



APPENDIX E TRAFFIC IMPACT ANALYSIS



City of Murrieta Focused General Plan Update Traffic Impact Analysis



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Submitted to:



10173.19 | Prepared by Iteris, Inc.

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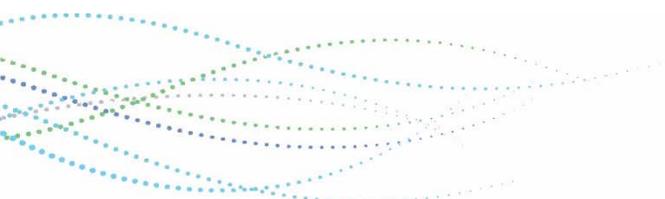
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1 INTRODUCTION

This report summarizes the results of the Traffic Impact Analysis (TIA) for the City of Murrieta Focused General Plan Update (GPU). This report provides detailed information concerning the methodology, findings and conclusions of the traffic analysis. The traffic analysis evaluates existing and future year traffic conditions at key intersections and roadways, taking into account growth in traffic due to buildout of the currently adopted General Plan and the modifications resulting from this Focused General Plan Update.

1.1 Project Description

The Focused GPU supersedes the 2011 Murrieta General Plan and subsequent General Plan Amendments through 2018. As this is a focused update, many portions of the 2011 General Plan will remain unchanged. This section summarizes the major changes between the 2011 General Plan and the Focused GPU.

The General Plan Land Use Policy Map identifies the type, location, and density/intensity of future development within the City of Murrieta. There are two key differences between the 2011 General Plan Land Use Policy Map and the proposed General Plan Land Use Policy Map which are found within six key areas. The first difference is that the Focused GPU contains a new land use designation, Innovation. The second difference is the mix and location of land use designations within the six key areas.

The new land use designation, Innovation, is defined as follows:

- Innovation** - The Innovation designation provides for a wider variety and intensity of non-residential uses allowed elsewhere in the City with the goal of providing a cutting edge and campus-like mixed-use business setting. The Innovation designation provides for employment intensive uses such as business and medical offices, corporate headquarters, medical services, research and development, education, technological advancement, makers labs (such as people using digital tools to design new products), craftsman products (such as furniture and window design/construction), and hotels. It will also provide for a limited amount of commercial uses for the sale of products made in facilities on-site and restaurants that support the employment and primary uses.

A summary of the change in the mix and location of land use designations within the six key areas is described in **Table 1**.

Table 1: Project Description Per Planning Area

Planning Area	Location	Existing Land Use Designation (2011 GP)	Proposed Land Use Designation
1	Bordered by Elm St to the south, Madison Ave to the west, Guava St to the north, and I-15 to the east	Office Research Park	Innovation
2	Bordered by a residential subdivision to the north, the City's boundary with the City of Temecula to the south, I-15 to the west, and residential subdivisions, open space areas and a creek to the east	Office Research Park, Commercial, Single-family Residential, Multi-family Residential	Innovation, Parks/Open Space, Commercial, Multi-family Residential
3	Bordered by Murrieta Hot Springs Road to the south, Sparkman Drive to the west, Medical Center Drive to the north, and Hancock Avenue to the east.	Office Research Park and Civic and Institutional	Commercial

Planning Area	Location	Existing Land Use Designation (2011 GP)	Proposed Land Use Designation
4	Bordered by Whitewood Road and I-215 to the west, Baxter Road to the north, Menifee Road to the east, and Los Alamos Road to the southeast.	Office Research Park, Large Lot Residential	Innovation, Single-family Residential, Multi-family Residential, Parks/Open Space
5	Bordered by the City's boundary with the County of Riverside to the north, Open Space areas to the west, I-215 to the east, and Linnel Lane to the south	Office Research Park	Innovation, Single-family Residential, Multi-family Residential
6	Bordered by Big Dipper Way, Via Mira Mosa, and Ariel Street to the south, Maximillian Avenue to the east, Donald Road to the north, and open space areas to the west.	Single-family Residential	Parks/Open Space

The locations of the six planning areas are shown in **Figure 1-1**.

1.2 Study Area

The study area for analysis includes the following twenty-three (23) intersections within the City or sphere of influence:

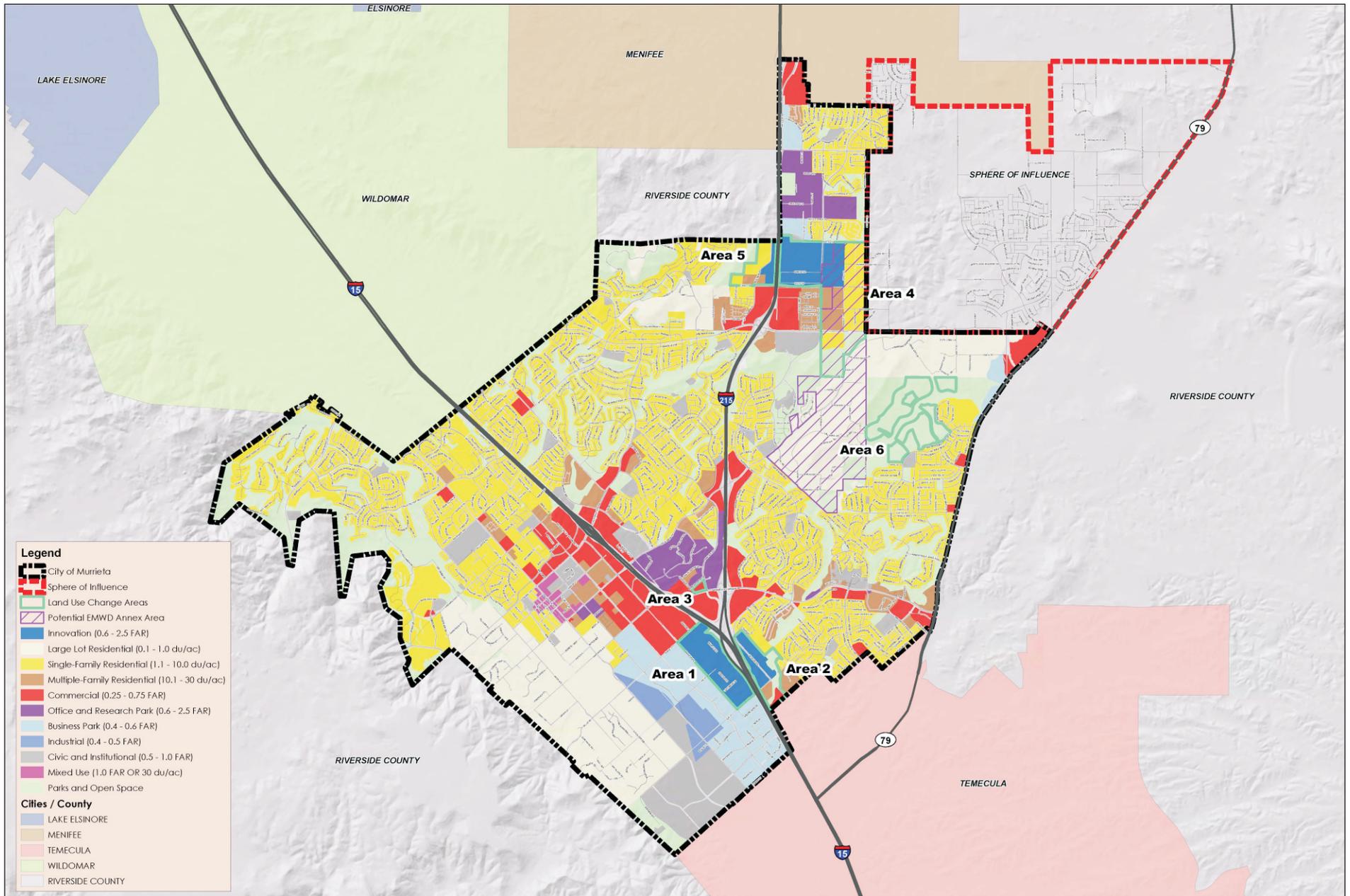
1. Jefferson Avenue/Murrieta Hot Springs Road;
2. Madison Avenue/Murrieta Hot Springs Road;
3. Menifee Road/Scott Road (sphere of influence);
4. Winchester Road (SR-79)/Scott Road (sphere of influence);
5. Antelope Road/Keller Road (renamed Warm Springs Parkway/Keller Road in future conditions);
6. Antelope Road/Baxter Road (renamed Warm Springs Parkway/Baxter Road in future conditions);
7. California Oaks Road/Clinton Keith Road;
8. Jefferson Avenue/Kalmia Street;
9. Winchester Road (SR-79)/Murrieta Hot Springs Road;
10. Hancock Avenue/Los Alamos Road;
11. I-215 Southbound Ramps/Los Alamos Road;
12. Whitewood Road/Murrieta Hot Springs Road;
13. Nutmeg Street/Clinton Keith Road;
14. Leon Road/Scott Road (sphere of influence);
15. Mitchell Road/Clinton Keith Road;
16. I-215 Northbound Ramps/Clinton Keith Road;
17. Whitewood Road/Clinton Keith Road;
18. Jefferson Avenue/Los Alamos Road;
19. Whitewood Road/Linnel Lane;
20. Whitewood Road/Baxter Road;
21. Warm Springs Parkway/Linnel Lane (future intersection);
22. Briggs Road/Keller Road (future intersection, sphere of influence); and
23. Winchester Road (SR-79)/Clinton Keith Road-Benton Road (future intersection).

Figure 1-2 shows the locations of the study intersections. Note that three of the locations are future intersections. The intersections represent key locations in the vicinity of the land use change areas, where major arterials intersect,

and where land use trip distribution is anticipated.

In addition, the study area for analysis includes the following twenty-two (22) roadway segments within the City or sphere of influence:

1. Scott Road east of Menifee Road;
2. Scott Road between Leon Road and Winchester Road (SR-79);
3. Keller Road between I-215 and Whitewood Road;
4. Keller Road east of Whitewood Road (future conditions only);
5. Baxter Road between Antelope Road and Whitewood Road;
6. Antelope Road between Baxter Road and Clinton Keith Road;
7. Whitewood Road between Baxter Road and Clinton Keith Road;
8. Clinton Keith Road west of Nutmeg Street;
9. Clinton Keith Road east of California Oaks Road;
10. Clinton Keith Road between I-215 and Whitewood Road;
11. Clinton Keith Road east of Whitewood Road;
12. California Oaks Road south of Clinton Keith Road;
13. California Oaks Road south of I-15;
14. Jefferson Avenue south of California Oaks Road;
15. Los Alamos Road between I-215 and Whitewood Road;
16. Los Alamos Road between Monroe Avenue and Hancock Avenue;
17. Whitewood Road north of Murrieta Hot Springs Road;
18. Jefferson Avenue south of Murrieta Hot Springs Road;
19. Murrieta Hot Springs Road between I-15 and I-215;
20. Murrieta Hot Springs Road between Alta Murrieta Drive and Whitewood Road;
21. Murrieta Hot Springs Road between Whitewood Road and Margarita Road; and
22. Murrieta Hot Springs Road between Margarita Road and Winchester Road (SR-79).



Source: Rick Engineering

1.3 Study Periods

Traffic operations were evaluated for each of the following scenarios during the weekday a.m. (7:00 – 9:00) and p.m. (4:00 – 6:00) peak hours during typical weekday conditions (during the school year):

- Existing Conditions;
- Future Year 2035 Without Project Conditions (with currently adopted General Plan); and
- Future Year 2035 With Project Conditions (with Focused General Plan Update).

2 ENVIRONMENTAL SETTING

This section describes the current environmental setting of the study area, including descriptions of key roadways and the methodology for existing traffic volume collection.

2.1 Roadway Configurations

Below are descriptions of the existing characteristics of key roadways in the study area:

- *Keller Road*, oriented in an east-west direction, is a two- to three-lane undivided roadway within the City of Murrieta. As part of the Circulation Element, Keller Road is planned to provide access to I-215 via a future interchange. The posted speed limit is 40 mph.
- *Clinton Keith Road*, oriented in an east-west direction, is generally a four-lane roadway west of I-215, providing access to both I-15 and I-215 via interchanges. East of I-215, Clinton Keith Road is a six-lane divided roadway that currently terminates at Leon Road. The posted speed limit is 50 mph west of I-215 and 45 mph east of I-215.
- *California Oaks Road*, oriented in a northeast-southwest direction, is a four-lane divided roadway providing access to I-15. California Oaks Road terminates on the north at Clinton Keith Road. The posted speed limit is 40 mph west of Jackson Avenue and 45 mph east of Jackson Avenue.
- *Los Alamos Road*, oriented in a northeast-southwest direction, is a four lane divided roadway providing access to I-215. The posted speed limit is 45 mph. West of Jefferson Avenue, Los Alamos Road transitions to a two-lane roadway with the name changing to Ivy Street.
- *Murrieta Hot Springs Road*, oriented in an east-west direction, is generally a six-lane divided roadway providing access to both I-15 and I-215 via interchanges. West of I-15, Murrieta Hot Springs Road terminates at Jefferson Avenue. The posted speed limit is 45 mph.
- *Jefferson Avenue*, oriented in a northwest-southeast direction, is generally a four-lane divided roadway (two-lane sections exist) running parallel to I-15. Jefferson Avenue terminates on the north end at Grizzly Ridge Drive. The posted speed limit varies between 40, 45, and 50 mph.
- *Whitewood Road*, oriented in a north-south direction, is a four-lane divided roadway running parallel to I-215. Whitewood Road terminates on the south within a residential area south of Murrieta Hot Springs Road. The posted speed limit is 45 mph.

2.2 Existing Traffic Volumes

Existing traffic counts at the study intersections were conducted in December 2018. All counts were conducted during the a.m. peak period (7:00 – 9:00) and p.m. peak period (4:00 – 6:00). The traffic impact analysis is based on the highest single hour of traffic during each time period at each location. Traffic counts were collected while schools were still in session, avoiding any holiday-related shifts in traffic patterns. Average Daily Traffic (ADT) volumes at the roadway segments were calculated based on peak hour adjacent intersection approach and departure volumes, using a peak hour-to-daily volume ratio (i.e., K factor) developed from daily volume counts at other locations provided by the City. Detailed vehicle turning movement data is included in **Appendix A**. and **Figure 2-1** shows the existing peak hour volumes at the study intersections.

