IV. ENVIRONMENTAL IMPACT ANALYSIS
I. TRANSPORTATION/TRAFFIC

INTRODUCTION

A Traffic Impact Study for the proposed project was prepared by Linscott, Law & Greenspan Engineers (LLG) in March 2003 under the direction and supervision of the City of Los Angeles Department of Transportation (LADOT) to analyze the potential traffic impacts associated with the proposed project. A summary of the Traffic Impact Study with respect to potential traffic impacts is set forth below. The Traffic Impact Study, which is incorporated herein by this reference, is included in its entirety as Appendix J to this Draft EIR. Appendix J also includes approval letters from LADOT dated July 17 and August 1, 2003.

This traffic analysis has been conducted to identify and evaluate the potential traffic impacts of the proposed Canyon Hills project. The project site is bisected by Interstate 210 in the Sunland-Tujunga area of the City of Los Angeles, California. The project site is bounded by residential and open space areas to the north, east and west, and La Tuna Canyon Road to the south. The project site location and general vicinity are shown on Figure II-1 in Section II.C (Related Projects).

The traffic analysis follows the City traffic study guidelines and is consistent with traffic impact assessment guidelines set forth in the 2002 Congestion Management Program for Los Angeles County, County of Los Angeles Metropolitan Transportation Authority, June 2002 (CMP). This traffic analysis evaluates potential project-related impacts at nine study intersections in the vicinity of the project site. The study intersections were determined by LADOT staff. The Critical Movement Analysis method was used to determine Volume-to-Capacity ratios and Levels of Service for the study intersections.

This study (i) presents existing traffic volumes, (ii) forecasts future traffic volumes with the related projects, (iii) forecasts future traffic volumes with the proposed project, and (iv) determines project-related impacts, and (v) presents recommendations for mitigation measures, where required.

ENVIRONMENTAL SETTING

Existing Street System

Immediate access to the project site is provided via La Tuna Canyon Road. The following nine study intersections were selected by City staff for analysis of potential impacts due to the proposed project:

1. Interstate 210 Eastbound Ramps and Sunland Boulevard.[1]

[1] *Signalized intersection*

2. Interstate 210 Westbound Ramps and Sunland Boulevard.[1]
3. Interstate 210 Eastbound Off-Ramp and La Tuna Canyon Road.[2]
4. Development Area A Access/Interstate 210 Westbound Ramps and La Tuna Canyon Road.[2]
5. Tujunga Canyon Boulevard and Foothill Boulevard.[1]
6. Tujunga Canyon Boulevard and La Tuna Canyon Road/Honolulu Avenue.[1]
7. Development Area B Access (West) and La Tuna Canyon Road.[2]
8. Development Area B Access (East) and La Tuna Canyon Road.[2]
9. Interstate 210 Eastbound On-Ramp and La Tuna Canyon Road.[2]

As noted, four of the nine study intersections selected for analysis are controlled by traffic signals. The remaining five study intersections are currently unsignalized. The existing lane configurations at the nine study intersections are displayed in Figure IV.I-1. A brief description of the important roadways in the project vicinity is provided in the following paragraphs.

The Foothill (Interstate 210) Freeway is a major freeway route that runs from the San Bernardino (I-10) Freeway-Orange (SR-57) Freeway junction in the City of Pomona to the east and joins the Golden State (I-5) Freeway near the City of San Fernando to the northwest. In the project vicinity, four mainline lanes are provided in each direction. An interchange with La Tuna Canyon Road is located in the immediate project vicinity. Both eastbound and westbound on- and off-ramps are provided at the La Tuna Canyon Road interchange.

Foothill Boulevard is a major east-west roadway which is located north of the project site. Two through travel lanes are generally provided in each direction along Foothill Boulevard. In the project vicinity, exclusive left-turn lanes are provided in both directions at major intersections. Parking is generally permitted along Foothill Boulevard in the project vicinity. The posted speed limit on Foothill Boulevard is 35 miles per hour (MPH) in the project vicinity.

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[2] *Unsignalized intersection*

Figure IV.I-1 Existing Lane Configurations

Tujunga Canyon Boulevard is a major north-south roadway which is located east of the project site and becomes Honolulu Avenue at the intersection with La Tuna Canyon Road. Tujunga Canyon Boulevard generally provides one through travel lane in each direction in the project vicinity. Exclusive left-turn lanes are provided in both directions at the intersection with Foothill Boulevard and in the northbound direction at the intersection with La Tuna Canyon Road. An exclusive right-turn only lane is provided in the southbound direction along Tujunga Canyon Boulevard at the intersection with Foothill Boulevard. Parking is generally not permitted along Tujunga Canyon Boulevard adjacent to the study intersections. The posted speed limit on Tujunga Canyon Boulevard is 30 MPH in the project vicinity.

La Tuna Canyon Road is a secondary east-west roadway located immediately adjacent to the project site. Two through travel lanes are generally provided in each direction along La Tuna Canyon Road in the project vicinity. However, there are two ½-mile segments located west of the project site (approximately 0.5 mile and 1.5 miles west of Interstate 210 Eastbound Off-Ramp and La Tuna Canyon Road intersection, respectively) where only one lane is provided in each direction. Exclusive left-turn lanes are provided in the westbound direction at the intersections with the Interstate 210 Eastbound Ramps, and in the eastbound direction at the intersection with Tujunga Canyon Boulevard. Parking is generally prohibited along La Tuna Canyon Road in the project vicinity. The posted speed limit on La Tuna Canyon Road is 50 MPH in the project vicinity.

Sunland Boulevard is a major east-west roadway located to the north and west of the project site. Two to three through travel lanes are generally provided in each direction along Sunland Boulevard in the project vicinity. An exclusive left-turn lane is provided in the eastbound direction at the intersection with the Interstate 210 Westbound Ramps. Curbside parking is prohibited along both sides of Sunland Boulevard in the project vicinity. The posted speed limit on Sunland Boulevard is 45 MPH in the project vicinity.

Existing Transit System

The closest Metropolitan Transportation Authority (MTA) bus route to the project site is approximately two miles away. These are MTA Transit Routes 90 and 91, which provide service through portions of Downtown Los Angeles, Glendale, Tujunga, Sunland, Lakeview Terrace and Sylmar. Transit Routes 90 and 91 serve Foothill Boulevard with stops at the Commerce Avenue, Tujunga Canyon Boulevard, and Lowell Avenue. Headways for both Transit Routes 90 and 91 are four buses per hour in the northbound and southbound directions during the AM peak hour, and two buses per hour in the northbound and southbound directions during the PM peak hour. It should be noted that the nearest bus stop to the project site is provided along Foothill Boulevard near Tujunga Canyon Boulevard and is approximately two miles from the project site (i.e., as measured from the project's access to Development Area A on La Tuna Canyon Road across from the Interstate 210 Westbound Ramps, traveling east on La Tuna Canyon Road, and then traveling north on Tujunga Canyon Road to the MTA bus stop on Foothill Boulevard).

Traffic Counts

Manual counts of vehicular turning movements were conducted at each of the nine study intersections during the weekday morning (AM) and afternoon (PM) commuter periods to determine the peak hour traffic volume. The manual traffic counts were conducted on Thursday, October 10, 2002. Traffic counts were not conducted during summer months or near holidays when overall system-wide traffic volumes are lower due to schools being out of session and vacations, which would represent more atypical travel patterns. It was confirmed that the local schools in the area were in session at the time that the manual traffic counts were conducted. Further, the traffic counts were conducted mid-week (i.e., Tuesday, Wednesday, or Thursday), which usually represent typical travel patterns.

LADOT requires that the traffic impact analyses examine existing and future conditions for the highest one hour of traffic during the morning (AM) peak commuter period, as well as the afternoon (PM) peak commuter period. Accordingly, the manual counts were conducted at the study intersections from 7:00 to 10:00 AM to determine the AM peak commuter hour, and from 3:00 to 6:00 PM to determine the PM peak commuter hour. Traffic volumes at the study intersections show the typical peak periods between 7:00 to 10:00 AM and 3:00 to 6:00 PM generally associated with peak commuter hours. The AM and PM peak hour traffic volumes are the highest traffic volume observed for a consecutive 60 minute period (one hour) during the respective peak commuter periods. Based on a review of the traffic count data in the project vicinity, the AM peak hour traffic volume commences at either 7:15 or 7:30 AM, depending on the study intersection, while the PM peak hour traffic volume commences at either 4:45 or 5:00 PM, depending on the study intersection.

