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EXECUTIVE SUMMARY

This report analyzes the transportation impacts associated with development of the Terra Ranch project, which would be located south of Woodward Avenue and west of Airport Way within the Manteca City Limits.

The study area is generally bounded by Interstate 5 (I-5) on the west, Union Road on the east, Yosemite Avenue on the north, and the Manteca City Limits on the south. Figure 4.11-1 displays the 10 intersections selected for analysis under weekday AM and PM peak hour conditions. In addition, freeway segments and ramps on State Route (SR) 120 between I-5 and Union Road were also analyzed.

PROJECT DESCRIPTION

The proposed project consists of 209 single-family dwelling units and 200 apartment units based on the Notice of Preparation (dated July 21, 2010). Access to the project would be provided onto Woodward Avenue by a new public street (Carrie Way), which would be located directly across from Galleria Drive. In addition, the project would construct a four-lane McKinley Avenue Expressway along the western frontage of the project with multiple project accesses provided onto this planned street.

EXISTING CONDITIONS

All study intersections currently operate at an acceptable level of service (LOS) according to the operating standard of the applicable agency. All freeway study facilities currently operate at an acceptable LOS D or better with the exception of eastbound SR 120 between I-5 and Yosemite Avenue and the SR 120 EB off-ramp diverge at Airport Way, each of which operates at LOS E during the PM peak hour.

EXISTING PLUS PROJECT CONDITIONS

Development of the proposed project under existing conditions would cause the following significant transportation impacts:

Impact 4.11-1: Traffic Impacts During Construction

Mitigation: *The applicant shall prepare a construction traffic management plan to the satisfaction of the City's Public Works Department. The plan shall ensure that acceptable operating conditions are maintained on local roadways during peak travel hours. Implementation of this mitigation measure would reduce the above impact to a less-than-significant level.*

Impact 4.11-2: Traffic Impacts to Freeway Facilities

Mitigation: *The project applicant shall pay the appropriate San Joaquin County Regional Traffic Impact Fee (RTIF), which is collecting fees from new developments to help fund the widening of SR 120 to six lanes.* Implementation of this mitigation measure would reduce the significance of the impact. However, the impact would remain significant and unavoidable because this improvement is within the jurisdiction of Caltrans and there are no assurances that it would be constructed within a reasonable period of time.

Project impacts to the transit, bicycle, pedestrian systems, and at-grade railroad crossings are considered less than significant. The project will construct sidewalks and bus turnouts along the McKinley Avenue Expressway to accommodate future bus service to the site. The project will construct bicycle facilities along its frontage in accordance with the City's Bikeway Master Plan. The project would not add traffic to an at-grade railroad crossing with a demonstrated record of having an above-average rate of accidents.

EXISTING PLUS PENDING PROJECT CONDITIONS

An analysis was conducted of the combined effects on the surrounding roadway system associated with development of the Terra Ranch project and the nearby Manteca Trails and Machado Estates projects. This scenario is not required under CEQA, but nevertheless presented here for informational purposes because all three projects could develop simultaneously and create additive impacts. This analysis focused on PM peak hour intersection operations along the Airport Way corridor and considered trips from all three projects. The results yielded the following conclusions:

- 100 percent buildout of Terra Ranch, Manteca Trails, and Machado Estates projects would result in LOS F operations at the SR 120/Airport Way ramp intersections and Airport Way/Daniels Street intersection.
- Through an iterative process, it was determined that 50 percent of buildout of all three pending projects would result in operations that remain acceptable.

Fifty percent buildout of the three pending projects would correspond to 1,317 dwelling units. According to City staff, during years with above-average residential growth, Manteca issued an average of 500 residential building permits per year. Assuming the 500-unit per year absorption rate and a conservative assumption that 33 percent of all constructed units are located in southwest Manteca (i.e., within the three pending projects), then it would take approximately 8 years to construct 1,300 units in this area. If construction begins in 2011, then 1,300 units would have been constructed in this area by 2019-2020. The planned SR 120/McKinley Avenue interchange is expected to be open to traffic in 2020, which will provide considerable traffic relief to the SR 120/Airport Way interchange. Thus, the timing of this important new infrastructure improvement appears to be well coordinated with anticipated residential absorption.

CUMULATIVE CONDITIONS

The cumulative analysis considered numerous reasonable and foreseeable land uses in the project vicinity including the Manteca Trails, Machado Estates, Northwest Airport Way Master Plan, Austin Road Business Park and Residential Community project, and a variety of other residential and retail uses south of SR 120. The cumulative roadway system (see **Figure 4.11-7**) included the following planned roadway improvements:

- SR 120/McKinley Avenue interchange – partial cloverleaf configuration
- McKinley Avenue Expressway – extends southerly from SR 120 as four lanes along the western boundary of Terra Ranch and then easterly to SR 99 as two to four lanes
- Woodward Avenue/Atherton Drive Realignment – existing segment of Woodward Avenue west of Terra Ranch is eliminated and replaced by a new four-lane arterial that intersects the McKinley Avenue Expressway opposite Atherton Drive
- Airport Way Widening – widened to four lanes between Yosemite Avenue and Woodward Avenue (with exception of SR 120 overcrossing).

The above improvements are listed as Tier I improvements in the 2011 Draft Regional Transportation Plan (RTP) being prepared by SJCOG and have identified funding sources (e.g., Measure K, RTIF). Improvements were not assumed at the SR 120/Airport Way interchange because it is shown as a Tier II (unfunded) improvement in the 2011 Draft RTP. SR 120 was assumed to remain a four-lane freeway because the timeframe for widening to six lanes is 2027 according to the 2011 Draft RTP, which is beyond the Manteca General Plan horizon year.

The SR 120/Airport Way ramp intersections would operate at LOS F during both peak hours without or with the proposed project. Vehicle queues from these intersections would cause operations at the Airport Way/Daniels Street and Airport Way/Atherton Drive intersections to also operate at LOS F during one or both peak hours. All 18 study segments/ramps on SR 120 would operate at an unacceptable level under cumulative conditions without or with the project.

Based on the cumulative impact analysis results, the project would cause the following cumulatively significant transportation impacts:

Impact 4.11-7: Traffic Impacts to Freeway Facilities

Mitigation: *The project applicant shall pay the appropriate San Joaquin County Regional Traffic Impact Fee (RTIF), which is collecting fees from new developments to help fund the widening of SR 120 to six lanes.* The widening of SR 120 to six lanes would improve operations to an acceptable level at 15 of the 18 study facilities. Implementation of this mitigation measure would reduce the significance of the impact. However, the impact would remain significant and unavoidable because this improvement is within the jurisdiction of Caltrans and there are no assurances that it would be constructed within a reasonable period of time.

Impact 4.11-8: Traffic Impacts to Study Intersections

Mitigation: *The project applicant shall pay its fair share cost (estimated at 0.7 percent) of improvements to the SR 120/Airport Way interchange. Improvements may include construction of loop on-ramps, widening of the overcrossing and off-ramps, and restriping at the Daniels Street/Airport Way intersection to add lanes.* Implementation of the above improvements would substantially improve interchange operations. However, the impact would remain significant and unavoidable because this improvement is within the jurisdiction of Caltrans and there are no assurances that it would be constructed within a reasonable period of time.

Project impacts to the transit, bicycle, pedestrian systems, and at-grade railroad crossings are considered less than significant. Project impacts to Regional Congestion Management Program (RCMP) facilities were also analyzed and found to be less than significant.

PROJECT ACCESS EVALUATION

Since the Tentative Subdivision Map for the project is currently being revised, recommendations relating to site access focus on the need to evaluate certain aspects of the revised plan and to incorporate other changes into the map as necessary. The following recommendations are offered:

- The City should review the revised Tentative Subdivision Map in consideration of “regional expressway” design guidelines set forth in the *San Joaquin County Regional Expressway Study* (2009). The review should address the appropriate number/placement of intersections, their permitted turning movements (both near-term and ultimate), type of traffic controls, need for right-turn deceleration lanes, and need/type of bicycle facilities.
- Installation of a traffic signal is necessary at the McKinley Avenue Expressway/Woodward Avenue intersection under cumulative conditions. The recommended lane configurations may require right-of-way dedication along the project’s frontages on McKinley Avenue Expressway and Woodward Avenue.
- The City should review the revised Tentative Subdivision Map with regard to street connections between Machado Estates and Terra Ranch, and resulting daily volumes on major residential streets within both developments.
- The City should review the revised Tentative Subdivision Map with regard to geometrics / lane configurations on Woodward Avenue (i.e., type of traffic control on minor streets, suitable locations for front-on residences, mid-block access control etc.).

1. INTRODUCTION

This report analyzes the transportation impacts associated with development of the Terra Ranch Subdivision ("Proposed Project"), which would be located south of Woodward Avenue and west of Airport Way in the City of Manteca. Refer to **Figure 4.11-1** for project location.¹

The analysis contained in this report will form the basis of the transportation chapter for the Environmental Impact Report (EIR). Therefore, the assumptions and methodologies used in the study are intended to comply with applicable California Environmental Quality Act (CEQA) guidelines and requirements.

A number of different public agencies provided comment letters in response to the Notice of Preparation of an EIR. Below are some of the salient comments pertaining to the transportation impact analysis:

- The traffic study should include a discussion of identified mitigation measures and funding strategies. The study should also analyze freeway facilities (intersections, mainline, and ramps) using HCM 2000 procedures.
- The traffic study should include all approved and pending projects in the project vicinity.
- McKinley Avenue is identified as an expressway in the San Joaquin Regional Expressway Study. Therefore, this roadway must be designed and built to expressway standards.
- The traffic study should include an analysis of project impacts on CMP facilities and proposed mitigations for deficiencies.

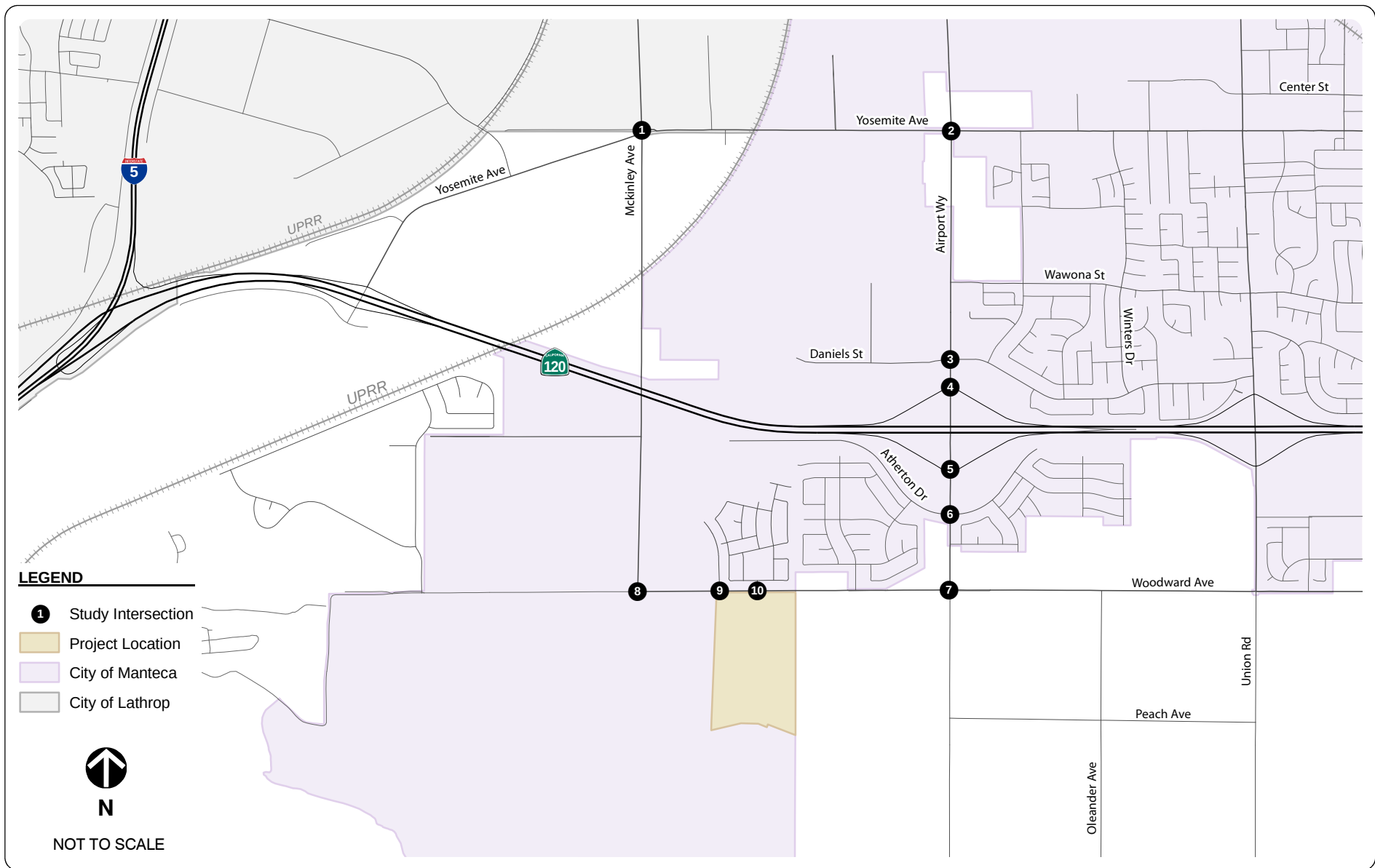
The technical analysis contained in this report addresses the items listed above and others requested in the NOP comment letters. In some instances, the requested type, method, or extent of analysis is not provided because it is either not required according to CEQA guidelines, not necessary based on professional engineering judgment, or may be too speculative to analyze.

ANALYSIS SCENARIOS

The following scenarios were analyzed in this study:

- Existing Conditions
- Existing Plus Proposed Project Conditions
- Cumulative No Project Conditions
- Cumulative Plus Proposed Project Conditions

¹ Tables and figures are numbered with a "4.11-x" nomenclature to match the EIR format.



PROJECT DESCRIPTION

The project site is located south of Woodward Avenue and west of Airport Way within the Manteca City Limits. The proposed project consists of the following trip generating land uses according to the Notice of Preparation (dated July 21, 2010):

- 209 single-family dwelling units
- 200 apartments

Access to the project would be provided onto Woodward Avenue by a new public street (Carrie Way), which would be located directly across from Galleria Drive. In addition, the project would construct a four-lane McKinley Avenue Expressway along the western frontage of the project with multiple project accesses provided onto this planned street.

The Machado Estates residential project would be situated directly east of Terra Ranch. City staff has indicated that the Machado Estates tentative subdivision map is being revised and will include one or more street connections to Terra Ranch. However, the locations of those street connections are not currently known. Therefore, the cumulative analysis (which will include both projects) does not evaluate local driveway access or traffic levels passing through each project due to the uncertainty of the Machado Estates street plan and access provisions.

