3.14 TRANSPORTATION/TRAFFIC

3.14.1 Introduction

This section describes the roadway facilities within the City and Project Area to determine whether the Proposed Project could have significant impacts on transportation/traffic resources. Specifically, this section analyzes potential impacts on the roadway network within the Study Area and Extended Study Area that could occur as a result of the Proposed Project and cumulative development. Although this section analyzes recent traffic data (current traffic conditions) taken from the Project Area, this section also utilizes data extrapolation and projections derived from comparisons of past, present and reasonably foreseeable cumulative projects to current traffic conditions. This approach is necessitated by the fact that actual buildout of the Proposed Project may not occur for several years, and during this interim period, traffic conditions in the Project Area cannot be precisely determined. It should be noted that the Proposed Project includes not only the land uses identified for the project sites, but also adoption of the Lake Forest Transportation Mitigation (LFTM) Program which includes a set of traffic improvements that are a part of the Proposed Project. Thus, this section uses both existing and projected traffic conditions to analyze the potential for impacts. Potential effects include those associated with increased congestion on roadways, intersections, and on the ramps and segments of freeways/tollways.

This section presents a summary of the findings of a traffic study carried out by Austin-Foust Associates dated July 2005. The full Traffic Study is contained in Appendix I. Information was obtained from the Orange County Transportation Authority (OCTA), the City of Lake Forest General Plan, the City's 1994 General Plan Final Master EIR, the Lake Forest Municipal Code, and previous environmental documentation prepared for the project area and surrounding areas. Full bibliographic entries for all reference materials are provided in Section 3.14.10 (References) of this section.

Two NOP comment letters were received on transportation issues: one from the California Department of Transportation (Caltrans) District 12 office and one from the Community Development Department of the City of Irvine. Caltrans, as a responsible agency, requested evaluation of connectivity among modes of transportation including walking/biking trails and/or transit-oriented development; development of a comprehensive traffic study; evaluation of intersections and roads near freeways and ramps; identification of impacts on Caltrans ROW; and avoidance of additional runoff into Caltrans ROW. The Proposed Project is consistent with the City's trails and bikeway plans. This section summarizes the results of a comprehensive traffic study for the Proposed Project, including an evaluation of intersections and roads near freeways and ramps, and analysis of potential freeway ramp and freeway segment impacts. No impacts to the Caltrans ROW is anticipated to result from project development and no additional runoff into the Caltrans ROW is anticipated as a result of the Proposed Project, as detailed more fully in the hydrology section of this EIR. The City of Irvine requested incorporation of the North Irvine Transportation Mitigation Program approved land uses and phased circulation improvements; extension of the project area to Sand Canyon Avenue and A.M. and P.M. peak hour intersection analysis for Jeffrey Road at Portola Parkway, and at Irvine Boulevard; evaluation of existing year, interim year, 2025 future and post-2025 future conditions; evaluation of the Portola Parkway Connection; evaluation

of existing and proposed truck routes associated with the project; and evaluation of the project impact on the Foothill Circulation Phasing Plan Fee Program (FCCP). The traffic analysis conducted for the Proposed Project is consistent with the City of Irvine's request, with the exception that no interim year evaluation was done, the buildout scenario is a 2030 rather that 2025 scenario, and truck routes were not evaluated, as they are unknown at this Program level of analysis. Given the long-term buildout characteristics of the Proposed Project and unknown phasing of development, an interim year scenario was felt to be highly speculative. Instead, a 2030 buildout scenario, which represents the worst-case scenario, was run.

3.14.2 Environmental Setting

Regional Characteristics

As can be seen here, the "Study Area" and "Extended Study Area" (Figure 3.14-1), comprise all of the City of Lake Forest and parts of the Cities of Irvine, Laguna Hills, Laguna Woods and Mission Viejo. The Study Area and Extended Study Area were defined based on peak hour intersection criteria, and include all major intersections where the Proposed Project would increase traffic by more than one percent. This inclusion criterion is consistent with guidelines used by Lake Forest and the surrounding jurisdictions in to define the area of impact for such studies. In addition, the study area was extended into Irvine in response to the City of Irvine's request.

The "Traffic Study Area" or "Study Area," is a subset of the Extended Study Area (see Figure 3-14.1) and includes all of the study intersections within the City of Lake Forest, as well as the intersections of El Toro & Avenida Carlota, Paseo de Valencia & Avenida Carlota, and Lake Forest & I-5/Carlota. Figure 3.14-1 shows the Traffic Study Area boundaries in relation to the Extended Study Area.

Traffic Study Area and Extended Study Area Characteristics

The existing circulation system in the Traffic Study Area is illustrated in Figure 3.14-2 together with existing midblock lanes on arterial roadways and the number of existing travel lanes on freeway/tollway mainline segments. Current average daily traffic (ADT) volumes are illustrated in Figure 3.14-3. The existing data for Lake Forest is based on counts taken in April 2004, prior to El Toro Road construction. This construction, which is currently ongoing, has affected normal traffic patterns. The data in the Extended Study area (in Irvine) are based on counts taken in 2005 and 2004 and are current per the City of Irvine's database. The volumes on I-5 and SR-241 are from 2003 counts provided by Caltrans and the Transportation Corridor Agencies (TCA). The current undeveloped conditions and traffic forecasts for the Extended Traffic Study Area are based on the City of Irvine's Irvine Transportation Analysis Model (ITAM) used for the North Irvine Transportation Mitigation (NITM) Program.

Intersection capacity utilization (ICU) values for the Study Area and Extended Study Area based on these counts are summarized in Table 3.14-1 and illustrated in Figure 3.14-5 and Figure 3.14-6 for A.M. and P.M. peak hours, respectively. Actual ICU worksheets can be found in Appendix I. As shown in

Legend

- City of Lake Forest Limits
- Future Roadway
- Analyzed intersection within study area
- Analyzed intersection within extended study area

FIGURE **3.14-1**

Intersections Analyzed within the Project Area and the Extended Project Area

Not to Scale

10953-00

Source: Austin-Foust Associates, Inc. 2005

City of Lake Forest

EIP ASSOCIATES

FIGURE **3.14-2**

Existing Circulation System with Midblock Lanes

Not to Scale

10953-00

Source: Austin-Foust Associates, Inc. 2005

City of Lake Forest

EIP ASSOCIATES

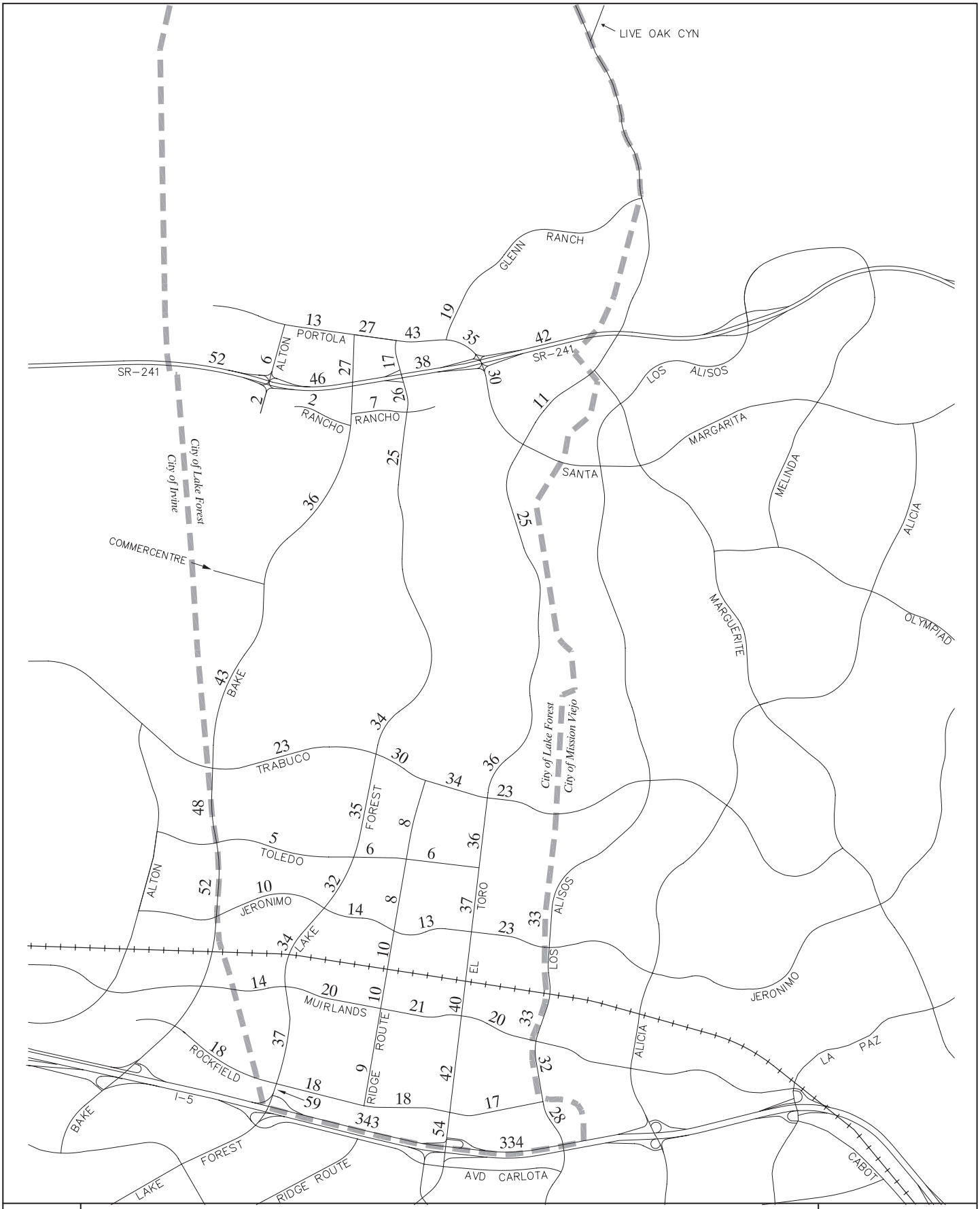

FIGURE **3.14-3**

Existing ADT Volumes (000s)

Not to Scale

10953-00

Source: Austin-Foust Associates, Inc. 2005

City of Lake Forest

EIP ASSOCIATES

Legend

X Intersection location

10953-00

FIGURE **3.14-4**

Existing Intersection Location Map

Not to Scale

Source: Austin-Foust Associates, Inc. 2005

City of Lake Forest

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Legend

- LOS A - C (<.80)
- LOS D (<.90)
- LOS E (<1.0)
- LOS F (>1.0)

10953-00

FIGURE **3.14-5**

Existing AM Peak Hour ICUs and Level of Service

Not to Scale

Source: Austin-Foust Associates, Inc. 2005

City of Lake Forest

EIP ASSOCIATES

Legend

- LOS A - C (<.80)
- LOS D (<.90)
- LOS E (<1.0)
- LOS F (>1.0)

10953-00

FIGURE **3.14-6**

Existing PM Peak Hour ICUs and Level of Service

Not to Scale

Source: Austin-Foust Associates, Inc. 2005

City of Lake Forest

EIP ASSOCIATES

Table 3.14-1 Existing Intersection LOS Summary

Loc. # North/South (NS) Road at East/West (EW) Road	A.M. Peak Hour		P.M. Peak Hour	
	ICU	LOS	ICU	LOS
Traffic Study Area				
1. Alton & Portola	.39	A	.24	A
2. Bake & Portola	.58	A	.74	C
3. Lake Forest & Portola	.48	A	.73	C
4. Glenn Ranch & Portola	.59	A	.55	A
5. Portola & SR-241 Ramps	.48	A	.59	A
6. Alton & SR-241 Ramps	.20	A	.26	A
7. Lake Forest & SR-241 NB	.35	A	.42	A
8. Lake Forest & SR-241 SB	.47	A	.48	A
9. Bake & Rancho North	.63	B	.76	C
10. Lake Forest & Rancho	.43	A	.55	A
11. Bake & Rancho South	.70	B	.68	B
12. El Toro & Portola/Santa Margarita	.58	A	.66	B
13. Bake & Commercentre	.64	B	.74	C
14. Bake & Irvine/Trabuco [a]	.95	E	.81	D
15. Lake Forest & Trabuco	.74	C	.74	C
16. Ridge Route & Trabuco	.48	A	.60	A
17. El Toro & Trabuco	.71	C	.68	B
18. Bake & Toledo	.85	D	.62	B
19. Lake Forest & Toledo	.47	A	.44	A
20. Ridge Route & Toledo	.35	A	.37	A
21. El Toro & Toledo	.47	A	.50	A
22. Bake & Jeronimo	.90	D	.75	C
23. Lake Forest & Jeronimo	.62	B	.75	C
24. Ridge Route & Jeronimo	.47	A	.57	A
25. El Toro & Jeronimo	.64	B	.66	B
26. Los Alisos & Jeronimo	.79	C	.80	C
27. Lake Forest & Muirlands	.56	A	.78	C
28. Ridge Route & Muirlands	.48	A	.66	B
29. El Toro & Muirlands	.54	A	.73	C
30. Los Alisos & Muirlands	.78	C	.90	D
31. Lake Forest & Rockfield	.62	B	.66	B
32. Ridge Route & Rockfield	.43	A	.55	A
33. El Toro & Rockfield	.62	B	.74	C
34. Los Alisos & Rockfield	.71	C	.74	C
35. Lake Forest & I-5 NB	.53	A	.61	B
36. Lake Forest & I-5/Carlota	.64	B	.78	C
37. Paseo De Valencia & Carlota	.49	A	.76	C
38. El Toro & Bridger/I-5 NB	.70	B	.74	C
39. El Toro & Avenida Carlota [a]	.60	A	.91	E

