# Diamond Springs Village Apartments

March 2017

Prepared for:
CoreCare Foundation
8863 Greenback Lane, Suite 324
Orangevale, CA 95662

Submitted by:

FEHR PEERS

1001 K Street, 3rd Floor
Sacramento, CA 95814

**Exhibit K**

## Table of Contents

## Appendices

## List of Figures



## List of Tables

# INTRODUCTION

## REPORT OVERVIEW

This study presents the results of a transportation impact analysis completed for the Diamond Springs Village Apartments project (project) in Diamond Springs, California, which is an unincorporated area of El Dorado County (County).

The purpose of this impact analysis is to identify potential environmental impacts to transportation facilities as required by the California Environmental Quality Act (CEQA). This study was performend in accordance with the El Dorado County Community Development Agency's *Traffic Impact Study Guidelines* (November 2014), and the scope of work developed in collaboration with County staff and Caltrans.

The remaining sections of this report document the proposed project, analysis methodolgies, impacts and mitigations.

## PROJECT DESCRIPTION

The proposed project would construct 80 affordable apartment units and one supervisory unit located south of Black Rice Lane, north of Pearl Place, east of Courtside Drive, and west of Deuce Drive/Service Drive. The project site is surrounded primarily by multi-family residential (Diamond Terrace Apartments) and rural single-family residential. Access to the proposed project would be provided via Racquet Way and Pearl Place, which intersect Pleasant Valley Road south of the project site. Racquet Way and Pearl Place will provide primary emergency vehicle access to the proposed project. The project is consistent with the adopted General Plan. The project site is shown on Figure 1.

# REGULATORY SETTING

Existing transportation polices, laws, and regulations that would apply to the proposed project are summarized below. This information provides a context for the impact discussion related to the project's consistency with applicable regulatory conditions.

## STATE

### CALIFORNIA DEPARTMENT OF TRANSPORTATION

The California Department of Transportation (Caltrans) is responsible for operating and maintaining the State highway system. In the project vicinity, US 50 falls under Caltrans' jurisdiction. Caltrans provides administrative support for transportation programming decisions made by the California Transportation Commission (CTC) for state funding programs. The State Transportation Improvement Program (STIP) is a multi-year capital improvement program that sets priorities and funds transportation projects envisioned in long-range transportation plans.

In June 2014, Caltrans approved a *Transportation Concept Report and Corridor System Management Plan (TCR/CSMP) for United States Route 50*. Caltrans prepares a TCR/CSMP, which is a long-range (20-year) planning document, for each state highway. The purpose of each TCR/CSMP is to identify existing route conditions and future needs and to communicate the vision for the development of each route during a 20-year planning horizon. Caltrans has established LOS E as the 'concept LOS' consistent with the El Dorado County General Plan LOS policy. Since LOS E is identified as the concept LOS no further degradation of service from existing "E" is acceptable. The Concept LOS is a generalized LOS for large study segments used by Caltrans that reflect the minimum level of service or quality of operations acceptable for each route segment.

According to the *Guide for the Preparation of Traffic Impact Studies* (Caltrans, December 2002), the existing LOS should be maintained if a freeway facility is currently operating at an unacceptable LOS (e.g., LOS F). A project impact is said to occur if the project degrades LOS from an acceptable to unacceptable level. A project impact may also occur when the addition of project trips exacerbates existing LOS F conditions and leads to a perceptible increase in density on freeway mainline segments or ramp junctions, or a perceptible increase in service volumes in a weaving area. In addition, a project impact is said to occur when the addition of project trips causes a queue on the off-ramp approach to a ramp terminal intersection to extend beyond its storage area and onto the freeway mainline.

# LOCAL

## SACRAMENTO AREA COUNCIL OF GOVERNMENTS

The Sacramento Area Council of Governments (SACOG) is an association of local governments in the six-county Sacramento Region. Its members include the counties of Sacramento, El Dorado, Placer, Sutter, Yolo, and Yuba, as well as 22 cities. SACOG provides transportation planning and funding for the region, and serves as a forum for the study and resolution of regional issues. In addition to preparing the region's long-range transportation plan, SACOG assists in planning for transit, bicycle networks, clean air, and airport land uses.