2. EXISTING ENVIRONMENTAL SETTING

This chapter describes the existing condition of the roadway, transit, rail, bicycle, and pedestrian systems in the study area.

STUDY AREA

The study area shown on Figure 4.11-1 was selected based on the project's expected travel characteristics (i.e., location and amount of project trips) as well as facilities susceptible to being impacted by the project. The study area is generally bounded by Interstate 5 (I-5) on the west, Union Road on the east, Yosemite Avenue on the north, and the Manteca City Limits on the south.

Figure 4.11-1 shows the 10 intersections that were selected for analysis under weekday AM and PM peak hour conditions. In addition to these off-site intersections, this study analyzes freeway segments and ramps on State Route (SR) 120 between I-5 and Union Road.

ROADWAY SYSTEM

The following describes the freeway facilities and local roadways that would serve the project.

State Route (SR) 120 – is an east-west four-lane freeway within the study area that connects Interstate 5 and State Route 99 through south Manteca. It features interchanges at Yosemite Avenue/Guthmiller Road, Airport Way, Union Road, and Main Street.

Airport Way – is a north-south road that extends from downtown Stockton into Manteca, and continues south beyond SR 120 into unincorporated San Joaquin County. South of Woodward Avenue, Airport Way is a two-lane rural undivided road with a posted speed limit of 55 mph. Between Woodward Avenue and SR 120, Airport Way is a two-lane street with a posted speed limit of 40 mph. It widens to four lanes from SR 120 northerly to Daniels Street, narrowing to two lanes beyond this intersection.

Woodward Avenue – is an east-west street that forms the northern boundary of the project site. It begins near Oakwood Lake and parallels SR 120, terminating at Moffat Boulevard near SR 99. West of Airport Way, Woodward Avenue is generally one lane in each direction, although a second westbound through lane has been constructed along the frontage of new developments on the north side of the street. Woodward Avenue has a posted speed limit of 35 mph west of Airport Way and 45 mph east of Airport Way.

McKinley Avenue – is a two-lane rural street that extends northerly from Woodward Avenue under SR 120 to Yosemite Avenue and beyond. Between Woodward Avenue and Yosemite Avenue, it has a posted speed limit of 45 mph and permits passing in certain sections.

Yosemite Avenue – is an east-west, two- to four-lane roadway that provides access to the central portion of the City of Manteca. It extends from the SR 120/Yosemite Avenue interchange in the west to its interchange with SR 99 in the east, where it becomes SR 120.

Table 4.11-1 displays the average daily traffic volume on study segments of Airport Way, Woodward Avenue, and McKinley Avenue based on counts collected in June 2010.

Table 4.11-1			
Average Daily Traffic Volumes – Existing Conditions			
Roadway		Number of Lanes	Average Daily Traffic (ADT)
1	Woodward Avenue – McKinley Avenue to Galleria Drive	2	1,100
2	Woodward Avenue – Galleria Drive to Airport Way	2	2,200
3	Woodward Avenue – Airport Way to Union Road	2	1,900
4	Airport Way – south of Woodward Avenue	2	2,400
5	Airport Way – Woodward Avenue to Atherton Drive	2	4,600
5	Airport Way – Atherton Drive to SR 120	2	8,500
6	Airport Way – SR 120 to Daniels Street	4	16,400
7	McKinley Avenue – Woodward Avenue to Yosemite Avenue	2	900

INTERSECTIONS

Figure 4.11-2 displays the existing AM and PM peak hour turning movement volumes at the 10 study intersections. New counts were collected at seven study intersections along Airport Way and Woodward Avenue in June 2010. Traffic counts from 2008-2009 were used at the Yosemite Avenue/McKinley Avenue, Yosemite Avenue/Airport Way, and Daniels Street/Airport Way intersections. As shown, four intersections are signalized, with the remaining intersections controlled by stop signs.

The operations of the roadway system are described using the level of service (LOS) concept. LOS is a qualitative description of traffic flow based on such factors as speed, travel time, delay, and freedom to maneuver. Six levels are defined from LOS A, with the least congested operating conditions, to LOS F, with the most congested operating conditions. LOS E represents “at-capacity” operations. Operations are designated as LOS F when volumes exceed capacity, resulting in stop-and-go conditions.

The level of service method for signalized intersections analyzes operations based on average control vehicular delay, as described in Chapter 16 of the 2000 *Highway Capacity Manual* (HCM) by the Transportation Research Board. Control delay includes initial deceleration delay, queue move-up time, stopped delay, and final acceleration delay. The average control delay for signalized intersections was calculated using the Synchro analysis software and is correlated to a LOS designation, as shown in **Table 4.11-2**. Operations at the SR 120/Airport Way interchange and adjacent intersections were analyzed in SimTraffic to account for potential queues and congestion affecting adjacent intersections.

Table 4.11-2 Intersection Level of Service Thresholds			
Level of Service	Signalized Intersection Control Delay (sec/veh) ¹	Unsignalized Intersection Control Delay (sec/veh) ¹	General Description
A	0 – 10.0	0 – 10.0	Little to no congestion or delays. Free Flow
B	10.1 – 20.0	10.1 – 15.0	Limited congestion, short delays
C	20.1 – 35.0	15.1 – 25.0	Modest delays and stable flow.
D	35.1 – 55.0	25.1 – 35.0	High density, heavy delays, but stable flow.
E	55.1 – 80.0	35.1 – 50.0	Operations at or near capacity
F	> 80.0	> 50.0	Over-capacity, breakdown flow.
Note: ¹ Control delay includes initial deceleration delay, queue move-up time, stopped delay, and acceleration delay. Source: <i>Highway Capacity Manual</i> , Transportation Research Board, 2000.			

Operations of unsignalized study intersections are evaluated using the method contained in Chapter 17 of the 2000 HCM. At two-way or side-street stop-controlled intersections, control delay is reported for the movement with the worst control delay, not for the intersection as a whole. For approaches composed of a single lane, control delay is computed as the average of all movements in that lane. For all-way stop-controlled intersections, the LOS is based on the weighted average control delay of all movements. The LOS designations for unsignalized intersections are also presented in Table 4.11-2.

A peak-hour signal warrant analysis was conducted for all unsignalized study intersections. The analysis applied the peak-hour traffic signal warrant recommended in the *California Manual on Uniform Traffic Control Devices* (MUTCD) (Caltrans 2006). It should be noted that the peak-hour signal warrant is only one of several warrants that are evaluated to determine the need for a traffic signal. Even when peak-hour signal warrant is satisfied, the decision to install a signal should not be based solely upon this factor. The City of Manteca, City of Lathrop, San Joaquin County, and Caltrans should regularly monitor traffic conditions and accident data, and evaluate the full set of warrants in order to prioritize and program intersections for signalization.

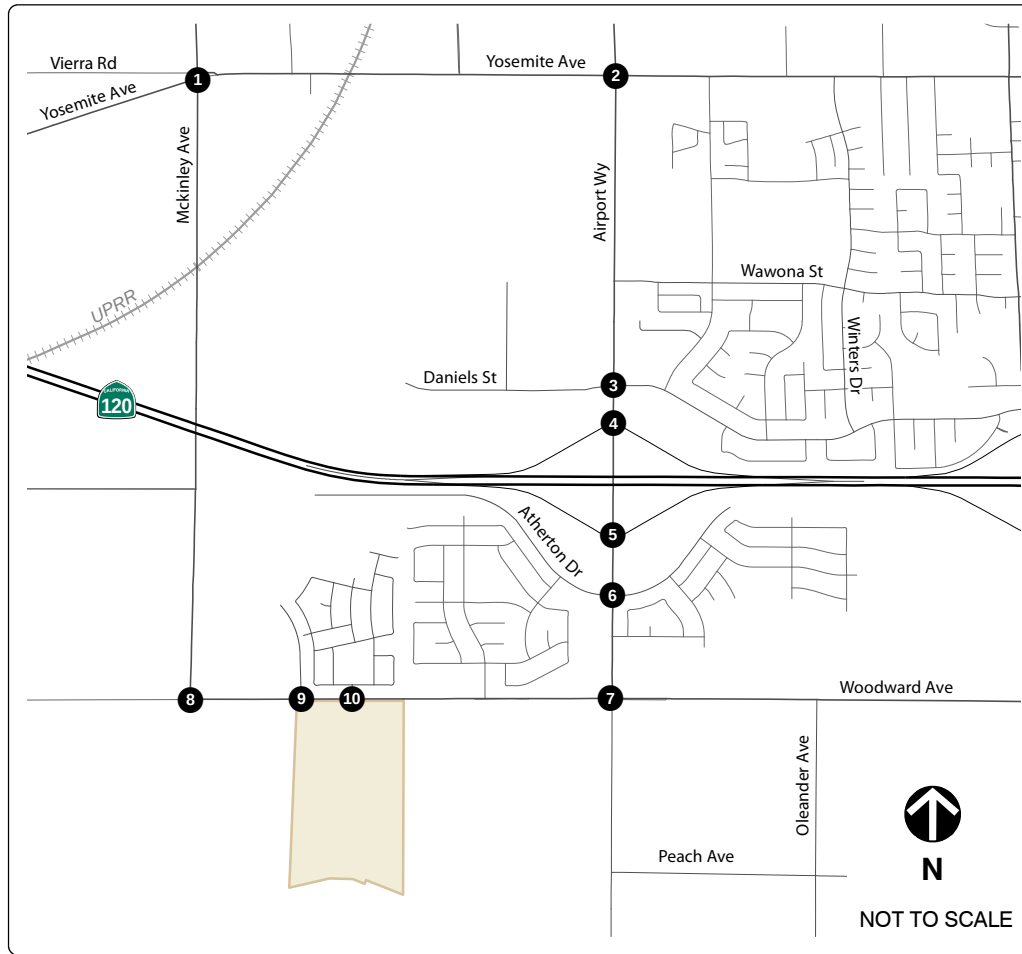
The study intersections were analyzed in accordance with procedures described previously. **Table 4.11-3** displays the average delay and LOS at each intersection during the AM and PM peak hours (refer to separately bound Appendix A for technical calculations). This table also displays the form of traffic control (signal, stop signs) and jurisdiction associated with each intersection. According to this table, all study intersections currently operate at LOS D or better during the AM and PM peak hours. None of the unsignalized study intersections currently satisfy the peak hour warrant for consideration of a traffic signal.

Table 4.11-3 Peak Hour Intersection LOS – Existing Conditions						
	Intersection	Jurisdiction	Control	Peak Hour	Existing	
					Avg. Delay (sec/veh)	LOS
1	Yosemite Avenue / McKinley Avenue	City of Lathrop	All Way Stop	AM	8	A
				PM	9	A
2	Yosemite Avenue / Airport Way	City of Manteca	Traffic Signal	PM	32	C
				PM	35	C
3	Daniels Street / Airport Way	City of Manteca	Traffic Signal	AM	15	B
				PM	24	C
4	SR 120 WB Ramps / Airport Way	Caltrans	Traffic Signal	AM	10	B
				PM	16	B
5	SR 120 EB Ramps / Airport Way	Caltrans	Traffic Signal	AM	13	B
				PM	43	D
6	Atherton Drive / Airport Way	City of Manteca	Side Street Stop	AM	9	A
				PM	20	C
7	Woodward Avenue / Airport Way	City of Manteca	All Way Stop	AM	8	A
				PM	10	B
8	Woodward Avenue / McKinley Avenue (West)	City of Manteca	Side Street Stop	AM	9	A
				PM	9	A
9	Woodward Avenue / S. McKinley Avenue (East)	City of Manteca	Side Street Stop	AM	9	A
				PM	9	A
10	Woodward Avenue / Galleria Drive	City of Manteca	Side Street Stop	AM	9	A
				PM	10	A

FREEWAYS

Freeway mainline segments and ramp junctions were evaluated using average existing (i.e., April – June 2010) mainline weekday AM and PM peak hour traffic volumes from Caltrans' Performance Measurement System (PeMS) database. **Table 4.11-4** displays the level of service thresholds for freeway mainline and ramp merge/diverge operations.

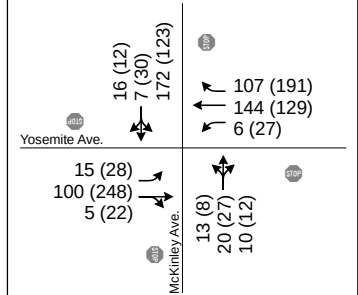
Table 4.11-5 displays the existing level of service at the ramp junctions and freeway mainline study segments of SR 120 between I-5 and Union Road (refer to Appendix A for technical calculations). As shown, all freeway study facilities currently operate at LOS D or better with the exception of eastbound SR 120 between I-5 and Yosemite Avenue and the SR 120 EB off-ramp diverge at Airport Way, each of which operates at LOS E during the PM peak hour.



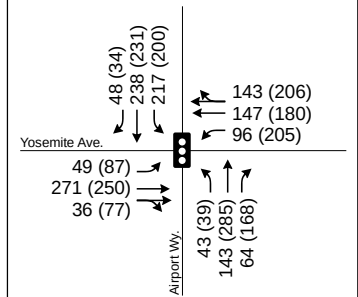
LEGEND

- Turn Lane
- AM (PM) Peak Hour Traffic Volume
- Study Intersection
- Traffic Signal
- Stop Sign
- Project Location

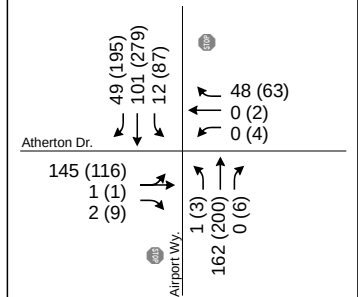
1. Yosemite Ave./McKinley Ave.



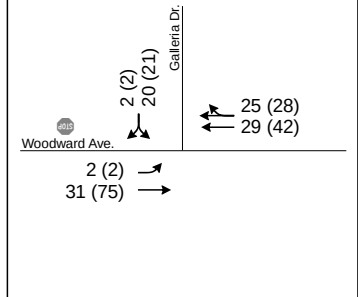
2. Yosemite Ave./Airport Wy.



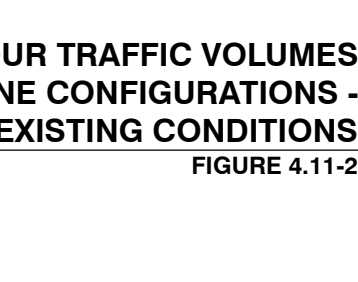
3. Daniels St./Airport Wy.