Table 3.14-1 Existing Intersection LOS Summary

Loc. # North/South (NS) Road at East/West (EW) Road	A.M. Peak Hour		P.M. Peak Hour	
	ICU	LOS	ICU	LOS
40. Portola & Rancho	N/A Future Intersection			
41. Alton & Towne Centre Dr	N/A Future Intersection			
42. Alton & Commercentre	N/A Future Intersection			
Extended Study Area				
100. Portola Pkwy. At SR-241 NB Ramps	.32	A	.15	A
101. Portola Pkwy. At SR-241 SB Ramps	.30	A	.40	A
103. Sand Canyon Av. At Portola Pkwy	.27	A	.32	A
104. Jeffrey Rd. at Portola Pkwy.	.40	A	.38	A
105. Alton Pkwy. At Irvine Boulevard	.37	A	.40	A
106. B Dr. at Irvine Boulevard	N/A Future Intersection			
107. A Dr. at Irvine Boulevard	N/A Future Intersection			
108. Ridge Vly. at Irvine Boulevard	N/A Future Intersection			
109. College Dr. at Irvine Boulevard	N/A Future Intersection			
110. ETC E. Leg NB Ramps at Irvine Center Dr.	.34	A	.37	A
111. ETC E. Leg SB Ramps at Irvine Center Dr.	.48	A	.31	A
112. Sand Canyon Av. at Irvine Boulevard	.52	A	.45	A
113. Jeffrey Rd. at Irvine Boulevard	.41	A	.47	A
114. SR-133 NB Ramps at Trabuco Rd.	N/A Future Intersection			
115. SR-133 SB Ramps at Trabuco Rd.	N/A Future Intersection			
116. Sand Canyon Av. at Trabuco Rd.	.42	A	.32	A
117. Alton Pkwy. at Toledo Way	.43	A	.38	A
118. Alton Pkwy. at Jeronimo Rd.	.42	A	.36	A
119. Alton Pkwy. at Barranca/Muirlands Boulevard	.50	A	.45	A
120. Marine Way at Alton Pkwy.	N/A Future Intersection			
121. Alton Pkwy. at Technology Dr.	.61	B	.65	B
122. Alton Pkwy. at I-5 NB Ramps	.71	C	.33	A
123. Marine Way at Rockfield Boulevard	N/A Future Intersection			
124. Bake Pkwy. at Muirlands Boulevard	.60	A	.62	B
125. Bake Pkwy. at Rockfield Boulevard	.51	A	.67	B
126. Bake Pkwy. at I-5 NB Ramps	.71	C	.56	A
127. Bake Pkwy. at I-5 SB Ramps	.63	B	.71	C
128. Bake Pkwy. at Irvine Center Dr.	.44	A	.65	B
129. Lake Forest Dr. at Irvine Center Dr.	.57	A	.55	A
130. Ridge Route at Moulton Pkwy.	.58	A	.72	C
131. Santa Maria Av. at Moulton Pkwy.	.50	A	.67	B
132. El Toro Rd. at Moulton Pkwy.	.79	C	.82	D
137. Los Alisos Boulevard at Trabuco Rd.	.83	D	.78	C
138. Trabuco Rd. at Alicia Pkwy. (a)	.77	C	.95	E
139. Jeronimo Rd. at Alicia Pkwy.	.74	C	.78	C
140. Alicia Pkwy. at Muirlands Boulevard	.64	B	.88	D

Table 3.14-1 Existing Intersection LOS Summary

Loc. # North/South (NS) Road at East/West (EW) Road	A.M. Peak Hour		P.M. Peak Hour	
	ICU	LOS	ICU	LOS
141. I-5 NB Ramps at Alicia Pkwy.	.37	A	.68	B
142. I-5 SB Ramps at Alicia Pkwy.	.66	B	.82	D
143. Los Alisos Boulevard at Avenida de Carlota	.47	A	.62	B
144. El Toro Rd. at Paseo de Valencia	.56	A	.72	C
145. Los Alisos Boulevard at Avenida de Valencia	.47	A	.62	B

SOURCE: Austin-Foust Associates, Inc. 2005a

ICU = intersection capacity utilization NB = northbound LOS = level of service SB = southbound

[a] This location currently operates deficiently in the A.M. and/or P.M. peak hour (i.e., the existing LOS is worse than the adopted LOS performance standard).

Table 3.14-1, all of the intersections included in the analysis are operating at acceptable levels of service (as defined in Table 3.14-8, Table 3.14-10, and Table 3.14-11), with the exception of No. 14 (Bake & Irvine/Trabuco), No. 39 (El Toro Road & Avenida Carlota), and No. 138 (Trabuco Road at Alicia Parkway).

Following is a description of the existing regional roadway network present in the Traffic Study Area, including the locations of on and off ramps:

- **Interstate 5 (I-5)** is a 10-lane freeway providing the primary regional access to the project traffic on the south end of the city. I-5 extends from North California to San Diego, South California. It serves as a major commuter route between Los Angeles County and Orange County. In the vicinity of the Traffic Study Area, I-5 has southbound and northbound on- and off-ramps at Lake Forest and at El Toro Road. At Lake Forest, there are both a southbound direct on-ramp and a loop on-ramp. At El Toro Road, there are both northbound and southbound direct and loop on-ramps. The I-5 has auxiliary lanes on the northbound and southbound directions between Lake Forest Drive and El Toro Road.
- **State Route 241 (SR-241)** a four-lane tollway providing the primary regional access to the project traffic on the north end of the city. SR-241 is a 12-mile tollway in Orange County, California. Signed as California State Highway 241, it travels parallel to Interstate 5, connecting the Eastern Toll Road outside of Irvine with Oso Parkway near Mission Viejo. In the vicinity of the Traffic Study Area, SR-241 has southbound and northbound on- and off-ramps at Alton Parkway and at Portola Parkway; as well as a northbound on-ramp and southbound off-ramp at Lake Forest Drive. There are auxiliary lanes in the northbound and southbound direction between Lake Forest city limits and Bake Parkway.
- There are three roadways with regional traffic characteristics within the City of Lake Forest that carry traffic to and from areas outside the City. These are El Toro Road, Trabuco Road, and Muirlands Boulevard.
- According to the County of Orange Master Plan of Arterial Highways (MPAH), El Toro Road at its ultimate capacity is an eight-lane major arterial between the I-5 Freeway and Trabuco Road and a six-lane major arterial between Trabuco Road and Live Oak Canyon Avenue. Trabuco Road within the City limits between Bake Parkway and El Toro Road is a six-lane major arterial and Muirlands Boulevard is a four-lane primary arterial.

- For the purposes of this analysis, El Toro Road, Lake Forest Drive, and Bake Parkway are assumed to run in a north/south orientation and Trabuco Road and Rockfield Boulevard are assumed to run east/west.

Following is a description of the existing local roadway network in the Extended Traffic Study Area, including the number lanes and the roadway classification per the City of Lake Forest General Plan:

- **El Toro Road** is a north/south commercial street from I-5 to Muirlands, then an eight-lane divided principal arterial from Muirlands to Trabuco, then a six-lane divided major arterial from Trabuco north to the city limit and from Glenn Ranch to the city limit. El Toro Road provides regional access to the project traffic. It serves as a major commuter route between I-5 and SR-241. In the City of Laguna Hills, El Toro Road, between Moulton Parkway and I-5, is a north/south six-lane street.
- **Portola Parkway** is an east/west six-lane divided major arterial from Alton Parkway to SR-241, then a north/south eight-lane divided principal arterial from SR-241 to El Toro Road. In the City of Irvine, Portola Parkway, between Jeffrey and SR-241, is a north/south/east/west six-lane street.
- **Los Alisos Boulevard** is a north/south six-lane divided major arterial from I-5 to the city limit.
- **Bake Parkway** is a north/south six-lane divided major arterial from Railroad to Trabuco, then a four-lane divided primary arterial from Trabuco to Rancho Parkway. In the City of Laguna Hills and in the City of Irvine, Bake Parkway, between Moulton Parkway and Railroad, is a north/south six-lane street.
- **Alton Parkway** is a north/south six-lane divided major arterial (unconstructed). In the City of Irvine, Alton Parkway, between I-5 and Trabuco Road, is an east/west and north/south six-lane street.
- **Lake Forest Drive** is a north/south commercial street from I-5 to Muirlands, then a six-lane divided major arterial from Muirlands to Trabuco Road, then a four-lane divided primary arterial from Trabuco Road to Rancho Parkway, then a commercial street from Rancho Parkway to Portola Parkway. In the City of Laguna Hills, Lake Forest Drive, between Moulton Parkway and I-5, is an east/west street.
- **Trabuco Road** is an east/west six-lane divided major arterial. In the City of Irvine, Irvine Road, between Jeffrey and Bake Parkway, is an east/west six-lane street. In the City of Irvine, Trabuco Road, between Sand Canyon and SR-133, is an east/west street. In the City of Mission Viejo, Trabuco Road, between Lake Forest city limits and Alicia, is an east/west street.
- **Rancho Parkway** is an east/west four-lane divided primary arterial from Bake Parkway to its eastern terminus, and a commercial street from its western terminus to Bake Parkway.
- **Muirlands Boulevard** is an east/west four-lane divided primary arterial. In the City of Mission Viejo, Muirlands Boulevard, between Lake Forest city limits and Alicia, is an east/west street.
- **Rockfield Boulevard** is an east/west commercial street from the city limits to Ridge Route Drive, then a four-lane divided primary arterial. In the City of Irvine, Rockfield Boulevard, between Alton Parkway and the city limits, is an east/west four-lane street.
- **Jeronimo Road** is an east/west four-lane divided primary arterial. In the City of Mission Viejo, Jeronimo Road, between Lake Forest city limits and Alicia, is an east/west street.
- **Toledo Way** is an east/west four-lane undivided secondary arterial.
- **Avenida De La Carlota** is in the City of Laguna Hills, an east/west street between Lake Forest Drive and Los Alisos Boulevard.
- **Towne Centre Drive** is a north/south loop road connecting Alton Parkway on the north and south sides of SR-241.

- **Paseo De Valencia** is in the City of Laguna Hills, Paseo de Valencia, between I-5 and Los Alisos Boulevard, is an east/west street.
- **Los Alisos Boulevard** is in the City of Laguna Hills and in the City of Mission Viejo, Los Alisos, between Paseo de Valencia and Trabuco Road, is a north/south street.
- **Alicia Parkway** is in the City of Mission Viejo, Alicia Parkway, between I-5 and Trabuco Road, is a north/south street.

Existing A.M. and P.M. peak hour ramp volumes were taken from intersection counts at each location in the Traffic Study Area where freeway/tollway ramps intersect the arterial system. The observed peak hour ramp volumes were applied together with the ramp capacities to calculate existing A.M. and P.M. peak hour ramp V/C ratios and corresponding Levels of Service (LOS). Traffic LOS is designated "A" through "F" with LOS "A" representing free flow conditions and LOS "F" representing severe traffic congestion. (An explanation of LOS and ICU is provided under Section 3.14.4 [Methodology], later in this section). The freeway ramp analysis presented here, which analyzes individual ramp locations, differs from the previous peak hour intersection analysis that included ramp intersections with arterial streets. The ramp analysis involves the peak hour V/C of the ramp itself whereas the intersection analysis involves the ICU value of the ramp intersection with the arterial street. Figure 3.14-7 illustrates the interchange locations where freeway/tollway ramps were analyzed, and Table 3.14-2 summarizes existing peak hour V/C ratios for freeway/tollway ramps in the Traffic Study Area. The results indicate that the only ramp location in the Traffic Study Area currently operating worse than the LOS "E" performance standard (below the City performance standard) is the I-5 southbound off-ramp at Lake Forest Drive (P.M. LOS = F).

To determine existing peak hour operating conditions for mainline freeway and tollway segments, peak hour traffic count data was compiled for the freeway and tollway system in the Traffic Study Area. A.M. and P.M. peak hour traffic count data was obtained from Caltrans and the TCA, and that data was supplemented with A.M. and P.M. peak hour ramp volumes taken from intersection count data at locations where freeway/tollway ramps intersect the arterial system (the freeway/tollway ramp data was used to determine mainline peak hour volumes upstream and/or downstream from the locations where Caltrans and TCA count data was available).

Speed and travel time measurements taken by Caltrans for the freeway/tollway system give a measure of when and where such conditions occur (i.e., for the day or days on which such measurements are taken). Specific LOS values are assigned based on the measured speeds, the LOS being derived by comparing the measured speed with a minimum desirable operating speed (typically 35 mph). The travel time studies also reveal deficient freeway/tollway segments that are not in themselves a capacity problem but which are adversely affected by queue build-up from a deficient segment downstream. Hence, LOS values as determined from speed measurements may not equate to the V/C because a queue can extend back from a deficient segment to a segment with a relatively low V/C.

Legend

Freeway/tollway ramp interchange location

FIGURE **3.14-7**

Existing Interchange Locations

Not to Scale

10953-00

***Source*:** Austin-Foust Associates, Inc. 2005

City of Lake Forest

EIP ASSOCIATES

Table 3.14-2 Existing Freeway/Tollway Ramp LOS Summary

Interchange	Ramp	Lanes	Peak Hour Capacity	A.M. Peak Hour			P.M. Peak Hour		
				Volume	V/C	LOS	Volume	V/C	LOS
I-5 at Lake Forest	SB Direct On	1	1,500	66	.04	A	926	.62	B
	SB Loop On	1	1,080	568	.53	A	821	.76	C
	NB On	2	1,800	1,136	.63	B	879	.49	A
	SB Off	2	3,000	2,068	.69	B	3,053	1.02	F
	NB Off	1	1,500	1,171	.78	C	662	.44	A
I-5 at El Toro	SB Direct On	1	1,080	47	.04	A	431	.40	A
	SB Loop On	1	1,500	649	.43	A	986	.66	B
	NB Direct On	1	1,500	1,135	.76	C	765	.51	A
	NB Loop On	1	1,080	871	.81	D	743	.69	B
	SB Off	2	2,250	1,351	.60	A	1,213	.54	A
	NB Off	1	1,500	1,051	.70	B	1,142	.76	C
SR-241 at Alton	SB On	1	1,500	154	.10	A	152	.10	A
	NB On	1	1,500	482	.32	A	283	.19	A
	SB Off	1	1,500	253	.17	A	420	.28	A
	NB Off	1	1,500	161	.11	A	129	.09	A
SR-241 at Lake Forest	NB On	2	2,250	228	.10	A	434	.19	A
	SB Off	1	1,500	468	.31	A	261	.17	A
SR-241 at Portola (East)	SB On	1	1,500	291	.19	A	932	.62	B
	NB On	2	2,250	893	.40	A	276	.12	A
	SB Off	1	1,500	245	.16	A	580	.39	A
	NB Off	2	2,250	1,661	.74	C	382	.17	A

SOURCE: Austin-Foust, Inc. 2005b

Table 3.14-3 summarizes existing A.M. and P.M. peak hour V/C ratios for freeway/tollway mainline segments in the Traffic Study Area. The table shows the LOSs derived from the V/C ratios together with operating LOSs determined from Caltrans field measurements as summarized in the 2003 Orange County Congestion Management Program (Orange County Transportation Authority, 2003 Edition). The existing peak hour freeway/tollway mainline segment V/C and speed/travel time survey LOS analysis results indicate that I-5 in the Traffic Study Area currently operates at LOS "F" (i.e., worse than the LOS "E" performance standard) in the northbound direction during the A.M. and in the southbound direction during the P.M.

Planned Circulation System

The circulation system that is planned for 2030 (i.e., the County of Orange Master Plan of Arterial Highways or MPAH) is illustrated in Figure 3.14-8. This figure shows the mid-block travel lanes on individual arterial road and freeway/tollway mainline segments of the Traffic Study Area circulation system. Table 3.14-4 lists the roadway improvements within the Traffic Study Area, subdivided into the committed and noncommitted categories. Table 3.14-5 lists the committed intersection improvements.