The 2002 AM and PM peak hour manual counts of turning vehicles at the nine study intersections are summarized in Table IV.I-1. The existing 2002 traffic volumes at the study intersections during the AM and PM peak hours are shown on Figures IV.I-2 and IV.I-3, respectively. Summary data worksheets of the 2002 manual counts are contained in Appendix J.

Table IV.I-1
Existing Traffic Volumes[a]
Canyon Hills Project

Int.	Intersection	Date	Dir	AM Peak Hour		PM Peak Hour	
				Began	Volume	Began	Volume
1	Interstate 210 Eastbound Ramps and Sunland Boulevard	10/10/02	NB	7:15	0[b]	5:00	0
			SB		1,077		939
			EB		767		1,348
			WB		1,222		759
2	Interstate 210 Westbound Ramps and Sunland Boulevard	10/10/02	NB	7:15	282	5:00	738
			SB		538		256
			EB		1,213		1,982
			WB		2,173		1,164
3	Interstate 210 Eastbound Off-Ramp and La Tuna Canyon Road	10/10/02	NB	7:30	0	5:00	2
			SB		58		89
			EB		436		638
			WB		730		429
4	Development Area A Access/ Interstate 210 Westbound Ramps and La Tuna Canyon Road	10/10/02	NB	7:30	544	4:45	351
			SB		0		0
			EB		204		298
			WB		269		136
5	Tujunga Canyon Boulevard and Foothill Boulevard	10/10/02	NB	7:30	376	5:00	1,080
			SB		725		365
			EB		1,312		866
			WB		592		1,124
6	Tujunga Canyon Boulevard and La Tuna Canyon Rd/Honolulu Ave	10/10/02	NB	7:30	513	5:00	1,251
			SB		1,385		670
			EB		198		344
			WB		0		0
7	Development Area B Access (West) and La Tuna Canyon Road	10/10/02	NB	7:30	0	5:00	0
			SB		0		0
			EB		436		683
			WB		732		439
8	Development Area B Access (East) and La Tuna Canyon Road	10/10/02	NB	7:30	0	5:00	0
			SB		0		0
			EB		436		683
			WB		732		439
9	Interstate 210 Eastbound On-Ramp and La Tuna Canyon Road	10/10/02	NB	7:30	0	5:00	0
			SB		0		0
			EB		481		754
			WB		734		435

[a] *Counts conducted by Accutek.*
[b] *Zeros (0) represent intersections where either (1) the approach does not exist (e.g., a "T" intersection) or (2) no vehicles were observed during the peak hour.*

Source: Linscott, Law & Greenspan Engineers, March 2003.

The 2002 AM and PM peak hour traffic counts were also compared to previous traffic counts conducted at the study intersections during the weekday commuter peak periods in September 2001. The 2001 manual traffic counts were conducted on Thursday, September 20, 2001. It should be noted that, similar to the 2002 manual traffic count, the 2001 traffic counts were not conducted during summer months or near holidays when overall system-wide traffic volumes are lower due to schools being out of session and vacations, which would represent more atypical travel patterns. It was confirmed that the local schools in the area were in session at the time that the 2001 manual traffic counts were conducted. Further, the 2001 traffic counts were conducted mid-week (i.e., Tuesday, Wednesday, or Thursday), which usually represent typical travel patterns. For reference, the summary data worksheets of the 2001 manual counts are contained in Appendix J.

The 2001 traffic count data was compared to the 2002 data for purposes of validating the more recent traffic counts, as well as to determine any significant changes in local traffic patterns. Based on this comparison, it was determined that the 2002 traffic count data are generally consistent and demonstrate that the 2002 numbers are accurate. Therefore, the most recent 2002 traffic count data was used for purposes of preparing the traffic impact assessment.

In addition, automatic 24-hour machine traffic counts were conducted on La Tuna Canyon Road west of the Interstate 210 interchange on two separate days: Thursday, October 17, and Friday, October 25, 2002. The 24-hour traffic count for La Tuna Canyon Road on Thursday, October 17, 2002 was 12,448 vehicles (6,857 eastbound, 5,591 westbound). The 24-hour count for La Tuna Canyon Road on Friday, October 25, 2002 was 13,714 vehicles (7,999 eastbound, 5,715 westbound). Thus, based on the two days of traffic count data, the Average Daily Traffic (ADT) on La Tuna Canyon Road is 13,081 vehicles per day. Copies of the ADT counts are provided in Appendix J.

Figure IV.I-2 Existing Traffic Volumes AM Peak Hour

Figure IV.I-3 Existing Traffic Volumes PM Peak Hour

ENVIRONMENTAL IMPACTS

Thresholds of Significance

The significance of the potential impacts of project generated traffic at each study intersection was identified using the traffic impact criteria set forth in LADOT's "Traffic Study Policies and Procedures," November 1993. According to the City's published traffic study policies and procedures, a significant transportation impact is determined based on the following sliding scale criteria provided in Table IV.I-2.

Table IV.I-2
LADOT Intersection Impact Threshold Criteria
Canyon Hills Project

Final v/c	Level of Service	Project Related Increase in v/c
>0.700-0.800	C	equal to or greater than 0.04
>0.800-0.900	D	equal to or greater than 0.02
> 0.900	E-F	equal to or greater than 0.01

Source: LADOT's Traffic Study Policies and Procedures, November, 1993.

Future Roadway Improvements

As part of this analysis, the following roadway improvements were assumed in the year 2009 future pre-project conditions based on City of Los Angeles planned improvements, as well as on information provided in the Tujunga Shopping Center Project Traffic Impact Study prepared by LLG Engineers, February, 2000:

- As a mitigation for the Tujunga Shopping Center project (currently under construction), which was approved by the Department of City Planning on August 18, 2000, the Tujunga Canyon Boulevard and Foothill Boulevard intersection was improved to accommodate dual left-turn lanes and a shared through/right-turn lane at the northbound Tujunga Canyon Boulevard approach to the intersection. A Class "B" Application/Permit was issued for the construction of this improvement (April 18, 2002). This improvement measure was completed in spring 2003 following the completion of the Traffic Impact Study in March 2003 (see Appendix J).

- The City recently reconfigured and widened the intersection of Tujunga Canyon Road and La Tuna Canyon Road/Honolulu Avenue to provide an exclusive left-turn lane and two through travel lanes at the northbound approach (Honolulu Avenue) to the intersection. In addition, two through travel lanes and one right-turn only lane were provided at the southbound approach (Tujunga Canyon Boulevard) to the intersection. The eastbound (La Tuna Canyon Road)

approach to the intersection provide one right-turn and one left-turn lane. The construction project was completed in spring 2003. In its prior condition, the Tujunga Canyon Boulevard and La Tuna Canyon Road/Honolulu Avenue intersection provided one left-turn and one through travel lane in the northbound direction (Honolulu Avenue approach), one combination through-right turn lane in the southbound direction (Tujunga Canyon Boulevard approach), and one left-turn and one-right turn lane in the eastbound direction (La Tuna Canyon Road approach).

Project Impacts

Construction Traffic

Construction Assumptions

It is assumed that both Development Area A and Development Area B would be mass graded. It is also assumed that after completion of the initial phase of construction grading, final grading and structure construction would begin on the newly created pads. Grading would be balanced onsite, thus the need to haul additional fill material to the site or to haul excess material offsite would not be required. The equipment staging area and construction worker parking for Development Area A would be located off of La Tuna Canyon Road near the Interstate 210 interchange during the initial phases of construction grading. After the start of construction grading, the equipment staging and construction worker parking for Development Area A would be moved onsite as space allows. The equipment staging area and construction worker parking for Development Area B would be located onsite off of La Tuna Canyon Road near the easterly proposed Development Area B access point (west of the Interstate 210 interchange with La Tuna Canyon Road) during the initial phases of construction grading. After the start of construction grading, the equipment staging and construction worker parking for Development Area B would be moved further onsite as space allows.

Construction Traffic Trip Generation

As previously noted, it is assumed that the heavy construction equipment would be located onsite during grading activities and not travel to and from the project site on a daily basis. Also, since the project site is "balanced" in terms of cut and fill materials, there would be no trips generated by trucks hauling dirt to and from the project site. Should there be incidental blasting in certain areas, a rock crusher would be required, as well as additional use of rock trucks and loaders.

