

Appendix 13.0

Traffic Impact Analysis

October 22, 2019

Mr. Don MacLean
KCG Blue, LLC
3961 Citrus Drive
Fallbrook, CA 92028

SUBJECT: GUN SHOOTING RANCH/TACTICAL TRAINING FACILITY TRIP GENERATION EVALUATION

Dear Mr. Don MacLean:

Urban Crossroads, Inc. is pleased to provide the following Trip Generation Evaluation for Gun Shooting Ranch/Tactical Training Facility development which is located on the southeast corner of Mission Trail and Bundy Canyon Road in the City of Wildomar. The purpose of this work effort is to assess the potential changes in trip generation for the site based on the proposed Project in comparison to the uses evaluated in the Gun Shooting Range/Tactical Training Facility Traffic Impact Analysis (dated July 17, 2019, referred to as "2019 Traffic Study").

SUMMARY OF FINDINGS

The 2019 Traffic Study evaluated a 12-vehicle fueling position gas station with up to 15,000 square feet (sf) of commercial retail use. The purpose of evaluating a higher generating mix of uses was to evaluate the proposed General Plan Amendment (General Plan Circulation Element change to Bundy Canyon Road). Although Bundy Canyon Road is currently classified as a 6-lane Urban Arterial Highway per the City's current General Plan Circulation Element, the 2019 Traffic Study findings for the more intense land use supports the proposed downgrade in classification to a 4-lane Modified Arterial Highway. In other words, the anticipated long-range forecasts along Bundy Canyon Road can be supported by a 4-lane roadway and maintain acceptable levels of service along the roadway segments. The downgrade would occur along Bundy Canyon Road between Corydon Road and Orange Street.

However, as noted in the 2019 Traffic Study, the proposed Project is to consist of a 34,702 sf gun shooting range. The resulting trip generation for the proposed gun shooting range is less than the gas station and commercial retail land use mix evaluated in the 2019 Traffic Study (96 fewer AM peak hour trips, 61 fewer PM peak hour trips, and 986 fewer trip-ends per day). Lastly, the proposed Project is anticipated to contribute fewer than 50 peak hour trips to the study area intersections. As such, the proposed Project's impact to the study area intersections is less than significant.

PROPOSED PROJECT

The Project is to consist of a gun shooting range building of approximately 34,702 sf, which includes 42 lanes and would operate between 9 AM and 10 PM, 7 days a week. The site is proposed to also include a 4,000-sf space for tactical/situational training for law enforcement, which includes 4 dedicated classroom spaces to accommodate 25-50 people.

Trip generation estimates for the Project are shown in Table 1. Since there are no readily available trip generations rates within the Institute of Transportation Engineers (ITE) Trip Generation Manual, 10th Edition, 2017, trip generation estimates have been based upon the Project description, assuming the maximum number of employees, patrons, and law enforcement users that are anticipated to utilize the site. As shown in Table 1, the proposed Project is anticipated to generate a total of 290 weekday trip-ends per day with 80 PM peak hour trips. AM peak hour trip generation has not been provided as the Project is not anticipated to operate during the AM peak hour.

TABLE 1: PROPOSED PROJECT TRIP GENERATION SUMMARY

Trip Type	PM Peak Hour			Daily
	In	Out	Total	
Wildomar Shooting Academy				
Patrons	25	25	50	150
Law Enforcement	10	10	20	100
Employees	3	7	10	40
Total	38	42	80	290

¹ Trip Generation Source: Statement of Operations provided by KCG Blue LLC

PROJECT FROM 2019 TRAFFIC STUDY

Pursuant to discussions with City staff, a conservative mix of retail uses could also be developed in the event a gun range is not developed on the site. The site could potentially be developed with a 12-vehicle fueling position gas station and up to 15,000 sf of commercial retail use. In an effort to conduct a conservative analysis, the mix of uses shown on Table 2 have been evaluated in the 2019 Traffic Study.

The trip generation evaluated uses the ITE Trip Generation Manual (see Table 2). In the event a gun range is not developed on the site, a retail site could potentially be developed in its place (see Table 2). As shown in Table 2, the Project could generate a total of 1,276 weekday trip-ends per day with 96 AM peak hour trips and 141 PM peak hour trips.

TABLE 2: TRIP GENERATION SUMMARY FROM 2019 TRAFFIC STUDY

Land Use ¹	Units ²	ITE LU Code	AM Peak Hour			PM Peak Hour			Daily
			In	Out	Total	In	Out	Total	
Project Trip Generation Rates									
Shopping Center	TSF	820	0.583	0.357	0.940	1.829	1.981	3.810	37.750
Gasoline/Service Station w/Convenience Mkt.	VFP	945	10.135	10.130	20.270	11.180	11.180	22.360	198.160

Project Land Uses	Quantity	Units ²	AM Peak Hour			PM Peak Hour			Daily
			In	Out	Total	In	Out	Total	
Project Trip Generation Summary									
Shopping Center	15,000	TSF	9	5	14	27	30	57	566
Internal Capture (10%):			-1	-1	-2	-3	-3	-6	-58
Net External Trips:			8	4	12	24	27	51	508
Pass-by Reduction (PM/Daily: 34%):			0	0	0	-8	-8	-16	-174
Shopping Center Total:			8	4	12	16	19	35	334
Gasoline/Service Station w/Convenience Mkt.	12	VFP	122	122	244	134	134	268	2,378
Internal Capture (10%):			-12	-12	-24	-13	-13	-26	-238
Net External Trips:			110	110	220	121	121	242	2,140
Pass-by Reduction (AM: 62%; PM/Daily: 56%):			-68	-68	-136	-68	-68	-136	-1,198
Gasoline/Service Station w/Conven. Mkt. Total:			42	42	84	53	53	106	942
Total Net Trips			50	46	96	69	72	141	1,276

¹ Trip Generation Source: Institute of Transportation Engineers (ITE), *Trip Generation Manual*, Tenth Edition (2017).

² TSF = thousand square feet; VFP = vehicle fueling position

TRIP GENERATION COMPARISON

The trip generation comparison is based on a comparison of the proposed Project trip generation to the trip generation evaluated in the 2019 Traffic Study. As shown in Table 3, the development of the proposed Project is anticipated to generate 96 fewer AM peak hour trips, 61 fewer PM peak hour trips, and 986 fewer trip-ends per day.

TABLE 3: TRIP GENERATION COMPARISON

Project	AM Peak Hour			PM Peak Hour			Daily
	In	Out	Total	In	Out	Total	
2019 Traffic Study (see Table 2)	50	46	96	69	72	141	1,276
Proposed Project (see Table 1)	0	0	0	38	42	80	290
Variance	-50	-46	-96	-31	-30	-61	-986

In addition, the proposed Project is anticipated to contribute fewer than 50 peak hour trips to the study area intersections. As such, the Project's impact to the study area intersections is less than significant. No additional traffic analysis is necessary for the proposed Project.

Mr. Don MacLean
KCG Blue, LLC
October 22, 2019
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If you have any questions, please contact me directly at (949) 336-5982.

Respectfully submitted,

URBAN CROSSROADS, INC.

A handwritten signature in cursive script that reads "Charlene So".

Charlene So, PE
Associate Principal



Gun Shooting Range/Tactical Training Facility

TRAFFIC IMPACT ANALYSIS

CITY OF WILDOMAR

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APRIL 22, 2019

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LIST OF ABBREVIATED TERMS

(1)	Reference
ADT	Average Daily Traffic
CA MUTCD	California Manual on Uniform Traffic Control Devices
Caltrans	California Department of Transportation
CEQA	California Environmental Quality Act
CMP	Congestion Management Program
DIF	Development Impact Fee
E+P	Existing Plus Project
HCM	Highway Capacity Manual
ITE	Institute of Transportation Engineers
LOS	Level of Service
N/A	Not Applicable
NCHRP	National Cooperative Highway Research Program
NP	No Project (or Without Project)
PHF	Peak Hour Factor
Project	Gun Shooting Range/Tactical Training Facility
RBBD	Road and Bridge Benefit District
RivTAM	Riverside County Transportation Analysis Model
RTA	Riverside Transit Agency
RTP	Regional Transportation Plan
SCAG	Southern California Association of Governments
SCS	Sustainable Communities Strategy
sf	Square Feet
TIA	Traffic Impact Analysis
TUMF	Transportation Uniform Mitigation Fee
WP	With Project
WRCOG	Western Riverside Council of Governments

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1 INTRODUCTION

This report presents the results of the traffic impact analysis (TIA) for the proposed Gun Shooting Range/Tactical Training Facility ("Project"), which is located on the southeast corner of Mission Trail and Bundy Canyon Road as shown on Exhibit 1-1.

The purpose of this TIA is to evaluate the potential circulation system deficiencies that may result from the development of the proposed Project, and to recommend improvements to achieve acceptable circulation system operational conditions.

1.1 SUMMARY OF FINDINGS

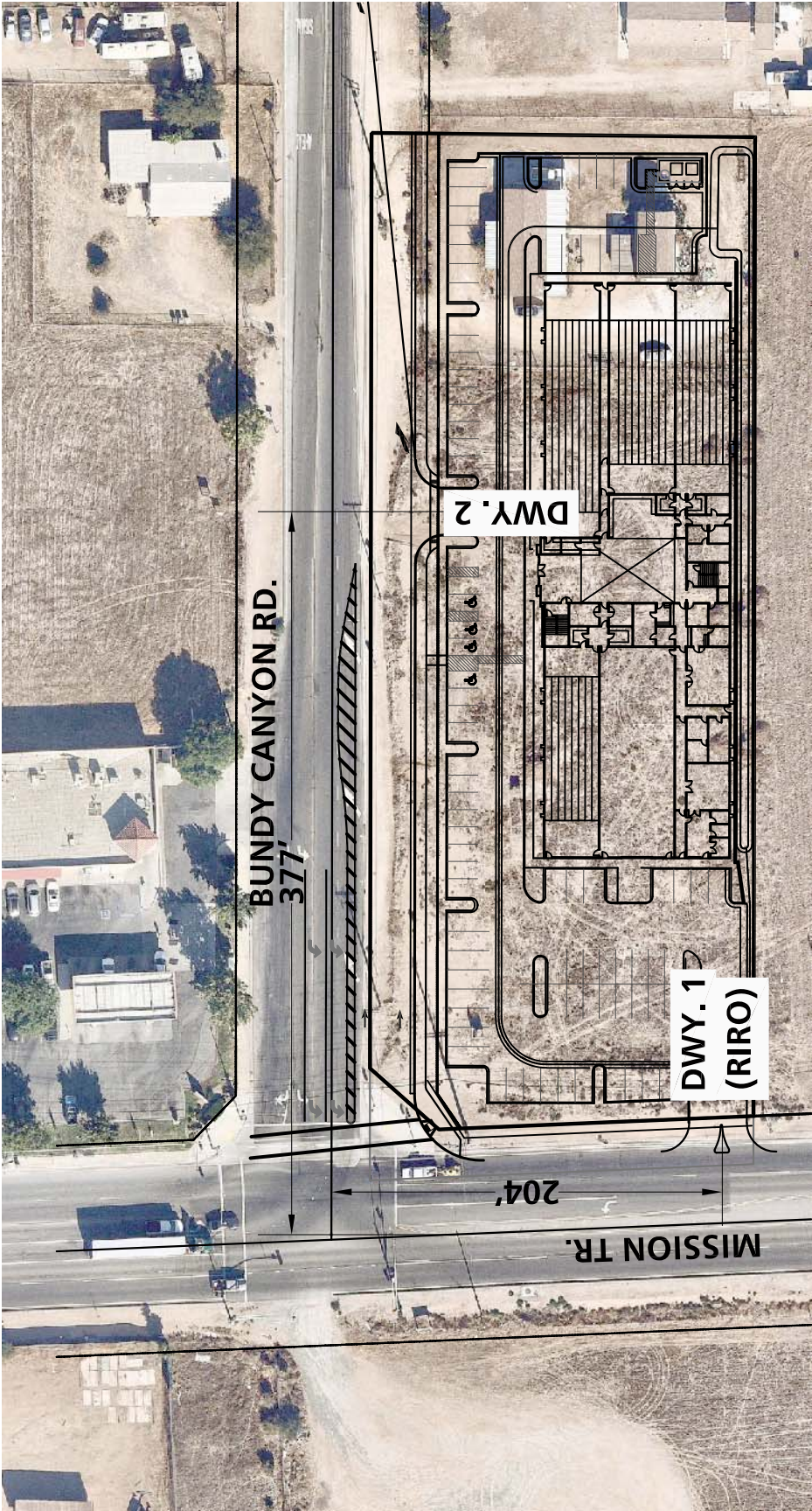
Trips generated by the proposed Project has been provided via the Statement of Operations by KCG Blue LLC. The Project is estimated to generate a net total of 290 trip-ends per day on a typical weekday with approximately 80 net PM peak hour trips. Nominal trips are anticipated during the AM peak hour. Pursuant to discussions with City staff, it has been recommended that a conservative trip generation be evaluated for the site for the purposes of this TIA. The trip generation evaluated in this TIA uses the Institute of Transportation Engineers (ITE) Trip Generation Manual (10th Edition). (1) In the event a gun range is not developed on the site, a retail site could potentially be developed in its place (Land Use Alternative 2). The site could potentially be developed with uses such as a 12-vehicle fueling position gas station and up to 15,000 square feet (sf) of commercial retail use. Land Use Alternative 2 is anticipated to generate a total of 1,276 weekday trip-ends per day with 96 AM peak hour trips and 141 PM peak hour trips. Land Use Alternative 2 has been evaluated for the purposes of this TIA. The assumptions and methods used to estimate the Project's trip generation characteristics are discussed in greater detail in Section 4.1 *Project Trip Generation* of this report.

The contribution of Project traffic to either existing traffic conditions was not found to result in any new deficient intersection operations. In other words, there are no direct Project impacts related to traffic. The Project is anticipated to contribute towards cumulative traffic impacts at the following intersections for Opening Year Cumulative (2020) or Horizon Year (2040) traffic conditions:

- Mission Trail & Bundy Canyon Road (#1)
- Orchard Street & Bundy Canyon Road (#4)
- Almond Street & Bundy Canyon Road (#5)

The Project's contribution towards pre-existing fee programs or fair share contribution would mitigate its cumulative impact to these intersections.

EXHIBIT 1-1: PRELIMINARY SITE PLAN



LEGEND:

RIRO - RIGHT-IN/RIGHT-OUT ONLY ACCESS

NOTE: SITE PLAN FOR RETAIL SITE IS NOT CURRENTLY AVAILABLE.



The Project will construct its ultimate half-section of Mission Trail and Bundy Canyon Road along the Project's frontage as an Arterial Highway. Although Bundy Canyon Road is currently classified as a 6-lane Urban Arterial Highway along the Project's frontage, the Project is proposing to downgrade the classification to a 4-lane Arterial Highway. The downgrade would occur along Bundy Canyon Road between Corydon Road and Orange Street. Access to the Project site will be provided via Bundy Canyon Road. By Horizon Year (2040) traffic conditions, Driveway 2 on Bundy Canyon Road is anticipated to operate at a deficient level of service during the peak hours as a cross-street stop-controlled intersection. Although signalization is anticipated to improve the peak hour operations back to acceptable levels, the intersections does not meet the typical ¼-mile spacing along Arterial Highways for signalized intersections. An alternative to signalization would be to restrict the access at the driveway to right-in/right-out/left-in access only (no left turns out) at such time in the future when Driveway 2 operates at a deficient level of service as a full access cross-street stop-controlled intersection. Additional discussion is included in Section 1.8 *On-Site Roadway and Site Access Improvements* of this report.

1.2 PROJECT OVERVIEW

1.2.1 LAND USE ALTERNATIVE 1

The Project is proposed to include the development of a gun shooting range building of approximately 34,702 sf, which includes 42 lanes and would operate between 9 AM and 10 PM, 7 days a week. The site is proposed to also include a 4,000 square foot space for tactical/situational training for law enforcement, which includes 4 dedicated classroom spaces to accommodate 25-50 people.

1.2.2 LAND USE ALTERNATIVE 2

Pursuant to discussions with City staff, a conservative mix of retail uses is also proposed to be evaluated in the event a gun range is not developed on the site. For the purposes of the traffic study, the site could potentially be developed with a 12-vehicle fueling position gas station and up to 15,000 sf of commercial retail use. In an effort to conduct a conservative analysis, Land Use Alternative 2 has been evaluated for the purposes of this TIA.

The Project is proposed to have two driveways along Bundy Canyon Road. The first access, labeled Driveway 1 on Mission Trail, is proposed for right-in/right-out access only. The second access, labeled Driveway 2 on Bundy Canyon Road, is proposed for full access. Regional access to the Project site is provided via the I-15 Freeway at Bundy Canyon Road. For the purposes of this analysis, it is assumed that the Project will be constructed within a single phase of development and is anticipated to be fully built and occupied by Year 2020.

1.3 ANALYSIS SCENARIOS

For the purposes of this traffic study, potential impacts to traffic and circulation have been assessed for each of the following conditions:

- Existing (2019) (1 scenario)
- Existing plus Project (1 scenario)
- Opening Year Cumulative (2020), Without and With Project (2 scenarios)
- Horizon Year (2040), Without and With Project (2 scenarios)

1.3.1 EXISTING (2019) CONDITIONS

Information for Existing (2019) conditions is disclosed to represent the baseline traffic conditions as they existed at the time this report was prepared.

1.3.2 EXISTING PLUS PROJECT CONDITIONS

The Existing Plus Project (E+P) analysis determines circulation system deficiencies that would occur on the existing roadway system in the scenario of the Project being placed upon Existing conditions.

