Appendix B:

Traffic Study Scoping Form

Kimley»Horn

Traffic Study Scoping Form

To: Jana Robbins, City of Alhambra Planner

From: Sri Chakravarthy, P.E., T.E. (Kimley-Horn and Associates, Inc.)
Vikas Sharma, P.E. (Kimley-Horn and Associates, Inc.)
Matt Stewart, E.I.T. (Kimley-Horn and Associates, Inc.)

Date: February 15, 2018

Subject: Traffic Impact Analysis Scope for the Alhambra Campus Development in the City of Alhambra

Introduction and Background

This memorandum is a scoping document for the traffic study to be conducted by Kimley-Horn as part of the Alhambra Campus Development in City of Alhambra. The proposed project consists of a master planned mixed-use development by The Ratkovich Company on a 38.38-acre site located at 1000 S. Fremont Avenue in the City of Alhambra, CA. The site is currently occupied by office buildings, three universities and a gym. The remainder of the site is occupied by surface parking lots and other buildings that are mostly unused. For the current phase of the project, The Ratkovich Company plans to redevelop these unused sections as residential apartments, condominiums, and townhouses. The Alhambra Campus Master Plan shown in **Figure 1** on the next page and the plan area summaries provided to us show 1,061 residential units consisting of 36 for-sale townhomes, 480 for-sale condominiums, and 545 rental apartments.

The site is divided into four plan areas – North, East, Corner, and South. The North Plan area is proposed to include 36 townhomes, three podium buildings with 480 condominiums, and an amenity pool and courtyard. The East Plan area is proposed to be a five-story parking structure to accommodate trips to the existing land use that currently use surface parking lots that would be removed. The Corner Plan area is proposed to be a single wrap building with 153 apartment units. The South Plan area is proposed to include two wrap buildings with 392 apartment units.

Access to the site would be provided by eight (8) full access driveways. One driveway along Fremont Avenue would remain a signalized intersection and provide access to the south plan area from the west. One driveway along Mission Road would be relocated approximately 280 feet west and provide access to the south plan area from the south. Three driveways along Date Avenue would provide access to Corner, East, and North Plan areas from the east. The farthest south driveway on Date Avenue would provide access exclusively to the Corner Plan parking structure. Three driveways located along Orange Street would provide access to the north and office plan areas. The residential parking for the North Plan will be provided for by a 1,136-space parking structure. The residential parking for the Corner Plan will be provided for by a 337-space parking structure. The residential parking for the South Plan will be provided for by a 218-space parking structure. Office parking will be accommodated by three existing parking lots and a new 490-space parking structure that will be constructed on the East Plan site. We will follow the City of Alhambra and the County of Los Angeles guidelines for Traffic Impact Analysis.