The *Metropolitan Transportation Plan/Sustainable Communities Strategy* (MTP/SCS) *for 2035* (SACOG 2012) is a federally mandated long-range fiscally constrained transportation plan for the six-county area. Most of this area is designated a federal non-attainment area for ozone, indicating that the transportation system is required to meet stringent air quality emissions budgets to reduce pollutant levels that contribute to ozone formation. To receive federal funding, transportation projects nominated by cities, counties, and agencies must be consistent with the MTP/SCS.

The *2013/16 Metropolitan Transportation Improvement Program* (MTIP) is a list of transportation projects and programs to be funded and implemented over the next 3 years. SACOG submits this document to Caltrans and amends the program on a quarterly cycle. Only projects listed in the MTP/SCS may be included in the MTIP.

## EL DORADO COUNTY TRANSPORTATION COMMISSION (EDCTC)

The EDCTC is the Regional Transportation Planning Agency (RTPA) for El Dorado County, except for the portion of the County within the Tahoe Basin, which is under the jurisdiction of the Tahoe Regional Planning Agency (TRPA).

One of the fundamental responsibilities which results from RTPA designation is the preparation of the County's Regional Transportation Plan. The *El Dorado County Regional Transportation Plan 2010 – 2030 (RTP)* is designed to be a blueprint for the systematic development of a balanced, comprehensive, multi-modal transportation system. The EDCTC submits the RTP to SACOG for inclusion in the MTP/SCS process.

The *El Dorado County Bicycle Transportation Plan - 2010 Update* provides a blueprint for the development of a bicycle transportation system on the western slope of El Dorado County. The plan updates the currently adopted *El Dorado County Bicycle Master Plan*, which was adopted in January 2005.

In May 2013, The EDCTC completed the *El Dorado Hills Community Transit Needs Assessment and US 50 Corridor Operations Plan* (Plan), which explores how the recent growth and projected development impact the need for transit services, and identifies the most appropriate type and level of service needed given the demand. The Plan represents a recommendation from the Western El Dorado County 2008 Short-Range Transit Plan to study and consider improved transit service in the El Dorado Hills area.

In August 2008, The EDCTC adopted the *Coordinated Public Transit – Human Services Transportation Plan,* which is intended to improve mobility of individuals who are disabled, elderly, or of low-income status. The plan focuses on identifying needs specific to those population groups and identifying strategies to meet their needs.

## COUNTY OF EL DORADO

The County of El Dorado provides for the mobility of people and goods within Diamond Springs, which is an unincorporated area of the County.

The Transportation and Circulation Element of the El Dorado County General Plan (amended January 2009) outlines goals and policies that coordinate the transportation and circulation system with planned land uses. The following goals and their associated policies are relevant to the project.

- GOAL TC-1: To plan for and provide a unified, coordinated, and cost-efficient countywide road and highway system that ensures the safe, orderly, and efficient movement of people and goods.
- GOAL TC-X: To coordinate planning and implementation of roadway improvements with new development to maintain adequate levels of service on County roads. (The LOS policy specific to this project is described in Section 4.2.)
- GOAL TC-2: To promote a safe and efficient transit system that provides service to all residents, including senior citizens, youths, the disabled, and those without access to automobiles that also helps to reduce congestion, and improves the environment.
- GOAL TC-3: To reduce travel demand on the County's road system and maximize the operating efficiency of transportation facilities, thereby reducing the quantity of motor vehicle emissions and the amount of investment required in new or expanded facilities.
- GOAL TC-4: To provide a safe, continuous, and easily accessible non-motorized transportation system that facilitates the use of the viable alternative transportation modes.
- GOAL TC-5: To provide safe, continuous, and accessible sidewalks and pedestrian facilities as a viable alternative transportation mode.