1.3.3 OPENING YEAR CUMULATIVE (2020) CONDITIONS

The Opening Year Cumulative (2020) conditions analysis determines the potential near-term cumulative circulation system deficiencies. To account for background traffic growth, traffic associated with other known cumulative development projects in conjunction with an ambient growth factor from Existing conditions of 1.02% for 2019 conditions are included for Opening Year Cumulative traffic conditions. The list of cumulative development projects was compiled from information provided by the City of Wildomar, and is consistent with other recent studies in the study area.

1.3.4 HORIZON YEAR (2040) CONDITIONS

The Horizon Year (2040) Without Project traffic conditions were derived from the Riverside County Transportation Analysis Model (RivTAM) modified to represent Horizon Year conditions for the City of Wildomar using accepted procedures for model forecast refinement and smoothing. The traffic forecasts reflect the area-wide growth anticipated between Existing conditions and Horizon Year conditions. The Horizon Year With Project traffic forecasts were determined by adding the Project traffic to the Horizon Year (2040) Without Project traffic forecasts from the RivTAM model. The Horizon Year traffic forecasts used in the traffic analysis were refined with existing peak hour traffic count data collected at intersection analysis locations. The initial estimate of the future peak hour turning movements have, therefore, been reviewed for reasonableness. The reasonableness checks performed include a review of traffic flow conservation in addition to a comparison with the Existing and Opening Year Cumulative traffic volumes. Where necessary, the Horizon Year volumes have been adjusted to achieve flow conservation, reasonable growth, and reasonable diversion between parallel routes.

The Horizon Year Without and With Project traffic conditions analyses will be utilized to determine if improvements funded through regional transportation mitigation fee programs, such as the Transportation Uniform Mitigation Fee (TUMF), Development Impact Fee (DIF) programs, Southwest Road and Bridge Benefit District (RBBB), or other approved funding mechanism can accommodate the long-range cumulative traffic at the target Level of Service (LOS) identified in the City of Wildomar General Plan. (2)

1.4 STUDY AREA

To ensure that this TIA satisfies the City of Wildomar's traffic study requirements, Urban Crossroads, Inc. prepared a Project traffic study scoping package for review by City staff prior to the preparation of this report. The Agreement provides an outline of the Project study area, trip generation, trip distribution, and analysis methodology. The Agreement approved by the City is included in Appendix 1.1.

The following 5 study area intersections shown on Exhibit 1-2 and listed in Table 1-1, were selected for this TIA based on consultation with City of Wildomar staff.

TABLE 1-1: INTERSECTION ANALYSIS LOCATIONS

ID	Intersection Location	Jurisdiction	CMP?
1	Mission Trail & Bundy Canyon Road	City of Wildomar	No
2	Mission Trail & Driveway 1 – Future Intersection	City of Wildomar	No
3	Driveway 2 & Bundy Canyon Road – Future Intersection	City of Wildomar	No
4	Orchard Street & Bundy Canyon Road	City of Wildomar	No
5	Almond Street & Bundy Canyon Road	City of Wildomar	No

In general, the study area includes intersections where the Project is anticipated to contribute 50 or more peak hour trips. The “50 peak hour trip” criterion utilized by the City of Wildomar is consistent with the methodology employed by the County of Riverside, and generally represents a minimum number of trips at which a typical intersection would have the potential to be substantively impacted by a given development proposal. Although each intersection may have unique operating characteristics, this traffic engineering rule of thumb is a widely utilized tool for estimating a potential area of impact (i.e., study area).

There are no intersection analysis locations within the study area that are identified as a Congestion Management Program (CMP) intersections in the Riverside County CMP.

EXHIBIT 1-2: LOCATION MAP



LEGEND:

- 0 = EXISTING INTERSECTION ANALYSIS LOCATION
- 0 = FUTURE INTERSECTION ANALYSIS LOCATION



1.5 SUMMARY OF INTERSECTION ANALYSIS

This section provides a summary of the analysis results for Existing (2019), E+P, Opening Year Cumulative, and Horizon Year traffic conditions. A summary of intersection LOS by analysis scenario is shown in Exhibit 1-3 and improvement needs to address those deficiencies are summarized in Table 1-2.

1.5.1 EXISTING (2019) CONDITIONS

Intersection Operations Analysis

For Existing (2019) traffic conditions, the existing study area intersection was found to operate at an acceptable level of service (LOS) during the peak hours, with the exception of the following intersection:

- Orchard Street & Bundy Canyon Road (#4) – LOS D AM peak hour only

A summary of Existing (2019) LOS results for all traffic conditions are presented in Exhibit 1-3.

Traffic Signal Warrant Analysis

The following unsignalized intersection currently warrants a traffic signal, based on Existing (2019) peak hour traffic volumes:

- Almond Street & Bundy Canyon Road (#5)

Recommended Improvements

The following improvements are needed to improve the Existing (2019) peak hour deficiencies back to acceptable levels.

Orchard Street & Bundy Canyon Road (#4)

- Install a Traffic Signal.
- Add a westbound left turn lane.

1.5.2 E+P CONDITIONS

Intersection Operations Analysis

With the addition of Project traffic, the study area intersections continue to operate at an acceptable LOS during the peak hours, with the exception of the following intersection:

- Orchard Street & Bundy Canyon Road (#4) – LOS D AM and PM peak hours

A summary of E+P LOS results for all traffic conditions are presented in Exhibit 1-3.

Traffic Signal Warrant Analysis

There are no additional study area intersections anticipated to meet planning level (average daily traffic or ADT) or peak hour volume-based traffic signal warrants under E+P traffic conditions, in addition to the intersection previously identified under Existing (2019) traffic conditions.

EXHIBIT 1-3: SUMMARY OF DEFICIENT INTERSECTIONS BY ANALYSIS SCENARIO

#	Intersection	Existing (2019)	E+P	Opening Year (2020) Without Project	Opening Year (2020) With Project	Horizon Year (2040) Without Project	Horizon Year (2040) With Project
1	Mission Trail & Bundy Canyon Rd.						
2	Mission Trail & Dwy. 1	NA		NA		NA	
3	Dwy. 2 & Bundy Canyon Rd.	NA		NA		NA	
4	Orchard St. & Bundy Canyon Rd.						
5	Almond St. & Bundy Canyon Rd.						

LEGEND:

- AM PEAK HOUR
- PM PEAK HOUR
- LOS A-D
- LOS D-E
- LOS F
- NA ■ NOT AN ANALYSIS LOCATION FOR THIS SCENARIO

Recommended Improvements

There are no additional improvements required to improve the E+P peak hour deficiency at Orchard Street and Bundy Canyon Road, in addition to the improvements previously identified under Existing (2019) traffic conditions.

1.5.3 OPENING YEAR CUMULATIVE (2020) CONDITIONS

Intersection Operations Analysis

For Opening Year Cumulative (2020) Without Project traffic conditions, the study area intersections continue to operate at acceptable LOS during the peak hours, with the exception of the following intersections:

- Orchard Street & Bundy Canyon Road (#4) – LOS D AM and PM peak hours
- Almond Street & Bundy Canyon Road (#5) – LOS D AM peak hour only

With the addition of the Project traffic, there are no additional study area intersections anticipated to operate at an unacceptable LOS from those locations previously identified for Opening Year Cumulative (2020) Without Project traffic conditions.

A summary of Opening Year Cumulative (2020) LOS results for all traffic conditions are presented in Exhibit 1-3.

Traffic Signal Warrant Analysis

In addition to the intersection previously identified under Existing (2019) traffic conditions, the following unsignalized intersection is anticipated to warrant a traffic signal, based on Opening Year Cumulative (2022) Without Project peak hour traffic volumes:

- Orchard Street & Bundy Canyon Road (#4)

The traffic signal warrant analysis indicates that there are no additional study area intersections anticipated to warrant a traffic signal for Opening Year Cumulative (2020) With Project traffic conditions, in addition to those previously identified under Existing (2019) and Opening Year Cumulative (2020) Without Project traffic conditions.

Recommended Improvements

There are no additional improvements required to improve the Opening Year Cumulative (2020) With Project peak hour deficiency at Orchard Street and Bundy Canyon Road, in addition to the improvements previously identified under Existing (2019) traffic conditions.

The following improvements are needed to improve the Opening Year Cumulative (2020) peak hour deficiencies back to acceptable levels.

Almond Street & Bundy Canyon Road (#5)

- Install a Traffic Signal.
- Add an eastbound left turn lane.
- Add a westbound left turn lane.

1.5.4 HORIZON YEAR (2040) CONDITIONS***Intersection Operations Analysis***

For Horizon Year (2040) Without Project traffic conditions, the following intersections were found to operate at an unacceptable LOS during the peak hours:

- Mission Trail & Bundy Canyon Road (#1) – LOS F AM and PM peak hours
- Orchard Street & Bundy Canyon Road (#4) – LOS F AM and PM peak hours
- Almond Street & Bundy Canyon Road (#5) – LOS F AM and PM peak hours

With the addition of the Project traffic, the following additional intersection is anticipated to operate at an unacceptable LOS during the peak hours in addition to the locations identified above for Horizon Year (2040) Without Project traffic conditions:

- Driveway 2 & Bundy Canyon Road (#3) – LOS F AM and PM peak hours

A summary of Horizon Year (2040) LOS results for all traffic conditions are presented in Exhibit 1-3.

Traffic Signal Warrant Analysis

The traffic signal warrant analysis results indicate that there are no additional study area intersections anticipated to warrant a traffic signal for Horizon Year (2040) With Project traffic conditions, in addition to the previously identified intersections under Existing (2019) and Opening Year Cumulative (2020) traffic conditions.

Recommended Improvements

The following improvements are needed to improve the Horizon Year (2040) With Project peak hour deficiencies back to acceptable levels in addition to those previously identified.

Mission Trail & Bundy Canyon Road (#1)

- Add a northbound left-turn lane.
- Add a northbound right-turn lane and modify the traffic signal to accommodate overlap phasing.
- Add an eastbound left-turn lane.
- Add two eastbound through lanes.
- Add an eastbound right-turn lane.
- Add a second westbound left-turn lane.
- Add a second westbound through lane.
- Add a westbound right-turn lane and modify the traffic signal to accommodate overlap phasing.

Orchard Street & Bundy Canyon Road (#4)

- Install a Traffic Signal.
- Add a second eastbound through lane.
- Add a westbound left-turn lane.
- Add a second westbound through lane.

Almond Street & Bundy Canyon Road (#5)

- Install a Traffic Signal.
- Add a northbound left turn lane.
- Add a southbound left turn lane.
- Add an eastbound left turn lane.
- Add a westbound left turn lane.

The Project Applicant shall participate in the funding of off-site improvements that are needed to serve cumulative traffic conditions through the payment to the City of Wildomar Transportation Uniform Mitigation Fee (TUMF), Development Impact Fee (DIF), and Southwest Road and Bridge Benefit District (RBBD) fee programs. These fees shall be collected by the City of Wildomar, with the proceeds solely used as part of a funding mechanism aimed at ensuring that regional highways and arterial expansions keep pace with the projected population increases.

1.6 CIRCULATION SYSTEM DEFICIENCIES AND RECOMMENDED IMPROVEMENTS**1.6.1 RECOMMENDED IMPROVEMENTS TO ADDRESS DEFICIENCIES AT INTERSECTIONS**

A summary of the operationally deficient study area intersections, and recommended improvements required to achieve acceptable circulation system operational conditions are described in detail within Section 3.0 *Existing Conditions*, Section 5.0 *E+P Traffic Analysis*, Section 6.0 *Opening Year Cumulative (2020) Traffic Analysis*, and Section 7.0 *Horizon Year (2040) Traffic Analysis* of this report.

A summary of off-site improvements needed to address intersection operational deficiencies for each analysis scenario is described in Table 1-2.

Mitigation Measure 1.1 – Prior to the issuance of building permits, the Project Applicant shall participate in the City’s DIF, the County’s TUMF, and the County’s Southwest RBBD fee programs by paying the requisite DIF, TUMF, and Southwest RBBD fees at the time of building permit; and in addition, shall pay the Project’s fair share for the improvements identified in Table 1-2 that are not covered in one of the existing fee programs, or as agreed to by the City and Project Applicant. Payment of fees and fair share contribution for those improvements not included in the existing fee program would mitigate the Project’s proportional share of the significant cumulative impacts at the study area intersections.

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Table 1-2

Summary of Improvements by Analysis Scenario

#	Intersection Location	Jurisdiction	Recommended Improvements				Improvements in DIF, TUMF, etc. ¹	Project Responsibility ²	Project Fair Share ³
			Existing (2019)	E+P	OYC (2020) With Project	HY (2040) With Project			
1	Mission Trail & Bundy Canyon Rd.	City of Wildomar	None	None	None	- NB left turn lane - 2nd NB through lane - NB right turn lane - Modify the traffic signal to accommodate overlap phasing for the NB right turn lane - EB left turn lane - 2 EB through lanes - EB right turn lane - 2nd WB left turn lane - 2 WB through lanes - WB right turn lane - Modify the traffic signal to accommodate overlap phasing for the WB right turn lane	Yes (DIF) Yes (TUMF) Yes (DIF) No Yes (DIF) Yes (TUMF & RBBD) Yes (DIF) Yes (DIF) Yes (TUMF & RBBD) Yes (DIF) Yes (DIF)	Fees Fees Fees Fair Share Fees Fees Fees Fees Fees Fees Fees	1.605%
4	Orchard St. & Bundy Canyon Rd.	City of Wildomar	- Install a Traffic Signal - WB left turn lane	Same Same	Same Same	Same Same - 2nd EB through lane - 2nd WB through lane	No No Yes (TUMF & RBBD) Yes (TUMF & RBBD)	Fair Share Fair Share Fees Fees	3.149%
5	Almond St. & Bundy Canyon Rd.	City of Wildomar	None	None	- Install a Traffic Signal - EB left turn lane - WB left turn lane	Same Same Same - NB left turn lane - SB left turn lane	No No No No No	Fair Share Fair Share Fair Share Fair Share Fair Share	3.053%

¹ Improvements included in Regional TUMF or City of Moreno Valley DIF programs have been identified as such.

² Identifies the Project's responsibility to construct an improvement or contribute fair share towards the implementation of the improvement shown.

³ Project fair share percentage for the improvements which are not already included in the City-wide DIF/County TUMF/County RBBD.

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1.7 LOCAL AND REGIONAL FUNDING MECHANISMS

Transportation improvements within the City of Wildomar are funded through a combination of direct project mitigation, fair share contributions or development impact fee programs, such as the County's TUMF program, the City of Wildomar's DIF program, and Southwest RBBB. Identification and timing of needed improvements is generally determined through local jurisdictions based upon a variety of factors.

The incremental improvements that are required by Horizon Year (2040) traffic conditions to alleviate circulation system deficiencies are listed in Table 1-2. The improvements listed in Table 1-2 comprise installation of traffic signals, and additional lane geometric modifications. Additional discussion of the relevant transportation impact fee programs is provided below.

1.7.1 TRANSPORTATION UNIFORM MITIGATION FEE (TUMF) PROGRAM

The TUMF program is administered by the Western Riverside Council of Governments (WRCOG) based upon a regional Nexus Study most recently updated in 2009 to address major changes in right of way acquisition and improvement cost factors. WRCOG is currently in the process of completing a current Nexus Study update to the program. Final changes to network facilities, network cost allocations, and fee changes were not available at the time this assessment was prepared. This regional program was put into place to ensure that development pays its fair share and that funding is in place for construction of facilities needed to maintain the requisite level of service and critical to mobility in the region.

TUMF fees are imposed on new residential, industrial, and commercial development through application of the TUMF fee ordinance and fees are collected at the building or occupancy permit stage. In addition, an annual inflation adjustment is considered each year in February. In this way, TUMF fees are adjusted upwards on a regular basis to ensure that the development impact fees collected keep pace with construction and labor costs, etc.

Certain facilities forecast to be impacted by the Project are programmed for improvements through the TUMF program. The Project Applicant will be subject to the TUMF fee program and will pay the requisite TUMF fees at the rates then in effect pursuant to the TUMF Ordinance. The Project is located in the Southwest TUMF zone. WRCOG has a successful track record funding and overseeing the construction of improvements funded through the TUMF program. In total, the TUMF program is anticipated to generate nearly \$5 billion in transportation projects for Western Riverside County.

1.7.2 CITY OF WILDOMAR DEVELOPMENT IMPACT FEE (DIF) PROGRAM

The Project will also be subject to City of Wildomar's Development Impact Fee (DIF) program which includes a component for roads and signals. Chapter Three and Four of the City of Wildomar Development Impact Fee Nexus Report (April, 2015) discusses the local (as opposed to regional) streets and signal improvements planned for the City through build-out of the existing City limits.

1.7.3 SOUTHWEST ROAD AND BRIDGE BENEFIT DISTRICT (RBBD)

The City of Wildomar is anticipated to experience substantial growth. Extensive improvements are necessitated by new development within the region. In particular, Riverside County recognized the impact of this growth on the vicinity of the study area when it formed the Southwest RBBD. The proposed Project lies within Zone A of the Southwest RBBD. Zone A is generally bounded by the City of Lake Elsinore's southern boundary to the north, Corydon Road/Grand Avenue to the west, Sunset Avenue/Murrieta Road to the east, and the City of Murrieta's northern boundary to the south. As discussed above, the facilities improvements that will be ultimately constructed as a result of the collection of these fees and assessments are significant. They include:

Southwest Road and Bridge Benefits District (Zone A):

- Bundy Canyon Road improvements from Mission Trail to Sunset Avenue

1.7.4 FAIR SHARE CONTRIBUTION

Project mitigation may include a combination of fee payments to established programs (e.g., TUMF, and/or DIF, and/or RBBD), construction of specific improvements, payment of a fair share contribution toward future improvements or a combination of these approaches. Improvements constructed by development may be eligible for a fee credit or reimbursement through the program where appropriate (to be determined at the City of Wildomar's discretion).