4. SR 120 WB Ramps/Airport Wy.



5. SR 120 EB Ramps/Airport Wy.



6. Atherton Dr./Airport Wy.

7. Woodward Ave./Airport Wy.

8. Woodward Ave./McKinley Ave. West

9. Woodward Ave./McKinley Ave. East

10. Woodward Ave./Galleria Dr.



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PEAK HOUR TRAFFIC VOLUMES AND LANE CONFIGURATIONS - EXISTING CONDITIONS

FIGURE 4.11-2

Table 4.11-4
Freeway Facility Level of Service Thresholds

Level of Service	Mainline Density ¹	Ramp Merge/Diverge ¹	General Description
A	≤ 11	≤ 10	Free-flow speeds prevail. Vehicles are almost completely unimpeded in their ability to maneuver within the traffic stream.
B	> 11 to 18	> 10 to 20	Free-flow speeds are maintained. The ability to maneuver with the traffic stream is only slightly restricted.
C	> 18 to 26	> 20 to 28	Flow with speeds at or near free-flow speeds. Freedom to maneuver within the traffic stream is noticeably restricted, and lane changes require more care and vigilance on the part of the driver.
D	> 26 to 35	> 28 to 35	Speeds decline slightly with increasing flows. Freedom to maneuver with the traffic stream is more noticeably limited.
E	> 35 to 45	> 35 to 43 ²	Operation at capacity. There are virtually no usable gaps within the traffic stream, leaving little room to maneuver.
F	**	**	Represents a breakdown in flow.

Notes:

¹ Density in passenger cars per mile per lane (pcpmpl).

² The maximum density for ramp junctions under LOS E is not defined in the *HCM 2000*. This report uses the maximum density of 43 passenger cars per mile per lane identified for weaving sections in the *HCM 2000*.

** Demand flow exceeds capacity.

Source: *Highway Capacity Manual*, Transportation Research Board, 2000.

Table 4.11-5 Peak Hour Freeway LOS – Existing Conditions					
Facility		Type	Peak Hour	Existing	
				Density (pcpmpl)	LOS
1	SR 120 EB from I-5 to Yosemite Avenue	Mainline	AM	18	B
			PM	35	E
2	SR 120 EB from Yosemite Avenue to Airport Way	Mainline	AM	18	B
			PM	34	D
3	SR 120 EB from Airport Way to Union Road	Mainline	AM	18	B
			PM	31	D
4	SR 120 EB off-ramp at Airport Way	Ramp Diverge	AM	21	C
			PM	36	E
5	SR 120 EB on-ramp from Airport Way	Ramp Merge	AM	20	B
			PM	32	D
6	SR 120 WB from Union Road to Airport Way	Mainline	AM	27	D
			PM	23	C
7	SR 120 WB from Airport Way to Yosemite Avenue	Mainline	AM	29	D
			PM	22	C
8	SR 120 WB from Yosemite Avenue to I-5	Mainline	AM	29	D
			PM	23	C
9	SR 120 WB off-ramp at Airport Way	Ramp Diverge	AM	30	D
			PM	26	C
10	SR 120 WB on-ramp from Airport Way	Ramp Merge	AM	30	D
			PM	24	C

TRANSIT SYSTEM

Transit service in the City of Manteca is provided by Manteca Transit. The San Joaquin Regional Transit District (SJRTD) provides fixed-route and flexible-response bus service in San Joaquin County. The nearest transit stop to the project site is located north of SR 120 at Airport Way and Daniels Street (Stadium Center). Routes 1, 2, and 3 stop at this location on weekdays between 6:30 a.m. and 7:00 p.m.

The *Manteca Transit Short Range Transit Plan* (2009) does not envision expanding the City's transit service to the immediate project vicinity within the next five years. However, it does acknowledge the need for additional transit service for the existing and planned retail developments along the SR 120 corridor.

The Altamont Corridor Express (ACE) is a commuter rail train service that operates between Stockton and the Bay Area. The Lathrop-Manteca ACE station is located on Shideler Parkway,

which is directly north of Yosemite Avenue and east of McKinley Avenue. This station is an approximate five minute drive from the project site. On weekdays, commuter rail service is provided by three westbound trains (departing the Lathrop-Manteca ACE Station at 4:37 a.m., 5:52 a.m., and 6:57 a.m.) and three eastbound trains (arriving at the Lathrop-Manteca ACE Station at 5:21 p.m., 6:21 p.m., and 7:21 p.m.).

BICYCLE/PEDESTRIAN SYSTEM

Pedestrian facilities in the project vicinity include sidewalks along the frontage of developed properties on Woodward Avenue and Airport Way. A class I (separated, off-street) bike path is located along Atherton Drive. A Class II (on-street with designated signing and striping) bike lane exists on portions of Airport Way from south of SR 120 to Woodward Avenue.

The *Final Manteca Bikeway Master Plan* (2003) shows a future bikeway system that would include Class II lanes along Airport Way and the Class I paths along the extension of Atherton Drive. Bike facilities are not shown on Woodward Avenue within the project vicinity.

RAIL CROSSINGS

The study area includes a Union Pacific Railroad (UPRR) track that extends southerly from Stockton and forms the western Manteca City limits. The track (i.e., Oakland Subdivision line) features at-grade crossings with Yosemite Avenue and McKinley Avenue. This study focuses on the McKinley Avenue crossing because it is closer to the project site than the Yosemite Avenue crossing and would be used by a greater percentage of project trips.

The McKinley Avenue at-grade crossing has advanced warning signs, railroad crossing pavement markings, stop lines, crossing gates, flashing lights, and warning bells. According to US Department of Transportation Crossing Inventory, an average of 13 trains per day crosses this segment of McKinley Avenue, which is in unincorporated San Joaquin County. Data regarding the number of accidents at this crossing was not available from the USDOT website.

3. REGULATORY CONTEXT

This section describes the regulatory setting, including policies of the City of Manteca and other responsible agencies that may be relevant to this study.

FEDERAL AND STATE REGULATIONS

Caltrans is responsible for planning, designing, constructing, operating, and maintaining all state-owned roadways in San Joaquin County. Federal highway standards are implemented in California by Caltrans. Any improvements or modifications to the state highway system within the City of Manteca need to be approved by Caltrans. The City of Manteca does not have the ability to unilaterally make improvements to the state highway system.

The *State Route 120 Transportation Concept Report – TCR* (Caltrans, 2005) identifies a concept LOS of “D” for the segment from I-5 to SR 99. The TCR identifies the need for widening of this facility to six lanes with an ultimate facility being eight lanes to meet projected travel demands. The TCR identifies interchange upgrades at Yosemite Avenue, McKinley Avenue, Airport Way, Union Road, and Main Street.

LOCAL REGULATIONS

San Joaquin County Regional Transportation Plan

San Joaquin County, through the San Joaquin Council of Governments (SJCOG), periodically updates the Regional Transportation Plan (RTP), which outlines countywide transportation expenditures based on funding from sources like the federal government, the State of California, and locally collected funds. The RTP contains several proposed improvements that would benefit the regional roadway network within the study area. These improvements are described at the end of this chapter. Draft and Final EIRs for the 2011 RTP have been published.

San Joaquin County Congestion Management Program

SJCOG operates a Regional Congestion Management Program (RCMP), which monitors cumulative transportation impacts of growth on the regional roadway system, identifies deficient roadways, and develops plans to mitigate the deficiencies. The RCMP considers LOS E or F operations to be deficient and includes segments of SR 120 and Airport Way (north of SR 120) as CMP facilities.

San Joaquin County Regional Traffic Impact Fee (RTIF)

SJCOG has implemented a regional traffic impact fee that is assessed on new developments throughout San Joaquin County. The RTIF capital project list provides funding for various freeway and local road widenings. As of 2009, the fee schedule for new residential

development is approximately \$3,000 for single-family units and \$1,800 for multi-family units. These fees are adjusted annually to account for inflation and the funds go toward adding capacity on regional roadways and state highways.

Measure K

Measure K is a San Joaquin County measure that funds transportation projects through a half-cent sales tax. Measure K provides funding for a number of improvements in the study area as described below.

City of Lathrop General Plan

The City of Lathrop General Plan identifies expected LOS C operations on City streets and LOS D operations at interchange ramps. The *Lathrop Gateway Business Park Specific Plan Draft EIR* (2010) applied a LOS C standard for City intersections for the purposes of identifying impacts.

City of Manteca General Plan

The City of Manteca General Plan (2003) includes the following policies related to transportation and circulation that are relevant to this analysis:

Street System

a. Policy C-P-1

The City shall strive to attain the highest possible traffic levels of service (LOS) consistent with the financial resources available and the limits of technical feasibility. The impact of new development and land use proposals on LOS should be considered in the review process.

b. Policy C-P-2

Manteca's target for transportation LOS is to provide a Citywide average of LOS of C or better, and a minimum of LOS D at any individual location. This "C average, D minimum" shall be accomplished by attempting to provide LOS C at all locations, but accepting LOS D under the following circumstances:

- Where constructing facilities with enough capacity to provide LOS C is found to be unreasonably expensive. This applies to facilities, for example, on which it would cost significantly more per dwelling unit equivalent (DUE) to provide LOS C than to provide LOS D.
- Where it is difficult or impossible to maintain LOS C because surrounding facilities in other jurisdictions operate at LOS D or worse.
- Where free-flowing roadways or interchange ramps would discourage use of alternate travel modes.

- Where maintaining LOS C will be a disincentive to use of existing alternative modes or to the implementation of new transportation modes that would reduce vehicle travel.

Note that for the purposes of this environmental analysis, the City considers LOS D as the acceptable LOS threshold for all intersections in the City of Manteca. This LOS standard was chosen primarily because of the constrained operations on the state highway system and the LOS policies of the surrounding jurisdictions.

a. Policy C-P-3

Streets shall be dedicated, widened, extended, and constructed according to the Street cross-section diagrams established in the City Improvement Standards. Dedication and improvement of full rights-of-way as shown in the Street Standards shall not be required in existing developed areas where the City determines that such improvements are either infeasible or undesirable.

b. Policy C-P-5

Development that would necessitate roadway improvements prior to the development of lands abutting those roadway improvements shall be required to make such improvements, or participate in such improvements, as a condition of approval.

c. Policy C-P-6

New development will pay a fair share of the costs of street and other traffic and transportation improvements based on traffic generation and impacts on levels of service in conformance with the standards and policies established in the Public Facilities Implementation Plan (PFIP).

d. Policy C-P-18

In accord with the PFIP, the City shall assess development fees for traffic signals and highway interchanges sufficient to fund system-wide improvements. The development fee schedule for these traffic improvements shall be periodically reviewed, and revised as necessary.

The City also requires new development to participate in the funding and construction of collector and arterial street improvements identified in the City's Street Master Plan.

Bikeways and Pedestrian Paths

c. Policy C-P-33

The City shall establish a safe and convenient network of identified bicycle routes connecting residential areas with recreation, shopping, and employment areas within the City.

d. Policy C-P-35

Route sidewalks so that they connect to major public parking areas, transit stops, and intersections within the bikeway system.

e. Policy C-P-36

Provide adequate bicycle parking facilities at commercial, business/professional, and light industrial uses.

f. Policy CD-P-31

The pedestrian and bikeway system shall be linked to other pedestrian and bikeways in adjacent neighborhoods and ultimately, to the City-wide Pedestrian and Bikeway trail System to provide a continuous interconnected system.

City of Manteca Bicycle Master Plan

The *Final City of Manteca Bicycle Master Plan* (2003) includes the following policies related to bicycle circulation in new development areas that are relevant to this analysis:

- Require new development to construct bikeways included in the proposed system along all roadways included within or adjacent to that development.
- Require new development to provide support facilities such as bicycle racks, personal lockers, and showers at appropriate locations such as parks, major recreational destinations, park-and-ride facilities, employment centers, schools, and commercial centers.
- Provide bike crossings at appropriate intervals along new roadways that will adequately serve new large-scale commercial, office, industrial, and residential development.
- Require new development to incorporate parks and schools as important destinations for bicyclists when designing circulation plans for subdivisions and other developments.

City of Manteca Public Facilities Implementation Plan

The City of Manteca's Public Facilities Implementation Plan (PFIP) (1993) is the implementing document for the City's General Plan policies on public infrastructure facilities. The purpose of the PFIP is to ensure adequate provision of public facilities as the city grows, and that they are developed in accordance with the City's General Plan. The PFIP is based on the City's individual water, sewer, drainage, and transportation facilities master plans. Under the PFIP, development impact fees are collected at or near the time of development and are used to finance the capacity expansion of public facilities (i.e., water, sewer collection, drainage, and transportation) necessary to accommodate the new demands.

Since the 1993 PFIP was not indexed to inflation, the current fees do not cover the costs of building the required transportation infrastructure. The City is currently updating the PFIP to develop a new list of infrastructure projects and a revised fee. It is expected that the PFIP fee will fully cover the cost of improvements to the City's street system. The revised fee is expected to be adopted by the City Council by the end of 2010.

Table 4.11-6 displays the status and identified funding sources for various regional roadway improvements within the study area. Tier I projects in the RTP are those that the region intends to fund, implement, and maintain during the plan period with identified revenue sources. They represent the region's fiscally constrained program for developing the transportation system. Tier II projects represent those that need to be built, implemented, and maintained during the plan period but have to be deferred until new funding resources materialize.

The 2007 and 2011 RTPs had a similar set of improvements and prioritization with a couple of exceptions. The 2007 RTP included improvements at the SR 120/Airport Way interchange as a Tier I project; the 2011 RTP lists this as a Tier II project. The 2011 RTP now includes the McKinley Avenue Expressway as a Tier I project, whereas it was not listed in the 2007 RTP.

Table 4.11-6 Status of Planned Improvements in Study Area			
Project	Included in Tier I List in 2011 RTP?	Included in Measure K?	Included in RTIF?
SR 120 Widening – 4 to 6 lanes from I-5 to SR 99 (\$90.6M, OTD = 2027)	yes	yes	yes
Upgrade SR 120/Yosemite interchange (\$22M, no OTD)	no	no	no
New SR 120/McKinley interchange (\$30M, OTD = 2020)	yes	yes	yes
Upgrade SR 120/Airport interchange (\$18M, no OTD)	no	yes	no
Upgrade SR 120/Union interchange (\$33M, OTD = 2015)	yes	yes	no
Airport Way Widening – 2 to 4 lanes from SR 120 to Lathrop Road (\$7M, OTD = 2012)	yes	no	yes
McKinley Avenue Widening – 2 to 4 lanes from SR 120 to Lathrop Road (not listed as Tier II, no OTD)	no	no	no
McKinley Ave. Expressway (\$18M, OTD = 2019)	yes	no	no
Notes: 120/Yosemite and SR 120/Airport interchanges listed as Tier II projects in 2011 RTP. OTD = Open to Traffic Date and costs based on 2011 RTP.			

As is described in Chapter 4, this study will assume in place under cumulative conditions those projects that are listed as Tier I improvements in the 2011 RTP and are to be constructed by 2023, which is the horizon year of the City's General Plan. Several other surface street improvements, which are not listed above are also assumed to be constructed as described in Chapter 4.

