

4.16 TRANSPORTATION AND TRAFFIC

This section describes the existing transportation and traffic circulation patterns in and around the project site, and provides an analysis of the potential impacts of the project. The information in this section was obtained from:

- A Traffic Impact Study (TIS) prepared by Abrams Associates Inc. in February 2017 (see **Appendix P**)
- A Traffic Impact Study Addendum (TIS Addendum) prepared by Abrams Associates Inc. in February 2017 (see **Appendix P**)
- A TIS Addendum addressing Equestrian, Pedestrian and Bicycle Safety in February 2017 (see **Appendix P**)
- The Contra Costa County General Plan 2005-2020 (General Plan)

These documents are available for review at the Contra Costa County Department of Conservation and Development, Community Development Division, 30 Muir Road, Martinez, California.

In response to the Notice of Preparation for this draft environmental impact report (EIR), the California Department of Transportation (Caltrans) submitted a comment letter requesting that the project's fair share contribution, financing, scheduling, implementation responsibilities, and lead agency monitoring should be discussed for all proposed mitigation measures and should be presented in the Mitigation Monitoring and Reporting Plan. Caltrans also noted that traffic impact fees should be identified if used for mitigation.

The East Bay Regional Park District (EBRPD) also submitted a comment letter expressing concern over additional traffic and congestion on Camille Avenue that may result from the project, parking issues associated with Las Trampas Regional Wilderness trail users, and recommend that a full traffic study should be undertaken. An individual also commented on parking adequacy for trail users, and safety and access issues associated with Camille Lane. These issues are addressed in the section.

4.16.1 METHODOLOGY

Study Area

The traffic study intersections are shown in **Figure 4.16-1** and include the project site and the adjacent roadway network in Alamo, an unincorporated area of Contra Costa County (County). This analysis considers the following five intersections:

- Danville Boulevard and Stone Valley Road
- Danville Boulevard and Hemme Avenue
- Danville Boulevard and Camille Avenue
- Danville Boulevard and El Portal
- Danville Boulevard and El Cerro Boulevard

Each of these intersections is signalized except El Portal, which is controlled by a stop sign on El Portal at the Danville Boulevard intersection.

In addition to these intersections, the segment of Danville Boulevard between Stone Valley Road and El Cerro Boulevard was also studied, along with the segment of Camille Avenue between Danville Boulevard and the project site.

Analysis Scenarios

Traffic impacts were evaluated for the weekday peak commute periods (i.e., AM and PM) using the following four condition scenarios:

- *Existing* – Level of Service (LOS) based on existing peak hour volumes and existing intersection configurations.
- *Baseline* – Existing traffic plus anticipated traffic from approved developments in the study area
- *Baseline Plus Project* – Baseline conditions peak-hour volumes plus trips from the project.
- *Cumulative No Project* – Future (Year 2030) forecast conditions based on the Contra Costa County General Plan EIR.
- *Cumulative With Project* – Future (Year 2030) forecast conditions based on the Contra Costa County General Plan EIR plus project-related traffic.

Analysis Method

Transportation engineers and planners use the term level of service (LOS) to qualitatively describe the operations of transportation facilities. Level of service is an expression, in the form of a scale, of the relationship between the capacity of an intersection (or roadway segment) to accommodate the volume of traffic moving through it at any given time. The level of service scale describes traffic flow with six ratings ranging from A to F, with “A” indicating relatively free flow of traffic and “F” indicating stop-and-go traffic characterized by traffic jams. The analysis methods for each of the transportation facilities evaluated in this section are described below.

Intersection Analysis

Operations of the five study intersections were evaluated using the 2010 *Highway Capacity Manual* (HCM) Level of Service (LOS) methodology.

As the amount of traffic moving through a given intersection or roadway segment increases, the traffic flow conditions that motorists experience rapidly deteriorate as the capacity of the intersection or roadway segment is reached. Under such conditions, there is general instability in the traffic flow, which means that relatively small incidents (e.g., momentary engine stall) can cause considerable fluctuations in speeds and delays that lead to traffic congestion. This near capacity situation is labeled level of service (LOS) E. Beyond LOS E, the intersection or roadway segment capacity has been exceeded, and arriving traffic will exceed the ability of the intersection to accommodate it.

For signalized intersections, the HCM methodology determines the capacity of each lane group approaching the intersection. LOS is then based on average control delay (in seconds per vehicle) for the various movements within the intersection. A combined weighted average control delay and LOS are presented for the intersection. **Table 4.16-1** summarizes the relationship between LOS and average control delay at signalized intersections. As per the requirements set forth by the Contra Costa County Transportation Authority (CCTA) all signalized intersections have also been analyzed using the methodology set forth in the Final Technical Procedures Update (dated January 16, 2013).

Table 4.16-1 Signalized Intersection Level of Service Definitions

LOS	Description of Operations	Average Delay (sec/veh)
A	Insignificant Delays: No approach phase is fully used and no vehicle waits longer than one red indication.	< or = 10
B	Minimal Delays: An occasional approach phase is fully used. Drivers begin to feel restricted.	> 10 to 20
C	Acceptable Delays: Major approach phase may become fully used. Most drivers feel somewhat restricted.	> 20 to 35
D	Tolerable Delays: Drivers may wait through no more than one red indication. Queues may develop but dissipate rapidly without excessive delays.	> 35 to 55
E	Significant Delays: Volumes approaching capacity. Vehicles may wait through several signal cycles and long vehicle queues from upstream.	> 55 to 80
F	Excessive Delays: Represents conditions at capacity, with extremely long delays. Queues may block upstream intersections.	> 80

Source: Transportation Research Board, 2010

Note: As part of the HCM methodology, adjustments are typically made for various factors that reduce the ability of the streets to accommodate vehicles (such as the downtown nature of the area, number of pedestrians, vehicle types, lane widths, grades, on-street parking, and queues). These adjustments are performed to ensure that the LOS analysis results reflect the operating conditions that are observed in the field.