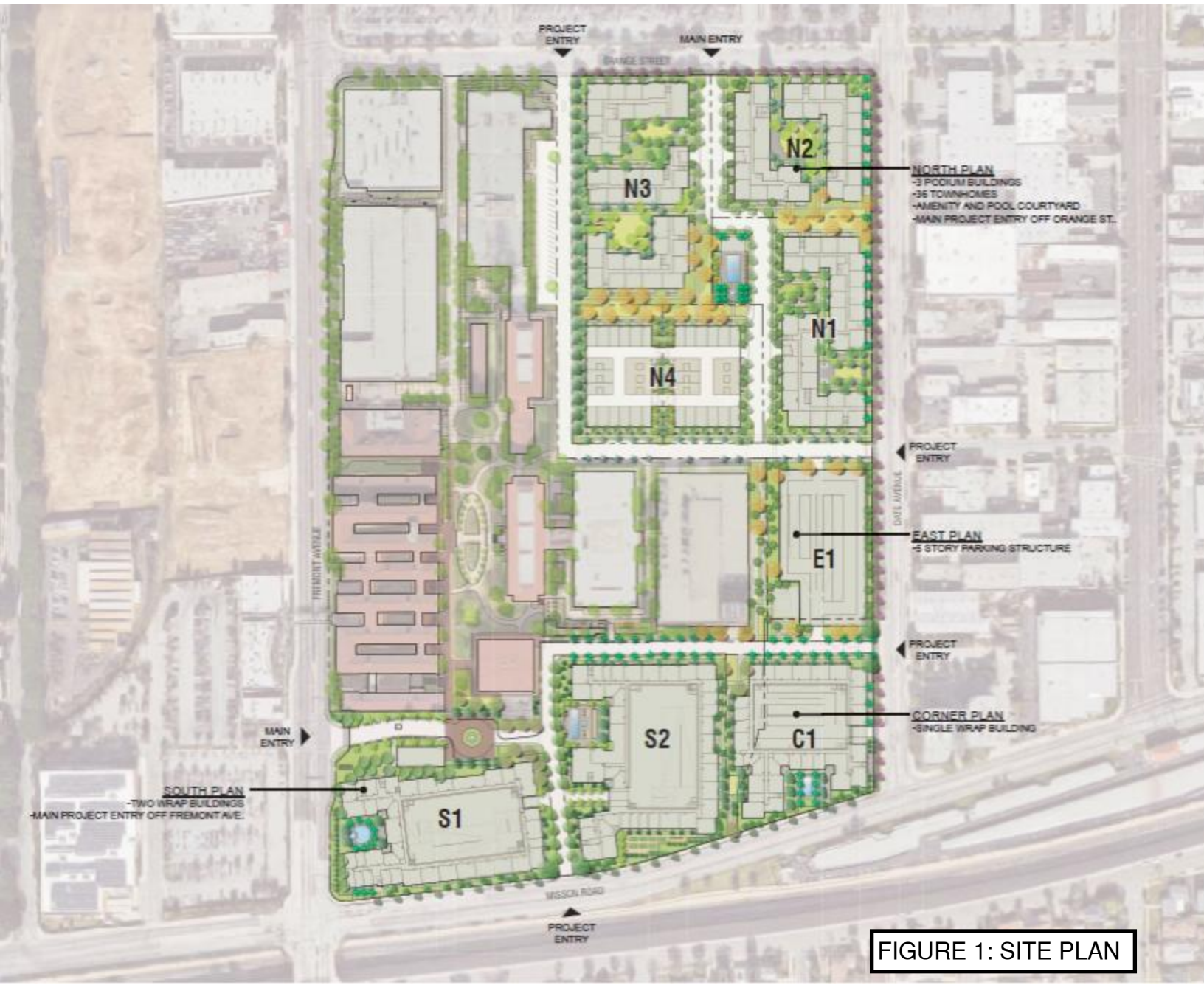


FIGURE 1: SITE PLAN

Project Study Intersections

Based upon our review of the area, site, and access points, we have identified 27 intersections for analysis of weekday peak-hour operations in order to determine if the project would result in significant traffic impacts. **Table 1** presents the study area intersections, their control, and jurisdiction. Kimley-Horn collected AM and PM peak-hour turning movement counts at the first 25 of these locations in April 2017 and collected counts at the intersections of S Fremont Ave at Ross Ave and Valley Blvd at Westmont Dr in November 2017. Kimley-Horn will utilize these counts for analysis. Weekday AM and PM peak-hour operations of these 27 intersections listed below will be analyzed as part of the traffic impact report.

Table 1: Project Study Intersections

	Intersection	Control	Jurisdiction
1	S Fremont Ave at W Mission Rd	Signalized	City of Alhambra
2	S Fremont Ave at Driveway	Signalized	City of Alhambra
3	S Fremont Ave at Orange St	Signalized	City of Alhambra
4	Date Ave at Orange St	Unsignalized	City of Alhambra
5	Orange St at S Palm Ave	Unsignalized	City of Alhambra
6	Chestnut St at S Palm Ave	Unsignalized	City of Alhambra
7	S Fremont Ave at Poplar Blvd	Signalized	City of Alhambra
8	W Mission Rd at Date Ave	Unsignalized	City of Alhambra
9	Chestnut St at Date Ave	Unsignalized	City of Alhambra
10	S Fremont Ave at Concord Ave	Signalized	City of Alhambra
11	S Fremont Ave at Montezuma Ave	Signalized	City of Alhambra
12	W Commonwealth Ave at S Palm Ave	Signalized	City of Alhambra
13	Date Ave at W Commonwealth Ave	Signalized	City of Alhambra
14	S Fremont Ave at W Commonwealth Ave	Signalized	City of Alhambra
15	S Fremont Ave at W Valley Blvd	Signalized	City of Alhambra
16	W Mission Rd at S Palm Ave	Unsignalized	City of Alhambra
17	W Valley Blvd at S Marengo Ave	Signalized	City of Alhambra
18	S Atlantic Blvd at W Mission Rd	Signalized	City of Alhambra
19	S Marengo Ave at W Mission Rd	Signalized	City of Alhambra
20	S Marengo Ave at Front St	Signalized	City of Alhambra
21	Valley Blvd at I-710 NB Offramp	Signalized	Caltrans
22	Valley Blvd at I-710 SB Onramp	Signalized	Caltrans
23	S Fremont Ave at W Hellman Ave	Signalized	City of Alhambra
24	W Hellman Ave at I-10 WB Ramps/Elm St	Unsignalized	Caltrans