The El Dorado County Community Development Agency's *Transportation Impact Study Guidelines* set forth the protocols and procedures for conducting transportation analysis in the County (El Dorado County, 2014), including the identification of the study area. All of the study intersections for the proposed project are within the County's jurisdiction. This traffic analysis is consistent with the County-established methods at the commencement of the project.

The project is subject to Measure E, which was adopted June 6, 2016 and became official on July 29, 2016. Because the project is an affordable workforce multi-family housing project, it is not subject to certain provisions of Measure E. Specifically, the 10-year impact analysis is not required for the following reasons:

- TC-Xf requires a ten-year traffic impact review for tentative maps with five or more parcels. This project is not a subdivision application with five or more parcels.
- The second paragraph in TC-Xf states "For all other discretionary projects that worsen (defined as a project that triggers Policy TC-Xe [A] or [B] or [C]) traffic on the County road system, the County shall condition the project to construct all road improvements necessary to maintain or attain Level of Service standards detailed in this Transportation and Circulation Element." This project is conditioned to construct all road improvements necessary to maintain or attain Level of Service standards.
- State law requires Housing Elements to "address and where appropriate and legally possible, remove governmental constraints to the maintenance, improvement, and development of housing" (Government Code Section 65583[c][3]). This project is an affordable workforce multifamily housing project.
- General Plan Implementation Measure HO-2013-13 states, "…identify additional opportunities to further streamline the procedures for affordable housing projects while maintaining adequate levels of public review." (Government Code Section 65583 and 65920 et seq.; General Plan Policies HO-1.3, HO-1.7, HO-1.16, HO-1.18)
- General Plan Implementation Measure HO-2013-14 states, "…assist developers in addressing barriers to infill development." (General Plan Policy HO-1.5)
- General Plan Implementation Measure LU-Q states, "Promote Infill Development: The program shall be linked to land-use, housing, air quality, transportation and circulation strategies that support development within existing communities, reduce vehicle miles traveled, increase energy efficiency, and encourage the development of affordable housing." (General Plan Objective 2.1.4, Policy 2.4.1.5)

## EL DORADO COUNTY TRANSIT AUTHORITY

El Dorado County Transit Authority (EDCTA) operates El Dorado Transit, which provides public transit service within the project area. Diamond Springs is currently served by El Dorado Transit Dial-A-Ride services, Commuter Service, and the Diamond Springs Route.

# METHOD OF ANALYSIS

## ANALYSIS PROCEDURES

Intersections and roadways were selected for analysis based on coordination with the El Dorado County Community Development Agency, Long Range Planning staff and Caltrans, and based on the expected distribution of project trips and review of the El Dorado County Community Development Agency's *Transportation Impact Study Guidelines*.

Each study roadway facility was analyzed using the concept of Level of Service (LOS). LOS is a qualitative measure of traffic operating conditions whereby a letter grade, from A (the best) to F (the worst), is assigned. These grades represent the perspective of drivers and are an indication of the comfort and convenience associated with driving. In general, LOS A represents free-flow conditions with no congestion, and LOS F represents long delays and a facility that is operating at or near its functional capacity.

### INTERSECTIONS

Traffic operations at the study intersections were analyzed using procedures and methodologies contained in the Transportation Research Board's *Highway Capacity Manual (HCM) 2010*. These methodologies were applied using the Synchro software package (Version 8), developed by Trafficware. Table 1 displays the delay range associated with each LOS category for signalized and unsignalized intersections based on the *HCM*.