Table 3.14-3 Existing Freeway/Tollway Mainline Peak Hour LOS Summary

Location	Direction	Lanes	Peak Hour Capacity	A.M. Peak Hour				P.M. Peak Hour			
				Volume	V/C	V/C LOS	Caltrans LOS[a]	Volume	V/C	V/C LOS	Caltrans LOS[a]
I-5 n/o Lake Forest	Northbound	8+2H	19,500	14,300	.73	D	F^0	10,350	.53	C	E
	Southbound	8+2H	19,500	10,230	.52	C	E	13,660	.70	C	F^2
I-5 n/o El Toro	Northbound	6+2H	15,500	13,520	.87	D	F^0	10,010	.65	C	E
	Southbound	6+2H	15,500	8,880	.57	C	E	12,210	.79	D	F^3
I-5 n/o Alicia	Northbound	~~4~~ 5+1H	9,600	12,250	1.28	F	F^3	9,290	.97	E	E
	Southbound	~~4~~ 5+1H	9,600	8,350	.87	D	E	12,040	1.25	F	F^3
SR-241 n/o Alton	Northbound	3	6,000	4,930	.82	D	E	1,610	.27	A	B
	Southbound	3	6,000	1,450	.24	A	B	3,570	.60	C	D
SR-241 n/o Lake Forest	Northbound	3	6,000	4,590	.77	D	D	1,440	.24	A	B
	Southbound	~~3~~ 2	6,000	1,300	.22	A	B	3,290	.55	C	D
SR-241 n/o Portola East	Northbound	3	6,000	4,360	.73	D	D	1,010	.17	A	B
	Southbound	3	6,000	830	.14	A	B	3,030	.51	C	D
SR-241 n/o Los Alisos	Northbound	3	6,000	5,130	.86	D	D	1,110	.19	A	B
	Southbound	3	6,000	880	.15	A	B	3,380	.56	C	D

SOURCE: Austin-Foust Associates, Inc. 2005b

H = high-occupancy vehicle lane LOS = level of service V/C = volume/capacity ratio

[a] Caltrans LOS values are from speed and travel time surveys carried out by Caltrans as summarized in the 2003 Orange County Congestion Management Program. The measured speeds in each segment reflect queue build-up from a downstream deficient segment and/or other prevailing conditions at the time the surveys were conducted. The superscript values for LOS "F" (i.e., 0, 1, 2, and 3) represent different lengths of time during which congested conditions occur in the peak period.

Legend

——— Existing Roadway
– – – – Future Roadway

FIGURE **3.14-8**

2030 Circulation System with Midblock Lanes

Not to Scale

10953-00

Source: Austin-Foust Associates, Inc. 2005

City of Lake Forest

EIP ASSOCIATES

Table 3.14-4 Summary of Committed and Noncommitted Roadway Improvements in Lake Forest and Immediate Vicinity

Roadway	Limits	Jurisdiction	Lanes		Source
			2004	2030	
Committed					
Alton Pkwy	Irvine Blvd to SR-241	Irvine/ Lake Forest	—	6D	Foothill Circulation Phasing Program (FCPP) administered by the County and Measure M
El Toro Rd	Muirlands Blvd to Avenida de la Carlota	Lake Forest/ Laguna Hills	6D	8D	City of Lake Forest and Measure M and FCPP
Rancho Pkwy	Existing terminus to Alton Pkwy	Lake Forest	—	4D	Shea/Baker
Rancho Pkwy	Lake Forest Dr to Portola Pkwy	Lake Forest	—	4D	Baker Ranch
SR-133	I-5 to Irvine Blvd	Caltrans/TCA	4T	6T	TCA CIP
SR-133	Irvine Blvd to SR-241	Caltrans/TCA	6T	8T	TCA CIP
SR-133	Interchange at Trabuco Rd	Irvine/Caltrans/TCA	—	I/C	NITM Program
SR-241	SR-133 to SR-261	Caltrans/TCA	5T	6T	TCA CIP
SR-241	Lake Forest Dr to Los Alisos Blvd	Caltrans/TCA	4T	8T	TCA CIP
SR-241	Portola Pkwy (W) to Lake Forest Dr	Caltrans/TCA	6T	8T	TCA CIP
El Toro Rd	Glenn Ranch Rd to Live Oak Canyon Rd	Lake Forest/County	2U	6D	El Toro Road Fee Program
El Toro Rd	Marguerite Pkwy to Glenn Ranch Rd	Mission Viejo	5D	6D	El Toro Road Fee Program
Noncommitted					
El Toro Rd	Trabuco Rd to Muirlands Blvd	Lake Forest	6D	8D	Unfunded[1]
Los Alisos Blvd	Rockfield Blvd to Avenida Carlota	Lake Forest/ Laguna Hills	4U	6D	Unfunded
Portola Pkwy	Alton Pkwy to SR-241	County	—	4D	Unfunded[2]
Portola Pkwy	SR-241 to El Toro Road	Lake Forest	6D	8D	Unfunded
Ridge Route Dr	Rockfield Blvd to Avenida Carlota	Lake Forest/ Laguna Hills	—	4U	Unfunded[2]
Ridge Route Dr	Jeronimo Rd to Muirlands Blvd at the railroad crossing	Lake Forest	2U	4U	Unfunded[2]
Trabuco Rd	Bake Pkwy to Lake Forest Dr	Lake Forest	5D	6D	Unfunded

Lane abbreviations:
D = Divided Roadway Lane
I/C = Interchange
T = Toll Road Lane
U = Undivided Roadway Lane

Other abbreviations:
CIP = Capital Improvement Program
NITM = North Irvine Transportation Mitigation
TCA = Transportation Corridor Agencies

[1] Recent studies have shown that eight dedicated lanes are not required at this location. Although this improvement is listed in the County Master Plan of Arterial Highways (MPAH) and the City's General Plan Circulation Element, it is not a candidate for implementation at this time. Refer to the Lake Forest Traffic Mitigation (LFTM) Program for additional information.

[2] These improvements are listed on the County Master Plan of Arterial Highways (MPAH) and the City's General Plan Circulation Element, however, they are not candidates for implementation at this time. Refer to the Lake Forest Traffic Mitigation (LFTM) Program for additional information.

Table 3.14-5 Summary of Committed Intersection Lane Improvements		
Intersection (NS & EW)	*Improvements*	*Source*
6. Alton & SR-241 Ramps	Add 3rd southbound thru and 3rd northbound thru	County/Irvine/Lake Forest and Measure M
33. El Toro & Rockfield	Add 4th southbound thru, westbound right-turn, 4th northbound thru, de facto northbound right-turn and free eastbound right-turn	Lake Forest and Measure M
38. El Toro & Bridger/I-5 NB Ramps	Add 4th southbound thru and convert southbound right-turn to shared 5th southbound thru/southbound right-turn	Lake Forest and Measure M
39. El Toro & Avenida Carlota	Add 4th northbound thru	City of Laguna Hills
40. Portola & Rancho	New intersection	Baker Ranch
41. Alton & Towne Centre Dr	New intersection	Shea/Baker
42. Alton & Commercentre	New intersection	Shea/Baker
See Table B-1 in Appendix I for detailed lane geometric assumptions for the above intersections.		

3.14.3 Planning and Regulatory Framework

The management of the roadway network is subject to laws and regulations at the state and local level. Summaries of relevant laws and regulations are presented below.

Federal

There are no federal transportation regulations pertinent to the Proposed Project.

State

Statewide Transportation Improvement Program (STIP)

The California Department of Transportation (Caltrans) administers transportation programming. Transportation programming is the public decision making process which sets priorities and funds projects envisioned in long-range transportation plans. It commits expected revenues over a multi-year period to transportation projects. The STIP is a multi-year capital improvement program of transportation projects on and off the State Highway System, funded with revenues from the State Highway Account and other funding sources.

Local

Orange County Congestion Management Plan

The Congestion Management Plan (CMP) requires that a traffic impact analysis be conducted for any project generating 2,400 or more daily trips, or 1,600 or more daily trips for projects that directly access the CMP Highway System (HS). Per the CMP guidelines, this number is based on the desire to analyze any impacts that will be 3 percent or more of the existing CMP highway system facilities' capacity. The

CMPHS includes specific roadways, which include State Highways and Super Streets, which are now known as Smart Streets, and CMP arterial monitoring locations/intersections. Therefore, the CMP traffic impact analysis (TIA) requirements relate to the potential impacts only on the specified CMPHS. The CMP highway system arterial facilities and CMP arterials closest to the Traffic Study Area consist of Irvine Boulevard/Trabuco Road and El Toro Road. The CMP arterial monitoring locations/intersections within the Traffic Study Area include Trabuco Road/El Toro Road, El Toro Road/I-5, and within the Extended Study Area, Moulton Parkway/El Toro Road and Irvine Boulevard/SR-133.

Orange County Growth Management Plan

In August, 1988, the County of Orange adopted a Growth Management Plan Element which presents a conceptual framework for coordinating traffic facilities and public facilities and services with new development. The Growth Management Plan Element also spawned several plans and programs, including the Development Monitoring Program, which evaluates the extent of new development and compliance with phasing requirements, and the Facilities Implementation Plans, which evaluate public facility needs and propose financing mechanisms. The Orange County Growth Management Plan Element and related plans are important to the City because these plans affect the contract services provided to the City by the County.

The most comprehensive legislation affecting growth management is Measure M, approved by the County voters in November, 1990. The measure requires each jurisdiction in the County to adopt a Growth Management Plan with specific contents and guidelines. Because its requirements are so comprehensive, Measure M is perhaps the most important piece of legislation currently affecting growth management.

North Irvine Transportation Mitigation (NITM) Program

The NITM Program established a funding mechanism for the transportation improvement mitigation measures identified in the EIRs for three future development projects in north: (1) Spectrum 8/PA40, (2) Irvine Northern Sphere Area (PAs 5B, 6, 8A, 9A and 9B), and (3) the Orange County Great Park. Post-2025 circulation system improvements in the NITM Program included within the City of Irvine portion of the Extended Study Area are included in the 2030 buildout scenario of the traffic impact analysis. Improvements identified in the NITM included intersections in Lake Forest with a specified funding share of those improvements included in the NITM.

City of Lake Forest General Plan

The City of Lake Forest General Plan contains goals, policies, and plans that are intended to guide land use and development decisions. The General Plan consists of a Land Use Policy Map and the following six elements, or chapters, which together fulfill the state requirements for a General Plan:

- Land Use Element
- Housing Element
- Circulation Element
- Recreation and Resources Element
- Safety and Noise Element

- Public Facilities/Growth Management Element

The Circulation Element contains policies that relate to traffic and circulation.

Six major issues are addressed by the goals, policies, and implementation actions of the Circulation Element. These major issues include (1) supporting the development of regional transportation facilities; (2) providing a suitable system of City roadways; (3) increasing the use of public transit and non vehicular modes of travel; (4) ensuring the existence of convenient and suitable parking for vehicles; (5) improving the efficiency of the transportation system and controlling demands on the system; and (6) identifying and utilizing sources of funding for transportation system improvements.

Goal 1.0 Support for the development of an efficient network of regional transportation facilities.

Goal 2.0 A system of roadways in the community that meets local needs.

Policy 2.1 Provide and maintain a City circulation system that is in balance with planned land uses in Lake Forest and surrounding areas in the region.

Policy 2.3 Improve the Lake Forest circulation system roadways in concert with land development to ensure adequate levels of service.

Goal 3.0 Increased use of public transportation.

Policy 3.1 Promote the provision of public transit facilities within areas of major development.

Policy 3.3 Encourage the provision of special transit services in Lake Forest.

Policy 3.4 Promote access and public transit service between Lake Forest and regional-serving transportation centers.

Goal 4.0 Promotion of non vehicular modes of travel.

Policy 4.1 Promote the provision of non vehicular circulation within Lake Forest.

Policy 4.2 Provide and maintain a non vehicular component of the Lake Forest overall circulation system that supports bicycles, equestrians, and pedestrians and is coordinated with those of other service districts in Lake Forest and with adjacent jurisdictions.

Policy 4.3 Improve pedestrian access from neighborhoods to commercial areas.

Goal 5.0 Convenient and suitable parking facilities for motorized and non motorized vehicles.

Policy 5.1 Require sufficient off street parking for all land uses and maximize the use of parking facilities in Lake Forest.

Policy 5.2 Eliminate the use of on street parking on identified arterial streets where maximum traffic flow is desired.

Policy 5.3 Promote the provision of access between the parking areas of adjacent properties along arterial roadways to improve overall traffic flow.

Goal 6.0 Maximized transportation system efficiency.

Policy 6.1 Improve operational measures of the traffic system designed to maximize the efficiency of the system while minimizing delay and congestion.

Policy 6.2 Improve intersection capacity at key intersections to improve traffic flow.

Goal 7.0 Utilization of various financing methods to improve the overall transportation system.

Policy 7.1 Utilize available financing methods and sources of funding to make necessary improvements to the overall transportation system in Lake Forest.

Policy 7.3 Maintain the transportation standards required to qualify for revenue from the Congestion Management Plan and the Revised Traffic Improvement and Growth Management Ordinance (Measure M).

City of Lake Forest Municipal Code

Guidelines and provisions related to traffic and circulation are addressed in Chapter 12 (Vehicles and Traffic) of the City Municipal Code. Chapter 9 addresses parking.

Chapter 12.04 General Provisions and Administration

Section 12.04.020 (Sec 6-4-201) County Traffic Engineering

The Traffic Engineering Section through the authority of the Director is hereby charged with the responsibility, under the powers and duties specified in this division, to carry out and review all traffic engineering functions affecting the City.

Section 12.04.020 (Sec 6-4-202) Duties of Traffic Engineering

It shall be the general duty of Traffic Engineering to determine the installation, design, operation, and maintenance of traffic-control devices, design and/or review traffic flow systems and appurtenances, conduct engineering analyses of traffic accidents; devise remedial measures; conduct engineering and traffic investigations of traffic conditions. Traffic Engineering shall also cooperate with the California Highway Patrol, the Orange County Sheriff's Department, the Orange County Fire Authority, and other agencies as appropriate in the development of ways and means to improve traffic conditions and carry out the additional duties imposed by the ordinances of the City.

Chapter 9.168 City Parking Standards

According to the Municipal Code, the purpose and intent of off-street parking requirements is "…to provide for the on-site, off-street parking of motor vehicles that are attracted by the use or uses on the

premises." Off-street parking does not count toward any on-site parking requirements. With regard to the Proposed Project, Business Park uses generally contain a mix of office, manufacturing, and warehouse uses. Required parking is calculated based on the proposed mix of uses identified in the floor plan. Table 3.14-6 lists off-street parking requirements.

Table 3.14-6 Off-Street Parking Requirements

Use	*Off-Street Parking Requirement (number of spaces)*
Office	1 parking space for every 250 square feet of gross floor area
Commercial	1 parking space for every 200 square feet of gross floor area
Manufacturing	1 parking space for every 500 square feet of gross floor area
Warehouse (storage only)	1 parking space for every 1,000 square feet of gross floor area
Residential—Multifamily	One-bedroom units: 1.5 spaces (1 must be covered) Two-bedroom units: 2 spaces (1 must be covered) Three-plus-bedroom units: 2.5 spaces, plus 0.5 space per each bedroom in excess of 3 bedrooms (2 must be covered)
Residential—Single Family	2 covered parking spaces for each dwelling. Dwellings with less than a 17-foot setback from back of sidewalk to garage shall provide 1 additional space within 200 feet of the dwelling.