When off-site improvements are identified with a minor share of responsibility assigned to proposed development, the approving jurisdiction may elect to collect a fair share contribution or require the development to construct improvements. Detailed fair share calculations, for each peak hour, has been provided on in Table 1-3 for the applicable deficient intersections shown previously on in Table 1-2. Improvements included in a defined program and constructed by development may be eligible for a fee credit or reimbursement through the program where appropriate.

Table 1-3

Project Fair Share Calculations for Intersections

#	Intersection	Existing (2019)	Project	2040 With Project	Total New Traffic	Project Fair Share ¹
1	Mission Trail & Bundy Canyon Rd.					
	AM:	1,263	37	3,569	2,306	1.605%
	PM:	1,402	53	5,202	3,800	1.395%
4	Orchard St. & Bundy Canyon Rd.					
	AM:	882	49	2,520	1,638	2.991%
	PM:	987	70	3,210	2,223	3.149%
5	Almond St. & Bundy Canyon Rd.					
	AM:	1,129	44	2,570	1,441	3.053%
	PM:	1,097	63	3,224	2,127	2.962%

BOLD = Denotes highest fair share percentage.

¹ Fair share based on net new traffic which is calculated from Project traffic volumes divided by the 2040 With Project less Existing (2019) traffic vo

1.8 ON-SITE ROADWAY AND SITE ACCESS IMPROVEMENTS

The Project is proposed to have two driveways along Bundy Canyon Road. The first access, labeled Driveway 1 on Mission Trail, is proposed for right-in/right-out access only. The second access, labeled Driveway 2 on Bundy Canyon Road, is proposed for full access. Roadway improvements necessary to provide site access and on-site circulation are assumed to be constructed in conjunction with site development and are described below. These improvements should be in place prior to occupancy.

1.8.1 SITE ADJACENT ROADWAY IMPROVEMENTS

The recommended site-adjacent roadway improvements for the Project are described below. These improvements are incorporated in the Project Description and are imposed as Project conditions of approval. Exhibit 1-4 illustrates the site-adjacent roadway improvement recommendations.

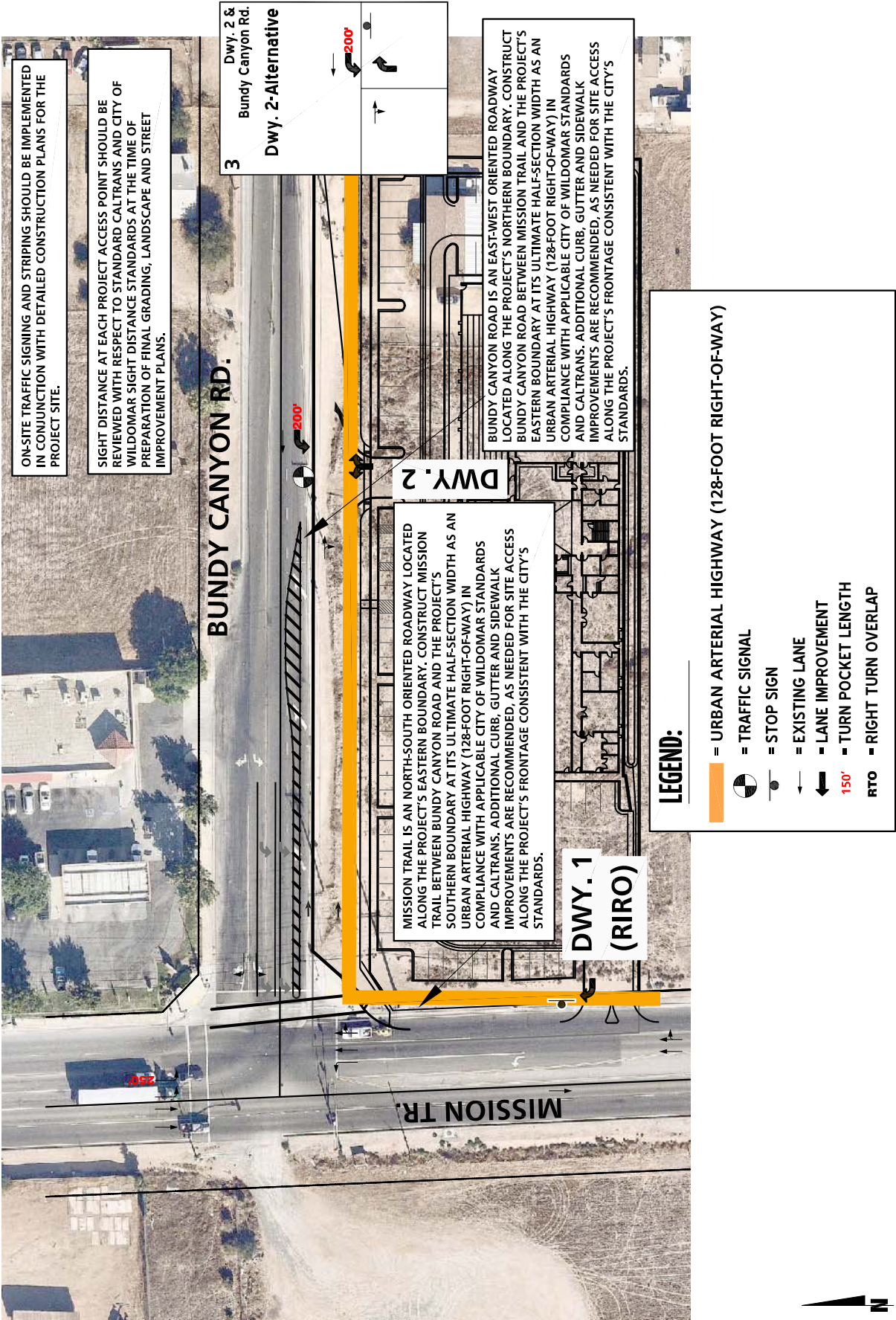
Mission Trail – Mission Trail is a north-south oriented roadway located along the Project's western boundary. Construct Mission Trail between Bundy Canyon Road and the Project's southern boundary at its ultimate half-section width as an Arterial Highway (128-foot right-of-way) in compliance with applicable City of Wildomar standards and Caltrans. Additional curb, gutter and sidewalk improvements are recommended, as needed for site access along the Project's frontage consistent with the City of Wildomar's standards.

Bundy Canyon Road – Bundy Canyon Road is an east-west oriented roadway located along the Project's northern boundary. Construct Bundy Canyon Road between Mission Trail and the Project's eastern boundary at its ultimate half-section width as an Arterial Highway (128-foot right-of-way) in compliance with applicable City of Wildomar standards and Caltrans. Additional curb, gutter and sidewalk improvements are recommended, as needed for site access along the Project's frontage consistent with the City of Wildomar's standards.

Bundy Canyon road is currently classified as an Urban Arterial Highway on the City's General Plan Circulation Element. However, the Project is proposing to downgrade this section of Bundy Canyon Road to a four-lane Arterial Highway. The analysis conducted as part of this TIA supports the downgrade of Bundy Canyon Road from an Urban Arterial Highway to an Arterial Highway between Corydon Road and Orange Street.

Wherever necessary, roadways adjacent to the Project, site access points and site-adjacent intersections will be constructed to be consistent with the identified roadway classifications in the City of Wildomar General Plan Circulation Elements.

EXHIBIT 1-4: SITE ADJACENT ROADWAY AND SITE ACCESS RECOMMENDATIONS



On-site traffic signing and striping should be implemented in conjunction with detailed construction plans for the Project site.

Sight distance at each project access point should be reviewed with respect to standard Caltrans and City of Wildomar sight distance standards at the time of preparation of final grading, landscape and street improvement plans.

1.8.2 SITE ACCESS IMPROVEMENTS

The recommended site access driveway improvements for the Project are described below. Exhibit 1-4 also illustrates the on-site and site adjacent recommended roadway lane improvements. Construction of on-site and site adjacent improvements are recommended to occur in conjunction with adjacent Project development activity or as needed for Project access purposes. It should be noted that the improvement shown on Exhibit 1-4 are consistent with the recommended near-term improvements.

Mission Trail & Driveway 1 – Install a stop control on the westbound approach and construct the intersection with the following geometrics:

Northbound Approach: One through lane and one shared through-right turn lane.

Southbound Approach: Two through lanes.

Eastbound Approach: Not Applicable (N/A)

Westbound Approach: One right turn lane.

Driveway 1 should be designed to restrict access to right-in/right-out only through the installation of a pork-chop island.

Driveway 2 & Bundy Canyon Road – Install a stop control on the northbound approach and construct the intersection with the following geometrics:

Northbound Approach: One shared left-right turn lane.

Southbound Approach: N/A

Eastbound Approach: One shared through-right turn lane.

Westbound Approach: One left turn lane with a minimum of 150-feet of storage and one through lane.

Driveway 2 does not meet the standard ¼-mile spacing from Mission Trail for signalization along an Arterial Highway. An alternative to signalization would be to restrict the access to right-in/right-out/left-in access only (no lefts out) at such time in the future when acceptable peak hour operations cannot be accommodated by the proposed cross-street stop-controlled intersection.

A queuing analysis was conducted for the site driveways and the site adjacent intersection of Mission Trail and Bundy Canyon Road for Horizon Year (2040) traffic conditions to determine the turn pocket length necessary to accommodate long-range 95th percentile queues. The analysis was conducted for the weekday AM and weekday PM peak hours and have been used for turn-pocket recommendations shown on Exhibit 1-4. The 95th percentile queues for the intersection can be found in Appendix 1.2.

2 METHODOLOGIES

This section of the report presents the methodologies used to perform the traffic analyses summarized in this report. As the City of Wildomar does not have their own traffic study guidelines, the methodologies described are generally consistent the Riverside County Transportation Department Traffic Impact Analysis Preparation Guide. (3)

2.1 LEVEL OF SERVICE

Traffic operations of roadway facilities are described using the term "Level of Service" (LOS). LOS is a qualitative description of traffic flow based on several factors such as speed, travel time, delay, and freedom to maneuver. Six levels are typically defined ranging from LOS A, representing completely free-flow conditions, to LOS F, representing breakdown in flow resulting in stop-and-go conditions. LOS E represents operations at or near capacity, an unstable level where vehicles are operating with the minimum spacing for maintaining uniform flow.

2.2 INTERSECTION CAPACITY ANALYSIS

The definitions of LOS for interrupted traffic flow (flow restrained by the existence of traffic signals and other traffic control devices) differ slightly depending on the type of traffic control. The LOS is typically dependent on the quality of traffic flow at the intersections along a roadway. The Highway Capacity Manual (HCM) methodology expresses the LOS at an intersection in terms of delay time for the various intersection approaches. (4) The HCM uses different procedures depending on the type of intersection control.

2.2.1 SIGNALIZED INTERSECTIONS

The City of Wildomar requires signalized intersection operations analysis based on the methodology described in the HCM (6th Edition). (4) Intersection LOS operations are based on an intersection's average control delay. Control delay includes initial deceleration delay, queue move-up time, stopped delay, and final acceleration delay. For signalized intersections LOS is directly related to the average control delay per vehicle and is correlated to a LOS designation as described in Table 2-1.

TABLE 2-1: SIGNALIZED INTERSECTION LOS THRESHOLDS

Description	Average Control Delay (Seconds), $V/C \leq 1.0$	Level of Service, $V/C \leq 1.0$	Level of Service, $V/C > 1.0$
Operations with very low delay occurring with favorable progression and/or short cycle length.	0 to 10.00	A	F
Operations with low delay occurring with good progression and/or short cycle lengths.	10.01 to 20.00	B	F

Description	Average Control Delay (Seconds), $V/C \leq 1.0$	Level of Service, $V/C \leq 1.0$	Level of Service, $V/C > 1.0$
Operations with average delays resulting from fair progression and/or longer cycle lengths. Individual cycle failures begin to appear.	20.01 to 35.00	C	F
Operations with longer delays due to a combination of unfavorable progression, long cycle lengths, or high V/C ratios. Many vehicles stop and individual cycle failures are noticeable.	35.01 to 55.00	D	F
Operations with high delay values indicating poor progression, long cycle lengths, and high V/C ratios. Individual cycle failures are frequent occurrences. This is considered to be the limit of acceptable delay.	55.01 to 80.00	E	F
Operation with delays unacceptable to most drivers occurring due to over saturation, poor progression, or very long cycle lengths	80.01 and up	F	F

Source: HCM 6th Edition

Study area intersections have been analyzed using the software package Synchro (Version 9.1). Synchro is a macroscopic traffic software program that is based on the signalized intersection capacity analysis as specified in the HCM (6th Edition). Macroscopic level models represent traffic in terms of aggregate measures for each movement at the study intersections. Equations are used to determine measures of effectiveness such as delay and queue length. The level of service and capacity analysis performed by Synchro takes into consideration optimization and coordination of signalized intersections within a network. The LOS analysis for signalized intersections has been performed using optimized signal timing for existing traffic conditions. Signal timing optimization has considered pedestrian safety and signal coordination requirements. Appropriate time for pedestrian crossings has also been considered in the signalized intersection analysis. Signal timing for study area intersections have been requested and utilized. Where signal timing was unavailable, the local accepted standards were utilized in lieu of actual signal timing.

The peak hour traffic volumes have been adjusted using a peak hour factor (PHF) to reflect peak 15-minute volumes. Common practice for LOS analysis is to use a peak 15-minute rate of flow. However, flow rates are typically expressed in vehicles per hour. The PHF is the relationship between the peak 15-minute flow rate and the full hourly volume (e.g. $PHF = [Hourly Volume] / [4 \times Peak\ 15\text{-minute Flow Rate}]$). The use of a 15-minute PHF produces a more detailed analysis as compared to analyzing vehicles per hour. Existing PHFs have been used for all analysis scenarios. Per the HCM (6th Edition), PHF values over 0.95 often are indicative of high traffic volumes with capacity constraints on peak hour flows while lower PHF values are indicative of greater variability of flow during the peak hour. (4) In an effort to conduct a conservative analysis, a PHF of 0.92 has been utilized for new intersections.

2.2.2 UNSIGNALIZED INTERSECTIONS

The City of Wildomar requires the operations of unsignalized intersections be evaluated using the methodology described in the HCM (6th Edition). (4) The LOS rating is based on the weighted average control delay expressed in seconds per vehicle (see Table 2-2).

TABLE 2-2: UNSIGNALIZED INTERSECTION LOS THRESHOLDS

Description	Average Control Delay Per Vehicle (Seconds)	Level of Service, V/C ≤ 1.0	Level of Service, V/C > 1.0
Little or no delays.	0 to 10.00	A	F
Short traffic delays.	10.01 to 15.00	B	F
Average traffic delays.	15.01 to 25.00	C	F
Long traffic delays.	25.01 to 35.00	D	F
Very long traffic delays.	35.01 to 50.00	E	F
Extreme traffic delays with intersection capacity exceeded.	> 50.00	F	F

Source: HCM 6th Edition

At two-way or side-street stop-controlled intersections, LOS is calculated for each controlled movement and for the left turn movement from the major street, as well as for the intersection as a whole. For approaches composed of a single lane, the delay is computed as the average of all movements in that lane.

2.3 TRAFFIC SIGNAL WARRANT ANALYSIS METHODOLOGY

The term "signal warrants" refers to the list of established criteria used by the Caltrans and other public agencies to quantitatively justify or ascertain the potential need for installation of a traffic signal at an otherwise unsignalized intersection. This TIA uses the signal warrant criteria presented in the latest edition of the Caltrans California Manual on Uniform Traffic Control Devices (CA MUTCD) for all study area intersections. (5)

The signal warrant criteria for Existing conditions are based upon several factors, including volume of vehicular and pedestrian traffic, frequency of accidents, and location of school areas. The Caltrans CA MUTCD indicates that the installation of a traffic signal should be considered if one or more of the signal warrants are met. (5) Specifically, this TIA utilizes the Peak Hour Volume-based Warrant 3 as the appropriate representative traffic signal warrant analysis for existing study area intersections for all analysis scenarios. Warrant 3 is appropriate to use for this TIA because it provides specialized warrant criteria for intersections with rural characteristics (e.g. located in communities with populations of less than 10,000 persons or with adjacent major streets operating above 40 miles per hour). For the purposes of this study, the speed limit was the basis for determining whether Urban or Rural warrants were used for a given intersection.

Future intersections that do not currently exist have been assessed regarding the potential need for new traffic signals based on future average daily traffic (ADT) volumes, using the Caltrans planning level ADT-based signal warrant analysis worksheets.

As shown in Table 2-3, traffic signal warrant analyses were performed for the following unsignalized study area intersections during the peak weekday conditions wherein the Project is anticipated to contribute the highest trips.

TABLE 2-3: TRAFFIC SIGNAL WARRANT ANALYSIS LOCATIONS

ID	Intersection Location	Jurisdiction
3	Driveway 2 & Bundy Canyon Road	City of Wildomar
4	Orchard Street & Bundy Canyon Road	City of Wildomar
5	Almond Street & Bundy Canyon Road	City of Wildomar

The Existing conditions traffic signal warrant analysis is presented in the subsequent section, Section 3 *Area Conditions* of this report. The traffic signal warrant analysis for future conditions is presented in Section 5 *E+P Traffic Analysis*, Section 6 *Opening Year Cumulative (2020) Traffic Analysis*, and Section 7 *Horizon Year (2040) Traffic Analysis* of this report.

It is important to note that a signal warrant defines the minimum condition under which the installation of a traffic signal might be warranted. Meeting this threshold condition does not require that a traffic control signal be installed at a particular location, but rather, that other traffic factors and conditions be evaluated in order to determine whether the signal is truly justified. It should also be noted that signal warrants do not necessarily correlate with LOS. An intersection may satisfy a signal warrant condition and operate at or above acceptable LOS or operate below acceptable LOS and not meet a signal warrant.

The intersection of Driveway 1 at Mission Trail is anticipated to be restricted to right-in/right-out access only. As such, traffic signal warrants have not been evaluated at this intersection.

