Than- Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
g) Expose people or structures, either directly or indirectly, to significant risk of loss, injury, or death involving wildland fires?			X	

<u>Explanation</u>: The California Department of Forestry (CAL-FIRE) has primary responsibility for fighting wildland fires in unincorporated areas, and provides fire-fighting assistance to local fire protection agencies on wildland fires within incorporated cities. CAL-FIRE also provides response for other types of emergencies, including automobile accidents, drownings, medical emergencies, hazardous materials spills, search and rescue missions, and much more.

The project is located at an interface between urbanized development and wildlands in the form of grazed, non-native grasses. There are no trees or bushes on the project site, although there is a stand of trees adjacent to the site where Camino Pablo intersects with Sanders Ranch Road. The project site is within a State Responsibility Area (SRA), which assigns primary responsibility for fire protection to CAL-FIRE.⁶⁷ However, the site is also located within the district boundary and sphere of influence of the Moraga-Orinda Fire Protection District (MOFD),⁶⁸ and the MOFD would provide primary fire protection response to the proposed project.⁶⁹ (See Section XIV(a) for additional discussion about potential impacts to the MOFD.)

The site is within a larger area that has been designated as a High Fire Hazard Severity Zone (HFHSZ), as mapped by CAL-FIRE.⁷⁰ However, the site is not located within a Very High Fire Hazard Severity Zone (VHFHSZ), and is therefore not subject to additional fire safety requirements as such.⁷¹

A Fire Prevention Fee was enacted by CAL-FIRE following the passage of Assembly Bill (AB) X1 29 in July 2011. However, on July 25, 2017 former Governor Edmund G. Brown signed AB 398, which suspended the SRA Fire Prevention Fee until 2031. This change was made because funding for fire prevention services was secured through renewal of the State's Cap-and-Trade Program, which is intended to reduce Statewide emissions of greenhouse gases, which are released in large quantities by uncontrolled wildfires.

Because the project site is not located within a Very High Fire Hazard Severity Zone, is not located in proximity to any substantial fuel sources (e.g., trees), and would receive first response fire protection from the MOFD, which has a fire station approximately 2 miles from the project site,

⁶⁷ California Department of Forestry and Fire Protection (CAL-FIRE), Fire and Resource Assessment Program, "Contra Costa County State Responsibility Areas for Fire Protection" [map], February 2014.

⁶⁸ Moraga-Orinda Fire Protection District, "Moraga-Orinda Fire Protection District Boundary and Sphere of Influence" [map], accessed April 3, 2019 at: <u>http://www.mofd.org/about</u>.

⁶⁹ Kathy Leonard, Fire Marshall, Moraga-Orinda Fire Protection District, "Re: Camino Pablo Subdivision Conceptual Plans" [letter], November 5, 2015, reconfirmed on April 8, 2019 via personal communication.

⁷⁰ California Department of Forestry and Fire Protection (CAL-FIRE), Fire and Resource Assessment Program, "Contra Costa County Fire Hazard Severity Zones in SRA" [map], adopted November 7, 2007.

⁷¹ California Department of Forestry and Fire Protection (CAL-FIRE), Fire and Resource Assessment Program, "Contra Costa County Very High Fire Hazard Severity Zones in LRA, As Recommended by CAL-FIRE" [map], January 7, 2009.

the project would not expose people or structures to a significant risk of loss, injury, or death involving wildland fires. Therefore, the proposed project would have a *less-than-significant impact* related to wildland fires. However, an issue has been identified related to regular fire protection provided by the Moraga-Orinda Fire District (MOFD); it is addressed in Section XV-a, and includes mitigation requirements.

<u>X. HYDROLOGY AND WATER QUALITY</u> — Would the project:

	Potentially Significant Impact	Less-Than- Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality?			X	

Explanation:

Operational Impacts

For residential development projects, the most common source of pollutants with a potential to degrade surface water quality is the automobile, which deposits oil and grease, fuel residues, heavy metals (e.g. lead, copper, cadmium, and zinc), tire particles, and other pollutants onto roadways and parking areas. These contaminants can be washed by stormwater runoff into surface waterways, degrading water quality.

Urban/suburban developments introduce a variety of other pollutants that contribute to surface water pollution, including pesticides, herbicides, and fertilizers from landscaping; organic debris (e.g. grass, leaves); weathered paint; eroded metals from painted and unpainted surfaces; organic compounds (e.g., cleaners, solvents, adhesives, etc.); nutrients; bacteria and viruses; and sediments. Even building rooftops are a source of pollutants, because mercury and polychlorinated biphenyls (PCBs) are airborne pollutants that get deposited on roofs and other impervious surfaces. While the incremental pollutant load from a single site may not be significant, the additive, regional effects of pollutants from all development have a significant adverse effect on water quality and the innumerable organisms that depend on the region's surface water bodies. Even low concentrations of heavy metals such as mercury bioaccumulate in fish, resulting in levels that adversely affect the health of sea animals and humans that eat them. Testing in the San Francisco Bay Area has shown elevated levels of mercury and PCBs in the sediment of urban storm drains throughout the region.

Operation of the project following completion of construction would have the potential to adversely affect surface water quality, for the reasons set forth above. However, the project would be required to comply with the stormwater treatment requirements described below, and compliance with these requirements would ensure that *operational impacts would be less than significant*.

Operational stormwater discharges from new development are regulated by the terms of each jurisdiction's municipal stormwater permits. In the Town of Moraga, development projects must comply with the National Pollutant Discharge Elimination System (NPDES) permit (NPDES Permit No. CAS612008) issued to the Contra Costa Clean Water Program (CCCWP) and other Bay Area jurisdictions by the San Francisco Bay Regional Water Quality Control Board (RWQCB) (NPDES Order No. R2-2015-0049). November 19, 2015 and became effective on January 1, 2016. This permit replaced the previous permit issued on October 14, 2009, which was formally rescinded by the RWQCB. The current MRP consolidates the multiple countywide permits previously issued to member agencies in the San Francisco Bay Area under a single MRP regulating stormwater discharges from municipalities and local agencies in Alameda, Contra Costa, San Mateo, and Santa Clara counties and the cities of Fairfield, Suisun City, and Vallejo.

Although the MRP imposes a variety of responsibilities for monitoring and protecting stormwater quality on member agencies, it also includes requirements for individual development projects. Specifically, Provision C.3 of the MRP requires any private or public development project that would create or modify 10,000 square feet or more of impervious surfaces to take measures to improve water quality of stormwater discharges from the project site (i.e., stormwater runoff), including providing treatment of 100 percent of the stormwater runoff from the site. The size threshold is reduced to 5,000 square feet for certain special land use categories, which include auto service facilities, retail gasoline outlets, restaurants, and uncovered parking lots. Where a redevelopment project that was not subject to Provision C.3 requirements, the entire project must be designed and operated in compliance with Provision C.3. The Provision C.3 requirements also pertain to construction or widening of roads, trails, and sidewalks. However, replacement of an existing roof or repaving of existing pavements are excluded from the C.3 requirements.

In the new MRP, Provision C.3 also requires small projects with 2,500 square feet to 10,000 square feet of new and replaced impervious surfaces and detached single-family home projects that create and/or replace 2,500 square feet or more of impervious surfaces to install at least one of the following site design measures to reduce uncontrolled stormwater runoff:

- Direct roof runoff into cisterns or barrels for reuse;
- Direct roof runoff onto vegetated areas;
- Direct roof runoff from sidewalks, walkways, and/or patios onto vegetated areas;
- Direct roof runoff from driveways and/or uncovered parking lots onto vegetated areas;
- Construct sidewalks, walkways, and/or patios with permeable surfaces;
- Construct bike lanes, driveways, and/or uncovered parking lots with permeable surfaces.

There are numerous new C.3 requirements in the new MRP that are applicable to the permittees and are not the responsibility of individual development projects. These additional requirements are therefore not discussed herein.

Projects subject to Provision C.3 must include low-impact development (LID) measures to capture and perform onsite treatment of all stormwater from the site prior to its discharge, including rainwater falling on building rooftops. Project applicants are required to implement appropriate source control and site design measures and to design and implement onsite stormwater treatment measures in order to reduce the discharge of stormwater pollutants to the *maximum extent practicable* (MEP), a standard established by the 1987 amendments to the federal Clean Water Act. Alternatively, stormwater from a development site can be treated offsite at a joint stormwater treatment facility that treats runoff from two or more regulated projects. An exemption from the LID requirements of Provision C.3.c. may be granted to any regulated project as long as stormwater treatment with media filters is provided that comply with the hydraulic sizing requirements of Provision C.3.d.

The goal of LID is to reduce runoff and mimic a site's predevelopment hydrology by minimizing disturbed areas and impervious cover and then infiltrating, storing, detaining, evapotranspiring, and/or biotreating stormwater runoff close to its source. LID employs principles such as preserving and recreating natural landscape features and minimizing imperviousness to create functional and appealing site drainage that treats stormwater as a resource, rather than a waste product. Practices used to adhere to these LID principles include measures such as rain barrels and cisterns, green roofs, permeable pavement, preserving undeveloped open space, and bio-treatment through rain gardens, bio-retention units, bioswales, and planter/tree boxes.

At a minimum, source control measures must include efficient irrigation systems and landscaping that minimizes irrigation and runoff, promotes surface infiltration, minimizes the use of pesticides and fertilizers, and incorporates other appropriate sustainable landscaping practices and programs, such as those promoted by the Bay-Friendly Landscaping and Gardening Coalition.

Projects subject to the C.3 stormwater requirements must incorporate LID measures to treat 100 percent of the runoff calculated using stipulated hydraulic sizing design criteria. These criteria are based on stormwater volume from the 85th-percentile 24-hour storm event, stormwater flow rate based on historical peak flow rates (there are several flow rate options, including 10 percent of the 50-year peak flow rate), or a combination of flow and volume criteria. Biotreatment or bioretention systems must be designed to have a surface area sufficient to accommodate a stormwater runoff rate of 5 inches per hour, must infiltrate the treatment media at the same rate, and must maximize infiltration to the native soil during the life of the project. Specifications for biotreatment soil media are stipulated in the MRP.

Infiltration devices alone may not be used for treatment of runoff from industrial or light industrial areas, from areas subject to high vehicular traffic (defined in the permit), or from other land uses that pose a high threat to water quality, such as auto repair shops, car washes, fleet storage areas, and nurseries. If they meet specific criteria, special projects that are inherently less polluting, such as high-density or transit-oriented developments, may receive LID Treatment Reduction Credits that reduce the on-site treatment requirements of such projects. These projects may utilize non-LID treatment systems, such as tree-box and/or vault-based high-flow-rate biofilters.

Provision C.3 of the MRP also includes hydromodification management (HM) requirements for certain projects. Hydrograph modification occurs when an undeveloped site is developed with impervious surfaces such as buildings and pavements, which prevents natural infiltration by rain water, and which results in an increase in the volume and rate of stormwater runoff from the site. Hydrograph modification has the undesirable effect of increasing erosion of natural creeks and earthen channels, which can cause flooding, property damage, degradation of stream habitat, and deterioration of water quality.

The applicability of the HM requirements vary by jurisdiction. For example, in some counties, they only apply to certain projects located in areas mapped as being susceptible to hydrograph modification. In Contra Costa County, HM requirements apply to projects that create or replace 1 acre or more of impervious surfaces, unless the project proponent can demonstrate the estimated post-project runoff durations and peak flows would not exceed the pre-project runoff durations and peak flows. The HM requirements would apply to the proposed project. An alternative exemption to the HM requirements can be granted if a project proponent can demonstrate the project runoff would not accelerate erosion of the receiving stream. In Contra Costa County, HM controls must be designed so that post-project runoff discharge rates and durations from 10 percent of the pre-project two-year peak flow up to the pre-project ten-year peak flow. These requirements do not apply to projects that use pre-sized and pre-designed Integrated Management Practices (IMPs). LID measures can be used to meet both the C.3 treatment requirements and the flow-control requirements.

HM measures can include site design and hydrologic source control measures, on-site structural HM measures, and in-stream restorative measures. Projects subject to the HM requirements must incorporate HM IMPs into the project. Typical IMPs include swales, bio-retention areas, and planter boxes, all of which can function to meet the C.3 treatment requirements as well as the HM flow requirements.

Stormwater treatment systems and HM controls installed in compliance with MRP Provision C.3 must be properly operated and maintained for the life of the projects. Responsibility for verification lies with the MRP Permittee, which in the case of the proposed project would be the Town of Moraga. The Permittee must inspect all newly installed stormwater treatment systems and HM controls within 45 days of installation to ensure the approved plans have been followed, and must inspect the systems at least once every five years.

As part of compliance with the C.3 requirements, the project sponsor will be required to prepare and implement a C.3 Stormwater Control Plan to reference and incorporate current construction and post-construction requirements specified by State Water Resources Control Board (SWRCB) Order No. 2009-0009-DWQ (construction impacts and requirements are discussed below) and the post-construction requirements specified by NPDES Order No. R2-2015-0049 and the CCCWP. The C.3 Stormwater Control Plan should be developed in accordance with the provisions of CCCWP's *Stormwater C.3 Guidebook* guidance manual (7th Edition, May 17, 2017).

A preliminary C.3 Stormwater Control Plan has been prepared for the project in compliance with the MRP for the San Francisco Bay Area.⁷² The Stormwater Control Plan and hydrologic and hydraulic analyses prepared for the project are presented in Appendix E. The plan identifies defines seven Drainage Management Areas across the site, further divided into subareas, based on the proposed grading and development plans. A total of approximately 109,612 square feet of new impervious surfaces would be created by the project, including rooftops, driveways, sidewalks, and the access street. There are existing impervious surfaces on the sidewalk along the Camino Pablo frontage; 7,318 square feet of this sidewalk would be replaced. Thus, a total of 116,930 square feet of new impervious surfaces would be created on the site.

⁷² DK Consulting, Preliminary Stormwater Control Plan for South Camino Pablo Annexation Project, Moraga, California, January 2019.

Following project construction, stormwater would be collected from all impervious surfaces and treated onsite in bio-treatment swales located along the proposed access street and/or in a bio-retention facility located adjacent to Camino Pablo. Stormwater from rooftops would either be collected from adjacent area drains and then directed into the treatment swales, or would be discharged directly to LID pervious areas and from there directed into the swales.

Stormwater collection and drainage would occur along the proposed street via perforated curbs, with discharge into the adjacent swales. The curb openings to the bioretention swales would be 12 inches wide with a 4- to 6-inch reveal. The openings would be fitted with an apron or other screening device to prevent blockage as vegetation in the swale grows, as well as to provide energy dissipation during storm events. The design of these facilities takes advantage of the natural terrain of the site, such that the natural drainage pattern will be maintained, and all storm runoff will flow naturally into one of the bio-treatment swales, and there would be adequate hydraulic head to allow drainage into, through, and away from the BMPs without the need for pumps. One hundred percent of the site's stormwater runoff would be treated in LID facilities. Additional details about the bio-retention facilities are provided in the project description.

Treated stormwater would be collected from 6-inch perforated pipes underlying the swales and bio-retention basin and discharged into a new 18-inch storm drain running under Camino Pablo that would connect to a 36-inch storm drain under Tharp Drive. If the bioretention swales become oversaturated during extreme storm events, excess water will flow via Street "A" into the existing Camino Pablo/Tharp Drive storm drainage system. Storm flow from this storm drain is discharged to the South Branch Moraga Creek, which drains into Upper San Leandro Reservoir, which is a drinking water supply source, and ultimately into San Francisco Bay, which is on the list of impaired water bodies compiled by the RWQCB.

The onsite stormwater bio-treatment system has been designed by a qualified engineer to comply with the Contra Costa Clean Water Program and the MRP issued by the RWQCB. The Stormwater Control Plan states that the volume of surface and subsurface storage designed for the project will meet or exceed the minimum required under the MRP. The Contra Costa County Building Department will confirm that the Stormwater Control Plan complies with the C.3 Provisions of the MRP prior to issuance of a grading permit, and inspections will verify construction of the stormwater controls in accordance with the approved plan. Compliance with the C.3 Provisions of the MRP will ensure that operation of the project will have a *less-than-significant impact* on water quality and local hydrology.

Construction Impacts

Construction activities could potentially affect water quality as a result of erosion of sediment. In addition, leaks from construction equipment; accidental spills of fuel, oil, or hazardous liquids used for equipment maintenance; and accidental spills of construction materials are all potential sources of pollutants that could degrade water quality during construction. If not properly addressed, construction impacts on water quality could be particularly severe because storm runoff from the site is ultimately discharged into San Francisco Bay via Moraga Creek and San Leandro Creek. Both San Leandro Creek and San Francisco Bay are on the list of impaired water bodies compiled by the San Francisco Bay Regional Water Quality Control Board (RWQCB) pursuant to the federal Clean Water Act. Because the State is required to develop action plans and establish Total Maximum Daily Loads (TMDLs) to improve water quality within these water bodies, uncontrolled discharge of pollutants into them would be particularly detrimental.

As part of any new development at the site, the project sponsor would be required to obtain NPDES construction coverage under Construction General Permit (CGP) No. CAS000002, as modified by State Water Resources Control Board (SWRCB) Order No. 2009-0009-DWQ. The CGP would require the applicant to carry out measures necessary to manage and control erosion from the site during construction pursuant to the requirements of the Regional Water Quality Control Board. Best Management Practices (BMPs) would include, but not be limited to, minimizing the migration of sediments off-site, covering soil stockpiles, sweeping soil from streets or other paved areas, site preparation in dry periods, and the planting of vegetation or landscaping in a timely manner. Other construction BMPs to minimize erosion may include features such as hay bales, water bars, covers, sediment fences, sensitive area access restrictions (for example, flagging), vehicle mats in wet areas, and retention/settlement ponds to be installed before extensive clearing and grading begins. Mulching, seeding, or other suitable stabilization measures should be used to protect exposed areas during construction activities. These measures should be consistent with the Association of Bay Area Governments' Manual of Standards for Erosion and Sedimentation Control Measures (2005 Updated Edition). Although project construction effects on surface water quality could result in a potentially significant impact, compliance with the required CGP would ensure that construction impacts on water quality remain less than significant.

		Potentially Significant Impact	Less-Than- Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
b)	Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?			X	

<u>Explanation</u>: Perched groundwater was encountered at a depth of 24 feet in one of the soil borings advanced adjacent to Camino Pablo during the geotechnical investigation of the project site.⁷³ No groundwater was encountered in the other borings or test pits, though an area of suspected seepage or near-surface groundwater was detected in the southwest corner of the site.

The project would create 109,612 square feet of net new impervious surfaces at the project site. To the extent that groundwater is recharged at the site through percolation, the increase in impervious surfaces would interfere with and reduce the amount of recharge. However, given the steep slopes on much of the site and the clay soils, there is likely an insignificant amount of groundwater recharge currently occurring at the site.

The surrounding residential land uses do not rely on groundwater as a potable water supply. Water is supplied by the East Bay Municipal Utility District (EBUMD), which in normal years derives 90 percent of its water supply from the Mokelumne River watershed on the western slope of the Sierra Nevada and the remaining 10 percent from surface runoff from its protected watershed lands in the East Bay.⁷⁴ Although the District utilizes groundwater as a supplemental supply during

⁷³ ENGEO, Inc., October 2015, op. cit.

⁷⁴ East Bay Municipal Utility District, *Water Supply Management Plan 2040*, April 2012.

periods of drought, the water is extracted from the South East Bay Plain Basin, which does not underlie the project site, and the District uses direct injection to recharge the aquifer. While the Carr Ranch, located about 600 feet east of the proposed subdivision, may utilize wells for a water supply, the amount of groundwater recharge interference that would be caused by the project would not be expected to adversely affect the local groundwater table. This would be a *less-thansignificant impact*.