4. METHODS OF ANALYSIS

This chapter presents the methods used to analyze the impacts of the project on the roadway, bicycle, pedestrian, transit, and rail systems. The standards of significance to be used in identifying project-specific and cumulative impacts are first presented. These standards are based on policies of the City of Manteca and other responsible agencies.

SIGNIFICANCE CRITERIA

Roadway System

The project would cause a significant impact to the roadway system if it would:

Signalized Intersections

- Worsen operations at a signalized intersection in Manteca or on a Caltrans facility from LOS D or better to LOS E or worse.
- Increase the average delay at a signalized intersection in Manteca currently operating (or projected to operate) at LOS E or worse by three (3) seconds or more.
- Add traffic to a signalized intersection on a Caltrans facility that is currently operating (or projected to operate) at LOS E or worse.
- Worsen operations at a signalized intersection in Lathrop from LOS C or better to LOS D or worse.
- Increase the average delay at a signalized intersection in Lathrop currently operating (or projected to operate) at LOS D or worse by five (5) seconds or more.

All-Way Stop Intersections

- Worsen operations from LOS D or better to LOS E or F.
- Increase the average delay at an intersection currently operating (or projected to operate) unacceptably by at least three (3) seconds if in Manteca or by at least five (5) seconds if in Lathrop and cause one of the peak hour signal warrants to be met.

Side-Street Stop Intersections

- Worsen operations from LOS D or better to LOS E or F.
- Increase the average delay for the highest delayed side-street movement at an intersection in Manteca currently operating (or projected to operate) unacceptably by three (3) seconds or more and cause one of the peak hour signal warrants to be met.

Freeways

- Worsen operations from LOS D or better to LOS E or F.
- Add 100 vehicles per day or more to a freeway segment that is currently operating (or projected to operate) unacceptably.
- Increase traffic by one percent or more at a freeway ramp that is currently operating (or projected to operate) unacceptably.

The above thresholds were developed based on the relevant policies of each agency, recently published environmental documents, and information in the City's *Transportation Impact Analysis Guidelines*. Although still in draft form, these guidelines have been used for several other EIRs in the area. They are also being considered for formal adoption along with updates to the City of Manteca General Plan Circulation Element.

Transit System

The *Draft Transportation Impact Analysis Guidelines* do not currently have thresholds for impacts on the transit systems. For the purposes of this study, an impact is considered significant if the project would:

- Disrupt or interfere with existing or planned public transit services or facilities.
- Create an inconsistency with policies concerning transit systems set forth in a General Plan or other adopted policy document.

Bicycle/Pedestrian System

The *Draft Transportation Impact Analysis Guidelines* do not currently have thresholds for impacts on the pedestrian and bicycle systems. For the purposes of this study, an impact is considered significant if the project would:

- Disrupt or interfere with existing or planned bicycle/pedestrian facilities.
- Result in unsafe conditions for pedestrians, including unsafe pedestrian/bicycle or pedestrian/vehicle conflicts.
- Result in unsafe conditions for bicycles, including unsafe bicycle/pedestrian or bicycle/vehicle conflicts.
- Create an inconsistency with policies related to bicycle or pedestrian systems set forth in a General Plan or other adopted policy document.

At-Grade Railroad Crossings

The project would cause a significant impact at an at-grade railroad crossing if it would:

- Cause motorists to incur delays corresponding to LOS E or F conditions due to preemptions caused by train crossings.
- Add traffic to an at-grade railroad crossing that has a demonstrated record of having an above-average rate of accidents.

PROJECT TRAVEL CHARACTERISTICS

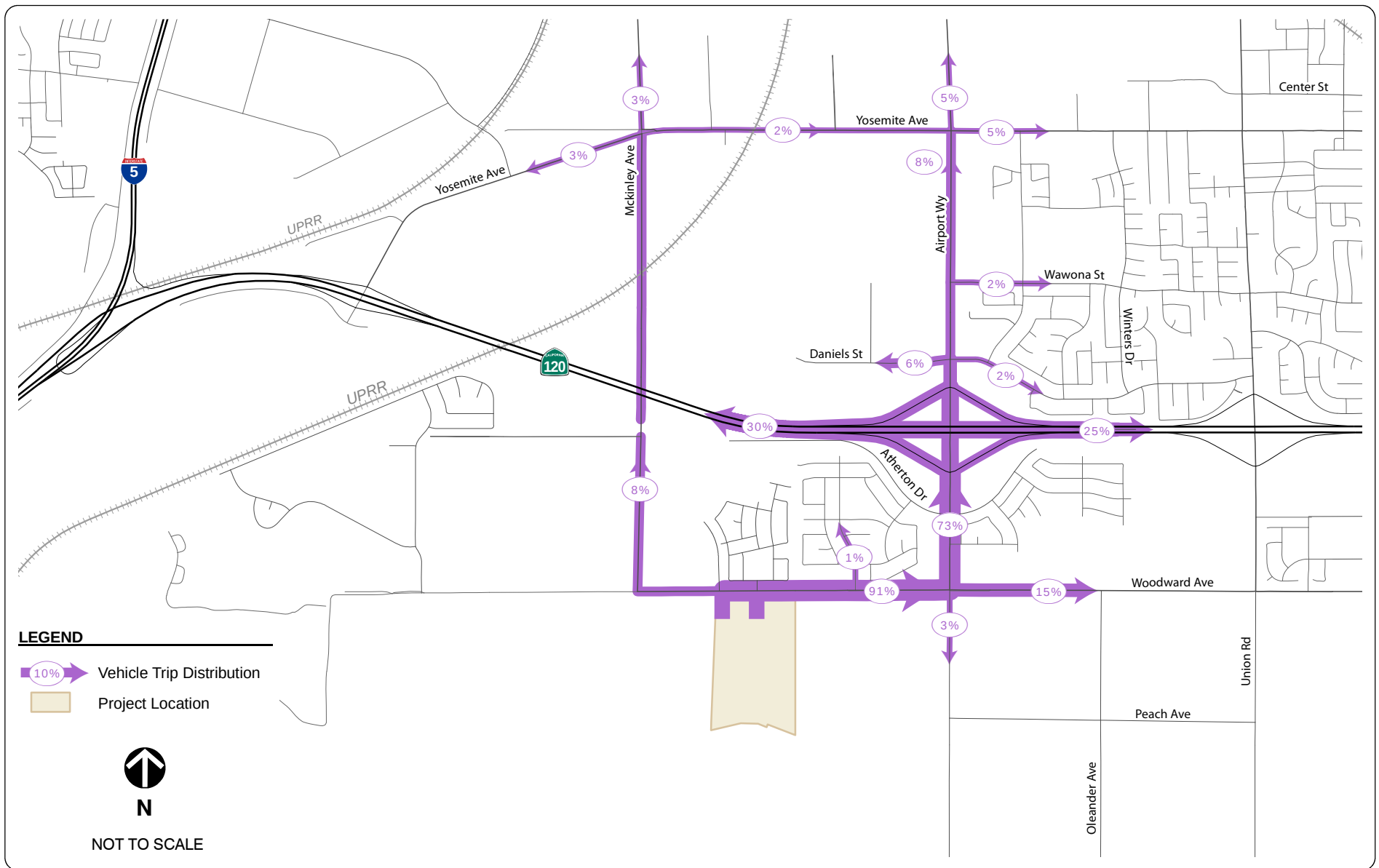
This section describes the anticipated number of vehicle trips and directionality of those trips that would result from the proposed project. **Table 4.11-7** displays the project's expected daily, AM peak hour, and PM peak hour trip generation.

Table 4.11-7 Project Trip Generation							
Land Use	Quantity	Trip Rate ¹			Trips		
		Daily	AM Peak Hour	AM Peak Hour	Daily	AM Peak Hour	PM Peak Hour
Single-Family Residential	209	9.57	0.75	1.01	2,000	157	211
Apartments	200	6.65	0.51	0.62	1,330	102	124
TOTAL:					3,330	259	335
Note: ¹ Based on average trip rate from <i>Trip Generation</i> (Institute of Transportation Engineers, 2008).							

Figure 4.11-3 displays the expected distribution of trips under “existing plus project” conditions. These percentages were derived from a variety of sources including:

- A project-only traffic assignment from the base year version of the SJCOG travel demand model.
- Locations of complementary land uses including schools (based on current school district boundaries from the school district website), shopping, parks, and other amenities.
- Relative travel time on competing routes such as travel to/from the west on SR 120 via the Airport Way interchange versus McKinley Avenue to the Yosemite Avenue interchange.

Figure 4.11-4 shows the expected distribution of project trips under cumulative conditions. The cumulative distribution is similar to that of existing, but considers planned roadway improvements discussed later in this chapter and new land use developments that may attract project trips.

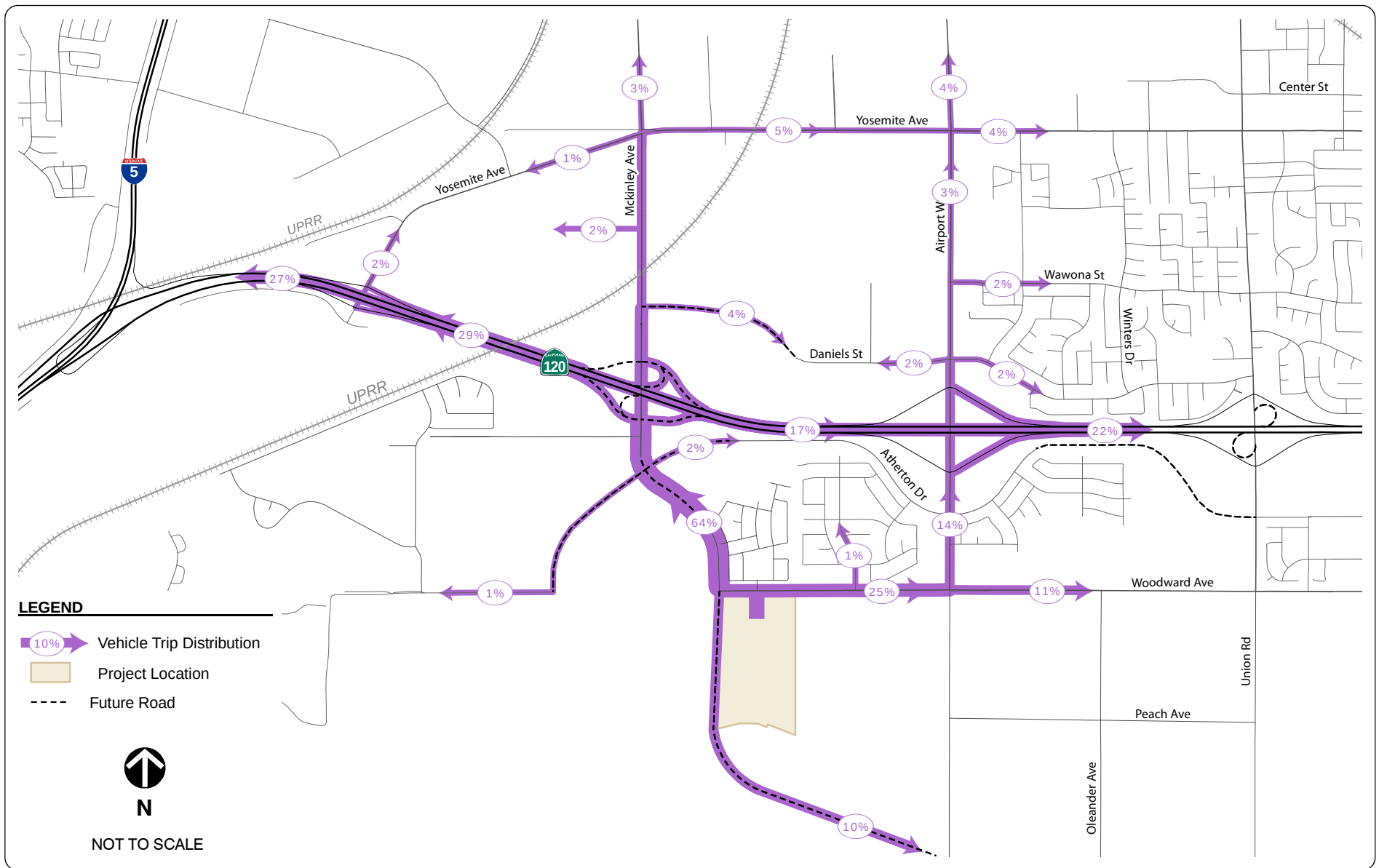


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**PROJECT TRIP DISTRIBUTION -
EXISTING CONDITIONS**

FIGURE 4.11-3



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**PROJECT TRIP DISTRIBUTION -
CUMULATIVE CONDITIONS**

FIGURE 4.11-4

EXISTING PLUS PROJECT CONDITIONS

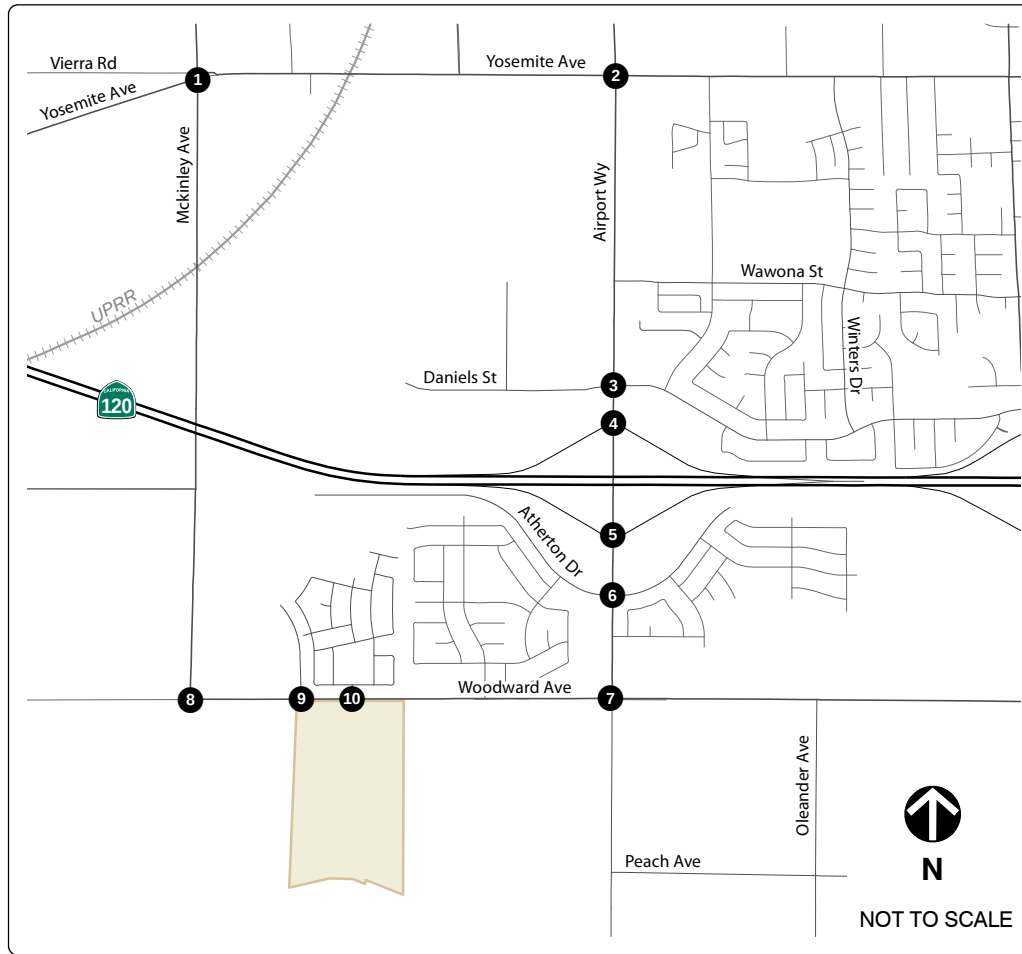
Project trips were assigned to the study facilities in accordance with the trip generation and distribution assumptions described previously. **Figure 4.11-5** displays project-only trips during the AM and PM peak hours at the study intersections. Project-only trips were then added to the existing volumes to yield “existing plus project” conditions. **Figure 4.11-6** displays these forecasts at the study intersections.