Construction activities on the project site would generate the highest number of vehicle trips (and therefore the greatest potential for impact on the adjacent street system) during final grading and structure construction on the newly created pads. To provide a conservative, "worst case" analysis, the construction trip generation forecast assumes that the final grading and structure construction activities

would be simultaneous on Development Area A and Development Area B. These activities would generate truck trips, as well as construction worker vehicular trips.

Truck Trips. It is assumed that approximately 16 to 24 maintenance trucks (heavy-duty trucks hauling equipment and/or supplies) and/or foremen's pick-up trucks (miscellaneous light trucks) would be in daily use during construction. To estimate the equivalent number of vehicles associated with the trucks, a passenger car equivalency factor of 2.0 was utilized based on standard traffic engineering practice. Therefore, conservatively assuming 24 daily truck trips, it is estimated that the trucks would generate approximately 96 passenger car equivalent vehicles trips (48 trips inbound, 48 trips outbound) on a daily basis.

Construction Workers. Different workers are anticipated to be located onsite during different phases of the construction. It is assumed that a work force of 200 construction workers would be necessary during the peak construction phases. Construction workers are expected to typically arrive at the site before 7:00 AM and most depart by 5:00 PM. These construction worker trips would occur outside of the peak hour of traffic during the respective weekday morning and afternoon peak hours of traffic on the local street system. As shown in the traffic study, the peak hour of traffic at the study intersections primarily occurs between 7:30 and 8:30 AM in the morning commuter period, and between 5:00 and 6:00 PM in the afternoon commuter period. It is anticipated that construction workers would remain onsite throughout the day. The number of construction worker vehicles is estimated using an average vehicle ridership (AVR) of 1.135 persons per vehicle (as provided by the South Coast Air Quality Management District in its CEQA Air Quality Handbook). Therefore, it is estimated that approximately 352 vehicle trips (176 trips inbound, 176 trips outbound) would be generated by construction workers on a daily basis. In total, peak construction activities at the project site are estimated to generate 448 daily vehicle trips (224 inbound trips, 224 outbound trips) onto the adjacent street system.

The daily trips generated to and from the project site during construction is approximately 17 percent of the proposed project's daily traffic volume upon build-out. The anticipated daily trip generation during construction is substantially less as compared to the site trip generation at project build-out. Further, the peak arrival and departure of construction worker traffic would occur outside of the peak hours of traffic on the adjacent street system. Therefore, the potential traffic impacts associated with the proposed construction would be substantially less than those evaluated in the traffic study related to the build-out of the proposed project. Since the operational traffic impacts associated with the project have already been determined to be less than significant, the substantially lower construction traffic impacts would also be less than significant.

Site Access

The project site access scheme for the proposed Canyon Hills project is illustrated in Figure IV.I-4. Access to the project site will be provided via three access points on La Tuna Canyon Road as follows:

- The residential components north of the Interstate 210 (Development Area A) and south of the Interstate 210 (Development Area B) will have separate and independent project site access and internal circulation schemes. Development Area A will have vehicular access via the proposed construction of the north leg of the existing intersection of the Interstate 210 westbound on/off ramps and La Tuna Canyon Road.

- Access for Development Area B will be provided via two proposed intersections to La Tuna Canyon Road west of the Interstate 210 interchange. Full left-turn and right-turn ingress and egress movement from La Tuna Canyon Road are proposed at these intersections. Further west on La Tuna Canyon Road, a separate driveway will be provided for the equestrian park.

- Onsite circulation will be provided via internal roadways. The internal roadways will be two-way and provide access to the single-family homes. It should be noted that no connection is planned between the two Development Areas.

Emergency Access

The purpose of emergency access is to permit adequate vehicular access to the project site by emergency vehicles (e.g., police, fire, ambulance), as well as to allow the evacuation of the project site by residents in case of emergency (e.g., fire, earthquake, landslide, etc.). The emergency vehicle access plan, including the related onsite and offsite roadway improvements, is submitted for review and approval by the City of Los Angeles Fire Department (LAFD) and the Bureau of Engineering prior to recording of the tract map.

The general parameters established by the City with respect to emergency access for development projects such as the proposed project include the following:

- Vehicular access by emergency vehicles must be provided at a minimum of two locations for each area of development. One of these access points may be used for emergency access purposes only (closed for day-to-day use at all other times).

- The two emergency access locations must provide access to the internal project street system such that all project streets are accessible.

- The emergency access route (onsite and offsite) must be comprised of an all-weather roadway surface (e.g., paved roadway) that is a minimum of 20 feet in width (assuming street parking is

Figure IV.I-4 Site Access Plan

not permitted). If street parking is permitted on one side of the street, an additional 8 feet of roadway width (i.e., up to 28 feet) is required along the emergency access route.

The emergency access route (onsite and offsite) must permit a minimum inside vehicle turning radius of 30 feet to accommodate a LAFD vehicle.

Development Area A Emergency Access

Primary emergency access to Development Area A (located north of Interstate 210) is planned to be provided via the proposed public vehicular access to Development Area A to be constructed opposite the existing Interstate 210 westbound on-ramps/off-ramps at La Tuna Canyon Road. A system of local streets would extend into the Development Area A from this intersection, and provide access and onsite circulation to the single-family homes. The internal roadways within the project would be built to City standards, which would allow for adequate width (at or greater than 20 feet) and vehicular turning radii (at or greater than 30 feet) for emergency access purposes.

In addition to the primary access to Development Area A, a secondary emergency access would be provided via either Inspiration Way or Verdugo Crestline Drive. The first option is via Inspiration Way, a local street that extends off of Alene Drive. Inspiration Way is a 40-foot wide dedicated public street improved as a graded dirt road with no pavement. A portion of the project site intersects the public street system adjacent to Inspiration Way. Inspiration Way can and would be improved to provide a minimum 20-foot wide paved roadway. In addition, the intersection of the project site access road with Inspiration Way can and would be improved to provide the minimum 30-foot turning radius required by the LAFD. Within the project site, the access roadway can and would be improved to the 20-foot minimum paved standard required by the LAFD. The access to this portion of the project site would be controlled such that it could only be utilized on an emergency basis (i.e., not available for day-to-day use by project residents or visitors).

Verdugo Crestline Drive provides a second option for an emergency access connection via Hillhaven Avenue and Alene Drive. Verdugo Crestline Drive is a 40-foot wide dedicated public street, with most sections improved as a graded dirt road with no pavement. As indicated on the project site plan, Verdugo Crestline Drive encroaches into the northerly portion of Development Area A. At this point, Verdugo Crestline Drive can and would be improved to the 20-foot minimum paved access roadway required by the LAFD. Further, the access to this portion of Verdugo Crestline Drive would be controlled such that it could only be utilized on an emergency basis (i.e., not available for day-to-day use by project residents or visitors).

Both Inspiration Way and Verdugo Crestline Drive connect to Hillhaven Avenue and Alene Drive (both publicly dedicated local streets). Hillhaven Avenue and Alene Drive then connect with Foothill Boulevard (a Major Highway), which is located approximately one-quarter mile north of the northerly boundary of Development Area A.

Traveling south from Foothill Boulevard, Hillhaven Avenue is a 40-foot wide dedicated street with variable pavement width ranging from 20 to 30 feet wide. Hillhaven Avenue terminates at Alene Drive, which is a 40-foot wide dedicated street with variable pavement width ranging from 18 to 22 feet. Alene Drive can and would be improved within the existing right-of-way so as to provide a minimum paved width of 20 feet. Hillhaven Avenue and Alene Drive have posted "No Parking" restrictions in appropriate sections to allow two-way travel.

As shown on Figure IV.I-4, there are two options for providing emergency access connections to Development Area A via Hillhaven Avenue and Alene Drive. It is important to note that the project will include only one of the two alternative routes for emergency access. Construction of two emergency access routes for Development Area A is not required and would be unnecessary.

The project applicant's preferred emergency access route is via Inspiration Way. However, implementation of either the Inspiration Way or Verdugo Crestline Drive emergency access route alternatives would provide adequate access to Development Area A as all project streets within Development Area A would be accessible to both alternative emergency access routes.

Development Area B Emergency Access

As shown on Figure IV.I-4, Development Area B (located south of Interstate 210) is planned to be developed with two primary points of access along La Tuna Canyon Road. These access points would also be available for use for access by emergency vehicles. A system of local streets will extend into the Development Area B from the two access points on La Tuna Canyon Road, and provide access and onsite circulation to the single-family homes in Development Area B. The internal roadways would be built to City standards, which will allow for adequate width for emergency access purposes. The internal roadways would adequately provide the Development Area B residents daily access, as well as emergency access, to La Tuna Canyon Road.