The HCM methodology determines the LOS at signalized intersections by comparing the average control delay (i.e., delay resulting from initial deceleration, queue move-up time, time actually stopped, and final acceleration) per vehicle at the intersection to the established thresholds. The LOS for traffic signal controlled and all-way stop controlled intersections is based on the average control delay for the entire intersection. For side street stop controlled intersections, the LOS is evaluated separately for each individual movement with delay reported for the critical (i.e., worst case) turning movement.

| TABLE 1 INTERSECTION LOS CRITERIA | | | |
|---|---|---|---|
| **Level of Service** | **Description** | **Average Control Delay (seconds per vehicle)** | |
| | | **Signalized Intersections[1]** | **Unsignalized Intersections[2]** |
| A | Represents free flow. Individual users are virtually unaffected by others in the traffic stream. | ≤ 10 | ≤ 10 |
| B | Stable flow, but the presence of other users in the traffic stream begins to be noticeable. | > 10 to 20 | > 10 to 15 |
| C | Stable flow, but the operation of individual users becomes significantly affected by interactions with others in the traffic stream. | > 20 to 35 | > 15 to 25 |
| D | Represents high-density, but stable flow. | > 35 to 55 | > 25 to 35 |
| E | Represents operating conditions at or near the capacity level. | > 55 to 80 | > 35 to 50 |
| F | Represents forced or breakdown flow. | > 80 | > 50 |

Sources:
[1] *Highway Capacity Manual 2010*, Chapter 18, Signalized Intersections
[2] *Highway Capacity Manual 2010*, Chapter 19, Two Way Stop Controlled Intersections
*Highway Capacity Manual 2010*, Chapter 20, All Way Stop Controlled Intersections

The following procedures and assumptions were applied for the analysis of existing and cumulative conditions:

- Roadway geometric data were gathered using field observations.
- Peak hour traffic volumes were entered according to the peak hour of each intersection.
- The peak hour factor (PHF) was calculated based on traffic counts and applied by intersection.
- The counted pedestrian and bicycle volumes were used.
- Heavy vehicle percentages were based on traffic counts and applied by movement with a minimum of 2 percent per movement per peak hour.
- Signal phasing and timings were based on existing signal timing sheets provided by El Dorado County.
- Speeds for the model network were based on the posted speed limit.
- A PHF of 0.92 or the existing PHF for each intersection (whichever is greater) was used for cumulative conditions.
- The existing heavy vehicle percentages were maintained for cumulative conditions.
- The existing pedestrian and bicycle volumes were maintained for cumulative conditions.
- The 2015 CIP projects were assumed to be in place for cumulative conditions.
- Traffic signal timings were optimized to serve future traffic volumes for cumulative conditions.

## ROADWAY SEGMENTS

Roadway segment LOS was determined by comparing peak hour traffic volumes for the study roadway segments to the LOS capacity thresholds in Table 2. The LOS capacity thresholds, provided in the El Dorado County Community Development Agency's *Transportation Impact Study Guidelines*, November 2014, were calculated based on the methodology contained in the *HCM 2010*.

**TABLE 2 PEAK HOUR ROADWAY SEGMENT LOS CRITERIA**

| Code | Functional Class Codes | HCM 2010 Planning Level Volumes | | | | |
|---|---|---|---|---|---|---|
| | | A | B | C | D | E |
| 2A | Two-Lane Arterial | - | - | 850 | 1,540 | 1,650 |
| 4AU | Four-Lane Arterial, Undivided | - | - | 1,760 | 3,070 | 3,130 |
| 4AD | Four-Lane Arterial, Divided | - | - | 1,850 | 3,220 | 3,290 |

Notes: Arterial LOS based on *HCM 2010*, Exhibit 16-14, K-factor of 0.09, posted speed 45 mph
Volumes are for both directions unless noted.
Source: *Transportation Impact Study Guidelines*, El Dorado County Community Development Agency, November 2014

# THRESHOLDS OF SIGNIFICANCE

In accordance with the California Environmental Quality Act (CEQA), the effects of a project are evaluated to determine if they will result in a significant adverse impact on the environment. Informed by the CEQA Statute and Guidelines, specifically Appendix G of the CEQA Guidelines, criteria have been established for this analysis to determine whether or not the project would have a significant impact on transportation and circulation.