SOURCE: City of Lake Forest Municipal Code

Lake Forest Traffic Mitigation (LFTM) Program

The proposed project includes the adoption of the Lake Forest Traffic Mitigation (LFTM) Program. The LFTM Program is a set of citywide transportation improvements designed to maintain adequate levels of service on the City's arterial street system. The LFTM Program will become part of the City's Municipal Code through an adopted Ordinance and will contain provisions for the payment of LFTM fees as development occurs. Table 3.14-7 lists the transportation improvements that are included in the LFTM:

The LFTM program is designed to mitigate both potential impacts of the Proposed Project and the existence of unfunded MPAH improvements, specifically: the extension of Portola Parkway from just west of Alton Parkway to SR-241, the extension of Ridge Route Drive from just west of Rockfield Boulevard to Avenida de la Carlota, and the widening and grade separation of Ridge Route Drive at the railroad crossing between Jeronimo Road and Muirlands Boulevard. The time frame for implementing these unfunded improvements is currently unknown, and future MPAH amendments could affect the implementation of some or all of the improvements. Accordingly, the City developed the LFTM Program to address a future scenario with buildout of the Proposed Project that does not include these new roadway links in the LFTM implementation time frame. The intent was to ensure adequate levels of service without these links so that a fully funded implementation program could be established to address the 2030 traffic demands in the City of Lake Forest with the Proposed Project.

Table 3.14-7 LFTM Improvements		
Intersection	*Improvement*	*Funding*
2. Bake & Portola	Add 3rd WBT or 2nd EBL	LFTM Program
10. Lake Forest & Rancho	Restripe WB and remove WBR to show 2 WBL, 2 WBT and add de facto WBR and 2nd EBT	LFTM Program
12. El Toro & Portola/Santa Marg.	Add 2nd NBL	LFTM Program
14. Bake & Irvine/Trabuco	Add 2nd NBL, convert 3rd WBT and WBR to 4th WBT and restripe 3rd EBT to shared 3rd EBT/2nd EBR Add de facto WBR	NITM Program LFTM Program
17. El Toro & Trabuco	Add de facto NBR and de facto WBR	LFTM Program
22. Bake & Jeronimo	Add 2nd NBL	NITM Program
23. Lake Forest & Jeronimo	Add de facto EBR	NITM and LFTM Programs
26. Los Alisos & Jeronimo	Restripe WB and remove WBR to 2 WBL, 2 WBT and add de facto WBR and 2nd EBL	NITM and LFTM Programs
30. Los Alisos & Muirlands	Add 2nd NBL, de facto NBR, 2nd SBL and 2nd EBL	NITM and LFTM Programs
31. Lake Forest & Rockfield	Restripe 2nd WBT to shared 3rd WBL/2nd WBT	NITM and LFTM Programs
34. Los Alisos & Rockfield	Add SBR	NITM and LFTM Programs
36. Lake Forest & I-5/Carlota	Restripe shared 3rd EBL/2nd EBT to 3rd EBL, add 2nd WBL and right-turn overlap for WBR Add 2nd EBT	NITM Program LFTM Program
37. Paseo De Valencia & Carlota	Restripe 2nd SBT to shared 3rd SBL/2nd SBT[3]	NITM and LFTM Programs and Laguna Hills
39. El Toro & Avenida Carlota	Restripe EB to 2 EBL, EBT and shared 2nd EBT/EBR and restripe WB to shared WBL/WBT and 2 WBR with overlap	NITM and LFTM Programs and Laguna Hills
41. Alton & Towne Centre Dr	Add 2nd WBL	LFTM Program
105. Alton & Irvine	Remove E/W split phasing, restripe shared 3rd EBL/3rd EBT to full 3rd EBL and add 3rd EBT and de facto EBR	LFTM Program
117. Alton & Toledo	Add a WB right-turn overlap	LFTM Program
125. Bake & Rockfield	Restripe shared 3rd WBL/2nd WBT to full 3rd WBL, remove E/W split phasing and free WBR and add 2nd WBT and de facto WBR	LFTM Program

W = west; E = east; WB = westbound; EB = eastbound; SB = southbound; NB = northbound; T = through; EBL = eastbound left turn; WBR = westbound right turn; ICU = Intersection Capacity Utilization; LFTM = Lake Forest Transportation Mitigation Program; NITM = North Irvine Transportation Mitigation Program

The LFTM Program builds on those citywide improvements that are currently committed and funded without dependence on the unfunded MPAH improvements. It establishes the additional improvements needed to achieve acceptable level of service (LOS) standards and establishes a process for the timing, prioritization and monitoring of improvements. Development of an improvement program that is not dependent on the unfunded MPAH improvements ensures that the program can achieve its goals and mitigate project traffic impacts in the event that the unfunded MPAH improvements are not built in the timeframe anticipated in the General Plan.

LFTM addresses the potential for lag time between the creation of vehicle trips and improvement implementation by creating: (1) an annual monitoring and prioritizing process and (2) providing a trip allocation formula and financing alternatives that will front-load traffic mitigation.

3.14.4 Methodology

The traffic analysis identifies project-induced changes in the Levels of Service (LOS), Volume to Capacity (V/C), and Intersection Capacity Utilization (ICU) in the Traffic Study Area. Traffic LOS is designated "A" through "F," with LOS "A" representing free flow conditions and LOS "F" representing severe traffic congestion. Table 3.14-8 summarizes the (V/C) ranges that correspond to LOS "A" through "F" for freeway/tollway segments. The V/C ranges listed for arterial roads are designated in the Orange County Congestion Management Program (CMP) as well as the General Plan for the City of Lake Forest and for the other jurisdictions within the Traffic Study Area. The V/C ranges listed for freeway/tollway segments are based on the V/C and LOS relationships specified in the 2000 Highway Capacity Manual (HCM 2000) for basic freeway sections.

Table 3.14-8 Volume/Capacity Ratio Level of Service Ranges

Level of Service (LOS)	Volume/Capacity (V/C) Ratio Range	
	Arterial Roads	Freeway Segments
A	0.00–0.60	0.00–0.30
B	0.61–0.70	0.31–0.50
C	0.71–0.80	0.51–0.71
D	0.81–0.90	0.72–0.89
E	0.91–1.00	0.90–1.00
F	Above 1.00	Above 1.00

The methodology and assumptions applied in this study are summarized in Table 3.14-9. The methodology includes components for intersections, freeway/tollway ramps, and freeway/tollway mainline segments and is based on LOS calculation methodologies and performance standards that have been adopted by the City of Lake Forest and/or by governing jurisdictions outside the City of Lake Forest and by the OCTA as part of the CMP. When analyzing individual locations on the Traffic Study Area circulation system, the criteria of the jurisdiction in which a given facility is located have been applied in this study.

The intersection criteria involve the use of peak hour ICU values. The ICU ranges that correspond to LOS "A" through "F" are the same as the V/C ranges shown in Table 3.14-8 for arterial roads. LOS "E" (ICU not to exceed 1.00) is the performance standard specified for CMP intersections and is applied in this analysis for CMP locations outside the Cities of Lake Forest and Irvine. LOS "E" is also the performance standard adopted by the City of Irvine for the intersections of Bake Parkway/I-5 northbound and southbound ramp intersections, Alton Parkway/Irvine Boulevard, Alton Parkway/I-5 northbound ramps and Irvine Center Drive/Lake Forest Drive. LOS "D" (ICU not to exceed 0.90) is the performance standard for the remaining intersections in the Traffic Study Area.

Table 3.14-9 Methodology and Assumptions for Locations Analyzed within the Traffic Study Area

I. INTERSECTIONS

V/C Calculation Methodology

Level of service to be based on peak hour intersection capacity utilization (ICU) values calculated using the following assumptions:

- Saturation Flow Rate: 1,700 vehicles/hour/lane
- Clearance Interval: .05
- Right-Turn-On-Red Utilization Factor*: .75

Performance Standard

CMP intersections outside the Cities of Lake Forest and Irvine, and the intersections of Bake Parkway/I-5 northbound and southbound ramps, Alton Parkway/Irvine Boulevard, Alton Parkway/I-5 northbound ramps and Irvine Center Drive/Lake Forest Drive: Level of Service E (peak hour ICU less than or equal to 1.00).

All other intersections: Level of Service D (peak hour ICU less than or equal to .90).

Mitigation Requirement

For ICU greater than the acceptable level of service, mitigation of the project contribution is required to bring intersection back to acceptable level of service or to no-project (existing General Plan) conditions if project contribution is greater than .03 at CMP locations outside the Cities of Lake Forest and Irvine (the impact threshold specified in the CMP) and .02 or greater for all other intersections in the Traffic Study Area.

II. FREEWAY/TOLLWAY RAMPS

V/C Calculation Methodology

Level of service to be based on peak hour volume/capacity (V/C) ratios calculated using the following capacities:

- Metered On-Ramps
  - A maximum capacity of 900 vehicles per hour (vph) for a one-lane metered on-ramp with only one mixed-flow lane at the meter.
  - A maximum capacity of 1,080 (20 percent greater than 900) vph for a one-lane metered on-ramp with one mixed-flow lane at the meter plus one high occupancy vehicle (HOV) preferential lane at the meter.
- Metered On-Ramps (cont)
  - A maximum capacity of 1,500 vph for a one-lane metered on-ramp with two mixed-flow lanes at the meter.
  - A maximum capacity of 1,800 vph for a two-lane metered on-ramp with two mixed-flow lanes at the meter.
- Toll Ramps (On-Ramps and Off-Ramps)
  - A maximum capacity of 1,500 vph for a one-lane toll ramp with one cash (stopped) lane and one FasTrak (unstopped) lane.
- Non-Metered and Non-Tolled On-Ramps and Off-Ramps
  - A maximum capacity of 1,500 vph for a one-lane ramp.
  - A maximum capacity of 2,250 (50 percent greater than 1,500) vph for a two-lane on-ramp that tapers to one merge lane at or beyond the freeway mainline gore point and for a two-lane off-ramp with only one auxiliary lane.
  - A maximum capacity of 3,000 vph for a two-lane on-ramp that does not taper to one merge lane and for a two-lane off-ramp with two auxiliary lanes.

Performance Standard

Level of Service E (peak hour V/C less than or equal to 1.00).

Mitigation Requirement

For V/C greater than the acceptable level of service, mitigation of the project contribution is required to bring ramp back to acceptable level of service or to no-project (existing General Plan) conditions if project contribution is greater than .03 for ramps at CMP intersections outside the Cities of Lake Forest and Irvine (the impact threshold specified in the CMP) and .02 or greater for all other ramps in the Traffic Study Area.

Table 3.14-9 Methodology and Assumptions for Locations Analyzed within the Traffic Study Area

III. FREEWAY/TOLLWAY MAINLINE SEGMENTS
V/C Calculation Methodology
Level of service to be based on peak hour V/C ratios calculated using the following capacities: ▪ 2,000 vehicles per hour per lane (vphpl) for mixed-flow (general purpose) lanes. ▪ 1,600 vphpl for a one-lane buffer-separated HOV facility. ▪ 1,750 vphpl for a two-lane buffer-separated HOV facility.
Performance Standard
Level of Service E (peak hour V/C less than or equal to 1.00).
Mitigation Requirement
For V/C greater than the acceptable level of service, mitigation of the project contribution is required to bring freeway/tollway mainline location back to acceptable level of service or to no-project (existing General Plan) conditions if project contribution is greater than .03 (the impact threshold specified in the CMP).

CMP = Orange County Congestion Management Program

* "De facto" right-turn lane is assumed in the ICU calculation if 19 feet from edge to outside of through-lane exists and parking is prohibited during peak periods.

The freeway/tollway ramp and freeway/tollway mainline criteria are based on peak hour V/C ratios. The freeway/tollway ramp and mainline capacities applied in this analysis are based on information contained in the Caltrans Ramp Meter Design Manual and Caltrans Highway Design Manual. LOS "E" (V/C not to exceed 1.00) has been established by the OCTA in the CMP for CMP facilities (the freeway/tollway system in the Traffic Study Area is included in the CMP roadway network) as the operating standard for freeway/tollway ramps and freeway/tollway mainline segments.

Table 3.14-10 and Table 3.14-11 summarize the general LOS descriptions for intersections and freeways/tollways, respectively.

Traffic Forecasting Methodology

This analysis identifies traffic impacts of the Proposed Project based on 2030 future traffic conditions in the Traffic Study Area. The traffic forecasts within the Traffic Study Area were developed using the Lake Forest Traffic Analysis Model (LFTAM) which is derived from the Orange County Transportation Analysis Model (OCTAM) maintained by the Orange County Transportation Authority (OCTA). The traffic forecasts for the Extended Traffic Study Area are based on the City of Irvine's Irvine Transportation Analysis Model (ITAM) used for the North Irvine Transportation Mitigation (NITM) Program (Austin-Foust Associates, Inc. 2003). The LFTAM was used to find the differential between the existing General Plan and each of the land use plans as an increment of overall traffic projections. The differential was then applied to the NITM forecasts resulting in the traffic volumes for the Extended Traffic Study Area.

Table 3.14-10 Level of Service Descriptions—Signalized Intersections

Levels of service (LOS) for signalized intersections are defined in terms of control delay as follows:

LOS	Description	Delay per Vehicle (Secs)
A	LOS "A" describes operations with low control delay, up to 10 seconds per vehicle. This LOS occurs when progression is extremely favorable and most vehicles arrive during the green phase. Many vehicles do not stop at all. Short cycle lengths may tend to contribute to low delay values.	< 10
B	LOS "B" describes operations with control delay greater than 10 and up to 20 seconds per vehicle. This level generally occurs with good progression, short cycle lengths, or both. More vehicles stop than the LOS "A", causing higher levels of delay.	10–20
C	LOS "C" describes operations with control delay greater than 20 and up to 35 seconds per vehicle. These higher delays may result from only fair progression, longer cycle lengths, or both. Individual cycle failures may begin to appear at this level. Cycle failure occurs when a given green phase does not serve queued vehicles, and overflows occur. The number of vehicles stopping is significant at this level, though many still pass through the intersection without stopping.	20–35
D	LOS "D" describes operations with control delay greater than 35 and up to 55 seconds per vehicle. At LOS "D", the influence of congestion becomes more noticeable. Longer delays may result from some combination of unfavorable progression, long cycle lengths, and high V/C ratios. Many vehicles stop, and the proportion of vehicles not stopping declines. Individual cycle failures are noticeable.	35–55
E	LOS "E" describes operations with control delay greater than 55 and up to 80 seconds per vehicle. These high delay values generally indicate poor progression, long cycle lengths, and high V/C ratios. Individual cycle failures are frequent.	55–80
F	LOS "F" describes operations with control delay in excess of 80 seconds per vehicle. This level, considered unacceptable to most drivers, often occurs with oversaturation, that is, when arrival flow rates exceed the capacity of lane groups. It may also occur at high V/C ratios with many individual cycle failures. Poor progression and long cycle lengths may also contribute significantly to high delay levels.	> 80

SOURCE: Highway Capacity Manual 2000, Transportation Research Board, National Research Council

The LFTAM was developed according to the Orange County sub-area traffic modeling guidelines that have been adopted by the OCTA, and the OCTA has certified the traffic model as being consistent with the OCTAM regional model.