Table 4.11-8 displays the ADT on roadways surrounding the project site under existing plus project conditions. As shown, the greatest increase in traffic is expected to occur on segments of Woodward Avenue and Airport Way east of the project site.

Table 4.11-8 Average Daily Traffic Volumes – Existing Plus Project Conditions					
Roadway		Number of Lanes	Average Daily Traffic (ADT)		
			Existing Conditions	Project Trips	Existing Plus Project Conditions
1	Woodward Avenue – McKinley Avenue to Galleria Dr.	2	1,100	300	1,400
2	Woodward Avenue – Galleria Drive to Airport Way	2	2,200	3,000	5,200
3	Woodward Avenue – Airport Way to Union Road	2	1,900	500	2,400
4	Airport Way – south of Woodward Avenue	2	2,400	100	2,500
5	Airport Way – Woodward Avenue to Atherton Drive	2	4,600	2,400	7,000
5	Airport Way – Atherton Drive to SR 120	2	8,500	2,400	10,900
6	Airport Way – SR 120 to Daniels Street	4	16,400	600	17,000
7	McKinley Avenue – Woodward Avenue to Yosemite Avenue	2	900	300	1,200

The study intersections were reanalyzed under existing plus project conditions. **Table 4.11-9** summarizes the results (refer to Appendix B for technical calculations). According to this table, all study intersections would continue operating at an acceptable level with the addition of project traffic.

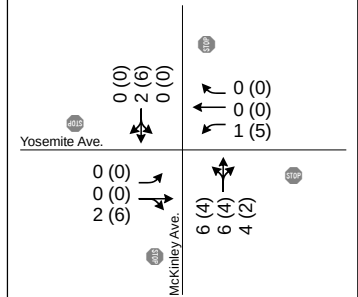
A peak-hour signal warrant analysis was conducted under existing plus project conditions for all unsignalized study intersections. None of the unsignalized study intersections would satisfy the peak hour warrant for consideration of a traffic signal.



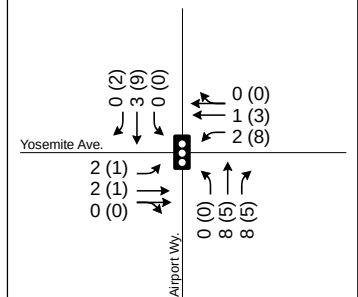
LEGEND

- Turn Lane
- AM (PM) Peak Hour Traffic Volume
- Study Intersection
- Traffic Signal
- Stop Sign
- Project Location

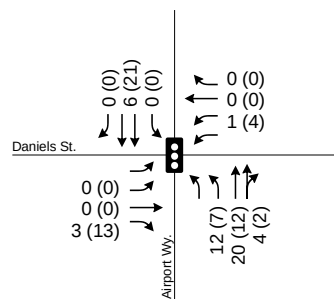
1. Yosemite Ave./McKinley Ave.



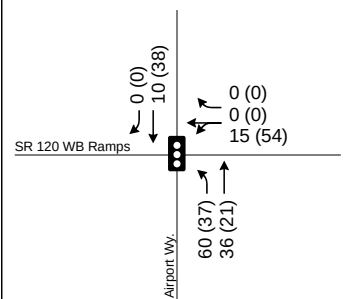
2. Yosemite Ave./Airport Wy.



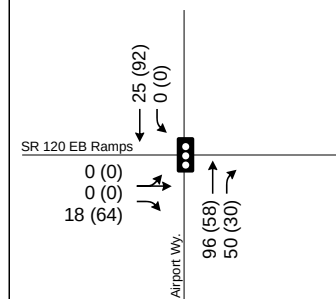
3. Daniels St./Airport Wy.



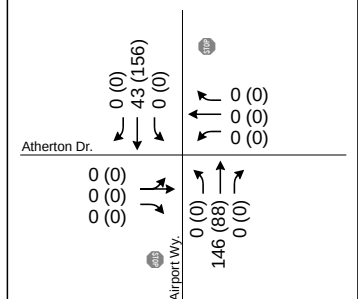
4. SR 120 WB Ramps/Airport Wy.



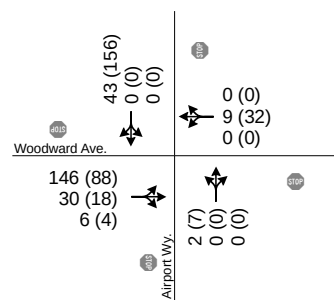
5. SR 120 EB Ramps/Airport Wy.



6. Atherton Dr./Airport Wy.



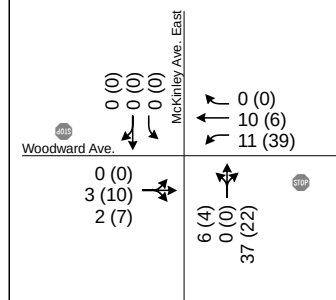
7. Woodward Ave./Airport Wy.



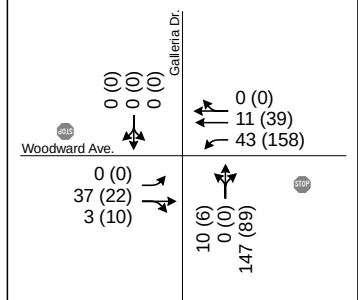
8. Woodward Ave./McKinley Ave. West



9. Woodward Ave./McKinley Ave. East



10. Woodward Ave./Galleria Dr.



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PEAK HOUR TRAFFIC VOLUMES AND LANE CONFIGURATIONS - PROJECT ONLY TRIPS

FIGURE 4.11-5

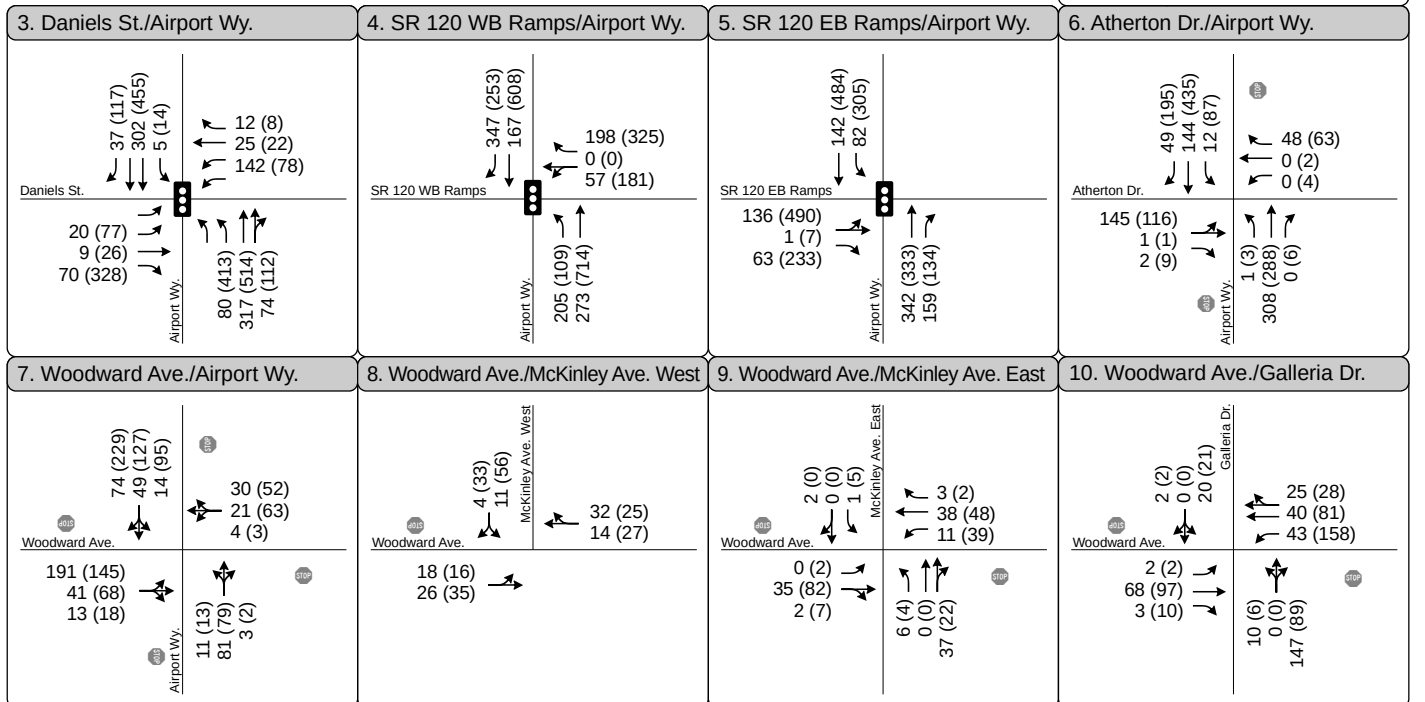
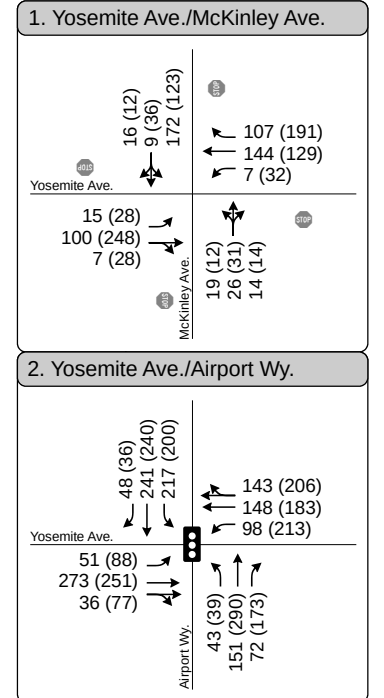
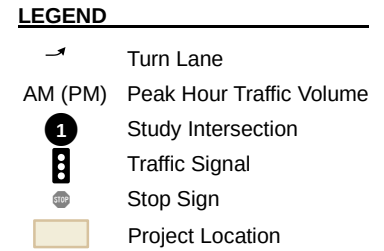
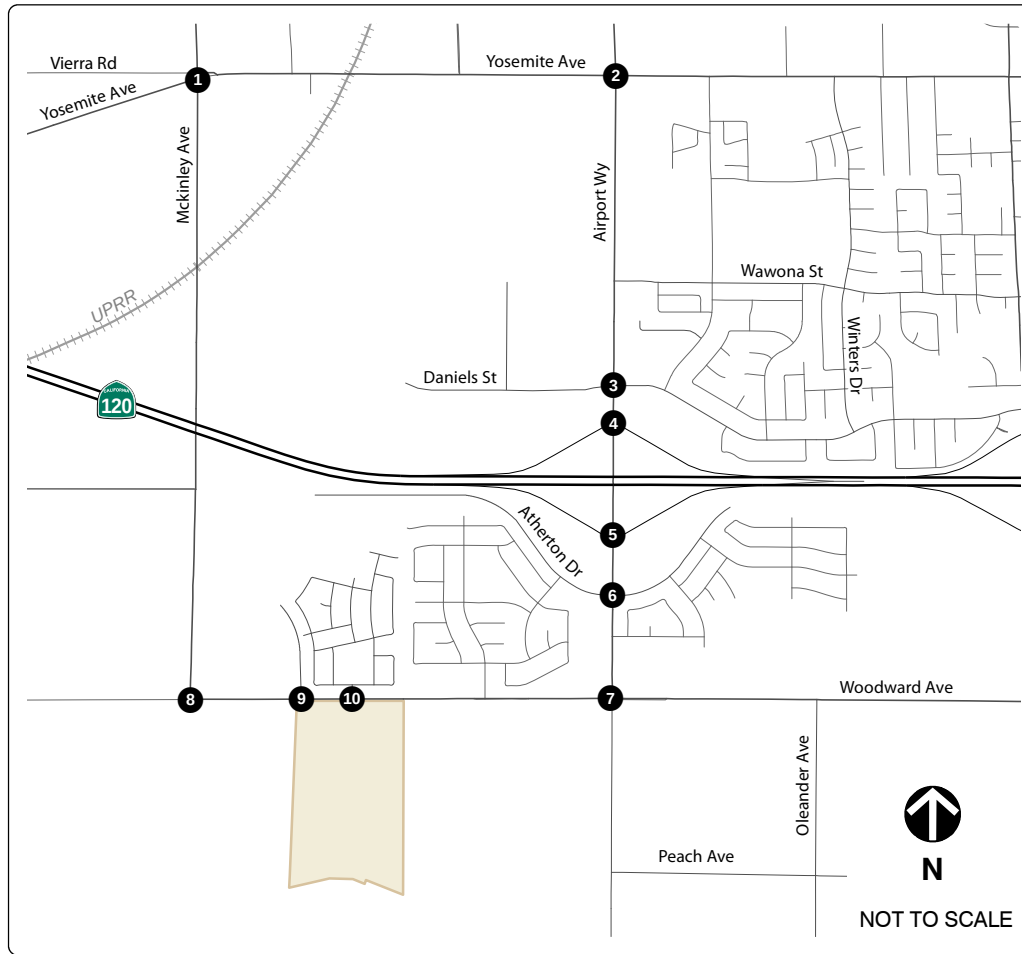


Table 4.11-9
Peak Hour Intersection LOS – Existing Plus Project Conditions

	Intersection	Jurisdiction	Control	Peak Hour	Existing		Existing Plus Project	
					Avg. Delay (sec/veh)	LOS	Avg. Delay (sec/veh)	LOS
1	Yosemite Avenue / McKinley Avenue	City of Lathrop	All Way Stop	AM	8	A	9	A
				PM	9	A	10	A
2	Yosemite Avenue / Airport Way	City of Manteca	Traffic Signal	PM	32	C	33	C
				PM	35	C	35	D
3	Daniels Street / Airport Way	City of Manteca	Traffic Signal	AM	15	B	14	B
				PM	24	C	26	C
4	SR 120 WB Ramps / Airport Way	Caltrans	Traffic Signal	AM	10	B	12	B
				PM	16	B	19	B
5	SR 120 EB Ramps / Airport Way	Caltrans	Traffic Signal	AM	13	B	13	B
				PM	43	D	46	D
6	Atherton Drive / Airport Way	City of Manteca	Side Street Stop	AM	9	A	13	B
				PM	20	C	34	D
7	Woodward Avenue / Airport Way	City of Manteca	All Way Stop	AM	8	A	10	B
				PM	10	B	18	C
8	Woodward Avenue / McKinley Avenue (West)	City of Manteca	Side Street Stop	AM	9	A	9	A
				PM	9	A	10	A
9	Woodward Avenue / S. McKinley Avenue (East)	City of Manteca	Side Street Stop	AM	9	A	10	A
				PM	9	A	11	B
10	Woodward Avenue / Galleria Drive	City of Manteca	Side Street Stop	AM	9	A	14	B
				PM	10	A	19	C

Table 4.11-10 displays the operations of study freeway facilities under existing plus project conditions (refer to Appendix B for technical calculations). The addition of project trips would not cause any facilities to degrade from an acceptable to unacceptable level. However, the project would add trips to the two facilities on SR 120 that currently operate at LOS E, which is below the LOS D concept for SR 120.