The intent of CEQA Guidelines Section 15064 is for the responsible agency to establish the thresholds in the context of their specific values towards environmental resources or impacts. Therefore, the standards of significance in this analysis are based on the framework presented in CEQA Guidelines Appendix G and the current practice of the appropriate regulatory agencies. For most areas related to transportation and circulation, policies from the *2004 El Dorado County General Plan* (amended January 2009) and the El Dorado County Department of Transportation's 2008 *Traffic Impact Study Protocols and Procedures* were used. Implementation of the project would have a potentially significant impact on transportation and circulation if it causes any of the following outcomes:

- Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness (MOEs) for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit. The following specific MOEs, which have been generated by the regulatory agencies, are applicable to this project.

- o General Plan Circulation Policy TC-Xd provides Level of Service standards for County-maintained roads and state highways as follows[1]:
    - ▪ Level of Service (LOS) for County-maintained roads and state highways within the unincorporated areas of the county shall not be worse than LOS E in the Community Regions or LOS D in the Rural Centers and Rural Regions except as specified in Table TC-2. The volume to capacity ratio of the roadway segments listed in Table TC-2 as applicable shall not exceed the ratio specified in that table.
        - Missouri Flat Road – Mother Lode Drive to China Garden Road: Max. v/c = 1.20
        - Pleasant Valley Road – El Dorado Road to SR 49: Max. v/c = 1.28
    - ▪ If a project causes the peak hour level of service or volume/capacity ratio on a county road or state highway that would otherwise meet the County standards (without the project) to exceed the LOS threshold, then the impact shall be considered significant.
    - ▪ If any county road or state highway fails to meet the above listed county standards for peak hour level of service or volume/capacity ratios under existing conditions, and the project will "worsen" conditions on the road or highway, then the impact shall be considered significant. The term "significantly worsen" is defined for the purpose of the paragraph according to General Plan Policy TC-Xe as follows:
        A. A two (2) percent increase in traffic during the AM peak hour, PM peak hour, or daily, OR
        B. The addition of 100 or more daily trips, OR
        C. The addition of 10 or more trips during the AM peak hour or the PM peak hour.

- Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment).
- Result in inadequate emergency access.
- Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities.

[1] *El Dorado County Department of Transportation's Traffic Impact Study Protocols and Procedures*

- The County has published the following issues and General Plan goals as relevant to traffic impact study assessments. The project may trigger a potentially significant impact if it's in conflict with any of the following:
  - Access to Public Transit Services consistent with General Plan Circulation Element Goal TC-2: "To promote a safe and efficient transit system that provides service to all residents, including senior citizens, youths, the disabled, and those without access to automobiles that also helps to reduce congestion, and improves the environment."
  - Transportation System Management consistent with General Plan Circulation Element Goal TC-3: "To reduce travel demand on the County's road system and maximize the operating efficiency of transportation facilities, thereby reducing the quantity of motor vehicle emissions and the amount of investment required in new or expanded facilities."
  - Non-Motorized Transportation consistent with General Plan Circulation Element Goal TC-4: "To provide a safe, continuous, and easily accessible non-motorized transportation system that facilitates the use of the viable alternative transportation modes."
- Conflict with adopted policies, plans, or programs regarding the delivery of goods and services.

# EXISTING SETTING

## STUDY AREA

Based on coordination with the El Dorado County Community Development Agency (Long Range Planning) staff, the expected distribution of project trips, and review of the El Dorado County *Traffic Impact Study Guidelines,* the following study intersections and roadways were selected for analysis during the AM and PM peak hours. Figure 1 identifies the study area.

The following lists both existing intersections and future intersections (applicable only to the Cumulative Conditions analysis).