For descriptive purposes, the modeling processes in the LFTAM can be divided into the following three general components:

1. Trip Generation
2. Trip Distribution/Mode Choice
3. Traffic Assignment

In the trip generation component of the traffic model, the amount of vehicle traffic generated by existing and future land use development is estimated. In the LFTAM, land use data is defined according to specific land use categories. The information is quantified by traffic analysis zones (TAZs) that have been defined in the City of Lake Forest as well as throughout the remainder of the study model area. For trip generation purposes, land use data is typically comprised of detailed information by acreage or floor area for nonresidential uses and number of dwelling units by density classification for residential uses. As

Table 3.14-11 Level of Service Descriptions—Freeways/Tollways	
LOS	*Description*
A	LOS "A" describes free-flow operations. Free-flow speeds (FFS) prevail. Vehicles are almost completely unimpeded in their ability to maneuver with the traffic stream. The effects of incidents or point breakdowns are easily absorbed at this level.
B	LOS "B" represents reasonably free-flow, and FFS are maintained. The ability to maneuver with the traffic stream is only slightly restricted, and the general level of physical and psychological comfort provided to drivers is still high. The effects of minor incidents and point breakdowns are still easily absorbed.
C	LOS "C" provides for flow with speeds at or near the FFS of the freeway/tollway. Freedom to maneuver within the traffic stream is noticeably restricted, and lane changes require more care and vigilance on the part of the driver. Minor incidents may still be absorbed, but the local deterioration in service will be substantial. Queues may be expected to form behind any significant blockage
D	LOS "D" is the level at which speeds begin to decline slightly with increasing flows and density begins to increase somewhat more quickly. Freedom to maneuver within the traffic stream is more noticeably limited, and the driver experiences reduced physical and psychological comfort levels. Even minor incidents can be expected to create queuing, because the traffic stream has little space to absorb disruptions.
E	At its highest density value, LOS "E" describes operation at capacity. Operations at this level are volatile, because there are virtually no usable gaps in the traffic stream. Vehicles are closely spaces, leaving little room to maneuver with the traffic stream at speeds that still exceed 49 miles per hour. Any disruption of the traffic stream, such as vehicles entering from a ramp or a vehicle changing lanes, can establish a disruption wave that propagates throughout the upstream traffic flow. At capacity, the traffic stream has no ability to dissipate even the most minor disruption, and any incident can be expected to produce a serious breakdown with extensive queuing. Maneuverability with the traffic stream is extremely limited, and the level of physical and psychological comfort afforded the driver is poor.
F	LOS "F" describes breakdowns in vehicular flow. Such conditions generally exist within queues forming behind breakdown points, and are the result of a bottleneck downstream point. LOS "F" is also used to describe conditions at the point of the breakdown or bottleneck and the queue discharge flow that occurs at speeds lower than the lowest speed for LOS "E," as well as the operations within the queue that forms upstream. Whenever LOS "F" conditions exist, they have the potential to extend upstream for significant distances.
SOURCE: Highway Capacity Manual 2000, Transportation Research Board, National Research Council	

part of the modeling process, the land use data is converted to socioeconomic categories such as dwelling units, population, employment, workers per household and income. The socioeconomic categories applied in the traffic model are the same categories that are applied in the OCTAM regional model. Vehicle trip generation estimates for the LFTAM are produced using socioeconomic trip generation rates that yield similar trip generation to land use based trip generation rates.

In the trip distribution/mode choice component of the traffic model, vehicle trip generation estimates are distributed using regional travel forecast data from the OCTAM model, thereby incorporating regional trip distribution patterns into the LFTAM. The regional traffic data is obtained from the OCTAM regional model in the form of vehicle trips, and hence also incorporates mode choice relationships (i.e., vehicle occupancy, transit trips, etc.) established in the OCTAM regional model. The resulting vehicle trip patterns are converted to actual traffic volumes on the roadway system in the traffic assignment component of the LFTAM. The traffic assignment component applies procedures that are sensitive to the capacity of the circulation system network and give forecast peak hour (A.M. and P.M.) volumes as well as average daily traffic (ADT) traffic volumes on that network.

Traffic Scenarios

The following traffic scenarios were included in the traffic analysis for the Study Area and Extended Study Area to identify potential traffic impacts caused by cumulative development and by the Proposed Project:

- **Existing Conditions**
- **2030 General Plan**—Existing conditions, plus cumulative development (City of Lake Forest General Plan development and cumulative projects), plus MPAH improvements
- **2030 Project**—Existing conditions, plus cumulative development (proposed project and cumulative projects), plus MPAH improvements (Chapter 4 of the Traffic Study)
- **2030 LFTM Needs**—Existing conditions, plus cumulative development (proposed project and cumulative projects), plus funded MPAH improvements (Chapter 5 of the Traffic Study)
- **2030 LFTM**—Existing conditions, plus cumulative development (proposed project and cumulative projects), plus funded MPAH improvements, plus LFTM improvements

Thresholds of Significance

The City's 2001 CEQA Significance Thresholds include traffic and circulation. Therefore, for purposes of this EIR, the Proposed Project would result in significant impacts related to traffic and circulation if any of the following thresholds are exceeded:

Long-Range Area-Wide Project

Project traffic causes the level of service (LOS) on a roadway to exceed the following LOS standards (excluding roadways on the CMP highway network and commercial corridors):

- Level of Service C—Two-lane and four-lane roadways
- Level of Service D—Six-lane and eight-lane roadways

Project-Specific

- If both of the following criteria are met:
  1. ICU values at intersections, with the Proposed Project, exceed the City of Lake Forest and County Growth Management Plan minimum level of service performance standard (LOS D)
  2. ICU values with the Proposed Project increase of more than 0.01 compared to the "without project" scenario ICU values at intersections that are operating at LOS E or F
- The Proposed Project includes design features or uses that may cause traffic hazards such as sharp curves, tight turning radii from streets, limited roadway visibility, short merging lanes, uneven road grades, or any other conditions determined by the City traffic engineer to be a hazard.

Parking

- The Proposed Project provides less parking than required, applying the standards found in the City of Lake Forest Municipal Code.

Adjoining City Criteria

The Traffic Study Area and Extended Traffic Study Area also include roadways outside of Lake Forest. For purposes of this EIR, the Project would result in significant impacts related to traffic and circulation if it would do the following:

- Exceed Level of Service E (peak hour ICU less than or equal to 1.00) for CMP intersections outside the Cities of Lake Forest and Irvine, and the intersections of Bake Parkway/I-5 northbound and southbound ramps, Alton Parkway/Irvine Boulevard, Alton Parkway/I-5 northbound ramps and Irvine Center Drive/Lake Forest Drive
- Exceed Level of Service D (peak hour ICU less than or equal to .90) for all other intersections outside of Lake Forest
- Exceed Level of Service E (peak hour V/C less than or equal to 1.00) for Freeway/Tollway Ramps and Freeway Mainline Segments

3.14.5 Impacts

The impact analysis is designed to address several questions:

1. What is the impact of the Proposed Project compared to existing conditions in the Study Area and Extended Study Area at the time the Notice of Preparation was issued? This question is typically analyzed in EIRs by comparing existing conditions to an existing plus project scenario. Chapter 5 of the traffic study (Appendix I) contains such an analysis and explains that, because of the nature of this Project, a comparison of existing conditions to an existing plus project scenario does not accurately represent the potential traffic impacts caused by buildout of the Proposed Project. Any comparative traffic analysis of full buildout of the Proposed Project versus existing traffic conditions is hypothetical because the timing of both planned roadway improvements and development on the project sites is not certain. Actual buildout of the Proposed Project may not occur for eight to ten years. The timing of many of the MPAH improvements is not known. Thus a meaningful analysis of a either an existing plus project or interim scenario is not feasible. For this reason, this question of the Proposed Project's impacts is addressed by using a two part process. First the Existing Scenario is compared with the 2030 Project Scenario. This is a worst-case scenario. This phase of the analysis thus identifies the cumulative impacts of the Proposed Project and past, present and reasonably foreseeable cumulative projects and planned roadway improvement in the project vicinity. During the second part of the analysis, the impacts of cumulative projects are separated from the net impacts of the Proposed Project through a comparison of the 2030 Project Scenario with the 2030 General Plan Scenario.
2. What are the likely actual impacts of developing the Proposed Project? This question is addressed by comparing the Project Scenario with the General Plan Scenario.
3. What are the traffic/transportation related benefits associated with the LFTM program? This question is addressed by comparing the LFTM Scenario with the General Plan Scenario. Since the proposed project includes adoption of the LFTM, which is designed to address both project impacts and the existence of unfunded MPAH improvements, an understanding of the benefits of the project with LFTM is important to a true understanding of both the positive and negative impacts of the proposed project.

Project Land Use and Trip Generation

Table 3.14-12 summarizes the land use and trip generation in the Project Area (i.e., the 7 Opportunities Study sites) for buildout (2030) under Proposed Project conditions. Detailed land use and trip generation summaries for each site can be found in Appendix I.

Table 3.14-12 Proposed Project Land Use and Trip Generation Summary

Land Use	Units	A.M. Peak Hour			P.M. Peak Hour			ADT
		In	Out	Total	In	Out	Total	
Single-Family Detached	1,574 DU	298	881	1,179	1,007	582	1,589	15,063
Condominium	2,042 DU	347	1,023	1,370	919	674	1,593	16,642
Apartment	1,799 DU	180	738	918	719	396	1,115	12,090
Commercial (EQ)	448.72 TSF	386	248	634	1,102	1,194	2,296	26,389
Park	51 Acre	0	0	0	1	1	2	80
Business Park	200 TSF	240	46	286	60	198	258	2,552
Sites 1–6 (using trip rates below)		1,451	2,936	4,387	3,808	3,045	6,853	72,816
Trip Rates (Land-Use Based)								
Single-Family Detached	DU	.19	.56	.75	.64	.37	1.01	9.57
Condominium	DU	.17	.50	.67	.45	.33	.78	8.15
Apartment	DU	.10	.41	.51	.40	.22	.62	6.72
Park	Acre	.01	.00	.01	.02	.02	.04	1.59
Business Park	TSF	1.20	.23	1.43	.30	.99	1.29	12.76

SOURCE: Austin-Foust Associates, Inc. 2005b

The Proposed Project also includes 6 acres of public facility uses consisting of 88,000 square feet of a community center and city hall and a 39-acre sports park on a 45-acre portion of the Nakase property (Site 7).

The trip rates above and regression equation below have been taken from the Institute of Transportation Engineers (ITE) 7th Edition Trip Generation Manual.

The land use-based trip rates for commercial use are based on the following equation:
LN(T) = AxLN(X)+B where X=land use amount (combined TSF in the TAZ) and T=daily trips

Land Use Type	Units	Coefficients		A.M. Peak Hour			P.M. Peak Hour		
		A	B	Pk/ADT Ratio	In	Out	Pk/ADT Ratio	In	Out
Commercial	TSF	.65	5.83	.024	61%	39%	.087	48%	52%

ADT = average daily trips DU = Dwelling Unit EQ = equation-based TSF = thousand square feet

In this section, future levels of service on the Traffic Study Area circulation system are summarized for 2030 traffic conditions. Traffic volumes and performance evaluation results for conditions with the Proposed Project are identified. Project impacts are identified by applying the performance criteria outlined previously.

Year 2030 average daily traffic (ADT) forecasts are illustrated in Figure 3.14-9 for the Proposed Project. The roadway network used here is the current County of Orange Master Plan of Arterial Highways (MPAH) and assumes all new roadways implied by buildout of the MPAH. In addition, this analysis evaluated the Nakase property (Site 7) with 683,000 sf of business park uses instead of 6 acres of public facility uses consisting of 88,000 square feet of a community center and city hall and a 39-acre sports

Legend

——— Existing Roadway

– – – – Future Roadway

FIGURE **3.14-9**

2030 ADT Volume (000s) - Proposed Project

Not to Scale

10953-00

Source: Austin-Foust Associates, Inc. 2005

City of Lake Forest

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park on a 45-acre portion of the Nakase property as identified for the Proposed Project. However, the minimal change in trip generation (4,157 less trips with the Proposed Project elements) would result in minor differences in the findings and conclusions presented in this analysis. Thus, the analysis slightly overstates impacts.

Impact 3.14-1 **Implementation of the Proposed Project would not cause additional impacts to intersections within the Traffic Study Area or Extended Traffic Study Area as compared to future without project conditions (General Plan Scenario).**

Significance Level: Less than significant

Table 3.14-13 summarizes A.M. and P.M. peak hour intersection capacity utilization (ICU) values and corresponding levels of service (LOS) for both the Existing and 2030 Project Scenarios. The 2030 Project Scenario includes the Proposed Project, all MPAH improvements planned to occur by buildout of the General Plan, and all past, present and reasonably foreseeable cumulative development through 2030. This scenario thus represents a worst-case future with project to existing conditions comparison.

The ICUs are also illustrated in Figure 3.14-10 and Figure 3.14-11. Intersection locations are shown in Figure 3.14-12. Actual turn volumes and ICU calculation worksheets are provided in Appendix I.

As shown in Table 3.14-13, the 2030 Project Scenario would result in a worsening or new exceedance of intersection LOS standards at the following intersections:

- Within the Study Area:
  - 2. Bake & Portola
  - 10. Lake Forest & Rancho
  - 12. El Toro & Portola/Santa Margarita
  - 14. Bake & Irvine/Trabuco
  - 17. El Toro & Trabuco
  - 22. Bake & Jeronimo
  - 25. El Toro & Jeronimo
  - 26. Los Alisos & Jeronimo
  - 30. Los Alisos & Muirlands
  - 32. Ridge Route & Rockfield
  - 34. Los Alisos & Rockfield
  - 36. Lake Forest & I-5/Carlota
  - 37. Paseo De Valencia & Carlota
  - 39. El Toro & Avenida Carlota
  - 41. Alton & Towne Centre Dr.
- Within the Expanded Study Area:
  - 105. Alton Pkwy. at Irvine Boulevard
  - 117. Alton Pkwy. at Toledo Way
  - 125. Bake Pkwy. at Rockfield Boulevard

130. Ridge Route at Moulton Pkwy.
131. Santa Maria Av. at Moulton Pkwy.
132. El Toro Rd. at Moulton Pkwy.
137. Los Alisos Boulevard at Trabuco Rd.
138. Trabuco Rd. at Alicia Pkwy.

Table 3.14-13 shows the impacts that would result by 2030 as a result of cumulative development and the Proposed Project. However, a number of these cumulative impacts would occur in the absence of the Proposed Project as a result of General Plan buildout and buildout of cumulative projects.

Impacts of the project can thus be separated from the impacts that would occur under existing conditions as a result of cumulative development (i.e. the 2030 General Plan Scenario) by comparing the 2030 General Plan Scenario with the 2030 Project Scenario. Table 3.14-14 presents a comparison of the 2030 Project Scenario with the 2030 General Plan scenario, and shows that the following intersections that are impacted under the 2030 project scenario would still be impacted in 2030 without the project, based on development consistent with the General Plan (2030 General Plan Scenario):

- Within the Study Area:
  2. Bake & Portola
  3. Lake Forest Drive and Portola Parkway
  10. Lake Forest & Rancho
  12. El Toro & Portola/Santa Margarita
  14. Bake & Irvine/Trabuco
  17. El Toro & Trabuco
  22. Bake & Jeronimo
  25. El Toro & Jeronimo
  26. Los Alisos & Jeronimo
  30. Los Alisos & Muirlands
  32. Ridge Route & Rockfield
  34. Los Alisos & Rockfield
  36. Lake Forest & I-5/Carlota
  37. Paseo De Valencia & Carlota
  39. El Toro & Avenida Carlota
  41. Alton & Towne Centre Dr.
- Within the Expanded Study Area:
  105. Alton Pkwy. at Irvine Boulevard
  125. Bake Pkwy. at Rockfield Boulevard
  130. Ridge Route at Moulton Pkwy.
  131. Santa Maria Av. at Moulton Pkwy.
  132. El Toro Rd. at Moulton Pkwy.
  137. Los Alisos Boulevard at Trabuco Rd.
  138. Trabuco Rd. at Alicia Pkwy.