	Potentially Significant Impact	Less-Than- Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river of through the addition of impervious surfaces, in a manner which would:				
i) Result in substantial erosion or siltation on- or of off-site?			X	

<u>Explanation</u>: The creation of a new paved street, construction of homes, and landscaping of yards would all alter the existing drainage patterns on the project site, which currently consists of open hillsides covered with non-native grasses. The proposed grading plan has been developed to maintain the existing topography of the site as much as possible, while strengthening unstable slopes and accommodating the proposed homes on the lower reaches of the site. The site design and stormwater collection and treatment system would utilize existing general drainage patterns and rely entirely on natural gravity flow of rainwater. Although the introduction of new impervious surfaces has the potential to increase storm flow rates and volumes, and thereby cause erosion and sedimentation in downstream receiving waters, such impacts would be minimized through compliance with the C.3 requirements of the Contra Costa Clean Water Program, discussed in Section IX(a), above. With compliance with the C.3 stormwater requirements, the project would have a *less-than-significant impact* due to the alteration of the existing drainage pattern on the site.

		Potentially Significant Impact	Less-Than- Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
ii)	Substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site?			X	

Explanation: Although the project would alter the existing drainage pattern of the site, as discussed above, it would not increase the volume or rate of surface runoff because stormwater would be detained and biologically treated on the site prior to discharge into the existing downstream stormwater drainage system. Because the project would tie into a 15-inch-diameter storm drainage pipe that runs through the backyards of three private residences fronting on Tharp Drive before

connecting to a 36-inch pipe in Tharp Drive, the project would be required to obtain legal drainage easements through each of the properties or construct a new storm drain within the public right-of-way.⁷⁵ The Town would ensure compliance with this requirement as a condition of project approval.

A hydrologic analysis of downstream conditions during a 10-year storm event were evaluated by DK Engineering (Appendix E).⁷⁶ The analysis determined that all existing downstream storm drainage pipes have adequate capacity to accommodate the project's storm runoff except for the existing 15-inch-diameter storm drainage pipe in Camino Pablo along the frontage of the project site. However, as part of the project, this pipe would be upsized to an 18-inch pipe. The existing downstream 36-inch pipes have well above the County's minimum freeboard requirement of 1.25 feet. DK Engineering concluded that the downstream drainage system is adequate to receive runoff from the proposed project. The project would therefore have a less-than-significant impact on the potential for the project to increase the risk of on- or off-site flooding.

	Potentially Significant Impact	Less-Than- Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
iii) 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?			X	

<u>Explanation</u>: The Stormwater Control Plan prepared for the project includes features, described in Section IX(a), to capture and provide on-site treatment of all stormwater runoff from the project's impervious surfaces, including rooftops. The facilities would also provide retention of peak flows such that post-project peak flows would be reduced in comparison with existing conditions. Therefore, of the proposed project would not result in an increase in stormwater runoff from the site. While the runoff would contain typical pollutants entrained in stormwater from urban areas, the project would provide on-site treatment of all stormwater runoff from the site via bio-filtration, in compliance with Provision C.3 of the NPDES Municipal Storm Water Permit, which is administered by the Contra Costa Clean Water Program. As part of this process, the applicant will be required to obtain approval of the project's Stormwater Control Plan, which must demonstrate that the project would not increase stormwater flows, and must identify the necessary stormwater treatment facilities and measures incorporated into the project to control pollutant discharges from the site. With compliance with the C.3 stormwater requirements, the project would have a *less-than-significant impact*.

⁷⁵ Mark Summers, PE, Associate Civil Engineer, Public Works Department, Town of Moraga, personal communication, February 14, 2020.

⁷⁶ DK Engineering, South Camino Pablo Annexation Hydrologic & Hydraulic Analyses, Job #13-1060-12, February 10, 2020.

	Potentially Significant Impact	Less-Than- Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
d) In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?				\mathbf{X}

Explanation:

Flood Hazard

The project site is within a larger surrounding area mapped as Zone X by the Federal Emergency Management Agency (FEMA), which is the designation assigned to areas that have been determined to be outside of the 0.2 percent annual chance flood plain (i.e., the 500-year flood plain).⁷⁷ The northern portion of the site is near the south branch of Moraga Creek, which is designated on the FEMA Flood Insurance Rate Map (FIRM) as Zone AE, which is assigned to areas that are located within the floodway of the 1-percent annual chance (100-year) flood plain and within a stream channel. The FIRM notes that the channel must be kept free of encroachment so that the 100-year flood does not cause substantial increases in flood heights.

The portions of Moraga Creek that flow across Camino Pablo and parallel to (and west of) Sanders Ranch Road have been determined by FEMA to have a base flood elevation ranging from 537 feet above mean sea level (msl) west of Camino Pablo to 589 feet msl near Reed Drive. Based on the FEMA FIRM, the project would not place housing within a 100-year flood hazard area. Although the proposed subdivision would be located well outside the FEMA-designated flood plain (approximately 800 feet from the nearest home), most of the proposed homes would also be above the flood elevations determined by FEMA, with pad elevations of 590 feet to 610 feet msl. While the two homes flanking the project entrance would have pad elevations of 580 feet msl, due to the project's substantial distance from the mapped flood zone, there is no potential for inundation of the proposed homes in the event of flooding along Moraga Creek. Therefore, there is no impact due to the release of pollutants due to inundation of the project by flood waters.

Tsunami Hazard

Tsunamis (seismic sea waves) are long-period waves that are typically caused by underwater disturbances (landslides), volcanic eruptions, or seismic events. Areas that are highly susceptible to tsunami inundation tend to be located in low-lying coastal areas such as tidal flats, marshlands, and former bay margins that have been artificially filled but are still at or near sea level. The project site is more than 8 miles east of San Francisco Bay, separated by a range of high hills, so there is no potential for tsunami inundation at the site. In addition, the Association of Bay Area Governments' Resilience Program, which coordinates hazard mitigation planning for the San Francisco Bay Area, has mapped tsunami evacuation (inundation) areas around the Bay Area, and the Town of Moraga is not located within a mapped tsunami inundation area.⁷⁸ Therefore, there is no impact due to the release of pollutants due to inundation of the project by tsunami.

⁷⁷ Federal Emergency Management Agency, Flood Insurance Rate Map, Contra Costa County, California and Incorporated Areas, Community Panel Number 06013C0440F, effective date June 16, 2009, and Community Panel Number 06013C0428F, effective date June 16, 2009.

⁷⁸ Association of Bay Area Governments, Resilience Program, Tsunami Evacuation Area [interactive map], accessed October 21, 2015 at: <u>http://gis.abag.ca.gov/website/Hazards/?hlyr=femaZones</u>.

Seiche Hazard

A seiche is a free or standing wave oscillation(s) of the surface of water in an enclosed or semienclosed basin that may be initiated by an earthquake. While the potential for a seiche in Upper San Leandro Reservoir is not known, based on the dam failure inundation map for the reservoir (see previous section), there is no potential for a seiche in this reservoir to affect the project site. There are no other water bodies in proximity to the site where seiches could potentially occur, so there is no potential for inundation by seiche at the site. Therefore, there is no impact due to the release of pollutants due to inundation of the project by seiche.

	Potentially Significant Impact	Less-Than- Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
e) Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?				\mathbf{X}

Explanation:

Water Quality Control Plan

The *Water Quality Control Plan for the San Francisco Bay Basin* (Basin Plan) is the master water quality control planning document adopted by the San Francisco Bay Regional Water Quality Control Board (RWQCB) in accordance with the Porter-Cologne Water Quality Control Act of 1969.⁷⁹ It designates beneficial uses and water quality objectives for waters of the State, including surface waters and groundwater. It also includes programs of implementation to achieve water quality objectives. The Basin Plan has been adopted and approved by the State Water Resources Control Board, U.S. Environmental Protection Agency (USEPA), and the Office of Administrative Law, where required.

Among other provisions, the Basin Plan establishes conditions (discharge prohibitions) that must be met at all times. These include restrictions on discharge of wastewater, wastewater sludge, biocides (i.e., pesticides, herbicides, copper, etc.), oils, and a wide range of solid materials, including silt, sand, and clay. Point source discharges must be made in accordance with waste discharge requirements (WDRs) established by the RWQCB in accordance with the NPDES program described in Section X-a.

The Basin Plan is a large and complex document with many specific provisions, policies, and implementation plans all with the overarching goal of protecting water quality for beneficial uses, such as:

- agricultural, municipal, domestic, and industrial supply;
- marine, estuarine, and warm and cold freshwater wildlife habitats;

⁷⁹ California Regional Water Quality Control Board, San Francisco Bay Region, San Francisco Bay Basin (Region 2) Water Quality Control Plan (Basin Plan), May 4, 2017.

- commercial and sport fishing;
- navigation;
- preservation of rare and endangered species;
- contact and non-contact water recreation;
- shellfish harvesting;
- fish spawning;
- and more.

Many of the programs and other provisions described in the Basin Plan are not applicable to the proposed project. However, the proposed project would be required to comply with the NPDES regulations pertaining to construction and operation of new development sites, described in detail in Section X-a, above. By complying with the applicable provisions of these regulations, potential water pollutants generated by construction and operation of the project would be minimized and would not adversely affect surface or groundwater quality. Therefore, the project would not conflict with or obstruct implementation of the applicable water quality control plan, and there would be no impact.

Sustainable Groundwater Management Plan

Despite California's heavy reliance on groundwater, the extraction of groundwater was never regulated until the 2014 passage of a package of bills that collectively formed the Sustainable Groundwater Management Act (SGMA). Senate Bill (SB) 1168, Assembly Bill (AB) 1739, and SB 1319 (which amended AB 1739) established a comprehensive Statewide groundwater management program with the primary goal of achieving sustainable groundwater basins over the next 20 years. Improved groundwater management is intended to provide a water supply buffer during periods of drought.

Rather than regulating groundwater at the State level, the SGMA allocates responsibility for local management of groundwater basins. The basins are to be managed by Groundwater Sustainability Agencies (GSAs), which can be formed by any local agency or coordinated group of agencies for purpose of complying with the SGMA. If no agency is formed, the county is presumed to be the local GSA unless the county explicitly opts out. In some cases, the legislation lists new special districts, which have exclusive authority for managing groundwater within their jurisdictional boundaries.

GSAs have authority to acquire land and water for purposes of recharging the groundwater basin and storing and transporting water. The GSAs must submit annual reports to the California Department of Water Resources (DWR), listing groundwater elevation data, amount of groundwater storage, use of surface water for groundwater recharge (or as water supply), and total use of water within the GSA's boundaries.

The DWR was required by prior legislation to rank the priority of each of the State's 515 groundwater basins and subbasins as either high, medium, low, or very low priority by January 31, 2015. These rankings were made in accordance with the California Statewide Groundwater

Elevation Monitoring (CASGEM) program. The CASGEM program considers such factors as the number of public wells in the basin, population served, acreage of land above the basin, reliance on groundwater, history of overdrafting, occurrence of subsidence, degradation in water quality, and other factors.

The SGMA requires Groundwater Sustainability Agencies (GSAs) to form in the State's high- and medium-priority basins and subbasins by June 30, 2017. For groundwater basins designed as medium or high priority, the SGMA requires the responsible GSA to prepare and adopt a Groundwater Sustainability Plan (GSP). Under certain conditions, including where a GSA has performed an analysis that demonstrates the groundwater basin under its purview has been operated within its sustainable yield over a period of at least 10 years, the GSA may prepare an Alternative to a GSP. The GSPs or Alternative GSPs must encompass an entire basin or subbasin and must demonstrate that the basin can achieve sustainable groundwater management within 20 years of adoption of the plan.

The DWR has not designated any high-, medium-, low-, or very-low-priority groundwater basin underlying the project area.⁸⁰ The nearest actively managed groundwater basin is the East Bay Plain Subbasin of the Santa Clara Valley Basin, which is located about 4 miles to the southwest of the project site. The East Bay Municipal Utility District (EBMUD) has been designated as the exclusive GSA for the East Bay Plain groundwater basin, which is a medium-priority basin.⁸¹ EBMUD has not yet completed a GSP for this groundwater basin.

Since the EBMUD has not yet adopted a GSP or Alternative GSP, there is no potential for the proposed project to obstruct the implementation of an applicable GSP. Furthermore, as discussed in Section X-b, no groundwater would be pumped at the project site, and development of the project would have a negligible effect on groundwater recharge at the site. Consequently, there is no potential for the project to substantially interfere with the management of groundwater supplies. The project would not affect implementation of the sustainable groundwater management plan, and there would be no impact.

XI. LAND USE AND PLANNING — Would the project:

	Potentially Significant Impact	Less-Than- Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Physically divide an established community?				X

<u>Explanation</u>: The project site is currently an undeveloped hillside site used for cattle grazing. Grazing land extends to the north and east of the site, while existing residential subdivisions of single-family homes are located to the south and west. The proposed project would develop the

⁸⁰ California Department of Water Resources, Public Affairs Office, Statewide Map of SGMA 2019 Basin Prioritization Results, April 30, 2019.

⁸¹ California Department of Water Resources, Groundwater Sustainability Agencies, GSA Map Viewer [interactive map], Accessed December 13, 2019 at: <u>https://sgma.water.ca.gov/webgis/index.jsp?appid=gasmaster&rz=true</u>.

site with new residences served by a new on-site street. The project does not include construction of new off-site roadways that could physically divide an existing neighborhood, nor would it otherwise create any barriers to existing circulation within the community. Therefore, implementation of the proposed project would not physically divide an established community and there would be no impact.

		Potentially Significant Impact	Less-Than- Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
b)	Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?				X

Explanation:

Note: This section contains a brief discussion of project conformance with land use policies and regulations applicable to the proposed project. It should be noted that policy conflicts are not necessarily an environmental impact. A significant environmental impact would occur only if the project conflicts with policy adopted for the purpose of avoiding or mitigating an environmental effect and the conflict would result in a significant adverse physical impact. It should also be noted that the General Plan contains many policies, some of which may compete with each other. The Planning Commission and Town Council when acting on the proposed project will decide whether, on balance, the project is consistent with the General Plan.

The project site currently has a General Plan land use designation of Open Space (OS) and Residential, 1 Dwelling Unit Per Acre (1-DUA). The project proposes changing the 1-DUA portion of the site to Residential, 3 Dwelling Unit Per Acre (3-DUA). General Plan Policy LU1.2 allows a maximum residential density of 3 units per acre in the 3-DUA designation and 0.05, 0.1, or 0.2 units per acre in the OS designation. Policy LU1.8 requires a minimum lot size of 10,000 square feet in the 3-DUA designation. Maximum densities and minimum lot sizes are intended, in part, to avoid adverse aesthetic and geologic impacts caused by new development in hillside settings.

The proposed project would be consistent with the maximum densities and minimum lot size requirements for the 3-DUA and OS designations. Project densities would be 1.79 units per acre on the 3-DUA lot and 0.11 units per acre on the OS lots. Gross density of all 13 homes would be 1.85 units per acre. Lots would all be greater than 10,000 square feet in the 3-DUA designation and greater than 40,000 square feet in the OS designation.

General Plan Policy LU1.10 establishes limitations on development in steep slope areas to minimize exposure to geologic hazards. Policy LU1.10 states that development is permitted on slopes of 20 percent or steeper only if supported by site-specific analysis. New residential structures may be placed on after-graded average slopes of 25 percent or steeper within the development area only if specifically approved by the Town Council. All new non-MOSO lots must contain an appropriate development area with an average after-graded slope of less than 25 percent. Grading on any Non-MOSO Open Space land with an average predevelopment slope of 25 percent or more must be approved by the Town Council. The grading must be supported by

site-specific analysis showing that a minimum amount of grading is proposed in a manner consistent with the General Plan.

As shown in the preliminary grading plan (Figure 4), the project site has average slope of 26.4 percent. The site-specific geotechnical investigation prepared for the project by ENGEO, Inc.⁸² found that the project site is suitable for the proposed development with incorporation of preliminary recommendations. All homes would be on either a flat pad or are split level in design (two flat pads with vertical 10-foot internal split). The average after-graded slope of the Non-MOSO Open Space lots is 12.6 percent for Lot 1 and 23.3 percent for Lot 2. As part of the project entitlement process, the Town Council must review and approve the proposed grading plan. For these reasons, the proposed project would be consistent with the slope limitations in Policy LU1.10.

General Plan Section CD 8 (Hillside Areas and Ridgelines) contains hillside development policies adopted in 2018 as part of the Town's Hillside and Ridgelines project. These policies call for new development to maintains Moraga's unique semi-rural feel and scenic natural setting (CD8.1), maintain hillsides in an undeveloped and natural state to the extent possible (CD8.2), and maintain the visual quality of scenic vistas (CD8.4). General Plan Section CD 8 also designates ridgelines subject to special protection and requires new hillside development to be located and designed so that Major MOSO Ridgelines, Minor MOSO Ridgelines, Significant Non-MOSO Ridgelines, and the hillside areas below them remain the dominant visual features when viewed from the Town's scenic corridors.

The Hillsides and Ridgelines project also included amendments to the Moraga Municipal Code and Town of Moraga Design Guidelines. Municipal Code Chapter 8.128 (Ridgeline Protection) requires horizontal buffers and visual separation of development from Major MOSO Ridgelines, Minor MOSO Ridgelines, Significant Non-MOSO Ridgelines and Chapter 8.136 requires the Town to make certain findings to approve hillside development project. Section 4 (Protect Ridgelines and Hillside Areas) of the Town of Moraga Design Guidelines establishes design guidelines for hillside development. These guidelines address the general layout of new subdivisions, building placement and foundation design, building design, grading, drainage, and other site elements.

The project site has an average predevelopment slope of 20 percent or greater and is subject to the hillside development requirements adopted through the Hillside and Ridgelines project. As described in Section I, Aesthetics, the proposed project would substantially conform with requirements for new development to maintain the visual qualities of Moraga's scenic vistas. The project would preserve 15.4 acres (64 percent of the project site) as publicly-visible permanent open space. The project site is not within the immediate vicinity of a Major MOSO Ridgelines, Minor MOSO Ridgelines, Significant Non-MOSO Ridgelines, so ridgeline buffer and visual separation requirements do not apply to the proposed project. To approve the project, the Town will need to make the findings for hillside development in Municipal Code Chapter 8.136. For these reasons, the proposed project would not conflict with the General Plan policies, Municipal Code standards, and Design Guidelines adopted with the Hillsides and Ridgeline project.

⁸² ENGEO, Inc., Preliminary Geotechnical Report, South Camino Pablo Annexation Project, Subdivision 9396, Moraga, California, Project No. 10741.000.000, March 25, 2015.

Based on the above discussion of project conformance with land use policies and regulations, the proposed project would not conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project adopted for the purposed of avoiding or mitigating an environmental effect.

<u>XII. MINERAL RESOURCES</u> — *Would the project:*

		Potentially Significant Impact	Less-Than- Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
a)	Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the State?				X

Explanation: No regionally significant mineral deposits have been mapped on or in the vicinity of the project site. The site is within a large area classified as Mineral Resource Zone MRZ-4 by the California Department of Conservation's Division of Mines and Geology (DMG).⁸³ The MRZ-4 designation is assigned to areas where available information is inadequate for assignment to any other MRZ. However, it should be noted that the area immediately to the west, currently occupied by a subdivision of single-family homes, is assigned an MRZ-1 designation, which applies to areas where sufficient data does exist for a determination by the DMG that no significant mineral deposits exist, or where it is judged that there is little likelihood for their presence. As noted below, the Contra Costa County General Plan also does not identify any mineral resources on the site. Based on these available information sources, the project would not have any impact on the availability of mineral resources.