**Intersections:**

1. Pleasant Valley Road/Racquet Way
2. Pleasant Valley Road/Pearl Place
3. Pleasant Valley Road (SR 49)/Diamond Road (SR 49)
4. Pleasant Valley Road (SR 49)/China Garden Road
5. Pleasant Valley Road (SR 49)/Missouri Flat Road
6. Missouri Flat Road /China Garden Road
7. Missouri Flat Road /Golden Center Drive
8. Diamond Road/Lime Kiln Road/Black Rice Road
9. Missouri Flat Road/Diamond Springs Parkway (future intersection)
10. Throwita Way/Diamond Springs Parkway (future intersection, cumulative analysis only)
11. Diamond Road (SR 49)/Diamond Springs Parkway (future intersection, cumulative analysis only)
12. Missouri Flat Road/Forni Road
13. Missouri Flat Road/Mother Lode Drive
14. Missouri Flat Road/US 50 EB Ramps
15. Missouri Flat Road/US 50 WB Ramps
16. Missouri Flat Road/Plaza Drive

**Roadway Segments:**

1. Missouri Flat Road – US 50 to Golden Center Drive
2. Missouri Flat Road – Golden Center Drive to Pleasant Valley Road (SR 49)
3. Pleasant Valley Road (SR 49) – SR 49 (West) to Missouri Flat Road

4. Pleasant Valley Road (SR 49) – Missouri Flat Road to Diamond Road (SR 49)
5. Pleasant Valley Road (SR 49) – Diamond Road (SR 49) to Canyon Valley Road
6. Pleasant Valley Road (SR 49) – Canyon Valley Road to Big Cut Road
7. Diamond Road (SR 49) – Pleasant Valley Road to Lime Kiln Road/Diamond Springs Parkway
8. Diamond Road (SR 49) – Lime Kiln Road/Diamond Springs Parkway to Bradley Drive
9. China Garden Road – Missouri Flat Road to Pleasant Valley Road (SR 49)
10. Diamond Springs Parkway –Missouri Flat Road to Diamond Road (SR 49)

## ROADWAY NETWORK

The characteristics of the roadway system near the project are described below. Where applicable, the roadway designation given in the *2004 El Dorado County General Plan* (amended January 2009) is provided.

**Pleasant Valley Road (State Route 49)** is a two-lane, east-west roadway that intersects Mother Lode Drive to the west and Sly Park Road to the east. Pleasant Valley Road is identified in the El Dorado County General Plan as a Major 2-Lane Road and shares a route with State Route (SR) 49 from Golden Chain Highway to Diamond Road. The posted speed limit on Pleasant Valley Road within the project area ranges from 25 to 45 mph.

**Missouri Flat Road** generally runs northwest-southeast between Green Valley Road (north of US Highway 50) and Pleasant Valley Road. Missouri Flat Road has two lanes for the majority of its route (and is identified as a Major 2-Lane Road in the El Dorado County General Plan), but widens to four lanes across US 50 to Golden Center Drive to the south (and is identified as a 4-Lane Divided Road in the El Dorado County General Plan). The posted speed limit of Missouri Flat is 45 mph in the project area.

**Diamond Road (SR 49)** is a two-lane, north-south roadway that is identified as a Major 2-Lane Road in the El Dorado County General Plan. Diamond Road shares a route with SR 49 for its entire length from Sacramento Street to Pleasant Valley Road. The posted speed limit on Diamond Road ranges from 40 to 50 mph near the project.

**China Garden Road** is identified as a 2-Lane Regional Road in the El Dorado County General Plan. China Garden Road connects Missouri Flat Road to Pleasant Valley Road east of Missouri Flat Road and north of Pleasant Valley Road. The posted speed limit on China Garden Road is 35 mph.