Table 3.14-13 Comparison of Existing and Future With Project (2030) Intersection LOS Summary

Intersection	Existing Scenario				Project Scenario			
	A.M. Peak Hour		P.M. Peak Hour		A.M. Peak Hour		P.M. Peak Hour	
	ICU	LOS	ICU	LOS	ICU	LOS	ICU	LOS
Study Area								
1. Alton & Portola	.39	A	.24	A	.52	A	.50	A
2. Bake & Portola (a)	.58	A	.74	C	.75	C	1.05	F
3. Lake Forest & Portola	.48	A	.73	C	.64	B	.90	D
4. Glenn Ranch & Portola	.59	A	.55	A	.67	B	.69	B
5. Portola & SR-241 Ramps	.48	A	.59	A	.48	A	.64	B
6. Alton & SR-241 Ramps	.20	A	.26	A	.62	B	.53	A
7. Lake Forest & SR-241 NB	.35	A	.42	A	.32	A	.46	A
8. Lake Forest & SR-241 SB	.47	A	.48	A	.54	A	.50	A
9. Bake & Rancho North	.63	B	.76	C	.71	C	.87	D
10. Lake Forest & Rancho	.43	A	.55	A	.93	E	1.23	F
11. Bake & Rancho South	.70	B	.68	B	.76	C	.80	C
12. El Toro & Portola/Santa Margarita	.58	A	.66	B	.84	D	1.00	E
13. Bake & Commercentre	.64	B	.74	C	.66	B	.72	C
14. Bake & Irvine/Trabuco	.95	E	.81	D	1.14	F	1.05	F
15. Lake Forest & Trabuco	.74	C	.74	C	.82	D	.87	D
16. Ridge Route & Trabuco	.48	A	.60	A	.57	A	.68	B
17. El Toro & Trabuco	.71	C	.68	B	.87	D	.99	E
18. Bake & Toledo	.85	D	.62	B	.89	D	.70	B
19. Lake Forest & Toledo	.47	A	.44	A	.61	B	.57	A
20. Ridge Route & Toledo	.35	A	.37	A	.42	A	.43	A
21. El Toro & Toledo	.47	A	.50	A	.62	B	.70	B
22. Bake & Jeronimo	.90	D	.75	C	1.02	F	.85	D
23. Lake Forest & Jeronimo	.62	B	.75	C	.75	C	.89	D
24. Ridge Route & Jeronimo	.47	A	.57	A	.55	A	.72	C
25. El Toro & Jeronimo	.64	B	.66	B	.93	E	.92	E
26. Los Alisos & Jeronimo	.79	C	.80	C	.92	E	.92	E
27. Lake Forest & Muirlands	.56	A	.78	C	.71	C	.82	D
28. Ridge Route & Muirlands	.48	A	.66	B	.58	A	.82	D
29. El Toro & Muirlands	.54	A	.73	C	.76	C	.85	D
30. Los Alisos & Muirlands	.78	C	.90	D	.98	E	1.14	F
31. Lake Forest & Rockfield	.62	B	.66	B	.80	C	.90	D
32. Ridge Route & Rockfield	.43	A	.55	A	.78	C	1.20	F
33. El Toro & Rockfield	.62	B	.74	C	.60	A	.72	C
34. Los Alisos & Rockfield	.71	C	.74	C	.92	E	.88	D
35. Lake Forest & I-5 NB	.53	A	.61	B	.66	B	.67	B
36. Lake Forest & I-5/Carlota	.64	B	.78	C	.81	D	1.00	E
37. Paseo De Valencia & Carlota	.49	A	.76	C	.63	B	1.01	F

Table 3.14-13 Comparison of Existing and Future With Project (2030) Intersection LOS Summary

Intersection	Existing Scenario				Project Scenario			
	A.M. Peak Hour		P.M. Peak Hour		A.M. Peak Hour		P.M. Peak Hour	
	ICU	LOS	ICU	LOS	ICU	LOS	ICU	LOS
38. El Toro & Bridger/I-5 NB(a)	.70	B	.74	C	.66	B	.67	B
39. El Toro & Avenida Carlota	.60	A	.91	E	.70	B	1.02	F
40. Portola & Rancho	N/A Future Intersection				.62	B	.70	B
41. Alton & Towne Centre Dr	N/A Future Intersection				.91	E	.77	C
42. Alton & Commercentre	N/A Future Intersection				.62	B	.74	C
Extended Study Area								
100. Portola Pkwy. at SR-241 NB Ramps	.32	A	.15	A	.62	B	.74	C
101. Portola Pkwy. at SR-241 SB Ramps	.30	A	.40	A	.57	A	.52	A
102. Ridge Vly. at Portola Pkwy.	.27	A	.32	A	.57	A	.90	D
103. Sand Canyon Av. at Portola Pkwy.	.40	A	.38	A	.74	C	.70	B
104. Jeffrey Rd. at Portola Pkwy.	.37	A	.40	A	.76	C	.62	B
105. Alton Pkwy. at Irvine Boulevard (a)	.37	A	.40	A	.89	D	1.02	F
106. B Dr. at Irvine Boulevard	N/A Future Intersection				.81	D	.75	C
107. A Dr. at Irvine Boulevard	N/A Future Intersection				.82	D	.83	D
108. Ridge Vly. at Irvine Boulevard	N/A Future Intersection				.73	C	.81	D
109. College Dr. at Irvine Boulevard	N/A Future Intersection				.77	C	.66	B
110. ETC E. Leg NB Ramps at Irvine Boulevard	.34	A	.37	A	.85	D	.74	C
111. ETC E. Leg SB Ramps at Irvine Boulevard	.48	A	.31	A	.80	C	.61	B
112. Sand Canyon Av. at Irvine Boulevard	.52	A	.45	A	.83	D	.78	C
113. Jeffrey Rd. at Irvine Boulevard (b)	.41	A	.47	A	.84	D	.85	D
114. SR-133 NB Ramps at Trabuco Rd.	N/A Future Intersection				.59	A	.53	A
115. SR-133 SB Ramps at Trabuco Rd.	N/A Future Intersection				.58	A	.50	A
116. Sand Canyon Av. at Trabuco Rd. (b)	.42	A	.32	A	.79	C	.77	C
117. Alton Pkwy. at Toledo Way	.43	A	.38	A	.71	C	.92	E
118. Alton Pkwy. at Jeronimo Rd.	.42	A	.36	A	.72	C	.77	C
119. Alton Pkwy. at Muirlands Boulevard	.50	A	.45	A	.81	D	.88	D
120. Marine Way at Alton Pkwy.	N/A Future Intersection				.71	C	.65	B
121. Alton Pkwy. at Technology Dr.	.61	B	.65	B	.83	D	.83	D
122. Alton Pkwy. at I-5 NB Ramps (a)	.71	C	.33	A	.96	E	.58	A
123. Marine Way at Rockfield Boulevard	N/A Future Intersection				.53	A	.56	A
124. Bake Pkwy. at Muirlands Boulevard	.60	A	.62	B	.82	D	.86	D
125. Bake Pkwy. at Rockfield Boulevard	.51	A	.67	B	.71	C	.92	E
126. Bake Pkwy. at I-5 NB Ramps (a)	.71	C	.56	A	.99	E	.93	E
127. Bake Pkwy. at I-5 SB Ramps (a)	.63	B	.71	C	.87	D	.93	E
128. Bake Pkwy. at Irvine Center Dr.	.44	A	.65	B	.43	A	.46	A
129. Lake Forest Dr. at Irvine Center Dr. (a)	.57	A	.55	A	.73	C	.81	D
130. Ridge Route at Moulton Pkwy.	.58	A	.72	C	.57	A	1.13	F
131. Santa Maria Av. at Moulton Pkwy.	.50	A	.67	B	.98	E	.99	E

Table 3.14-13 Comparison of Existing and Future With Project (2030) Intersection LOS Summary

Intersection	Existing Scenario				Project Scenario			
	A.M. Peak Hour		P.M. Peak Hour		A.M. Peak Hour		P.M. Peak Hour	
	ICU	LOS	ICU	LOS	ICU	LOS	ICU	LOS
132. El Toro Rd. at Moulton Pkwy. (a)	.79	C	.82	D	1.17	F	1.02	F
137. Los Alisos Boulevard at Trabuco Rd.	.83	D	.78	C	.94	E	.78	C
138. Trabuco Rd. at Alicia Pkwy.	.77	C	.95	E	.74	C	.94	E
139. Jeronimo Rd. at Alicia Pkwy.	.74	C	.78	C	.74	C	.79	C
140. Alicia Pkwy. at Muirlands Boulevard	.64	B	.88	D	.91	E	.99	E
141. I-5 NB Ramps at Alicia Pkwy.	.37	A	.68	B	.40	A	.73	C
142. I-5 SB Ramps at Alicia Pkwy.	.66	B	.82	D	.69	B	.76	C
143. Los Alisos Boulevard at Avenida de la Carlota	.47	A	.62	B	.53	A	.75	C
144. El Toro Rd. at Paseo de Valencia	.56	A	.72	C	.62	B	.69	B
145. Los Alisos Boulevard at Paseo de Valencia	.47	A	.62	B	.77	C	.79	C

SOURCE: Austin-Foust Associates, Inc. 2005b: Traffic Study Tables 4-1 and 4-6.

ICU = intersection capacity utilization LOS = level of service NB = northbound SB = southbound

Shaded areas denote locations where ICUs location is forecast to operate deficiently in the A.M. and/or P.M. peak hour (i.e., the forecasted LOS is worse than the adopted LOS performance standard). For the future with project scenario, shaded area identify locations where the location is forecast to operate deficiently and the deficiency is the result of the project as compared to existing conditions (i.e., adverse cumulative impacts).

(a) Denotes intersection subject to the LOS E standard.

(b) ICUs at this City of Irvine location include a .05 Advanced Transportation Management System (ATMS) credit.

Legend

- LOS A - C (<.80)
- LOS D (<.90)
- LOS E (<1.0)
- LOS F (>1.0)

10953-00

FIGURE **3.14-10**

2030 AM Peak Hour ICUs and Level of Service - Proposed Project

Not to Scale

Source: Austin-Foust Associates, Inc. 2005

City of Lake Forest

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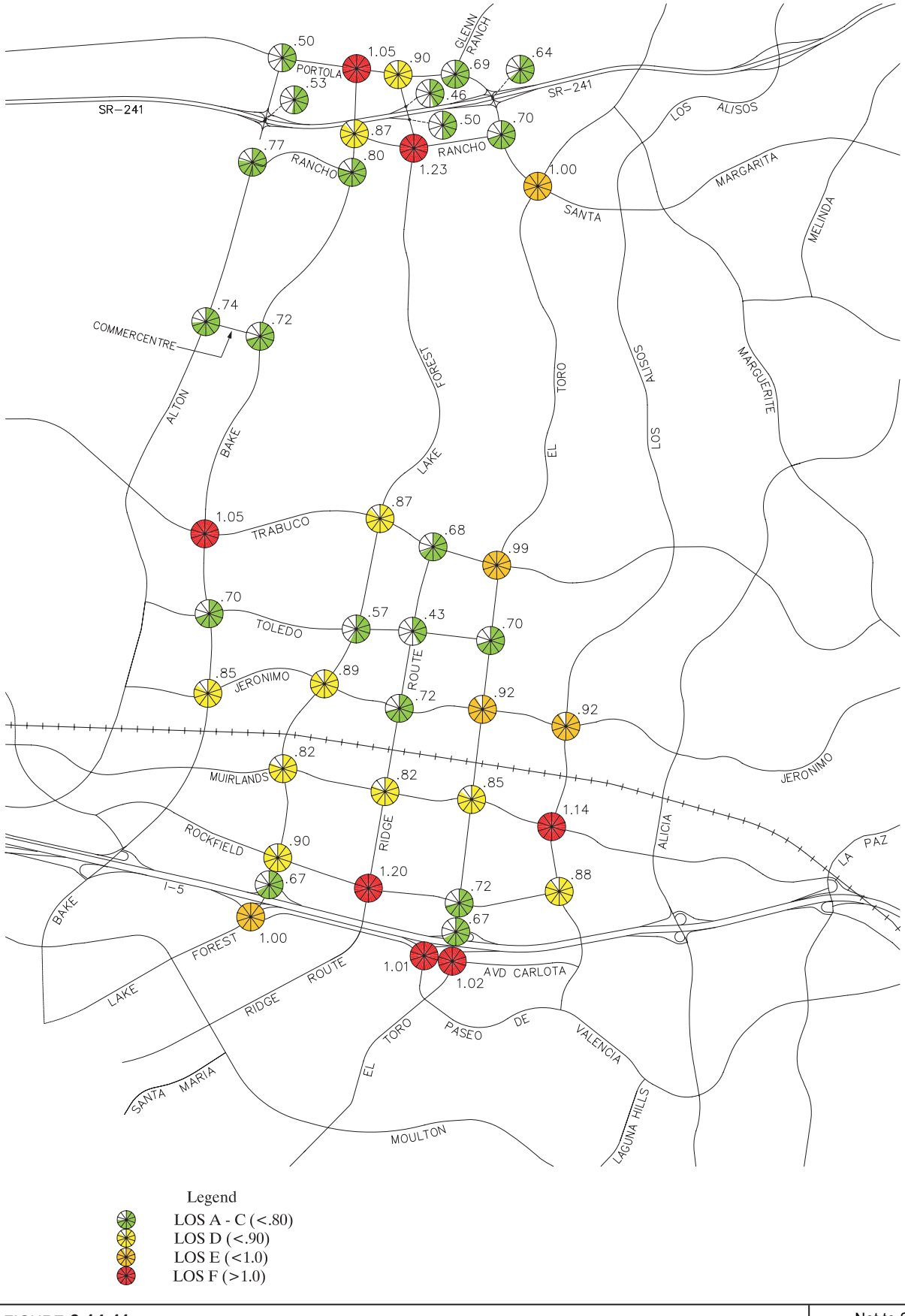