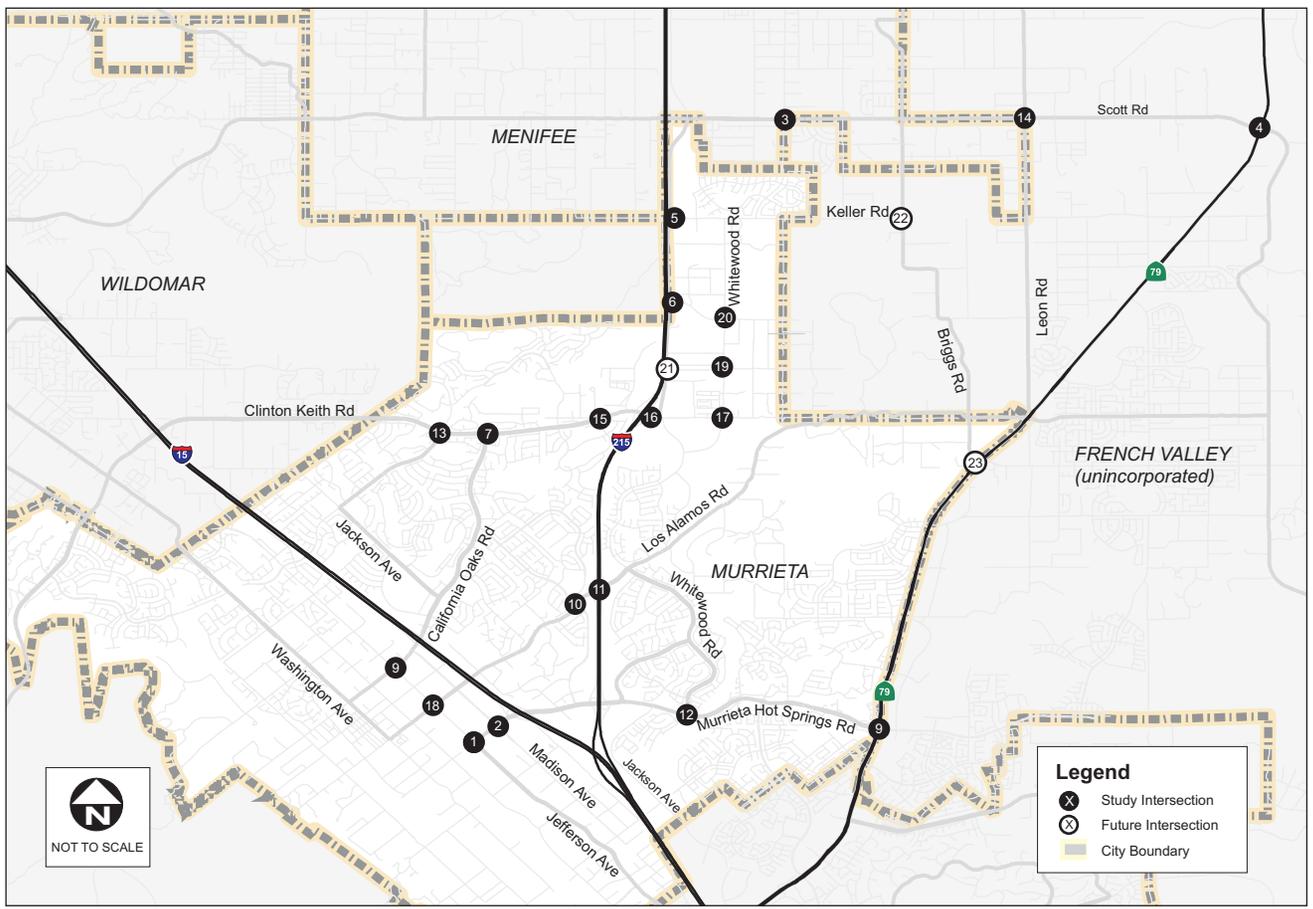
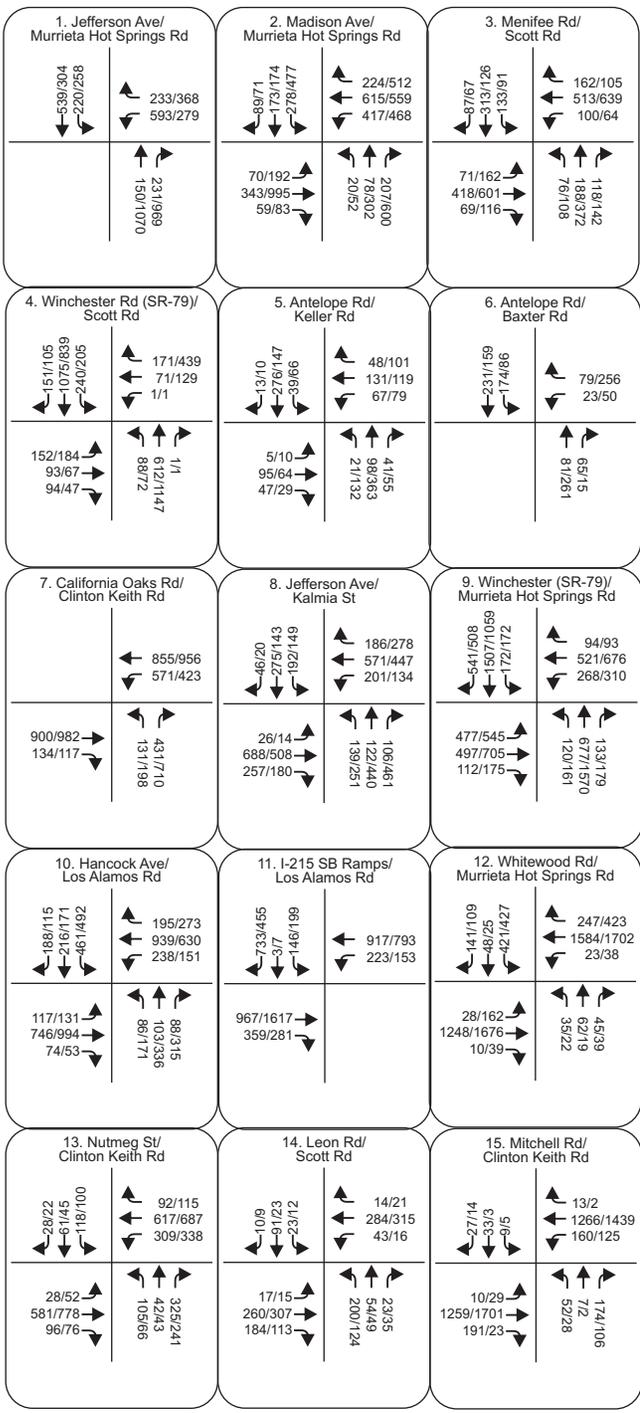


Figure 2-1
 Existing Intersection Volumes

3 TRAFFIC OPERATIONS ANALYSIS METHODOLOGY

The quality of traffic operations is characterized using the concept of level of service (LOS). Level of service is defined by a range of grades from A (best) to F (worst). At intersections, LOS “A” represents relatively free flow operating conditions with little or no delay. LOS “F” is characterized by extremely unstable flow conditions, severe congestion and delays with traffic volumes at or near the intersection’s design capacity. This typically results in long vehicular queues extending from all approaches to the intersection.

Analysis of traffic operations were conducted using the Highway Capacity Manual (HCM) 2010 Edition. LOS analysis was calculated at the study area intersections using Synchro 9 software. All traffic signal phasing splits were optimized for the purposes of this analysis. **Table 2** presents a brief description of each level of service letter grade, as well as the range of HCM average intersection delay associated with each grade for both signalized and unsignalized intersections.

Table 2: Intersection Level of Service Definitions

Level Of Service	Description	Signalized Intersection Delay (seconds per vehicle)	Unsignalized Intersection Delay (seconds per vehicle)
A	Excellent operation. All approaches to the intersection appear quite open, turning movements are easily made, and nearly all drivers find freedom of operation.	≤ 10	≤ 10
B	Very good operation. Many drivers begin to feel somewhat restricted within platoons of vehicles. This represents stable flow. An approach to an intersection may occasionally be fully utilized and traffic queues start to form.	>10 and ≤ 20	>10 and ≤ 15
C	Good operation. Occasionally drivers may have to wait more than 60 seconds, and back-ups may develop behind turning vehicles. Most drivers feel somewhat restricted.	>20 and ≤ 35	>15 and ≤ 25
D	Fair operation. Cars are sometimes required to wait more than 60 seconds during short peaks. There are no long-standing traffic queues.	>35 and ≤ 55	>25 and ≤ 35
E	Poor operation. Some long-standing vehicular queues develop on critical approaches to intersections. Delays may be up to several minutes.	>55 and ≤ 80	>35 and ≤ 50
F	Forced flow. Represents jammed conditions. Backups form locations downstream or on the cross street may restrict or prevent movement of vehicles out of the intersection approach lanes; therefore, volumes carried are not predictable. Potential for stop and go type traffic flow.	> 80	> 50

The City’s Level of Service standard, as published in the City’s current General Plan, Chapter IV, is LOS D for peak hour intersection operations.

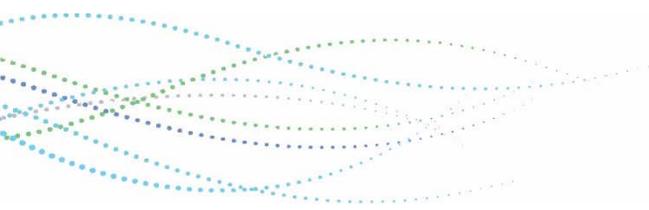


Table 3 presents the daily roadway capacity values per the current Circulation Element, for use in the roadway segment LOS analysis.

Table 3: Daily Roadway Capacity

Facility	Lane Configuration	Maximum Capacity (veh/day)
Collector	2-lane Divided	13,000
Secondary	4-lane Divided	25,900
Major	4-lane Divided	34,100
Arterial	4-lane Divided	35,900
Arterial and Urban Arterial	6-lane Divided	53,900
Augmented Urban Arterial	8-lane Divided	71,800

Table 4 summarizes the LOS criteria, measured in terms of Volume-to-Capacity ratio, for use in the roadway segment analysis.

Table 4: Roadway Segment Level of Service Criteria

Level of Service (LOS)	Volume-to-Capacity Ratio
A	0.00 – 0.60
B	> 0.60 – 0.70
C	> 0.70 – 0.80
D	> 0.80 – 0.90
E	> 0.90 – 1.00
F	> 1.00

The City’s Level of Service standard is LOS C for roadway segment operations, unless segments are within General Plan Focus Areas where LOS D is allowed.

3.1 Significance Criteria

This section presents the significant impact criteria at roadway segments and intersections.

3.1.1 Roadway Segments

Traffic volume increases from public or private projects that result in the following criteria will have a significant traffic volume or level of service traffic impact on a roadway segment:

- The additional or redistributed ADT generated by the proposed project will significantly increase congestion on a roadway segment currently operating at LOS E or F, or will cause a roadway segment to operate at LOS E or LOS F as a result of the proposed project as identified in **Table 5**.

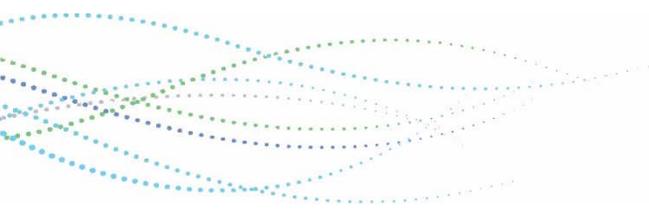


Table 5: Measures of Significant Project Impacts to Congestion on Roadway Segments

Level of Service	Allowable Increases on Congested Roadway Segments		
	Two-lane Road	Four-lane Road	Six-lane Road
LOS E	200 ADT	400 ADT	600 ADT
LOS F	100 ADT	200 ADT	300 ADT

Notes:

1. By adding proposed project trips to all other trips from a list of projects, this same table must be used to determine if total cumulative impacts are significant. If cumulative impacts are found to be significant, each project that contributes additional trips must mitigate a share of the cumulative impacts.
2. The City may also determine impacts have occurred on roads even where a project's traffic or cumulative impacts do not trigger an unacceptable level of service, when such traffic uses a significant amount of remaining roadway capacity.

3.1.2 Intersections

This section provides guidance for evaluating adverse environmental effects a project may have on signalized and unsignalized intersections. **Table 6** summarizes the significant project impacts for signalized and unsignalized intersections.

Signalized

Traffic volume increases from public or private projects that result in the following criteria will have a significant traffic volume or level of service traffic impact on a signalized intersection:

- The additional or redistributed ADT generated by the proposed project will significantly increase congestion on a signalized intersection operating at LOS E or LOS F, or will cause a signalized intersection to operate at LOS E or LOS F as identified in **Table 6**.

Unsignalized

Traffic volume increases from public or private projects that result in one or more of the following criteria will have a significant impact to an unsignalized intersection as listed in **Table 6** and described in text below:

- The additional or redistributed traffic generated by the proposed project will add 21 or more peak hour trips to a critical movement of an unsignalized intersection, and cause an unsignalized intersection to operate below LOS D, or
- The additional or redistributed traffic generated by the proposed project will add 21 or more peak hour trips to a critical movement of an unsignalized intersection currently operating at LOS E, or
- The additional or redistributed traffic generated by the proposed project will add 6 or more peak hour trips to a critical movement of an unsignalized intersection, and cause the unsignalized intersection to operate at LOS F, or
- The additional or redistributed traffic generated by the proposed project will add 6 or more peak hour trips to a critical movement of an unsignalized intersection currently operating at LOS F, or

- Based upon an evaluation of existing accident rates, the signal prioritization list, intersection geometrics, proximity of adjacent driveways, sight distance or other factors, the project would significantly impact the operations of the intersection.

Table 6: Measures of Significant Project Impacts to Congestion on Intersections

Level of Service	Allowable Increases on Congested Intersections	
	Signalized	Unsignalized
LOS E	Delay of 2 seconds or less	20 or less peak hour trips on a critical movement
LOS F	Either a delay of 1 second, or 5 peak hour trips or less on a critical movement	5 or less peak hour trips on a critical movement

Notes:

- A critical movement is an intersection movement (left-turn, through movement, right-turn) that experiences excessive queues, which typically operate at LOS F. Also, if a project adds significant volume to a minor roadway approach, a gap study should be provided that details the headways between vehicles on the major roadway.
- By adding proposed project trips to all other trips from a list of projects, these same tables are used to determine if total cumulative impacts are significant. If cumulative impacts are found to be significant, each project is responsible for mitigating its share of the cumulative impact.
- The City may also determine impacts have occurred at intersections even when a project’s direct or cumulative impacts do not trigger an unacceptable level of service, when such traffic uses a significant amount of remaining intersection capacity.
- For determining significance at signalized intersections with LOS F conditions, the analysis must evaluate both the delay and the number of trips on a critical movement. Exceedance of either criteria results in a significant impact.

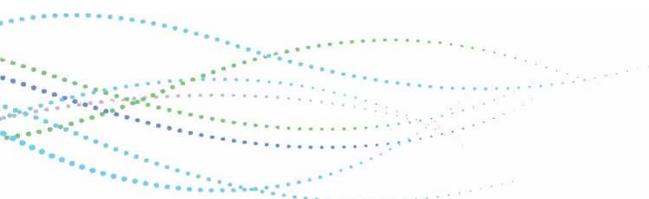
Significance criteria is adopted from the County of San Diego Guidelines for Determining Significance and Report Format and Content Requirements, Transportation and Traffic, Land Use and Environment Group, Department of Planning and Land Use, Department of Public Works, Second Modification, August 24, 2011.

4 EXISTING CONDITIONS

This section includes the analysis of existing peak hour intersection operations and daily roadway segment operations.

4.1 Intersection Analysis

A level of service analysis was conducted to evaluate existing intersection operations during the a.m. and p.m. peak hours at the study intersections. **Figure 4-1** shows the existing intersection configurations. **Table 7** summarizes the existing peak hour LOS at the study intersections. LOS calculation sheets are provided in **Appendix B**.