For unsignalized intersections (all-way stop controlled and two-way stop controlled), the average control delay and LOS operating conditions are calculated by approach (e.g., northbound) and movement (e.g., northbound left-turn) for those movements that are subject to delay. In general, the operating conditions for unsignalized intersections are presented for the worst approach. **Table 4.16-2** summarizes the relationship between LOS and average control delay at unsignalized intersections.

Table 4.16-2 Unsignalized Intersection Level of Service Definitions

LOS	Description of Operations	Average Delay (sec/veh)
A	No delay for stop-controlled approaches.	0 to 10
B	Operations with minor delays.	> 10 to 15
C	Operations with moderate delays.	> 15 to 25
D	Operations with some delays.	> 25 to 35
E	Operations with high delays and long queues.	> 35 to 50
F	Operations with extreme congestion, with very high delays and long queues unacceptable to most drivers.	> 50

Source: Transportation Research Board, 2010

4.16.2 EXISTING CONDITIONS

This section describes the roadways, traffic conditions, and other existing transportation characteristics in the vicinity of the project site. The primary basis of the analysis is the peak hour LOS for the key intersections. The morning peak hour is 8:00 AM to 9:00 AM and the afternoon peak hour is 5:00 PM to 6:00 PM for all of the transportation facilities described. Throughout this report, these peak hours will be identified as the AM and PM peak hours, respectively.

Roadway System

The project site is located in the unincorporated Alamo area west of Danville Boulevard. Entry to the project site is at the western terminus of Camille Avenue (a public street), and the western terminus of Ironwood Place (a public street). Regional access to the project site is provided by Interstate 680 (I-680), located 0.5 miles to the northeast.

Highways

I-680 is an eight-lane divided highway that is north-south oriented in the vicinity of the project site. It has paved shoulders and a retaining wall is located along portion of the south edge of the highway. I-680 is designated a California Scenic Highway from the Alameda County line to State Route (SR) 24 as it affords views of Mount Diablo, located approximately 5 miles northeast of the project site.

SR 24 is located approximately 5 miles northwest of the project site and is oriented in an east-west direction. It contains six- to ten-lanes depending on the segment of the highway. It is a divided highway with paved shoulders. SR 24 is also a State

Scenic Highway from the east portal of the Caldecott tunnel to I-680 near Walnut Creek.

Major Roadways

Camille Avenue is the roadway that would serve the project site. It is a two-lane residential street, which intersects with Danville Boulevard. The neighborhood that it serves contains about 160 homes, all of which use Camille Avenue for access. Other streets that connect to Camille Avenue for access include Daniel Drive, Gary Court, Camille Court, Escondido Court, and Ironwood Lane.

An office building is currently located within the project site at the terminus of Camille Avenue. Occupancy of this building has fluctuated from 100 percent capacity in the 1970s, to 76 percent capacity in 2010, to 40 percent occupancy when traffic surveys were conducted in May, 2012. At the time of the preparation of the TIS, the office building had approximately 15,751 square feet usable office space leased and about 45 parking spaces. Traffic levels observed in August 2013 and September 2016 were consistent with the May 2012 levels, and so 40 percent occupancy was assumed for existing conditions.

Danville Boulevard is a two-lane roadway with turn lanes at all major intersections. It runs north-south to the west of and parallel to I-680. It is the major local arterial through this part of Alamo, and is considered a Route of Regional Significance in the Tri-Valley Transportation Council Action Plan. Danville Boulevard has traffic signals at Stone Valley Road, Hemme Avenue, Camille Avenue, and El Cerro Boulevard.

Other Roadways

Hemme Avenue is a two lane residential street that provides access to Rancho Romero Elementary School. There are turn lanes and a traffic signal at its intersection with Danville Boulevard.

El Portal is also a two lane residential street with a stop sign where it intersects with Danville Boulevard. It provides access to La Gonda Way and Hap Magee Ranch Park. It also provides access to a partial interchange at El Pintado Road, and is used as a local route to and from the I-680 interchange.

El Cerro Boulevard is an arterial street that connects with an interchange with I-680. All approaches have two or more lanes at the intersection with Danville Boulevard. This intersection is located in the town of Danville.

Figure 4.16-1 illustrates the local roadways and lane configurations in the vicinity of the project site.

Existing Traffic and Circulation

AM and PM peak hour turning movement counts were conducted at each of the study intersections in May 2012 at times when local schools were in session.