10953-00

FIGURE **3.14-11**

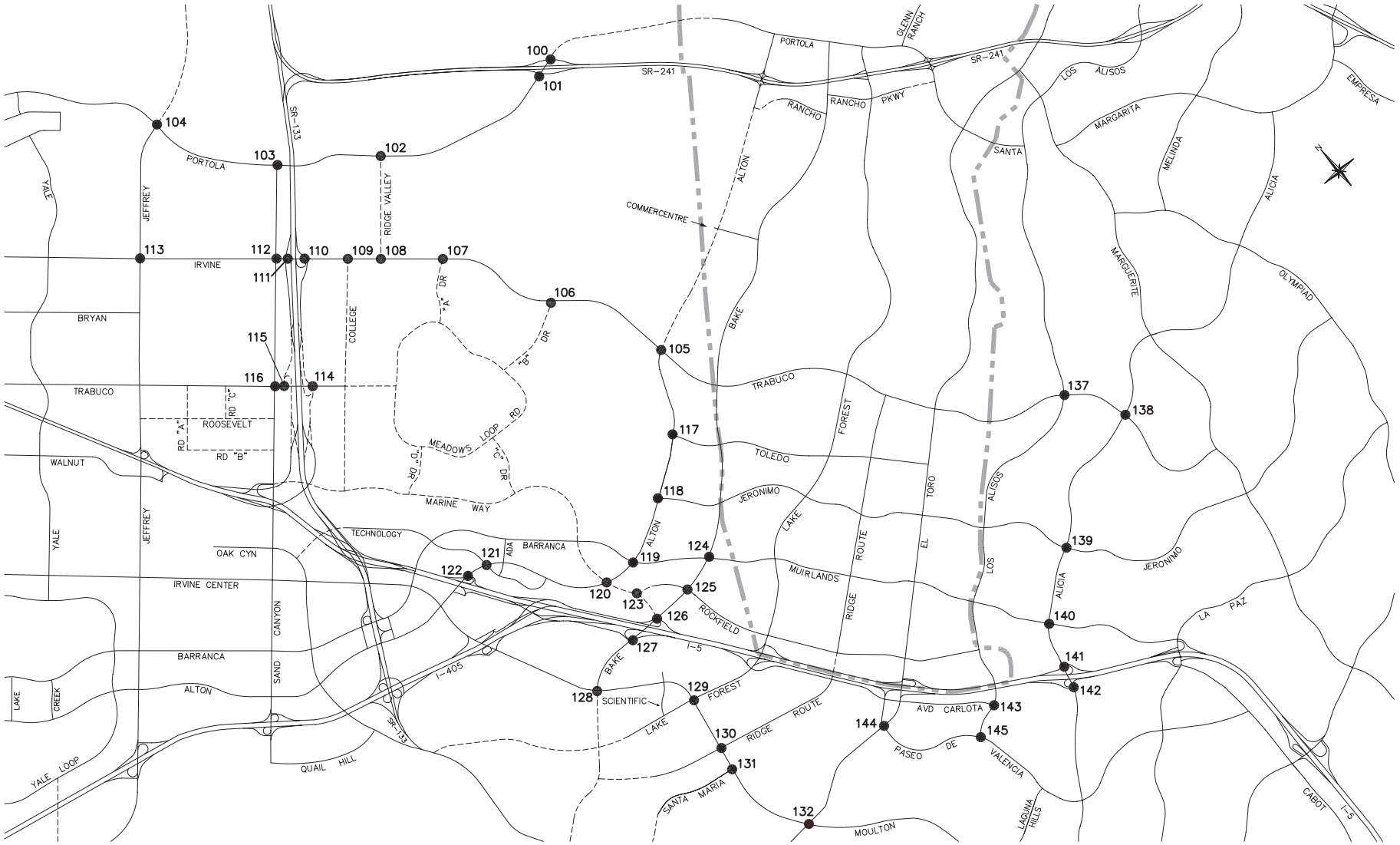
2030 PM Peak Hour ICUs and Level of Service - Proposed Project

Not to Scale

Source: Austin-Foust Associates, Inc. 2005

City of Lake Forest

EIP ASSOCIATES



Legend

City of Lake Forest Limits

Future Roadway

FIGURE **3.14-12**

Intersection Locations Analyzed within the Extended Project Area

Not to Scale

10953-00

***Source*:** Austin-Foust Associates, Inc. 2005

City of Lake Forest

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Table 3.14-14 Comparison of 2030 General Plan Scenario and 2030 Project Scenario Intersection LOS Summary

Intersection	General Plan Scenario				Project Scenario			
	A.M. Peak Hour		P.M. Peak Hour		A.M. Peak Hour		P.M. Peak Hour	
	ICU	LOS	ICU	LOS	ICU	LOS	ICU	LOS
Study Area								
1. Alton & Portola	.57	A	.49	A	.52	A	.50	A
2. Bake & Portola (a)	.72	C	1.03	F	.75	C	1.05	F
3. Lake Forest & Portola (a)	.65	B	.96	E	.64	B	.90	D
4. Glenn Ranch & Portola	.85	D	.78	C	.67	B	.69	B
5. Portola & SR-241 Ramps	.49	A	.69	B	.48	A	.64	B
6. Alton & SR-241 Ramps	.65	B	.65	B	.62	B	.53	A
7. Lake Forest & SR-241 NB	.37	A	.51	A	.32	A	.46	A
8. Lake Forest & SR-241 SB	.64	B	.57	A	.54	A	.50	A
9. Bake & Rancho North	.76	C	.90	D	.71	C	.87	D
10. Lake Forest & Rancho (a)	.96	E	1.32	F	.93	E	1.23	F
11. Bake & Rancho South	.76	C	.83	D	.76	C	.80	C
12. El Toro & Portola/Santa Margarita (a)	.95	E	1.08	F	.84	D	1.00	E
13. Bake & Commercentre	.62	B	.72	C	.66	B	.72	C
14. Bake & Irvine/Trabuco (a)	1.07	F	1.09	F	1.14	F	1.05	F
15. Lake Forest & Trabuco	.76	C	.88	D	.82	D	.87	D
16. Ridge Route & Trabuco	.60	A	.68	B	.57	A	.68	B
17. El Toro & Trabuco (a)	.89	D	.99	E	.87	D	.99	E
18. Bake & Toledo	.82	D	.66	B	.89	D	.70	B
19. Lake Forest & Toledo	.56	A	.53	A	.61	B	.57	A
20. Ridge Route & Toledo	.41	A	.41	A	.42	A	.43	A
21. El Toro & Toledo	.57	A	.65	B	.62	B	.70	B
22. Bake & Jeronimo (a)	.94	E	.82	D	1.02	F	.85	D
23. Lake Forest & Jeronimo	.77	C	.89	D	.75	C	.89	D
24. Ridge Route & Jeronimo	.51	A	.69	B	.55	A	.72	C
25. El Toro & Jeronimo (a)	.96	E	.94	E	.93	E	.92	E
26. Los Alisos & Jeronimo (a)	.91	E	.96	E	.92	E	.92	E
27. Lake Forest & Muirlands	.69	B	.81	D	.71	C	.82	D
28. Ridge Route & Muirlands	.58	A	.80	C	.58	A	.82	D
29. El Toro & Muirlands	.75	C	.84	D	.76	C	.85	D
30. Los Alisos & Muirlands (a)	1.03	F	1.08	F	.98	E	1.14	F
31. Lake Forest & Rockfield	.76	C	.85	D	.80	C	.90	D
32. Ridge Route & Rockfield (a)	.76	C	1.19	F	.78	C	1.20	F
33. El Toro & Rockfield	.58	A	.74	C	.60	A	.72	C
34. Los Alisos & Rockfield (a)	.91	E	.93	E	.92	E	.88	D
35. Lake Forest & I-5 NB	.67	B	.65	B	.66	B	.67	B
36. Lake Forest & I-5/Carlota (a)	.81	D	.99	E	.81	D	1.00	E
37. Paseo De Valencia & Carlota (a)	.67	B	.98	E	.63	B	1.01	F

Table 3.14-14 Comparison of 2030 General Plan Scenario and 2030 Project Scenario Intersection LOS Summary

Intersection	General Plan Scenario				Project Scenario			
	A.M. Peak Hour		P.M. Peak Hour		A.M. Peak Hour		P.M. Peak Hour	
	ICU	LOS	ICU	LOS	ICU	LOS	ICU	LOS
38. El Toro & Bridger/I-5 NB	.65	B	.67	B	.66	B	.67	B
39. El Toro & Avenida Carlota (a)	.72	C	1.00	E	.70	B	1.02	F
40. Portola & Rancho	.69	B	.79	C	.62	B	.70	B
41. Alton & Towne Centre Dr (a)	.82	D	1.07	F	.91	E	.77	C
42. Alton & Commercentre	.53	A	.69	B	.62	B	.74	C
Extended Study Area								
100. Portola Pkwy. at SR-241 NB Ramps	.63	B	.70	B	.62	B	.74	C
101. Portola Pkwy. at SR-241 SB Ramps	.57	A	.47	A	.57	A	.52	A
102. Ridge Vly. at Portola Pkwy.	.60	A	.86	D	.57	A	.90	D
103. Sand Canyon Av. at Portola Pkwy.	.76	C	.68	B	.74	C	.70	B
104. Jeffrey Rd. at Portola Pkwy.	.83	D	.68	B	.76	C	.62	B
105. Alton Pkwy. at Irvine Boulevard (a)	.92	E	.98	E	.89	D	1.02	F
106. B Dr. at Irvine Boulevard	.83	D	.79	C	.81	D	.75	C
107. A Dr. at Irvine Boulevard	.85	D	.85	D	.82	D	.83	D
108. Ridge Vly. at Irvine Boulevard	.76	C	.82	D	.73	C	.81	D
109. College Dr. at Irvine Boulevard	.78	C	.67	B	.77	C	.66	B
110. ETC E. Leg NB Ramps at Irvine Boulevard	.88	D	.74	C	.85	D	.74	C
111. ETC E. Leg SB Ramps at Irvine Boulevard	.84	D	.57	A	.80	C	.61	B
112. Sand Canyon Av. at Irvine Boulevard	.87	D	.81	D	.83	D	.78	C
113. Jeffrey Rd. at Irvine Boulevard (b)	.83	D	.89	D	.84	D	.85	D
114. SR-133 NB Ramps at Trabuco Rd.	.61	B	.53	A	.59	A	.53	A
115. SR-133 SB Ramps at Trabuco Rd.	.56	A	.50	A	.58	A	.50	A
116. Sand Canyon Av. at Trabuco Rd. (b)	.77	C	.76	C	.79	C	.77	C
117. Alton Pkwy. at Toledo Way (a)	.73	C	.84	D	.71	C	.92	E
118. Alton Pkwy. at Jeronimo Rd.	.63	B	.71	C	.72	C	.77	C
119. Alton Pkwy. at Muirlands Boulevard	.77	C	.83	D	.81	D	.88	D
120. Marine Way at Alton Pkwy.	.64	B	.67	B	.71	C	.65	B
121. Alton Pkwy. at Technology Dr.	.83	D	.87	D	.83	D	.83	D
122. Alton Pkwy. at I-5 NB Ramps	1.00	E	.59	A	.96	E	.58	A
123. Marine Way at Rockfield Boulevard	.51	A	.57	A	.53	A	.56	A
124. Bake Pkwy. at Muirlands Boulevard	.73	C	.85	D	.82	D	.86	D
125. Bake Pkwy. at Rockfield Boulevard (a)	.66	B	.89	D	.71	C	.92	E
126. Bake Pkwy. at I-5 NB Ramps	1.00	E	.94	E	.99	E	.93	E
127. Bake Pkwy. at I-5 SB Ramps	.91	E	.89	D	.87	D	.93	E
128. Bake Pkwy. at Irvine Center Dr.	.43	A	.45	A	.43	A	.46	A
129. Lake Forest Dr. at Irvine Center Dr.	.71	C	.81	D	.73	C	.81	D
130. Ridge Route at Moulton Pkwy. (a)	.56	A	1.13	F	.57	A	1.13	F
131. Santa Maria Av. at Moulton Pkwy. (a)	.98	E	.99	E	.98	E	.99	E

Table 3.14-14 Comparison of 2030 General Plan Scenario and 2030 Project Scenario Intersection LOS Summary

Intersection	General Plan Scenario				Project Scenario			
	A.M. Peak Hour		P.M. Peak Hour		A.M. Peak Hour		P.M. Peak Hour	
	ICU	LOS	ICU	LOS	ICU	LOS	ICU	LOS
132. El Toro Rd. at Moulton Pkwy. (a)	1.17	F	1.02	F	1.17	F	1.02	F
137. Los Alisos Boulevard at Trabuco Rd. (a)	.94	E	.79	C	.94	E	.78	C
138. Trabuco Rd. at Alicia Pkwy. (a)	.78	C	.94	E	.74	C	.94	E
139. Jeronimo Rd. at Alicia Pkwy.	.74	C	.77	C	.74	C	.79	C
140. Alicia Pkwy. at Muirlands Boulevard (a)	.91	E	1.00	E	.91	E	.99	E
141. I-5 NB Ramps at Alicia Pkwy.	.42	A	.72	C	.40	A	.73	C
142. I-5 SB Ramps at Alicia Pkwy.	.71	C	.75	C	.69	B	.76	C
143. Los Alisos Boulevard at Avenida de la Carlota	.51	A	.75	C	.53	A	.75	C
144. El Toro Rd. at Paseo de Valencia	.64	B	.70	B	.62	B	.69	B
145. Los Alisos Boulevard at Paseo de Valencia	.74	C	.80	C	.77	C	.79	C

SOURCE: Austin-Foust Associates, Inc. 2005b: Traffic Study Tables 4-1 and 4-6

ICU = intersection capacity utilization LOS = level of service NB = northbound SB = southbound

(a) This location is forecast to operate deficiently in the A.M. and/or P.M. peak hour (i.e., the forecasted LOS is worse than the adopted LOS performance standard). Shaded entries under the 2030 Project Scenario denote locations where ICUs are worsened by the project (i.e., adverse project impacts). Shaded entries under the 2030 General Plan Scenario denote locations which are impacted under the 2030 General Plan Scenario, but would be improved under the 2030 Project Scenario

(b) ICUs at this City of Irvine location include a .05 Advanced Transportation Management System (ATMS) credit.