	Potentially Significant Impact	Less-Than- Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
b) Result in the loss of availability of a locally- important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan?				X

Explanation: The countywide map of mineral resource areas included in the Contra Costa County General Plan does not identify any mineral resources in the vicinity of the project site.⁸⁴ Therefore, there would be no impact on mineral resources.

⁸³ California Department of Conservation, Division of Mines and Geology, Generalized Mineral Land Classification Map of the South San Francisco Bay Production-Consumption Region (Plate 1 of 29), 1996.

⁸⁴ Contra Costa County, Contra Costa County General Plan 2005-2020, Conservation Element, Figure 8-4: Mineral Resource Areas, January 18, 2005.

<u>XIII. NOISE</u> — Would the project result in:

		Potentially Significant Impact	Less-Than- Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
a)	Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?		X		

Explanation: The information presented in Section XII is based on a noise and vibration assessment (presented in Appendix F) conducted by Illingworth & Rodkin, Inc., an acoustical and air quality consulting firm.⁸⁵

Introduction to Noise Descriptors

Noise is defined as unwanted sound. Airborne sound is a rapid fluctuation of air pressure above and below atmospheric pressure. Sound levels are usually measured and expressed in decibels (dB) with 0 dB corresponding roughly to the threshold of hearing.

Most of the sounds that we hear in the environment do not consist of a single frequency, but rather a broad band of frequencies, with each frequency differing in sound level. The intensities of each frequency add together to generate a sound. The method commonly used to quantify environmental sounds consists of evaluating all of the frequencies of a sound in accordance with a weighting that reflects the facts that human hearing is less sensitive at low frequencies and extreme high frequencies than in the mid-range frequency. This is called "A" weighting, and the decibel level so measured is called the A-weighted sound level (dBA). In practice, the level of a sound source is conveniently measured using a sound level meter that includes an electrical filter corresponding to the A-weighting curve. Typical A-weighted levels measured in the environment and in industry are shown in Table N-1 for different types of noise.

Although the A-weighted noise level may adequately indicate the level of environmental noise at any instant in time, community noise levels vary continuously. Most environmental noise includes a conglomeration of noise from distant sources that create a relatively steady background noise in which no particular source is identifiable. To describe the time-varying character of environmental noise, the statistical noise descriptors, L_{01} , L_{10} , L_{50} , and L_{90} , are commonly used. They are the A-weighted noise levels equaled or exceeded during 1 percent, 10 percent, 50 percent, and 90 percent of a stated time period. A single number descriptor called the L_{eq} is also widely used. The L_{eq} is the average A-weighted noise level during a stated period of time.

In determining the daily level of environmental noise, it is important to account for the difference in response of people to daytime and nighttime noises. During the nighttime, exterior background

⁸⁵ Illingworth & Rodkin, Inc., South Camino Pablo Annexation Project Noise and Vibration Assessment, December 4, 2015.

noises are generally lower than the daytime levels. However, most household noise also decreases at night and exterior noise becomes very noticeable. Further, most people sleep at night and are very sensitive to noise intrusion. To account for human sensitivity to nighttime noise levels, a descriptor, DNL (day/night average sound level), was developed. The DNL divides the 24-hour day into the daytime of 7:00 AM to 10:00 PM and the nighttime of 10:00 PM to 7:00 AM. The nighttime noise level is weighted 10 dB higher than the daytime noise level.

The Community Noise Equivalent Level (CNEL) is another 24-hour average which includes both an evening and nighttime weighting, adding 5 decibels to the average noise levels during the evening and 10 decibels to the average noise levels during the nighttime period. CNEL and DNL descriptors are similar and are often used interchangeably.

Noise Level (dBA)	Outdoor Activity	Indoor Activity
90+	Gas lawn mower at 3 feet, jet flyover at 1,000 feet	Rock Band
80-90	Diesel truck at 50 feet	Loud television at 3 feet
70-80	Gas lawn mower at 100 feet, noisy urban area	Garbage disposal at 3 feet, vacuum cleaner at 10 feet
60-70	Commercial area	Normal speech at 3 feet
40-60	Quiet urban daytime traffic at 300 feet	Large business office, dishwasher next room
20-40	Quiet rural, suburban nighttime	Concert hall (background), library, bedroom at night
10-20		Broadcast/recording studio
0	Lowest threshold of human hearing	Lowest threshold of human hearing

Table N-1

Typical Noise Levels

Source: (modified from Caltrans Technical Noise Supplement, 2013)

Noise levels that are generally considered acceptable or unacceptable can characterize various environments. Lower levels are expected in rural or suburban areas than would be expected in commercial or industrial zones. Nighttime ambient levels in urban environments are about 7 decibels lower than the corresponding average daytime levels. The day-to-night noise level difference in rural areas away from roads and other human activity can be considerably less. Noise levels above 45 dBA at night can result in the onset of sleep interference.⁸⁶ At 70 dBA, sleep interference becomes considerable.

⁸⁶ U.S. Environmental Protection Agency, *Community Noise*, 1971.

Town of Moraga Noise Standards

Chapter 7.12 of the Moraga Municipal Code Section generally prohibits unnecessary, excessive, and annoying noise from all sources subject to the Town's police power. Section 7.12.090 of the Municipal Code prohibits construction work within a residential zone or within a 500-foot radius from a residential zone between the hours of 5:00 p.m. and 8:00 a.m.

The *Moraga General Plan* also establishes noise policies with the objective of a preserving peaceful and tranquil community. The following Open Space and Conservation Element policies are relevant to the proposed project:

OS6.2 Noise Levels. Ensure that noise from all sources is maintained at levels that will not adversely affect adjacent properties or the community, especially during evening and early morning hours. Reasonable exceptions may be made in the interest of public safety.

OS6.3 Noise Sensitive Uses. Locate uses where they will be most acoustically compatible with elements of the man-made and natural environment.

OS6.4 Noise Impacts of New Development. Ensure that new development will not raise levels above acceptable levels on the Town's arterials and major local streets.

OS6.5 Acoustical Data with Development Applications. Require the submittal of acoustical data, when and where appropriate, as part of the development application process so that the noise impacts of proposed uses can be properly evaluated and mitigated.

OS6.6 Temporary Noise Sources. Permit temporary noise-generating activities such as construction only for the shortest reasonable duration and in locations that will have the least possible adverse effect.

While it establishes noise policies, the *Moraga General Plan* does not identify quantified noise and land use compatibility standards for proposed land uses. Therefore, the standards set forth in the *Guidelines for the Preparation and Content of the Noise Element of the General Plan* published by the Governor's Office of Planning and Research are used to assess the compatibility of land uses with the noise environment. These guidelines—which quantify the acceptable noise levels referenced in the Town's General Plan policies and can therefore be considered supportive of and consistent with the Town's noise policies—identify an ambient noise level of 60 dBA L_{dn} as "normally acceptable" for single-family residential land uses. Ambient noise levels up to 70 dBA L_{dn} are considered "conditionally acceptable," where new development may be permitted for its specified use only after a detailed analysis of the noise reduction requirements is made and needed noise insulation features are included in the design of the project. Noise levels between 70 dBA L_{dn} and 75 dBA L_{dn} are considered "normally unacceptable." These standards are used as thresholds of significance for the noise analysis presented in this Initial Study.

Existing Conditions

The existing noise environment at the project site is controlled primarily by vehicular traffic sources on Camino Pablo and Sanders Ranch Road, which run adjacent to the site's eastern and northeastern boundaries, respectively. Noise monitoring was conducted adjacent to the site by Illingworth & Rodkin between September 15, 2015 and September 17, 2015 in order to quantify existing ambient noise levels. Although the measurements are now nearly 5 years old at the time this Initial Study is being published, the noise environment has changed little since 2015. Vehicle traffic continues to be the primary source of noise in the area, and without new development

driving new vehicle traffic in the area, traffic volumes are presumed to have increased only incrementally. The standard traffic volume growth rate in developed communities is typically 1 to 2 percent per year, which over the course of 5 years, is approximately 5 to 10 percent overall. Since traffic volumes would have to double to produce a barely perceptible increase in noise levels of 3 dBA, a noticeable change in the ambient noise levels could not have occurred over the past 5 years. Traffic volumes would have to increase by 26 percent to even result in an imperceptible 1-dBA increase, and traffic has not increased by this much in the project vicinity over the past 5 years. Therefore, Illingworth & Rodkin concluded that noise levels measured in 2015 continue to adequately describe the existing noise environment.⁸⁷

The noise monitoring survey included one long-term noise measurement (LT-1) along Camino Pablo and two short-term measurements (ST-1 and ST-2), one at the intersection of Camino Pablo and Tharp Drive and the other on Sky View Court, which is located about 200 feet south of the proposed subdivision. The noise monitoring locations are shown on Figure N-1.

Long-term noise measurement LT-1 was along the westernmost boundary of the site approximately 30 feet from the centerline of Camino Pablo. Hourly average noise levels ranged from 47 to 61 dBA L_{eq} during the day and from 27 to 49 dBA L_{eq} at night. The L_{dn} at this location was 54 dBA on Wednesday, September 16, 2015. The daily trends in noise levels at LT-1 are shown on Figures N-2 through N-4.

Short-term noise measurements ST-1 and ST-2 were made in the vicinity of existing noisesensitive residential land uses bordering the site. These locations are also within 200 feet of proposed homes in the Camino Pablo subdivision. Table N-2 summarizes the data collected at the short-term measurement locations.

Noise Measurement Location (Date, Time)	L _{max}	L ₍₁₎	L ₍₁₀₎	L ₍₅₀₎	L(90)	\mathbf{L}_{eq}	L _{dn}
ST-1: Camino Pablo at Tharp Drive (apx. 50 feet west of center) (9/17/2015), 12:00-12:10 p.m.)	63	57	49	42	38	47	52
ST-2: end of Sky View Court (9/17/2015), 11:40-11:50 a.m.)	55	48	44	40	37	41	<50

Table N-2

Summary of Short-Term Noise Measurement Data, in Decibels (dBA)

Source: Illingworth & Rodkin, 2015

Note: Ldn approximated by correlating to corresponding period at long-term measurement location.

⁸⁷ Michael Thill, Principal, Illingworth & Rodkin, personal communication, June 16, 2020.



Noise Monitoring Locations

Source: dk Consulting







Impact of Increased Noise Levels on Existing and Future Residents

The noise analysis assumes that the future exterior noise environment at and in the vicinity of the project site will continue to result primarily from vehicle traffic along Camino Pablo. The addition of project-generated traffic would add incrementally to the existing traffic noise on Camino Pablo.

With respect to traffic sources, a doubling of traffic volumes is generally required before an increase in ambient noise will be perceived by the average person, corresponding to a noise level increase of 3 dB. For purposes of this analysis, a significant impact would be identified if traffic generated by the project would substantially increase noise levels at sensitive receivers in the vicinity. Since the Moraga General Plan does not identify quantified noise and land use compatibility standards for proposed land uses, a "substantial increase" in noise levels is defined based on the standards set forth in the *Guidelines for the Preparation and Content of the Noise Element of the General Plan* published by the Governor's Office of Planning and Research (OPR). These guidelines identify an ambient noise level of 60 dBA L_{dn} as "normally acceptable" for single-family residential land uses. Ambient noise levels up to 70 dBA L_{dn} are considered "conditionally acceptable," where new development may be permitted for its specified use only after a detailed analysis of the noise reduction requirements is made and needed noise insulation features are included in the design of the project. Noise levels between 70 dBA L_{dn} and 75 dBA L_{dn} are considered "normally unacceptable."

The OPR guidelines for single-family residential land uses are intended to achieve an acceptable interior noise level of 45 dBA L_{dn} without the incorporation of special noise insulation features such as forced-air mechanical ventilation systems or sound-rated construction methods into the design of the residential units. The "normally acceptable" exterior ambient noise level of 60 dBA L_{dn} was established because typical residential construction methods, with the windows partially open for ventilation, provide for interior noise levels that are 15 dBA lower than exterior noise levels.

Based on the OPR guidelines, a substantial increase would occur if the increase in noise levels at noise-sensitive land uses is: a) 3 dBA L_{dn} or greater where future exterior noise levels would exceed the normally acceptable noise level standard of 60 dBA L_{dn} , or b) 5 dBA L_{dn} or greater where noise levels would remain at or below the normally acceptable noise level. In addition, interior noise levels above 45 dBA L_{dn} in habitable rooms would be considered a significant adverse noise impact.

As discussed in more detail in Section XVI, Transportation/Traffic, the existing daily traffic volume on Camino Pablo at Tharp Drive, adjacent to the proposed project entrance, is 1,170 vehicles per day. The project would generate an additional 160 average daily vehicle trips, thereby increasing traffic on Camino Pablo by about 14 percent. Based on this projected increase, Illingworth & Rodkin calculated that the project would increase traffic noise levels along Camino Pablo by up to 1 dBA L_{dn} above existing conditions. This increase in sound levels would not be perceptible to the average person.

Traffic noise levels are calculated to reach 55 dBA L_{dn} at the westernmost project boundary (approximately 30 feet from the center of Camino Pablo) and would be considered "normally acceptable" with the proposed residential land uses. Future exterior noise levels at the location of the residential pads, approximately 100 to 150 feet from the center of Camino Pablo, are projected

to be 50 dBA L_{dn} or less, and would also be considered "normally acceptable" with the proposed residential land uses. With the nearest existing residences located more than 40 feet from the centerline of Camino Pablo, exterior noise levels at the nearest residential receptors would therefore be no more than 55 dBA L_{dn} , which would be acceptable per the State guidelines referenced above. Interior noise levels at all existing and future residences would be well below the 45-dBA threshold. Accordingly, the incremental noise that would be generated by operation of the proposed project would have a *less-than-significant impact* on existing and future residents on and in the vicinity of the project site.

Illingworth & Rodkin revisited their analysis in June 2020 to address project changes since 2015 that included the addition of six accessory dwelling units (ADUs) on Lots 1, 2, 4, 5, 6, and 10. It was conservatively assumed that the additional ADU's would result in approximately 50 percent more traffic than previously forecast for the 13 single-family homes. However, even with this increased traffic, noise levels on area roadways would still increase by 1 dBA Ldn or less, which is an imperceptible increase in noise. The conclusions about project-generated noise presented above remain valid.

Construction Noise Impacts

Temporary noise would be generated during site clearing and grading, and during construction of the proposed project. Construction activities generate considerable amounts of noise, especially during earth-moving activities when heavy equipment is used. The highest maximum noise levels generated by project construction activities would typically range from about 80 to 90 dBA L_{max} at a distance of 50 feet from the noise source. As shown in Table N-3, typical hourly average construction generated noise levels are about 81 dBA to 88 dBA measured at a distance of 50 feet from the center of the site during busy construction periods (e.g., earth moving equipment, impact tools, etc.). The noise levels associated with construction of the residential units would be substantially less than the noise levels associated with grading and pavement activities during project site preparation. Hourly average noise levels generated by the construction of the proposed homes would range from about 63 dBA to 71 dBA measured at a distance of 50 feet depending on the amount of activity at the site.

Construction-generated noise levels drop off at a rate of about 6 dBA per doubling of distance between the source and receptor. Shielding by barriers, buildings, or terrain can provide an additional 5 to 10 dBA noise reduction at distant receptors.

Noise impacts resulting from construction depend on the noise levels generated by various pieces of construction equipment, the timing and duration of noise-generating activities, and the distance between construction noise sources and noise-sensitive receptors. Construction noise impacts primarily occur when construction activities occur during noise-sensitive times of the day (early morning, evening, or nighttime hours), the construction occurs in areas immediately adjoining noise-sensitive land uses, or when construction durations last over extended periods of time. Where hourly average noise levels from construction activities exceed 60 dBA L_{eq} between 8:00 a.m. and 5 p.m. Monday through Friday would constitute a significant but temporary noise increase at adjacent residential land uses.

Table N-3

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

Construction Equipment 50-Foot Noise Emission Limits

Notes:

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

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

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

The noisiest phases of project construction (site preparation, excavation, grading, and trenching) would require approximately 19 months to complete. Heavy construction equipment used to complete these tasks would include a loader, scrapers, trenching equipment, dump trucks, a compactor, a motor grader, water trucks, a generator, a paving machine, and dozers. Noise generated during the construction of the residential structures is generally lower as less heavy construction equipment is required to complete the task. Once construction moves indoors, minimal noise would be generated at off-site locations.

The nearest existing residences are located approximately 50 feet to the south and would be exposed to hourly average noise levels ranging from 81 to 88 dBA L_{eq} during the busiest construction periods along the southern boundary of the site. At residences to the west, located about 100 feet from the westernmost edge of the proposed development area, construction noise levels would range from about 75 to 82 dBA L_{eq} during the busiest periods where construction occurs along the western boundary of the disturbance area.

While construction of the proposed project would result in substantial temporary increases in noise in the project vicinity that nearby residential receptors could find objectionable, similar to most California jurisdictions, the Town of Moraga exempts construction noise from their adopted interior and exterior noise standards, and relies on restrictions on construction hours to mitigate construction noise impacts. Municipal Code Section 7.12.090 prohibits outdoor construction activity after 5:00 p.m. and before 8:00 a.m. (i.e., construction is allowed only between the hours of 8:00 a.m. and 5:00 p.m.). Construction on weekends and holidays is not restricted or prohibited. Project compliance with these code requirements would limit noise disturbance from project construction. Although construction noise would be a *potentially significant impact*, implementation of Mitigation Measures N-1 through N-6 would ensure that short-term construction impacts associated with the proposed project would be mitigated to a less-thansignificant level. Mitigation Measures N-2 and N-3 (not including a noise barrier) would reduce construction noise by about 5 dBA. If temporary noise barriers are implemented, the overall noise reduction could reach 10 dBA.⁸⁸

- Mitigation Measure N-1: Noise-generating construction activities shall be limited to the hours of 8:00 a.m. to 5:00 p.m. Monday through Friday, unless otherwise approved by the Planning Director for a limited duration. Construction activities within private and public street improvements shall be limited to the hours of 8:00 a.m. to 4:00 p.m. Monday through Friday.
- **Mitigation Measure N-2:** The project sponsor shall require the construction contractor to equip all construction equipment driven by internal combustion engines with intake and exhaust mufflers which are in good condition, appropriate for the equipment, and no less effective than those originally installed by the manufacturer. The manufacturers' noise abatement features, such as mufflers, engine covers, and engine vibration isolators, must remain intact and operational. All construction equipment shall be inspected weekly to ensure proper maintenance and presence of noise control devices (e.g., mufflers

⁸⁸ Michael Thill, Illingworth & Rodkin, op cit.

and shrouding, etc.). Unnecessary idling of internal combustion engines shall be prohibited.

- Mitigation Measure N-3: Wherever possible, hydraulic tools shall be used instead of pneumatic impact tools. "Quiet" air compressors and other stationary noise sources shall be utilized when appropriate technology is available. Construction staging areas, stockpile areas, parking areas, maintenance yards, air compressors, portable power generators, and other construction-oriented operations shall be located as far as reasonably possible from noise-sensitive receptors. Temporary noise barriers with no gaps or cracks shall be constructed to screen stationary noise-generating equipment when located within 200 feet of adjoining sensitive land uses.
- Mitigation Measure N-4: The residential units at the western and southern site boundaries shall be constructed as early as possible during project construction so that the intervening buildings will provide acoustical shielding for nearby existing residences. This would provide approximately 10 dB of noise reduction during the remainder of project construction activities.