Table 4.11-10 Peak Hour Freeway LOS – Existing Plus Project Conditions							
Facility		Type	Peak Hour	Existing		Existing Plus Project	
				Density (pcpmpl)	LOS	Density (pcpmpl)	LOS
1	SR 120 EB from I-5 to Yosemite Avenue	Mainline	AM	18	B	18	C
			PM	35	E	36	E
2	SR 120 EB from Yosemite Avenue to Airport Way	Mainline	AM	18	B	18	B
			PM	34	D	35	D
3	SR 120 EB from Airport Way to Union Road	Mainline	AM	18	B	18	B
			PM	31	D	32	D
4	SR 120 EB off-ramp at Airport Way	Ramp Diverge	AM	21	C	21	C
			PM	36	E	37	E
5	SR 120 EB on-ramp from Airport Way	Ramp Merge	AM	20	B	20	C
			PM	32	D	32	D
6	SR 120 WB from Union Road to Airport Way	Mainline	AM	27	D	27	D
			PM	23	C	24	C
7	SR 120 WB from Airport Way to Yosemite Avenue	Mainline	AM	29	D	30	D
			PM	22	C	22	C
8	SR 120 WB from Yosemite Avenue to I-5	Mainline	AM	29	D	30	D
			PM	23	C	23	C
9	SR 120 WB off-ramp at Airport Way	Ramp Diverge	AM	30	D	30	D
			PM	26	C	27	C
10	SR 120 WB on-ramp from Airport Way	Ramp Merge	AM	30	D	31	D
			PM	24	C	24	C

CUMULATIVE CONDITIONS

Cumulative no project traffic forecasts were developed using the SJCOG travel demand model. The model was modified to reflect the following reasonable and foreseeable land uses in the project vicinity:

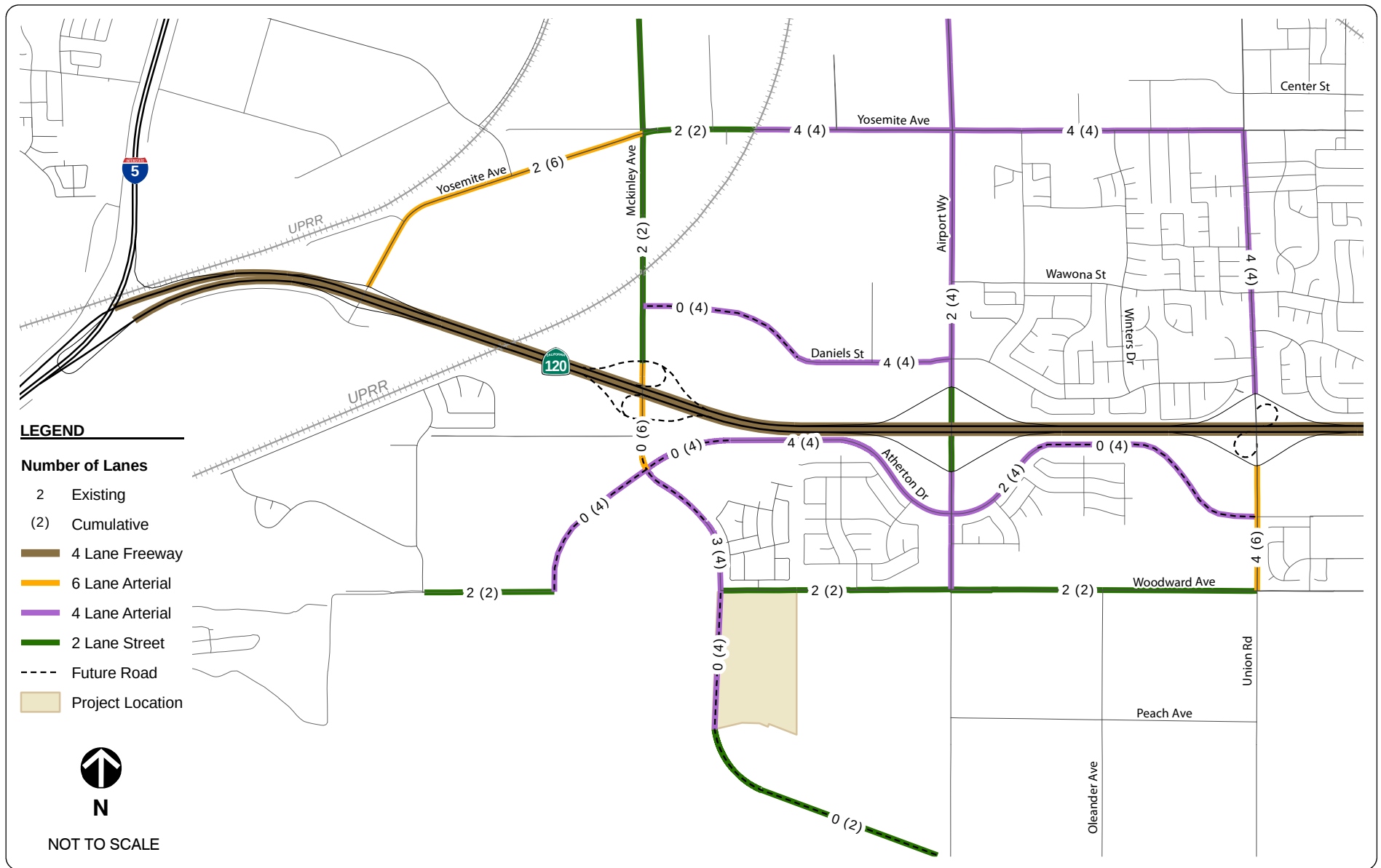
- Manteca Trails – 1,651 dwelling units located west of the project site
- Lathrop Gateway Business Park – situated north of SR 120 between Yosemite Avenue and McKinley Avenue, which could yield a maximum of 5.43 million square feet of non-residential according to that project's EIR.
- Machado Estates – 575 dwelling units located directly east of Terra Ranch

In addition to the above, a number of other land uses were assumed including new retail centers along Atherton Drive near Airport Way, the Northwest Airport Way Master Plan, and the Austin Road Business Park and Residential Community. It should be noted that the Tara Park project (located west of Terra Ranch to the north and south of Woodward Avenue) was not assumed in place since an application for this property is not being processed.

Planned roadway improvements in the study area include the following (see **Figure 4.11-7**):

- SR 120/McKinley Avenue interchange – partial cloverleaf design with lane configurations similar to those in the 2007 Project Study Report.
- McKinley Avenue Expressway – extends southerly from SR 120 as four lanes along the western boundary of Terra Ranch and then easterly to SR 99 as two to four lanes.
- Woodward Avenue/Atherton Drive Realignment – existing segment of Woodward Avenue west of Terra Ranch is eliminated and replaced by a new four-lane arterial that intersects the McKinley Avenue opposite Atherton Drive (see Figure 4.11-7).
- Airport Way Widening – widened to four lanes between Yosemite Avenue and Woodward Avenue (with exception of SR 120 overcrossing).
- Yosemite Avenue Widening – widened to six lanes along the frontage of the Lathrop Gateway Business Park, based on its EIR which included this widening as mitigation for its impacts.

In addition to the above, a number of other improvements are assumed including the extensions of Atherton Drive and Daniels Street, and widening of Union Road. Improvements were not assumed at the SR 120/Airport Way interchange because they are shown as a Tier II (unfunded) improvement in the 2011 Draft RTP. SR 120 was assumed to remain a four-lane freeway because the timeframe for widening to six lanes is 2027 according to the 2011 Draft RTP, which is beyond the Manteca General Plan horizon year.



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CUMULATIVE ROADWAY SYSTEM

FIGURE 4.11-7

Figure 4.11-8 displays the cumulative no project peak hour traffic forecasts at the study intersections. **Table 4.11-11** displays the cumulative no project average daily traffic volumes in the project vicinity. These forecasts assume no development on the project site.

The new SR 120/McKinley Avenue interchange ramp intersections and the Atherton Drive/McKinley Avenue Expressway intersection were added as study facilities. Traffic signals were assumed at the Airport Way/Atherton Road and Airport Way/Woodward Avenue² intersections as they are planned City improvements and pending land developments in the area will trigger their installation.

Project trips were added to the cumulative no project forecasts to yield the cumulative plus project peak hour intersection forecasts shown on **Figure 4.11-9** and the daily forecasts shown in Table 4.11-11.

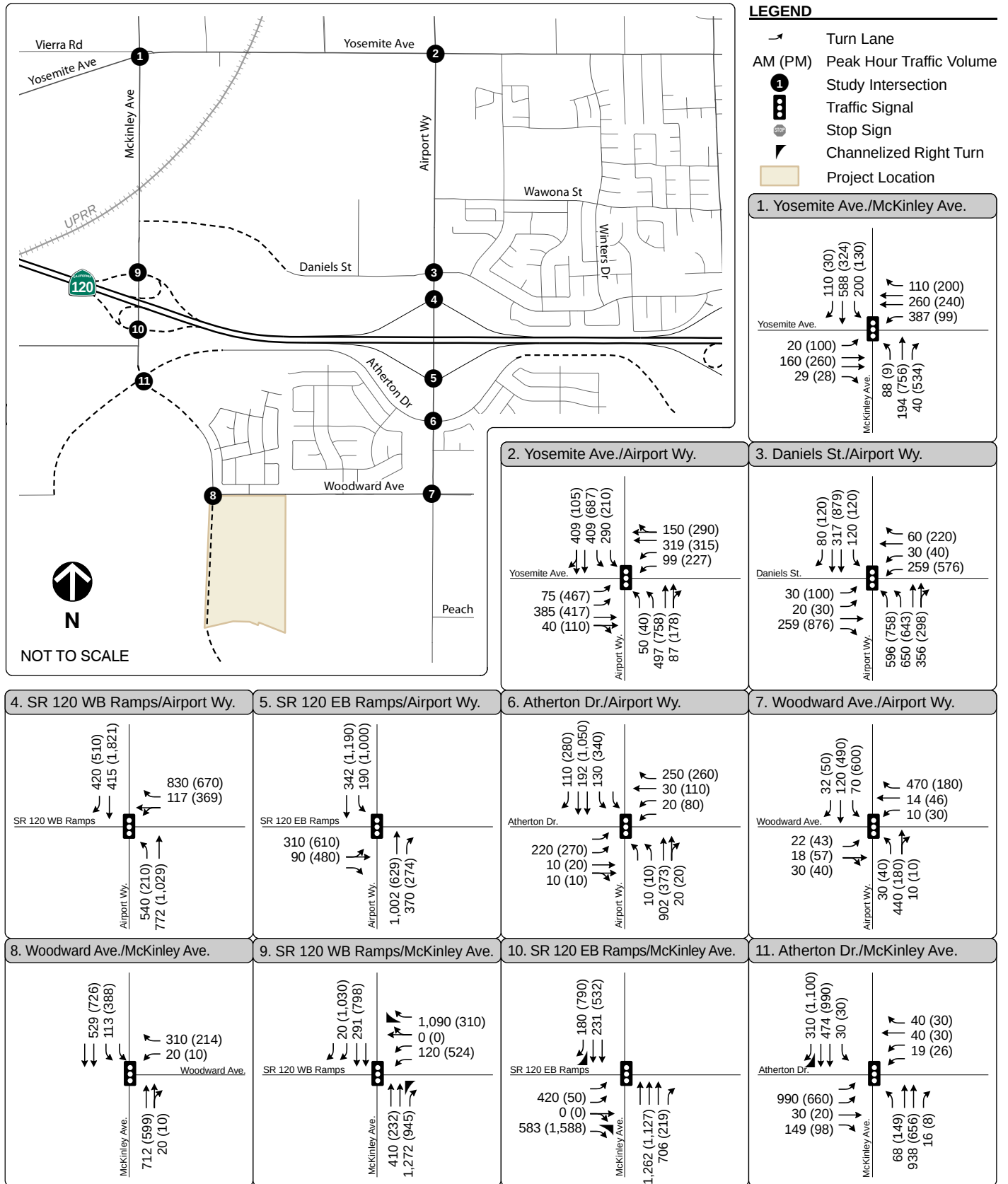
Intersection Operations

The study intersections were analyzed under cumulative conditions, without and with the proposed project. **Table 4.11-12** summarizes the results (refer to Appendix C for technical calculations). According to this table, the SR 120/Airport Way ramp intersections would operate at LOS F during both peak hours without or with the proposed project. Vehicle queues from these intersections would cause operations at the Airport Way/Daniels Street and Airport Way/Atherton Drive intersections to also operate at LOS F during one or both peak hours.

Freeway Operations

The study freeway facilities (including merge/diverge movements at new SR 120/McKinley Avenue interchange) were analyzed under cumulative conditions, without and with the proposed project. **Table 4.11-13** summarizes the results (refer to Appendix C for technical calculations). According to this table, all 18 study segments/ramps on SR 120 would operate at an unacceptable LOS E or F under cumulative conditions without or with the proposed project. This is to be expected since the widening of SR 120 is known to be a needed improvement, but was not assumed under cumulative conditions because its construction date is beyond the Manteca General Plan horizon year.

² The City is considering the installation of roundabouts at major intersections along Woodward Avenue. Accordingly, cumulative operations at the Airport Way/Woodward Avenue intersection are analyzed assuming both a traffic signal and a roundabout.