Existing Intersection Operations

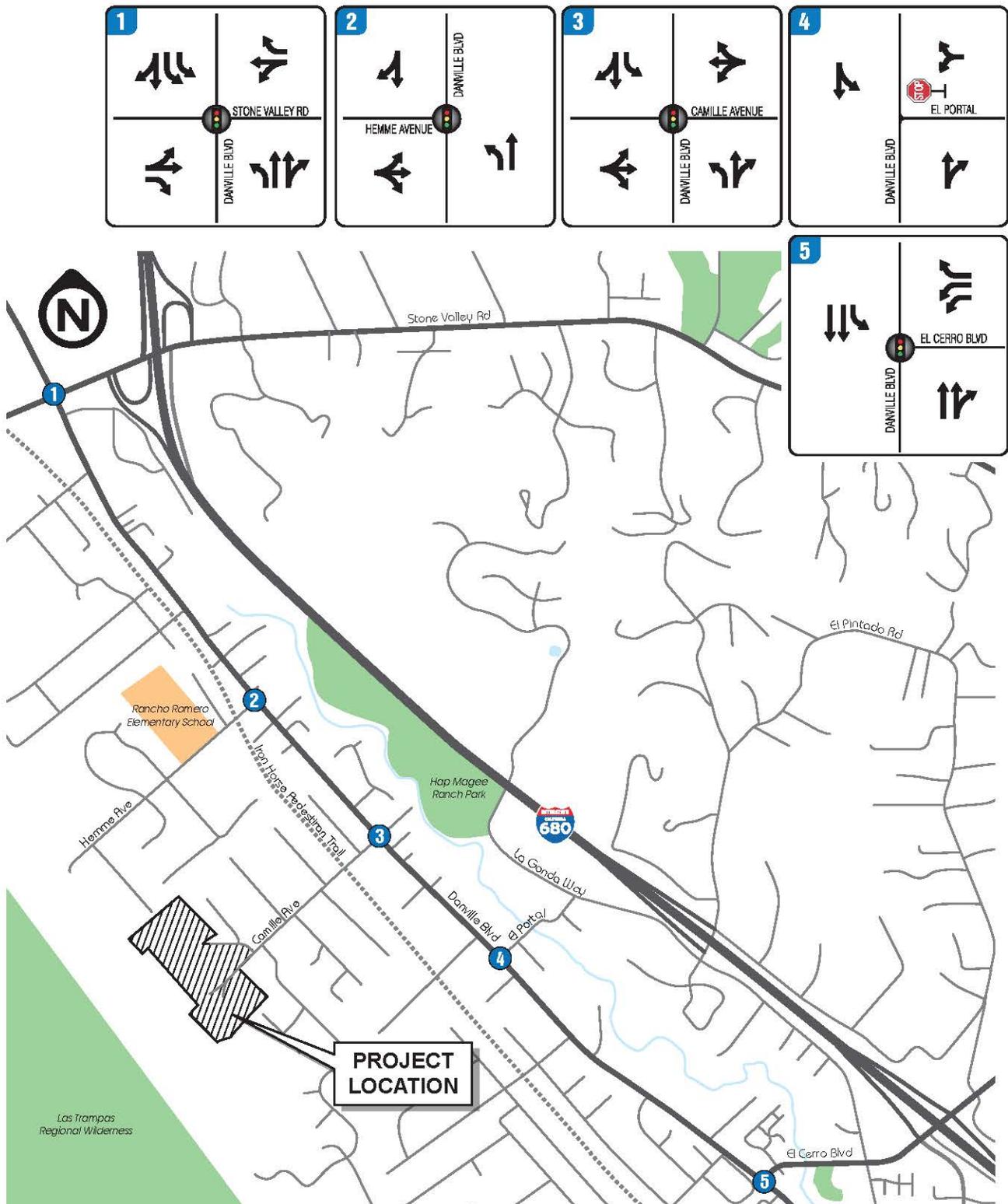
Table 4.16-3 summarizes the results of the existing conditions at the intersections evaluated. These conditions were observed in May 2012 and observed again in August 2013 and September 2016. The intersection capacity results reveals that all of the signalized intersections currently have acceptable conditions (LOS D or better) during both the weekday AM and PM peak hours.

Table 4.16-3 Existing Peak Hour Intersection Level of Service

Intersection	Control	Peak Hour	Existing	
			Measure (seconds/vehicle)	LOS
Danville Boulevard and Stone Valley Road	Traffic signal	AM	22.2	C
		PM	28.2	C
Danville Boulevard and Hemme Avenue	Traffic signal	AM	35.1	D
		PM	6.4	A
Danville Boulevard and Camille Avenue	Traffic signal	AM	9.1	A
		PM	6.6	A
Danville Boulevard and El Portal	Side street stop sign	AM	20.6	C
		PM	22.6	C
Danville Boulevard and El Cerro Boulevard	Traffic signal	AM	13.1	B
		PM	19.2	B

Note: At traffic signals, the delay is the average for all vehicles at the intersection, and is presented in terms of seconds per vehicle. At unsignalized intersections, the delay is calculated for the single most critical movement.

Source: Abrams Associates, 2017a



Traffic Study Intersections and Lane Configurations

Figure 4.16-1

Source: Abrams Associates, 2015.

Existing Multi-Modal Facilities

Public Transportation

Public transportation in the project vicinity is limited. The closest bus station is located at the intersection of Danville Boulevard and Camille Avenue, which is served by County Connection route 21 traveling along Danville Boulevard. Several bus routes also travel along I-680, but do not have stations in the project vicinity.

Bicycle, Pedestrian, and Equestrian Facilities

Existing pedestrian and bicycle activity on Camille Avenue west of the Iron Horse Trail is extremely limited, as it is on other local streets in the vicinity of the proposed project. There is significant bicycle traffic on Danville Boulevard and mixed bicycle and pedestrian traffic on the Iron Horse Trail; however, Camille Avenue experiences limited bicycle and pedestrian activity and virtually no equestrian activity (Abrams Associates, 2018).