Mitigation Measure N-5: Neighbors located adjacent to the construction site shall be notified of the construction schedule in writing. The Town of Moraga shall designate a project liaison who will be responsible for responding to noise complaints during project construction. The name and phone number of the liaison shall be conspicuously posted at construction areas and on all advanced notifications. This person shall take steps to resolve complaints, including periodic noise monitoring, if necessary. Results of noise monitoring shall be presented at regular project meetings with the project contractor, and the liaison shall coordinate with the contractor to modify any construction activities that generated excessive noise levels to the extent feasible. The noise liaison shall implement a reporting program that documents complaints received, actions taken to resolve problems, and effectiveness of these actions.

Mitigation Measure N-6: The Town shall conduct a pre-construction meeting with the job inspectors and the general contractor/on-site project manager to confirm that noise controls and practices (including construction hours, construction schedule, and noise coordinator) are implemented.

		Potentially Significant Impact	Less-Than- Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
b)	Generation of excessive groundborne vibration or groundborne noise levels?			X	

<u>Explanation</u>: While operation of the proposed project would not generate substantial or noticeable ground vibration, construction of the project may generate perceptible vibration when heavy equipment or impact tools (e.g. jackhammers, hoe rams, etc.) are used. Construction activities would include excavation, grading, site preparation work, foundation work, and new building framing and finishing. Disturbance to people can range from barely perceptible vibration to interference with sleep. Due to the seismically active nature of the San Francisco Bay Area, an experience of heavy vibration could provoke fear or anxiety about an earthquake. Vibration severe enough to cause structural damage would not be expected from project construction

Ground vibration consists of rapidly fluctuating motions or waves with an average motion of zero. Several different methods are typically used to quantify vibration amplitude. One method is the Peak Particle Velocity (PPV). The PPV is defined as the maximum instantaneous positive or negative peak of the vibration wave. For purposes of this analysis, a PPV descriptor with units of millimeters per second (mm/sec) or inches per second (in/sec) is used to evaluate construction-generated vibration for potential building damage and human complaints. Table N-4 displays the typical reactions of people and the effects on buildings that different continuous vibration levels can produce.

The annoyance levels shown in Table N-4 should be interpreted with care since vibration may be found to be annoying at much lower levels than those shown, depending on the level of activity or the sensitivity of the individual. To sensitive individuals, vibrations approaching the threshold of perception can be annoying. Low-level vibrations frequently cause irritating secondary vibration, such as a slight rattling of windows, doors, or stacked dishes. The rattling sound can give rise to exaggerated vibration complaints, even though there is very little risk of actual structural damage.

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

The two primary concerns with construction-induced vibration, the potential to damage a structure and the potential to interfere with the enjoyment of life, are evaluated against different vibration limits. Studies have shown that the threshold of perception for average persons is in the range of 0.008 to 0.012 in/sec PPV. Human perception to vibration varies with the individual and is a function of physical setting and the type of vibration. Persons exposed to elevated ambient vibration levels, such as people in an urban environment, may tolerate a higher vibration level.

Table N-4

Reactions of People and Damage to Buildings from Continuous or Frequent Intermittent Vibration Levels

Velocity Level, PPV (in/sec)	Human Response	Effect on Buildings
0.01	Barely perceptible	No effect
0.04	Distinctly perceptible	Vibration unlikely to cause damage to any type of structure
0.08	Distinctly perceptible to strongly perceptible	Recommended upper level of the vibration to which ruins and ancient monuments should be subjected
0.1	Strongly perceptible	Virtually no risk of damage to normal buildings
0.3	Strongly perceptible to severe	Threshold at which there is a risk of damage to older residential dwellings such as plastered walls or ceilings
0.5	Severe - Vibrations considered unpleasant	Threshold at which there is a risk of damage to newer residential structures

Source: Transportation and Construction Vibration Guidance Manual, California Department of Transportation, September 2013.

Structural damage can be classified as cosmetic only, such as minor cracking of building elements, or may threaten the integrity of the building. Safe vibration limits that can be applied to assess the potential for damaging a structure vary by researcher and there is no general consensus as to what amount of vibration may pose a threat for structural damage to the building. Construction-induced vibration that can be detrimental to the building is very rare and has only been observed in instances where the structure is at a high state of disrepair and the construction activity occurs immediately adjacent to the structure.

The California Department of Transportation recommends a vibration limit of 0.5 in/sec PPV for buildings structurally sound and designed to modern engineering standards, 0.3 in/sec PPV for buildings that are found to be structurally sound but where structural damage is a major concern, and a conservative limit of 0.08 in/sec PPV for ancient buildings or buildings that are documented to be structurally weakened. No ancient buildings or buildings that are documented to be structurally weakened adjoin the project site. Therefore, groundborne vibration levels exceeding 0.3 in/sec PPV would have the potential to result in a significant vibration impact.

Table N-5 presents typical vibration levels that could be expected from construction equipment at a distance of 25 feet. Project construction activities such as drilling, the use of jackhammers, rock drills and other high-power or vibratory tools, and rolling stock equipment (tracked vehicles, compactors, etc.) may generate substantial vibration in the immediate vicinity. Jackhammers
typically generate vibration levels of 0.035 in/sec PPV and drilling typically generates vibration levels of 0.09 in/sec PPV at a distance of 25 feet. Vibration levels would vary depending on soil conditions, construction methods, and equipment used. Vibration levels from typical construction activities would be expected to be 0.2 in/sec PPV or less at a distance of 25 feet, below the 0.3 in/sec PPV significance threshold used to assess potential cosmetic damage to buildings that are structurally sound. The nearest residential structures to the site are located 50 feet or further from the shared property line. Vibration levels at a distance of 50 feet would be 0.1 in/sec PPV or less. Vibration generated by construction activities near the common property line with Sky View Court residential land uses would therefore at times be perceptible; however, it would be infrequent and would only occur during the allowable daytime construction period. Therefore, construction of the project would have a *less-than-significant impact* from vibration.

Table N-5

Velocity Level, PPV (in/sec)	Human Response	Effect on Buildings
0.01	Barely perceptible	No effect
0.04	Distinctly perceptible	Vibration unlikely to cause damage to any type of structure
0.08	Distinctly perceptible to strongly perceptible	Recommended upper level of the vibration to which ruins and ancient monuments should be subjected
0.1	Strongly perceptible	Virtually no risk of damage to normal buildings
0.3	Strongly perceptible to severe	Threshold at which there is a risk of damage to older residential dwellings such as plastered walls or ceilings
0.5	Severe - Vibrations considered unpleasant	Threshold at which there is a risk of damage to newer residential structures

Vibration Source Levels for Construction Equipment

Source: Transit Noise and Vibration Impact Assessment, United States Department of Transportation, Office of Planning and Environment, Federal Transit Administration, May 2006.

	Potentially Significant Impact	Less-Than- Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
c) For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?				X

<u>Explanation</u>: The project site is not located within an Airport Influence Area (AIA) of a public airport. The nearest airport is Oakland International Airport, which is located about 9 miles southwest of the project site. In addition, the Little Hands Airport, a small privately owned airport, is located about 4.7 miles to the east, and the Bishop Ranch Heliport is located in San Ramon, about 8 miles southeast of the project site. Due to the distance of these facilities from the site, there is no potential for project residents to be exposed to excessive noise levels, and thus there would be no impact.

<u>XIV. POPULATION AND HOUSING</u> — Would the project:

		Potentially Significant Impact	Less-Than- Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
a)	Induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?			X	

Explanation: The proposed project would directly generate population growth through the development of 13 new single-family homes. According to the U.S. Census Bureau, the 2010 average household size reported for the Town of Moraga was 2.57 persons per owner-occupied housing unit.⁸⁹ Applying this average household size to the project, and conservatively counting each ADU as a dwelling unit, the proposed project would generate a population of approximately 49 persons. Since the site is not currently within the Town limits, is not zoned for residential use, and is not served by an existing access street, this would represent a net new increase in the population of Moraga. However, with a 2010 population of 16,016 persons, this would represent an increase of 0.3 percent in the Town's population and a 0.0046-percent increase in the population

⁸⁹ California Department of Finance, Demographic Research Unit, State Census Data Center, Table 1: Population, Age and Sex Characteristics, April 1, 2010, Incorporated Cities and Census Designated Places (CDP) by County in California (extracted from U.S. Census Bureau data), Accessed October 13, 2015 at: <u>http://www.dof.ca.gov/research/demographic</u>.

of Contra Costa County. This would not represent a substantial growth in population. Furthermore, as documented in other relevant sections of this Initial Study, implementation of the project would not require expansion of existing water or wastewater treatment capacity, development of new water supplies, increased police or fire protection staffing or facilities, or other public services and utilities. The population growth induced by the project would therefore be a *less-than-significant impact*.

	Potentially Significant Impact	Less-Than- Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
b) Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?				\boxtimes

Explanation: The project site does not contain any residential structures. Therefore, the project would not demolish or otherwise remove any existing housing units and there would be no impact.

<u>XV. PUBLIC SERVICES</u> - Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for any of the following public services:

	Potentially Significant Impact	Less-Than- Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Fire protection?			X	

<u>Explanation</u>: Fire response to the project site would be provided by the Moraga-Orinda Fire District (MOFD), which also provides emergency medical response. In 2015, the MOFD responded to 7,830 calls for service.⁹⁰ Typically, more than half of the MOFD's service calls are for emergency medical response, while under 10 percent of the calls are for fires.

The MOFD serves an area encompassing about 42 square miles, with a service population of approximately 38,500 residents. The District operates five fire stations, two of them in Moraga with the other three located in Orinda. The MOFD currently has a staff of 61 fire suppression employees, a Fire Prevention staff of 5, and Administrative staff of 6. The Fire District staffs five stations with four front line engines, 1 aerial ladder truck, and two life support ambulances.⁹¹

⁹⁰ Jeff Isaacs, Moraga-Orinda Fire District, personal communication, June 26, 2020.

⁹¹ Jeff Isaacs, Moraga-Orinda Fire District, personal communication, June 17, 2020.

Station Number 41, located at 1284 Moraga Way in Moraga, approximately 2.2 miles from the project, would provide first response to the site. Station 41 is staffed with five rescue responders and is equipped with a Type 1 fire engine, one ambulance, and a Type 3 wildland engine. Backup response to the project site would be provided by Station 42, located at 555 Moraga Road, approximately 3.5 miles north of the project.

As discussed in more detail in Section IX(h), the project site is not located within a Very High Fire Hazard Severity Zone as designated by the California Department of Forestry (CAL-FIRE); however, it is located in a High Fire Hazard Severity Zone. The site is also within a State Responsibility Area (SRA), as discussed in Section IX(h), which places primary responsibility for fire protection upon CAL-FIRE. This also means the project must comply with California Building Code and Fire Code Chapter 7A and Title 14 Section 1270 regulations, which require fire-resistant construction materials. The project would be required to comply with these requirements.

While CAL-FIRE has primary responsibility for fighting wildland fires in SRAs in unincorporated areas, the site is also located within the district boundary and sphere of influence of the MOFPD,⁹² and the MOFPD would provide primary fire protection response to the proposed project.⁹³

The MOFD has a target response time of no more than 3 minutes and a travel distance of no more than 1.5 miles, established by Policy PS3.3 in the Public Safety Element of the *Moraga 2002 General Plan*. The MOFD has reviewed the conceptual plans for the project and determined that the project site is outside both the response time and distance standards set by Policy PS3.3. The Fire Marshall has determined that a new fire station closer to the project would be required in order for the MOFD to provide adequate fire protection to the project, but the Department is not currently capable of providing staff for an additional fire station.⁹⁴ Therefore, the project would have a *potentially significant impact* on fire protection services. Based on consultation with the MOFD, implementation of the following mitigation would reduce this impact to a less-than-significant level:

Mitigation Measure PS-1:

Prior to issuance of occupancy permits for the project, the project sponsor shall implement the following measures:

- 1) The applicant shall prepare and implement a Wildfire Hazard Assessment and Plan (WHAPP), subject to review and approval by the Moraga-Orinda Fire District (MOFD). The WHAPP must include a vegetation assessment, a wildfire growth potential study, and a plan for mitigation and maintenance of the immediate wildland/urban interface.
- 2) The project sponsor shall pay a fair-share contribution, to be determined by the Fire District in conjunction with the Town, toward the purchase of a new Type 3 fire engine meeting MOFD specifications which, with off-road capability and

⁹² Moraga-Orinda Fire Protection District, "Moraga-Orinda Fire Protection District Boundary and Sphere of Influence" [map], accessed April 3, 2019 at: <u>http://www.mofd.org/about</u>.

⁹³ Kathy Leonard, Fire Marshall, Moraga-Orinda Fire Protection District, "Re: Camino Pablo Subdivision Conceptual Plans" [letter], November 5, 2015.

⁹⁴ Kathy Leonard, Fire Marshall, Moraga-Orinda Fire Department, personal communication, November 5, 2015, reconfirmed on April 8, 2019.

onboard water storage, will enable the MOFD to respond more quickly to fires in the project area.

	Potentially Significant Impact	Less-Than- Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
b) Police protection?			X	

<u>Explanation</u>: Police protection would be provided to the project by the Moraga Police Department (MPD). The Department operates out of one station located at 329 Rheem Boulevard. The MPD currently has an authorized staff of 12 sworn officers, four reserve officers, and two civilians. The sworn personnel consist of the Chief of Police, one Lieutenant, one Sergeant, three Corporals, one Detective, and five Patrol Officers. Reserve Officers and Cadets volunteer their time to the department.⁹⁵ The Contra Costa County Sheriff's Department also provides assistance in responding to emergency calls.

The current staffing ratio of sworn officers per 1,000 population is 0.69, based upon the 2010 Census Projection population of 16,016 people. The General Plan does not establish a target staffing ratio for the Department. Crime rates in Moraga are relatively low compared to other Northern California cities. Overall, crime dropped 43 percent between 2010 and 2017. There were a total of 143 crimes reported in Moraga in 2017, including 1 rape, 3 robberies, 11 assaults, 30 burglaries, 88 larcenies, and 10 auto thefts. There were no homicides.⁹⁶

The estimated response time to the project site would vary based on officer location and call type. However, with the police station located about 4 miles (driving distance) away, rapid response times to the site would generally be expected. The General Plan sets target response times of 3 minutes for life-threatening calls and those involving criminal misconduct, and 7 minutes for non-emergency calls.

The proposed project would incrementally increase the population of the Town of Moraga by an estimated 49 people, representing a 0.3-percent increase in the Town's population. This could result in minimal increase in calls for police protection services. The MPD has concluded that the project would not result in a need for new or expanded police facilities in order to serve the project.⁹⁷ Therefore, the proposed project would have a less-than-significant impact on police protection services.

⁹⁵ Moraga Police Department, Your Department, accessed April 4, 2019 at: <u>http://police.moraga.ca.us/department.php</u>.

⁹⁶ Moraga Police Department, Town of Moraga Crime Statistics, accessed April 4, 2019 at: <u>http://police.moraga.ca.us/</u> <u>statistics.php</u>.

⁹⁷ Brian J. South, Police Lieutenant, Moraga Police Department, personal communication, June 17, 2020.

	Potentially Significant Impact	Less-Than- Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
c) Schools?			X	

Explanation: The project would be served by two public school districts. The Moraga School District (MSD) serves elementary and intermediate school students, while high school education is provided by the Acalanes Union High School District (AUHSD). The MSD has three elementary schools and one intermediate school, with a student enrollment in the 2018/2019 school year of 1,870 students. Elementary school students (grades K-5) from the proposed project would attend Camino Pablo Elementary School, located at 1111 Camino Pablo. The capacity of Camino Pablo Elementary is 600 students, while 2018/2019 enrollment is 372 students. Intermediate school students (grades 6-8) from the project would attend Joaquin Moraga Intermediate School, located at 1010 Camino Pablo Boulevard. Joaquin Moraga Intermediate School has a 2018/2019 enrollment of 662 students and a capacity of 875 students.⁹⁸

The Acalanes Union High School District has four high schools serving the communities of Canyon, Moraga, Lafayette, Orinda, and Walnut Creek. Two of the District's schools serve the Town of Moraga: Campolindo High School and Miramonte High School. Campolindo High School, located at 300 Moraga Road, would serve high-school aged residents of the proposed project. With a capacity of 1,500 students, enrollment as of April 2019 was 1,386 students.⁹⁹ All three schools serving the project site have capacity greater than current and projected enrollment, and have excess capacity to accept the students generated by the project.

Based on student enrollment formulas developed by MSD and AUHSD, the following yield factors were utilized to determine the student generation of single-family detached residential construction:

Grade Level	Students per Household ¹⁰⁰
K-6	0.2345
7-8	0.0757
9-12	0.1523
Total	0.4625

Based on these factors, and treating each of the six ADUs as households, the proposed project would be expected to generate approximately four elementary students, one intermediate school student, and two high school students, for a total of seven students. To cover the cost of housing these students, the project applicant would be required to pay a State-mandated school impact fee to the school districts prior to issuance of building permits by the County. The State-mandated school impact fee varies from school district to school district, depending on the current

⁹⁸ Jennifer Baier, Executive Assistant, Moraga School District, personal communications, April 8 and 11, 2019.

⁹⁹ Alcalanes Union High School District, Enrollment Update, April 17, 2019.

¹⁰⁰ Although MSD's schools are broken into K-5 and 6-8 cohorts, the school impact fee report provided generation rates for K-6 and 7-8 cohorts.

documented capacity and enrollment. Within the Moraga School District, the fees currently authorized by the State Allocation Board are \$3.79 per square foot for new residential construction.¹⁰¹ The school impact fees are collected by the County prior to issuance of building permits, and then are distributed to the MSD and AUHSD.¹⁰² Under California law, the payment by a developer of all current school impact fees associated with a proposed development effectively mitigates any impact that such development may have on the facilities of the local school district.

The proposed project would not result in a need for physical expansion of school facilities, or cause school enrollment to exceed existing capacity. Pursuant to Senate Bill 50, which became effective in 1998, payment of the School Facilities Mitigation Fee has been deemed by the State legislature to be full and complete mitigation for the impacts of a development project on the provision of adequate school facilities. Therefore, with the required payment of the school impact fees, the proposed project would have a *less-than-significant impact* on schools.

	Potentially Significant Impact	Less-Than- Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
d) Parks?			X	

Explanation: The Town of Moraga has two public parks and one special use area encompassing approximately 57 acres: Moraga Commons, Rancho Laguna, and Hacienda de las Flores (special use area). The three elementary schools in Moraga—Camino Pablo, Perales, and Rheem—provide another 8.4 acres of neighborhood parkland. Additionally, the Town manages the Mulholland Ridge Open Space Preserve, a 250-acre natural preserve used by the public primarily for hiking, dog-walking, and running. The Sanders Ranch Natural Area, a private natural area with some hiking trails, is located approximately ³/₄-mile north of the project site.

The nearest existing park to the project site is Rancho Laguna Park, an 8-acre rural park located about 750 feet south of the project site on Camino Pablo. The park has a large lawn set among trees. The facilities include tot lots, swings, a small amphitheater, and picnic areas, including a group picnic area that can accommodate 200 people. The park is authorized as an off-leash dog run area.

The Community Facilities and Services Element of the *Moraga 2002 General Plan* establishes two Parks and Recreation policies that are relevant to the proposed project. They are:

Policy FS3.2 Parks and Recreation Facilities in New Developments. Ensure that adequate recreation facilities are provided in areas of new residential development as a condition of development approval. Recreation facilities may include but need not be limited to amenities such as playgrounds, drinking fountains, trails, restrooms, picnic tables, play fields, and natural areas.