Project Traffic Generation

Traffic volumes expected to be generated by the proposed project during the AM and PM peak hours, as well as on a daily basis, were estimated using rates published in the Institute of Transportation Engineers' (ITE) Trip Generation manual, 6th Edition, 1997. Traffic volumes expected to be generated by the proposed residential project were forecast based on the number of single-family homes. Traffic volumes expected to be generated by the equestrian park were forecast based on number of acres.

ITE Land Use Code 210 (Single Family Residential) average trip generation rates were used to forecast the traffic volumes expected to be generated by the single-family residential component of the proposed project. However, the ITE Trip Generation manual does not include a specific trip generation rate for an equestrian park. Therefore, ITE Land Use Code 417 (Regional Park) average peak hour of generator trip generation rates were used to forecast the traffic volumes expected to be generated by the

equestrian park component of the proposed project. The ITE Regional Park land use includes sites with hiking trails, lakes, pools, ball fields, picnic facilities, etc., which activities will not occur in the equestrian park. Therefore, the trip generation forecast for the equestrian park using the ITE Regional Park trip generation rates likely overstates the number of vehicular trips that will be generated by the equestrian park and the trip generation forecast for the equestrian park portion of the Canyon Hills project provides a conservative ("worst case") analysis. The project trip generation forecast for the proposed project is summarized in Table IV.I-3.

As shown in Table IV.I-3, the proposed project is expected to generate 212 net new vehicle trips (54 inbound and 158 outbound) during the AM peak hour. During the PM peak hour, the proposed project is expected to generate 284 net new vehicle trips (181 inbound and 103 outbound). Over a 24-hour period, the proposed project is forecasted to generate 2,694 net new daily trip ends during a typical weekday (1,347 inbound and 1,347 outbound trips).

Project Trip Distribution

The regional distribution patterns were determined consistent with the procedures outlined in the CMP.[3] The CMP provides generalized trip distribution factors based on regional modeling efforts. Those distribution factors show Regional Statistical Areas (RSAs)-level trip making origins and destinations for work and non-work trip purposes. The regional distribution pattern for the proposed project was based on the Appendix D, Exhibit D-3 of the CMP, which provides general origin and destination trip distributions from the project study area RSA to throughout the Los Angeles basin. The regional RSA-level trip distribution percentages (for work trip purposes) were then assigned to the local roadway system. The project traffic was assigned to the local roadway system and study intersections based on a traffic distribution pattern which reflected the proposed project land uses, the proposed project site access scheme, existing traffic movements, characteristics of the surrounding roadway system, and nearby residential areas. This procedure of determining the project distribution pattern is also consistent with trip distribution and assignment methodologies utilized in the traffic engineering industry. The distribution pattern was reviewed and approved by LADOT.

The project traffic distribution percentages forecast for the nine study intersections are provided in Figure IV.I-5. The forecast project traffic volumes at the study intersections for the AM and PM peak hours are displayed in Figures IV.I-6 and IV.I-7, respectively.

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[3] *The CMP is a state-mandated program that was enacted by the State Legislature with the passage of Proposition 111 in 1990. The program is intended to address the impact of local growth on the regional transportation system.*

Table IV.I-3
Project Trip Generation[a]
Canyon Hills Project

Land Use	Size	Daily Trip Ends[b] Volumes	AM Peak Hour Volumes[b]			PM Peak Hour Volumes[b]		
			In	Out	Total	In	Out	Total
Single Family Residential[c]	280 DU	2,680	53	158	211	181	102	283
Equestrian Park[d]	3 Acres	14	1	0	1	0	1	1
Total		**2,694**	**54**	**158**	**212**	**181**	**103**	**284**

[a] Source: ITE "Trip Generation," 6th Edition, 1997.
[b] Trips are one-way traffic movements, entering or leaving.
[c] ITE Land Use Code 210 (Single Family Residential) trip generation average rates.
[d] ITE Land Use Code 417 (Regional Park) trip generation average rates. The peak hour of generator trip rates were used in order to provide a conservative analysis for the equestrian park.

Source: Linscott, Law & Greenspan Engineers, March 2003.

Related Projects

A forecast of on-street traffic conditions prior to the occupancy of the proposed project was prepared by incorporating the potential trips associated with other known development projects (related projects) in the area. With this information, the potential impact of the proposed project can be evaluated within the context of the cumulative impact of all ongoing development. The related projects research was based on information on file at the City of Los Angeles Departments of City Planning and Transportation, as well as the City of Glendale Department of Transportation. The list of related projects in the area is presented in Table IV.I-4. The location of the related projects is displayed on Figure IV.I-8. The list of related projects was reviewed and approved by LADOT staff.

Traffic volumes expected to be generated by the related projects were estimated using accepted generation rates published in the ITE Trip Generation manual, 6th Edition, 1997. However, if a traffic impact study was prepared for a specific related project, the traffic volumes expected to be generated by that project were based on the corresponding traffic impact study. The related projects' respective traffic generation for the AM and PM peak hours, as well as on a daily basis for a typical weekday, is presented in Table IV.I-5. The anticipated distribution of the related projects traffic volumes at the nine study intersections during the AM and PM peak hours is shown on Figures IV.I-9 and IV.I-10, respectively.

Figure IV.I-5 Project Trip Distribution

Figure IV.I-6 Project Traffic Volumes AM Peak Hour

Figure IV.I-7 Project Traffic Volumes PM Peak Hour

Table IV.I-4
List of Related Projects[a]
Canyon Hills Project

Map No.	Project	Location	Land Use	Size	Status
1	99-169	6723 Foothill Boulevard	Fast-Food Restaurant	3,050 SF	Proposed
2	00-4015	7611 Foothill Boulevard	Mini-Market (expansion)	3,827 SF	Proposed
3	00-3567[b]	6520 Foothill Boulevard (Tujunga Shopping Center)	Shopping Center	46,814 SF	Under Construction
4	97-0155	7344 Apperson Street	Church (expansion)	8,000 SF	Proposed
5	00-0687	6901 Foothill Boulevard	Auto Repair	6,080 SF	Proposed
6	00-2989	8250 Foothill Boulevard	Auto Repair	25,000 SF	Proposed
7		Duke Development/Hill View Estates	Single-Family Residential	10 DU	Approved
8	01-3434	ARCO Station 7200 Foothill Boulevard	Gas Station Convenience Store Car Wash	20 fuel pos. 3,600 SF	Proposed
9		La Crescenta	Single-Family Residential	125 DU	Proposed
10	[c]	Verdugo Hills Family YMCA Project 6840 Foothill Boulevard	YMCA Expansion	7,508 SF	Proposed
11		Foothill Boulevard between Foothill Place and Wentworth Street	Golf Course	160 Acres	Under Construction
12	[d]	All Nations Church Foothill Boulevard east of Wheatland Ave and Interstate 210 Ramps	Sanctuary/Chapel/ Sunday School/ Administrative Office Gymnasium Tennis Courts	52,000 SF 8,000 SF 5 Courts	Approved
13		K-Mart Expansion Southwest corner of Foothill Boulevard and Woodward Avenue	Discount Store (Expansion)	56,426 GSF	Proposed

[a] *Source: City of Los Angeles Department of Transportation and Department of Planning.*
[b] *Source: "Traffic Impact Study, Tujunga Shopping Center," prepared by LLG Engineers, February, 2000.*
[c] *Source: "Traffic Impact Study, Verdugo HIlls Family YMCA Project," prepared by LLG Engineers, June, 2002.*
[d] *Source: "Traffic Impact Study, All Nations Church," prepared by LLG Engineers, September, 1999.*

Source: Linscott, Law & Greenspan Engineers, March 2003.