	Intersection	Control	Jurisdiction
25	S Fremont Ave at I-10 EB Ramps/Ramona Rd	Unsignalized	Caltrans
26	S Fremont Ave at Ross Ave	Signalized	City of Alhambra
27	W Valley Blvd at Westmont Dr	Signalized	City of Alhambra

Source: Kimley-Horn and Associates, Inc. *February 2018*

Project Phasing

The Ratkovich Company plans to phase construction such that 516 condominium and townhouse units (project areas N1, N2, N3, and N4) will be built by 2024 and the remaining 545 apartment units (project areas S1, S2, and C) will be built by 2028. The traffic impact analysis will analyze project impacts at the opening year of 2024 when the first portion of units are built and again in 2028 when all the units are built.

Project Trip Generation

Weekday daily, AM and PM peak hour trips were estimated for the project using trip generation rates from the ITE publication entitled *Trip Generation*, 9th Edition. The ITE Land Use Code, trip generation rates and the resulting trips that would be generated by the proposed project are presented in **Table 2** for the opening year 2024 project trip generation and in **Table 3** for the 2028 full buildout project trip generation.

Table 2: Project Trip Generation – Opening Year 2024 Project Buildout

ITE Code	Building	Land Use Description	Units	No. of Units	Project Generated Trips				
					Daily	Am Peak Hour		PM Peak Hour	
						In	Out	In	Out
Trips Generated									
230	N1	Residential Condominium/Townhouse*	DU	149	1,192	9	72	70	39
230	N2	Residential Condominium/Townhouse*	DU	139	1,112	8	67	65	36
230	N3	Residential Condominium/Townhouse*	DU	192	1,536	12	92	90	50
230	N4	Residential Condominium/Townhouse*	DU	36	288	2	17	17	9
Subtotal of Trips Generated					**4,128**	**31**	**248**	**243**	**134**
Trip Credits									
Drive Ratio Reduction (11%)					-454	-3	-27	-27	-15
Internal Capture** (2-3% AM, 7-11% PM)					-372	-1	-7	-34	-13
Subtotal of Trip Credits					**-826**	**-4**	**-35**	**-61**	**-28**
Net Project Total					**3,302**	**27**	**213**	**182**	**106**

Source: Trip Generation Manual (ITE 9th Edition) *February 2018*
** Residential Condominium/Townhouse rates per LA County Traffic Impact Analysis Report guidelines were used.*
*** Internal capture rates based upon calculation.*

Table 3: Project Trip Generation – 2028 Full Project Buildout

ITE Code	Building	Land Use Description	Units	No. of Units	Project Generated Trips				
					Daily	Am Peak Hour		PM Peak Hour	
						In	Out	In	Out
Trips Generated									
220	S1	Apartment	DU	175	1,164	18	71	71	38
220	S2	Apartment	DU	217	1,443	22	89	87	47
220	C	Apartment	DU	153	1,017	16	62	62	33
230	N1	Residential Condominium/Townhouse*	DU	149	1,192	9	72	70	39
230	N2	Residential Condominium/Townhouse*	DU	139	1,112	8	67	65	36
230	N3	Residential Condominium/Townhouse*	DU	192	1,536	12	92	90	50
230	N4	Residential Condominium/Townhouse*	DU	36	288	2	17	17	9
Subtotal of Trips Generated					**7,752**	**87**	**470**	**463**	**252**
Trip Credits									
710	S1	General Office Building***	KSF	10.145	-112	-14	-2	-3	-13
Drive Ratio Reduction (11%)					-853	-10	-52	-51	-28
Internal Capture** (2-3% AM, 7-11% PM)					-699	-2	-14	-65	-25
Subtotal of Trip Credits					**-1,664**	**-25**	**-68**	**-119**	**-66**
Net Project Total					**6,088**	**62**	**402**	**344**	**186**