2.4 MINIMUM LEVEL OF SERVICE (LOS)

The City of Wildomar defines intersection performance deficiency standards consistent with those of the County of Riverside General Plan Circulation Element.

The definition of an intersection deficiency has been obtained from the City of Wildomar General Plan. Riverside County General Plan Policy C 2.1 states that the County will maintain the following County-wide target LOS:

The following minimum target levels of service have been designated for the review of development proposals in the unincorporated areas of Riverside County with respect to transportation impacts on roadways designated in the Riverside County Circulation Plan which are currently County maintained, or are intended to be accepted into the County maintained roadway system:

- *LOS C shall apply to all development proposals in any area of the Riverside County not located within the boundaries of an Area Plan, as well as those areas located within the following Area Plans: REMAP, Eastern Coachella Valley, Desert Center, Palo Verde Valley, and those non-Community Development areas of the Elsinore, Lake Mathews/Woodcrest, Mead Valley and Temescal Canyon Area Plans.*

- *LOS D shall apply to all development proposals located within any of the following Area Plans: Eastvale, Jurupa, Highgrove, Reche Canyon/Badlands, Lakeview/Nuevo, Sun City/Menifee Valley, Harvest Valley/Winchester, Southwest Area, The Pass, San Jacinto Valley, Western Coachella Valley and those Community Development Areas of the Elsinore, Lake Mathews/Woodcrest, Mead Valley and Temescal Canyon Area Plans.*
- *LOS E may be allowed by the Board of Supervisors within designated areas where transit-oriented development and walkable communities are proposed.*

The applicable minimum LOS utilized for the purposes of this analysis is LOS D per the County-wide target LOS for projects located within a Community Development Area.

A summary of acceptable LOS at each study area intersection is shown below:

ID	Intersection Location	Acceptable LOS
1	Mission Trail & Bundy Canyon Road	D
2	Mission Trail & Driveway 1	C
3	Driveway 2 & Bundy Canyon Road	C
4	Orchard Street & Bundy Canyon Road	C
5	Almond Street & Bundy Canyon Road	C

2.5 THRESHOLDS OF SIGNIFICANCE

To determine whether the addition of project-related traffic at a study intersection would result in a significant project-related impact, the following thresholds of significance will be utilized:

- A significant project-related impact occurs at a study intersection if the addition of project-generated trips reduces the peak hour level of service of the study intersection to change from acceptable “pre-project” operation (LOS A, B, C or D) to deficient operation (LOS E or F);
- A significant project-related impact occurs at a study intersection if the addition of project-generated trips changes the pre-project delay by the value shown below.

TABLE 2-4: CITY OF WILDOMAR INTERSECTION TRAFFIC LEVEL OF SERVICE STANDARD

Pre-Project LOS	Project-Related Delay Increase	Mitigation Measure
E or F	More than 5.0 seconds	Reduce delay increase to within 5.0 seconds

2.6 PROJECT FAIR SHARE CALCULATION METHODOLOGY

Improvements found to be included in the TUMF, RBBD, and/or DIF will be identified as such. For improvements that do not appear to be in either of the pre-existing fee programs, a fair share financial contribution based on the Project’s proportional share may be imposed in order to mitigate the Project’s share of deficiencies in lieu of construction. It should be noted that fair share calculations are for informational purposes only and the City Traffic Engineer will determine the appropriate improvements to be implemented by a project (to be identified in the conditions of approval).

If the intersection is currently operating at acceptable LOS under Existing traffic conditions, the Project’s fair share cost of improvements would be determined based on the following equation,

which is the ratio of Project traffic to new traffic, where new traffic is total future traffic less existing baseline traffic:

$$\text{Project Fair Share \%} = \text{Project Traffic} / (\text{Horizon Year Total Traffic} - \text{Existing (2019) Traffic})$$

3 AREA CONDITIONS

This section provides a summary of the existing circulation network, the City of Wildomar General Plan Circulation Network, a review of existing peak hour intersection operations and traffic signal warrant analyses.

3.1 EXISTING CIRCULATION NETWORK

Pursuant to the agreement with City of Wildomar staff (Appendix 1.1), the study area includes a total of 5 existing and future intersections as shown previously on Exhibit 1-2. Exhibit 3-1 illustrates the study area intersections located near the proposed Project and identifies the number of through traffic lanes for existing roadways and intersection traffic controls.

3.2 GENERAL PLAN CIRCULATION AND INFRASTRUCTURE ELEMENT

Exhibit 3-2 shows the City of Wildomar General Plan Circulation and Infrastructure Element, Exhibit 3-3 illustrates the City of Wildomar General Plan roadway cross-sections.

3.3 BICYCLE & PEDESTRIAN FACILITIES

Exhibit 3-4 shows the City of Wildomar General Plan Trails Map, which shows there is a Community Trail along Bundy Canyon Road within the study area. Field observations conducted in February 2019 indicate nominal pedestrian and bicycle activity within the study area. Existing pedestrian facilities within the study area are shown on Exhibit 3-5. There are limited areas with existing sidewalks within the study area and there are no bike lanes/paths.

3.4 TRANSIT SERVICE

The study area is currently served by the Riverside Transit Agency (RTA). Route 8 runs north on Mission Trail (see Exhibit 3-6). Transit service is reviewed and updated by RTA periodically to address ridership, budget, and community demand needs. Changes in land use can affect these periodic adjustments which may lead to either enhanced or reduced service where appropriate.

3.5 EXISTING (2019) TRAFFIC COUNTS

The intersection LOS analysis is based on the traffic volumes observed during the peak hour conditions using traffic count data collected in February 2019. The following peak hours were selected for analysis:

- Weekday AM Peak Hour (peak hour between 7:00 AM and 9:00 AM)
- Weekday PM Peak Hour (peak hour between 4:00 PM and 6:00 PM)

EXHIBIT 3-1: EXISTING NUMBER OF THROUGH LANES AND INTERSECTION CONTROLS



LEGEND:

- TRAFFIC SIGNAL
- ALL WAY STOP
- STOP SIGN
- NUMBER OF LANES
- DIVIDED
- UNDIVIDED
- DEFACTO RIGHT TURN
- SPEED LIMIT (MPH)
- SCHOOL SPEED LIMIT (MPH)


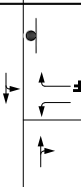
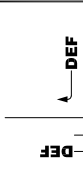
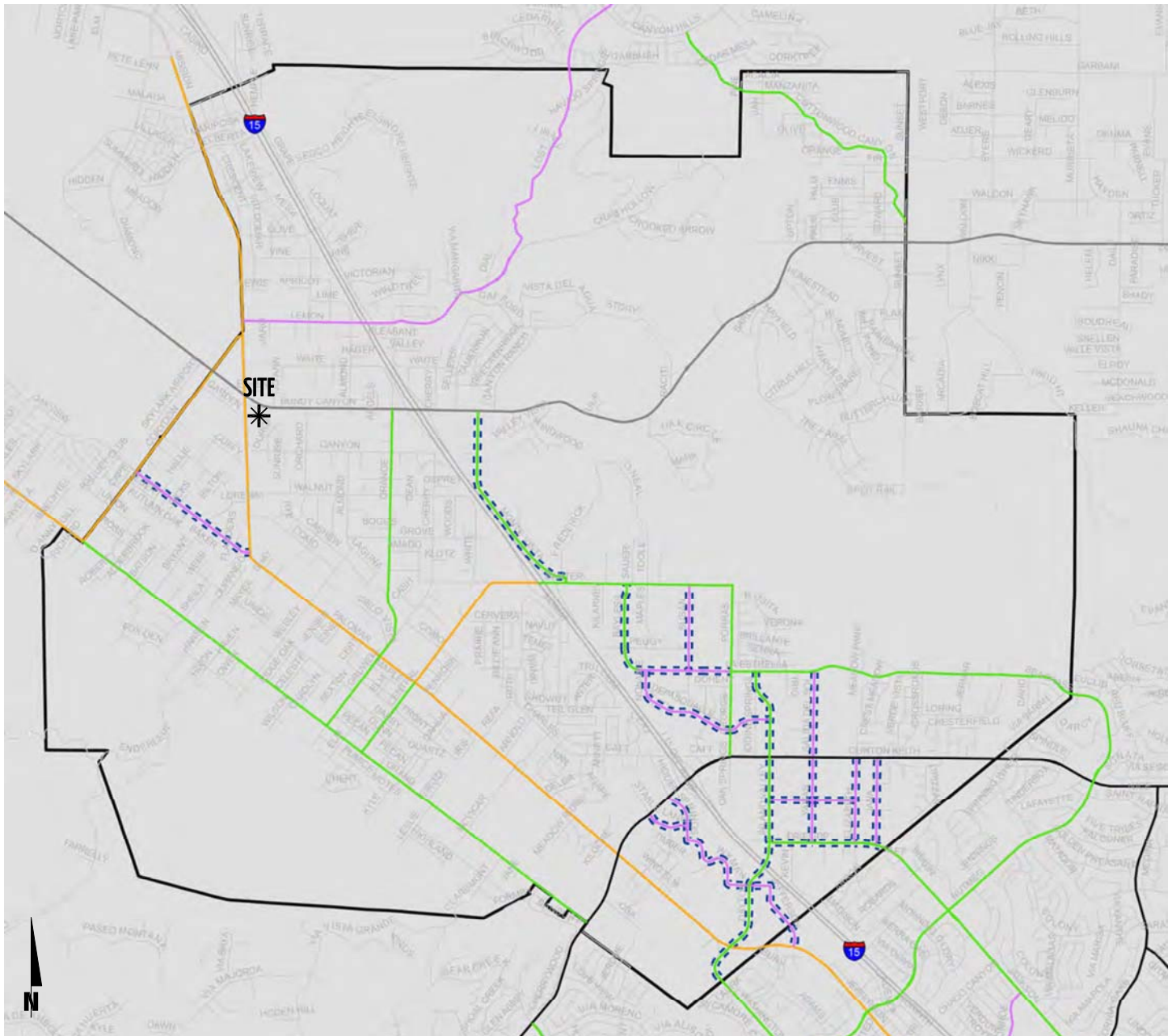
1	Mission Tr. & Bundy Canyon Rd.	2	Mission Tr. & Dwy. 1	3	Dwy. 2 & Bundy Canyon Rd.	4	Orchard St. & Bundy Canyon Rd.	5	Almond St. & Bundy Canyon Rd.
		Future Intersection		Future Intersection					



EXHIBIT 3-2: CITY OF WILDOMAR GENERAL PLAN CIRCULATION AND INFRASTRUCTURE ELEMENT

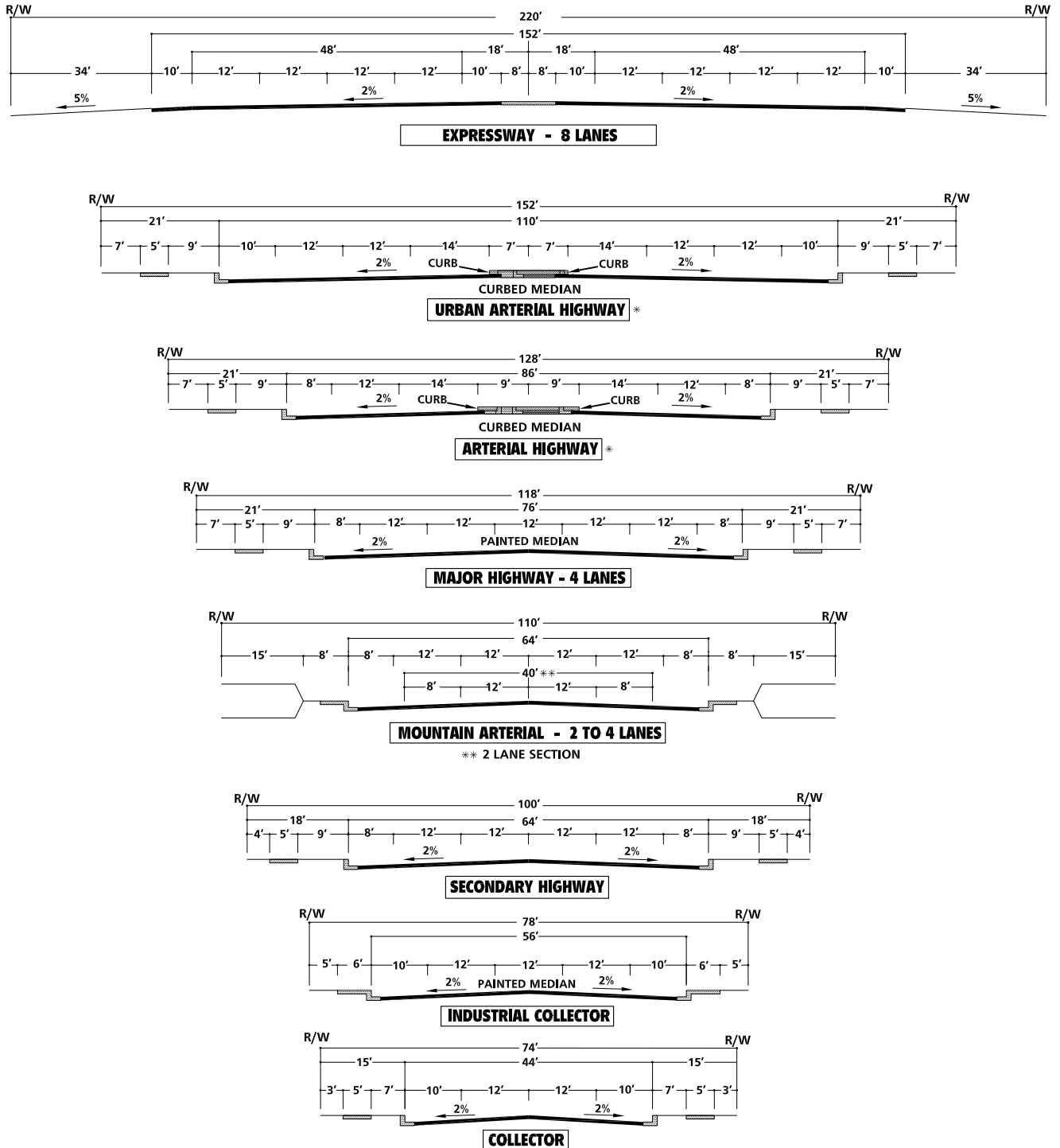


LEGEND:

	URBAN ARTERIAL
	ARTERIAL
	MAJOR
	SECONDARY
	COLLECTOR
	WILDOMAR CITY BOUNDARIES

NOTE: CITY OF WILDOMAR DRAFT GENERAL PLAN UPDATE
JANUARY 2015

EXHIBIT 3-3: CITY OF WILDOMAR GENERAL PLAN ROADWAY CROSS-SECTIONS



* IMPROVEMENTS MAY BE RECONFIGURED TO ACCOMMODATE EXCLUSIVE TRANSIT LANES OR ALTERNATIVE LANE ARRANGEMENTS. ADDITIONAL RIGHT OF WAY MAY BE REQUIRED AT INTERSECTIONS TO ACCOMMODATE ULTIMATE IMPROVEMENTS FOR STATE HIGHWAYS. SHALL CONFORM TO CALTRANS DESIGN STANDARDS.