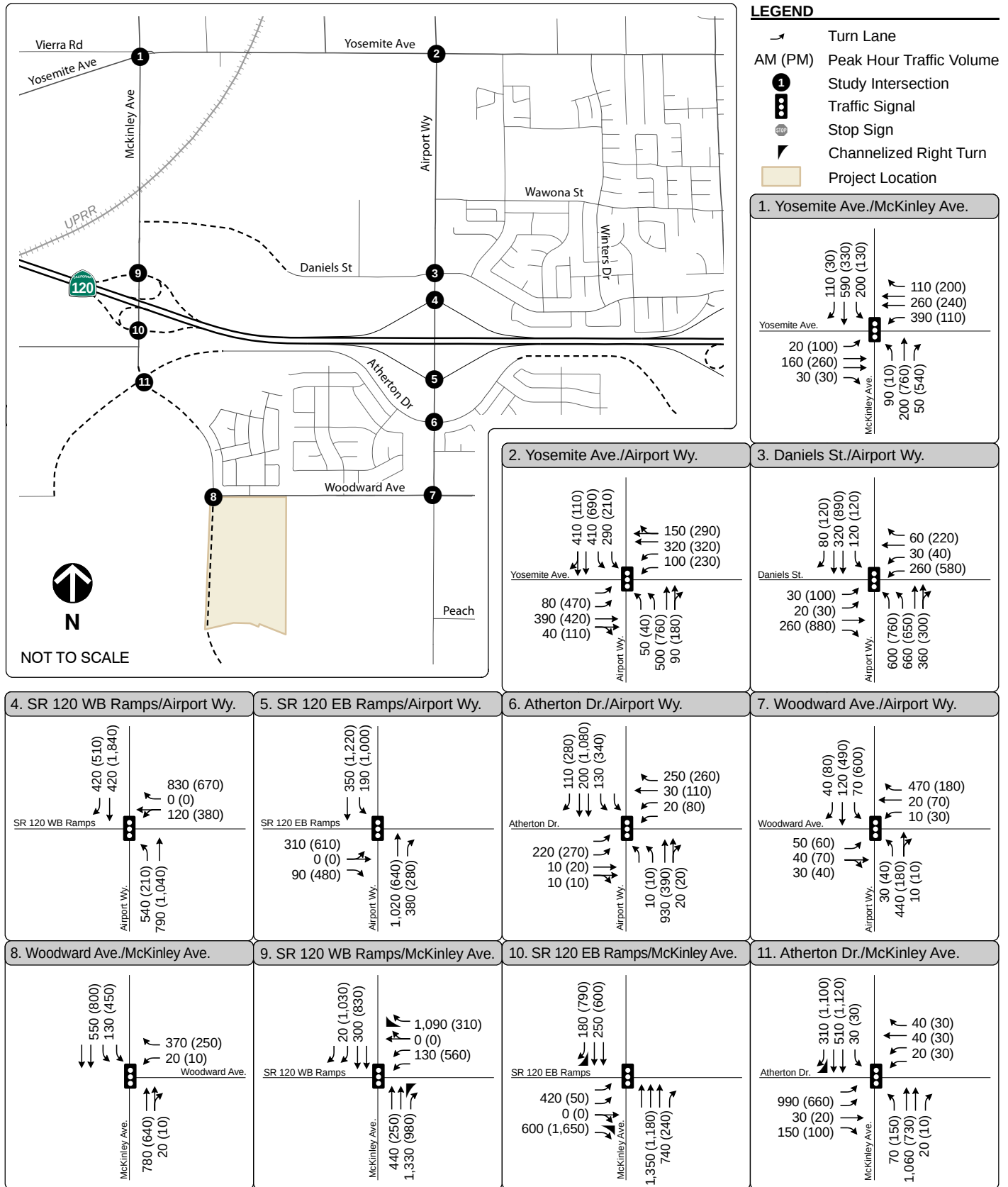


Table 4.11-11
Average Daily Traffic Volumes – Cumulative Conditions

Roadway		Number of Lanes	Average Daily Traffic (ADT)		
			Cumulative No Project Conditions	Project Trips	Cumulative Plus Project Conditions
1	Woodward Avenue – east McKinley Avenue Expressway	2	5,400	1,200	6,600
2	Airport Way – south of Woodward Avenue	2	6,600	0	6,600
3	Airport Way – Woodward Avenue to Atherton Drive	4	12,300	500	12,800
4	Airport Way – Atherton Drive to SR 120	4	21,700	500	22,200
5	Airport Way – SR 120 to Daniels Street	4	31,300	300	31,600
6	McKinley Avenue Expressway – SR 120 to Atherton Drive	4	31,000	2,000	33,000
7	McKinley Avenue Expressway – Atherton Drive to Woodward Avenue	4	16,600	2,100	18,700
8	McKinley Avenue Expressway – south of Woodward Avenue	4	11,700	1,300	13,000
9	McKinley Avenue Expressway – south of project site	2	11,700	300	12,000

Table 4.11-12
Peak Hour Intersection LOS – Cumulative Conditions

	Intersection	Jurisdiction	Control	Peak Hour	Cumulative No Project		Cumulative Plus Project	
					Avg. Delay (sec/veh)	LOS	Avg. Delay (sec/veh)	LOS
1	Yosemite Avenue / McKinley Avenue	City of Lathrop	Traffic Signal	AM	37	D	38	D
				PM	29	C	29	C
2	Yosemite Avenue / Airport Way	City of Manteca	Traffic Signal	PM	25	C	25	C
				PM	34	C	34	C
3	Daniels Street / Airport Way	City of Manteca	Traffic Signal	AM	34	C	32	C
				PM	>150	F	>150	F
4	SR 120 WB Ramps / Airport Way	Caltrans	Traffic Signal	AM	105	F	110	F
				PM	>150	F	>150	F
5	SR 120 EB Ramps / Airport Way	Caltrans	Traffic Signal	AM	90	F	104	F
				PM	>150	F	>150	F
6	Atherton Drive / Airport Way	City of Manteca	Traffic Signal	AM	>150	F	>150	F
				PM	42	D	48	D
7	Woodward Avenue / Airport Way	City of Manteca	Traffic Signal ¹	AM	21	C	22	C
				PM	25	C	25	C
8	Woodward Avenue / McKinley Avenue Expressway	City of Manteca	Traffic Signal	AM	10	A	10	B
				PM	10	B	11	B
9	SR 120 WB Ramps / McKinley Avenue	Caltrans	Traffic Signal	AM	10	A	12	B
				PM	15	B	15	B
10	SR 120 EB Ramps / McKinley Avenue	Caltrans	Traffic Signal	AM	9	A	10	A
				PM	28	C	29	C
11	Atherton Drive / McKinley Avenue Expressway	City of Manteca	Traffic Signal	AM	30	C	42	D
				PM	22	C	24	C

Notes: ¹ Operations would also be at LOS C or better if a two-lane roundabout were installed.
Bolded cells represent unacceptable operations.

Table 4.11-13
Peak Hour Freeway LOS – Cumulative Conditions

Facility		Type	Peak Hour	No Project		Plus Project	
				Density (pcpmpl)	LOS	Density (pcpmpl)	LOS
1	SR 120 EB from I-5 to Yosemite Avenue	Mainline	AM	39	E	39	E
			PM	-	F	-	F
2	SR 120 EB from Yosemite Avenue to McKinley Ave.	Mainline	AM	33	D	33	D
			PM	-	F	-	F
3	SR 120 EB from McKinley Avenue to Airport Way	Mainline	AM	31	D	32	D
			PM	-	F	-	F
4	SR 120 EB from Airport Way to Union Road	Mainline	AM	33	D	34	D
			PM	-	F	-	F
5	SR 120 EB off-ramp at McKinley Avenue	Ramp Diverge	AM	35	D	35	E
			PM	-	F	-	F
6	SR 120 EB off-ramp at Airport Way	Ramp Diverge	AM	34	D	34	D
			PM	-	F	-	F
7	SR 120 EB loop on-ramp from McKinley Avenue	Ramp Merge	AM	27	C	27	C
			PM	-	F	-	F
8	SR 120 EB on-ramp from McKinley Avenue	Ramp Merge	AM	32	D	32	D
			PM	-	F	-	F
9	SR 120 EB on-ramp from Airport Way	Ramp Merge	AM	33	D	33	D
			PM	-	F	-	F
10	SR 120 WB from Union Road to Airport Way	Mainline	AM	-	F	-	F
			PM	-	F	-	F
11	SR 120 WB from Airport Way to McKinley Avenue	Mainline	AM	-	F	-	F
			PM	-	F	-	F
12	SR 120 WB from McKinley Avenue to Yosemite Avenue	Mainline	AM	-	F	-	F
			PM	-	F	-	F
13	SR 120 WB from Yosemite Avenue to I-5	Mainline	AM	-	F	-	F
			PM	-	F	-	F
14	SR 120 WB off-ramp at Airport Way	Ramp Diverge	AM	-	F	-	F
			PM	-	F	-	F
15	SR 120 WB off-ramp at McKinley Avenue	Ramp Diverge	AM	-	F	-	F
			PM	-	F	-	F
16	SR 120 WB on-ramp from Airport Way	Ramp Merge	AM	-	F	-	F
			PM	-	F	-	F
17	SR 120 WB loop on-ramp from McKinley Avenue	Ramp Merge	AM	-	F	-	F
			PM	-	F	-	F
18	SR 120 WB on-ramp from McKinley Avenue	Ramp Merge	AM	-	F	-	F
			PM	-	F	-	F

Bolded cells represent unacceptable operations.

CMP ROADWAY SEGMENTS

Regional roadways in San Joaquin County are monitored as part of the Regional Congestion Management Program (RCMP) implemented by SJCOG. Within the study area, Airport Way (north of SR 120) and SR 120 are designated as CMP facilities. Additionally, SJCOG has indicated that planned arterials and expressways should also be included in the CMP analysis. Accordingly, the McKinley Avenue Expressway (segments south of SR 120) is included in this study. The RCMP requires that each designated facility be analyzed to identify any project-related impacts. SR 120 is a regional facility that is being analyzed in the forthcoming Manteca General Plan EIR. Therefore, this study includes CMP analyses of study segments of the McKinley Avenue Expressway and Airport Way.

The McKinley Avenue Expressway and Airport Way were evaluated based on their planned cross-sections using PM peak hour volumes in accordance with the guidelines from the RCMP. The LOS was determined using the thresholds as specified by the RCMP. The results are shown in **Table 4.11-14** and indicate that all CMP facilities are expected to operate at LOS D or better, which meets the CMP standard for these facilities.

Table 4.11-14 CMP Roadway Segment Operations – Cumulative Conditions						
Roadway		Number of Lanes	Cumulative No Project Conditions		Cumulative Plus Project Conditions	
			Two-Way PM Peak Hour Volume	LOS	Two-Way PM Peak Hour Volume	LOS
1	Airport Way - Yosemite Avenue to SR 120	4	2,082	D	2,100	D
2	McKinley Avenue Expressway - SR 120 to Atherton Drive	6	3,466	D	3,670	D
3	McKinley Avenue Expressway - Atherton Drive to Woodward Avenue	4	1,927	C	2,140	D
4	McKinley Avenue Expressway – south of Woodward Avenue	4	1,345	C	1,460	C
5	McKinley Avenue Expressway - south of project site	2	1,345	D	1,380	D

EXISTING PLUS PENDING PROJECTS CONDITIONS

This section presents the results of an analysis of the effects of the combined development of the Terra Ranch, Manteca Trails, and Machado Estates projects on the surrounding roadway system. This analysis is meaningful because EIRs are likely to be released simultaneously for Terra Ranch and Manteca Trails. As such, identification of mitigation measures for project-specific impacts in each EIR should ideally consider the effects of other projects that could add traffic to impacted facilities. This scenario is not required under CEQA, but nevertheless presented here for informational purposes.

This analysis focuses on PM peak hour intersection operations along the Airport Way corridor and daily traffic levels on Airport Way and Woodward Avenue. Trips associated with all three projects were added to existing volumes based on the trip distribution percentages developed for each project. **Table 4.11-15** shows the resulting daily volumes. **Table 4.11-16** displays the resulting peak hour intersections operations (see Appendix D for technical calculations). As noted in this table, traffic signals have been assumed at the Airport Way/Atherton Drive and Airport Way/Woodward Avenue intersections.

Table 4.11-16 indicates that 100 percent buildout of all three pending projects would result in LOS F operations at the SR 120/Airport Way ramp intersections and Airport Way/Daniels Street intersection. Through an iterative process, it was determined that approximately 50 percent of buildout of all three pending projects would result in operations that remain at LOS D or better (see Table 4.11-15).

Fifty percent buildout of the three pending projects would correspond to 1,317 dwelling units. Thus, it could be inferred from this analysis that operations at the SR 120/Airport Way interchange would degrade to unacceptable levels with construction of 1,300 or more units³. During years with above-average residential growth, Manteca issued an average of 500 residential building permits per year. Assuming the 500-unit per year absorption rate and a conservative assumption that 33 percent of all constructed units are located in southwest Manteca (i.e., within the three pending projects), then it would take approximately 8 years to construct 1,300 units in this area. If construction begins in 2011, then 1,300 units would be constructed in this area by 2019-2020. As mentioned previously, the SR 120/McKinley Avenue interchange is expected to be open to traffic in 2020. Thus, the timing of an important new infrastructure improvement appears to be well coordinated with anticipated residential absorption, which will eventually trigger the need for congestion relief at the SR 120/Airport Way interchange.

³ Construction of non-residential uses on the north side of the interchange could cause interchange operations to degrade sooner. However, the timing of those developments is uncertain.

Table 4.11-15
Average Daily Traffic Volumes – Existing Plus Pending Project Conditions¹

Roadway	Number of Lanes	Average Daily Traffic (ADT)		
		Existing Conditions	Existing Plus 50% Buildout ²	Existing Plus 100% Buildout ³
1 Woodward Avenue – west of Airport Way	2	2,200	10,200	18,200
2 Airport Way – Woodward Avenue to Atherton Drive	2	4,600	10,900	17,200
3 Airport Way – Atherton Drive to SR 120	2	8,500	14,800	21,100

Notes: ¹ Pending Projects include Terra Ranch, Machado Estates, and Manteca Trails
² 50% Buildout scenario assumes 50% of total project trips from Terra Ranch, Machado Estates, and Manteca Trails
³ 100% Buildout scenario assumes the complete buildout of Terra Ranch, Machado Estates, and Manteca Trails

Table 4.11-16
PM Peak Hour Intersection LOS – Existing Plus Pending Projects Conditions¹

Intersection	Jurisdiction	Control	Existing Conditions		Existing Plus 50% Build Out ²		Existing Plus 100% Build Out ³	
			Avg. Delay (sec/veh)	LOS	Avg. Delay (sec/veh)	LOS	Avg. Delay (sec/veh)	LOS
3 Daniels Street / Airport Way	City of Manteca	Traffic Signal	24	C	28	C	95	F
4 SR 120 WB Ramps / Airport Way	Caltrans	Traffic Signal	16	B	28	C	82	F
5 SR 120 EB Ramps / Airport Way	Caltrans	Traffic Signal	43	D	54	D	87	F
6 Atherton Drive / Airport Way	City of Manteca	Traffic Signal ⁴	20	C	15	B	23	C
7 Woodward Avenue / Airport Way	City of Manteca	Traffic Signal ⁵	10	B	21	C	39	D

Notes: ¹ Pending Projects include Terra Ranch, Machado Estates, and Manteca Trails
² 50% Buildout scenario assumes 50% of total project trips from Terra Ranch, Machado Estates, and Manteca Trails
³ 100% Buildout scenario assumes the complete buildout of Terra Ranch, Machado Estates, and Manteca Trails
⁴ Atherton Drive / Airport Way intersection has side-street stop control under Existing Conditions
⁵ Woodward Avenue / Airport Way intersection has all-way stop control under Existing Conditions
 Bolded cells represent unacceptable operations.