Source: Trip Generation Manual (ITE 9th Edition) *February 2018*

** Residential Condominium/Townhouse rates per LA County Traffic Impact Analysis Report guidelines were used.*

*** Internal capture rates based upon calculation.*

**** Office space to be repurposed.*

The trip generation estimates includes the following three types of credits:

1) The first trip generation credit is for existing land uses that will be demolished or repurposed as part of the Alhambra Campus Development. Many of the buildings currently on the site are warehouses and are not currently generating any trips. The Alhambra Medical University on the southeast corner of the project site has classes primarily in the evenings and on weekends and is estimated to generate a negligible number of trips during AM and PM peak periods. The one credit that is applied is for 10,145 square feet of office space that will be repurposed to be residential amenity for the S1 building.

2) The second credit is an 11% drive ratio credit which indicates that 11% of the residential trips will be completed by public transit, biking, or walking, rather than single occupant vehicle trips. This credit is based on 2015 American Community Survey data that shows that 11% of those who work in the City of Alhambra commute to work using a non-auto mode and 11% carpool. In addition, in 2016, The Ratkovich Company performed a weeklong survey of employee commute mode as part of its LEED certification process. A total of 449 employees participated in the survey. On an average day, approximately 16% of employees do not drive to work. This includes those who are telecommuting or not working due to a compressed work week schedule.

3) The third credit is for internal capture of trips using multiple land uses within the Alhambra Campus. Internal capture credits are applied to projects where some of the trips generated by the project are expected to be captured by other land uses within the project. Since Alhambra Campus is a mixed-use development with office, residential, and restaurant land uses, internal capture can be applied. Internal capture rates are from the ITE publication entitled *Trip Generation Handbook*, 3rd Edition. In the AM peak hour, 2% of incoming trips and 3% of outgoing trips are expected to be generated internally by office, college, and retail land uses at the Alhambra Campus and adjacent Shops at the Alhambra. In the PM peak hour, 14% of incoming trips and 10% of outgoing trips are expected to be generated internally.

After making adjustments for the trip credits for existing land use, the Project at full buildout in 2028 is estimated to generate 6,088 new weekday daily trips with 464 trips occurring during the AM peak hour and 530 trips occurring during the PM peak hour. For the opening year of 2024, the project is expected to generate 3,302 new weekday daily trips with 240 trips occurring during the AM peak hour and 288 trips occurring during the PM peak hour. It is important to note that these trips do not include trips generated by the existing units at the project site.

Additional trips are expected to be generated by pedestrians, bicyclists, and transit riders. The bicycle and pedestrian analysis will qualitatively describe the effect of the project on bicycle and pedestrian conditions. The transit analysis will consider the effects on the project on transit vehicle delay and an assessment of transit access and facilities near the project site. The transit delay will be based on delay results from the intersection analysis.

Project Study Roadway Segments

The following four (4) project roadway segments are recommended to be analyzed for weekday peak-hour operations to determine if the project would result in significant traffic impacts. **Table 4** presents the roadway segments extents and their jurisdiction. Weekday AM and PM peak-hour operations for the two roadway segments will be analyzed as part of the traffic impact report.