Figure IV.I-8 Location of Related Projects

Table IV.I-5
Related Projects Trip Generation[a]
Canyon Hills Project

	Land Use	Size	Daily Trip Ends[b] Volumes	AM Peak Hour Volumes[b]			PM Peak Hour Volumes[b]		
				In	Out	Total	In	Out	Total
1	Fast-Food Rest w/Drive Thru[c]	3,050 GSF	1,513	78	75	153	53	49	102
	Less 50% Pass-by[d]		(757)	(39)	(39)	(77)	(27)	(25)	(51)
2	Mini-Market[e]	3,827 GSF	1,276	57	57	114	47	47	94
	Less 50% Pass-by[4]		(638)	(29)	(29)	(57)	(24)	(24)	(47)
3	Tujunga Shopping Center[5]	46,814 GSF	3,580	108	89	197	135	137	272
4	Church[f]	8,000 GSF	73	3	3	6	3	2	5
5	Auto Care Center[g]	6,080 GLSF	200	12	6	18	10	10	20
	Less 10% Pass-by[d]		(20)	(1)	(1)	(2)	(1)	(1)	(2)
6	Auto Care Center[g]	25,000 GSF	840	48	26	74	42	42	84
	Less 10% Pass-by[d]		(84)	(5)	(3)	(7)	(4)	(4)	(8)
7	Single-Family Residential[h]	10 DU	96	2	6	8	6	4	10
8	Gas Station/Car Wash/Mini Mart[i]	20 fuel pos.	3,057	109	104	213	132	132	264
	Less 50% Pass-by[d]		(1,528)	(54)	(52)	(106)	(66)	(66)	(132)
9	Single-Family Residential[h]	125 DU	1,273	24	73	97	84	47	131
10	YMCA[j]	7,508 GSF	595	52	47	99	46	54	100
11	Golf Course[k]	160 Acres	680	50	10	60	30	30	60
12	All Nations Church[l]		830	24	21	45	30	123	153
13	K-Mart Expansion Project[m]	56,426 SF	3,767	25	13	38	94	94	188
Total			**14,752**	**464**	**409**	**873**	**591**	**652**	**1,243**

[a] Source: ITE "Trip Generation", 6th Edition, 1997.
[b] Trips are one-way traffic movements, entering or leaving.
[c] Source: LADOT
[d] Pass-by trip reduction credit per LADOT policy.
[e] Source: "Traffic Impact Study, Tujunga Shopping Center" prepared by LLG Engineers, February 2000.
[f] ITE Land Use Code 560 (Church) trip generation rates.
[g] ITE Land Use Code 840 (Automobile Care Center) trip generation rates. Daily trip ends volumes were calculated based on the assumption that PM peak hour trips generally represent ten percent of the daily trip ends volume.
[h] ITE Land Use Code 210 (Single Family Residential) trip generation rates.
[I] ITE Land Use Code 846 (Gas Station/Car Wash/Mini-Market) trip generation rates.
[j] "Traffic Impact Study, Verdugo Hills Family YMCA Project, "prepared by LLG Engineers, June 2002.
[k] Los Angeles Golf Club, Draft Environmental Impact Report, Planning Associates, Inc., February, 1996.
[l] "Traffic Impact Study, All Nations Church" prepared by LLG Engineers, September, 1999.
[m] "Traffic Impact Study, K-Mart Expansion Project," prepared by Associated Transportation Engineers. Information provided by LADOT.

Source: Linscott, Law & Greenspan Engineers, March 2003.

Figure IV.I-9 Related Projects Traffic Volumes AM Peak Hour

Figure IV.I-10 Related Projects Traffic Volumes PM Peak Hour

In order to account for unknown related projects not included in this analysis, the existing traffic volumes were increased at an annual rate of two percent (2%) per year to the year 2009 (i.e., the anticipated year of project build-out). Application of the annual ambient growth factor allows for a conservative worst case forecast of future traffic volumes in the area. The ambient growth factor was determined by LADOT staff.

Traffic Impact Analysis and Methodology

The nine study intersections were evaluated using the Critical Movement Analysis (CMA) method of analysis which determines Volume-to-Capacity (v/c) ratio on a critical lane basis. The overall intersection V/C ratio is subsequently assigned a Levels of Service (LOS) value to describe intersection operations. The Levels of Service vary from LOS A (free flow) to LOS F (jammed condition). A description of the CMA method and corresponding Levels of Service is provided in Appendix J.

The relative impact of the added project traffic volumes expected to be generated by the proposed Canyon Hills project during the AM and the PM peak hours were evaluated based on analysis of future operating conditions at the nine study intersections, without and then with the proposed project. The previously discussed capacity analysis procedures were utilized to evaluate the future volume-to-capacity relationships and service level characteristics at each study intersection.

Traffic Impact Analysis Scenarios

Pursuant to LADOT's traffic study policies and procedures, Level of Service calculations have been prepared for the following scenarios:

(a) Existing traffic conditions.

(b) Condition (a) plus two percent (2%) ambient traffic growth up through year 2009.

(c) Condition (b) with completion and occupancy of the related projects.

(d) Condition (c) with completion and occupancy of the proposed project (year 2009).

(e) Condition (d) with implementation of mitigation measures, where necessary.

The traffic volumes for each new condition were added to the volumes in the prior condition to determine the change in capacity utilization at the study intersections.

Summaries of the V/C ratios and LOS values for the study intersections during the AM and PM peak hours are shown in Table IV.I-6. The CMA data worksheets for the analyzed intersections during the AM and PM peak hours are contained in Appendix J.

Table IV.I-6
Summary of Volume to Capacity Ratios and Levels of Service
AM and PM Peak Hours
Canyon Hills Project

No	Intersection	Peak Hour	[1] Year 2002 Existing		[2] Year 2009 w/Ambient Growth		[3] Year 2009 w/Related Projects		[4] Year 2009 w/Proposed Project		Change V/C	Signif. Impact[a]	[5] Year 2009 w/Project Mitigation		Change V/C ([5]-[3])	Mitigated
			V/C	LOS	V/C	LOS	V/C	LOS	V/C	LOS			V/C	LOS		
1	Interstate 210 Eastbound Ramps and Sunland Boulevard	AM PM	0.816 0.775	D C	0.940 0.893	E D	0.949 0.907	E E	0.951 0.909	E E	0.002 0.002	NO NO	0.951 0.909	E E	0.002 0.002	--- ---
2	Interstate 210 Westbound Ramps and Sunland Boulevard	AM PM	0.871 0.613	D B	1.003 0.708	F C	1.008 0.721	F C	1.014 0.724	F C	0.006 0.003	NO NO	1.014 0.724	F C	0.006 0.003	--- ---
3	Interstate 210 Eastbound Off-Ramp and La Tuna Canyon Road	AM PM	0.348 0.353	A A	0.397 0.402	A A	0.398 0.404	A A	0.417 0.462	A A	0.019 0.058	NO NO	0.417 0.462	A A	0.019 0.058	--- ---
4	Development Area A Access/ Interstate 210 Westbound Ramps and La Tuna Canyon Road	AM PM	0.611 0.522	B A	0.696 0.595	B A	0.700 0.598	C A	0.787 0.661	C B	0.087 0.063	YES NO	0.630 0.529	B A	-0.070 -0.069	YES ---
5	Tujunga Canyon Boulevard and Foothill Boulevard	AM PM	0.889 0.885	D D	1.024 1.019	F F	0.989 0.974	E E	0.998 0.981	E E	0.009 0.007	NO NO	0.998 0.981	E E	0.009 0.007	--- ---
6	Tujunga Canyon Boulevard and La Tuna Canyon Rd/Honolulu Ave	AM PM	1.040 0.938	F E	1.186 1.069	F F	0.586 0.639	A B	0.604 0.649	B B	0.018 0.010	NO NO	0.534 0.579	A A	-0.052 -0.060	--- ---
7	Development Area B Access (West) and La Tuna Canyon Road	AM PM	0.305 0.285	A A	0.348 0.324	A A	0.348 0.325	A A	0.367 0.337	A A	0.019 0.012	NO NO	0.367 0.337	A A	0.019 0.012	--- ---
8	Development Area B Access (East) and La Tuna Canyon Road	AM PM	0.305 0.285	A A	0.348 0.324	A A	0.348 0.325	A A	0.373 0.343	A A	0.025 0.018	NO NO	0.373 0.343	A A	0.025 0.018	--- ---
9	Interstate 210 Eastbound On-Ramp and La Tuna Canyon Road	AM PM	0.303 0.435	A A	0.346 0.496	A A	0.347 0.496	A A	0.359 0.522	A A	0.012 0.026	NO NO	0.359 0.522	A A	0.012 0.026	--- ---

[a] *As presented in Table IV.I-2, a significant impact would occur when:*

- *Final v/c is >0.700-0.800, LOS is C and the project-related increase in v/c is equal to or greater than 0.04;*
- *Final v/c is >0.800-0.900, LOS is D and the project-related increase in v/c is equal to of greater than 0.02; or*
- *Final v/c is >0.900, LOS is E-F and the project-related increase in v/c is equal to or greater than 0.01.*

Source: Linscott, Law & Greenspan Engineers, March 2003.