The EBRPD Master Plan shows Camille Avenue and Camille Lane as a part of the Las Trampas to Mount Diablo Regional Trail, connecting the EBRPD Trail System on Mount Diablo to that in the Las Trampas area. The trail proceeds westerly through Hap Magee Park then along and across Danville Boulevard and up Camille Avenue to the Madrone Trail ties into the EBRPD Las Trampas Regional Wilderness. The Diablo Regional Trail is meant to accommodate equestrian, pedestrian and bicycle traffic but is lightly travelled, limited to a very few equestrians, pedestrians or bicyclists each day. The existing trailhead is currently used by hikers, who arrive by driving, particularly on weekends. Users generally park along the end of Camille Avenue. Vehicles parked at the trailhead ranges from 6 to 8 on weekdays and 14 on a weekend morning, with the highest concentration in the morning. The trip generation from the existing trailhead is estimated to be about two vehicle trips during the weekday AM peak hour and one vehicle trip during the weekday PM peak hour.

4.16.3 REGULATORY SETTING

Contra Costa County General Plan

The Transportation & Circulation Element of the General Plan contains the following relevant policies related to transportation and circulation:

Transportation & Circulation Element

- 5-3: Transportation facilities serving new urban development shall be linked to and compatible with existing and planned roads, bicycle facilities, pedestrian facilities, and pathways of adjoining areas, and such facilities shall use presently available public and semi-public right of way where feasible.
- 5-4: Development shall be allowed only when transportation performance criteria are met and necessary facilities and/or programs are in place or committed to be developed within a specific period of time.
- 5-8: Direct frontage and access points on arterials and collectors shall be minimized.
- 5-14: Physical conflicts between vehicular traffic, bicyclists, and pedestrians shall be minimized.
- 5-15: Adequate lighting shall be provided for vehicular, pedestrian and bicyclist's safety, consistent with neighborhood desires.
- 5-16: Curbs and sidewalks shall be provided in appropriate areas.
- 5-17: Emergency response vehicles shall be accommodated in development project design.
- 5-22: New subdivisions should be designed to permit convenient pedestrian access to bus transit and efficient bus circulation patterns.
- 5-32: Local road dimensions shall complement the scale and appearance of adjoining properties.
- 5-33: Landscaping and maintenance of street medians and curb areas shall be provided where appropriate.

Growth Management Element

- 4-1: New development shall not be approved in unincorporated areas unless the applicant can provide the infrastructure which meets the traffic level of service and performance standards outlined in Policy 4-3, or a funding mechanism has been established which will provide the infrastructure to

meet the standards or as is stated in other portions of this Growth Management Element.

- 4-2: If it cannot be demonstrated prior to project approval that levels of service will be met per Policy 4-1, development will be temporarily deferred until the standards can be met or assured. Projects which do not, or will not, meet the standards shall be scheduled for hearing before the appropriate hearing body with a staff recommendation for denial, on the grounds that the project is inconsistent with the goals, policies, and objectives of the Growth Management Element of the County General Plan.
- 4-3: In the event that a signalized intersection on a Basic Route exceeds the applicable level of service standard, the County may approve projects if the County can establish appropriate mitigation measures, or determine that the intersection or portion of roadway is subject to a finding of special circumstances, or is a Route of Regional Significance, consistent with those findings and/or action plans adopted by the Contra Costa Transportation Authority pursuant to Measure C - 1988. Mitigation measures specified in the action plans shall be applied to all projects which would create significant impacts on such regional routes, as defined by the Authority in consultation with local agencies and as permitted by law. For the purpose of reporting to the Contra Costa Transportation Authority in compliance with the Growth Management Program, a list of intersections that will be reported on Basic Routes will be prepared and maintained by the Conservation and Development Department.
- 4-4: The County shall institute an ongoing growth management program process.

Project Consistency Analysis

The development of the project site would generate new traffic volumes that would reduce the LOS ratings for some of the nearby intersections. However, all intersection would operate at LOS D or better with project implementation. Streets would be designed in compliance with County standards and requirements of emergency service providers. Consistent with General Plan Policy 5-17, emergency vehicle access (EVA) would be provided at the project site. Thus, the project would be consistent with both the Transportation and Circulation Element and the Growth Management Element of the General Plan.

Contra Costa Transportation Authority

The purpose of the Contra Costa Transportation Authority (CCTA) is to relieve existing congestion created by past development through road, transit, pedestrian and bicycle improvements funded by the Measure C sales tax increase (approved on

November 8, 1988) and to prevent future development from creating new traffic congestion or deteriorating service levels for fire, police, parks, and other public services in Contra Costa through the Growth Management Program.

Congestion Management Plan

CCTA serves as the Congestion Management Agency (CMA) for the County. As the CMA, CCTA must, under State law, prepare a Congestion Management Program (CMP) and update it every two years. The CMP is meant to outline the CMA's strategies for managing the performance of the regional transportation within its county. The CMP must include a road network designated by CCTA that includes, at a minimum, all State highways and principal arterials. SR 24 and I-680 are both included in the CMP network.

Pertinent components of the CMP include:

1. Traffic level-of-service (LOS) standards that apply to a system of designated routes.
2. A performance element that includes performance measures to evaluate current and future multimodal system performance for the movement of people and goods.
3. A seven year capital improvement program (CIP) that maintains or improves the performance of the multi-modal system or mitigates regional transportation impacts.
4. A program to analyze the impacts of local land use decisions on the regional transportation system.
5. A travel demand element that promotes transportation alternatives to the single-occupant vehicle.