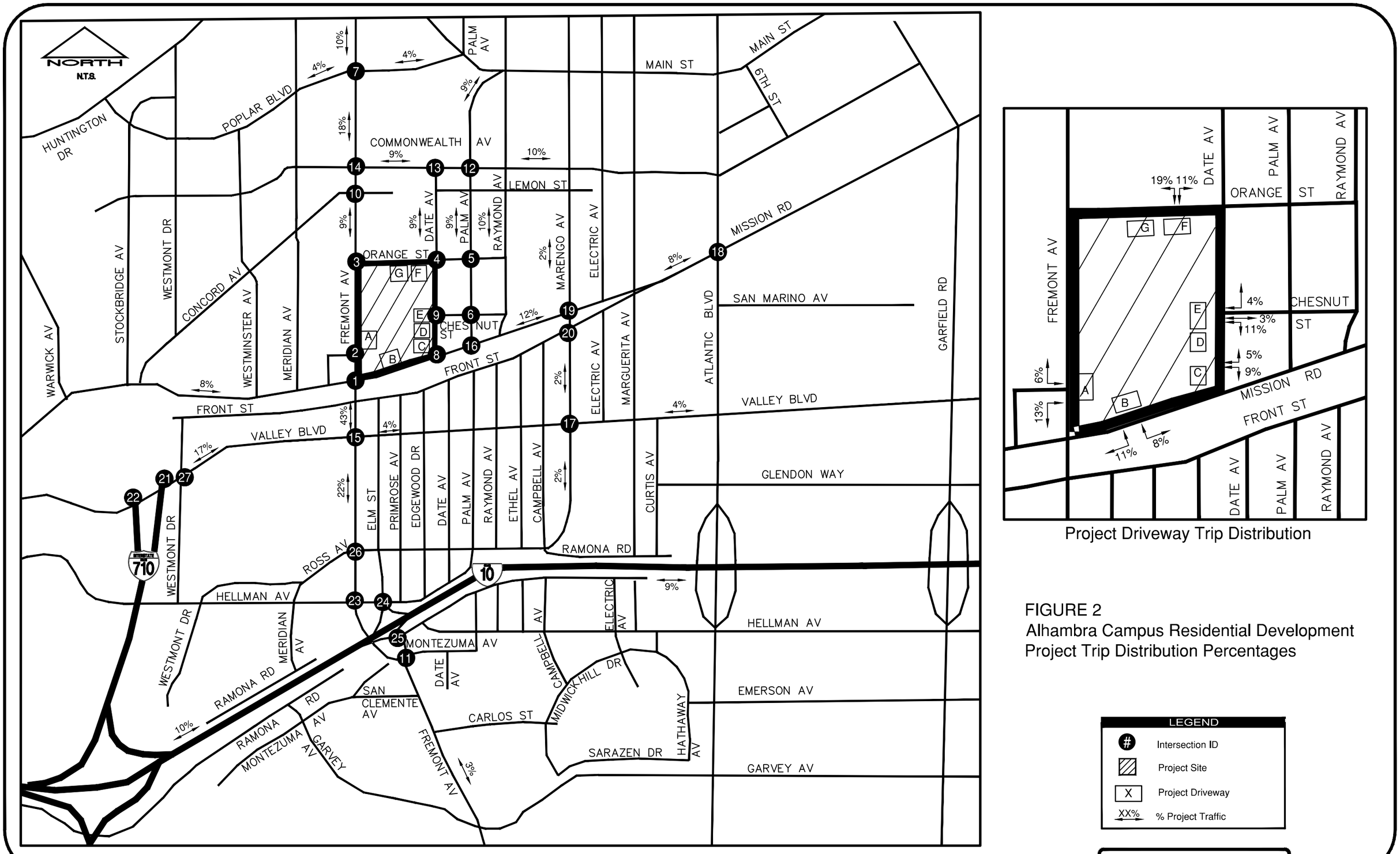
Table 4: Study Roadway Segments

	Street Name	From	To	Jurisdiction
1	Fremont Avenue	Orange St	Mission Rd	City of Alhambra
2	Mission Road	Date Ave	Fremont Ave	City of Alhambra
3	Orange Street	Fremont Ave	Date Ave	City of Alhambra
4	Date Ave	Mission Rd	Orange St	City of Alhambra

Source: Kimley-Horn and Associates, Inc. *February 2018*

Project Trip Distribution

Figure 2 shows the project area, study intersections, and trip distribution recommendations. The trip distribution is based upon distribution factors from Exhibit D-3 of the LA Metro Congestion Management Program (CMP) guidelines.