Existing Conditions (Without Proposed Project)

As indicated in Column [1] of Table IV.I-6, eight of the nine study intersections are presently operating at LOS D or better during the AM and/or PM peak hours under existing conditions. The following study intersection shown below is currently operating at LOS E or F during the peak hours under existing conditions:

- No. 6: Tujunga Canyon Blvd./La Tuna Canyon Road — AM Peak Hour: v/c=1.040, LOS F; PM Peak Hour: v/c=0.938, LOS E

As previously mentioned, the existing traffic volumes for the AM and PM peak hours are displayed in Figures IV.I-3 and IV.I-4, respectively.

With Ambient Growth

Growth in traffic due to the combined effects of continuing development, intensification of existing development, and other factors, were assumed to be two percent (2%) per year through year 2009. This ambient growth incrementally increases the Volume-to-Capacity ratios at all of the study intersections. As shown in Column [2] of Table IV.I-6, five of the nine study intersections are expected to continue to operate at LOS D or better during the AM and/or PM peak hours with the addition of ambient growth traffic. The following four study intersections are expected to operate at LOS E or F during the peak hours shown below with the addition of ambient growth traffic:

- No. 1: Interstate 210 EB Ramps/Sunland Boulevard — AM Peak Hour: v/c=0.940, LOS E
- No. 2: Interstate 210 WB Ramps/Sunland Boulevard — AM Peak Hour: v/c=1.003, LOS F
- No. 5: Tujunga Canyon Blvd/Foothill Boulevard — AM Peak Hour: v/c=1.024, LOS F; PM Peak Hour: v/c=1.019, LOS F
- No. 6: Tujunga Canyon Blvd/La Tuna Canyon Road — AM Peak Hour: v/c=1.186, LOS F; PM Peak Hour: v/c=1.069, LOS F

The existing with ambient growth traffic volumes at the study intersections for the AM and PM peak hours are displayed on Figures IV.I-11 and IV.I-12, respectively.

Figure IV.I-11 Existing Plus Ambient Growth Traffic Volumes AM Peak Hour

Figure IV.I-12 Existing Plus Ambient Growth Traffic Volumes PM Peak Hour

With Related Projects

The Levels of Service at the study intersections were incrementally increased by the addition of traffic generated by the related projects listed in Table IV.I-4. As presented in Column [3] of Table IV.I-6, six of the nine study intersections are expected to operate at LOS D or better during the AM and PM peak hours with the addition of growth in ambient traffic and the traffic due to the related projects. The following three study intersections are anticipated to operate at LOS E or F with the addition of growth in ambient traffic and related projects traffic during the peak hours:

- No. 1: Interstate 210 EB Ramps/Sunland Boulevard — AM Peak Hour: v/c=0.949, LOS E; PM Peak Hour: v/c=0.907, LOS E
- No. 2: Interstate 210 WB Ramps/Sunland Boulevard — AM Peak Hour: v/c=1.008, LOS F
- No. 5: Tujunga Canyon Blvd/Foothill Boulevard — AM Peak Hour: v/c=0.989, LOS E; PM Peak Hour: v/c=0.974, LOS E

The future pre-project (existing, ambient growth and related projects) traffic volumes for the AM and PM peak hours are shown on Figures IV.I-13 and IV.I-14, respectively. The road improvements described above for the Tujunga Canyon Boulevard/Foothill Boulevard intersection and the Tujunga Canyon Boulevard/La Tuna Canyon Road/Honolulu Avenue intersection (see "Impact Criteria and Thresholds" discussion) have been incorporated into the "Year 2009 W/Related Project" in Column [3] of Table IV.I-6 and the "Future 2009 Pre-Project Traffic Volumes" in Figures IV.I-14 and IV.I-15. As a result, the future pre-project traffic volumes for the AM and PM peak hours for the Tujunga Canyon Boulevard/La Tuna Canyon Road/Honolulu intersection (i.e., study intersection No. 6) will operate at LOS A and B, respectively.

With Proposed Project

As shown in Column [4] of Table IV.I-6, application of the City's significance threshold criteria to the "With Proposed Project" scenario indicates that the proposed project is expected to create a significant transportation impact at one of the nine study intersections during the AM and/or PM peak hours as shown below:

- No. 4: Development Area A Access/Interstate 210 Westbound Ramps and La Tuna Canyon Road — AM peak hour v/c ratio increase of 0.087 [0.700 to 0.787 (LOS C)]

As indicated in Table IV.I-6, incremental but not significant impacts are noted at the remaining eight study intersections due to development of the proposed project. The future with project (existing, ambient growth, related projects and proposed project) traffic volumes at the study intersections for the AM and PM peak hours are shown in Figures IV.I-15 and IV.I-16, respectively.

Figure IV.I-13 Future 2009 Pre-Project Traffic Volumes AM Peak Hour

Figure IV.I-14 Future 2009 Pre-Project Traffic Volumes PM Peak Hour

Figure IV.I-15 Future 2009 With Project Traffic Volumes AM Peak Hour

Figure IV.I-16 Future 2009 With Project Traffic Volumes PM Peak Hour

Traffic Signal Warrant Analysis

Traffic signal warrants were prepared as outlined in Chapter 9, Index 9-01.2, Traffic Signal Warrants, of the California Department of Transportation (Caltrans) Traffic Manual for the Interstate 210 Westbound Ramps/Project Driveway and La Tuna Canyon Road intersection. The Interstate 210 Westbound Ramps and La Tuna Canyon Road intersection is currently an unsignalized "T" intersection. The proposed project driveway will act as the north leg of the intersection, with the development of the Canyon Hills project. Copies of the Caltrans Traffic Manual traffic signal warrants as well as the traffic signal warrant data worksheets are provided in Appendix J.

In the signal warrant analysis for the Interstate 210 Westbound Ramps and La Tuna Canyon Road intersection, La Tuna Canyon Road was assumed to be the major street, which provides two or more approach lanes to the intersection. The Interstate 210 Westbound Ramps/project driveway was assumed to be the minor street, which will provide two or more approach lanes to the intersection. In addition, the Caltrans traffic signal warrants applicable to the speed limit of 50 mph for La Tuna Canyon Road were utilized.

Caltrans Warrant No. 11 (Peak Hour Volume) was prepared with the projected Future 2009 With Project AM and PM peak hour volumes. As shown in the signal warrant worksheets, Warrant No. 11 was met at the intersection of Interstate 210 Westbound Ramps/project driveway and La Tuna Canyon Road. Thus, it is recommended that a traffic signal be installed at this intersection in conjunction with the development of the proposed project. Therefore, for purposes of this traffic analysis, the recommendation of the installation of a traffic signal at this intersection as a mitigation measure is appropriate.

Review of La Tuna Canyon Road

Two-Lane Roadway Segment Analysis

The project's potential traffic impacts for the segment of La Tuna Canyon Road, from the western boundary of proposed Development Area B easterly to Tujunga Canyon Boulevard, have been thoroughly addressed within this study through the analysis of intersection operations (specifically at the intersections of La Tuna Canyon Road with Tujunga Canyon Boulevard, Interstate 210 Westbound Ramps/Development Area A access, Interstate 210 Eastbound Off-Ramp, Development Area B (east) access, and Development Area B (west) access). The project's potential impacts at these La Tuna Canyon Road intersections are summarized in Table IV.I-6.

To supplement the intersection analysis, an additional review of the project's potential traffic impacts was prepared for the segment of La Tuna Canyon Road west of proposed Development Area B. This portion of La Tuna Canyon Road differs from the segment adjacent to the project site, and easterly thereof, as the roadway narrows to provide two lanes of travel (one lane in each direction). Within this

two-lane roadway segment, the capacity of La Tuna Canyon Road is reduced, thereby resulting in potential traffic impacts related to the project that may not be readily apparent in the LADOT traffic impact analysis methodology (which focuses primarily on operation at intersections, which are the typical constraint point in an urban street network).