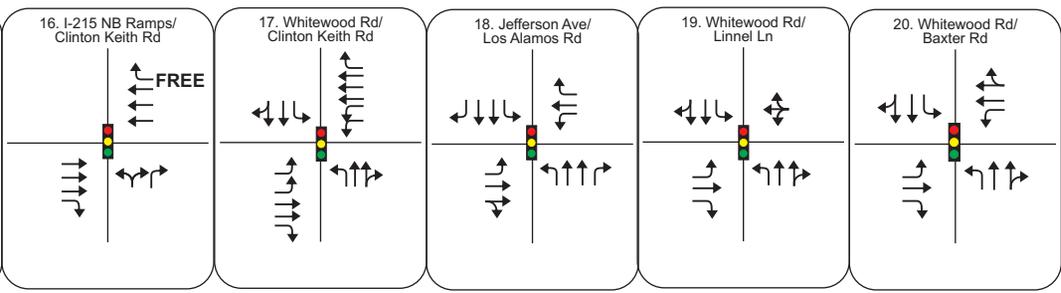
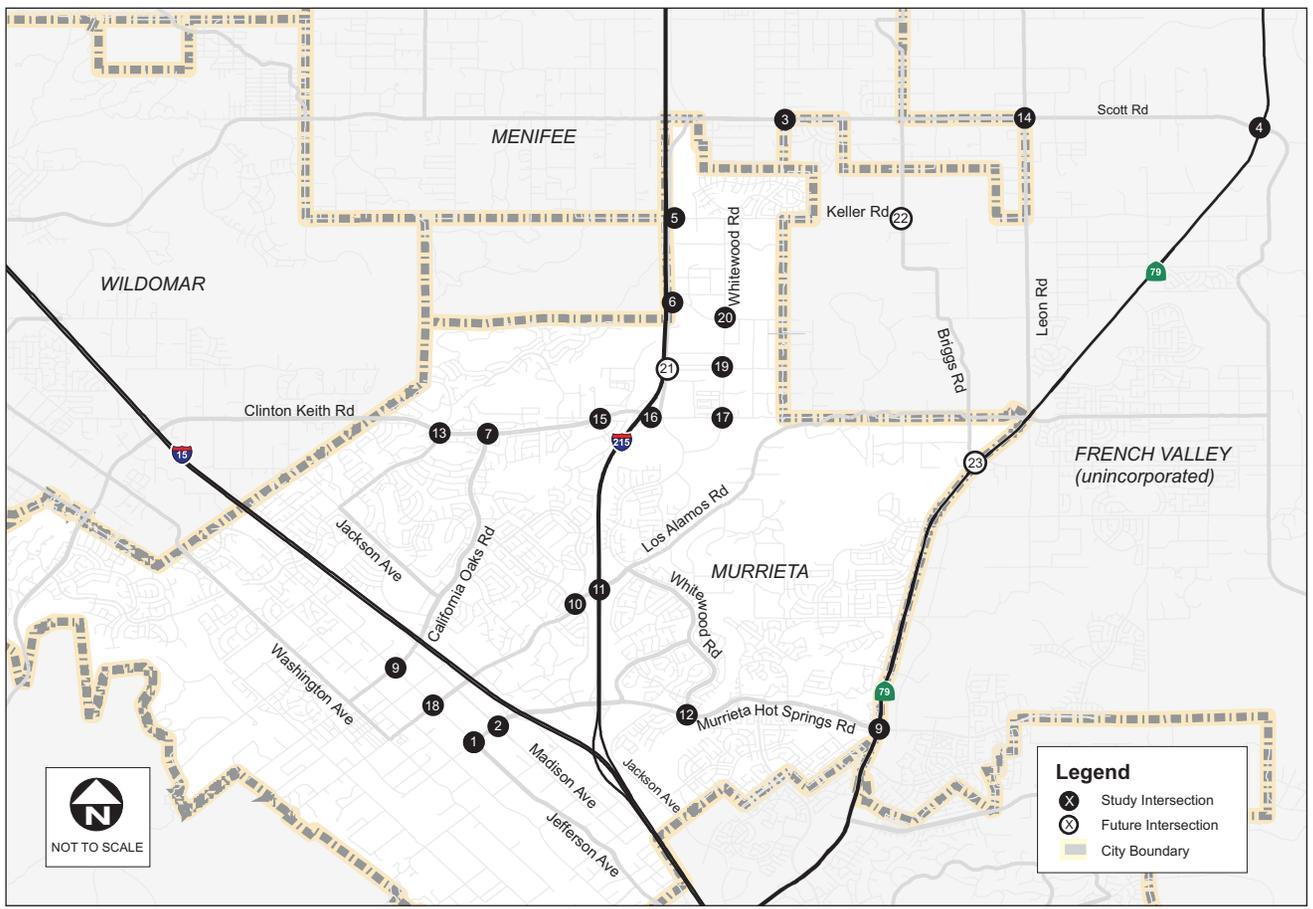
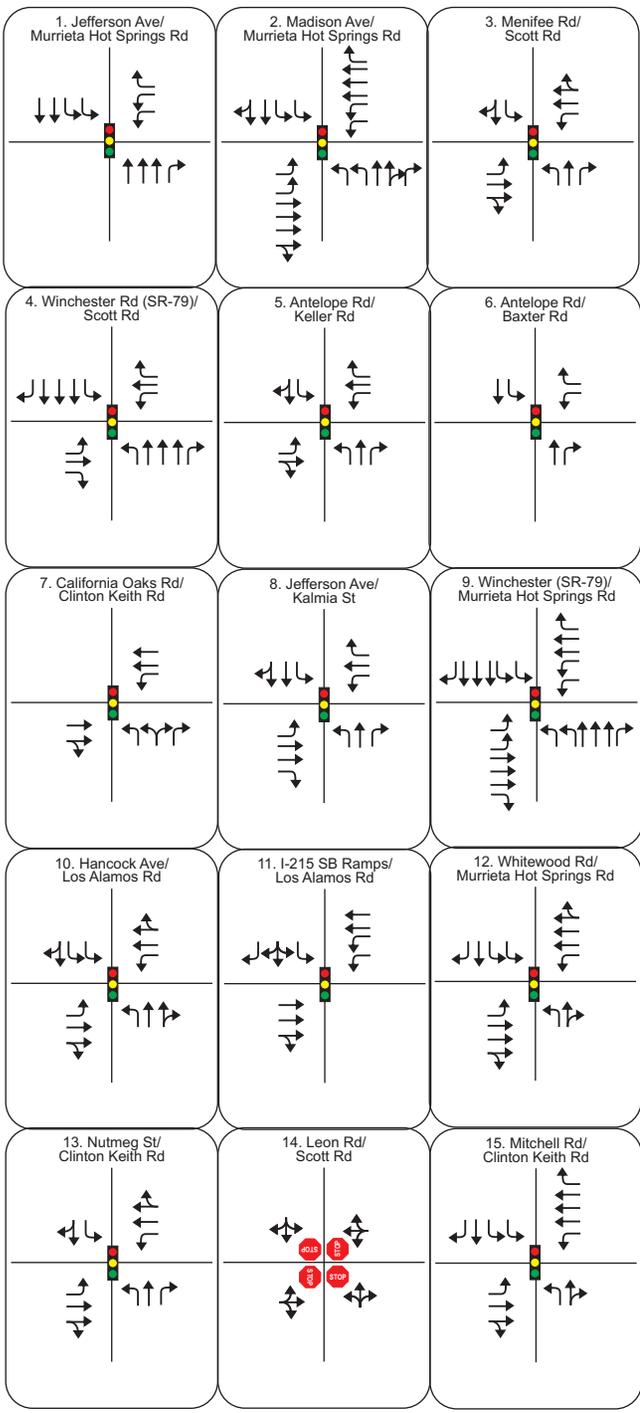


Table 7: Existing Intersection Peak Hour Level of Service

	Intersection	Control Type	AM Peak Hour		PM Peak Hour	
			Delay (sec)	LOS	Delay (sec)	LOS
1	Jefferson Ave/Murrieta Hot Springs Rd	signalized	19.9	B	21.6	C
2	Madison Ave/Murrieta Hot Springs Rd	signalized	38.3	D	63.8	E
3	Menifee Rd/Scott Rd	signalized	29.3	C	35.8	D
4	Winchester Rd (SR-79)/Scott Rd	signalized	27.9	C	54.7	D
5	Antelope Road/Keller Rd	signalized	21.0	C	23.0	C
6	Antelope Rd/Baxter Rd	signalized	20.4	C	25.2	C
7	California Oaks Rd/Clinton Keith Rd	signalized	60.0	E	39.0	D
8	Jefferson Ave/Kalmia St	signalized	47.7	D	41.0	D
9	Winchester Rd (SR-79)/Murrieta Hot Springs Rd	signalized	44.8	D	49.5	D
10	Hancock Ave/Los Alamos Rd	signalized	62.7	E	59.4	E
11	I-215 SB Ramps/Los Alamos Rd	signalized	25.3	C	20.6	C
12	Whitewood Rd/Murrieta Hot Springs Rd	signalized	52.6	D	72.8	E
13	Nutmeg St/Clinton Keith Rd	signalized	30.3	C	36.7	D
14	Leon Rd/Scott Rd	AWSC	24.3	C	18.6	C
15	Mitchell Rd/Clinton Keith Rd	signalized	41.7	D	43.2	D
16	I-215 NB Ramps/Clinton Keith Rd	signalized	21.7	C	20.7	C
17	Whitewood Rd/Clinton Keith Rd	signalized	44.2	D	41.4	D
18	Jefferson Ave/Los Alamos Rd	signalized	33.8	C	31.3	C
19	Whitewood Rd/Linnel Ln	signalized	8.9	A	12.1	B
20	Whitewood Rd/Baxter Rd	signalized	15.6	B	16.8	B

Notes:

LOS = Level of Service.

AWSC = All-way stop control

As shown in **Table 7**, the following intersections are currently operating at LOS E or F:

- Madison Avenue/Murrieta Hot Springs Road;
- California Oaks Road/Clinton Keith Road;
- Hancock Avenue/Los Alamos Road; and
- Whitewood Road/Murrieta Hot Springs Road.

4.2 Roadway Segment Analysis

Table 8 summarizes the existing Volume-to-Capacity (V/C) ratios and LOS at the roadway segments, utilizing the maximum daily roadway capacity values per the current Circulation Element. Daily volumes were calculated based on peak hour adjacent intersection approach and departure volumes, using a peak hour-to-daily volume ratio (i.e., K factor) developed from daily volume data at other locations provided by the City.

Table 8: Existing Daily Roadway Segment Level of Service

	Segment	Lane Configuration	Capacity (vehicles/day)	Existing ADT	Volume to Capacity Ratio (V/C)	LOS
1	Scott Rd east of Menifee Rd	4D	35,900	13,355	0.37	A
2	Scott Rd between Leon Rd and Winchester Rd (SR-79)	2U	13,000	6,930	0.53	A
3	Keller Rd between I-215 and Whitewood Rd	3D	19,500*	5,120	0.26	A
4	Keller Rd east of Whitewood Rd (future)	-	-	-	-	-
5	Baxter Rd between Antelope Rd and Whitewood Rd	4D	25,900	4,225	0.16	A
6	Antelope Rd between Baxter Rd and Clinton Keith Rd	2U	13,000	5,130	0.39	A
7	Whitewood Rd between Baxter Rd and Clinton Keith Rd	4D	34,100	18,305	0.54	A
8	Clinton Keith Rd west of Nutmeg St	4D	35,900	17,790	0.50	A
9	Clinton Keith Rd east of California Oaks Rd	4D	35,900	32,490	0.91	E
10	Clinton Keith Rd between I-215 and Whitewood Rd	6D	53,900	26,205	0.49	A
11	Clinton Keith Rd east of Whitewood Rd	6D	53,900	15,780	0.29	A
12	California Oaks Rd south of Clinton Keith Rd	4D	34,100	15,320	0.45	A
13	California Oaks Rd south of I-15	5D	44,875*	20,920	0.47	A
14	Jefferson Ave south of California Oaks Rd	4D	35,900	17,700	0.49	A
15	Los Alamos Rd between I-215 and Whitewood Rd	4D	35,900	29,230	0.81	D
16	Los Alamos Rd between Monroe Ave and Hancock Ave	4D	34,100	22,150	0.65	B
17	Whitewood Rd north of Murrieta Hot Springs Rd	4D	34,100	12,330	0.36	A
18	Jefferson Ave south of Murrieta Hot Springs Rd	4D	35,900	27,750	0.77	C
19	Murrieta Hot Springs Rd between I-15 and I-215	8D	71,800	38,200	0.53	A
20	Murrieta Hot Springs Rd between Alta Murrieta Dr and Whitewood Rd	6D	53,900	39,260	0.73	C
21	Murrieta Hot Springs Rd between Whitewood Rd and Margarita Rd	6D	53,900	45,560	0.85	D
22	Murrieta Hot Springs Rd between Margarita Rd and Winchester Rd (SR-79)	4D	35,900	29,310	0.82	D

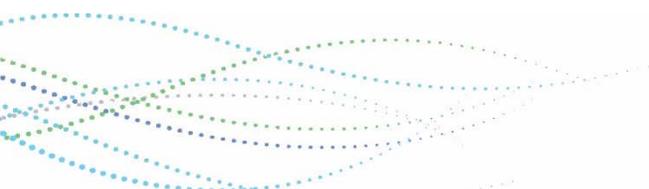
Notes:

LOS = Level of Service.

* Capacity calculated based on per lane capacities from other designations.

As shown in **Table 8**, all segments are currently operating at LOS C or better with the exception of the following segments:

- Clinton Keith Road east of California Oaks Road;
- Los Alamos Road between I-215 and Whitewood Road;



- Murrieta Hot Springs Road between Whitewood Road and Margarita Road; and
- Murrieta Hot Springs Road between Margarita Road and Winchester Road (SR-79).

5 PROPOSED PROJECT

As previously discussed, the Focused GPU supersedes the 2011 Murrieta General Plan and subsequent General Plan Amendments through 2018. As this is a focused update, many portions of the 2011 General Plan will remain unchanged. With regards to land use, there are two key differences between the 2011 General Plan and the proposed General Plan. These differences are contained within six key areas of the City. The first difference is that the Focused GPU contains a new land use designation, Innovation. The second difference is the mix and location of land use designations within the six key areas.

5.1 Land Use

Table 9 shows the proposed project net changes in land use for residential and non-residential uses, including the new Innovation category.

Table 9: Proposed Project Net Land Use Changes

Land Use Description	Net Change
Large Lot Residential	-32 dwelling units
Single-Family Residential	-192 dwelling units
Multi-family Residential	+1,796 dwelling units
Commercial	+176,749 sq ft
Office & Research Park	-9,841,655 sq ft
Civic & Institutional	-91 sq ft
Innovation (new)	+7,259,396 sq ft
Mixed-Use	0 sq ft
Business Park	0 sq ft
Industrial	0 sq ft

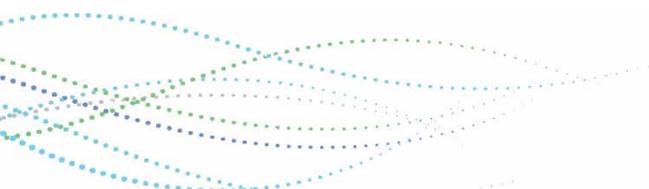
The Focused GPU’s anticipated change in dwelling units and non-residential square footage over the 2035 estimated buildout from the 2011 General Plan is:

- Addition of 1,572 dwelling units; and
- Reduction of 2,405,601 square feet of non-residential uses.