Project Driveway Trip Distribution

FIGURE 2
Alhambra Campus Residential Development
Project Trip Distribution Percentages

LEGEND	
#	Intersection ID
	Project Site
X	Project Driveway
XX%	% Project Traffic

Kimley»Horn

Study Methodology

The traffic impact analysis will be conducted per City of Alhambra Traffic Impact Analysis guidelines which follows County of Los Angeles and Congestion Management Program (CMP) guidelines.

The following scenarios will be studied as per City of Alhambra Traffic Impact Analysis guidelines:

- Existing Conditions (2018)
- Existing Plus Project Conditions (2018)
- Ambient Conditions (Existing Plus Ambient Growth) (2024)
- Ambient Plus Project Conditions (Existing Plus Project, Plus Ambient Growth) (2024)
- Cumulative Conditions (Existing Plus Cumulative Projects, Plus Ambient Growth (2024)
- Cumulative Plus Project Conditions (Existing Plus Project, Plus Cumulative Projects, Plus Ambient Growth) (2024)
- Ambient Conditions (Existing Plus Ambient Growth) (2028)
- Ambient Plus Project Conditions (Existing Plus Project, Plus Ambient Growth) (2028)
- Cumulative Conditions (Existing Plus Cumulative Projects, Plus Ambient Growth (2028)
- Cumulative Plus Project Conditions (Existing Plus Project, Plus Cumulative Projects, Plus Ambient Growth) (2028)

The traffic impact analysis will incorporate project phasing. The Ambient Conditions, Ambient Plus Project Conditions, Cumulative Conditions, and Cumulative Plus Project Conditions will all be analyzed for the opening year of 2024 when the 516 condominium and townhouse units will be completed and again for 2028 when all 1,061 units will be completed.

Unsignalized Intersection Analysis

Project impact for the unsignalized study intersections will be evaluated using the Highway Capacity Method (HCM 2010). The unsignalized intersections will be analyzed using Synchro software, version 9. The average intersection delay (per vehicle) ratio and the corresponding LOS will follow the 2010 Highway Capacity Manual analysis utilized within the Synchro software.

Signalized Intersection Analysis

Project impact for signalized study intersections will be evaluated using the Intersection Capacity Utilization (ICU) methodology which includes an hourly capacity of 1,600 vehicles per lane for each through or turning lane (1,440 vehicles per lane for dual left-turn lanes), and a clearance interval of 10% per cycle. The signalized intersections will be analyzed using Traffix, version 8.

Significant Impact Threshold

The City of Alhambra guidelines for impact criteria will be used to identify significant project impacts. The City of Alhambra's significant impact criteria follows the County of Los Angeles significant impact criteria which states that a project's impact is considered to be significant if the project-related increase in the intersection volume-to-capacity ratio (v/c ratio) equals or exceeds the threshold shown on the following page in **Table 5.**

Table 5: Significant Impact Threshold

Intersection Impact Significant Threshold		
Pre-Project Conditions		Project V/C Increase
Level of Service	V/C Ratio	
C	0.71 to 0.80	0.04 or more
D	0.81 to 0.90	0.02 or more
E/F	0.91 or more	0.01 or more

Roadway Analysis Methodology

The roadway LOS for multi-lane highways will be calculated using maximum density per HCM methodology. For two-lane highways, the LOS will be calculated using the allowed Percent-Time-Spent-Following (PTSF) per HCM methodology.

Additional Analysis

Kimley-Horn will review access to the project at project driveways and recommend driveway widths. Line of sight along the projects frontage on each adjacent roadway will be analyzed and a determination will be made whether red curb is necessary on either side of project driveways. Kimley-Horn will determine if left turn pockets will be needed and include a discussion on stacking length.

Kimley-Horn will estimate queue lengths and adequate storage lengths for each project driveway. Queue lengths will be calculated using Synchro and SimTraffic. Signal warrants will be conducted for all unsignalized intersections using methodology in the California Manual on Uniform Traffic Control Devices (2014 CA MUTCD, Revision 2).

Kimley-Horn will review the circulation of vehicles on site. Circulation of large vehicles such as buses will also be considered. Adjustment to the circulation of existing traffic will be considered to account for the location of the new parking structure and how existing land use will access the parking structure.

Kimley-Horn will review construction vehicle access to the site and determine the impact that construction will have on on-site parking and surrounding traffic.