¹⁰¹ Cooperative Strategies, *Acalanes Union High School District Residential Development School Fee Justification Study*, Section V-I, March 8, 2018.

¹⁰² Carmelita Fritz, Fiscal Analyst, Acalanes Union High School District, personal communication, June 8, 2016.

Policy FS3.3 Park Dedication Requirements. Require residential and business developments to make appropriate provisions for park land dedication, trails, trail easements and/or in-lieu fees as part of the planning and development process. Land and/or facilities provided by the developer can be considered for credit toward the park dedication requirement.

In the Growth Management Element of the General Plan, Policy GM1.5 establishes a performance standard of 3 acres of parkland for every 1,000 residents, among other standards. Policy GM1.5 states that the performance standards enumerated in the policy pertain to the development review process, and should not be construed as applying to existing developed lands. This indicates that the park requirement for new development projects should be considered in isolation from the community-wide ratio of park acreage to residents.

Additional park dedication requirements are set forth in Chapter 8.140 of the Moraga Planning Code. Section 8.140.050 requires developers of residential subdivisions to dedicate parkland, pay an in-lieu fee thereof, or do a combination of both. As provided in Code Sections 8.140.190 and 8.140.200, it is ultimately up to the discretion of the Town Council whether to require land dedication, payment of a fee, or a combination of both. Section 8.140.080 stipulates the land dedication requirement of 3 acres per 1,000 residents. It also states that the average number of persons per dwelling unit that shall be used for calculating the parkland dedication requirement shall be as established in the adopted 2016 Development Impact Fee Nexus Study, or any applicable update to the study. That study, which remains the most recent study, indicates a household size for single-family detached homes of 3.4 persons per dwelling unit.¹⁰³

Applying the average household size of 3.4 persons for single-family homes results in a project population of 44 persons.¹⁰⁴ The park requirement is equivalent to 0.003 acre per person, which results in a park dedication requirement of 0.1326 acre for the proposed Camino Pablo subdivision.

The *Town of Moraga Parks and Recreation Master Plan* (2007) recommends the preservation of existing park facilities and acquisition and development of two new neighborhood parks, one centrally located special use area, a series of trails, and "acres of open space."

The project applicant is proposing to preserve Parcel A, an approximately 15.4-acre parcel that comprises approximately two-thirds of the total project site area, as permanent open space. No improvements for the open space and no dedicated parkland are proposed for the project. The applicant would be required to pay an in-lieu fee unless the Town requires development of parkland on a portion of the proposed open space during the entitlement process. Pursuant to Section 8.140.110 of the Planning Code, the Town Council may give up to 50 percent partial credit toward the land dedication and/or in-lieu fee for the provided open space. The partial credit may only be given if the Town Council finds that it is in the public interest to do so, and that the standards set forth in Planning Code Section 8.140.120 are met. Among other things, those standards require a minimum of four park or recreation elements, such as a hiking trail, children's

¹⁰³Town of Moraga, 2016 Comprehensive Development Impact Fee Update, Table 10: Calculation of Park Dedication In Lieu Fee, adopted May 11, 2016.

¹⁰⁴For calculation purposes, the exact result of 44.2 persons is used. As discussed in more detail In Section XIV, a project population of 49 persons has been assumed elsewhere in this Initial Study, based on the Town of Moraga average household size as determined in the 2010 U.S. Census.

playground, picnic area, etc., with minimum size requirements stipulated for each park or recreation element.

Because the proposed project would be required to dedicate parkland and/or pay in-lieu fees for parkland as a condition of approval, the project would not conflict with the Town of Moraga's performance standard for parkland, and would therefore have a *less-than-significant impact* on parks.

	Potentially Significant Impact	Less-Than- Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
e) Other public facilities?			X	

<u>Explanation</u>: Library services within the Town of Moraga are provided by the Contra Costa County Library (CCCL). The Moraga branch, located at 1500 St. Mary's Road, serves over 9,000 visitors each month with library and other related governmental services. The library houses almost 65,000 books, recorded books, music CDs, and DVDs, as well as public computers with free WI-FI access. With a large public meeting room, the library hosts a variety of regular children's and family programs , such as story-telling, music and dance performances, magic shows, lectures, author visits, and workshops.

The Moraga General Plan does not contain any specific thresholds for library services or facilities. While the proposed project would generate an incremental increase in demand for library services, the additional demand that would be generated by an estimated population of 49 persons, a small portion of whom would be expected to utilize the library in any given month, would be a tiny fraction of the existing 9,000 monthly visitors. This would not require an expansion of library facilities, and the project's impact on library services would be considered less than significant.

XVI. RECREATION -

		Potentially Significant Impact	Less-Than- Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
a)	Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?			X	

Explanation: The park facilities discussed in Section XIV(d) provide various recreation facilities, including softball fields, tennis courts, basketball courts, soccer and other athletic fields, swimming pools, picnic/BBQ areas, and playgrounds. The potential impact from a project-generated increase in demand for parks and associated recreation facilities was addressed

previously in Section XIII(d). While the new residents that would be generated by the project would be expected to result in an incremental increase in the use of existing neighborhood parks, regional parks, and other recreational facilities, the increased demand created by an estimated 49 new residents would not have the potential to cause substantial physical deterioration of the existing facilities. Project-generated use of parks and other recreational facilities would not be focused on a single facility, but would be spread out over multiple recreational opportunities in the region. Project-generated use would also be sporadic and intermittent; no facility would be visited every day by all 49 project residents. Finally, the sporadic and intermittent visitation by project residents would not have the potential to cause substantial physical deterioration of the facilities, and it would not have the potential to cause substantial physical deterioration of the facilities. This would be a *less-than-significant* impact.

	Potentially Significant Impact	Less-Than- Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
b) Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?				X

Explanation: The proposed project does not include construction of recreation facilities; thus, there would be no impact.

XVII. TRANSPORTATION/TRAFFIC -

Would the project:

	Potentially Significant Impact	Less-Than- Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Conflict with a program, plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities?			X	

<u>Explanation</u>: The transportation consulting firm Fehr & Peers conducted a traffic trip generation and operations analysis in 2015 for the proposed project that included an analysis of existing and projected traffic operating conditions in the vicinity of the project.¹⁰⁵ An updated transportation analysis was completed in June 2020 to reflect changes to the project since it was first proposed

¹⁰⁵ Fehr & Peers, *Camino Pablo Subdivision Transportation Analysis* [technical memorandum], September 18, 2015.

and to ensure the analysis and findings remained valid.¹⁰⁶ Both reports are presented in Appendix G. The transportation analysis included an evaluation of existing pedestrian, bicycle, and transit facilities and their capacity to accommodate the increase demand from the project.

Class II bicycle lanes currently exist along Camino Pablo north of Tharp Drive; there are no dedicated bicycle facilities south of Tharp Drive on Camino Pablo. However, Camino Pablo south of Tharp Drive is designated as a Bicycle Route in the *Moraga Walk* | *Bike Plan* (October 2016). As part of the proposed project and consistent with the *Moraga Walk* | *Bike Plan* , the roadway classification of Camino Pablo would be changed from Major Arterial to Collector, with a bike route installed after the Sanders Ranch intersection to the southern terminus of Camino Pablo. This change would require a General Plan Amendment. The applicant would install 'Share the Road' signage and striping to alert drivers that there may be bicyclists within the travel way.

The Contra Costa Transportation Authority (CCTA) is the designated Congestion Management Agency (CMA) for Contra Costa County. The latest Congestion Management Plan (CMP) for the County was adopted by CCTA in December 2019.¹⁰⁷ A study of freeway segments or other CMP roadways was not required for the proposed project because the Contra Costa CMP only requires this analysis for projects that generate more than 100 net new peak-hour vehicle trips. As discussed in more detail below, the project would generate 17 AM peak-hour trips and 17 PM peak-hour trips. The project would not conflict with the Contra Costa CMP.

All of the Town's Circulation Element goals and policies were reviewed to identify any potential conflicts. Consistent with Policy C1.1, the Fehr & Peers analysis found the proposed project would be safe for vehicles, bicyclists, and pedestrians with recommended mitigation measures. The proposed project meets MOFD emergency vehicle access standards, consistent with Policy C.11. As called for by Policy C1.5, the proposed project includes a generous landscaped buffer between homes and Camino Pablo, and consistent with Policy C4.1, a sidewalk along the new project street would connect to the Camino Pablo walkway, which provides a pedestrian connection to Rancho Laguna Park and the Carr Ranch property trails. Consistent with Policy C4.1, the project would install a bike route on Camino Pablo after the Sanders Ranch intersection with 'Share the Road' signage and striping to alert drivers that there may be bicyclists within the travel way. The proposed project appears to be consistent with all of the policies, which will be subject to confirmation by Town decision makers.

The potential traffic impacts of the project were originally evaluated in 2015 by comparing existing operating conditions to projected post-project conditions to determine the magnitude of changes to services levels due to increased vehicle delay. However, pursuant to recent updates to the *CEQA Guidelines*, effective December 28, 2018, the use of vehicle delay-based metrics as measured by level of service (LOS) and other similar metrics no longer constitutes a significant environmental impact under CEQA. After July 1, 2020, vehicle miles of travel (VMT) has been identified by the Office of Planning and Research (OPR) as the most appropriate metric to evaluate a project's transportation impacts (see section XVII(b) below).

However, an LOS analysis was conducted for informational purposes and also to demonstrate consistency with the Moraga General Plan, which establishes in Policy GM 1.4 a Level of Service

¹⁰⁶ Fehr & Peers, *Camino Pablo Subdivision Transportation Analysis* [technical memorandum], June 15, 2020.

¹⁰⁷ Contra Costa Transportation Authority, 2019 Update of the Contra Costa Congestion Management Program, Adopted December 18, 2019.

(LOS) "C" standard for roads in Moraga, which is applied to signalized intersection operations. At unsignalized intersections, application of a LOS C policy could result in over-sized intersections and unwarranted traffic signals that would be costly to install and maintain, and provide little benefit to vehicle operations. Therefore, an LOS E standard has been applied to the controlled approaches of a two-way stop-controlled intersection, with an overall LOS C standard, and a LOS D standard has been applied at all-way stop-controlled intersections. The different LOS classifications are explained below.

Due to the small magnitude of the project and its location at the outer margins of the Town, a single study intersection was evaluated in the trip generation and operations analysis: Camino Pablo at Tharp Drive, where the proposed subdivision entrance would be located. The intersection is currently a three-way T-intersection, with no stop control on Camino Pablo and stop control on Tharp Drive. This intersection was selected for inclusion in the study because all project traffic would access this intersection. Based on guidance provided by the Contra Costa Transportation Authority (CCTA), signalized intersections where a project could add more than 50 trips during any one peak hour should be evaluated. Since the project is expected to generate less than 20 trips in any one hour, no additional intersections (either signalized or unsignalized) were selected for evaluation and the project's effect on the operation of other intersections is expected to be negligible.

Existing conditions at the study intersection were determined by vehicle movement turning counts conducted by Fehr & Peers over a 72-hour period (Tuesday through Thursday) in September 2015 when school was in session. Traffic volumes were fairly consistent on the days of data collection, with a variation in daily volumes of approximately 2 percent. Daily traffic data for Camino Pablo was also collected and a speed survey conducted. For the study intersection, the single hour with the highest traffic volumes during the count periods was identified. Although the traffic count data was collected in 2015, these counts remain representative of current non-shelter-in-place conditions along Camino Pablo as no development has occurred along the corridor that would change overall travel patterns at the Camino Pablo at Tharp Drive intersection.

Existing Road Network

Regional access to the project site is provided by State Route (SR) 24, located about 6 miles north of the site, via Moraga Road through the City of Lafayette. Local access is provided by the following roadways:

Moraga Road/Canyon Road is a two- to four-lane north-south arterial roadway extending between Moraga Way in the Town of Moraga and Mount Diablo Boulevard in the City of Lafayette. Canyon Road is the extension of Moraga Road south of Moraga Way; it continues south to Pinehurst Road in Alameda County. The posted speed limit on Moraga Road is 35 miles per hour (mph). On-street parking is permitted on some portions of this roadway and Class II bicycle lanes and sidewalks are provided through the study area.

Moraga Way is generally a two-lane arterial roadway that extends northwest-southeast between Moraga Road (in the Town of Moraga) and SR 24 in the City of Orinda. Between School Street and Moraga Road, Moraga Way is a four-lane road with left-turn lanes. The posted speed limit on Moraga Way is 35 mph. On-street parking is permitted on some portions of this roadway and Class II bicycle lanes are provided through the study area. Sidewalks are also provided along some portions of the roadway. **Camino Pablo** is a two-lane arterial roadway that has a northwest to southeast orientation. Its northwest terminus connects to Canyon Road, while at its southern end, south of Moraga's Town limits, Camino Pablo transitions to Brown Ranch Road, which has restricted access. Sidewalks are provided on the east side of the roadway and Class II bike lanes are provided in both the northbound and southbound directions between Canyon Road and Tharp Drive. Pedestrian curb ramps, marked crosswalks, and left-turn pockets are provided at some intersections, but not all. On-street parking is permitted on portions of the roadway. The posted speed limit on this roadway is 25 mph. Based on the speed survey conducted by Fehr & Peers, the average travel speed is 29 mph and the 85th-percentile speed is 34 mph, which means that 85 percent of motorists are traveling at or below this speed.

Tharp Drive is a two-lane residential collector street that intersects with Camino Pablo. Sidewalks and dedicated bicycle facilities are not provided as it is expected that pedestrians and bicyclists will share the roadway with vehicles. On-street parking is permitted on both sides of the roadway. Tharp Drive intersects with a number of local streets through a residential neighborhood. A circuitous connection to the north end of Camino Pablo is provided via Tharp Drive and Rimer Drive.

Level-of-Service Criteria

The Level of Service (LOS) criteria from the 2010 *Highway Capacity Manual* were utilized for local roadway analysis. LOS primarily describes traffic flow conditions. LOS varies from LOS A to LOS F, and ranges from LOS A (indicating free-flow traffic conditions with little or no delay at intersections) to LOS F (representing over-saturated conditions where traffic flows exceed design capacity, resulting in long queues and delays). The different levels of service are defined by the amount of delay experienced by vehicles at a study intersection, as shown in Table T-1 for both signalized and unsignalized intersections. The minimum acceptable levels of service in the Town of Moraga are listed in Table T-2.

Signalized Intersection	ns
LOS	Average Control Delay per Vehicle, in Seconds
А	0.0-10.0
В	10.1-20.0
С	20.1-35.0
D	35.1-55.0
Е	55.1 -80.0
F	> 80.0
Non-signalized Interse	ections
LOS	Average Stopped Delay per Vehicle, in Seconds
А	0.0-10.0
В	10.1-15.0
С	15.1-25.0
D	25.1-35.0
Е	35.1-50.0
F	>50.0

Table T-1 Traffic Level Of Service (LOS) Criteria

Source: Transportation Research Board, Highway Capacity Manual 2000.

Table T-2 Intersection Level Of Service (LOS) Standards

Intersection Type	LOS Standard	Volume-to-Capacity (V/C) Ratio	Control Delay Per Vehicle (in seconds) ²
Signalized Intersection ¹	LOS C	0.75 to 0.79	28-35 sec.
All-Way Stop Control ³	LOS D	n/a	30-35 sec.
One- and Two-Way Stop Control: ³			
Overall Intersection	LOS C	n/a	20-25 sec.
Side-Street Traffic	LOS E	n/a	43-50 sec.

Source: Fehr & Peers, September 2015

Notes:

¹Town of Moraga, *Moraga 2002 General Plan* ²Transportation Research Board, *Highway Capacity Manual* (HCM), 6th Edition ¹Town of Moraga, *Moraga 2002 General Plan*

Trip Generation Estimates

Through empirical research, data have been collected that quantify the amount of traffic produced by common types of land uses. For residential uses, there are standard trip generation rates that can be applied to help predict the future traffic increases that would result from a new development. The magnitude of traffic added to the roadway system by a particular development is estimated by applying the applicable trip generation rates to the size of the development. The standard trip generation rates are published in the Institute of Transportation Engineers (ITE) manual entitled *Trip Generation*, 9th Edition. In addition to estimates of daily traffic, estimates have also been created for the peak one-hour periods during the morning (AM) and evening (PM) commute hours, when traffic volumes on adjacent streets are typically at their highest.

Based on ITE's trip generation rates for Single-Family Homes, the 13-unit proposed project is expected to generate 160 daily vehicle trips. The six ADUs would generate about 40 additional daily vehicle trips, based on the ITE category for Low-Rise Multi-Family Housing. Combined, the project would generate approximately 200 daily vehicle trips, with 17 trips occurring during the AM peak hour and 17 trips occurring during the PM peak hour. (For purposes of comparison, the existing average daily traffic for all turning movements at the Camino Pablo/Tharp Drive intersection is 1,170 vehicles.) These trips were assigned to streets in the local roadways system based on existing and expected traffic patterns in the area.

Intersection Operations Analysis

Level of Service Analysis

Using the existing peak-hour traffic volumes tallied in the September 2015 traffic counts collected by Fehr & Peers, operations at the project study intersection were evaluated both without (Existing) and with (Plus Project) the addition of project-generated traffic. The results are shown in Table T-3. The results are shown graphically for Existing and Plus Project conditions on Figures T-1 and T-2, respectively. As shown in the table, the intersection of Camino Pablo at Tharp Drive currently operates at LOS A, the highest levels of service, and would continue to operate at LOS A with the addition of project-generated traffic. The addition of project traffic would not result in a deterioration in LOS or increase average delay by more than 1 second, and signalization of the intersection would not be warranted. The project would not cause a deterioration of the intersection levels of service below the standard set by the Moraga General Plan.

Table T-3Existing and Future Intersection Level Of Service (LOS)

Intersection	Peak Existing		Existing Plus Project		Future (2040)		Future (2040) Plus Project		
Hour	Hour	Delay ¹	LOS ²	Delay ¹	LOS ²	Delay ¹	LOS ²	Delay ¹	LOS ²
1. Tharp Drive at	AM	3 (9)	A (A)	4 (10)	A (A)	3 (9)	A (A)	3 (10)	A (A)
Camino Pablo	PM	3 (9)	A (A)	4 (9)	A (A)	3 (9)	A (A)	4 (9)	A (A)

Source: Fehr & Peers, June 2020

Notes:

¹ Delay presented in seconds per vehicle; delay presented as intersection average (worst approach).

 2 LOS = Level of Service

Future (2040) Conditions

Future land use development within the Town of Moraga and adjacent communities has the potential to increase traffic on roadways within the area. Fehr & Peers reviewed approved and pending developments in the area and determined that there are no planned or anticipated projects, other than the proposed project, that would take access from Camino Pablo and potentially increase traffic in the area. Fehr & Peers also consulted traffic growth projections in the Contra Costa Transportation Authority (CCTA) travel demand model, which indicates a potential annual traffic growth rate of less than 0.50 percent per year in the project area. Although not much change in travel patterns on Camino Pablo at Tharp Drive is expected, the existing through traffic volumes on Camino Pablo were increased by 0.5 percent per year for 25 years to conservatively approximate future conditions, with a resulting average daily traffic volume in 2040 of 1,370 vehicles. Project traffic was then added to the resulting daily and peak-hour traffic forecasts. The resulting turning movement volumes are shown on Figure T-3. The total average daily traffic with the addition of project traffic would be 1,520 vehicles.

The intersection levels of service predicted for Future Plus Project conditions are listed in Table T-3. As shown in the table, with future growth and the addition of project-generated traffic, the study intersection would continue to operate optimally at LOS A and would not cause a deterioration of the intersection levels of service below the standard set by the Moraga General Plan.