5. IMPACTS AND MITIGATIONS

This chapter identifies the significant project-specific and cumulative impacts of the proposed project on the transportation system. Each impact is followed by a recommended mitigation measure to reduce the significance of identified impacts.

PROJECT-SPECIFIC IMPACTS AND MITIGATIONS

This section evaluates the significance of project impacts based on the thresholds of significance and analysis results in the previous chapter.

4.11-1 The proposed project could cause potentially significant traffic impacts during construction.

Construction may include disruptions to the transportation network near the site, including the possibility of temporary street closures. Heavy vehicles will access the site and may need to be staged for construction. These activities could result in degraded roadway operating conditions. Therefore, this impact is considered **significant**.

Mitigation Measure

4.11-1 Prior to the beginning of construction, the applicant shall prepare a construction traffic management plan to the satisfaction of the City's Public Works Department. The plan shall ensure that acceptable operating conditions are maintained on local roadways during peak travel hours.

Implementation of this mitigation measure would reduce the above impact to a **less-than-significant** level.

4.11-2 The proposed project could cause potentially significant impacts to freeway facilities.

According to Table 4.11-10, the project would add trips during the PM peak hour to the following facilities that currently operate at an unacceptable LOS E:

- Eastbound SR 120 between I-5 and Yosemite Avenue
- Eastbound SR 120 off-ramp diverge at Airport Way

This impact is considered **significant**.

Mitigation Measure

4.11-2 The project applicant shall pay the appropriate San Joaquin County Regional Traffic Impact Fee (RTIF), which is collecting fees from new developments to help fund the widening of SR 120 to six lanes.

The widening of SR 120 to six lanes would improve operations at each impacted location to an acceptable level. Implementation of this mitigation measure would reduce the significance of the impact. However, the impact would remain **significant and unavoidable** because this improvement is within the jurisdiction of Caltrans and there are no assurances that it would be constructed within a reasonable period of time.

4.11-3 The proposed project could cause potentially significant impacts to study intersections.

According to Table 4.11-9, all study intersections would operate at an acceptable LOS D or better under existing plus project conditions. Therefore, this impact is considered **less than significant**.

Mitigation Measure

None.

4.11-4 The proposed project could cause potentially significant impacts to bicycle and pedestrian facilities.

According to the project description, the project would construct Class II bike lanes on public streets in accordance with the City's Bikeway Master Plan. The project would construct a 5-foot detached sidewalk along the McKinley Avenue Expressway. The project would not disrupt existing or planned bicycle/pedestrian facilities or create an inconsistency with applicable policies related to bicycle or pedestrian systems. Therefore, this impact is considered **less than significant**.

Mitigation Measure

None.

4.11-5 The proposed project could cause potentially significant impacts to the transit system.

According to the project description, the project would construct bus turnouts along the McKinley Avenue Expressway to accommodate future bus service for project residents. The project would not disrupt existing or planned transit services or facilities or create an inconsistency with applicable policies related to transit. Therefore, this impact is considered **less than significant**.

Mitigation Measure

None.

4.11-6 The proposed project could cause potentially significant impacts to at-grade railroad crossings.

McKinley Avenue features an at-grade crossing of a UP railroad track between SR 120 and Yosemite Avenue. The project would result in the volume of traffic crossing this track to increase from 900 to 1,200 vehicles per day. This crossing has advanced warning signs, railroad crossing pavement markings, stop lines, crossing gates, flashing lights, and warning bells. The project would not cause an increase in delay during train crossings that would correspond to LOS E or worse conditions. Furthermore, the project would not add traffic to an at-grade crossing with a known safety problem. Therefore, this impact is considered **less than significant**.

It should be noted that the City of Manteca, San Joaquin County, and the California Public Utilities Commission monitor the operations and safety of at-grade railroad crossings to determine whether safety improvements are warranted. If and when safety improvements are determined to be warranted, the City of Manteca shall coordinate with agencies with jurisdiction over the grade crossing to install the improvements.

Mitigation Measure

None.

CUMULATIVE IMPACTS AND MITIGATIONS

This section evaluates the significance of cumulative project impacts and recommends mitigations for each impact. Refer to Appendix E for technical calculations.

4.11-7 The proposed project could cause potentially significant impacts to freeway facilities.

According to Table 4.11-13, the project would further exacerbate cumulatively unacceptable operations on SR 120. This impact is considered **significant**.

Mitigation Measure

4.11-7 Implement Mitigation Measure 4.11-1 (Pay RTIF).

The widening of SR 120 to six lanes would improve operations to an acceptable level at 15 of the 18 study facilities (See **Table 4.11-17**). By adding new residents to the area, the project would result in additional revenues through the Measure K sales tax, which helps fund the SR 120 widening. However, the impact would remain **significant and unavoidable** because this improvement is within the jurisdiction of Caltrans and there are no assurances that it would be constructed within a reasonable period of time.

Facility		Type	Peak Hour	Plus Project		with Mitigation	
				Density	LOS	Density	LOS
1	SR 120 EB from I-5 to Yosemite Avenue	Mainline	AM	39	E	24	C
			PM	-	F	33	D
2	SR 120 EB from Yosemite Avenue to McKinley Avenue	Mainline	AM	33	D	21	C
			PM	-	F	35	D
3	SR 120 EB from McKinley Avenue to Airport Way	Mainline	AM	32	D	21	C
			PM	-	F	30	D
4	SR 120 EB from Airport Way to Union Road	Mainline	AM	34	D	22	C
			PM	-	F	31	D
5	SR 120 EB off-ramp at McKinley Avenue	Ramp Diverge	AM	35	E	26	C
			PM	-	F	37	E
6	SR 120 EB off-ramp at Airport Way	Ramp Diverge	AM	34	D	25	C
			PM	-	F	33	D
7	SR 120 EB loop on-ramp from McKinley Avenue	Ramp Merge	AM	27	C	18	B
			PM	-	F	30	D
8	SR 120 EB on-ramp from McKinley Avenue	Ramp Merge	AM	32	D	23	C
			PM	-	F	29	D
9	SR 120 EB on-ramp from Airport Way	Ramp Merge	AM	33	D	23	C
			PM	-	F	32	D
10	SR 120 WB from Union Road to Airport Way	Mainline	AM	-	F	28	D
			PM	-	F	30	D
11	SR 120 WB from Airport Way to McKinley Avenue	Mainline	AM	-	F	28	D
			PM	-	F	28	D
12	SR 120 WB from McKinley Avenue to Yosemite Avenue	Mainline	AM	-	F	28	D
			PM	-	F	36	E
13	SR 120 WB from Yosemite Avenue to I-5	Mainline	AM	-	F	27	D
			PM	-	F	43	E
14	SR 120 WB off-ramp at Airport Way	Ramp Diverge	AM	-	F	31	D
			PM	-	F	33	D
15	SR 120 WB off-ramp at McKinley Avenue	Ramp Diverge	AM	-	F	32	D
			PM	-	F	31	D
16	SR 120 WB on-ramp from Airport Way	Ramp Merge	AM	-	F	29	D
			PM	-	F	29	D
17	SR 120 WB loop on-ramp from McKinley Ave.	Ramp Merge	AM	-	F	31	D
			PM	-	F	30	D
18	SR 120 WB on-ramp from McKinley Avenue	Ramp Merge	AM	-	F	27	C
			PM	-	F	35	D
Note: Bolded cells represent unacceptable operations.							

4.11-8 The proposed project could cause potentially significant impacts to study intersections.

According to Table 4.11-12, the SR 120/Airport Way ramp intersections would operate at LOS F during both peak hours without or with the proposed project. Vehicle queues from these intersections would cause operations at the Airport Way/Daniels Street and Airport Way/Atherton Drive intersections to also operate at LOS F during one or both peak hours. This impact is considered **significant**.

Mitigation Measure

4.11-8 *The project applicant shall pay its fair share toward improvements to the SR 120/Airport Way interchange. The project's fair share is estimated to be 0.7 percent⁴. The following improvements would be necessary to accommodate the cumulative volumes:*

- Construct loop on-ramps
- Widen overcrossing to include two northbound and three southbound lanes
- Widen SR 120 EB and WB off-ramps to include two left-turn lanes and two right-turn lanes
- Restripe the SB approach at the Airport Way/Daniels Street intersection to add a third through lane and restripe the NB approach to add an exclusive right-turn lane
- Restripe the EB Daniels Street approach to include left, shared left/through, and two right-turn lanes with right-turn overlap phasing.

Implementation of the above improvements would substantially improve interchange operations (See **Table 4.11-18**). However, the impact would remain **significant and unavoidable** because this improvement is within the jurisdiction of Caltrans and there are no assurances that it would be constructed within a reasonable period of time. Furthermore, funding for the remaining share of the cost has not been identified.

4.11-9 The proposed project could cause potentially significant impacts to CMP roadway segments.

According to Table 4.11-9, the CMP facilities evaluated in this study (Airport Way north of SR 120 and McKinley Avenue Expressway) would operate at an acceptable LOS D or better under cumulative plus project conditions. Therefore, this impact is considered **less than significant**.

⁴ Fair share calculation is based on the project's cumulative traffic contribution (total AM and PM peak hour volumes) on four freeway on- and off-ramps using the following formula:

$$\text{Fair Share Percentage} = [\text{Project Only Total Volume} \div (\text{Cumulative Plus Project Total Volume} - \text{Existing Count Volume})]$$

$$\text{Fair Share Percentage} = [30 \div (7,020 - 2,957)] = 0.7\%$$

Mitigation Measure

None.

Cumulative impacts to the transit, bicycle, pedestrian systems, and at-grade railroad crossings are considered less than significant based on the impact analysis in the previous chapter and thresholds of significance.

Table 4.11-18 Peak Hour Intersection LOS – Cumulative Mitigations								
Intersection		Jurisdiction	Control	Peak Hour	Cumulative Plus Project		Cumulative Plus Project w/ Mitigations	
					Avg. Delay (sec/veh)	LOS	Avg. Delay (sec/veh)	LOS
3	Daniels Street / Airport Way	City of Manteca	Traffic Signal	AM	32	C	23	C
				PM	>150	F	50	D
4	SR 120 WB Ramps / Airport Way	Caltrans	Traffic Signal	AM	110	F	11	B
				PM	>150	F	16	B
5	SR 120 EB Ramps / Airport Way	Caltrans	Traffic Signal	AM	104	F	10	B
				PM	>150	F	15	B
6	Atherton Drive / Airport Way	City of Manteca	Traffic Signal	AM	>150	F	27	C
				PM	48	D	23	C
Bolded cells represent unacceptable operations.								

6. PROJECT ACCESS EVALUATION

This chapter discusses access to the project site and internal circulation. Since the Tentative Subdivision Map for the project is currently being revised, recommendations provided in this chapter are focused on the need to evaluate certain aspects of the revised plan and to incorporate other changes into the map as necessary.

FRONTAGE IMPROVEMENTS

This section describes the roadway improvements and traffic controls along the project's frontage on McKinley Avenue Expressway and Woodward Avenue.

McKinley Avenue Expressway

The *San Joaquin County Regional Expressway Study* (Fehr & Peers, 2009) identifies the McKinley Avenue Expressway as a planned "four-lane regional" expressway. The Expressway Study Committee (ESC) defined these types of facilities as having the following characteristics:

- Striped or raised median;
- Provides limited access to abutting properties with intersections generally limited to no less than ½ mile intervals;
- Right-turn in/out movements more frequently allowed but may involve acceleration and deceleration lanes;
- Turn lanes included at intersections; and
- May include Class I or II bicycle facilities and pedestrian facilities as appropriate.

The study states that "these guidelines are very general and exceptions may be needed to ensure that the expressways are appropriately designed to suit their location and setting". According to the cumulative traffic forecasts, the segment of McKinley Avenue Expressway along the project frontage would carry approximately 13,000 ADT, which can be accommodated by the four-lane cross-section.

The project consists of approximately 2,300 feet of frontage along the McKinley Avenue Expressway. The Tentative Subdivision Map shows two planned intersections. The northerly intersection is approximately 1,000 feet south of Woodward Avenue, and the southerly intersection is 1,200 feet south of the northerly intersection. Thus, the spacing of these intersections does not meet the ½ mile spacing guideline mentioned above.

Fehr & Peers recommends that the City review the revised Tentative Subdivision Map in consideration of the expressway design guidelines. The review should address the appropriate number/placement of intersections, their permitted turning movements (both near-term and ultimate), type of traffic controls, need for right-turn deceleration lanes, and need/type of bicycle facilities.

McKinley Avenue Expressway/Woodward Avenue Intersection

- Installation of a traffic signal is necessary at this intersection under cumulative conditions with lane configurations shown on Figure 4.11-9.
- The dual southbound left-turn lanes may require right-of-way dedication along the project's frontages on the McKinley Avenue Expressway (for lane alignment purposes) and Woodward Avenue (to provide a second eastbound receiving lane for several hundred feet before the lane drop occurs).

Woodward Avenue

The segment of Woodward Avenue east of McKinley Avenue Expressway is expected to carry 6,600 ADT under cumulative plus project conditions. Specific recommendations for this segment are not offered at this time because the planned street cross-section is unknown and the revised Tentative Subdivision Map is not available.

Fehr & Peers recommends a detailed evaluation of project access and internal circulation be conducted when a revised lotting map for Terra Ranch is submitted. The review should focus on the following:

- Geometric / lane configurations on Woodward Avenue (i.e., type of traffic control on minor streets, suitable locations for front-on residences, mid-block access control, etc.)
- Length of exclusive southbound left-turn lanes on McKinley Avenue Expressway
- Anticipated use of Machado Estates streets by Terra Ranch traffic, and resulting daily volumes on major residential streets within both developments
- Consideration of access needs for future development on the west side of McKinley Avenue Expressway

The access evaluations should be performed in accordance with the City's *Transportation Impact Study Guidelines*.

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