Project Consistency Analysis

SR 24 and I-680 are both included in the CMP network. The Contra Costa CMP legislation requires that CMP roadways operate at established LOS thresholds. Given that the project would generate a low volume of trips (32 trips during the AM peak hour and 43 vehicle trips during the PM peak hour), and that those trips would not be traveling to the established CMP roadways in the vicinity of the project, the project would not introduce new traffic that could substantially reduce LOS. As such, the project would not conflict with the applicable CMP.

CCTA Technical Procedures and Implementation Guide

The CCTA Technical Procedures establish a uniform methodology that public agencies may apply to evaluate the impacts of land use decisions and related transportation projects on the local and regional transportation system. This

document also describes in detail the key considerations and requirements for conducting traffic impact analyses, which is required for projects that exceed a trip generation threshold of 100 net new peak hour vehicle trips. The CCTA Implementation Guide establishes the roles, responsibilities, and procedures to be undertaken by local jurisdictions, to implement sound land use and transportation planning.

Project Consistency Analysis

CCTA requires preparation of a traffic study when a proposed development project has the potential to generate more than 100 peak hour vehicle trips. This project would generate a low volume of trips (32 trips during the AM peak hour and 43 vehicle trips during the PM peak hour, plus additional trips that could be generated by the proposed staging area), but a traffic study was nevertheless undertaken for purposes of presenting a conservative analysis.

Tri-Valley Transportation Plan and Action Plan for Routes of Regional Significance

The Tri-Valley Transportation Council (TVTC) – made up of the Cities of Dublin, Livermore, Pleasanton, and San Ramon, the Town of Danville, and the Counties of Alameda and Contra Costa – adopted its first Tri-Valley Transportation Plan/Action Plan in 1995 as a guide for transportation planning throughout the Tri-Valley. This document identified a coordinated approach to addressing the pressing transportation problems in the Tri-Valley. The 2014 TVTC Plan is the third major update, reassesses transportation issues within the Tri-Valley area, refines the vision statements, goals, and policies, and updates programs that will help to achieve the plan objectives.

This document identifies I-680 as an interregional route of regional significance, and Danville Boulevard as an intraregional route of regional significance. The Iron Horse Trail is also important to regional pedestrian and bicycle mobility and requires interjurisdictional planning. The TVTC dictates that member jurisdictions must analyze the impacts of any development project that generates more than 100 peak hour vehicle trips.

Project Consistency Analysis

TVTC requires preparation of a traffic study when a proposed development project has the potential to generate more than 100 peak hour vehicle trips. This project would generate a low volume of trips (32 trips during the AM peak hour and 43 vehicle trips during the PM peak hour, plus additional trips that could be generated by the proposed staging area), but a traffic study was nevertheless undertaken for purposes of presenting a conservative analysis.

4.16.4 IMPACTS AND MITIGATION MEASURES

Significance Criteria

Appendix G of the CEQA Guidelines identifies environmental issues a lead agency can consider when determining whether a project could have significant effects on the environment. The project would have a significant impact if it would:

- Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks.
- Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses.
- Result in inadequate emergency access.
- Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities.
- Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit.
- Conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways.

Standards of Significance

The County's LOS standards, as established by the General Plan, are used to determine whether the project would result in a significant impact to the study intersections and/or roadway segments. These standards are listed below:

- Rural Areas: Peak LOS of low C (volume/capacity ratio $[V/C] = 0.70-0.74$)
- Semi-Rural Areas: Peak LOS of high C ($V/C = 0.74-0.79$)
- Suburban Areas: Peak LOS of low D ($V/C = 0.80-0.84$)
- Urban Areas: Peak LOS of high D ($V/C = 0.85-0.89$)
- Central Business: Peak LOS of low E ($V/C = 0.90-0.94$)

In addition, Transportation Improvement Measures C and J and the Growth Management Plan (GMP) both require the use of the CCTA methods to determine LOS conditions. The time of stopped delay used in this technical evaluation is based on the HCM 2010 procedures to calculate LOS. The LOS standards and volume to capacity (V/C) ratios are consistent with the requirements of the CCTA Measure C GMP.

Signalized Intersections

Project-related operational impacts on signalized intersections are considered significant if project-related traffic causes the LOS rating to deteriorate from LOS D or better to LOS E or F, or from LOS E to LOS F.

Unsignalized Intersections

Project-related operational impacts on unsignalized intersections are considered significant if project generated traffic causes the worst-case movement (or average of all movements for all-way stop-controlled intersections and roundabouts) to deteriorate from LOS D or better to LOS E or F.

Discussion of No Impacts

Would the project result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?

The closest airport to the project site is the Buchanan Field Airport, located approximately 10 miles north of the project site in the City of Concord. The Little Hands private airstrip, the nearest private airstrip, is located approximately 2 miles south of the project site in the San Ramon area. The project does not include any towers or other vertical obstructions that would extend beyond the existing height of surrounding structure or topography, and does not represent a unique hazard to the operations of this airstrip.

Based on the project site's significant distance from public airports and private airstrips, and that the project would not introduce a new use that would affect air traffic patterns the project would not introduce any foreseeable hazards to aircraft or to people residing or working in the vicinity of the project site.

Discussion of Less-than-Significant Impacts

Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses?

As shown on **Figure 3-4** and described in **Chapter 3.0, Project Description**, the project would create new roads, gates, turnarounds, an access road, and a trail easement, listed below.