NOTE: THE CITY OF WILDOMAR HAS ADOPTED THE COUNTY OF RIVERSIDE'S GENERAL PLAN AND STANDARDS

EXHIBIT 3-4: CITY OF WILDOMAR GENERAL PLAN TRAILS MAP

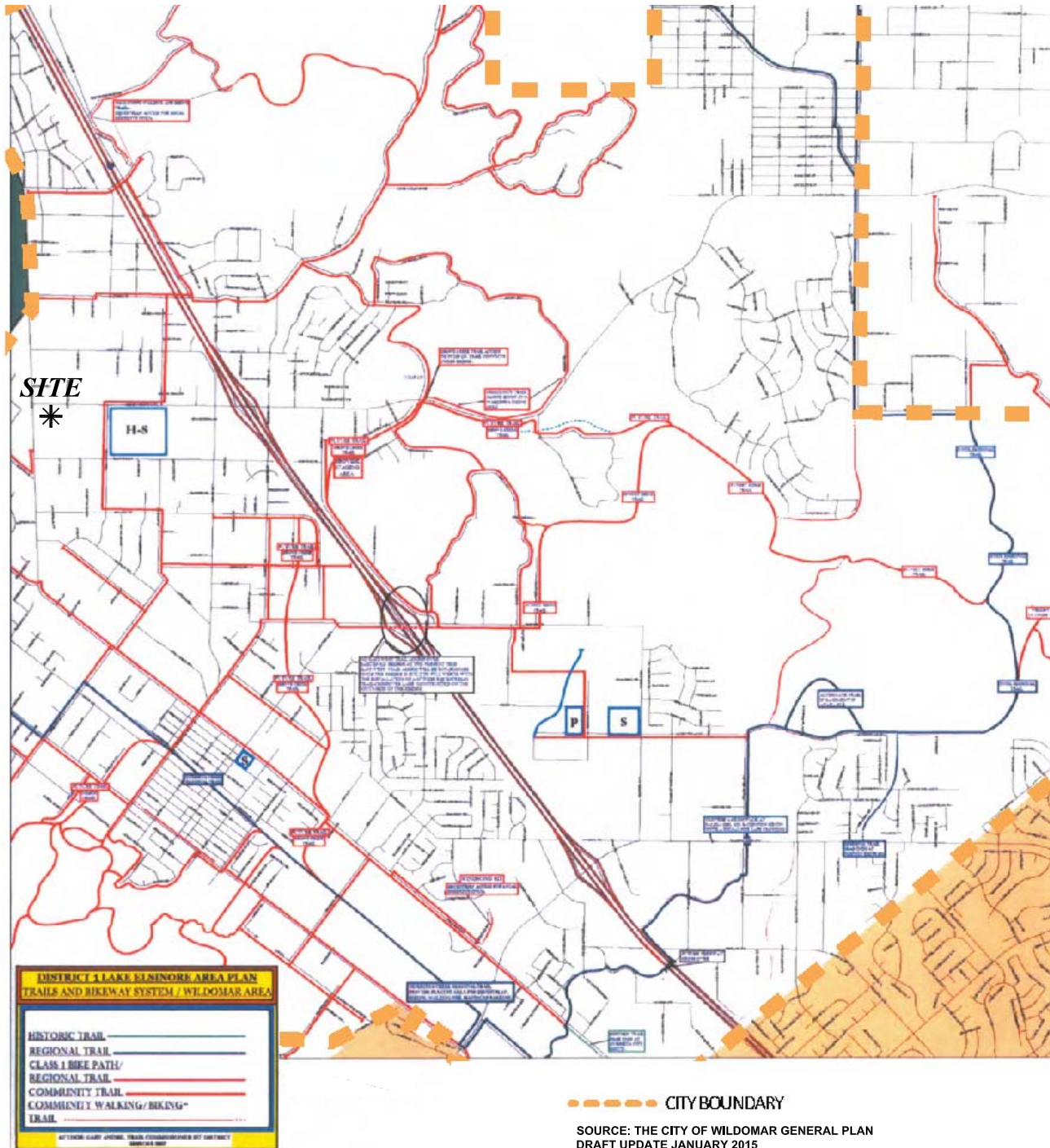
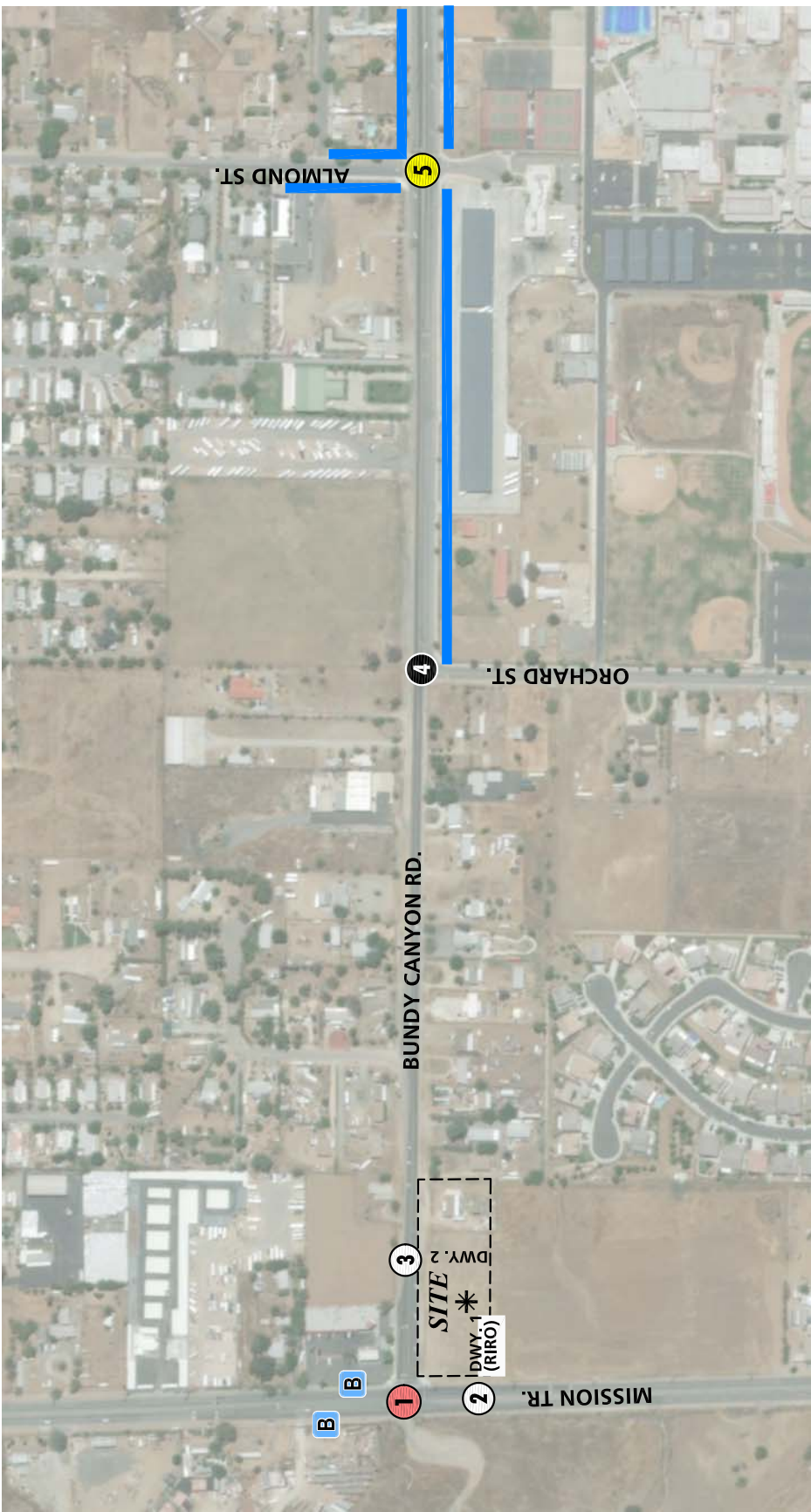


EXHIBIT 3-5: EXISTING PEDESTRIAN FACILITIES




LEGEND:

- SIDEWALK
- CROSSWALK ON TWO APPROACHES
- SCHOOL CROSSWALK ON TWO APPROACHES
- NO CROSSWALK
- FUTURE INTERSECTION
- BUS STOP

EXHIBIT 3-6: EXISTING TRANSIT ROUTES



LEGEND:

 = RTA ROUTE 8



The weekday AM and weekday PM peak hour count data is representative of typical weekday peak hour traffic conditions in the study area. There were no observations made in the field that would indicate atypical traffic conditions on the count dates, such as construction activity or detour routes. The raw manual peak hour turning movement traffic count data sheets are included in Appendix 3.1. These raw turning volumes have been flow conserved between intersections with limited access, no access and where there are currently no uses generating traffic (e.g., between ramp-to-arterial intersections, etc.).

Existing weekday average daily traffic (ADT) volumes on arterial highways throughout the study area are shown on Exhibit 3-7. Existing ADT volumes are based upon factored intersection peak hour counts collected by Urban Crossroads, Inc. using the following formula for each intersection leg:

$$\text{Weekday PM Peak Hour (Approach Volume + Exit Volume)} \times 12.052297 = \text{Leg Volume}$$

A comparison of the PM peak hour and daily traffic volumes of various roadway segments within the study area indicated that the peak-to-daily relationship is approximately 8.297 percent. As such, the above equation utilizing a factor of 12.052297 estimates the ADT volumes on the study area roadway segments assuming a peak-to-daily relationship of approximately 8.297 percent (i.e., $1/0.08297 = 12.052297$) and was assumed to sufficiently estimate average daily traffic (ADT) volumes for planning-level analyses. Existing weekday AM and PM are also shown on Exhibit 3-7.

3.6 EXISTING (2019) CONDITIONS INTERSECTION OPERATIONS ANALYSIS

Existing peak hour traffic operations have been evaluated for the study area intersections based on the analysis methodologies presented in Section 2.2 *Intersection Capacity Analysis* of this report. The intersection operations analysis results are summarized in Table 3-1 which indicates that the existing study area intersections are currently operating at an acceptable LOS during the peak hours, with exception of the following intersection:

- Orchard Street & Bundy Canyon Road (#4) – LOS D AM peak hour only

Consistent with Table 3-1, a summary of the peak hour intersection LOS for Existing conditions are shown on Exhibit 3-8. The intersection operations analysis worksheets are included in Appendix 3.2 of this TIA.

EXHIBIT 3-7: EXISTING (2019) TRAFFIC VOLUMES



LEGEND:

- 10.0 = ACTUAL (COUNT-BASED) VEHICLES PER DAY (1000'S)
- 10.0 = ESTIMATED VEHICLES PER DAY (1000'S)
- 10(10) = AM(PM) PEAK HOUR INTERSECTION VOLUMES



EXHIBIT 3-8: EXISTING (2019) SUMMARY OF LOS



Table 3-1

Intersection Analysis for Existing (2019) Conditions

#	Intersection	Traffic Control ³	Intersection Approach Lanes ¹												Delay ² (secs.)		Level of Service		Acceptable LOS ⁴
			Northbound			Southbound			Eastbound			Westbound							
			L	T	R	L	T	R	L	T	R	L	T	R	AM	PM	AM	PM	
1	Mission Trail & Bundy Canyon Rd.	TS	0	2	0	2	2	0	0	0	0	1	1	0	17.5	23.6	B	C	D
2	Mission Trail & Driveway 1		Intersection Does Not Exist																
3	Driveway 2 & Bundy Canyon Rd.		Intersection Does Not Exist																
4	Orchard St. & Bundy Canyon Rd.	CSS	1	0	d	0	0	0	0	1	0	0	1	0	28.2	22.7	D	C	C
5	Almond St. & Bundy Canyon Rd.	AWS	0	1	0	0	1	d	0	2	d	0	2	d	21.3	16.7	C	C	C

* **BOLD** = Level of Service (LOS) does not meet the applicable jurisdictional requirements (i.e., unacceptable LOS).

¹ When a right turn is designated, the lane can either be striped or unstriped. To function as a right turn lane there must be sufficient width for right turning vehicles to travel outside the through lanes.

L = Left; T = Through; R = Right; d= Defacto Right Turn Lane

² Per the Highway Capacity Manual (6th Edition), overall average intersection delay and level of service are shown for intersections with a traffic signal or all way stop control. For intersections with cross street stop control, the delay and level of service for the worst individual movement (or movements sharing a single lane) are shown.

³ TS = Traffic Signal; CSS = Cross-Street Stop; AWS = All-Way Stop

⁴ Minimum acceptable LOS for each applicable jurisdiction.

3.7 TRAFFIC SIGNAL WARRANTS ANALYSIS

The following unsignalized intersections currently warrant a traffic signal, based on Existing (2019) peak hour traffic volumes (see Appendix 3.3):

- Almond Street & Bundy Canyon Road (#5)

Although the intersection of Orchard Street and Bundy Canyon Road does not currently meet traffic signal warrants, a traffic signal is necessary to meet acceptable peak hour operations. However, the intersection should be monitored, and a traffic signal should be installed at the City Traffic Engineer's discretion. Alternative lane improvements are not anticipated to result in acceptable peak hour operations without signalization.

3.8 RECOMMENDED IMPROVEMENTS

Improvement strategies have been recommended at intersections that have been identified as deficient under Existing (2019) traffic conditions in an effort to achieve an acceptable LOS (i.e., LOS C/D or better).

3.8.1 RECOMMENDED IMPROVEMENTS TO ADDRESS DEFICIENCIES AT INTERSECTIONS

The following improvements are needed to improve the Existing (2019) peak hour deficiencies back to acceptable levels.

Orchard Street & Bundy Canyon Road (#4)

- Install a Traffic Signal.
- Add a westbound left turn lane.

The intersection operations analysis worksheets for Existing (2019) traffic conditions, with improvements, are included in Appendix 3.4 of this TIA.

Table 3-2

Intersection Analysis for Existing (2019) Conditions With Improvements

#	Intersection	Traffic Control ³	Intersection Approach Lanes ¹												Delay ² (secs.)		Level of Service	
			Northbound			Southbound			Eastbound			Westbound			AM	PM	AM	PM
			L	T	R	L	T	R	L	T	R	L	T	R				
4	Orchard St. & Bundy Canyon Rd.																	
	Without Improvements:	CSS	1	0	d	0	0	0	0	1	0	0	1	0	28.2	22.7	D	C
	With Improvements:	TS	1	0	d	0	0	0	0	1	0	1	1	0	10.7	7.7	B	A

¹ When a right turn is designated, the lane can either be striped or unstriped. To function as a right turn lane there must be sufficient width for right turning vehicles to travel outside the through lanes.

L = Left; T = Through; R = Right; 1 = Improvement

² Per the Highway Capacity Manual (6th Edition), overall average intersection delay and level of service are shown for intersections with a traffic signal or all way stop control. For intersections with cross street stop control, the delay and level of service for the worst individual movement (or movements sharing a single lane) are shown.

³ TS = Traffic Signal; CSS = Cross-street Stop; AWS = All-Way Stop; CSS = Improvement

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4 PROJECTED FUTURE TRAFFIC

This section presents the traffic volumes estimated to be generated by the Project, as well as the Project's trip assignment onto the study area roadway network. For the purposes of this analysis, it is assumed that the Project will be constructed within a single phase of development and is anticipated to be fully built and occupied by Year 2020.

The Project is proposed to have two driveways along Bundy Canyon Road. The first access, labeled Driveway 1 on Mission Trail, is proposed for right-in/right-out access only. The second access, labeled Driveway 2 on Bundy Canyon Road, is proposed for full access. Regional access to the Project site is provided via the I-15 Freeway at Bundy Canyon Road.

4.1 PROJECT TRIP GENERATION

Trip generation represents the amount of traffic which is both attracted to and produced by a development. Determining traffic generation for a specific project is therefore based upon forecasting the amount of traffic that is expected to be both attracted to and produced by the specific land uses being proposed for a given development.

4.1.1 LAND USE ALTERNATIVE 1

The Project is to consist of a gun shooting range building of approximately 34,702 sf, which includes 42 lanes and would operate between 9 AM and 10 PM, 7 days a week. The site is proposed to also include a 4,000-sf space for tactical/situational training for law enforcement, which includes 4 dedicated classroom spaces to accommodate 25-50 people.

Trip generation estimates for the Project are shown in Table 4-1 for Land Use Alternative 1. Since there are no readily available trip generations rates within the Institute of Transportation Engineers (ITE) Trip Generation Manual, 10th Edition, 2017, trip generation estimates have been based upon the Project description, assuming the maximum number of employees, patrons, and law enforcement users that are anticipated to utilize the site.

As shown in Table 4-1, Land Use Alternative 1 is anticipated to generate a total of 290 weekday trip-ends per day with 80 PM peak hour trips. AM peak hour trip generation has not been provided as the Project is not anticipated to operate during the AM peak hour.

Table 4-1

Land Use Alternative 1: Proposed Project Trip Generation Summary

Trip Type	PM Peak Hour			Daily
	In	Out	Total	
Wildomar Shooting Academy				
Patrons	25	25	50	150
Law Enforcement	10	10	20	100
Employees	3	7	10	40
Total	38	42	80	290

¹ Trip Generation Source: Statement of Operations provided by KCG Blue LLC

LAND USE ALTERNATIVE 2

Pursuant to discussions with City staff, a conservative mix of retail uses could also be developed in the event a gun range is not developed on the site. The site could potentially be developed with a 12-vehicle fueling position gas station and up to 15,000 sf of commercial retail use. In an effort to conduct a conservative analysis, Land Use Alternative 2 has been evaluated for the purposes of this TIA.

The trip generation evaluated uses the ITE Trip Generation Manual (see Table 4-2). In the event a gun range is not developed on the site, a retail site could potentially be developed in its place (Land Use Alternative 2). As shown in Table 4-2, Land Use Alternative 2 is anticipated to generate a total of 1,276 weekday trip-ends per day with 96 AM peak hour trips and 141 PM peak hour trips.

4.2 PROJECT TRIP DISTRIBUTION

Trip distribution is the process of identifying the probable destinations, directions or traffic routes that will be utilized by Project traffic. The potential interaction between the planned land uses and surrounding regional access routes are considered, to identify the route where the Project traffic would distribute. The Project trip distribution was developed based on anticipated travel patterns to and from the Project site. There are no potential traffic impacts anticipated to local residential streets as project-related traffic is anticipated to primarily utilize the City's arterials (e.g., no cut-through traffic).

The trip distribution patterns are heavily influenced by the geographical location of the site, the location of surrounding uses, and the proximity to the regional freeway system. Exhibit 4-1 illustrates the trip distribution patterns for the Project.

4.3 MODAL SPLIT

The traffic reducing potential of public transit, walking or bicycling have not been considered in this TIA. Essentially, the traffic projections are "conservative" in that these alternative travel modes might be able to reduce the forecasted traffic volumes.

4.4 PROJECT TRIP ASSIGNMENT

The assignment of traffic from the Project area to the adjoining roadway system is based upon the Project trip generation, trip distribution, and the arterial highway and local street system improvements that would be in place by the time of initial occupancy of the Project. Based on the identified Project traffic generation and trip distribution patterns, Project ADT and peak hour intersection turning movement volumes are shown on Exhibit 4-2.

Table 4-2

Land Use Alternative 2: Proposed Project Trip Generation Summary

Land Use ¹	Units ²	ITE LU Code	AM Peak Hour			PM Peak Hour			Daily
			In	Out	Total	In	Out	Total	
Project Trip Generation Rates									
Shopping Center	TSF	820	0.583	0.357	0.940	1.829	1.981	3.810	37.750
Gasoline/Service Station w/Convenience Mkt.	VFP	945	10.135	10.130	20.270	11.180	11.180	22.360	198.160

Project Land Uses	Quantity	Units ²	AM Peak Hour			PM Peak Hour			Daily
			In	Out	Total	In	Out	Total	
Project Trip Generation Summary									
Shopping Center	15.000	TSF	9	5	14	27	30	57	566
Internal Capture (10%):			-1	-1	-2	-3	-3	-6	-58
Net External Trips:			8	4	12	24	27	51	508
Pass-by Reduction (PM/Daily: 34%):			0	0	0	-8	-8	-16	-174
Shopping Center Total:			8	4	12	16	19	35	334
Gasoline/Service Station w/Convenience Mkt.	12	VFP	122	122	244	134	134	268	2,378
Internal Capture (10%):			-12	-12	-24	-13	-13	-26	-238
Net External Trips:			110	110	220	121	121	242	2,140
Pass-by Reduction (AM: 62%; PM/Daily: 56%):			-68	-68	-136	-68	-68	-136	-1,198
Gasoline/Service Station w/Conven. Mkt. Total:			42	42	84	53	53	106	942
Total Net Trips			50	46	96	69	72	141	1,276

¹ Trip Generation Source: Institute of Transportation Engineers (ITE), *Trip Generation Manual*, Tenth Edition (2017).