5.2 Traffic Forecasting

The traffic forecasting approach involved the development of a focused multi-modal, multi-class travel demand model for the City of Murrieta. This focused model is consistent with the 2016 SCAG RTP/SCS travel demand model assumptions and inputs as well as compatible with the current City of Murrieta Transportation Analysis Zone (TAZ) structure and land use as part of the adopted General Plan.

The base year of 2016 and the forecast year of 2040 were obtained from the 2016 SCAG RTP/SCS travel demand



model. The Model was developed using the TransCAD software package, the software platform currently used by SCAG for regional modeling. The City’s highway network was updated and refined to include all key general plan roadways in the City of Murrieta. The transit network was also reviewed and found to be a satisfactory representation of transit services. The Model is consistent with the traditional four step modeling process, which includes trip generation, trip distribution, mode split, and traffic assignment.

5.2.1 Transportation Analysis Zones

The zone structure of the 2040 forecast year is identical to the zone structure of the base year, with only data inputs being modified. The land use data, described in **Table 9**, for each TAZ is converted to three (3) major socioeconomic variables (population, households and employment) and further disaggregated into secondary variables (e.g. household size, age, income level, employment type, etc.). **Table 10** summarizes the socioeconomic data (SED) under the currently adopted General Plan, the Focused General Plan Update, and the net change, applied as part of the traffic forecasting process.

Table 10: Citywide Socioeconomic Data Summary

Year	Currently Adopted General Plan			Focused General Plan Update			Net Change		
	HH	Pop	Emp	HH	Pop	Emp	HH	Pop	Emp
2040	44,805	135,419	95,029	46,377	139,825	92,087	1,572	4,406	-2,942

Note: HH = Households, Pop = Population, Emp = Employment

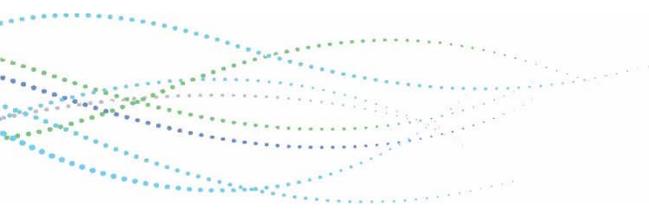
The process by which Iteris developed and validated the model is provided in a separate Model Development and Validation report within **Appendix C**. In addition, two land use alternatives were developed and evaluated in terms of Citywide Vehicle Miles Travel (VMT). The alternatives evaluation is provided in **Appendix D**.

5.2.2 Post-processing

The buildout year in the currently adopted General Plan is 2035. Thus, the year 2040 volumes were interpolated to the year 2035 and were used for the purposes of analyzing the traffic impacts of the focused General Plan Update, as opposed to 2040 which were taken directly from the 2016 SCAG RTP/SCS travel-demand model. The future year 2035 circulation network is anticipated to be modified significantly from the current network. For example, major planned enhancements such as a new I-215 interchange at Keller Road, extension of Keller Road to Leon Road, extension of Clinton Keith Road east of Whitewood Road, and a new Warm Springs Parkway running parallel to I-215 are anticipated in the City’s buildout condition. As such, more so than simply a change in traffic volume magnitude, traffic patterns in the study area will be largely different than existing conditions.

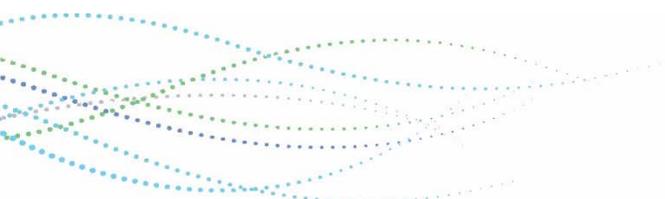
Existing turning movement count data is typically used as a “pivot point” for projecting future year turning movement volumes, where intersection and roadway capacities remain mostly static between baseline and future (i.e., a currently built out environment). However, considering Murrieta’s long-range planned buildout condition, this method is not applicable. Rather, turning movement volumes at the study intersections are acquired directly from the model, consistently applied to the “without project” and “with project” conditions.

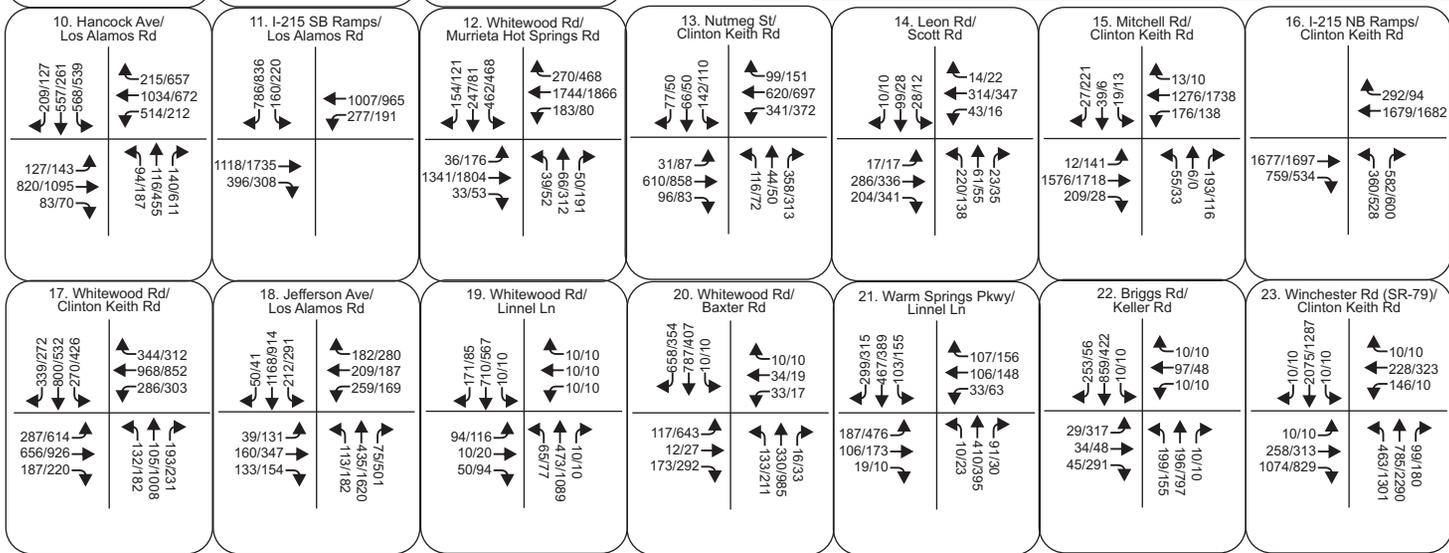
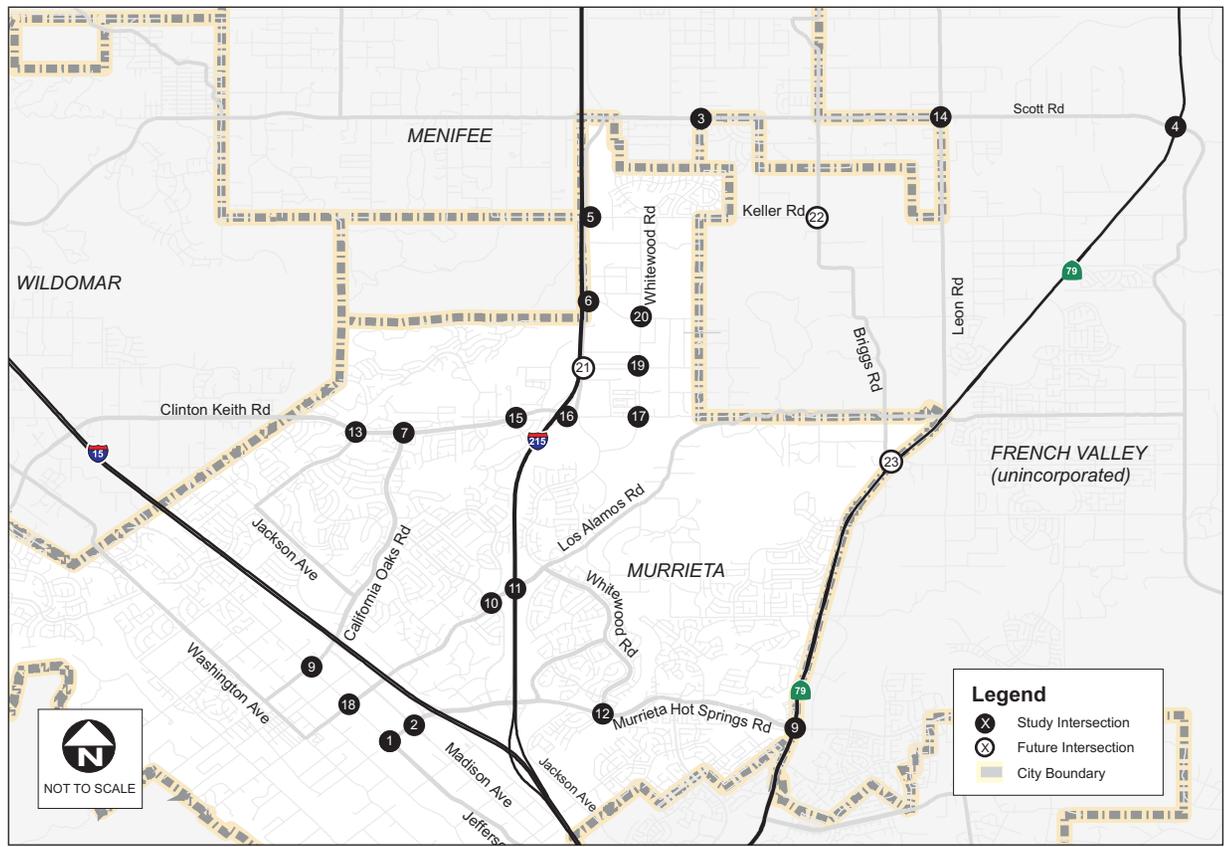
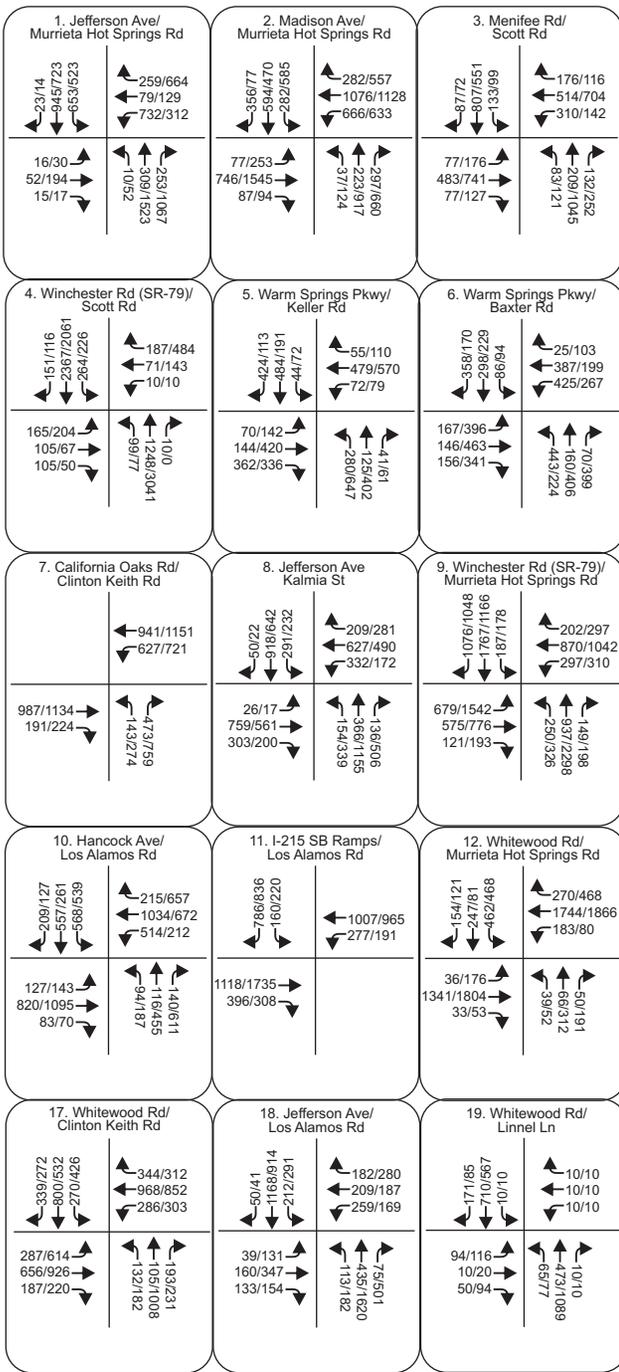
Future year peak hour turning movements acquired from the traffic model were adjusted to year 2035, from the model buildout year 2040. As part of typical post-processing, turning movements were scaled and balanced where appropriate in order to ensure consistent traffic flow.