- **Ironwood Place (private):** Ironwood Place would be extended north and west, approximately 760 feet from its current terminus. The new road would be approximately 28 feet wide. A gate would be installed between Lots 1 and 14.
- **Turnaround on Ironwood Place (public):** A turnaround would be constructed on Ironwood Place on the public side of the proposed gate. This improvement would occur outside of the project boundary and be dedicated to Contra Costa County. A lot line adjustment between three parcels (APN: 198-262-002; 198-262-003; and 198-262-004) would be filed separately to accommodate the turnaround.
- **Emergency Access Road (EVA):** A 20-foot-wide paved EVA would be constructed between Lots 5 and 6, connecting the existing Ironwood Place (terminating at the northwest project site boundary) to the proposed extension of Ironwood Place. An eight-foot-tall EVA gate attached to an 8-foot fence would be installed on the common property line between the project and the existing Ironwood Place.
- **Turnaround on Camille Avenue (public):** A turnaround would be constructed at the end of Camille Avenue located on the public side of the proposed gate that would be installed between Lots 15 and 21. This improvement would occur mostly within and partly outside the project boundary, and would be dedicated to the County.
- **“A” Drive (private):** A 28-foot-wide roadway would be constructed south of Camille Avenue. The new road would be approximately 420 feet in length. A gate would be installed at its entryway at the end of the proposed Camille Avenue turnaround.
- **“A” Court (private):** A 28-foot-wide roadway would be constructed south of A Drive. The new road would be approximately 250 feet in length.
- **“B” Lane (private):** A 20-foot-wide roadway would be constructed at the end of A Drive to the south. The new road would be approximately 140 feet in length.
- **“B” Court (private):** A new roadway would be constructed at the end of A Drive to the north. The new road would be 20-to 28-feet wide and approximately 640 feet in length. The “B” Court alignment would have a 20-foot by 40-foot bridge over a drainage channel on the project site.

- **Access easement from “B” Court:** An easement from “B” court that extends over Lot 28 would provide access to the Parcel D staging area, and would be 22-foot wide and approximately 250 feet in length.
- **Parcel B and C Access Easements:** Two easements for emergency access and maintenance would be provided to parcels B and C from Ironwood Place and crosses over Lots 8 and 9.
- **EBRPD Trail Easement:** EBRPD would continue to maintain an existing 10-foot-wide trail easement along Camille Lane and Lots 15 through 18, 27, and 28.
- **Connector Trail:** The Parcel D staging area would include an 8-foot-wide, approximately 100-foot-long connector trail constructed from the staging area to the existing Madrone Trail. The connector trail would travel across property owned by EBRPD and include a pedestrian bridge to cross a small drainage.

Improvements located on the publically accessible periphery of the project site would not present any new or increased hazards. Turnarounds located at Ironwood Place and Camille Avenue would facilitate safe redirection. The EVA gate would be located where there is an existing fence at the end of a cul-de-sac, where improvements would result in negligible effects. No internal site circulation or access issues have been identified that would cause a public safety concern. Given the above, this impact would be less than significant.

Would the project result in inadequate emergency access?

As previously discussed, the internal roadway system at the project site is designed in coordination with traffic engineers to ensure safe and efficient circulation, and will comply with all modern standards of the Fire Code and other applicable ordinances and regulations. The project would also incorporate an EVA connection between the project site and the existing segment of Ironwood Place north of the project site. As such, the impact to emergency access would be less than significant.

Would the project conflict with an applicable congestion management program?

SR 24 and I-680 are both included in the CMP network. The Contra Costa CMP legislation requires that CMP roadways operate at established LOS thresholds. Given that the project would generate a low volume of trips (i.e., 32 trips during the AM peak hour, and 42 vehicle trips during the PM peak hour), and that not all of those trips would travel directly onto the established CMP roadways in the vicinity of the project, the project would not introduce new traffic that could substantially reduce LOS. As such, the project would not conflict with the applicable CMP and the impact would be less than significant.

Would the project conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system?

Trip Generation

The amount of traffic predicted to enter and exit a site is referred to as the project's trip generation. Operational trip generation estimates for the project were calculated using data published in the Institute of Transportation Engineers' (ITE) *Trip Generation (9th Edition)*, as presented below in **Table 4.16-4**. Construction-period trip generation estimates for the project were based on assumptions regarding the number of daily construction workers required on site.

Operational Trip Generation

According to standard ITE trip generations for single-family homes, the project would generate approximately 20 AM peak hour trips, and 30 PM peak hour trips. The ITE Trip Generation Manual acknowledges that larger homes, such as those proposed under the project, typically have a higher trip generation per unit. Therefore, the TIS uses a 1.28 trip multiplier (representing a 27 percent increase over the average ITE rates for a single-family dwelling) to more accurately estimate maximum traffic generation. In addition, traffic generated from the office building will no longer exist with completion of the project, because the office building within the project site would be removed. As shown in **Table 4.16-4**, the project's total trip generation during the peak hours is approximately 34 vehicle trips in the AM peak hour and 43 trips in the PM peak hour.

The existing office building at the end of Camille Avenue was only about 40 percent occupied at the time of the May 2012 traffic counts. This building will be vacated and removed when the proposed project is developed, and the traffic generated from the office building will no longer exist. Based on traffic counts taken in May 2012, which reflects conditions consistent with the building's historical 40 percent occupancy, there were approximately 110 vehicle trips per day, with 13 of the vehicle trips occurring during the PM peak hours (4 inbound and 9 outbound). The office has very little or no traffic during the day or on weekends.