² TSF = thousand square feet; VFP = vehicle fueling position

EXHIBIT 4-1: PROJECT TRIP DISTRIBUTION



LEGEND:

10 ■ PERCENT TO/FROM PROJECT

→ = OUTBOUND

--- = INBOUND

EXHIBIT 4-2: PROJECT ONLY TRAFFIC VOLUMES



LEGEND:

10(10) - AM(PM) PEAK HOUR INTERSECTION VOLUMES
10.0 = VEHICLES PER DAY (1000'S)

1	2	3	4	5	Almond St. & Bundy Canyon Rd.
Mission Tr. & Bundy Canyon Rd.	Mission Tr. & Dwy. 1	Dwy. 2 & Bundy Canyon Rd.	Orchard St. & Bundy Canyon Rd.		
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4.5 BACKGROUND TRAFFIC

Future year traffic forecasts have been based upon three years of background (ambient) growth at 2% per year for 2020 traffic conditions. The ambient growth factor is intended to approximate regional traffic growth. The total ambient growth is 2.00 percent for 2020 traffic conditions (compounded growth of 2 percent per year over 1 year or 1.02^1 year). This ambient growth rate is added to existing traffic volumes to account for area-wide growth not reflected by cumulative development projects. Ambient growth has been added to daily and peak hour traffic volumes on surrounding roadways, in addition to traffic generated by the development of future projects that have been approved but not yet built and/or for which development applications have been filed and are under consideration by governing agencies.

The currently adopted Southern California Association of Governments (SCAG) 2016 Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS) (April 2016) growth forecasts for the unincorporated areas of the City of Wildomar identifies projected growth in population of 33,000 in 2012 to 56,200 in 2040, or a 70.3 percent increase over the 28-year period. (6) The change in population equates to roughly a 1.92 percent growth rate per year, compounded annually. Similarly, growth over the same 28-year period in households is projected to increase by 79.2 percent, or a 2.11 percent growth rate per year, compounded annually. Finally, growth in employment over the same 28-year period is projected to increase by 170.0 percent, or a 3.61 percent growth rate per year, compounded annually.

Based on a comparison of Existing (2019) traffic volumes to the Horizon Year (2040) forecasts, the average growth rate is estimated at approximately 5.29 percent compounded annually between Existing (2019) and Horizon Year (2040) traffic conditions. The annual growth rate at each individual intersection is not lower than 3.99 percent (compounded annually) to as high as 6.46 percent (compounded annually) over the same time period. Therefore, the annual growth rate utilized for the purposes of this analysis would appear to conservatively approximate the anticipated regional growth in traffic volumes in the City of Wildomar for Horizon Year (2040) traffic conditions, especially when considered along with the addition of project-related traffic. As such, the growth in traffic volumes assumed in this traffic impact analysis would tend to overstate, as opposed to understate, the potential impacts to traffic and circulation.

4.6 CUMULATIVE DEVELOPMENT TRAFFIC

California Environmental Quality Act (CEQA) guidelines require that other reasonably foreseeable development projects which are either approved or being processed concurrently in the study area also be included as part of a cumulative analysis scenario. A cumulative project list was developed for the purposes of this analysis through consultation with Planning and Engineering staff from the City of Wildomar and is consistent with other recent studies in the study area.

Exhibit 4-3 illustrates the cumulative development location map. A summary of cumulative development projects and their proposed land uses are shown in Table 4-3. If applicable, the traffic generated by individual cumulative projects was manually added to the Opening Year Cumulative forecasts to ensure that traffic generated by the listed cumulative development projects in Table 4-3 are reflected as part of the background traffic.

EXHIBIT 4-3: CUMULATIVE DEVELOPMENT PROJECT LOCATION MAP

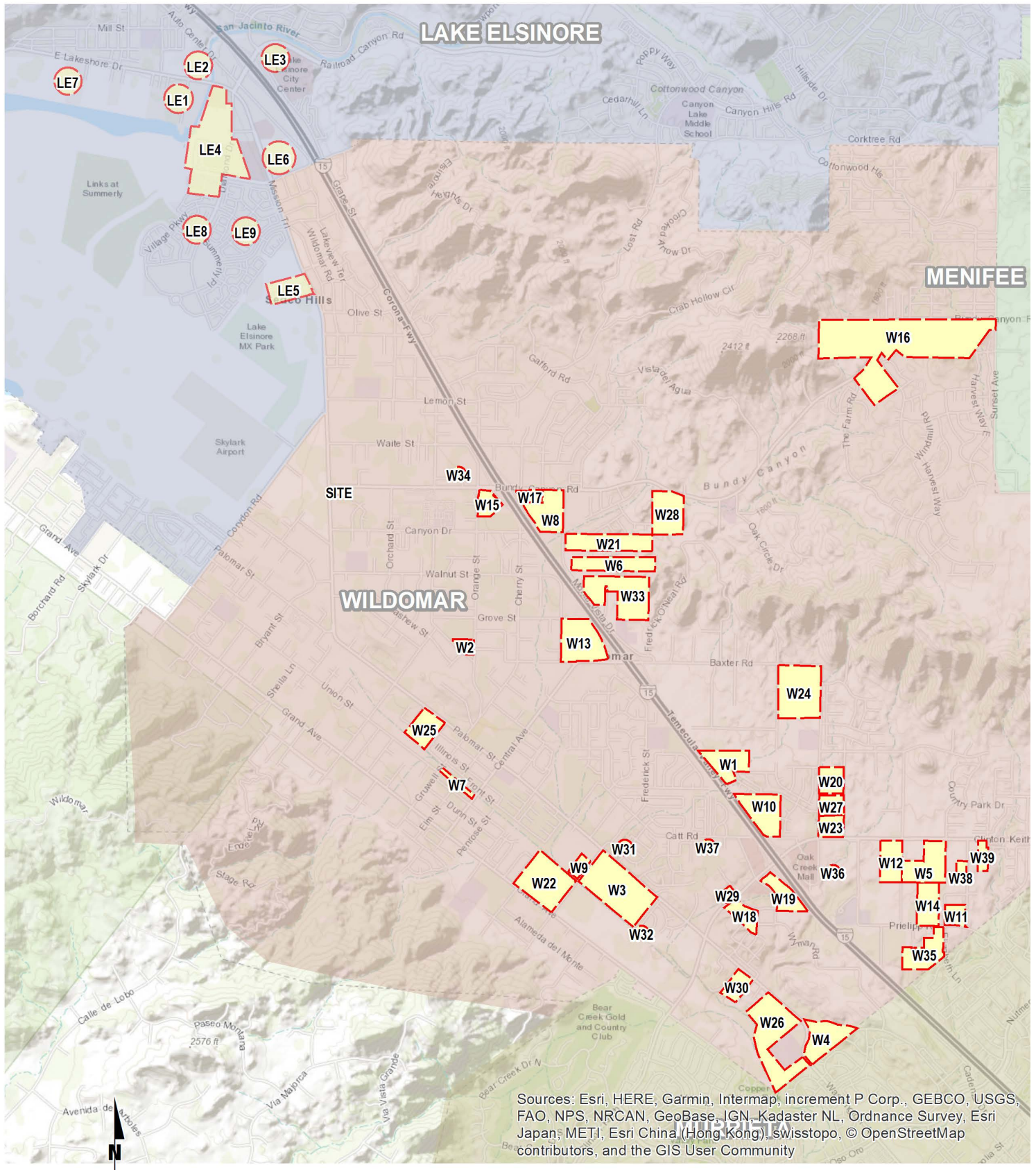


Table 4-3

Page 1 of 2

Cumulative Development Land Use Summary

TAZ	Project Name	Land Use ¹	Quantity	Units ²
CITY OF WILDOMAR				
W1	Faith Bible Church	Church	45.155	TSF
W2	Lesle Tract Map/Kuesder Homes Residential	SFDR	10	DU
W3	Richmond American	SFDR	149	DU
W4	Camelia Townhouse Project	Condo/Townhomes	163	DU
W5	Rancon Medical & Retail Center	Retail	200.000	TSF
		Office	94.000	TSF
W6	The "Village at Monte Vista"	SFDR	80	DU
		Business Park	136.000	TSF
W7	Elm Street Subdivision	SFDR	14	DU
W8	Walmart Retail Project	Free-Standing Discount Superstore	193.792	TSF
W9	McVicar Residential Project	SFDR	48	DU
W10	Westpark Promenade Development (mixed use)	Shopping Center	118.354	TSF
		Condo/Townhomes	191	DU
W11	Villa Sienna Apartment Project	Condo/Townhomes	180	DU
W12	Grove Park Mixed Use Project	Condo/Townhomes	162	DU
		Retail	50.000	TSF
W13	Baxter Village	Shopping Center	75.000	TSF
		SFDR	67	DU
		Condo/Townhomes	204	DU
W14	Horizons/Strata Mixed Use Project	Assisted Living	86	BED
		Condo/Townhomes	138	DU
W15	Orange Bundy/Parcel Map	Retail	79.497	TSF
		Fast Food w/ Drive Through	1.500	TSF
		Gas Station w/ Market	6	VFP
W16	Oak Creek Canyon	SFDR	275	DU
W17	Bundy Canyon Plaza	Shopping Center	36.990	TSF
W18	Renaissance Plaza	Daycare	9.305	TSF
		Retail	20.894	TSF
W19	Wildomar Square Retail Center	Retail	46.600	TSF
W20	The Orchard Collection	SFDR	51	DU
W21	Summerhill Community	SFDR	70	DU
W22	Beazer Homes	SFDR	108	DU
W23	Clinton Keith Village Retail Center	Shopping Center	40.000	TSF
W24	Baxter/Susan GPA/TTM	SFDR	48	DU
W25	Ione/Palomar Residential	SFDR	60	DU
W26	Rhoades Residential Project	SFDR	131	DU
W27	Nova Homes/Wildomar Ridge Residential	SFDR	77	DU
W28	Darling/Bundy Canyon Resort Apartments	Condo/Townhomes	140	DU
W29	Wildomar Springs Retail Center	Retail	27.000	TSF
W30	Sycamore Academy Charter School	Private School (K-8)	401	STU
W31	Meritage Homes	SFDR	74	DU
W32	Andalusia I	SFDR	55	DU
W33	Cornerstone Church Preschool & Admin. Building	Daycare	17.135	TSF
		Office	25.462	TSF
W34	Subway Commercial Project	Retail	10.500	TSF
W35	Briarwood Community	SFDR	67	DU

Table 4-3

Page 2 of 2

Cumulative Development Land Use Summary

TAZ	Project Name	Land Use ¹	Quantity	Units ²
W36	Oak Spring Ranch Residential	SFDR	103	DU
W37	Andalusia II	SFDR	44	DU
W38	Milestone RV/Boat Storage	Self-Storage	8.300	TSF
W39	Smith Ranch Self Storage	Self-Storage	150.000	TSF
		Office	10.000	TSF
City of Lake Elsinore				
LE1	LE Sports Complex	Recreational Community Center	525.000	TSF
LE2	TAG Property ⁴	New Car Sales	50.000	TSF
LE3	City Center Condos ⁴	Condo/Townhomes	144	DU
LE4	Diamond Specific Plan ⁵	Condo/Townhomes	600	DU
		Hotel	150	RM
		General Office	425.000	TSF
		Shopping Center	472.000	TSF
LE5	The Colony ⁴	Apartments	211	DU
	Back Basin Specific Plan & East Lake Specific Plan	Single Family Residential	2,407	DU
		Condo/Townhomes	324	DU
	John Laing Homes (Phase 2)	Single Family Residential	506	DU
		Condo/Townhomes	1,141	DU
		Apartments	308	DU
		Shopping Center	117.000	TSF
LE6	Artisan Alley	Shopping Center	95.100	TSF
LE7	Lakeshore Senior Apartments	Senior Adult Housing Attached	121	DU
LE8	Summerly	Single Family Residential	142	DU
LE9	Beazer, KB Homes, McMillin Homes, Richmond American	Single Family Residential	395	DU

¹ SFDR = Single Family Detached Residential

² DU = Dwelling Unit; TSF = Thousand Square Feet; STU = Students; VFP = Vehicle Fueling Positions

4.7 NEAR-TERM TRAFFIC FORECASTS

To provide a comprehensive assessment of potential transportation network deficiencies, a “buildup” analysis method was performed in support of this work effort. The “buildup” method was used to approximate E+P and Opening Year Cumulative traffic conditions and is intended to identify the near-term deficiencies on both the existing and planned near-term circulation system. The Opening Year Cumulative traffic condition includes background traffic, traffic generated by other cumulative development projects within the study area and the traffic generated by the proposed Project.

The “buildup” approach combines existing traffic counts with a background ambient growth factor to forecast the near-term 2020 traffic conditions. An ambient growth factor of 1.02 percent accounts for background (area-wide) traffic increases that occur over time up to the year 2020 from the year 2019 (compounded 2 percent per year growth over a 1-year period). Traffic volumes generated by cumulative development projects are then added to assess the Opening Year Cumulative traffic conditions. Lastly, Project traffic is added to assess “with Project” traffic conditions. The 2020 roadway network is similar to the existing conditions roadway network with the exception of intersections proposed to be developed by the Project.

- Opening Year Cumulative Without Project
 - Existing 2019 counts
 - Ambient growth traffic (2.00%)
 - Cumulative Development Project traffic
- Opening Year Cumulative With Project
 - Existing 2019 counts
 - Ambient growth traffic (2.00%)
 - Cumulative Development Project traffic
 - Project traffic

4.8 HORIZON YEAR (2040) VOLUME DEVELOPMENT

The Horizon Year (2040) With Project traffic conditions were derived from the RivTAM modified to represent Horizon Year conditions for the City of Wildomar using accepted procedures for model forecast refinement and smoothing. The traffic forecasts reflect the area-wide growth anticipated between Existing conditions and Horizon Year conditions.

In most instances the traffic model zone structure is not designed to provide accurate turning movements along arterial roadways unless refinement and reasonableness checking is performed. Therefore, the Horizon Year With Project peak hour forecasts were refined using the model derived long-range forecasts, along with existing peak hour traffic count data collected at each analysis location in February 2019. Future estimated peak hour traffic data was used for new intersections and intersections with an anticipated change in travel patterns to further refine the Horizon Year With Project peak hour forecasts.

The refined future peak hour approach and departure volumes obtained from the model output data are then entered into a spreadsheet program consistent with the National Cooperative Highway Research Program (NCHRP Report 255), along with initial estimates of turning movement proportions. A linear programming algorithm is used to calculate individual turning movements which match the known directional roadway segment forecast volumes computed in the previous step. This program computes a likely set of intersection turning movements from intersection approach counts and the initial turning proportions from each approach leg.

Typically, the model growth is prorated and is subsequently added to the existing (base validation) traffic volumes to represent Long Range traffic conditions. However, review of the resulting model growth indicates negative growth for several study area intersections. In an effort to conduct a conservative analysis, reductions to traffic forecasts from either Existing (2019) or Opening Year Cumulative traffic conditions were not assumed as part of this analysis. Additional growth has also been applied on a movement-by-movement basis, where applicable, to estimate reasonable Horizon Year forecasts. Horizon Year turning volumes were compared to Opening Year Cumulative volumes in order to ensure a minimum growth as a part of the refinement process. The minimum growth includes any additional growth between Opening Year Cumulative and Horizon Year traffic conditions that is not accounted for by the traffic generated by cumulative development projects and ambient growth rates assumed between Existing (2019) and Opening Year Cumulative traffic conditions. Future estimated peak hour traffic data was used for new intersections and intersections with an anticipated change in travel patterns to further refine the Horizon Year peak hour forecasts.

The future Horizon Year without Project peak hour turning movements were then reviewed by Urban Crossroads for reasonableness, and in some cases, were adjusted to achieve flow conservation, reasonable growth, and reasonable diversion between parallel routes. Flow conservation checks ensure that traffic flow between two closely spaced intersections, such as two freeway ramp locations, is verified in order to make certain that vehicles leaving one intersection are entering the adjacent intersection and that there is no unexplained loss of vehicles. The result of this traffic forecasting procedure is a series of traffic volumes which are suitable for traffic operations analysis.

Post-processing worksheets for Horizon Year Without Project traffic conditions are provided in Appendix 4.1.

5 E+P TRAFFIC CONDITIONS

This section discusses the traffic forecasts for E+P conditions and the resulting intersection operations and traffic signal warrant analyses.

5.1 ROADWAY IMPROVEMENTS

The lane configurations and traffic controls assumed to be in place for E+P conditions are consistent with those shown previously on Exhibit 3-1, with the exception of the following:

- Project driveways and those facilities assumed to be constructed by the Project to provide site access are also assumed to be in place for E+P conditions only (e.g., intersection and roadway improvements along the Project's frontage and driveways).

5.2 E+P TRAFFIC VOLUME FORECASTS

This scenario includes Existing traffic volumes plus Project traffic. Exhibit 5-1 shows the ADT volumes which can be expected for E+P traffic conditions. E+P weekday AM and PM peak hour intersection turning movement volumes are also shown on Exhibit 5-1.

5.3 INTERSECTION OPERATIONS ANALYSIS

E+P peak hour traffic operations have been evaluated for the study area intersections based on the analysis methodologies presented in Section 2 *Methodologies* of this TIA. The intersection analysis results are summarized in Table 5-1, which indicates that there are no additional study area intersections anticipated to operate at an unacceptable LOS with the addition of Project traffic from the location previously identified under Existing traffic conditions.