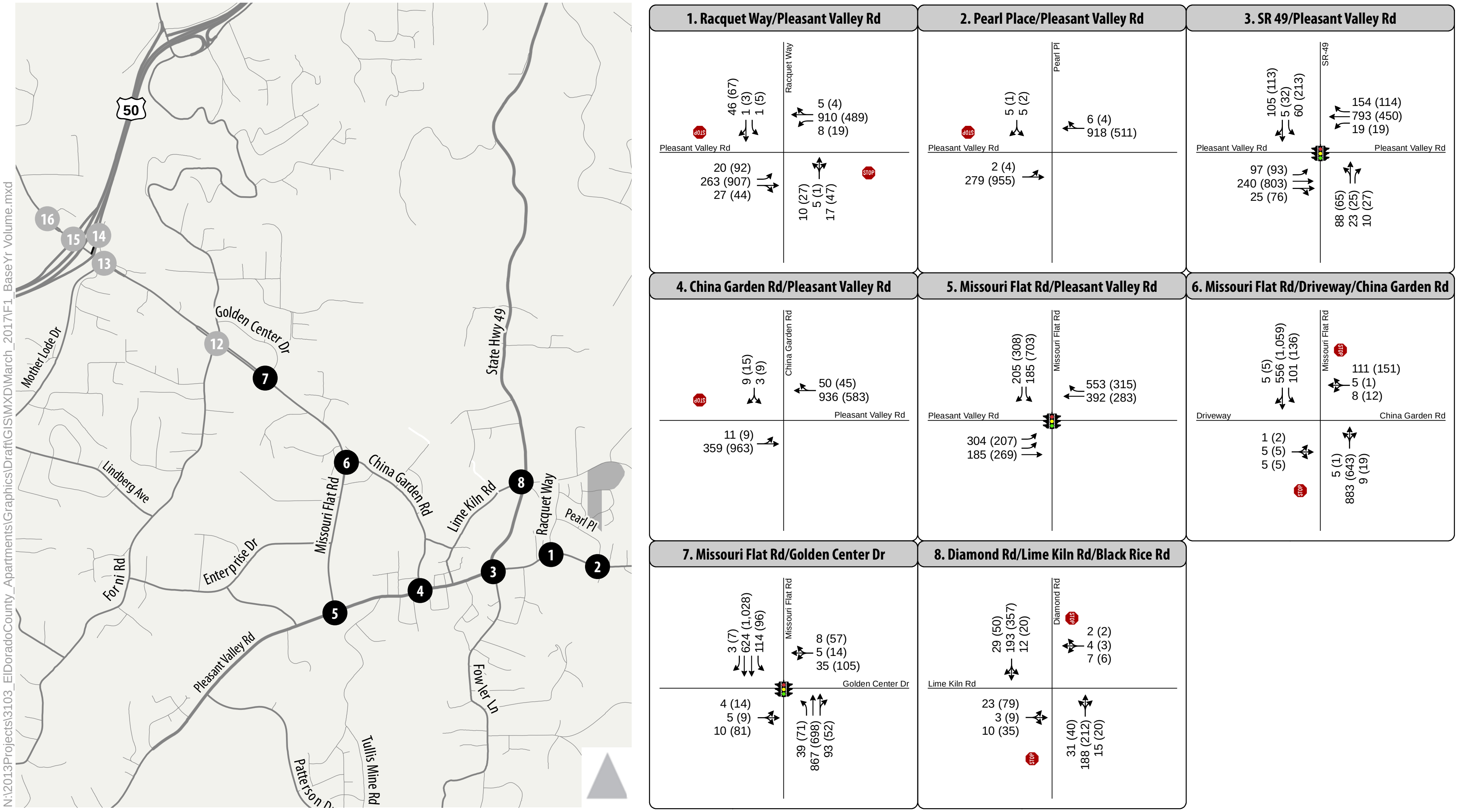
**Diamond Springs Parkway** is a planned four-lane divided roadway that will connect Missouri Flat Road north of China Garden Road to Diamond Road (SR 49) north of Lime Kiln Road. The roadway will include bicycle and pedestrian access with sidewalks and Class II bike lanes. Three bus turnouts will also be included along the new roadway.