These trips are deducted from the project's trip generation, resulting in the total net new trips associated with the project (see **Table 4.16-4**). The 40 percent occupancy rate provides a relatively conservative estimate in the net change in traffic trips on the project site. If trips associated with 100 percent occupancy had been used for this analysis, the deduction of trips associated with the office building would have been higher, resulting in a reduced estimate of net new trips.

Table 4.16-4 Trip Generation Calculations

Land Use	AM Peak Hour			PM Peak Hour		
	In	Out	Total	In	Out	Total
Trip Generation Rate for Single-family Homes	0.19	0.56	0.75	0.68	0.37	1.01
Total Project Trip Generation	6	19	25	21	12	33
Total Project Trip Generation plus 28 percent factor	8	24	32	27	16	43
Trips associated with Existing Office Building	-9	-3	-12	-4	-9	-13
Total Net New Trips	-1	21	20	23	7	30

Source: Abrams Associates, 2017a

Note: At traffic signals, the delay is the average for all vehicles at the intersection, and is presented in terms of seconds per vehicle. At unsignalized intersections, the delay is calculated for the single most critical movement.

^a While the project includes 35 lots, two of these lots, the residential estate home and the caretaker’s residence, currently exist. The traffic study was based on 33 units to reflect the net new trip generation from the project. Nonetheless, the conclusion of the report is equivalent to 35 residential homes in total.

The proposed staging area would provide 19 public parking stalls. Currently, recreationalists using the Madrone Trail and the EBRPD Las Trampas Regional Wilderness areas park vehicles along Camille Avenue and enter Madrone Trail by walking west along Camille Avenue (see **Figure 3-3**). The May 2014 and June 2015 traffic observations noted 6 to 8 cars parked along Camille Avenue on weekdays, and 14 cars parked along Camille Avenue on weekends, with the highest concentration of parked cars in the morning. The proposed staging area could encourage increased usage of Madrone Trail and could result in small amount of new trips along Camille Avenue.

Intersection Level of Service

Table 4.16-5 summarizes the existing, baseline, baseline plus project, cumulative no project (Year 2030), and cumulative with project (Year 2030) scenario LOS conditions for each of the five study intersections in the project site vicinity.

Baseline Conditions

The 2015 baseline year assumed an annual average trip growth rate of 1.5 percent per year since 2012. Traffic levels were checked in August 2013 and September 2016 and were determined to be unchanged since 2012. Under baseline conditions, operation of the study intersections would remain identical to Existing Conditions. Baseline plus project would also remain largely identical to existing conditions with the exception of the intersection at El Portal, where the PM peak hour LOS would decline from C to D.

Cumulative Conditions (Year 2030)

Under 2030 cumulative conditions, LOS at three study intersections would decline relative to existing conditions:

- Danville Boulevard and Camille Avenue (LOS A to LOS B, AM peak hour)
- Danville Boulevard and El Portal (LOS C to LOS D, AM and PM peak hour)
- Danville Boulevard and El Cerro Boulevard (LOS B to LOS C, PM peak hour)

Project-related operational impacts on signalized intersections are considered significant if project-related traffic causes the LOS rating to deteriorate from LOS D or better to LOS E or F, or from LOS E to LOS F. Project-related operational impacts on unsignalized intersections are considered significant if project generated traffic causes the worst-case movement to deteriorate from LOS D or better to LOS E or F. As discussed in **Appendix P** and demonstrated in **Table 4.16-5**, all of the study intersections would operate at LOS D or better with project implementation. This impact would be less than significant.

Table 4.16-5 Peak Hour Intersection Level of Service

Intersection	Control	Peak Hour	Level of Service (seconds per vehicle)			
			Baseline	Baseline Plus Project	Future Year, No Project (2030)	Future Year, With Project (2030)
Danville Blvd and Stone Valley Rd	Traffic Signal	AM PM	C (23.1) C (29.6)	C (23.2) C (29.9)	C (24.4) C (32.8)	C (25.5) C (33.2)
Danville Blvd and Hemme Ave	Traffic Signal	AM PM	D (38.2) A (6.4)	D (39.2) A (6.4)	D (46.6) A (6.5)	D (48.0) A (6.5)
Danville Blvd and Camille Ave	Traffic Signal	AM PM	A (9.3) A (6.6)	B (10.0) A (7.3)	B (10.0) A (6.8)	B (10.9) A (7.5)
Danville Blvd and El Portal	Side Street Stop Sign	AM PM	C (22.2) C (24.6)	C (22.4) D (25.1)	D (26.0) D (30.4)	D (26.5) D (31.3)
Danville Blvd and El Cerro Blvd	Traffic Signal	AM PM	B (13.9) B (19.2)	B (14.0) B (19.6)	B (15.7) C (24.1)	B (15.9) C (24.7)

Note: At traffic signals, the delay is the average for all vehicles at the intersection, and is presented in terms of seconds per vehicle. At unsignalized intersections, the delay is calculated for the single most critical movement.

Source: Abrams Associates, 2017a

As discussed in **Chapter 3.0, Project Description**, project operation would include vegetation management to maintain 100 feet of defensible space to reduce the risk of wildfires. Vegetation management activities would necessitate a handful of truck or car trips once per year to deliver employees and/or equipment to the project site. Given the small size and infrequency of trips associated with the vegetation clearing, these trips would not substantially contribute to traffic in the project area.