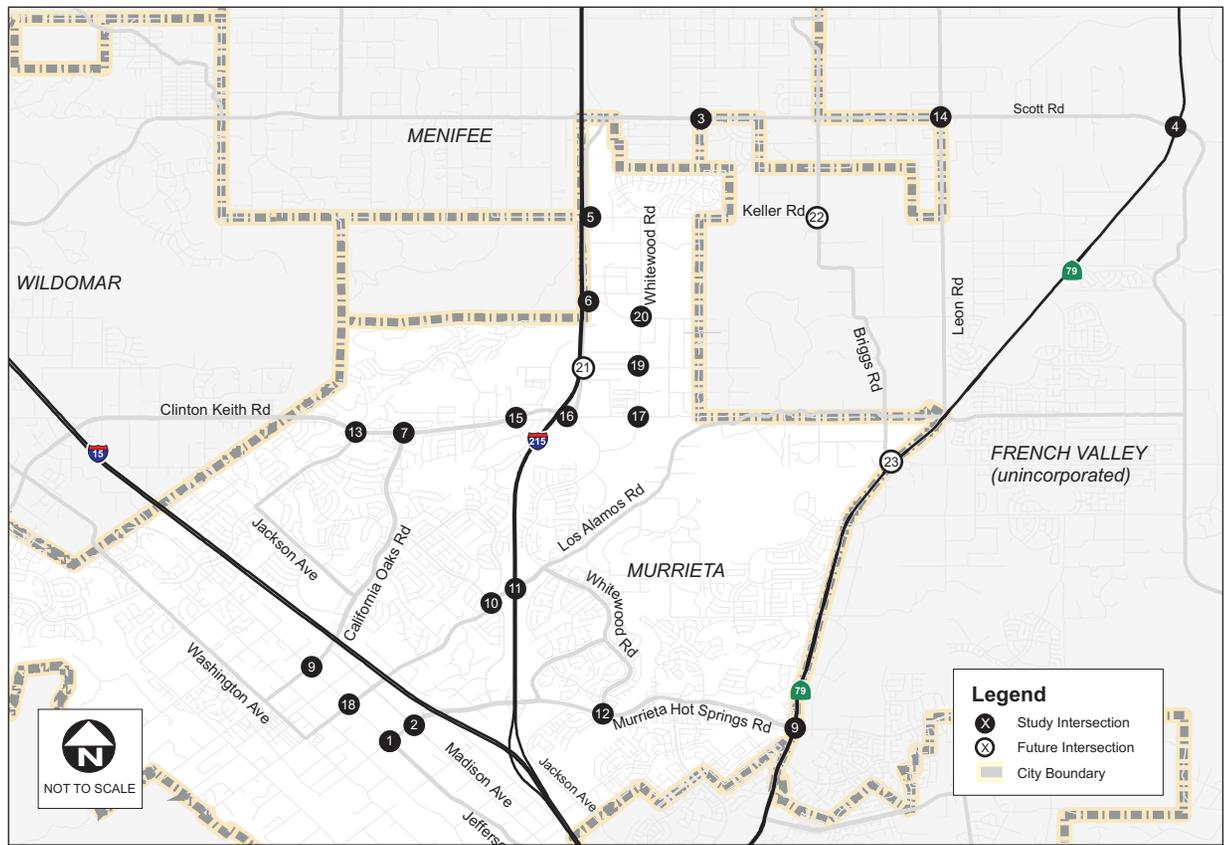
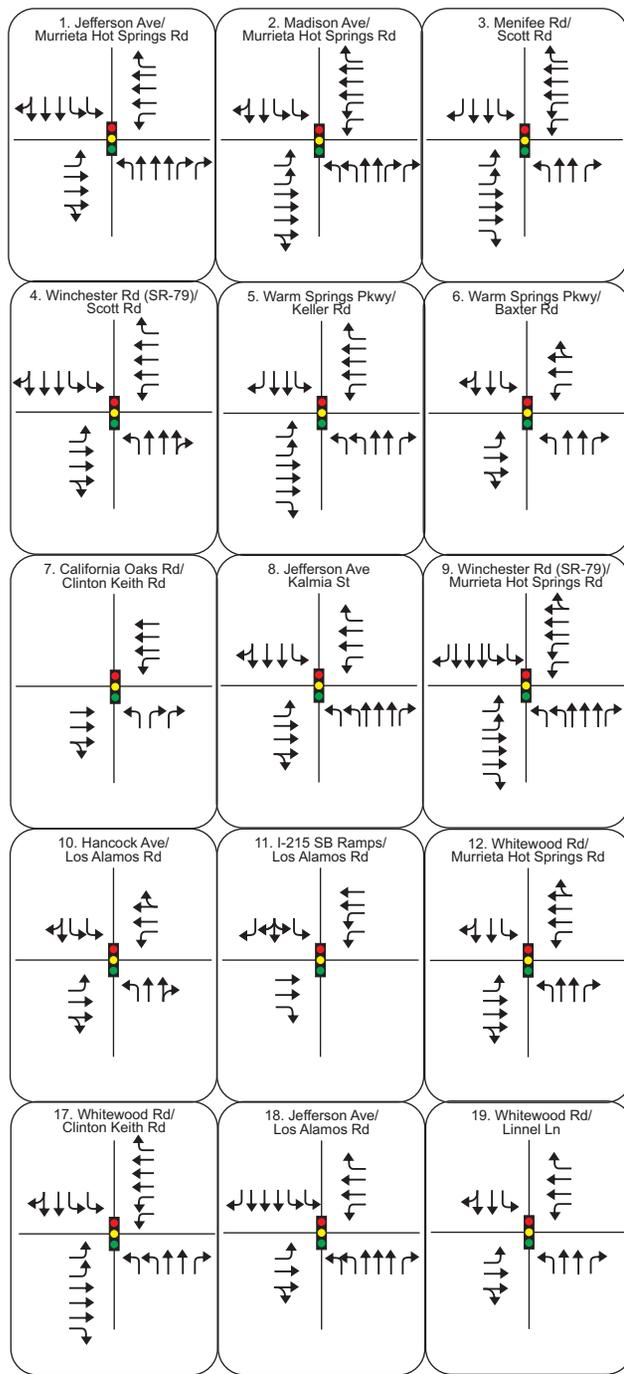


6 FUTURE YEAR 2035 WITHOUT PROJECT CONDITIONS

As mentioned, the buildout year in the currently adopted General Plan is 2035. Thus, the year 2040 volumes were interpolated to the year 2035 and were used for the purposes of analyzing the traffic impacts of the focused General Plan Update, as opposed to 2040 which were taken directly from the 2016 SCAG RTP/SCS travel-demand model. This section presents the analysis of traffic operations with the buildout of the currently adopted General Plan (i.e., “without project” conditions) in 2035. Future year 2035 without project traffic volumes were developed based on traffic modeling and post-processing procedures described in Section 5. **Figure 6-1** shows the future year 2035 without project intersection traffic volumes. **Figure 6-2** shows the future year 2035 without project intersection lane configurations, consistent with the currently adopted Circulation Element.







6.1 Intersection Analysis

A level of service analysis was conducted to evaluate future year 2035 without project intersection operations during the a.m. and p.m. peak hours at the study intersections. **Table 11** summarizes the future year 2035 without project peak hour LOS at the study intersections. LOS calculation sheets are provided in **Appendix B**.

Table 11: Future Year 2035 Without Project Intersection Peak Hour Level of Service

	Intersection	Control Type	AM Peak Hour		PM Peak Hour	
			Delay (sec)	LOS	Delay (sec)	LOS
1	Jefferson Ave/Murrieta Hot Springs Rd	signalized	97.6	F	126.5	F
2	Madison Ave/Murrieta Hot Springs Rd	signalized	46.9	D	99.2	F
3	Menifee Rd/Scott Rd	signalized	28.8	C	31.9	C
4	Winchester Rd (SR-79)/Scott Rd	signalized	50.3	D	156.1	F
5	Warm Springs Pkwy/Keller Rd	signalized	37.0	D	42.5	D
6	Warm Springs Pkwy/Baxter Rd	signalized	67.1	E	52.7	D
7	California Oaks Rd/Clinton Keith Rd	signalized	44.5	D	63.7	E
8	Jefferson Ave/Kalmia St	signalized	58.7	E	50.3	D
9	Winchester Rd (SR-79)/Murrieta Hot Springs Rd	signalized	125.2	F	254.2	F
10	Hancock Ave/Los Alamos Rd	signalized	139.1	F	144.9	F
11	I-215 SB Ramps/Los Alamos Rd	signalized	26.8	C	32.9	C
12	Whitewood Rd/Murrieta Hot Springs Rd	signalized	96.1	F	143.9	F
13	Nutmeg St/Clinton Keith Rd	signalized	30.7	C	32.2	C
14	Leon Rd/Scott Rd	signalized	14.4	B	12.7	B
15	Mitchell Rd/Clinton Keith Rd	signalized	34.9	C	34.7	C
16	I-215 NB Ramps/Clinton Keith Rd	signalized	29.1	C	35.9	D
17	Whitewood Rd/Clinton Keith Rd	signalized	57.3	E	76.5	E
18	Jefferson Ave/Los Alamos Rd	signalized	28.3	C	37.7	D
19	Whitewood Rd/Linnel Ln	signalized	14.5	B	15.4	B
20	Whitewood Rd/Baxter Rd	signalized	25.6	C	58.8	E
21	Warm Springs Pkwy/Linnel Ln	signalized	16.9	B	29.0	C
22	Briggs Rd/Keller Rd	signalized	17.3	B	19.9	B
23	Winchester Rd (SR-79)/Clinton Keith Rd	signalized	93.5	F	101.9	F

Notes:

LOS = Level of Service.

As shown in **Table 11**, the following intersections are forecast to operate at LOS E or F:

- Jefferson Avenue/Murrieta Hot Springs Road;
- Madison Avenue/Murrieta Hot Springs Road;
- Winchester Road (SR-79)/Scott Road;
- Warm Springs Parkway/Baxter Road;

- California Oaks Road/Clinton Keith Road;
- Jefferson Avenue/Kalmia Street;
- Winchester Road (SR-79)/Murrieta Hot Springs Road;
- Hancock Avenue/Los Alamos Road;
- Whitewood Road/Murrieta Hot Springs Road;
- Whitewood Road/Clinton Keith Road;
- Whitewood Road/Baxter Road; and
- Winchester Road (SR-79)/Clinton Keith Road.

6.2 Roadway Segment Analysis

Table 12 summarizes the future year 2035 without project V/C ratios and LOS at the roadway segments, assuming lane configurations consistent with the current Circulation Element as well as the maximum daily roadway capacity values per the current Circulation Element. Daily traffic volumes were developed based on traffic modeling procedures described in Section 5.

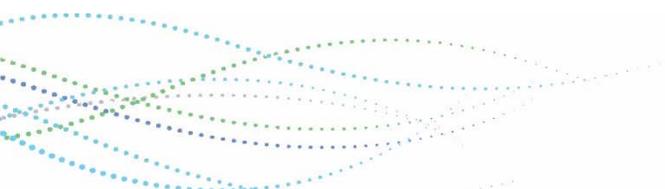


Table 12: Future Year 2035 Without Project Daily Roadway Segment Level of Service

Segment	Lane Configuration	Designation	Capacity (vehicles/day)	2035 Without Project ADT	Volume to Capacity Ratio (V/C)	LOS	
1	Scott Rd east of Menifee Rd	6D	Arterial	53,900	9,550	0.18	A
2	Scott Rd between Leon Rd and Winchester Rd (SR-79)	6D	Arterial	53,900	8,120	0.15	A
3	Keller Rd between I-215 and Whitewood Rd	6D	Arterial	53,900	12,610	0.23	A
4	Keller Rd east of Whitewood Rd	4D	Secondary	25,900	10,970	0.42	A
5	Baxter Rd between Antelope Rd and Whitewood Rd	4D	Secondary	25,900	15,270	0.59	A
6	Warm Springs Pkwy between Baxter Rd and Clinton Keith Rd	4D	Major	34,100	12,150	0.36	A
7	Whitewood Rd between Baxter Rd and Clinton Keith Rd	4D	Major	34,100	12,250	0.36	A
8	Clinton Keith Rd west of Nutmeg St	6D	Arterial	53,900	23,190	0.43	A
9	Clinton Keith Rd east of California Oaks Rd	6D	Arterial	53,900	43,780	0.81	D
10	Clinton Keith Rd between I-215 and Whitewood Rd	6D	Urban Arterial	53,900	22,500	0.42	A
11	Clinton Keith Rd east of Whitewood Rd	6D	Urban Arterial	53,900	24,990	0.46	A
12	California Oaks Rd south of Clinton Keith Rd	4D	Major	34,100	22,960	0.67	B
13	California Oaks Rd south of I-15	6D	Arterial	53,900	25,130	0.47	A
14	Jefferson Ave south of California Oaks Rd	6D	Arterial	53,900	44,190	0.82	D
15	Los Alamos Rd between I-215 and Whitewood Rd	6D	Arterial	53,900	23,850	0.44	A
16	Los Alamos Rd between Monroe Ave and Hancock Ave	4D	Major	34,100	36,560	1.07	F
17	Whitewood Rd north of Murrieta Hot Springs Rd	4D	Major	34,100	6,040	0.18	A
18	Jefferson Ave south of Murrieta Hot Springs Rd	6D	Arterial	53,900	37,150	0.69	B
19	Murrieta Hot Springs Rd between I-15 and I-215	8D	Augmented Urban Arterial	71,800	74,560	1.04	F
20	Murrieta Hot Springs Rd between Alta Murrieta Dr and Whitewood Rd	6D	Multi-Modal Transportation	53,900	49,280	0.91	E
21	Murrieta Hot Springs Rd between Whitewood Rd and Margarita Rd	6D	Multi-Modal Transportation	53,900	47,680	0.88	D
22	Murrieta Hot Springs Rd between Margarita Rd and Winchester Rd (SR-79)	6D	Multi-Modal Transportation	53,900	38,600	0.72	C

Notes:

ADT volume in 2035 is rounded to the nearest 10 vehicles.

LOS = Level of Service.

As shown in **Table 12**, the following roadways are forecast to operate at LOS D, E or F in future year 2035 without project conditions:

- Clinton Keith Road east of California Oaks Road;
- Jefferson Avenue south of California Oaks Road (acceptable, as part of GP focus area);
- Los Alamos Road between Monroe Avenue and Hancock Avenue;

- Murrieta Hot Springs Road between I-15 and I-215;
- Murrieta Hot Springs Road between Alta Murrieta Drive and Whitewood Road; and
- Murrieta Hot Springs Road between Whitewood Road and Margarita Road.

7 FUTURE YEAR 2035 WITH PROJECT CONDITIONS

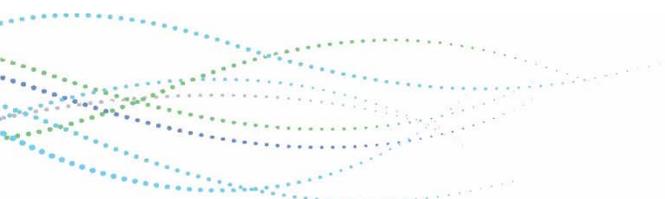
This section presents the analysis of traffic operations with the buildout of the proposed Focused General Plan Update (i.e., “with project” conditions) in 2035. Future year 2035 with project traffic conditions include land use changes within six focused areas of the City, as described in Section 5. In addition, based on an initial model run and discussions with City Public Works Department staff, the following roadway classification or configuration modifications to the currently adopted circulation network were identified (shown in **Figure 7-1**):

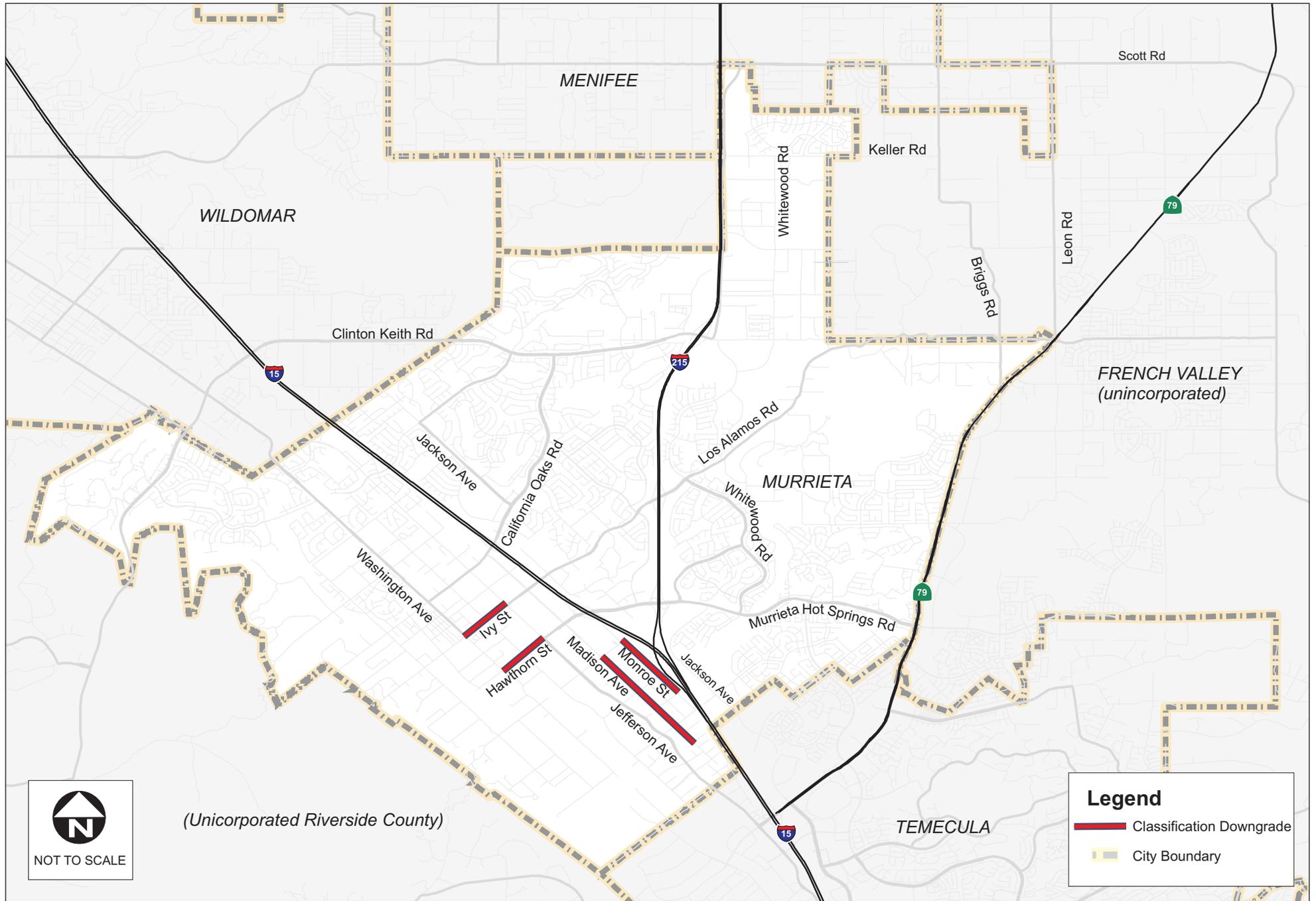
- Hawthorn Street is downgraded from an Arterial road (6-lane) (in the current Circulation Element) to a Secondary road (4-lane), between Washington Avenue and Jefferson Avenue;
- Monroe Avenue is downgraded from a Major road (4-lane) (in the current Circulation Element) to an Industrial Collector road (2-lane), between Guava Avenue and Larchmont Lane;
- Ivy Street is downgraded from a Major road (in the current Circulation Element) to a Secondary road, between Washington Avenue and Jefferson Avenue; and
- Madison Avenue is downgraded from a Major road (in the current Circulation Element) to a Secondary road, between Guava Street and Date Street.