A summary of the peak hour intersection LOS for E+P conditions are shown on Exhibit 5-2. The intersection operations analysis worksheets for E+P traffic conditions are included in Appendix 5.1 of this TIA.

5.4 TRAFFIC SIGNAL WARRANTS ANALYSIS

For E+P conditions, Driveway 2 on Bundy Canyon Road is anticipated to meet a planning level (average daily traffic or ADT) traffic signal warrant under E+P traffic conditions, in addition to the intersections previously identified under Existing (2019) traffic conditions (see Appendix 5.2).

Although the intersection of Orchard Street and Bundy Canyon Road is not anticipated to meet traffic signal warrants for E+P traffic conditions, a traffic signal is necessary to meet acceptable peak hour operations. However, the intersection should be monitored, and a traffic signal should be installed at the City Traffic Engineer's discretion. Alternative lane improvements are not anticipated to result in acceptable peak hour operations without signalization.

EXHIBIT 5-1: E+P TRAFFIC VOLUMES



1	Mission Tr. & Bundy Canyon Rd.	2	Mission Tr. & Dwy. 1	3	Dwy. 2 & Bundy Canyon Rd.	4	Orchard St. & Bundy Canyon Rd.	5	Almond St. & Bundy Canyon Rd.
	309(315) ← 73(68) ← 275(258) ← 265(337) ← 296(309) ← 82(163) ←	353(346) ← 30(36) ← 357(421) ← 29(37) ←	308(371) ← 30(36) ← 46(56) ← 40(55) ← 59(73) ← 332(416) ←	342(472) ← 27(10) ← 45(6) ← 69(31) ← 79(38) ← 369(501) ←	21(22) ← 337(471) ← 35(7) ← 68(16) ← 38(8) ← 40(6) ← 360(506) ← 61(15) ← 24(32) ←				

LEGEND:

10(10) = AM(PM) PEAK HOUR INTERSECTION VOLUMES
10.0 = VEHICLES PER DAY (1000'S)



EXHIBIT 5-2: E+P SUMMARY OF LOS



Table 5-1

Intersection Analysis for E+P Conditions

#	Intersection	Traffic Control ²	Existing (2019)				E+P				Acceptable LOS ³
			Delay ¹ (secs.)		Level of Service		Delay ¹ (secs.)		Level of Service		
			AM	PM	AM	PM	AM	PM	AM	PM	
1	Mission Trail & Bundy Canyon Rd.	TS	17.5	23.6	B	C	17.8	24.5	B	C	D
2	Mission Trail & Driveway 1	<u>CSS</u>	Future Intersection				9.7	9.8	A	A	C
3	Driveway 2 & Bundy Canyon Rd.	<u>CSS</u>	Future Intersection				13.3	15.5	B	C	C
4	Orchard St. & Bundy Canyon Rd.	CSS	28.2	22.7	D	C	31.9	25.2	D	D	C
5	Almond St. & Bundy Canyon Rd.	AWS	21.3	16.7	C	C	23.4	18.5	C	C	C

* **BOLD** = Level of Service (LOS) does not meet the applicable jurisdictional requirements (i.e., unacceptable LOS).

¹ Per the Highway Capacity Manual (6th Edition), overall average intersection delay and level of service are shown for intersections with a traffic signal or all way stop control. For intersections with cross street stop control, the delay and level of service for the worst individual movement (or movements sharing a single lane) are shown.

² TS = Traffic Signal; CSS = Cross-street Stop; AWS = All-Way Stop; **CSS** = Improvement

³ Minimum acceptable LOS for each applicable jurisdiction.

5.5 RECOMMENDED IMPROVEMENTS

Improvement strategies have been recommended at intersections that have been identified as deficient in an effort to reduce each location's peak hour delay and improve the associated LOS grade to an acceptable LOS (LOS C/LOS D or better). The effectiveness of the recommended improvement strategies discussed below to address E+P traffic deficiencies is presented in Table 5-2.

There are no additional improvements required to improve the E+P peak hour deficiency at Orchard Street and Bundy Canyon Road, in addition to the improvements previously identified under Existing (2019) traffic conditions. Worksheets for E+P traffic conditions, with improvements, HCM calculations are provided in Appendix 5.3.

Table 5-2

Intersection Analysis for E+P Conditions With Improvements

#	Intersection	Traffic Control ³	Intersection Approach Lanes ¹												Delay ² (secs.)		Level of Service	
			Northbound			Southbound			Eastbound			Westbound			AM	PM	AM	PM
			L	T	R	L	T	R	L	T	R	L	T	R				
4	Orchard St. & Bundy Canyon Rd.																	
	Without Improvements:	CSS	1	0	d	0	0	0	0	1	0	0	1	0	31.9	25.2	D	D
	With Improvements:	TS	1	0	d	0	0	0	0	1	0	1	1	0	10.7	8.0	B	A

¹ When a right turn is designated, the lane can either be striped or unstriped. To function as a right turn lane there must be sufficient width for right turning vehicles to travel outside the through lanes.

L = Left; T = Through; R = Right; d= Defacto Right Turn Lane; 1 = Improvement

² Per the Highway Capacity Manual (6th Edition), overall average intersection delay and level of service are shown for intersections with a traffic signal or all way stop control. For intersections with cross street stop control, the delay and level of service for the worst individual movement (or movements sharing a single lane) are shown.

³ TS = Traffic Signal; CSS = Cross-street Stop; AWS = All-Way Stop; CSS = Improvement

6 OPENING YEAR CUMULATIVE (2020) TRAFFIC CONDITIONS

This section discusses the methods used to develop Opening Year Cumulative (2020) Without and With Project traffic forecasts, and the resulting intersection operations and traffic signal warrant analyses.

6.1 ROADWAY IMPROVEMENTS

The lane configurations and traffic controls assumed to be in place for Opening Year Cumulative (2020) conditions are consistent with those shown previously on Exhibit 3-1, with the exception of the following:

- Project driveways and those facilities assumed to be constructed by the Project to provide site access are also assumed to be in place for Opening Year Cumulative conditions only (e.g., intersection and roadway improvements along the Project's frontage and driveways).

6.2 OPENING YEAR CUMULATIVE (2020) TRAFFIC VOLUME FORECASTS

6.2.1 OPENING YEAR CUMULATIVE (2020) WITHOUT PROJECT TRAFFIC CONDITIONS

This scenario includes Existing traffic volumes plus an ambient growth factor of 2.00% plus traffic from pending and approved but not yet constructed known development projects in the area. The weekday ADT, weekday AM and PM peak hour volumes which can be expected for Opening Year Cumulative Without Project traffic conditions are shown on Exhibit 6-1.

6.2.2 OPENING YEAR CUMULATIVE (2020) WITH PROJECT TRAFFIC CONDITIONS

This scenario includes Existing traffic volumes, an ambient growth factor of 2.00%, traffic from pending and approved but not yet constructed known development projects in the area and the addition of Project traffic. The weekday ADT, weekday AM and PM peak hour volumes which can be expected for Opening Year Cumulative With Project traffic conditions are shown on Exhibit 6-2.

6.3 INTERSECTION OPERATIONS ANALYSIS

6.3.1 OPENING YEAR CUMULATIVE (2020) WITHOUT PROJECT TRAFFIC CONDITIONS

LOS calculations were conducted for the study intersections to evaluate their operations under Opening Year Cumulative Without Project conditions with roadway and intersection geometrics consistent with Section 6.1 *Roadway Improvements*.

EXHIBIT 6-1: OPENING YEAR CUMULATIVE (2020) WITHOUT PROJECT TRAFFIC VOLUMES



1	Mission Tr. & Bundy Canyon Rd.	Future Intersection	Dwy. 2 & Bundy Canyon Rd.	4	Orchard St. & Bundy Canyon Rd.	5	Almond St. & Bundy Canyon Rd.
320(359) 282(367) 74(155)		375(533) 84(46)		27(40) 39(8) 374(554) 62(15)		16(15) 362(512) 36(7)	
303(303) 78(76)		43(2) 74(39)		82(54) 54(4) 56(20)		41(6) 39(8) 69(16)	

LEGEND:

10'(10) - AM(PM) PEAK HOUR INTERSECTION VOLUMES
10.0 - VEHICLES PER DAY (1000'S)



EXHIBIT 6-2: OPENING YEAR CUMULATIVE (2020) WITH PROJECT TRAFFIC VOLUMES



1	Mission Tr. & Bundy Canyon Rd.	Mission Tr. & Dwy. 1	Dwy. 2 & Bundy Canyon Rd.	Orchard St. & Bundy Canyon Rd.	5	Almond St. & Bundy Canyon Rd.
	315(321) ← 78(76) → 320(359) ← 295(384) → 281(263) ← 86(173) →	364(360) ← 30(36) → 367(436) ← 29(37) →	344(427) ← 30(36) → 360(477) ← 59(73) → 40(55) → 46(56) ←	379(531) ← 28(10) → 398(564) ← 84(46) → 46(5) → 74(39) →	21(22) ← 378(537) → 398(564) ← 84(46) → 46(5) → 74(39) →	69(16) ← 39(8) → 41(6) → 21(22) ← 378(537) → 398(564) ← 84(46) → 46(5) → 74(39) →

LEGEND:

10(10) = AM(PM) PEAK HOUR INTERSECTION VOLUMES
10.0 = VEHICLES PER DAY (1000'S)



As shown in Table 6-1, the following intersections are anticipated to operate at unacceptable LOS for Opening Year Cumulative (2020) Without Project traffic conditions:

- Orchard Street & Bundy Canyon Road (#4) – LOS D AM and PM peak hours
- Almond Street & Bundy Canyon Road (#5) – LOS D AM peak hour only

A summary of the peak hour intersection LOS for Opening Year Cumulative Without Project conditions are shown on Exhibit 6-3. The intersection operations analysis worksheets for Opening Year Cumulative Without Project traffic conditions are included in Appendix 6.1 of this TIA.

6.3.2 OPENING YEAR CUMULATIVE (2020) WITH PROJECT TRAFFIC CONDITIONS

As shown in Table 6-1 and illustrated on Exhibit 6-4, there are no additional study area intersections anticipated to operate at an unacceptable LOS with the addition of Project traffic from those previously identified under Opening Year Cumulative (2020) Without Project traffic conditions.

The intersection operations analysis worksheets for Opening Year Cumulative With Project traffic conditions are included in Appendix 6.2 of this TIA. Measures to address near-term deficiencies for Opening Year Cumulative traffic conditions are discussed in Section 6.5 *Near-Term Deficiencies and Recommended Improvements*.

6.4 TRAFFIC SIGNAL WARRANTS ANALYSIS

6.4.1 OPENING YEAR CUMULATIVE (2020) WITHOUT PROJECT TRAFFIC CONDITIONS

For Opening Year Cumulative (2020) Without Project conditions, the following unsignalized intersection is anticipated to warrant a traffic signal, based on Opening Year Cumulative (2022) Without Project peak hour traffic volumes (see Appendix 6.3):

- Orchard Street & Bundy Canyon Road (#4)

6.4.2 OPENING YEAR CUMULATIVE (2020) WITH PROJECT TRAFFIC CONDITIONS

All applicable unsignalized study area intersections have met a traffic signal warrant in a previous analysis scenario. As such, no traffic signal warrant analysis has been performed for Opening Year Cumulative (2020) With Project conditions.

Table 6-1

Intersection Analysis for Opening Year Cumulative (2020) Conditions

#	Intersection	Traffic Control ²	2020 Without Project				2020 With Project				Acceptable LOS ³
			Delay ¹ (secs.)		Level of Service		Delay ¹ (secs.)		Level of Service		
			AM	PM	AM	PM	AM	PM	AM	PM	
1	Mission Trail & Bundy Canyon Rd.	TS	18.5	26.3	B	C	18.9	27.2	B	C	D
2	Mission Trail & Driveway 1	<u>CSS</u>	Future Intersection				9.7	9.8	A	A	C
3	Driveway 2 & Bundy Canyon Rd.	<u>CSS</u>	Future Intersection				13.8	16.9	B	C	C
4	Orchard St. & Bundy Canyon Rd.	CSS	34.0	27.7	D	D	39.0	31.0	E	D	C
5	Almond St. & Bundy Canyon Rd.	AWS	26.7	22.5	D	C	30.4	27.0	D	D	C

* **BOLD** = Level of Service (LOS) does not meet the applicable jurisdictional requirements (i.e., unacceptable LOS).

¹ Per the Highway Capacity Manual (6th Edition), overall average intersection delay and level of service are shown for intersections with a traffic signal or all way stop control. For intersections with cross street stop control, the delay and level of service for the worst individual movement (or movements sharing a single lane) are shown.

² TS = Traffic Signal; CSS = Cross-street Stop; AWS = All-Way Stop; CSS = Improvement

³ Minimum acceptable LOS for each applicable jurisdiction.

EXHIBIT 6-3: OPENING YEAR CUMULATIVE (2020) WITHOUT PROJECT SUMMARY OF LOS

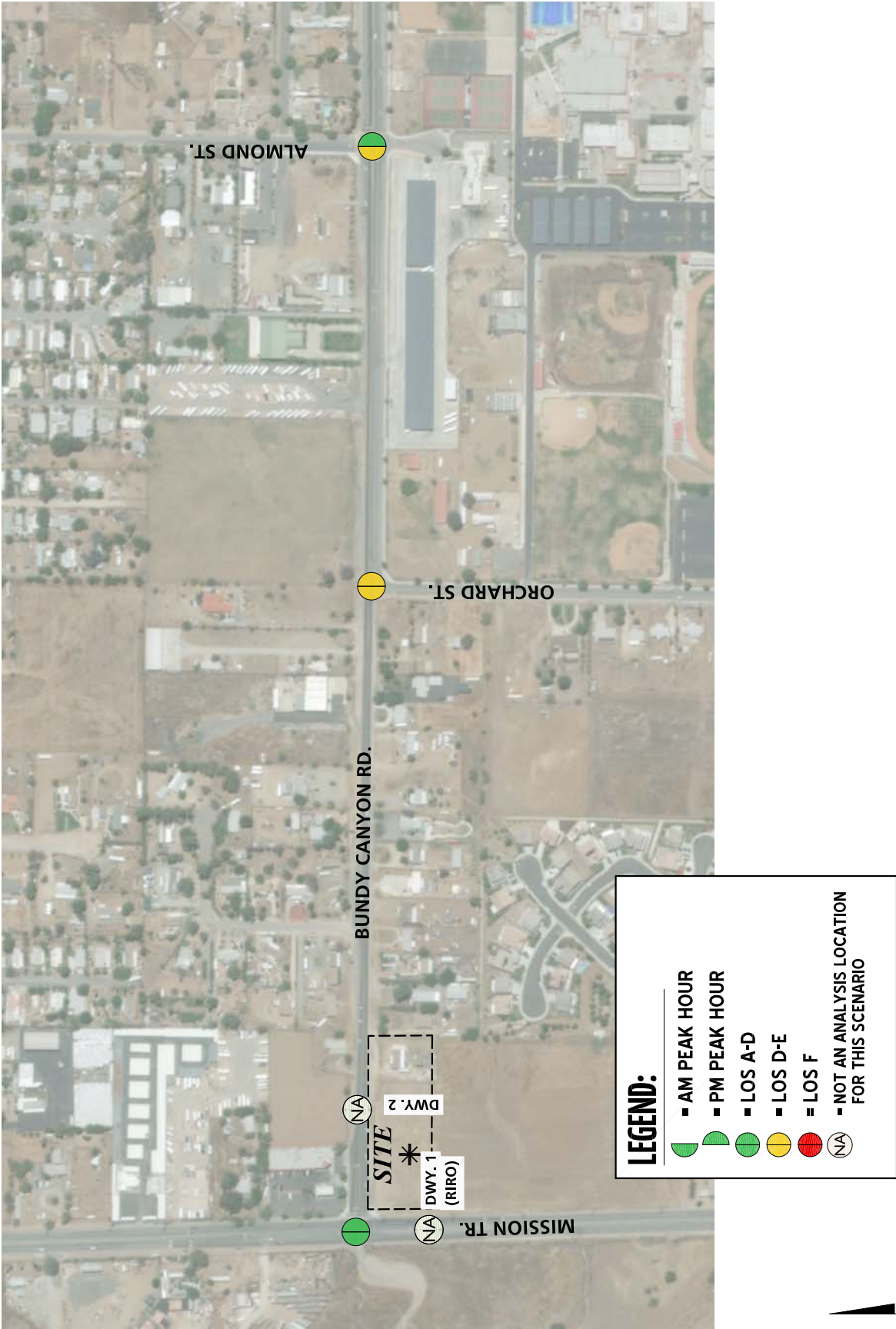


EXHIBIT 6-4: OPENING YEAR CUMULATIVE (2020) WITH PROJECT SUMMARY OF LOS



6.5 NEAR-TERM DEFICIENCIES AND RECOMMENDED IMPROVEMENTS

Improvement strategies have been recommended at intersections that have been identified as deficient in an effort to reduce each location's peak hour delay and improve the associated LOS grade to an acceptable LOS (LOS C/LOS D or better). The effectiveness of the recommended improvement strategies discussed below to address Opening Year Cumulative traffic deficiencies is presented in Table 6-2.

The following improvements are needed to improve the Opening Year Cumulative (2020) With Project peak hour deficiencies back to acceptable levels.

Orchard Street & Bundy Canyon Road (#4)

- Install a Traffic Signal.
- Add a westbound left turn lane.

Almond Street & Bundy Canyon Road (#5)

- Install a Traffic Signal.
- Add an eastbound left turn lane.
- Add a westbound left turn lane.

Worksheets for Opening Year Cumulative (2020) With Project conditions, with improvements, HCM calculations are provided in Appendix 6.4.