Based on the peak hour intersection performance criteria and impact thresholds discussed previously, there are seven intersections within the Traffic Study Area that are significantly impacted by the Proposed Project based on year 2030 conditions, once the net impacts of the Proposed Project are separated from the impacts of cumulative development alone. The impacted intersections are as follows:

2. Bake Parkway and Portola Parkway
14. Bake Parkway and Irvine Boulevard/Trabuco Road
22. Bake Parkway and Jeronimo Road
30. Los Alisos Boulevard and Muirlands Boulevard
37. Paseo de Valencia and Avenida de la Carlota
39. El Toro Road and Avenida de la Carlota
41. Alton Parkway and Towne Centre Drive

Based on the peak hour intersection performance criteria and impact thresholds discussed previously, the following three intersections within the Extended Traffic Study Area are also significantly impacted by the Proposed Project based on year 2030 conditions, once the net impacts of the Proposed Project are separated from the impacts of cumulative development alone:

105. Alton Parkway at Irvine Boulevard
117. Alton Parkway at Toledo Way
125. Bake Parkway at Rockfield Boulevard

These impacts can be mitigated by means of the following improvements:

- *#2. Bake Parkway and Portola Parkway*—At the Bake Parkway and Portola Parkway intersection, add a third westbound thru lane or a second eastbound left-turn lane.
- *#14. Bake Parkway and Irvine Boulevard/Trabuco Road*—At the Bake Parkway and Irvine Boulevard/Trabuco Road intersection, add a second northbound left-turn lane. As well, convert the westbound right-turn lane to a fourth westbound thru and de facto westbound right-turn lane. Restripe the third eastbound thru lane to a shared 3rd eastbound thru lane/2nd eastbound right-turn lane.
- *#22. Bake Parkway and Jeronimo Road*—At the Bake Parkway and Jeronimo Road intersection, add a second northbound left-turn lane.
- *#30. Los Alisos Boulevard and Muirlands Boulevard*—At the Los Alisos Boulevard and Muirlands Boulevard intersection, add a second northbound left-turn lane, a de facto northbound right-turn lane, a second southbound left-turn lane, and a 2nd eastbound left-turn lane.
- *#37. Paseo de Valencia and Avenida de la Carlota*—At the Paseo de Valencia and Avenida De La Carlota intersection, restripe the southbound approach for a shared 3rd southbound left-turn lane/2nd southbound thru lane.
- *#39. El Toro Road and Avenida de la Carlota*—At the El Toro Road and Avenida De La Carlota intersection, restripe the eastbound approach to a 2nd eastbound left-turn lanes and eastbound thru lane and shared 2nd eastbound thru lane/eastbound right-turn lane and restripe the westbound lane to a shared westbound left-turn lane/westbound thru lane and a 2nd westbound right-turn lane with overlap.
- *#41. Alton Parkway and Towne Centre Drive*—Alton Parkway and Towne Centre Drive - At the Alton Parkway and Towne Centre Drive Intersection, add a second westbound left-turn lane.
- *#105. Alton Parkway at Irvine Boulevard*—At the Alton Parkway and Irvine Boulevard intersection, remove the east/west split signal phasing, restripe the shared 3rd eastbound lane/3rd eastbound turn lane to a full 3rd eastbound left-turn lane and add a 3rd eastbound thru lane and de facto eastbound right-turn lane.
- *#117. Alton Parkway at Toledo Way*—At the Alton Parkway and Toledo Way intersection, add signal phasing for a westbound right-turn overlap.
- *#125. Bake Parkway at Rockfield Boulevard*—At the Bake Parkway and Rockfield Boulevard intersection, remove the east/west split signal phasing and provide 3 westbound left-turn lanes, 2 westbound thru lanes and a de facto westbound right-turn lane.

However, as shown in Table 3.14-7, these improvements are already included in the LFTM, and are therefore a part of the project. As a result, project impacts would be less than significant.

The ICU summary table and figures also indicate that the following five locations, which are deficient under the existing General Plan, have lower ICUs with the Proposed Project. These are beneficial effects of the project:

3. Lake Forest Drive and Portola Parkway

10. Lake Forest Drive and Rancho Parkway

12. El Toro Road and Portola Parkway/Santa Margarita Parkway

25. El Toro Road and Jeronimo Road

34. Los Alisos Boulevard and Rockfield Boulevard

Table 3.14-15 lists ICU values for both the LFTM Needs Scenario (existing conditions, plus cumulative projects and the Proposed Project, plus only funded MPAH improvements) and LFTM Scenario (existing conditions, plus cumulative projects and the Proposed Project, plus only funded MPAH improvements, plus the LFTM improvements). It also provides the ICU values for the General Plan Scenario (which assumes both funded and unfunded MPAH improvements) in parenthesis. Table 3.14-15 thus shows the benefits of the Proposed Project compared to the 2030 General Plan Scenario.

As shown in Table 3.14-15, the LFTM, which is a part of this project, includes improvements to 10 additional intersections in order to address concerns regarding unfunded MPAH improvements. Improvements to the operation of these 10 intersections (i.e., intersection nos. 10, 12, 17, 23, 26, 30, 31, 34, 36, and 37), resulting from the LFTM component of the project, would also be a beneficial effect of the project.

Impact 3.14-2 **Implementation of the Proposed Project would not cause the LOS on a freeway ramp to exceed the applicable standard within the Traffic Study Area.**

Significance Level: Less than significant

Figure 3.14-13 illustrates the interchange locations where freeway ramps were analyzed based on year 2030 conditions. Year 2030 with-project A.M. and P.M. peak-hour ramp volumes and V/C ratios are summarized in Table 3.14-16. Based on the peak-hour ramp performance criteria and impact thresholds discussed previously, no freeway ramps are forecast to be significantly impacted by the Proposed Project based on year 2030 conditions when compared to either existing conditions or to the General Plan Scenario. In fact, the Proposed Project would eliminate impacts to five ramps which would occur under the 2030 General Plan Scenario. This would be a benefit of the Proposed Project.

Impact 3.14-3 **Implementation of the Proposed Project would not cause the LOS on a freeway mainline segment to exceed the applicable standard within the Traffic Study Area.**

Significance Level: Less than significant

Year 2030 with-project A.M. and P.M. freeway mainline peak hour volumes and V/C ratios are summarized in Table 3.14-17. Based on the peak hour mainline performance criteria and impact thresholds discussed previously, the proposed project and cumulative development would cause five segments to operate below standards, compared to existing conditions. This would be a cumulative impact. However, no freeway mainline segments are forecast to be significantly impacted by the Proposed Project based on year 2030 conditions compared to the 2030 General Plan Scenario.

Table 3.14-15 Effect of the LFTM on Intersection Operations

Intersection (NS & EW)	2030 Peak Hour ICU				Improvements
	LFTM Needs Scenario		LFTM Scenario		
	AM	PM	AM	PM	
2. Bake & Portola	.75 (.72)	1.05 (1.03)	.67 .63	.94 .94	Add 3rd WBT or 2nd EBL
10. Lake Forest & Rancho	.95	1.22	.67	.88	Restripe WB and remove WBR to show 2 WBL, 2 WBT and add de facto WBR and 2nd EBT
12. El Toro & Portola/Santa Margarita	.82	.99	.70	.85	Add 2nd NBL
14. Bake & Irvine/Trabuco	1.18 (1.07)	1.03 (1.09)	.91	.86	Add 2nd NBL, convert 3rd WBT and WBR to 4th WBT and restripe 3rd EBT to shared 3rd EBT/2nd EBR Add de facto WBR
17. El Toro & Trabuco	.83	.92	.79	.79	Add de facto NBR and de facto WBR
22. Bake & Jeronimo	1.02 (.94)	.89 (.82)	.90	.89	Add 2nd NBL
23. Lake Forest & Jeronimo	.78	.92	.75	.90	Add de facto EBR
26. Los Alisos & Jeronimo	.94	.96	.90	.89	Restripe WB and remove WBR to 2 WBL, 2 WBT and add de facto WBR and 2nd EBL
30. Los Alisos & Muirlands	1.02 (1.03)	1.17 (1.08)	.89	.90	Add 2nd NBL, de facto NBR, 2nd SBL, and 2nd EBL
31. Lake Forest & Rockfield	.81	.92	.81	.88	Restripe 2nd WBT to shared 3rd WBL/2nd WBT
34. Los Alisos & Rockfield	.94	.91	.74	.83	Add SBR
36. Lake Forest & I-5/Carlota	.80	1.07	.75	.94	Restripe shared 3rd EBL/2nd EBT to 3rd EBL, add 2nd WBL and right-turn overlap for WBR Add 2nd EBT
37. Paseo De Valencia & Carlota	.64 (.67)	.99 (.98)	.60	.89	Restripe 2nd SBT to shared 3rd SBL/2nd SBT [a]
39. El Toro & Avenida Carlota	.88 (.72)	1.13 (1.00)	.82	.85	Restripe EB to 2 EBL, EBT and shared 2nd EBT/EBR and restripe WB to shared WBL/WBT and 2 WBR with overlap
41. Alton & Towne Centre Dr	.93 (.82)	.83 (1.07)	.82	.80	Add 2nd WBL
105. Alton & Irvine	.89 (.92)	1.02 (.98)	.76	.95	Remove E/W split phasing, restripe shared 3rd EBL/3rd EBT to full 3rd EBL and add 3rd EBT and de facto EBR
117. Alton & Toledo	.71 (.73)	.92 (.84)	.66	.87	Add a WB right-turn overlap
125. Bake & Rockfield	.71 (.66)	.92 (.89)	.69	.89	Restripe shared 3rd WBL/2nd WBT to full 3rd WBL, remove E/W split phasing and free WBR and add 2nd WBT and de facto WBR

SOURCE: Austin Foust Associates, Inc. 2005b: Traffic Study Table 5-1

W = west; E = east; WB = westbound; EB = eastbound; SB = southbound; NB = northbound; T = through; EBL = eastbound left turn; WBR = westbound right turn; ICU = Intersection Capacity Utilization; LFTM = Lake Forest Transportation Mitigation Program; NITM = North Irvine Transportation Mitigation Program

[a] Includes construction of a third eastbound receiving lane for the third southbound left-turn lane.

Legend

- Freeway/tollway ramp interchange location
- Existing Roadway
- Future Roadway

10953-00

FIGURE **3.14-13**

2030 Interchange Locations

Not to Scale

Source: Austin-Foust Associates, Inc. 2005

City of Lake Forest

EIP ASSOCIATES

Table 3.14-16 2030 Proposed Project Freeway/Tollway Ramp LOS Summary

Interchange	Ramp	Lanes	Peak Hour Capacity	Proposed Project					
				A.M. Peak Hour			P.M. Peak Hour		
				Volume	V/C	LOS	Volume	V/C	LOS
I-5 at Lake Forest	SB Direct On	1	1,500	200	.13	A	1,300	.87	D
	SB Loop On	1	1,080	460	.43	A	560	.52	A
	NB On	2	1,800	1,310	.73	C	1,090	.61	B
(a)	SB Off	2	3,000	2,140	.71	C	3,070	1.02	F
	NB Off	1	1,500	1,500	1.00	E	720	.48	A
I-5 at El Toro	SB Direct On	1	1,080	50	.05	A	420	.39	A
	SB Loop On	1	1,500	650	.43	A	1,170	.78	C
	NB Direct On	1	1,500	1,350	.90	D	1,020	.68	B
	NB Loop On	1	1,500	1,190	.79	C	1,140	.76	C
	SB Off	2	3,000	1,790	.60	A	1,980	.66	B
	NB Off	1	1,500	1,250	.83	D	1,150	.77	C
SR-241 at Alton	SB On	1	1,500	450	.30	A	1,270	.85	D
	NB On	1	1,500	130	.09	A	410	.27	A
	SB Off	1	1,500	580	.39	A	200	.13	A
	NB Off	1	1,500	1,340	.89	D	670	.45	A
SR-241 at Lake Forest	NB On	2	2,250	120	.05	A	650	.29	A
	SB Off	2	2,250	670	.30	A	320	.14	A
SR-241 at Portola (East)	SB On	1	1,500	320	.21	A	1,430	.95	E
	NB On	2	2,250	780	.35	A	350	.16	A
	SB Off	1	1,500	360	.24	A	510	.34	A
	NB Off	2	2,250	2,150	.96	E	530	.24	A

SOURCE: Austin-Foust Associates, Inc. 2005b

LOS = level of service NB = northbound SB = southbound V/C = volume/capacity ratio

(a) This ramp operates at LOS F V/C 1.02 under existing conditions. Table 3.14-2 as well as Table 3-2 of the Traffic Study included in Appendix I lists existing conditions. Table 4-12 in Chapter 4 lists ramp conditions under the General Plan scenario.

Table 3.14-17 2030 Proposed Project Freeway/Tollway Mainline LOS Summary

Location	Direction	Lanes	Peak Hour Capacity	Proposed Project					
				A.M. Peak Hour			P.M. Peak Hour		
				Volume	V/C	LOS	Volume	V/C	LOS
I-5 n/o Lake Forest	Northbound	8+2H	19,500	18,808	.96	E	12,349	.63	C
	Southbound	8+2H	19,500	11,976	.61	C	17,106	.88	D
I-5 n/o El Toro (a)	Northbound	6+2H	15,500	18,140	1.17	F	11,786	.76	D
(a)	Southbound	6+2H	15,500	10,075	.65	C	15,992	1.03	F
I-5 n/o Alicia (a)	Northbound	4+1H	9,600	16,405	1.71	F	10,677	1.11	F
(a)	Southbound	4+1H	9,600	9,103	.95	E	15,031	1.57	F
SR-241 n/o Alton	Northbound	4+1H	9,600	8,060	.84	D	3,663	.38	B
	Southbound	4+1H	9,600	3,079	.32	B	6,599	.69	C
SR-241 n/o Lake Forest	Northbound	4+1H	9,600	8,978	.94	E	3,969	.41	B
	Southbound	4+1H	9,600	2,998	.31	B	7,476	.78	D
SR-241 n/o Portola East	Northbound	4+1H	9,600	8,881	.93	E	3,324	.35	B
	Southbound	4+1H	9,600	2,319	.24	A	7,156	.75	D
SR-241 n/o Los Alisos (a)	Northbound	4+1H	9,600	10,392	1.08	F	3,550	.37	B
	Southbound	4+1H	9,600	2,348	.24	A	8,112	.85	D

SOURCE: Austin-Foust Associates, Inc. 2005b

H = high-occupancy vehicle lane LOS = level of service V/C = volume/capacity ratio

(a) Shading indicates that the segment would be impacted compared to existing conditions. Table 3.14-3 as well as Table 3-3 of the Traffic Study included in Appendix I lists existing conditions. Table 4-13 in Chapter 4 lists segment conditions under the General Plan scenario.

Impact 3.14-4 Implementation of the Proposed Project would not provide less parking than provided for in the City of Lake Forest Municipal Code within the project area.

Significance Level: Less than significant

The Proposed Project includes development on sites owned by several different entities. Implementation of the Proposed Project would not avoid implementation of standards or requirements in the Municipal Code. In addition, Development Agreements will be considered with each of the participating landowners concurrent with completion of Phase 3 and adoption of the GPA. The Development Agreements would be considered in order to vest the land uses and number of units approved with the GPA and Zone Change, as well as to impose conditions of development. With regard to parking, each development would be required to comply with the parking standards (on-street and off-street) identified in the Municipal Code. This includes provision of ADA (Title 24) parking spaces, as well as allowance for an up to a 10 percent reduction in the required minimum off-street parking provided that certain findings can be made. The findings require the review of a parking study prepared by a state-registered traffic engineer which presents clear and convincing evidence that the parking demand will be less than the requirement. This reduction generally only applies to non-residential projects. No impacts related to parking would occur with implementation of the Proposed Project.

3.14.6 Mitigation Measures

Because the LFTM is part of the project and implementation of the LFTM will ensure that the impacts of the Proposed Project are less than significant, no mitigation measures are required.

3.14.7 Summary of Impacts

Table 3.14-18 summarizes the potential long-term adverse impacts of the Proposed Project.

Table 3.14-18 Summary of Impacts

Impact	*Threshold*	*Significance*
3.14-1	Implementation of the project will not cause the LOS on a roadway to exceed the applicable standard within the Traffic Study Area or Extended Traffic Study Area.	Less than significant
3.14-2	Implementation of the Proposed Project will not cause the LOS on a freeway ramp to exceed the applicable standard within the Traffic Study Area.	Less than significant
3.14-3	Implementation of the Proposed Project will not cause the LOS on a freeway mainline segment to exceed the applicable standard within the Traffic Study Area.	Less than significant
3.14-4	Implementation of the Proposed Project will not provide less parking than provided for in the City of Lake Forest Municipal Code within the project area.	Less than significant

3.14.8 References

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