Future year 2035 with project traffic volumes were developed based on traffic modeling and post-processing procedures described in Section 5. **Figure 7-2** shows the future year 2035 with project peak hour intersection volumes.

7.1 Intersection Analysis

A level of service analysis was conducted to evaluate future year 2035 with project intersection operations during the a.m. and p.m. peak hours at the study intersections. **Table 13** summarizes the future year 2035 with project peak hour LOS at the study intersections. With the exception of the downgraded roadway classifications described, the LOS analysis utilizes the same intersection lane configurations used in the “without project” scenario (shown in **Figure 6-2**). LOS calculation sheets are provided in **Appendix B**.





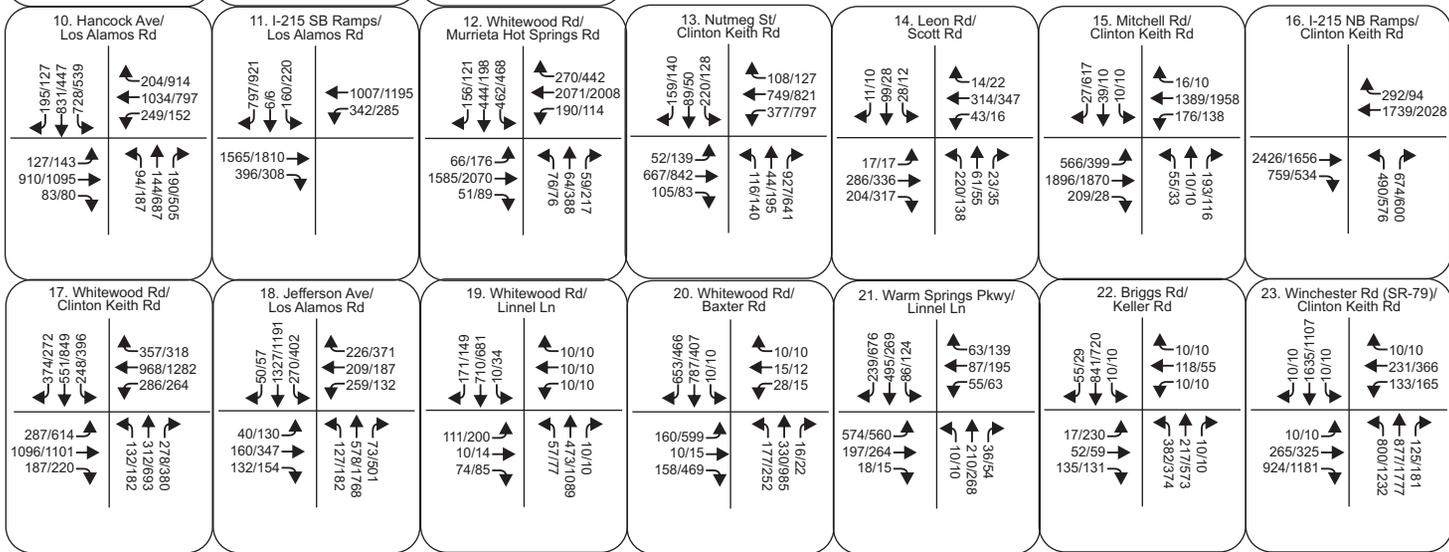
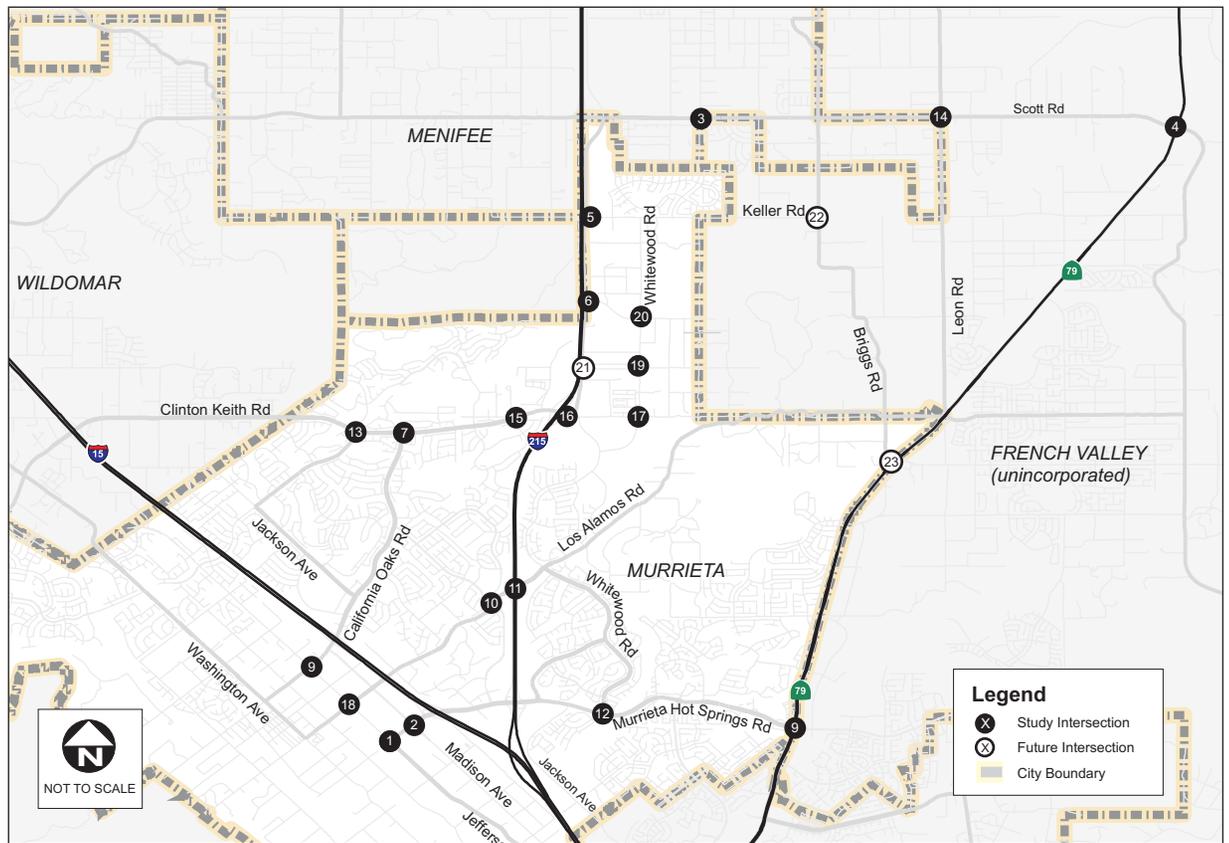
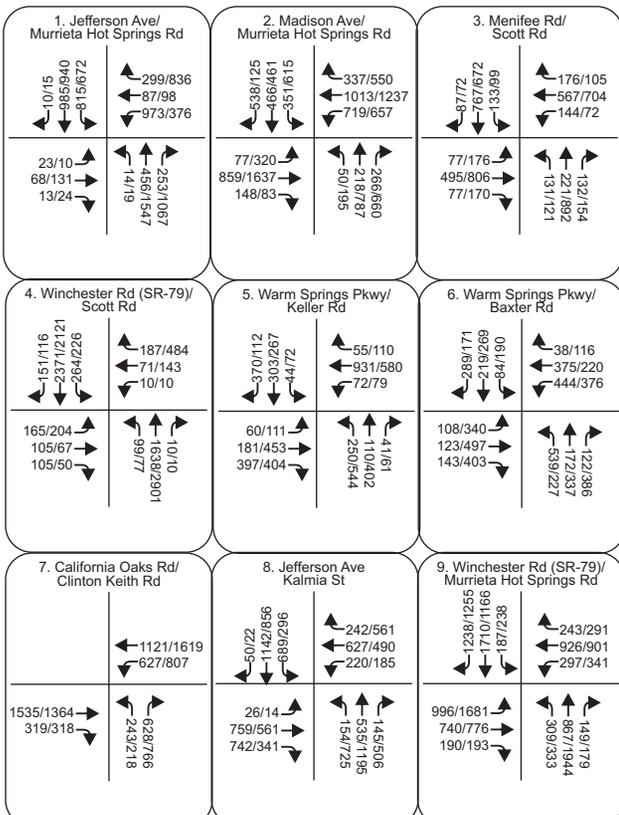


Table 13: Future Year 2035 With Project Intersection Peak Hour Level of Service

Intersection	Future Year 2035 Without Project				Future Year 2035 With Project				Change in AM Delay (sec)	Change in PM Delay (sec)	Significant Impact?
	AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour				
	Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)	LOS			
1 Jefferson Ave/Murrieta Hot Springs Rd	97.6	F	126.5	F	186.3	F	163.2	F	88.7	36.7	Yes
2 Madison Ave/Murrieta Hot Springs Rd	46.9	D	99.2	F	55.5	E	108.9	F	8.6	9.7	Yes
3 Menifee Rd/Scott Rd	28.8	C	31.9	C	28.7	C	30.8	C	-0.1	-1.1	No
4 Winchester Rd (SR-79)/Scott Rd	50.3	D	156.1	F	50.3	D	135.9	F	0.0	-20.2	No
5 Warm Springs Pkwy/Keller Rd	37.0	D	42.5	D	37.4	D	40.3	D	0.4	-2.2	No
6 Warm Springs Pkwy/Baxter Rd	67.1	E	52.7	D	68.7	E	72.5	E	1.6	19.8	Yes
7 California Oaks Rd/Clinton Keith Rd	44.5	D	63.7	E	79.7	E	91.4	F	35.2	27.7	Yes
8 Jefferson Ave/Kalmia St	58.7	E	50.3	D	153.5	F	75.0	E	94.8	24.7	Yes
9 Winchester Rd (SR-79)/Murrieta Hot Springs Rd	125.2	F	254.2	F	197.2	F	299.8	F	72.0	45.6	Yes
10 Hancock Ave/Los Alamos Rd	139.1	F	144.9	F	160.2	F	188.1	F	21.1	43.2	Yes
11 I-215 SB Ramps/Los Alamos Rd	26.8	C	32.9	C	32.4	C	52.6	D	5.6	19.7	No
12 Whitewood Rd/Murrieta Hot Springs Rd	96.1	F	143.9	F	130.1	F	160.4	F	34.0	16.5	Yes
13 Nutmeg St/Clinton Keith Rd	30.7	C	32.2	C	161.2	F	126.3	F	130.5	94.1	Yes
14 Leon Rd/Scott Rd	14.4	B	12.7	B	14.4	B	12.6	B	0.0	-0.1	No
15 Mitchell Rd/Clinton Keith Rd	34.9	C	34.7	C	63.0	E	62.5	E	28.1	27.8	Yes
16 I-215 NB Ramps/Clinton Keith Rd	29.1	C	35.9	D	65.3	E	42.6	D	36.2	6.7	Yes
17 Whitewood Rd/Clinton Keith Rd	57.3	E	76.5	E	52.2	D	85.3	F	-5.1	8.8	Yes
18 Jefferson Ave/Los Alamos Rd	28.3	C	37.7	D	29.6	C	53.0	D	1.3	15.3	No
19 Whitewood Rd/Linnel Ln	14.5	B	15.4	B	15.3	B	19.6	B	0.8	4.2	No
20 Whitewood Rd/Baxter Rd	25.6	C	58.8	E	28.4	C	65.8	E	2.8	7.0	Yes
21 Warm Springs Pkwy/Linnel Ln	16.9	B	29.0	C	23.6	C	75.5	E	6.7	46.5	Yes
22 Briggs Rd/Keller Rd	17.3	B	19.9	B	23.1	C	25.3	C	5.8	5.4	No
23 Winchester Rd (SR-79)/Clinton Keith Rd	93.5	F	101.9	F	104.6	F	155.3	F	11.1	53.4	Yes

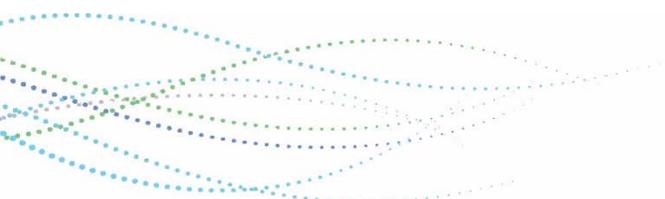
Notes: LOS = Level of Service.

As shown in **Table 13**, traffic related to the proposed project's land use modifications are forecast to result in significant traffic impacts, based on the criteria described in Section 3.1, at the following intersections in future year 2035:

- Jefferson Avenue/Murrieta Hot Springs Road;
- Madison Avenue/Murrieta Hot Springs Road;
- Warm Springs Parkway/Baxter Road;
- California Oaks Road/Clinton Keith Road;
- Jefferson Avenue/Kalmia Street;
- Winchester Road (SR-79)/Murrieta Hot Springs Road;
- Hancock Avenue/Los Alamos Road;
- Whitewood Road/Murrieta Hot Springs Road;
- Nutmeg Street/Clinton Keith Road;
- Mitchell Road/Clinton Keith Road;
- I-215 Northbound Ramps/Clinton Keith Road;
- Whitewood Road/Clinton Keith Road;
- Whitewood Road/Baxter Road;
- Warm Springs Parkway/Linnel Lane; and
- Winchester Road (SR-79)/Clinton Keith Road.