Fehr & Peers also conducted a supplemental assessment to determine intersection operations if allway stop-control was installed at the Camino Pablo/Tharp Drive intersection. With the addition of all-way stop-control, the intersection would experience an average delay of less than 10 seconds per vehicle during both peak hours in both future conditions and the existing conditions. The intersection would therefore operate acceptably as either a side-street or all-way stop-controlled intersection.



Existing Traffic Volumes



Existing Plus Project Traffic Volumes



Future and Future Plus Project Traffic Volumes

		Potentially Significant Impact	Less-Than- Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
b)	Conflict or be inconsistent with CEQA Guidelines Section 15064.3, subdivision (b)?				X

Explanation: As discussed above, VMT assessments are not required to be completed until after July 1, 2020. No VMT assessment was conducted for the proposed project since this analysis was completed prior to July 1, 2020.

		Potentially Significant Impact	Less-Than- Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
<i>c)</i>	Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?		X		

<u>Explanation</u>: The project would modify the Camino Pablo/Tharp Drive intersection by creating a new access street for the proposed subdivision that would connect with the intersection opposite Tharp Drive, thereby creating a four-way intersection with stop controls at the new street where it meets the intersection. The new roadway would terminate at a cul-de-sac near the south end of the project site.

Fehr & Peers reviewed accident data for the existing Camino Pablo/Tharp Drive intersection, collected from the following sources:

- 1) Transportation Injury Mapping System (TIMS)
- 2) Statewide Integrated Traffic Records System (SWITRS)

There was one reported accident at the intersection of Tharp Drive at Camino Pablo between 2010 and the end of 2019. The primary collision factor was unsafe speed and the driver hit an object. No injuries were reported. At the intersection of Sanders Ranch Road, there was one reported collision in 2015 and one in 2019; in both collisions, a pedestrian and motor vehicle were involved. In both collisions, failure to follow traffic signs was the primary collision factor.

Fehr & Peers also performed a sight distance evaluation of the new roadway connection from the project site to Camino Pablo at Tharp Drive. For this assessment, the stopping sight distance and corner sight distance were reviewed. Stopping sight distance is defined as the distance required by a driver of a vehicle, traveling at a given speed, to bring the vehicle to a stop after an object on the road becomes visible and in advance of reaching the object. Corner sight distance is defined as the intersection line of sight maintained between the driver of a vehicle waiting at the crossroad and the driver of an approaching vehicle. Although the existing speed limit is 25 mph on Camino Pablo

at the intersection with Tharp Drive, the analysis was conducted using the observed 85th percentile travel speed of approximately 35 mph.

According to the *Caltrans Highway Design Manual* (6th Edition), a travel speed of 35 mph requires in a minimum stopping sight distance of 250 feet and a corner sight distance of 385 feet for turns from the proposed project roadway. Fehr & Peers determined that the actual sight distance north and south of the proposed project entrance is greater than 385 feet, satisfying the Caltrans criteria, as shown on Figure T-4. Once drivers exit the project site stop and the Stop bar at the intersection, they will be able to advance forward to obtain a clear line of sight to the south without encroaching into Camino Pablo. Therefore, there would be a less-than-significant impact as to sight distance. However, to ensure that this sight distance for drivers is maintained in the future, the traffic consultant recommended ongoing maintenance of the landscaping at the northeast and southeast corner of the future roadway connection with Camino Pablo, or elimination of plants or shrubs that could grow taller than 3 feet.

The transportation assessment included an evaluation of gradients (slopes) along the proposed new street. Based on the conceptual grading plan, the project roadway would follow the existing contour of the site with moderate adjustments. The project roadway would intersect Camino Pablo on a down-sloping grade of approximately 6 percent. Within the site, maximum slopes would be approximately 15 percent.

California Fire Code, as enforced by the Moraga-Orinda Fire District, allows roadway grades of up to 20 percent, with a grooved concrete surface required for grades between 16 and 20 percent. Because the maximum grade proposed within the site is 15 percent, no additional roadway treatments would be required and impacts regarding gradients would be less than significant. However, the traffic consultant recommended installation of signage reminding drivers of vehicles parked on street to curb their wheels.

Fehr & Peers also analyzed impacts to bicycle and pedestrian safety. Although the posted speed limit on Camino Pablo at Tharp Drive is 25 miles per hour (mph), the observed 85th-percentile travel speed is 35 mph, which is higher than the desired vehicle speed on a bicycle route of no more than 25 mph, based on Federal Highway Administration guidance for bicycle facilities. Roadway volumes on this portion of Camino Pablo are within the thresholds for bicycle routes – less than 2,000 vehicles per day. However, the proposed designation of Camino Pablo from south of Sanders Ranch to the southern terminus of Camino Pablo as a bicycle route could result in a traffic hazard due to the 85th-percentile vehicle speeds on Camino Pablo in the vicinity of Tharp Drive. This potentially hazardous condition for bicyclists would be a *significant adverse impact*. Implementation of the following mitigation measure would reduce the impact to a less-than-significant level:

Mitigation Measure TRA-1: The Town of Moraga shall implement speed reduction measures on Camino Pablo south of Sanders Ranch Road to the southern terminus to reduce the 85th-percentile travel speed to 25 miles per hour to the satisfaction of the Town. Alternatively, the Town shall eliminate on-street parking to allow for the provision of Class II bicycle lanes along the project frontage.



Sight Distance at Project Entrance

The conceptual plans include a 5-foot-wide sidewalk on the east side of the project roadway. The sidewalks would connect into the existing sidewalk along the Camino Pablo project frontage. Curb ramps would be constructed at the intersection of Camino Pablo and the project roadway, and sidewalks would be constructed along the east side of Camino Pablo, with a landscape strip on the east side of the sidewalk. The project currently does not propose sidewalks or curb ramps to be installed on Tharp Drive.

Although the traffic consultant did not identify a significant pedestrian safety impact, to enhance pedestrian safety Fehr & Peers recommended providing directional curb ramps to orient pedestrians to the path of travel along Camino Pablo at the project roadway. As an alternative, Fehr & Peers recommended installing all-way stop-control at the intersection of Tharp Drive and Camino Pablo with crosswalks across all legs of the intersection. While there is no pedestrian safety impact identified requiring mitigation, the Town's decision makers can consider whether or not to incorporate the traffic consultant's recommendations as conditions of approval.

In summary, MM TRA-1 would reduce impacts due to a substantial increase in hazards to a less-than-significant level.

	Potentially Significant Impact	Less-Than- Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
d) Result in inadequate emergency access?				X

<u>Explanation</u>: Emergency vehicle access would be provided from Camino Pablo and the new project roadway. The California Fire Code requires a minimum 90-foot diameter cul-de-sac for roadways between 151 and 750 feet, which would apply to the proposed project roadway. This requirement is satisfied by the proposed design, which would also permit on-street parking within the cul-de-sac bulb by residents and visitors. An auto-turn assessment conducted by Fehr & Peers confirmed that fire trucks would be able to turn around in the cul-de-sac. The cul-de-sac roadway length would also be within the limits established by the Fire Code. Fehr & Peers concluded that the project plan exhibits adequate site access and on-site circulation for motor vehicles, including fire trucks and other emergency vehicles. The project would not affect offsite access routes. There would be no impacts due to inadequate emergency access.

XVIII. TRIBAL CULTURAL RESOURCES — Would the project:

	Potentially Significant Impact	Less-Than- Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
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:				
a) 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)?		X		

Explanation: In accordance with the requirements of Assembly Bill 52 (2014), on behalf of the Town of Moraga, Archeo-Tec initiated consultation with representatives of Native American tribes that may have tribal cultural resources in the project area. On January 18, 2016, Emily Wick of Archeo-Tec contacted the Native American Heritage Commission to formally request they search their Sacred Lands File to determine whether the project encroaches on any recorded areas of cultural importance. On February 1, 2016, Sharaya Souza reported that the Sacred Lands File search produced negative results, but advised that Archeo-Tec contact selected Native American individuals/organizations who may have knowledge of cultural resources in the area; Ms. Souza provided a list of the tribal representatives and their contact information.

Letters were sent by email to all five tribal representatives on February 9, 2016. On February 10, 2016, Michelle Staley spoke by phone with Ann Marie Sayers, Chairperson of the Mutsun Band of Costanoan. Ms. Sayers recommended both archaeological and Native American monitoring of all construction excavation, and recommended that if a burial is found, it be reburied in the open space portion of the property with an easement preventing any further disturbance. Although there was some communication with other tribal representatives, no other input regarding the project was received from the other Native American representatives contacted by Archeo-Tec.

As discussed further in Section V, the possible presence of buried prehistoric cultural materials at the project site, including tribal cultural resources, cannot be ruled out, and any disturbance to such resources, were they to exist, could result in a significant, adverse impact on tribal cultural resources. Implementation of Mitigation Measures CR-1 through CR-3, set forth in Section V, would reduce the potential impact to a *less-than-significant-with-mitigation* level:

	Potentially Significant Impact	Less-Than- Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
b) 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 Resources Code Section 5024.1? In applying the criteria set forth in subdivision (c) of Public Resources Code Section 5024.1, the Lead Agency shall consider the significance of the resource to a California Native American tribe.		X		

<u>Explanation</u>: Public Resources Code Section 5024.1 establishes the California Register of Historical Resources and defines the criteria for inclusion on the California Register. No historic resources are known or suspected to be present at the project site. However, as discussed in Section V-a, their potential presence cannot be completely ruled out. Were such resources to be present, disturbance of the subsurface during construction could damage or destroy the resource(s), which would be a potentially significant impact on historic resources. Implementation of Mitigation Measures CR-1 through CR-3 (see Section V) would reduce the impact to *less than significant with mitigation*.

XIX. UTILITIES AND SERVICE SYSTEMS — Would the project:

		Potentially Significant Impact	Less-Than- Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
a)	Require or result in the relocation or construction of new or expanded water, wastewater treatment, stormwater drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects?			X	

Explanation:

Water Treatment Facilities

Potable water is provided to the Town of Moraga by the East Bay Municipal Utility District (EBMUD), which serves incorporated and unincorporated areas in much of Contra Costa and Alameda Counties, encompassing 332 square miles of land area. The District serves 20 cities and 15 unincorporated communities, with a service population of about 1.4 million people. EBMUD's water system infrastructure includes a network of storage reservoirs, pumping plants, aqueducts,

and 4,200 miles of delivery pipes.¹⁰⁸ In addition to five major storage reservoirs with a total capacity of 151,670 acre-feet (AF) of water,¹⁰⁹ the distribution network includes 170 neighborhood reservoirs storing treated potable water, with a combined total capacity of 830 million gallons.

The District operates six treatment facilities, including the Walnut Creek Water Treatment Plant (WTP), Orinda WTP, and the Lafayette WTP, with a combined daily capacity of 375 million gallons per day (mgd). Each water treatment plant provides filtration, disinfection, fluoridation, and corrosion control. Water delivered to the Town of Moraga is treated at both the Orinda and Walnut Creek WTPs, and may be treated as needed at the Lafayette WTP.¹¹⁰

The District's previous Urban Water Management Plan (2010) reported that in the Moraga area, EBMUD had planned or already implemented improvements to the Moraga Road Pipeline, Fay Hill Reservoir, Fay Hill Pipeline, Fay Hill Pumping Plant, and Moraga Reservoir. It stated that implementation of EBMUD's Water Treatment and Transmission Improvements Program (WTTIP), which also includes improvements to the Lafayette WTP, a source of the Town's water supply, would allow the District to reliably meet projected water demands in the region through 2030 and beyond.¹¹¹ In its most recent Urban Water Management Plan (2015), conducting a seismic/structural assessment of Lafayette Aqueduct Number 2 is also identified as a high-priority capital improvement project in the project area. Improvements to the Walnut Creek WTP were completed in 2014 that increased capacity and reliability of water service.

There is currently more than adequate excess capacity at all three of the water treatment plants that would potentially serve the proposed project. As of June 2020, the Orinda, Lafayette, and Walnut Creek WTPs were all operating at approximately half their capacity.¹¹² Therefore, there is no potential for the project to require construction of new water facilities.

Wastewater Treatment Facilities

Although wastewater in the Town of Moraga is collected and treated by the Central Contra Costa Sanitary District (CCCSD), the project site is currently outside the CCCSD's Sphere of Influence (SOI). Annexation of the property into the CCCSD would be required before sanitary sewer service could be provided to the project. Annexation would require formal approval by both the CCCSD Board of Directors and the Contra Costa Local Agency Formation Commission (LAFCO).

Assuming annexation into the CCCSD is approved, wastewater from the proposed project would be treated at the CCCSD Wastewater Treatment Plant (WWTP) located at 5019 Imhoff Place in the City of Martinez. The wastewater treatment plant provides primary and secondary treatment and discharges treated effluent into Suisun Bay. The current treatment capacity is 54 million

¹⁰⁸ East Bay Municipal Utility District (EBMUD), Water Resources Planning Division, Draft Urban Water Management Plan 2015, page 13, April 2016.

¹⁰⁹ An acre-foot is the amount of water necessary to cover 1 acre of land to a depth of 1 foot, and is equivalent to 325,851.43 gallons, or 43,560 cubic feet.

¹¹⁰ East Bay Municipal Utility District (EBMUD), 2018 Annual Water Quality Report for January Through December, May 19, 2019.

¹¹¹ East Bay Municipal Utility District (EBMUD), Urban Water Management Plan 2010, page 2-13, June 2011.

¹¹² East Bay Municipal Utility District (EBMUD), Water Supply Engineering Daily Report for June 15, 2020, Water Production and Demand, accessed June 16, 2020 at: <u>https://www.ebmud.com/water/about-your-water/water-supply/water-supply-report/</u>.

gallons per day (mgd), with 240 mgd of wet-weather flow.¹¹³ Approximately 600 million gallons per year are treated to a tertiary level through additional filtration and disinfection before being distributed as recycled water for use in landscape irrigation and industrial processes. The treatment plant processes wastewater generated by approximately 476,400 residents and over 3,000 businesses in a service area of 144 square miles. The CCCSD maintains a sewage collection network of over 1,500 miles of sewer pipelines ranging in size from 6 to 102 inches in diameter.

The CCCSD's current permit, issued by the Regional Water Quality Control Board, allows a treated average dry weather flow discharge of 53.8 million gallons per day (mgd), based on an advanced secondary level of treatment. The actual average dry weather flow rate is currently 35.6 mgd. According to CCCSD, the wastewater treatment plant should have adequate capacity for the next several decades.¹¹⁴

There is an existing 8-inch diameter sewer main within Camino Pablo that would serve the proposed project. In May 2015 the CCCSD completed a preliminary analysis of the District's ability to serve the proposed project and determined that the volume of wastewater expected to be generated by the project would be below the District's threshold requiring a more detailed analysis.¹¹⁵

Central Contra Costa Sanitary District requires that all sewer connections drain by gravity flow. Wastewater from the project site would flow by gravity into CCCSD's sewer main located in Camino Pablo. The project developer would be required to extend an 8-inch-diameter public main sewer along the length of the proposed access street in order to serve each new residential lot; this sewer line is depicted on the current project plans. Wastewater from the project would be conveyed to the treatment plant from the Moraga Pumping Station located on School Street, one of 18 pumping stations operated by CCCSD. There is currently excess capacity at the Moraga Pumping Station and existing sewer facilities in the project area to accommodate the additional wastewater flows that would result from implementation of the proposed project.¹¹⁶

Moraga General Plan Growth Management Policy GM 1.5 requires new development to demonstrate that there is capacity to transport and treat residential and non-residential wastewater, as determined by CCCSD. The proposed project would generate approximately 3,705 gallons per day (gpd) (0.0037 mgd) of sewage, based on a generation rate of approximately 195 gpd per single-family dwelling, and assuming the same rate for the six ADUs. With current excess dry-weather capacity of approximately 26 mgd, the treatment plant could readily accommodate wastewater generated by the project. As noted above, the CCCSD has determined that it has sufficient planned wastewater conveyance and treatment capacity to accommodate the project.¹¹⁷ The project would therefore result in a less-than-significant impact on wastewater facilities.

¹¹³ Central Contra Costa Sanitary District, Facilities, Accessed April 5, 2019 at: <u>https://www.centralsan.org/facilities</u>.

¹¹⁴ Russell Leavitt, Engineering Assistant III, Central Contra Costa Sanitary District, personal communication, May 31, 2016; reconfirmed April 15, 2019 and June 16, 2020.

¹¹⁵ Russell Leavitt, Engineering Assistant III, Central Contra Costa Sanitary District, Request for Service, Thirteen-Lot Residential Subdivision; 1211 Camino Pablo, Moraga; APN: 258-290-023; WS 10; Map 96B3: Job 1151 [letter to Moraga Planning Department], May 15, 2015.

¹¹⁶Russell Leavitt (2016), op. cit.

¹¹⁷ *Ibid*.

Stormwater Drainage Facilities

Existing stormwater drainage facilities serving the project site consist of concrete v-ditches running alongside and parallel to Camino Pablo and Sanders Ranch Road that intercept surface stormwater draining from the slopes on the property. Water collected in these ditches is conveyed to Moraga Creek via a 24-inch storm drain in Camino Pablo that connects to a 30-inch pipe under Tharp Drive. Part of the greater San Leandro watershed, Moraga Creek flows into the Upper San Leandro Reservoir, and then into San Leandro Creek, which exits to San Francisco Bay at Arrowhead Marsh, between the Oakland Airport and Alameda. At the point where the Tharp Drive storm drain discharges to Moraga Creek, there is a planned upgrade to add a 78-inch-diameter corrugated metal pipe that is intended to expand capacity to accommodate peak discharge from a 100-year storm.¹¹⁸

As discussed in more detail in Section IX(a), the project would comply with the hydromodification management (HM) requirements of the Municipal Regional Stormwater Permit administered by the Contra Costa Clean Water Program. Also see Section X-c-iii for additional information on stormwater drainage facilities that would serve the project.

Electric Power, Natural Gas, and Telecommunications Facilities

Development of the project would occur in a location currently served with electricity, gas, telephone, cable television, and internet infrastructure and service. Service providers typically upgrade facilities on an as-needed basis to accommodate demand within their service areas, and are equipped to extend service to areas of new development. The increased demand from 13 new single-family homes and six ADUs would not result in the need for Pacific Gas & Electric Company (PG&E) or other service providers to construct new generation or transmission facilities, the construction of which could potentially cause adverse environmental effects. Therefore, the project would have a less-than-significant impact on electricity, natural gas, and telecommunications facilities and services.

¹¹⁸ Storm Water Consulting, Inc., *Town of Moraga Storm Drainage Needs Study*, SWC Project No. 2006-37, December 2006, updated April 2008.

	Potentially Significant Impact	Less-Than- Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
b) Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry, and multiple dry years?			X	

Explanation: As noted in Section XVII(b), above, water is supplied to the Town of Moraga by the East Bay Municipal Utility District (EBMUD). EBMUD had a baseline per-capita water consumption of 161 gallons per day (gpd) averaged over the five-year period from 2003 to 2007.¹¹⁹ In response to Senate Bill x7-7, the Water Conservation Act of 2009, the District has adopted a minimum 5-percent reduction goal for 2020 of 153 gpd. It should be noted that District-wide was demand was reduced by 20 percent in 2014 and by 28 percent in 2015 in response to calls for conservation and drought surcharges implemented due to the State's four-year drought.