It should be noted that the LADOT "Traffic Study Policies and Procedures" document provides no methodology (or significant traffic impact thresholds) related to the analysis of two-lane roadway segments of Secondary and Major Highways. Therefore, in order to assess the project-related impacts on the two-lane segment of La Tuna Canyon Road west of proposed Development Area B, the County of Los Angeles methodology set forth in the County of Los Angeles' Traffic Impact Analysis Report Guidelines, January 1, 1997, for determining significant impacts on two-lane roadways was used. In the County's methodology, a total capacity in passenger cars per hour (pcph) is assigned to the two-lane roadway segment based on the directional split of the traffic volume. The capacity (in pcph) is used with the hourly traffic volume to determine the volume to capacity ratio and corresponding LOS. The determination of whether a proposed project would have a significant transportation impact is based on the project-related percentage increase in the traffic volume (pcph) as compared to the calculated capacity of the two-lane roadway (v/c ratio), and the pre-project LOS. The County of Los Angeles impact thresholds for two-lane roadways are shown in Table IV.I-7.

Table IV.I-7
County of Los Angeles
Two-Lane Roadway Impact Threshold Criteria
Canyon Hills Project

Directional Split	Total Capacity (pcph)	Project Related Increase in v/c Pre-Project v/c and LOS		
		C	D	E/F
50/50	2,800	≥0.04	≥0.02	≥0.01
60/40	2,650	≥0.04	≥0.02	≥0.01
70/30	2,500	≥0.04	≥0.02	≥0.01
80/20	2,300	≥0.04	≥0.02	≥0.01
90/10	2,100	≥0.04	≥0.02	≥0.01
100/0	2,000	≥0.04	≥0.02	≥0.01

Source: Linscott, Law & Greenspan Engineers, March 2003.

As previously noted, automatic 24-hour machine traffic counts were conducted for the street segment study location on Thursday, October 17, and Friday, October 25, 2002. Copies of the current 24-hour machine traffic counts for the study locations are contained in Appendix J.

The existing and forecast existing with project AM and PM peak hour volumes at the study location is summarized in Table IV.I-8. The existing average volumes are shown in Column [1]. The capacity of

the street segment (in passenger cars per hour) based on the directional split of traffic volume is shown in Column [2]. The existing volume to capacity (v/c) ratio and corresponding LOS for the study location is presented in Column [3]. The total project trip distribution percentage for the study location is shown in Column [4]. The project traffic volume for the study location is presented in Column [5]. The forecast existing with project volumes for the study location is presented in Column [6]. The forecast existing with project v/c ratio and corresponding LOS for the study location is presented in Column [7]. Finally, the change in the v/c ratio due to the added project traffic on the street segment is presented in Column [8].

As shown in Column [3] of Table IV.I-8, the two-lane segment of La Tuna Canyon Road is presently operating at LOS A during the AM and PM peak hours under existing conditions. As shown in Column [7] of Table IV.I-8, the two-lane segment of La Tuna Canyon Road is anticipated to continue to operate at LOS A during both the AM and PM peak hours with the addition of the project related traffic. Therefore, no mitigation measures are required or recommended.

Safety Review

A traffic safety review of La Tuna Canyon Road between Sunland Boulevard and the Interstate 210 Westbound Ramps was also performed as part of this traffic study. Required data includes the annual number of accidents at this location and the annual number of vehicles that travel on this segment of La Tuna Canyon Road. This information is used to determine an accident rate for this portion of La Tuna Canyon Road. The accident rate is expressed as the number of accidents per million vehicle-miles of travel.

Traffic accident data from January 1990 through December 2000 (the most recent data available) was provided by the LADOT Records Division for this analysis. The annual number of vehicles that travel on La Tuna Canyon Road was estimated based on the mathematical average of the daily traffic (ADT) counts collected on October 17 and 25, 2002. The segment length was determined to be approximately five miles. Based on the number of reported accidents, the annual number of vehicles, and the segment length, the accident rate for the study street segment was calculated.

Table IV.I-8
Summary of Street Segment Analysis
Canyon Hills Project

Location	Time Period	[1] Average Existing Volume	[2] Capacity	[3] Existing V/C Ratio ([1]/[2])	Existing LOS	Proposed Project		[6] Existing w/Project Volume	[7] Existing w/Project V/C Ratio	[8] Change in V/C Ratio ([7]-[3])	[9] Impact?
						[4] Total Project Distribution %	[5] Project Traffic Volume				
La Tuna Canyon Road west of Development Area B Access (West)	AM Peak Hour	1,192	2,650	0.45	A	10.0% In 10.0% Out	5 16	1,213	0.46	0.01	No
	PM Peak Hour	1,473	2,800	0.53	A	10.0% In 10.0% Out	18 10	1,501	0.54	0.01	No

[1] Existing AM, PM and ADT Volumes based on traffic counts conducted by Accutek on October 17 and 25, 2002.
The traffic volumes shown represent the average traffic volume of the two days of counts. See Appendix A summary data worksheets of the 24-hour traffic counts
[2]Capacity in passenger cars per hour based on directional split at the analyzed street segment. Values based on Two-Lane Roadways significant impact thresholds set forth in the County of Los Angeles' "Traffic Impact Analysis Report Guidelines," January, 1997.
[3] Volume to capacity ratio. Column [1] divided by column [2].
[4] Total distribution of inbound and outbound project traffic at the analyzed street segment. See Figure IV.I-5, Project Trip Distribution.
[5] The project volume includes inbound and outbound trips based on the proposed project daily volumes of 2,694 net daily trip ends (1,347 inbound and 1,347 outbound), AM volumes of 212 net new trips (54 inbound and 158 outbound), and PM volumes of 284 net new trips (181 inbound and 103 outbound). See Table IV.I-3, Project Trip Generation. The number of forecasted project trips on the specific street segment is derived from multiplying the directional percentage of traffic assigned to the street segment by the respective forecast number of total project inbound and outbound trips shown on Table IV.I-3.
[6]Column [1] plus the total of the volumes shown in Column [5]
[7]Column [6] divided by column [2].
[8]Column [7] minus column [3].

Source: Linscott, Law & Greenspan Engineers, March 2003.

As previously noted, the average 24-hour traffic volume count was 13,081 ADT for La Tuna Canyon Road, west of the Interstate 210 interchange. There were 202 traffic accidents reported during the 11-year period from January 1990 through December 2000 on La Tuna Canyon Road between Sunland Boulevard and Interstate 210 Westbound Ramps. A list of the reported traffic accidents, as well as articles regarding the traffic accident history along La Tuna Canyon Road is provided for reference in Appendix J. The following equation, from the Traffic Engineering Handbook, ITE, 1999, is utilized to obtain the section rate in terms of accidents per million vehicle-miles of travel:

$$Section\ Rate = \frac{A \times 10^6}{365\ T \times V \times L}$$

Where:

A = number of reported accidents,
T = time frame of the analysis in years,
V = average daily trips (ADT), and
L = the section length in miles.

Thus,

$$Section\ Rate = \frac{202 \times 10^6}{365(11)(13,081)(5)}$$

$$Section\ Rate = \frac{202,000,000}{262,601,075}$$

$$Section\ Rate = 0.769$$

Based on the above calculation, the section rate for La Tuna Canyon Road between Sunland Boulevard and Interstate 210 Westbound Ramps is estimated to be 0.769 accidents per million vehicle-miles of travel. The City of Los Angeles does not provide a significance threshold for purposes of determining whether a traffic accident rate indicates that a roadway segment is safe or unsafe. For comparison purposes, however, the County of Los Angeles Department of Public Works (LACDPW) has provided average traffic accident rates for various roadways throughout the County. The rate of reported accidents on La Tuna Canyon Road is less than half the LACDPW average accident rate of 1.82 accidents per million vehicle-miles of travel for mountain roads with a design speed greater than 35 mph. A comparison of the rate of reported accidents along La Tuna Canyon Road to other roadways surveyed by LACDPW indicates that La Tuna Canyon Road between Sunland Boulevard and Interstate 210 Westbound Ramps has a relatively lower rate of accidents.

As previously noted, the average 24-hour traffic volume count in 2002 was 13,081 ADT for La Tuna Canyon Road, west of the Interstate 210 interchange. The 24-hour ADT volumes were estimated for years 1990 through 2000 based on the assumption that traffic volumes have increased at an annual rate of two percent (2%) per year. For example, the 2002 ADT volume of 13,081 was decreased by 24% to reflect the estimated traffic volume of 10,549 ADT in 1990. The accident rates for the five-mile segment of La Tuna Canyon Road between Sunland Boulevard and Interstate 210 Westbound Ramps were calculated on a yearly basis for the traffic accident data researched (1990 through 2000). The calculated accident rates for each year (in terms of million vehicle miles traveled) are shown in Table IV.I-9.