7.2 Roadway Segment Analysis

Table 14 summarizes the future year 2035 with project V/C ratios and LOS at the roadway segments, assuming lane configurations consistent with the adopted Circulation Element as well as the maximum daily roadway capacity values per the adopted Circulation Element. With the exception of the downgraded roadway classifications described, the LOS analysis utilizes the same roadway lane configurations used in the “without project” scenario. Daily traffic volumes were developed based on traffic modeling procedures described in Section 5. **Figure 7-3** shows the LOS, based on V/C ratio, at the roadway segments.



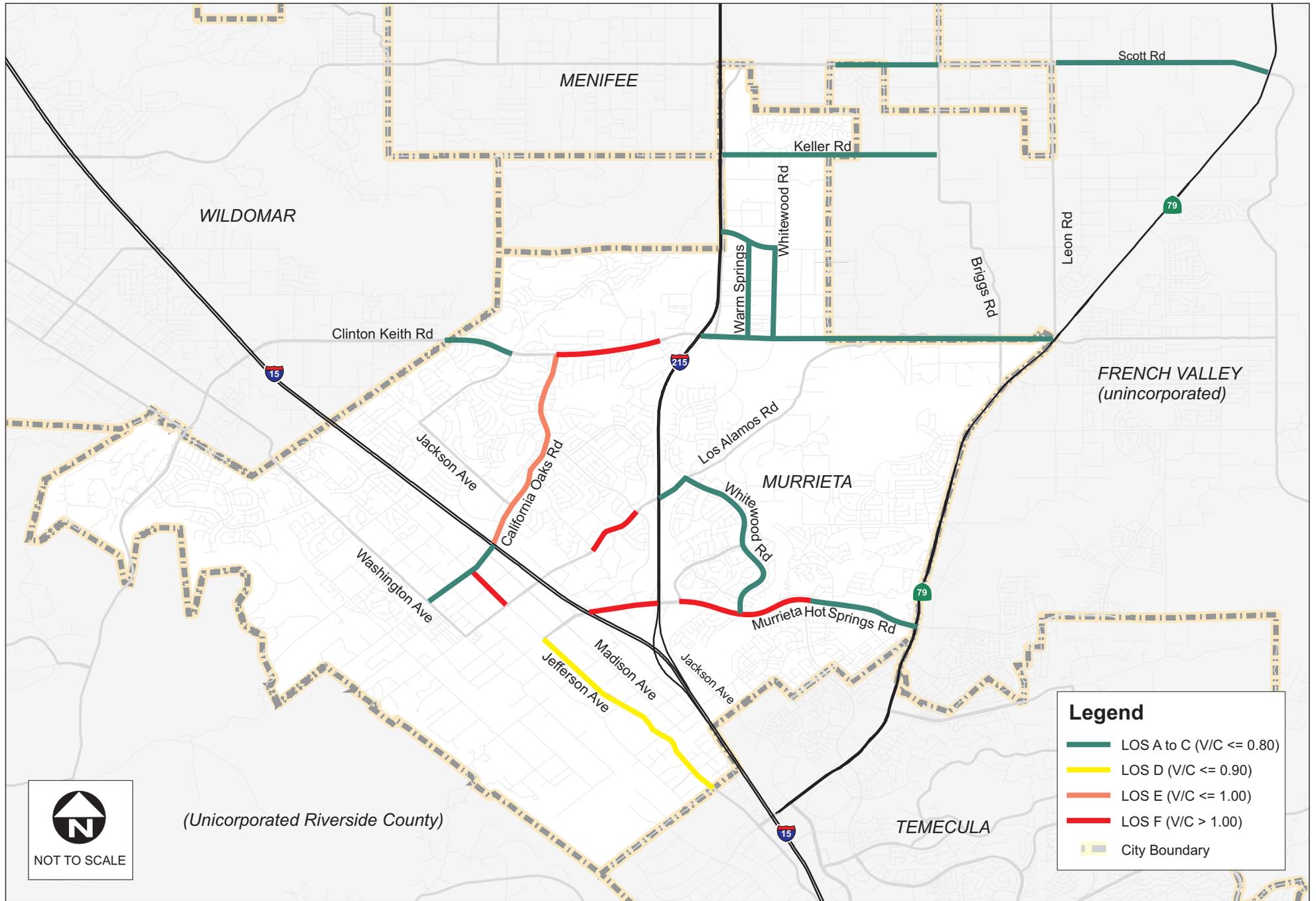


Table 14: Future Year 2035 With Project Daily Roadway Segment Level of Service

	Segment	Lane Configuration	Designation	Capacity (vehicles/day)	2035 With Project ADT	Volume to Capacity Ratio (V/C)	LOS
1	Scott Rd east of Menifee Rd	6D	Arterial	53,900	9,040	0.17	A
2	Scott Rd between Leon Rd and Winchester Rd (SR-79)	6D	Arterial	53,900	8,120	0.15	A
3	Keller Rd between I-215 and Whitewood Rd	6D	Arterial	53,900	15,460	0.29	A
4	Keller Rd east of Whitewood Rd	4D	Secondary	25,900	11,660	0.45	A
5	Baxter Rd between Antelope Rd and Whitewood Rd	4D	Secondary	25,900	16,040	0.62	B
6	Warm Springs Pkwy between Baxter Rd and Clinton Keith Rd	4D	Major	34,100	11,020	0.32	A
7	Whitewood Rd between Baxter Rd and Clinton Keith Rd	4D	Major	34,100	12,980	0.38	A
8	Clinton Keith Rd west of Nutmeg St	6D	Arterial	53,900	27,410	0.51	A
9	Clinton Keith Rd east of California Oaks Rd	6D	Arterial	53,900	57,630	1.07	F
10	Clinton Keith Rd between I-215 and Whitewood Rd	6D	Urban Arterial	53,900	27,400	0.51	A
11	Clinton Keith Rd east of Whitewood Rd	6D	Urban Arterial	53,900	30,930	0.57	A
12	California Oaks Rd south of Clinton Keith Rd	4D	Major	34,100	31,470	0.92	E
13	California Oaks Rd south of I-15	6D	Arterial	53,900	31,640	0.59	A
14	Jefferson Ave south of California Oaks Rd	6D	Arterial	53,900	55,800	1.04	F
15	Los Alamos Rd between I-215 and Whitewood Rd	6D	Arterial	53,900	31,690	0.59	A
16	Los Alamos Rd between Monroe Ave and Hancock Ave	4D	Major	34,100	40,320	1.18	F
17	Whitewood Rd north of Murrieta Hot Springs Rd	4D	Major	34,100	11,330	0.33	A
18	Jefferson Ave south of Murrieta Hot Springs Rd	6D	Arterial	53,900	44,210	0.82	D
19	Murrieta Hot Springs Rd between I-15 and I-215	8D	Augmented Urban Arterial	71,800	79,600	1.11	F
20	Murrieta Hot Springs Rd between Alta Murrieta Dr and Whitewood Rd	6D	Multi-Modal Transportation	53,900	58,620	1.09	F
21	Murrieta Hot Springs Rd between Whitewood Rd and Margarita Rd	6D	Multi-Modal Transportation	53,900	58,330	1.08	F
22	Murrieta Hot Springs Rd between Margarita Rd and Winchester Rd (SR-79)	6D	Multi-Modal Transportation	53,900	42,440	0.79	C

Notes:

ADT volume in 2035 is rounded to the nearest 10 vehicles.

LOS = Level of Service.

As shown in **Table 14**, traffic related to the proposed project’s land use modifications are forecast to result in significant traffic impacts, based on the criteria described in Section 3.1, at the following roadway segments in future year 2035:

- Clinton Keith Road east of California Oaks Road;

- California Oaks Road south of Clinton Keith Road;
- Jefferson Avenue south of California Oaks Road;
- Los Alamos Road between Monroe Avenue and Hancock Avenue;
- Murrieta Hot Springs Road between I-15 and I-215;
- Murrieta Hot Springs Road between Alta Murrieta Drive and Whitewood Road; and
- Murrieta Hot Springs Road between Whitewood Road and Margarita Road.

8 POTENTIAL IMPROVEMENTS

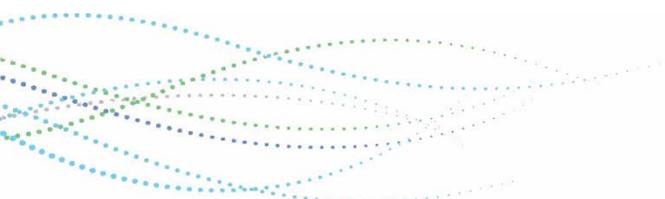
Based on the results of the traffic impact analysis, several intersections are forecast to be impacted by the land use modifications from the Focused GPU. In order to potentially alleviate the significant impacts, the following improvements are recommended through coordination with City staff:

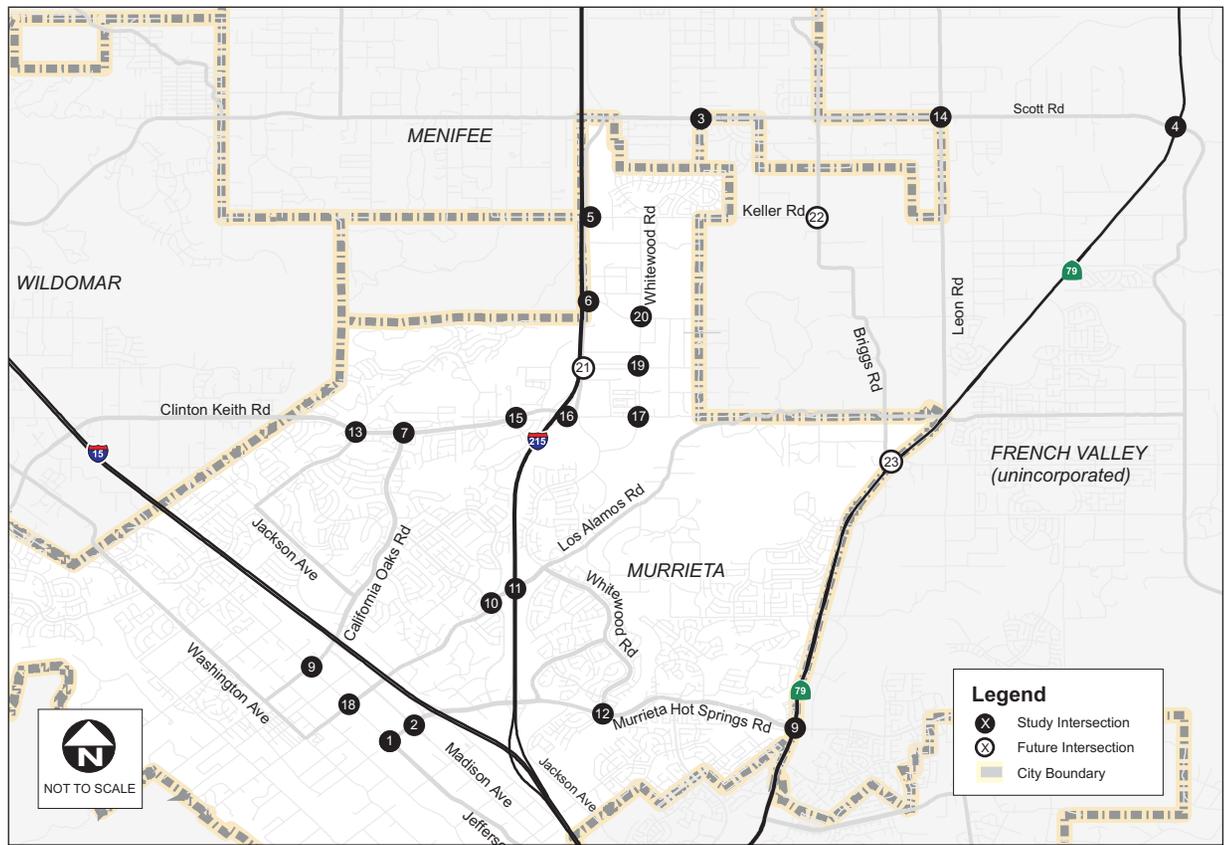
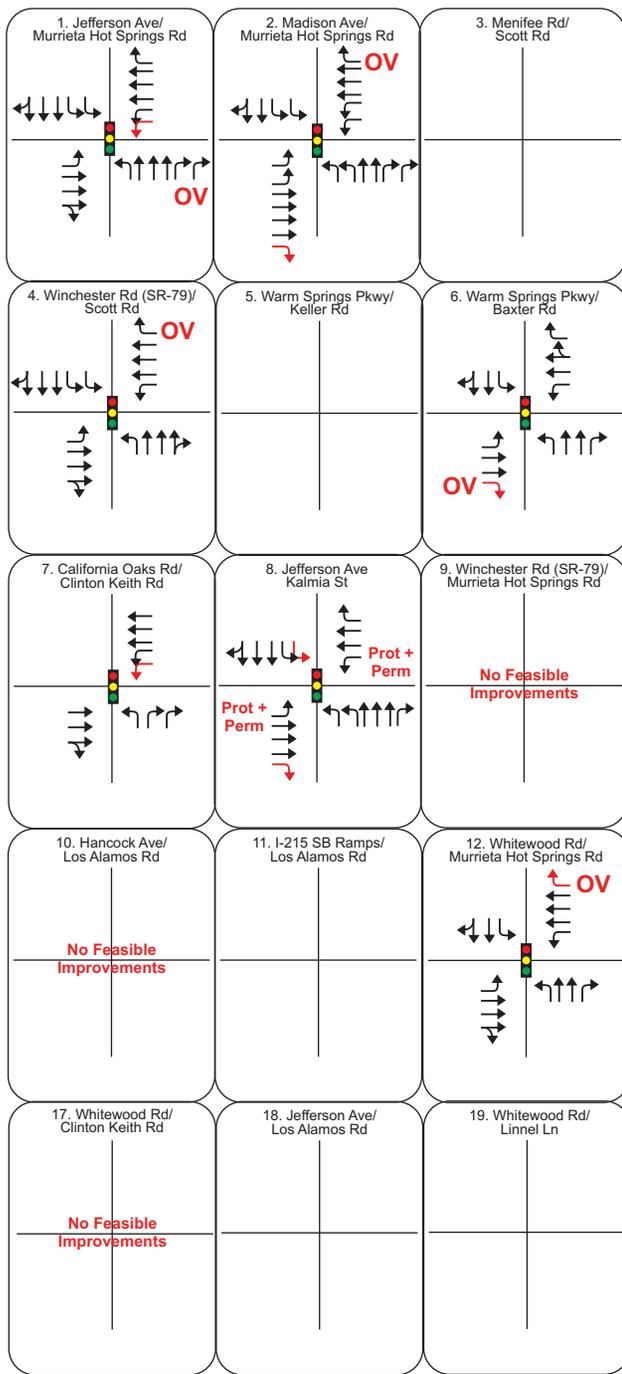
- **1. Jefferson Avenue/Murrieta Hot Springs Road** – At the westbound Murrieta Hot Springs Road approach, add a second left-turn lane. Modify the traffic signal phasing to include a northbound right-turn overlap phase.
- **2. Madison Avenue/Murrieta Hot Springs Road** – Widen the eastbound Murrieta Hot Springs Road approach to include a dedicated right-turn lane. Modify the traffic signal phasing to include a westbound right-turn overlap phase.
- **4. Winchester Road (SR-79)/Scott Road** – Modify the traffic signal phasing to include a westbound right-turn overlap phase.
- **6. Warm Springs Parkway/Baxter Road** – Widen the eastbound Baxter Road approach to include a dedicated right-turn lane and modify the traffic signal phasing to include an eastbound right-turn overlap phase.
- **7. California Oaks Road/Clinton Keith Road** - At the westbound Clinton Keith Road approach, add a second left-turn lane.
- **8. Jefferson Avenue/Kalmia Street** - At the southbound Jefferson Avenue approach, add a second left-turn lane. Widen the eastbound Kalmia Street approach to include a dedicated right-turn lane. Modify the traffic signal phasing to include protected plus permitted phasing at the Kalmia Street eastbound and westbound approaches.
- **9. Winchester Road (SR-79)/Murrieta Hot Springs Road** – No feasible improvements identified, significant unavoidable impact.
- **10. Hancock Avenue/Los Alamos Road** – No feasible improvements identified, significant unavoidable impact.
- **12. Whitewood Road/Murrieta Hot Springs Road** – Widen the westbound Murrieta Hot Springs Road approach to include a dedicated right-turn lane and modify the traffic signal phasing to include a westbound right-turn overlap phase.
- **13. Nutmeg Street/Clinton Keith Road** - At the westbound Clinton Keith Road approach, add a second left-turn lane. Convert the second northbound Nutmeg Street through lane to a dedicated right-turn lane