Based on the EBMUD 161-gpd baseline per-capita water consumption reported in its most recent Urban Water Management Plan, the proposed project would generate demand for about 5,313 gpd of domestic water. With a projected total District-wide consumption in 2015 of approximately 232 mgd, the project's incremental water demand would represent about 0.0023 percent of daily demand in the District.¹²⁰

The EBMUD obtains about 90 percent of its water supply from the Mokelumne River watershed in the Sierra Nevada, with the remainder collected from protected watershed lands in the East Bay area.¹²¹ The District has water rights to a maximum of 325 million gallons per day (mgd) of Mokelumne River water, subject to availability of Mokelumne River runoff, senior water rights of other users, and downstream fishery flow requirements.¹²² Local runoff provides 15 to 25 mgd of EBMUD's water supply during normal rainfall years, but it provides a negligible amount during drought years. Although the water supply is currently adequate to meet demand within the EBMUD, in the long term, the Mokelumne River supply cannot meet projected customer demand, even with mandatory water use restrictions.

EBMUD's planning to ensure an adequate water supply during both wet and dry years is based on future growth projections through 2040, determined by a 2040 Demand Study completed in 2009, based on land use projections from local planning agencies. The district-wide land use analysis was conducted prior to the 2007-2009 economic recession, when there was an expectation that the economic expansion occurring prior to the recession would continue. Therefore, increased water demand associated with economic and population growth is likely to occur more slowly than projected in EBMUD's 2040 Demand Study. The adjusted planning-level demand is 217 mgd in

¹¹⁹ EBMUD (2016), *op. cit.*, Table G-2.

¹²⁰ EBMUD (2016), *op. cit.*, Table 4-1.

¹²¹ East Bay Municipal Utility District (EBMUD), WSMP 2040: Water Supply Management Program 2040 Plan, page 3-1, Final April 2012.

¹²² EBMUD (2015), op. cit., page 8.

2020 and 230 mgd in 2040, which does not reflect projected reductions as a result of conservation and recycling programs.¹²³

EBMUD's *Urban Water Management Plan 2015* (UWMP), prepared in compliance with the California Urban Water Management Planning Act of 1983, documents the District's planning activities to ensure adequate water supplies to meet existing and future demands for water. Its drought planning is based on modeling of rainfall runoff that occurred in 1976 and 1977, the driest recorded two-year period, and also factors in the runoff from the 2014-2015 drought. EBMUD typically uses a three-year drought planning sequence (DPS) to assess the adequacy of its water supply. The first and second years of the DPS are modeled on the actual runoff that occurred in 1976 and 1977, respectively, and the third year is the average runoff from those two years, or 185 thousand acre-feet (TAF).¹²⁴

The UWMP determined that EBMUD would have sufficient water supplies to meet customer demand through 2040 during normal years and up to two dry years of a multi-year drought, but would need supplemental water supplies to meet projected demand during a third dry year after 2020 (supplies would be adequate through 2020). During a third year of drought there would be shortfalls of 13 TAF, 25 TAF, and 49 TAF in 2030, 2035, and 2040, respectively.¹²⁵ There would be sufficient excess supply during normal years for the District to recharge groundwater, either locally or at the off-site Semitropic Groundwater Bank, for later use during dry years.

During multi-year droughts when demand could exceed supply by up to 10 percent, EBMUD would rely on local and off-site groundwater storage to make up the shortfall. If there were insufficient local groundwater storage or the District was unable to recover its full contractual amount from the Semitropic Groundwater Banking Program, the District would look to secure additional supplies through a California Department of Water Resources (DWR) drought water bank or similar water purchase/transfer program.

Water shortages during prolonged droughts or due to short-term emergencies would also be addressed through implementation of EBMUD's Water Shortage Contingency Plan (WSCP), required by Section 10632 of the California Water Code. EBMUD adopted its first WSCP in 1992 and it has continued to evolve since. It was last updated in the 2010 UWMP to reflect the 2007-2010 drought, the completion of the Freeport Regional Water Facility (discussed below), and numerous other changes, and is updated again in the current UWMP.

In order to meet projected water demand during future drought years, in 2006 the EBMUD modified a prior contract executed in 2000 with U.S. Bureau of Reclamation (USBR) for delivery of Central Valley Project (CVP) water from the American River. The Long Term Renewal Contract (LTRC) that EBMUD executed with the USBR allows EBMUD to take delivery of CVP water during dry periods from an intake in the Sacramento River rather than the American River. Pursuant to the original contract, the Freeport Regional Water Authority (FRWA), a joint powers agency created by EBMUD and the Sacramento County Water Agency (SCWA) in 2002, developed the Freeport Regional Water Project (FRWP), bringing it online in 2011. Among other

¹²³ EBMUD (2015), op. cit., pages 49-50.

¹²⁴ An acre-foot is the amount of water necessary to cover 1 acre of land to a depth of 1 foot; it is equivalent to 325,851.43 gallons, or 43,560 cubic feet.

¹²⁵ EBMUD (2015), *op. cit.*, Table 4-5.

facilities, the FRWP includes a 185-mgd water intake (with fish screens) and pumping plant on the Sacramento River near Freeport, approximately 20 miles of 72-inch-diameter pipeline, and two 100-mgd inline pumping plants to transport Sacramento River water to EBMUD's Mokelumne Aqueducts.

The LTRC provides for delivery of up to 133,000 acre-feet (AF) in a single qualifying year, not to exceed a total of 165,000 AF in three consecutive qualifying years. Qualifying years are those in which EBMUD's total stored water supply is forecast as of March 1 to be below 500 TAF on September 30 of that year. EBMUD exercised its LTRC for the first time during the 2014-2015 drought and delivered CVP water to its customers. The District received 18,641 AF of CVP supply in 2014 and another 33,250 AF of CVP water in 2015.¹²⁶

In addition to these water supply sources, since 2010 EBMUD has been operating the Bayside Groundwater Facility to provide an additional water supply source during droughts. During normal rainfall years, potable water is injected into the South East Bay Plain Groundwater Basin (SEBPGB) in the vicinity of the City of Hayward. The District can draw on this stored water during dry years via extraction wells that can produce 2 mgd over a 6-month period. This supplemental supply can produce about 1,120 AF/year (AFY), which the District plans to expand to up to 10,080 AFY in the future. Although the injection of surplus water into the SEBPGB is expected to exceed the quantity of water extracted during dry years, EBMUD has not yet made groundwater injections due to the drought of the past four years.¹²⁷

The District also continues to explore a variety of other long-term supplemental water supplies, including expansion of surface water storage in the Contra Costa Water District's Los Vaqueros Reservoir, partnerships with other water agencies, and the possibility of a jointly-owned regional desalination facility to produce potable water from ocean, Bay, and/or brackish water.

Pursuant to EBMUD's Water Supply Availability and Deficiency Policy 9.03, by March 1st of each year the District presents to the EBMUD Board of Directors a preliminary assessment evaluating the adequacy of that year's water supply. Following this preliminary assessment, the Board of Directors adopts a final Water Supply Availability and Deficiency Report before May 1st that updates the water supply projections based on the April 1st snow survey by DWR. Based on these reports, the Board of Directors decides whether to declare a water shortage emergency and implement a drought management program, institute mandatory water use reductions, and/or obtain/pursue supplemental supplies. The preliminary report can also be used as the basis for requesting CVP water that year if EBMUD's water supply is projected to be deficient. EBMUD continues to monitor the water supply throughout the year and assess the effects on demand of any voluntary or mandatory rationing policy.

The WSCP contains a variety of other provisions for addressing water supply shortfalls, including demand reduction strategies and agreements obtaining emergency water supplies from neighboring agencies, including the Contra Costa Water District (CCWD), San Francisco Public Utilities Commission (SFPUC), Dublin San Ramon Services District (DSRSD), and City of Hayward (Hayward).

¹²⁶ EBMUD (2015), op. cit., Sections 1.4 and 1.5.

¹²⁷ EBMUD (2015), *op. cit.*, page 61.

The proposed project is well under the water demand threshold established by Senate Bill 610 (2001), requiring preparation of a Water Supply Assessment (WSA) during environmental review of projects over a certain size. Among other thresholds, a project is required to prepare a WSA if it would: (1) be a business establishment employing more than 1,000 persons or having more than 500,000 square feet of floor space, or (2) would demand an amount of water equal to, or greater than, the amount of water needed to serve a 500-dwelling unit project.¹²⁸ The proposed project would create an minor incremental increase in water demand that would not cause a substantial effect on the availability of regional water supplies. The *2040 Demand Study* on which EBMUD's UWMP is based factors in growth in the region. The impact associated with the project's water demand would therefore be less than significant.

		Potentially Significant Impact	Less-Than- Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
<i>c)</i>	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?			X	

Explanation: See Section XIX-b, above.

	Potentially Significant Impact	Less-Than- Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
d) Generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?			X	

<u>Explanation</u>: Solid waste from the proposed project would be collected by Allied Waste Services, which also does business as Republic Services of Contra Costa County. Collected waste would be hauled to the Contra Costa Transfer and Recovery Station (CCTRS) in Martinez, then transferred to and disposed of at the Keller Canyon Landfill, located in Pittsburg. Allied Waste is contracted to provide this service through February 2025.¹²⁹ The CCTRS and the Keller Canyon Landfill are also owned and operated by an approved affiliate of Allied Waste Industries.

¹²⁸ California Code of Regulations, Title 14, Chapter 3, Article 10, Section 15155.

¹²⁹ Central Contra Costa Solid Waste Authority, Franchise Agreement Between Central Contra Costa Solid Waste Authority and Allied Waste Systems, Inc. for Franchised Materials Collection, Transfer, Transport, Processing, Diversion, and Disposal Services, May 14, 2014.

The Keller Canyon Landfill is permitted for a total refuse capacity of 75 million cubic yards and a daily permitted throughput of 3,500 tons per day (TPD).¹³⁰ The landfill currently receives approximately 2,500 TPD of waste, and as of November 2004 had more than 63.4 million cubic yards of remaining capacity, sufficient for many decades, though its current permit will expire at the end of 2030.¹³¹

California's statewide solid waste disposal rate in 2016 was 6.0 pounds per resident per day, which factors in a recycling rate of 44 percent.¹³² Based on this rate and the population per household in Moraga (see Section XIII(a)), the project's 13 single-family homes and six ADUs would generate approximately 294 pounds (or 0.147 tons) per day. This would represent an incremental 0.0058-percent increase in current waste disposal at Keller Canyon Landfill, and consumption of 0.0042 percent of daily permitted capacity at the landfill. The proposed project would represent an incremental increase in collection and disposal of household waste, and would utilize less than 1/100th of 1 percent of permitted daily landfill capacity. With more than 50 years of remaining capacity at the landfill, the solid waste generated by the project would not measurably reduce existing landfill capacity. Therefore, the proposed project would present a less-than-significant impact on solid waste disposal.

	Potentially Significant Impact	Less-Than- Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
e) Comply with federal, State, and local management and reduction statutes and regulations related to solid waste?			X	

<u>Explanation</u>: The proposed project would be required to comply with all laws and regulations pertaining to solid waste. Although the project would not result in a significant impact on solid waste facilities, landfill disposal capacity is a diminishing resource. Furthermore, the construction and operation of landfills entail a number of adverse environmental effects, including natural resource depletion (i.e., energy and materials), reduction of wildlife habitat, air and water pollution, and contribution to global warming, among others.

The proposed project would not conflict with or interfere with the Town's ability to implement its adopted solid waste programs and policies. Open Space and Conservation Policy OS2.11, promulgated in the General Plan, calls for continuing source reduction and recycling programs, and encouraging the participation of all residents and businesses. The project would be served by weekly curbside pickup of recyclable materials by Allied Waste Services. Policy OS23.2 prohibits the accumulation and dumping of trash, garbage, vehicle lubricant wastes, and other materials that might cause pollution.

¹³⁰ California Department of Resources Recycling and Recovery (CalRecycle), California Integrated Waste Management Board, Solid Waste Information System (SWIS) [online database] Assessed April 5, 2019 at: <u>https://www2.calrecycle.ca.gov/swfacilities/Directory/07-AA-0032/</u>.

¹³¹*Ibid*.

¹³²California Department of Resources Recycling and Recovery (CalRecycle), California's 2015 Per Capita Disposal Rate, accessed April 5, 2019 at: <u>https://www.calrecycle.ca.gov/lgcentral/goalmeasure/DisposalRate/ MostRecent/</u>.

Waste generated by the proposed project would be collected, processed, and disposed of in the same manner as other solid waste collected by Allied Waste Services, and would be subject to the same existing requirements regarding recycling and solid waste disposal that apply to other Allied Waste customers. The Town of Moraga is a member agency of the Central Contra Costa Solid Waste Authority (CCCSWA), which provides solid waste and recycling services to the cities of Lafayette, Orinda, and Walnut Creek; the towns of Moraga and Danville; and unincorporated areas in central Contra Costa County. Member agencies are subject to CCCSWA Ordinance No. 97-01, which requires solid waste to be removed from residential, commercial, and industrial properties on a weekly or more frequent basis, and requires collection of recyclable materials, among many other requirements. The project would be required to comply with the applicable provisions of Ordinance No. 97-01.

Because existing solid waste collection and disposal in Moraga complies with current federal, State, and local requirements, and because the project's solid waste would enter the same existing disposal stream, the proposed project would not violate any federal, State, or local statues or regulations related to solid waste. Therefore, impacts would be less than significant.

XX. WILDFIRE — If located in or near a State Responsibility Area or lands classified as a Very High Fire Hazard Severity Zone, would the project:

	Potentially Significant Impact	Less-Than- Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Substantially impair an adopted emergency response plan or emergency evacuation plan?				\boxtimes

Explanation: Although the project site is located in a State Responsibility Area, as discussed in more detail in Section IX-g, the project site is not located within a Very High Fire Hazard Severity Zone (VHFHSZ), as mapped by the California Department of Forestry and Fire Protection (CAL-FIRE); however, the site is within an area that has been designated by CAL-FIRE as a High Fire Hazard Severity Zone (HFHSZ). As discussed in more detail in Section IX-f, the project would not block or impede access to emergency evacuation routes, and would not interfere with implementation of the applicable emergency response plans—the Town of Moraga's *Emergency Operations Plan* and the *Contra Costa County Emergency Operations Plan*—or emergency response procedures adopted by any local service providers.

	Potentially Significant Impact	Less-Than- Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
b) Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to pollutant concentrations from a wildfire of the uncontrolled spread of a wildfire?			X	

<u>Explanation</u>: As discussed above, the project site is located in a State Responsibility Area but is not located within a Very High Fire Hazard Severity Zone (VHFHSZ), as mapped by the California Department of Forestry and Fire Protection (CAL-FIRE); the site is within an area that has been designated by CAL-FIRE as a High Fire Hazard Severity Zone (HFHSZ). The grassy slopes exposed to the prevailing westerly winds could contribute to the spread of a wildfire. However, as discussed in Section IX-g, the project site is not located in proximity to any substantial fuel sources (e.g., trees), and would receive first response fire protection from the Moraga-Orinda Fire District (MOFD), which has a fire station approximately 2 miles from the project site. Therefore, the project is not expected to expose the proposed homes or their residents to a significant risk of wildland fires. The project would have a *less-than-significant impact* due to exposure to wildland fires. However, a potential impact on the MOFD is identified in Section XV-a, and mitigation has been identified to reduce the impact to a less-than-significant level. See the discussion in Section XV-a for additional information.

	Potentially Significant Impact	Less-Than- Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
c) Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines, or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?			X	

<u>Explanation</u>: The project site is fully served by existing roads, water supply, and fire-fighting services. While a new street would be constructed from Camino Pablo to provide access to the proposed homes, the road would not exacerbate fire risk, and the potential impacts from its construction have been addressed elsewhere in this Initial Study, such as in the sections on air quality, water quality, and noise. The power lines supplying electricity to the project would be located underground, and the project would relocate the existing overhead power line on the project site's frontage on Camino Pablo underground as well, eliminating risk of wildfire from an overhead power line. Aside from standard fire hydrants that would be constructed to serve the project, so there would be no associated construction impacts to the environment that have not already been addressed in this document. Implementation of the construction-related mitigation measures presented in other technical sections would ensure that impacts associated with the provision of fire-fighting infrastructure would be less than significant.

		Potentially Significant Impact	Less-Than- Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
d)	Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?				X

Explanation: As discussed in Section X, there is no potential for flooding at the project site. Although there is landslide potential at the site, corrective measures to address historic landslide deposits and future landslide potential would be required by Mitigation Measures GS-1 and GS-2. Therefore, in the event of wildfire at or near the project site, significant secondary effects such as post-fire slope instability are not expected. Therefore, this would be a *less-than-significant impact*.

XXI. MANDATORY FINDINGS OF SIGNIFICANCE –

	Potentially Significant Impact	Less-Than- Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Does the project have the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?		X		

<u>Explanation</u>: The project site is dominated by grassland and non-native annual grassland vegetation, which primarily provides foraging habitat for raptors. No special-status habitats or special-status plant or wildlife species were identified on the site during biological surveys of the site. Mitigation measures have been included in the project to ensure there are no significant adverse effects on wildlife or special-status plant species. There is a possibility for encountering buried historic/prehistoric cultural resources on the site, but mitigation measures have been identified to minimize potential impacts in the event such resources are encountered during project construction.
	Potentially Significant Impact	Less-Than- Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
b) Does the project have impacts that are individually limited but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a 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.)			X	

<u>Explanation</u>: No significant cumulative impacts were identified for the proposed project. The less-than-significant cumulative impacts are discussed individually in the dedicated resource sections, including air quality, greenhouse gases, traffic, and others.

	Potentially Significant Impact	Less-Than- Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
c) Does the project have environmental effects that will cause substantial adverse effects on human beings, either directly or indirectly?		X		

Explanation: The proposed project, consisting entirely of residential development, would not introduce any significant hazards to the project area. Measures have been identified to address potentially significant impacts associated with strong seismic shaking and other seismic/geotechnical hazards. There is some potential to expose future residents to risk of wildfire, but the site is not within a Very High Fire Hazard Severity Zone, and included mitigation measures would require preventive construction and vegetation management features that would minimize the risk. An additional measure requires the project sponsor to fund the purchase of a new fire engine meeting Moraga-Orinda Fire Department (MOFD) specifications which will enable the MOFD to respond more quickly and effectively to fires in the project area.

There is also potential for temporary air pollutant emissions from construction activities, including wind-blown dust, to adversely affect nearby persons with sensitive respiratory systems. Nearby residents could also be disturbed by temporary construction noise. Mitigation measures have been identified to reduce these potential impacts to less-than-significant levels. With implementation of all mitigation measures identified in this Initial Study, the project would not have environmental effects that would cause substantial adverse effects on human beings, either directly or indirectly.

REPORT PREPARATION

This Initial Study/Mitigated Negative Declaration was prepared under the direction of Douglas Herring & Associates. In addition, the technical consultants listed below contributed to preparation of the Initial Study or produced separate technical reports.

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	Jeff Olberding, Wetland Regulatory Scientist
<u>Graphics</u> :	RT Designs 13020 Quaker Hill Cross Road Nevada City, CA 96969 Ron Teitel, Principal

MITIGATION MEASURES

Air Quality

Mitigation Measure AQ-1: The project applicant shall require the construction contractor to reduce the severity of project construction fugitive dust and combustion exhaust impacts by complying with the following control measures:

- All exposed surfaces (e.g., parking areas, staging areas, soil piles, graded areas, and unpaved access roads) shall be watered two times per day.
- All haul trucks transporting soil, sand, or other loose material off-site shall be covered.
- All visible mud or dirt track-out onto adjacent public roads shall be removed using wet power vacuum street sweepers at least once per day. The use of dry power sweeping is prohibited.
- All vehicle speeds on unpaved roads shall be limited to 15 mph.
- All roadways, driveways, and sidewalks to be paved shall be completed as soon as possible. Building pads shall be laid as soon as possible after grading unless seeding or soil binders are used.
- Idling times shall be minimized either by shutting equipment off when not in use or reducing the maximum idling time to 5 minutes (as required by the California airborne toxics control measure Title 13, Section 2485 of California Code of Regulations [CCR]). Clear signage shall be provided for construction workers at all access points.
- All construction equipment shall be maintained and properly tuned in accordance with the manufacturer's specifications. All equipment shall be checked by a certified visible emissions evaluator.
- Post a publicly visible sign with the telephone number and person to contact at the Lead Agency regarding dust complaints. This person shall respond and take corrective action within 48 hours. The BAAQMD's phone number shall also be visible to ensure compliance with applicable regulations.