As stated above, trips to and from the proposed staging area, when combined with traffic generated by the project's single-family homes (**Table 4.16-4**), would be unlikely to add substantial new trips. The trips that would occur during the peak hour associated with this staging area would likely travel against the flow of peak-hour commuters. Recreationalists visiting Las Trampas Regional Wilderness would aim to spend daylight hours in the park. Thus, arrivals to the staging area would occur during the AM peak hour, when most trips on the local roadway network are driving away from the project site (**Appendix P, Figure 4**). Departures from the staging area would occur during the PM peak hour, when most trips on the local roadway network are driving towards the project site (**Appendix P, Figure 4**). Given this, trips associated with the staging area, combined the trips associated with the single-family development, would not substantially impact LOS in the area.

Construction Trip Generation

Construction workers could require parking for up to 20 vehicles during the peak construction period. Additionally, deliveries, visits, and other activities may generate peak non-worker parking demand of 5 to 10 automobiles per day. Therefore, up to 30 vehicle parking spaces may be required during the peak construction period for the construction employees, generating up to 60 total daily trips. The number of trips generated during construction be temporary and substantially below trips generation during project operation. Given this, trips associated with project construction would not substantially impact LOS in the project area.

Would the project conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities?

As discussed above, public transit, pedestrian, and bicycle activity is relatively light in the proposed project area. There is a significant amount of bicycle traffic on Danville Boulevard, and the Iron Horse Trail carries relatively large numbers of bicycle, pedestrian and other non-motorized vehicles, particularly on weekends. However, limited bicycle pedestrian activity occurs west of Iron Horse Trail, along on Camille Avenue, or on local streets in the project vicinity.

The EBRPD identifies Camille Avenue and Camille Lane as part of the Mount Diablo Regional Trail, connecting Madrone Trail to the trail system in Mount Diablo State Park across Danville Boulevard to the east. In general, pedestrian traffic along

Camille Avenue and Camille Lane is limited. According to monitoring visits conducted for the TIA, hikers typically park vehicles at the west end of Camille Avenue or along Camille Lane for access to Madrone Trail.

Potential safety impacts to pedestrian, bicycle, and public transit facilities include the addition of new vehicle trips, as identified above (see **Table 4.16-4**). However, the low number of new trips associated with the project would be unlikely to substantially delay or impact pedestrian, bicycle, or public transit facilities along Danville Boulevard or the Iron Horse Trail. In addition, Madrone Trail users currently parking on Camille Avenue and Camille Lane would benefit from the EBRPD staging area, thus reducing pedestrian traffic along local roadways. Moreover, sidewalks would be installed on one side of the street from the two project entrances, extending along A Drive, B Court, and Ironwood Place to end at the cul-de-sacs of B Court and Ironwood Place, which would provide safe pedestrian access within the project.

Section 96-8.402 of the Contra Costa County Code requires sidewalks along all streets in subdivisions zoned R-12 or zoning districts with a higher density. The project is located within the R-20 zoning designation and, therefore, this provision does not apply. However, the section of the Contra Costa County Code also requires sidewalks along all arterials, collector and minor streets serving as a direct access to schools within one mile of the project. Rancho Romero Elementary School located on Hemme Drive is within one mile of the project site.

The location of the proposed sidewalks in the project has been reviewed both in accordance with the provisions of the Contra Costa County Code and in accordance with the requirements of the State's Safe Routes to School Program and the suggestions of the Federal Highway Administration Bicycle and Pedestrian Program (e.g., Section 3.21 of the Federal Highway Administration Bicycle and Pedestrian Program Guide). The streets which will not have sidewalks in the project are two minor streets serving six lots or less which fall within the County's definition of roadways. They are all streets that dead end within the project and will not be subject to through traffic from any other locations. The traffic generated by these minor streets within the project will be very light. Accordingly, the project traffic consultant has determined that the sidewalk construction will adequately protect the health and safety of all of the project's residents, including school-aged children who will be walking to school (Abrams Associates, 2018).

In summary, the bicycle, pedestrian, and equestrian use of Camille Avenue and Camille Lane following the development of the project will continue to be very low, and the project traffic would not be expected to have a significant impact upon equestrian, pedestrian or bicycle activity. Likewise, the sidewalk system proposed for the project is consistent with applicable regulations to adequately protect

residents and users of that system. Given the above, this impact would be less than significant.

4.16.5 CUMULATIVE IMPACTS

The cumulative impact area for transportation and traffic includes the intersections and roadways identified and studied above and within the TIS. As previously described, the project would result in a continuation of acceptable automotive traffic LOS for all intersections and roadways studied.

For the traffic cumulative impact analysis, the intersection traffic volumes are based on the existing turning movements plus the addition of growth estimated by CCTA's traffic model. Based on the model forecasts, the 2030 cumulative traffic volumes were developed by applying a 0.5 percent per year increase to the baseline traffic volumes.

Table 4.16-5 summarizes the associated LOS computation results for all study scenarios, including the Future Year (or cumulative) year 2030 weekday AM and PM peak hour traffic conditions with implementation of the project. The corresponding LOS analysis calculation sheets are presented in **Appendix P**. As shown in **Table 4.16-5**, all of the signalized study intersections would continue to have acceptable conditions (LOS D or better) during the weekday AM and PM peak hours in the Future Year (cumulative year) 2030, both with and without the project. The project would have a negligible contribution to this cumulative impact.

4.16.6 REFERENCES

Abrams Associates, 2017a. *Traffic Impact Study*.

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