- (same configuration as existing conditions) and modify the traffic signal phasing to include a northbound right-turn overlap phase.
- **15. Mitchell Road/Clinton Keith Road** – Modify the traffic signal phasing to include protected plus permitted phasing at the Clinton Keith Road eastbound and westbound approaches.
 - **16. I-215 Northbound Ramps/Clinton Keith Road** – At the northbound I-215 Off-ramp approach, add a dedicated left-turn lane, resulting in the approach lane configuration of one left-turn lane, one shared left-turn/right-turn lane, and one right-turn lane.
 - **17. Whitewood Road/Clinton Keith Road** – No feasible improvements identified, significant unavoidable impact.
 - **20. Whitewood Road/Baxter Road** - Modify the traffic signal phasing to include a southbound right-turn overlap phase.
 - **21. Warm Springs Parkway/Linnel Lane** - Modify the traffic signal phasing to include a southbound right-turn overlap phase.
 - **23. Winchester Road (SR-79)/Clinton Keith Road** - Modify the traffic signal phasing to include an eastbound right-turn overlap phase.

Figure 8-1 shows the potential lane configuration or signal phasing improvements as described.

Table 15 summarizes the future year 2035 with project peak hour LOS at the study intersections with implementation of the potential improvements. LOS calculation sheets are provided in Appendix B.







Focused General Plan Update Traffic Impact Analysis

Table 15: Future Year 2035 With Project With Potential Improvements Intersection Peak Hour Level of Service

Intersection		Future Year 2035 Without Project				Future Year 2035 With Project With Potential Improvements				Change in AM Delay (sec)	Change in PM Delay (sec)	Significant Impact?
		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour				
		Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)	LOS			
1	Jefferson Ave/Murrieta Hot Springs Rd	97.6	F	126.5	F	66.7	E	111.4	F	-30.9	-15.1	No
2	Madison Ave/Murrieta Hot Springs Rd	46.9	D	99.2	F	53.6	D	91.7	F	6.7	-7.5	No
4	Winchester Rd (SR-79)/Scott Rd	50.3	D	156.1	F	46.4	D	103.5	F	-3.9	-52.6	No
6	Warm Springs Pkwy/Baxter Rd	67.1	E	52.7	D	60.3	E	53.0	D	-6.8	0.3	No
7	California Oaks Rd/Clinton Keith Rd	44.5	D	63.7	E	38.0	D	37.1	D	-6.5	-26.6	No
8	Jefferson Ave/Kalmia St	58.7	E	50.3	D	87.0	F	56.4	E	28.3	6.1	Yes
9	Winchester Rd (SR-79)/Murrieta Hot Springs Rd	No feasible Improvements										Yes
10	Hancock Ave/Los Alamos Rd	No feasible Improvements										Yes
12	Whitewood Rd/Murrieta Hot Springs Rd	96.1	F	143.9	F	111.4	F	136.2	F	15.3	-7.7	Yes
13	Nutmeg St/Clinton Keith Rd	30.7	C	32.2	C	37.9	D	32.6	C	7.2	0.4	No
15	Mitchell Rd/Clinton Keith Rd	34.9	C	34.7	C	54.2	D	52.9	D	19.3	18.2	No
16	I-215 NB Ramps/Clinton Keith Rd	35.1	D	36.6	D	30.3	C	25.6	C	-4.8	-11.0	No
17	Whitewood Rd/Clinton Keith Rd	No feasible Improvements										Yes
20	Whitewood Rd/Baxter Rd	25.6	C	58.8	E	21.7	C	54.2	D	-3.9	-4.6	No
21	Warm Springs Pkwy/Linnel Ln	16.9	B	29.0	C	21.3	C	29.5	C	4.4	0.5	No
23	Winchester Rd (SR-79)/Clinton Keith Rd	93.5	F	101.9	F	38.5	D	35.8	D	-55.0	-66.1	No

Notes: LOS = Level of Service.

As shown in **Table 15**, with the potential improvements, traffic operations at most of the intersections are forecast to improve to either acceptable conditions (LOS D or better) or to a level considered less than significant (below “without project” levels). However, at the following intersections, feasible improvements were not identified or feasible improvement measures did not result in improved delays to below “without project” levels:

- Jefferson Avenue/Kalmia Street;
- Winchester Road (SR-79)/Murrieta Hot Springs Road;
- Hancock Avenue/Los Alamos Road;
- Whitewood Road/Murrieta Hot Springs Road; and
- Whitewood Road/Clinton Keith Road.

9 CONCLUSIONS

This report summarizes the results of the TIA for the City of Murrieta Focused General Plan Update (GPU). The Focused GPU supersedes the 2011 Murrieta General Plan and subsequent General Plan Amendments through 2018. The Focused GPU contains a new land use designation, Innovation, and also includes changes in the mix and location of land use designations within the six key areas.

9.1 Existing Conditions

Existing conditions includes the evaluation of the study area under current conditions, utilizing new traffic count data.

9.1.1 Intersections

In existing conditions, 20 key intersections are evaluated. The following intersections are currently operating at LOS E or F:

- Madison Avenue/Murrieta Hot Springs Road;
- California Oaks Road/Clinton Keith Road;
- Hancock Avenue/Los Alamos Road; and
- Whitewood Road/Murrieta Hot Springs Road.

9.1.2 Roadway Segments

In addition, 22 current roadway segments are evaluated using daily volumes and roadway capacities as described in the current Circulation Element. All segments are currently operating at LOS C or better with the exception of the following segments:

- Clinton Keith Road east of California Oaks Road;
- Los Alamos Road between I-215 and Whitewood Road;
- Murrieta Hot Springs Road between Whitewood Road and Margarita Road; and
- Murrieta Hot Springs Road between Margarita Road and Winchester Road (SR-79).

9.2 Future Year 2035 Without Project Conditions

Future year 2035 without project conditions includes the evaluation of the study area assuming the buildout of the currently adopted General Plan.

9.2.1 Intersections

A total of 23 intersections were analyzed as part of this scenario (including three future intersections not analyzed in existing conditions). Of the 23 intersections analyzed, the following 12 intersections are forecast to operate at LOS E or F:

- Jefferson Avenue/Murrieta Hot Springs Road;
- Madison Avenue/Murrieta Hot Springs Road;
- Winchester Road (SR-79)/Scott Road;
- Warm Springs Parkway/Baxter Road;
- California Oaks Road/Clinton Keith Road;
- Jefferson Avenue/Kalmia Street;
- Winchester Road (SR-79)/Murrieta Hot Springs Road;
- Hancock Avenue/Los Alamos Road;
- Whitewood Road/Murrieta Hot Springs Road;
- Whitewood Road/Clinton Keith Road;
- Whitewood Road/Baxter Road; and
- Winchester Road (SR-79)/Clinton Keith Road.

9.2.2 Roadway Segments

A total of 22 roadway segments were analyzed as part of this scenario. Of the 22 segments analyzed, the following 6 segments are forecast to operate at LOS D, E or F:

- Clinton Keith Road east of California Oaks Road;
- Jefferson Avenue south of California Oaks Road (acceptable, as part of GP focus area);
- Los Alamos Road between Monroe Avenue and Hancock Avenue;
- Murrieta Hot Springs Road between I-15 and I-215;
- Murrieta Hot Springs Road between Alta Murrieta Drive and Whitewood Road; and
- Murrieta Hot Springs Road between Whitewood Road and Margarita Road.

9.3 Future Year 2035 With Project Conditions

Future year 2035 with project conditions includes the evaluation of the study area assuming the buildout of the Focused General Plan Update. The same 23 intersections and 22 roadway segments were analyzed as part of this scenario. As part of this scenario, based on an initial model run and discussions with City Public Works Department staff, the following roadway classification or configuration modifications to the currently adopted circulation network were identified:

- Hawthorn Street is downgraded from an Arterial road (6-lane) (in the current Circulation Element) to a Secondary road (4-lane), between Washington Avenue and Jefferson Avenue;
- Monroe Avenue is downgraded from a Major road (4-lane) (in the current Circulation Element) to an Industrial Collector road (2-lane), between Guava Avenue and Larchmont Lane;
- Ivy Street is downgraded from a Major road (in the current Circulation Element) to a Secondary road, between Washington Avenue and Jefferson Avenue; and
- Madison Avenue is downgraded from a Major road (in the current Circulation Element) to a Secondary road, between Guava Street and Date Street.

9.3.1 Intersections

Of the 23 intersections analyzed, traffic related to the proposed project's land use modifications are forecast to result in significant traffic impacts at the following 15 intersections:

- Jefferson Avenue/Murrieta Hot Springs Road;
- Madison Avenue/Murrieta Hot Springs Road;
- Warm Springs Parkway/Baxter Road;
- California Oaks Road/Clinton Keith Road;
- Jefferson Avenue/Kalmia Street;
- Winchester Road (SR-79)/Murrieta Hot Springs Road;
- Hancock Avenue/Los Alamos Road;
- Whitewood Road/Murrieta Hot Springs Road;
- Nutmeg Street/Clinton Keith Road;
- Mitchell Road/Clinton Keith Road;
- I-215 Northbound Ramps/Clinton Keith Road;
- Whitewood Road/Clinton Keith Road;
- Whitewood Road/Baxter Road;
- Warm Springs Parkway/Linnel Lane; and
- Winchester Road (SR-79)/Clinton Keith Road.

9.3.2 Roadway Segments

Of the 22 segments analyzed, the proposed project's land use modifications are forecast to result in significant traffic impacts at the following 7 segments:

- Clinton Keith Road east of California Oaks Road;
- California Oaks Road south of Clinton Keith Road;
- Jefferson Avenue south of California Oaks Road;
- Los Alamos Road between Monroe Avenue and Hancock Avenue;
- Murrieta Hot Springs Road between I-15 and I-215;
- Murrieta Hot Springs Road between Alta Murrieta Drive and Whitewood Road; and
- Murrieta Hot Springs Road between Whitewood Road and Margarita Road.

9.4 Potential Improvements

9.4.1 Intersections

Based on the results of the traffic impact analysis, several intersections are forecast to be impacted by the land use modifications from the Focused GPU. Feasible potential improvements were developed, through coordination with City staff, at 13 intersections:

- **1. Jefferson Avenue/Murrieta Hot Springs Road** – At the westbound Murrieta Hot Springs Road approach, add a second left-turn lane. Modify the traffic signal phasing to include a northbound right-turn overlap phase.
- **2. Madison Avenue/Murrieta Hot Springs Road** – Widen the eastbound Murrieta Hot Springs Road approach to include a dedicated right-turn lane. Modify the traffic signal phasing to include a westbound right-turn overlap phase.

- **4. Winchester Road (SR-79)/Scott Road** – Modify the traffic signal phasing to include a westbound right-turn overlap phase.
- **6. Warm Springs Parkway/Baxter Road** – Widen the eastbound Baxter Road approach to include a dedicated right-turn lane and modify the traffic signal phasing to include an eastbound right-turn overlap phase.
- **7. California Oaks Road/Clinton Keith Road** - At the westbound Clinton Keith Road approach, add a second left-turn lane.
- **8. Jefferson Avenue/Kalmia Street** - At the southbound Jefferson Avenue approach, add a second left-turn lane. Widen the eastbound Kalmia Street approach to include a dedicated right-turn lane. Modify the traffic signal phasing to include protected plus permitted phasing at the Kalmia Street eastbound and westbound approaches.
- **9. Winchester Road (SR-79)/Murrieta Hot Springs Road** – No feasible improvements identified, significant unavoidable impact.
- **10. Hancock Avenue/Los Alamos Road** – No feasible improvements identified, significant unavoidable impact.
- **12. Whitewood Road/Murrieta Hot Springs Road** – Widen the westbound Murrieta Hot Springs Road approach to include a dedicated right-turn lane and modify the traffic signal phasing to include a westbound right-turn overlap phase.
- **13. Nutmeg Street/Clinton Keith Road** - At the westbound Clinton Keith Road approach, add a second left-turn lane. Convert the second northbound Nutmeg Street through lane to a dedicated right-turn lane (same configuration as existing conditions) and modify the traffic signal phasing to include a northbound right-turn overlap phase.
- **15. Mitchell Road/Clinton Keith Road** – Modify the traffic signal phasing to include protected plus permitted phasing at the Clinton Keith Road eastbound and westbound approaches.
- **16. I-215 Northbound Ramps/Clinton Keith Road** – At the northbound I-215 Off-ramp approach, add a dedicated left-turn lane, resulting in the approach lane configuration of one left-turn lane, one shared left-turn/right-turn lane, and one right-turn lane.
- **17. Whitewood Road/Clinton Keith Road** – No feasible improvements identified, significant unavoidable impact.
- **20. Whitewood Road/Baxter Road** - Modify the traffic signal phasing to include a southbound right-turn overlap phase.
- **21. Warm Springs Parkway/Linnel Lane** - Modify the traffic signal phasing to include a southbound right-turn overlap phase.
- **23. Winchester Road (SR-79)/Clinton Keith Road** - Modify the traffic signal phasing to include an eastbound right-turn overlap phase.

With the potential improvements, traffic operations at most of the intersections are forecast to improve to either acceptable conditions (LOS D or better) or to a level considered less than significant (below “without project” levels). However, at the following intersections, feasible improvements were not identified or feasible improvement measures did not result in improved delays to below “without project” levels:

- Jefferson Avenue/Kalmia Street;
- Winchester Road (SR-79)/Murrieta Hot Springs Road;
- Hancock Avenue/Los Alamos Road;
- Whitewood Road/Murrieta Hot Springs Road; and
- Whitewood Road/Clinton Keith Road.

9.4.2 Roadway Segments

Based on the results of the traffic impact analysis, 7 segments are forecast to be significantly impacted as a result of the proposed project’s land use modifications. Potential improvements to roadway segment operations are limited to roadway widening to increase capacity (as opposed to intersection improvements that include less impactful measures such as signal phasing modifications). Thus, roadway segment improvements are not considered to be feasible.