Mitigation Measure AQ-2:

: The project applicant shall require the construction contractor to reduce the severity of project construction combustion exhaust impacts by complying with the following control measures:

- Where access to alternative sources of power are available, portable diesel engines shall be prohibited; and
- Off-road construction equipment shall meet or exceed either CARB Tier 2 off-road emission standards, and
- Off-road construction equipment shall meet or exceed CARB Level 2 Verified Diesel Emissions Control Strategy. Acceptable options for reducing emissions include the use of late model engines, low-emission diesel products, alternative fuels, engine retrofit technology, after-treatment products, add-on devices such as particulate filters, and/or other options as such are available.

Biological Resources

Mitigation Measure BIO-1: Prior to Town issuance of a grading permit, special-status plant surveys shall be conducted for all species for which the project site provides potentially suitable habitat, as listed in Table BIO-1 of the Initial Study/Mitigated Negative Declaration prepared for the proposed project. The site surveys shall be conducted in appropriate habitats during the appropriate period in which the species are most identifiable. These surveys shall be in compliance with all survey guidelines published by the California Department of Fish and Wildlife (CDFW) (2009), U.S. Fish and Wildlife Service (USFWS) (1996), and California Native Plant Society (CNPS) (2001). If the survey finds that there are no special-status plants on the property or within the proposed project site, then there would be no further mitigation and the project may proceed, provided all other applicable permits and authorizations are obtained for the project.

If special-status plant species are found, the biologist shall fill out a California Natural Diversity Data Base (CNDDB) form for each special-status plant species identified and submit it to CDFW. The special-status plant populations shall be mapped and enumerated, and disturbance of the plants shall be avoided to the extent practicable. If avoidance is not practicable while otherwise obtaining the project's objectives, then the following measures shall be implemented:

- 1. Prior to site disturbance within the project area, a qualified botanist shall collect the seeds, propagules, and top soils, or other parts of the plant that would ensure successful replanting of the population elsewhere. The seeds, propagules, or other plantable portion of all plants shall be collected at the appropriate time of the year.
- 2. Half of the seeds and top soils collected shall be appropriately stored in long-term storage at a botanic garden

or museum (for example, Rancho Santa Ana Botanic Garden). The other half of the seeds, propagules, or other plantable portion of all plants shall be planted at the appropriate time of year (late fall months) in a protected area on- or off-site that will not be impacted by the project.

- 3. This protected area shall be fenced with permanent fencing (for example, chain link fencing) to ensure protection of the species. The applicant shall hire a qualified biologist to conduct annual monitoring surveys of the transplanted plant population for a five-year period and shall prepare annual monitoring reports reporting the success or failure of the transplanting effort. These reports shall be submitted to the Town no later than December 1st each monitoring year.
- 4. If the seeding/transplanting effort fails, the stored seeds and top soils shall be taken out of long-term storage and sown in another location (either onsite or offsite) deemed suitable by the Town. This seeding effort shall then be monitored for an additional three-year period to ensure survivorship of the new population, with annual monitoring reports submitted to the Town by December 1st of each monitoring year.

In lieu of the above prescribed mitigation, as allowed in writing by the Town, mitigation requirements may be satisfied via the purchase of qualified mitigation credits or the preservation of offsite habitat.

Mitigation Measure BIO-2: If construction would anytime commence during the nesting/breeding season of the California horned lark or other bird species listed in the Migratory Bird Treaty Act (typically February through September 15th), a pre-construction survey of the project vicinity for nesting birds shall be conducted by a qualified biologist experienced with the nesting behavior of bird species of the region. The survey shall determine if active nests are present within the planned area of disturbance or within 250 feet of the construction zone. The survey shall be performed no more than 14 days prior to the commencement of construction activities that would occur during the nesting/breeding season. If ground disturbance activities are delayed following a survey, then an additional preconstruction survey shall be conducted such that no more than two weeks will have elapsed between the last survey and the commencement of ground disturbance activities.

If active nests are found in areas that could be directly or indirectly affected by the project, a no-disturbance buffer zone shall be created around active nests and maintained until September 15th or until a qualified biologist determines that all young have fledged. The size of the buffer zones and types of construction activities restricted within them shall be determined through consultation

with the California Department of Fish and Wildlife (CDFW), taking into account factors such as the following:

- Noise and human disturbance levels at the construction site at the time of the survey and the noise and disturbance expected during the construction activity;
- Distance and amount of vegetation or other screening between the construction site and the nest; and
- Sensitivity of individual nesting species and behaviors of the nesting birds.

The buffer zone around an active nest shall be established in the field with orange construction fencing or another appropriate barrier and construction personnel shall be instructed on the sensitivity of nest areas. The qualified biologist shall serve as a construction monitor during those periods when construction activities would occur near active nest areas of special-status bird species to ensure that no impacts on these nests occur.

- **Mitigation Measure BIO-3:** The following measures shall be implemented by the project sponsor to the satisfaction of the Town to reduce potential impacts to the Alameda Whipsnake (AWS) and the California Red-Legged Frog (CRLF):
 - a. The number and size of access routes and staging areas, and the total area of activity shall be limited to the minimum size necessary to achieve the project goal. Routes and boundaries shall be clearly demarcated. Heavy equipment shall be restricted to the existing roads, areas to be graded, and a haul route between graded areas only as necessary. The project plans including any proposed haul route shall be reviewed by a qualified biologist prior to approval. Equipment working in the area shall be restricted to a 10-mile-per-hour speed limit.
 - b. Work activities to mass grade the development area of the project site shall be completed between April 15 and November 1.
 - c. A qualified biologist who has previous experience conducting biological construction monitoring for CRLF and AWS shall conduct a preconstruction survey of the construction area for any listed species, but specifically for CRLF and AWS, within 48 hours of the onset of project work activities. If CRLF, AWS or other federally listed species are found, work on the project shall be halted and the US Fish and Wildlife Service (Service) shall be notified.

- d. Before any construction activities begin, a qualified biologist with previous project experience with CRLF and AWS monitoring, shall conduct a training session for all construction personnel. At a minimum, the training shall include a description of the CRLF and AWS and their habitat, the importance of these listed species and their habitat, the general measures that are being implemented to conserve CRLF and AWS as they relate to the project, the ramifications and consequences including potential fines and penalties of taking threatened species and the boundaries within which the project may be accomplished. Brochures, books and briefings may be used in the training session, provided that a qualified person is on hand to answer any questions. Interpretation shall be provided for non-English speaking workers.
- e. Vegetation within the areas to be graded shall be removed prior to grading immediately after the qualified biologist has surveyed and cleared the area. The qualified biologist shall be present during all vegetation removal.
- f. Once vegetation has been removed, wildlife exclusion fencing shall be installed around the construction area so that CRLF and AWS cannot move into the cleared work area. The wildlife exclusion fence shall be a minimum of 42-inches tall and the bottom 6 inches shall be buried if feasible or otherwise adequately secured to prevent listed species from crawling under the fence. Fence stakes shall face the work area. The integrity of the fence shall be checked weekly and shall be continuously maintained until all construction activities are completed to ensure that CRLF and AWS cannot get through the fence.
- g. Any vegetation outside of the perimeter exclusion fencing and within 5 feet of the fencing must be maintained such that wildlife cannot use the vegetation to gain access to work site. A qualified biologist shall be present during all vegetation cutting or removal activities.
- h. A Service-approved biologist shall be present during all work at the construction site until such time as CRLF and AWS surveys have been completed and no CRLF and AWS have been identified in the construction area, instruction of workers has been completed, and vegetation clearing has been completed. After this time, a construction monitor shall be designated to monitor on-site compliance with all minimization measures. The qualified biologist shall ensure that this individual receives training outlined above in Item (d), above, and in the identification of CRLF and AWS.

The monitor and the Service-approved biologist shall have the authority to halt any action that might result in effects that exceed the levels described in these measures.

- i. To reduce the likelihood of vehicle strike, prior to the start of work each day, the qualified biologist or designated construction monitor shall survey all roads, including haul roads, within the project area to ensure that no CRLF and AWS are located in the roadways.
- j. If CRLF and AWS are found in the work area at any point, all work activity on the project shall be halted, the Service shall be notified, and the Service shall determine whether additional measures should be implemented.
- k. All material stockpiling and staging areas shall be located right-of-ways within project or at designated disturbed/developed areas outside of designated construction zones. Any debris or equipment left overnight shall be checked daily prior to use in order to avoid injury and mortality to listed species. Because CRLF and AWS may take refuge in cavity-like structures such as pipes and may enter stored pipes and become trapped, all construction pipes, culverts, or similar structures that are stored at a construction site for one or more overnight periods shall be either securely capped prior to storage, contained within separate wildlife exclusion fencing, or thoroughly inspected by the on-site biologist and/or the on-site monitor for these animals before the pipe is subsequently buried, capped, or otherwise used or moved in any way.
- 1. All construction-related holes, capable of entrapping wildlife, shall be covered at the end of each workday in a manner that shall prevent entrapment. Prior to commencing construction activities each workday, trenches shall be thoroughly inspected for animals.
- m. During project activities, all trash that may attract predators shall be properly contained, removed from the construction area and disposed of regularly. Following construction, all trash and construction debris shall be removed from work areas.
- n. Vehicle and equipment refueling, repair, and lubrication shall only be permitted in designated areas where accidental spills shall be contained.
- o. Erosion control Best Management Practices shall be implemented in accordance to the San Francisco Bay

Regional Water Quality Control Board and other agency permits. Tightly woven fiber netting or similar material shall be used for erosion control or other purposes to ensure that CRLF and AWS do not get trapped. Plastic mono-filament netting (erosion control matting) or similar material shall not be used at the project site because animals may become entangled or trapped in it.

- p. All areas temporarily disturbed by construction shall be revegetated to pre-project or native conditions, as specified in project-specific revegetation plans.
- q. Landscaping plans for the proposed development shall not include any plants categorized by the California Invasive Plant Council (Cal-IPC) as "Invasive Non-Native Plants that Threaten Wildlands in California" for the California West floristic region (Cal-IPC 2006). Landscaping plans shall be reviewed by a qualified professional to ensure that this requirement is satisfied prior to approval by the Town of Moraga. Any substitutions to landscaping plans after approval shall be subject to similar review.

Cultural Resources

- **Mitigation Measure CR-1:** During grading, excavation, or other surface disturbance of the project site areas proposed for Lots 12 and 13, a qualified archeologist shall be present to observe and monitor the activity. Representatives of the Native American organizations contacted during preparation of this Initial Study shall be offered the opportunity to monitor grading/excavation activity on Lots 12 and 13 in tandem with the archeologist, and shall receive notification at least 10 days prior to the work being performed. In the event that prehistoric or historic resources are encountered during excavation and/or grading of the site, the project sponsor shall implement Mitigation Measure CR-2.
- Mitigation Measure CR-2: In the event that prehistoric or historic resources are encountered during excavation and/or grading of any portion of the site, all activity within a 50-foot radius of the find shall be stopped, the Moraga Planning Director shall be notified, and a qualified archeologist or paleontologist shall examine the find and make appropriate recommendations. Recommendations could include collection, recordation, and analysis of any significant cultural materials. A report of findings documenting any data recovery during monitoring shall be submitted to the Planning Director.
- Mitigation Measure CR-3: In the event that human remains are discovered during excavation and/or grading of the site, all activity within a 50-foot radius of the

site shall be stopped. The Contra Costa County Coroner shall be notified and shall make a determination as to whether the remains are Native American origin or whether an investigation into the cause of death is required. If the remains are determined to be Native American, the Coroner will notify the Native American Heritage Commission (NAHC) immediately. Once the NAHC identifies the most likely descendants, the descendants will make recommendations regarding the proper burial which shall be implemented in accordance with Section 15064.5(e) of the *CEQA Guidelines*.

Geology and Soils

- **Mitigation Measure GS-1:** Prior to issuance of a grading permit, the project sponsor shall retain the services of a qualified geotechnical engineer or engineering geologist to prepare a design-level geotechnical investigation for purposes of identifying project-specific foundation and structural design features needed for the project to withstand the seismic shaking intensity expected at the site in the event of a large earthquake. The report shall confirm or clarify the site preparation recommendations related to remedial grading and slope reinforcement presented in the March 2015 Preliminary Geotechnical Report and October 2015 Supplemental Geotechnical bv Exploration report prepared ENGEO. Inc. The the preliminary recommendations in and supplemental geotechnical investigation reports shall be updated or modified as appropriate to reflect the design-level geotechnical investigation to the satisfaction of the Town.
- Mitigation Measure GS-2: The proposed project shall be designed and constructed in accordance with all of the site preparation, foundation design, structural design, drainage, ground improvement performance testing, pavement design, and other recommendations presented in the design-level geotechnical investigation required by Mitigation Measures GS-1, unless modified during construction, based on field conditions, by a qualified registered geotechnical or civil engineer. In addition, the final grading plans shall be reviewed by a qualified registered geotechnical or civil engineer, and any resulting additional recommendations shall be incorporated into the project. All site preparation work shall be performed under the observation of the Geotechnical Engineering firm of record. All design and construction shall conform to the requirements of the latest California Building Code. All structural design and construction shall be subject to final approval by the Contra Costa County Building Department.

Mitigation Measure GS-3: If any paleontological resources are encountered during site grading or other construction activities, all ground disturbance shall be halted the Moraga Planning Director shall be notified, and the services of a qualified paleontologist shall be retained to identify and evaluate the scientific value of the resource(s) and, if necessary, recommend measures to document and prevent any significant adverse effects on the resource(s). Significant paleontological resources shall be salvaged and deposited in an accredited and permanent scientific institution, such as the University of California Museum of Paleontology (UCMP), and shall be recorded with the U.S. Geological Survey.

Hydrology and Water Quality

Mitigation Measure WQ-1: The project sponsor shall obtain National Pollutant Discharge Elimination System (NPDES) construction coverage as required by Construction General Permit (CGP) No. CAS000002, as modified by State Water Resources Control Board (SWRCB) Order No. 2009-0009-DWQ. Pursuant to the Order, the project applicant shall electronically file the Permit Registration Documents (PRDs), which include a Notice of Intent (NOI), a risk assessment, site map, signed certification, Stormwater Pollution Prevention Plan (SWPPP), and other site-specific PRDs that may be required. At a minimum the SWPPP shall incorporate the standards provided in the Association of Bay Area Governments' Manual of Standards for Erosion and Sedimentation Control Measures (2005), the California Stormwater Ouality Association's California Stormwater Best Management Practices Handbook (2009), the prescriptive standards included in the CGP, or as required by the Contra Costa Clean Water Program, whichever are applicable and more stringent. Implementation of the plan will help stabilize graded areas and reduce erosion and sedimentation. The plan shall identify Best Management Practices (BMPs) that shall be adhered to during construction activities. Erosion-minimizing efforts such as hay bales, water bars, covers, sediment fences, sensitive area access restrictions (for example, flagging), vehicle mats in wet areas, and retention/settlement ponds shall be installed before extensive clearing and grading begins. Mulching, seeding, or other suitable stabilization measures shall be used to protect exposed areas during construction activities.

Mitigation Measure WQ-2: All cut-and-fill slopes shall be stabilized as soon as possible after completion of grading. No site grading shall occur between October 15th and April 15th unless approved erosion control measures are in place.

Noise

- Mitigation Measure N-1: Noise-generating construction activities shall be limited to the hours of 8:00 a.m. to 5:00 p.m. Monday through Friday, unless otherwise approved by the Planning Director for a limited duration. Construction activities within private and public street improvements shall be limited to the hours of 8:00 a.m. to 4:00 p.m. Monday through Friday.
- **Mitigation Measure N-2:** The project sponsor shall require the construction contractor to equip all construction equipment driven by internal combustion engines with intake and exhaust mufflers which are in good condition, appropriate for the equipment, and no less effective than those originally installed by the manufacturer. The manufacturers' noise abatement features, such as mufflers, engine covers, and engine vibration isolators, must remain intact and operational. All construction equipment shall be inspected weekly to ensure proper maintenance and presence of noise control devices (e.g., mufflers and shrouding, etc.). Unnecessary idling of internal combustion engines shall be prohibited.
- Mitigation Measure N-3: Wherever possible, hydraulic tools shall be used instead of pneumatic impact tools. "Quiet" air compressors and other stationary noise sources shall be utilized when appropriate technology is available. Construction staging areas, stockpile areas, parking areas, maintenance yards, air compressors, portable power generators, and other construction-oriented operations shall be located as far as reasonably possible from noise-sensitive receptors. Temporary noise barriers with no gaps or cracks shall be constructed to screen stationary noise-generating equipment when located within 200 feet of adjoining sensitive land uses.
- Mitigation Measure N-4: The residential units at the western and southern site boundaries shall be constructed as early as possible during project construction so that the intervening buildings will provide acoustical shielding for nearby existing residences. This would provide approximately 10 dB of noise reduction during the remainder of project construction activities.
- Mitigation Measure N-5: Neighbors located adjacent to the construction site shall be notified of the construction schedule in writing. The Town of Moraga shall designate a project liaison who will be responsible for responding to noise complaints during project construction. The name and phone number of the liaison shall be conspicuously posted at construction areas and on all advanced notifications. This person shall take steps to resolve complaints, including periodic noise monitoring, if necessary. Results of noise monitoring shall be presented at regular project meetings with the project contractor, and the liaison shall coordinate with the contractor to modify any construction activities that generated excessive noise levels to the extent feasible. The

noise liaison shall implement a reporting program that documents complaints received, actions taken to resolve problems, and effectiveness of these actions.

Mitigation Measure N-6: The Town shall conduct a pre-construction meeting with the job inspectors and the general contractor/on-site project manager to confirm that noise controls and practices (including construction hours, construction schedule, and noise coordinator) are implemented.

Public Services

- **Mitigation Measure PS-1:** Prior to issuance of occupancy permits for the project, the project sponsor shall implement the following measures:
 - 1) The applicant shall prepare and implement a Wildfire Hazard Assessment and Plan (WHAPP), subject to review and approval by the Moraga-Orinda Fire District (MOFD). The WHAPP must include a vegetation assessment, a wildfire growth potential study, and a plan for mitigation and maintenance of the immediate wildland/urban interface.
 - 2) The project sponsor shall pay a fair-share contribution, to be determined by the Fire District in conjunction with the Town, toward the purchase of a new Type 3 fire engine meeting MOFD specifications which, with off-road capability and onboard water storage, will enable the MOFD to respond more quickly to fires in the project area.

Transportation/Traffic

Mitigation Measure TRA-1: The Town of Moraga shall implement speed reduction measures on Camino Pablo south of Sanders Ranch Road to the southern terminus to reduce the 85th-percentile travel speed to 25 miles per hour to the satisfaction of the Town. Alternatively, the Town shall eliminate on-street parking to allow for the provision of Class II bicycle lanes along the project frontage. (This page intentionally left blank.)