As shown in Table IV.I-9, during the 1997 through 2000 period the accident rates were below 0.769 accidents per million vehicle miles traveled, except for year 1999. Based on a review of the yearly accident rates, no trend is readily apparent in the accident rates from year to year. In recent years, accident rates have generally been lower than in prior years. For example, the accident rates in 1997, 1998 and 2000 were all lower than the accident rates from 1990-1996 (except for 1995). It is clear, however, that accident rates did not increase in relation to the increase in traffic volumes on La Tuna Canyon Road during the 11-year period. Therefore, the small increase in traffic on La Tuna Canyon Road due to the proposed project is not anticipated to significantly increase the accident rates along the roadway.

Research of accident history along La Tuna Canyon Road also indicates that fatal accidents and other serious accidents have occurred on a portion of La Tuna Canyon Road west of the Interstate 210 when drivers have lost control of their vehicles due to flood conditions. On La Tuna Canyon Road, three fatal accidents and one other serious accident (in 1979, 1987, 1994, and 1996) occurred near Elben Avenue, which is located west of Development Area B. These accidents resulted in legal action against the City of Los Angeles, which ended in monetary settlements paid by the City. At least one of those accidents (in 1994) involved a crash with a trash truck. In order to remedy the conditions that led to those accidents, in 1997 the City of Los Angeles modified and reconstructed portions of La Tuna Canyon Road, in particular near Elben Avenue, to address safety issues related to pavement drainage. In addition, in September 1997, the Los Angeles City Council banned heavy trucks weighing in excess of 6000 pounds along La Tuna Canyon Road from Sunland Boulevard to the Interstate 210. It should be noted that since these measures were implemented in 1997, no fatal accidents have occurred on this particular section of La Tuna Canyon Road.

Based on the foregoing data and analysis, the measures implemented by the City in 1997 have been effective in eliminating the fatalities and significantly reducing other serious accidents that previously occurred on La Tuna Canyon Road under flood conditions. Therefore, the small increase in traffic on this portion of La Tuna Canyon Road relating to the proposed project should not materially increase the type of accident that occurred along that stretch of road prior to 1997.

Table IV.I-9
Accident Rates for La Tuna Canyon Road
Between Sunland Boulevard and Interstate 210
Canyon Hills Project

[1] Year	[2] 24-Hour ADT Volume	[3] Number of Accidents	[4] Accident Rate (per million VMT)
1990	10,549	18	0.935
1991	10,722	20	1.022
1992	10,901	18	0.905
1993	11,086	11	0.544
1994	11,277	16	0.777
1995	11,475	24	1.146
1996	11,679	26	1.220
1997	11,892	10	0.461
1998	12,112	17	0.769
1999	12,341	26	1.154
2000	12,578	16	0.697
2001	12,825	N/A	N/A
2002	13,081	N/A	N/A

[1] Year in which the accidents occurred. Accident history data collected from January 1, 1990 through December 31, 2000.
[2] ADT volume calculated based on the an annual growth rate of 2%. The ADT volume was factored based on the 2002 average 24-hour traffic count.
[3] Number of accidents recorded along La Tuna Canyon Road between Sunland Boulevard and Interstate 210 Westbound Ramps.
[4] Accident Rate for the 5-mile section of La Tuna Canyon Road based on the following equation:
Accident Rate = (#Accidents x 10^6)/(365 x #Years x ADT x Length of Segment)

Source: Linscott, Law & Greenspan Engineers, March 2003.

Congestion Management Plan Traffic Impact Assessment

The CMP is a state-mandated program that was enacted by the State Legislature with the passage of Proposition 111 in 1990. The program is intended to address the impact of local growth on the regional transportation system.

As required by the CMP, a Traffic Impact Assessment (TIA) has been prepared to determine the potential impacts on designated monitoring locations on the CMP highway system. The analysis has been prepared in accordance with procedures outlined in the CMP. A summary of the CMP traffic impact assessment is provided in Table IV.I-10.

Intersections

Table IV.I-10 provides a summary of the CMP intersection monitoring location (CMP Station No. 26) in the vicinity of the proposed project. The CMP TIA guidelines require that intersection monitoring locations must be examined if the proposed project will add 50 or more trips during either the AM or PM weekday peak periods. The proposed project will add not 50 or more trips during the AM or PM peak hours at CMP intersection monitoring location which is the threshold for preparing a traffic impact assessment, as stated in the CMP manual. Therefore, no further review of potential impacts to intersection monitoring locations which are part of the CMP highway system is required.

Freeways

Table IV.I-10 provides a summary of the CMP freeway monitoring locations (CMP Station Nos. 1059 and 1060) in the vicinity of the proposed project. The CMP TIA guidelines require that freeway monitoring locations must be examined if the proposed project will add 150 or more trips (in either direction) during either the AM or PM weekday peak hours. The proposed project will not add 150 or more trips (in either direction) during either the AM or PM weekday peak hours at CMP mainline freeway monitoring locations which is the threshold for preparing a traffic impact assessment, as stated in the CMP manual. Therefore, no further review of potential impacts to freeway monitoring locations which are part of the CMP highway system is required.

Table IV.I-10
Congestion Management Plan (CMP)
Traffic Impact Assessment
Canyon Hills Project

CMP Station	Location	Peak Hour	Forecasted Project Trips	CMP Traffic Impact Assessment Threshold	CMP Traffic Impact Assessment Required
26	Angeles Crest Highway and Interstate 210 WB Off Ramp La Canada - Flintridge	AM PM	0 0	50 50	NO NO
1059	Interstate 210 Eastbound at Terra Bella Street	AM PM	16 54	150 150	NO NO
1059	Interstate 210 Westbound at Terra Bella Street	AM PM	47 30	150 150	NO NO
1060	Interstate 210 Eastbound west of SR-134 and SR-710	AM PM	47 31	150 150	NO NO
1060	Interstate 210 Westbound west of SR-134 and SR-710	AM PM	16 54	150 150	NO NO

Source: Linscott, Law & Greenspan Engineers, March 2003.

Transit

As required by the CMP, a review has been made of the CMP transit service. As previously discussed, the nearest existing transit service is provided approximately two miles from the proposed project site.

Pursuant to the CMP guidelines, since no fixed route transit services operate within one mile of the proposed Development Areas, the proposed project is not forecast to generate a demand for any net new transit trips during the weekday AM or PM peak hours. Thus, no project impacts on existing or future transit services in the project area are expected to occur as a result of the proposed project.

MITIGATION MEASURES

As indicated in the above discussion and in Table IV.I-6, a significant traffic impact would occur with implementation of the proposed project at the intersection of Development Area A Access/Interstate 210 Westbound Ramps and La Tuna Canyon Road. To address this impact, the following mitigation measure shall be implemented.

I-1 Fund the design and installation of a traffic signal compatible with Automated Traffic Surveillance and Control/Adaptive Traffic Control System (ATSAC/ATCS) for the intersection of Development Area A Access/Interstate 210 Westbound Ramps and La Tuna Canyon Road. The above transportation improvement, including all necessary dedications, widening and signal installation, shall be guaranteed before the issuance of any building permit through the B-Permit process of the City of Los Angeles Bureau of Engineering (BOE) and encroachment permit of Caltrans. Prior to setting the bond amount of the B-Permit, the BOE shall require that the developer's engineer or contractor to contact LADOT's B-Permit Coordinator at (213) 580-5322 to arrange a pre-design meeting to finalize the design for the required transportation improvements. The traffic signal shall be constructed and completed, before the issuance of <u>any</u> certificate of occupancy, to the satisfaction of LADOT, the BOE and Caltrans.

This measure is anticipated to fully mitigate the project-related significant impact at this intersection. The v/c ratio in the AM peak hour is expected to improve from 0.787 (LOS C) to 0.630 (LOS B), and in the PM peak hour from 0.661 (LOS B) to 0.529 (LOS A) with the proposed measure.

CUMULATIVE IMPACTS

The growth in traffic due to the combined effects of continuing development, intensification of development, and related projects in conjunction with the proposed project is incorporated into the traffic impacts analysis above. The analysis shows that the proposed project, in combination with the related projects, will result in a potentially significant cumulative impact at the intersection of Development Area A access/I-210 Westbound ramps and La Tuna Canyon Road. The proposed

mitigation to install a traffic signal at that intersection will reduce the cumulative impact to a less-than-significant level. Therefore, no significant cumulative impacts will occur.

LEVEL OF SIGNIFICANCE AFTER MITIGATION

Following implementation of the above-listed mitigation measure, potentially significant impacts on traffic will be reduced to a less-than-significant level.