Table 6-2

Intersection Analysis for Opening Year Cumulative (2020) With Project Conditions With Improvements

#	Intersection	Traffic Control ³	Intersection Approach Lanes ¹												Delay ² (secs.)		Level of Service	
			Northbound			Southbound			Eastbound			Westbound			AM	PM	AM	PM
			L	T	R	L	T	R	L	T	R	L	T	R				
4	Orchard St. & Bundy Canyon Rd.																	
	Without Improvements:	CSS	1	0	d	0	0	0	0	1	0	0	1	0	39.0	31.0	E	D
	With Improvements:	<u>TS</u>	1	0	d	0	0	0	0	1	0	<u>1</u>	1	0	11.5	8.9	B	A
5	Almond St. & Bundy Canyon Rd.																	
	Without Improvements:	AWS	0	1	0	0	1	d	0	2	d	0	2	d	30.4	27.0	D	D
	With Improvements:	<u>TS</u>	0	1	0	0	1	d	<u>1</u>	2	d	<u>1</u>	2	d	16.7	9.5	B	A

¹ When a right turn is designated, the lane can either be striped or unstriped. To function as a right turn lane there must be sufficient width for right turning vehicles to travel outside the through lanes.

L = Left; T = Through; R = Right; d= Defacto Right Turn Lane; 1 = Improvement

² Per the Highway Capacity Manual (6th Edition), overall average intersection delay and level of service are shown for intersections with a traffic signal or all way stop control. For intersections with cross street stop control, the delay and level of service for the worst individual movement (or movements sharing a single lane) are shown.

³ TS = Traffic Signal; CSS = Cross-street Stop; AWS = All-Way Stop; CSS = Improvement

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7 HORIZON YEAR (2040) TRAFFIC CONDITIONS

This section discusses the methods used to develop Horizon Year (2040) Without and With Project traffic forecasts, and the resulting intersection operations and traffic signal warrant analyses.

7.1 ROADWAY IMPROVEMENTS

The lane configurations and traffic controls assumed to be in place for Horizon Year conditions are consistent with those shown previously on Exhibit 3-1, with the exception of the following:

- Project driveways and those facilities assumed to be constructed by the Project to provide site access are also assumed to be in place for Horizon Year conditions only (e.g., intersection and roadway improvements along the Project's frontage and driveways).
- Driveways and those facilities assumed to be constructed by cumulative developments to provide site access are also assumed to be in place for Horizon Year conditions only (e.g., intersection and roadway improvements along the cumulative development's frontages and driveways).

7.2 HORIZON YEAR (2040) TRAFFIC VOLUME FORECASTS

7.2.1 HORIZON YEAR (2040) WITHOUT PROJECT TRAFFIC CONDITIONS

This scenario includes the refined post-processed volumes obtained from the RivTAM. For additional information on the development of the Horizon Year Without Project traffic forecasts, see Section 4.8 *Horizon Year (2040) Volume Development* of this TIA. The weekday ADT and weekday AM and PM peak hour volumes which can be expected for Horizon Year Without Project traffic conditions are shown on Exhibit 7-1.

7.2.2 HORIZON YEAR (2040) WITH PROJECT TRAFFIC CONDITIONS

This scenario includes the refined post-processed volumes obtained from the RivTAM, plus Project traffic. The weekday ADT and weekday AM and PM peak hour volumes which can be expected for Horizon Year With Project traffic conditions are shown on Exhibit 7-2.

As shown on Exhibit 7-2, the daily traffic volumes anticipated along Bundy Canyon Road along the Project's frontage are within the allowable capacity of a 4-lane Arterial Highway. The peak hour intersection operations analysis presented subsequently also demonstrates that the study area intersections can operate at acceptable LOS as a 4-lane Arterial Highway.

EXHIBIT 7-1: HORIZON YEAR (2040) WITHOUT PROJECT TRAFFIC VOLUMES



LEGEND:

10'(10) - AM(PM) PEAK HOUR INTERSECTION VOLUMES
10.0 - VEHICLES PER DAY (1000'S)



EXHIBIT 7-2: HORIZON YEAR (2040) WITH PROJECT TRAFFIC VOLUMES



1	Mission Tr. & BundY Canyon Rd.	2	Mission Tr. & Dwy. 1	3	Dwy. 2 & BundY Canyon Rd.	4	Orchard St. & BundY Canyon Rd.	5	Almond St. & BundY Canyon Rd.
126(205) 731(1071) 64(148)	316(485) 503(748) 173(367)	73(89) 423(538) 266(302)	574(1118) 733(892) 30(36)	29(37)	946(1544) 59(73)	1243(1639) 30(14)	1023(1451) 92(50)	36(37) 1145(1587) 36(7)	30(44) 39(8) 889(1387) 62(15)
117(143) 337(603) 440(503)	173(367) 503(748) 316(485)	73(89) 423(538) 266(302)	733(892) 30(36) 574(1118)	29(37)	946(1544) 59(73)	1243(1639) 30(14)	1023(1451) 92(50)	36(37) 1145(1587) 36(7)	30(44) 39(8) 889(1387) 62(15)

LEGEND:

10(10) = AM(PM) PEAK HOUR INTERSECTION VOLUMES
10.0 = VEHICLES PER DAY (1000'S)



7.3 INTERSECTION OPERATIONS ANALYSIS

7.3.1 HORIZON YEAR WITHOUT PROJECT TRAFFIC CONDITIONS

LOS calculations were conducted for the study intersections to evaluate their operations under Horizon Year Without Project conditions with roadway and intersection geometrics consistent with Section 7.1 *Roadway Improvements*. As shown in Table 7-1, the study area intersections are anticipated to operate at acceptable LOS for Horizon Year (2040) Without Project traffic conditions, with the exception of the following study area intersection:

- Mission Trail & Bundy Canyon Road (#1) – LOS F AM and PM peak hours
- Orchard Street & Bundy Canyon Road (#4) – LOS F AM and PM peak hours
- Almond Street & Bundy Canyon Road (#5) – LOS F AM and PM peak hours

A summary of the peak hour intersection LOS for Horizon Year Without Project conditions are shown on Exhibit 7-3. The intersection operations analysis worksheets for Horizon Year Without Project traffic conditions are included in Appendix 7.1.

7.3.2 HORIZON YEAR WITH PROJECT TRAFFIC CONDITIONS

As shown in Table 7-1 and illustrated on Exhibit 7-4, the following study area intersection is anticipated to operate at unacceptable LOS during the peak hours with the addition of the Project traffic:

- Driveway 2 & Bundy Canyon Road (#3) – LOS F AM and PM peak hours

The intersection operations analysis worksheets for Horizon Year With Project traffic conditions are included in Appendix 7.2 of this TIA.

7.4 TRAFFIC SIGNAL WARRANTS ANALYSIS

All applicable unsignalized study area intersections have met a traffic signal warrant in a previous analysis scenario. As such, no traffic signal warrant analysis has been performed for Horizon Year (2040) Without and With Project conditions.

Table 7-1

Intersection Analysis for Horizon Year (2040) Conditions

#	Intersection	Traffic Control ²	2040 Without Project				2040 With Project				Acceptable LOS ³
			Delay ¹ (secs.)		Level of Service		Delay ¹ (secs.)		Level of Service		
			AM	PM	AM	PM	AM	PM	AM	PM	
1	Mission Trail & Bundy Canyon Rd.	TS	>200.0	>200.0	F	F	>200.0	>200.0	F	F	D
2	Mission Trail & Driveway 1	CSS	Future Intersection				11.5	12.6	B	B	C
3	Driveway 2 & Bundy Canyon Rd.	CSS	Future Intersection				39.1	>100.0	E	F	C
4	Orchard St. & Bundy Canyon Rd.	CSS	>100.0	86.4	F	F	>100.0	93.5	F	F	C
5	Almond St. & Bundy Canyon Rd.	AWS	>100.0	>100.0	F	F	>100.0	>100.0	F	F	C

* **BOLD** = Level of Service (LOS) does not meet the applicable jurisdictional requirements (i.e., unacceptable LOS).

¹ Per the Highway Capacity Manual (6th Edition), overall average intersection delay and level of service are shown for intersections with a traffic signal or all way stop control. For intersections with cross street stop control, the delay and level of service for the worst individual movement (or movements sharing a single lane) are shown.

² TS = Traffic Signal; CSS = Cross-street Stop; AWS = All-Way Stop; CSS = Improvement

³ Minimum acceptable LOS for each applicable jurisdiction.

EXHIBIT 7-3: HORIZON YEAR (2040) WITHOUT PROJECT SUMMARY OF LOS

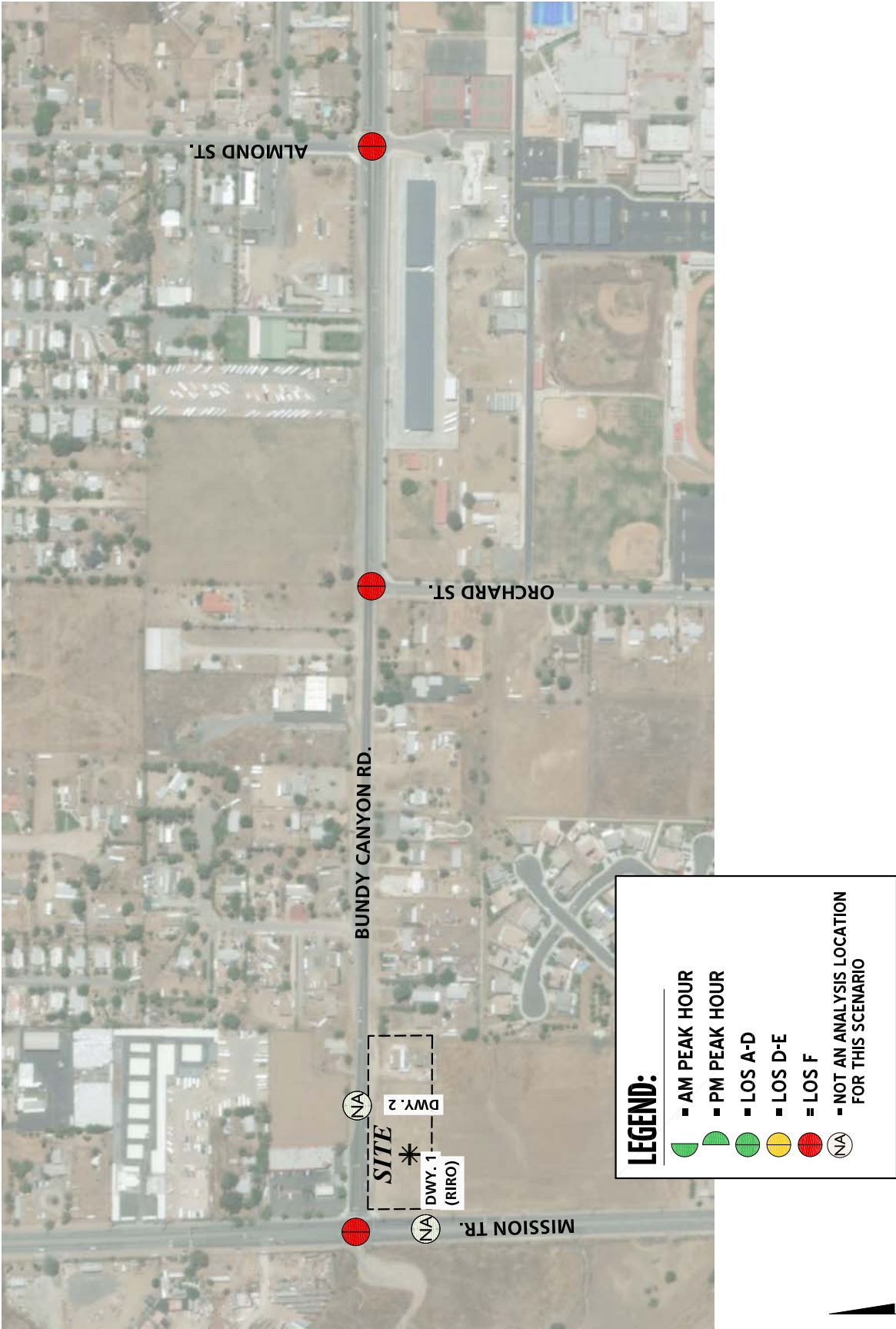


EXHIBIT 7-4: HORIZON YEAR (2040) WITH PROJECT SUMMARY OF LOS



7.5 HORIZON YEAR DEFICIENCIES AND RECOMMENDED IMPROVEMENTS

Improvements necessary to improve intersection operations back to acceptable levels are presented in Table 7-2 for Horizon Year (2040) traffic conditions. With implementation of the intersection improvements discussed below, cumulative traffic conditions would be improved to acceptable LOS. The city may condition the Project to contribute its fair share to the recommended cumulative improvements.

Mission Trail & Bundy Canyon Road (#1)

- Add a northbound left-turn lane.
- Add a northbound right-turn lane and modify the traffic signal to accommodate overlap phasing.
- Add an eastbound left-turn lane.
- Add two eastbound through lanes.
- Add an eastbound right-turn lane.
- Add a second westbound left-turn lane.
- Add a second westbound through lane.
- Add a westbound right-turn lane and modify the traffic signal to accommodate overlap phasing.

Driveway 2 & Bundy Canyon Road (#3)

- Install a Traffic Signal.
- Add a second eastbound through lane.
- Add a westbound left turn lane.
- Add a second westbound through lane.

Or

- Maintain a stop control on the northbound approach and restrict left turns out.
- Add a second eastbound through lane.
- Add a westbound left turn lane.
- Add a second westbound through lane.

Orchard Street & Bundy Canyon Road (#4)

- Install a Traffic Signal.
- Add a second eastbound through lane.
- Add a westbound left-turn lane.
- Add a second westbound through lane.

Table 7-2

Intersection Analysis for Horizon Year (2040) With Project Conditions With Improvements

#	Intersection	Traffic Control ³	Intersection Approach Lanes ¹												Delay ² (secs.)		Level of Service	
			Northbound			Southbound			Eastbound			Westbound			AM	PM	AM	PM
			L	T	R	L	T	R	L	T	R	L	T	R				
1	Mission Trail & Bundy Canyon Rd.																	
	Without Improvements:	TS	0	2	0	2	2	0	0	0	0	1	1	0	>200.0	>200.0	F	F
	With Improvements:	TS	<u>1</u>	2	<u>1</u> >	2	2	0	<u>1</u>	<u>2</u>	<u>1</u>	<u>2</u>	<u>2</u>	<u>1</u> >	37.5	53.9	D	D
3	Driveway 2 & Bundy Canyon Rd.																	
	Without Improvements:	CSS	0	<u>1</u>	0	0	0	0	0	<u>1</u>	0	<u>1</u>	<u>1</u>	0	39.1	>100.0	E	F
	With Improvements:	TS	0	<u>1</u>	0	0	0	0	0	<u>2</u>	0	<u>1</u>	<u>2</u>	0	26.1	12.2	C	B
	With Alternative Improvements:	CSS ⁴	0	0	<u>1</u>	0	0	0	0	<u>2</u>	0	<u>1</u>	<u>2</u>	0	16.2	24.2	C	C
4	Orchard St. & Bundy Canyon Rd.																	
	Without Improvements:	CSS	1	0	d	0	0	0	0	1	0	0	1	0	>100.0	93.5	F	F
	With Improvements:	TS	1	0	d	0	0	0	0	<u>2</u>	0	<u>1</u>	<u>2</u>	0	22.0	8.0	C	A
5	Almond St. & Bundy Canyon Rd.																	
	Without Improvements:	AWS	0	1	0	0	1	d	0	2	d	0	2	d	>100.0	>100.0	F	F
	With Improvements:	TS	<u>1</u>	1	0	<u>1</u>	1	d	<u>1</u>	2	d	<u>1</u>	2	d	26.8	14.1	C	B

¹ When a right turn is designated, the lane can either be striped or unstriped. To function as a right turn lane there must be sufficient width for right turning vehicles to travel outside the through lanes.

L = Left; T = Through; R = Right; > = Right-turn Overlap Phasing; d= Defacto Right Turn Lane; 1 = Improvement

² Per the Highway Capacity Manual (6th Edition), overall average intersection delay and level of service are shown for intersections with a traffic signal or all way stop control. For intersections with cross street stop control, the delay and level of service for the worst individual movement (or movements sharing a single lane) are shown.

³ TS = Traffic Signal; CSS = Cross-street Stop; AWS = All-Way Stop; CSS = Improvement

⁴ Driveway 2 does not meet 1/4-mile spacing from Mission Trail for signalization. However, no other alternative improvements can achieve acceptable LOS expect signalization of restricting the access to right-in/right-out only.

Almond Street & Bundy Canyon Road (#5)

- Install a Traffic Signal.
- Add a northbound left turn lane.
- Add a southbound left turn lane.
- Add an eastbound left turn lane.
- Add a westbound left turn lane.

The Project Applicant shall participate in the funding of off-site improvements, including traffic signals that are needed to serve cumulative traffic conditions through the payment of WRCOG TUMF, City of Wildomar DIF Program, Southwest RBBD program, or a fair share contribution as directed by the City. These fees are collected as part of a funding mechanism aimed at ensuring that regional highways and arterial expansions keep pace with the projected population increases. Each of the improvements discussed above have been identified as being included as part of TUMF fee program, City DIF fee program, Southwest RBBD fee program, or fair share contribution in Section 1.7 *Local and Regional Funding Mechanisms* of this TIA.

The intersection operations analysis worksheets for Horizon Year (2040) With Project traffic conditions, with improvements, are included in Appendix 7.3 of this TIA.

7 REFERENCES

1. **Institute of Transportation Engineers.** *Trip Generation Manual*. 10th Edition. 2017.
2. **County of Riverside.** *City of Wildomar General Plan*. City of Wildomar : s.n., 2003.
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