## EXISTING CONDITIONS PEAK HOUR TRAFFIC VOLUMES

AM peak period (7 AM to 9 AM) and PM peak period (4 PM to 6 PM) intersection turning movement counts were collected to determine the existing traffic operations of the study facilities. Traffic counts were collected at the study intersections on the following dates:

1. Pleasant Valley Road/Racquet Way – July 30, 2014
2. Pleasant Valley Road/Pearl Place – July 14, 2015
3. Pleasant Valley Road (SR 49)/Diamond Road (SR 49) – May 5, 2015 and July 14, 2015
4. Pleasant Valley Road (SR 49)/China Garden Road – September 26, 2012
5. Pleasant Valley Road (SR 49)/Missouri Flat Road – May 5, 2015
6. Missouri Flat Road /China Garden Road – May 5, 2015
7. Missouri Flat Road /Golden Center Drive – May 5, 2015

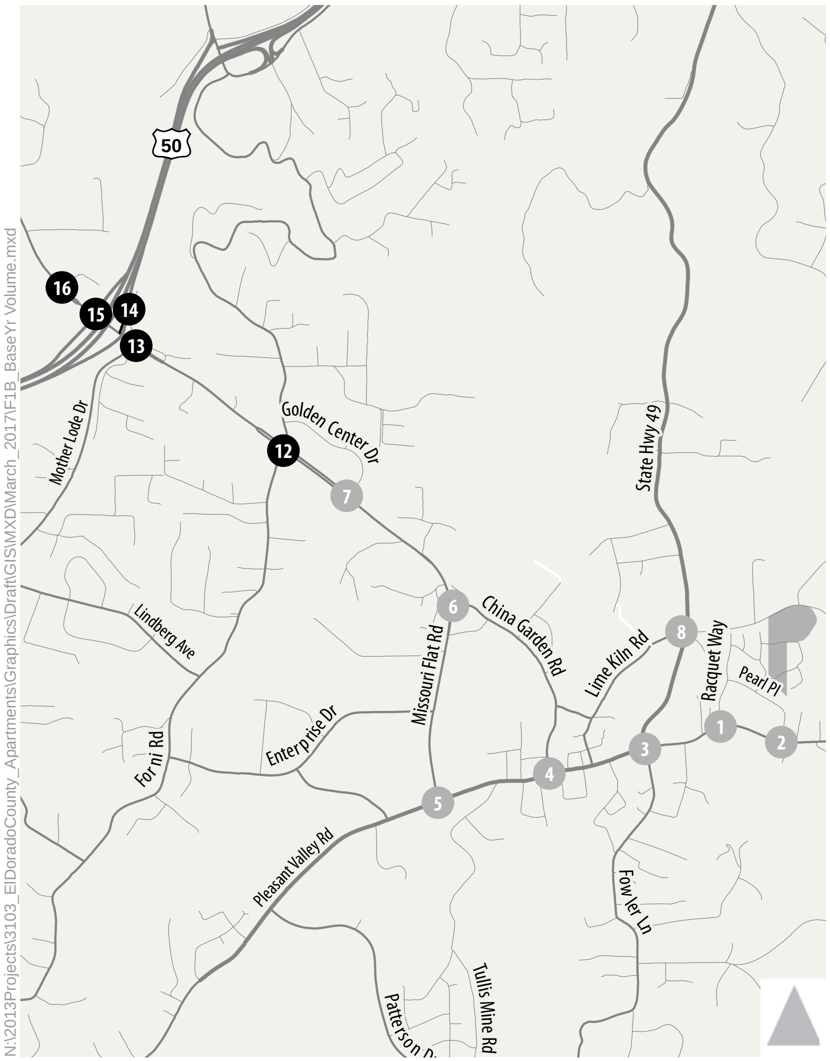
Traffic counts at some of the study intersections were collected during the summer (July). In order to scale these traffic volumes to reflect non-summer conditions, traffic counts were collected at the Pleasant Valley Road (SR 49)/Diamond Road (SR 49) intersection in May and July in order to create a factor and adjust the volumes. The existing traffic volumes were balanced between intersections where appropriate to account for any differences associated with counts being collected on different days. The AM peak hour of the study intersections is generally between 7:15 AM and 8:15 AM. The PM peak hour of the study intersections is generally between 4:30 PM and 5:30 PM. Figure 1 shows the peak hour traffic volumes, lane configurations and traffic controls at each of the study intersections.

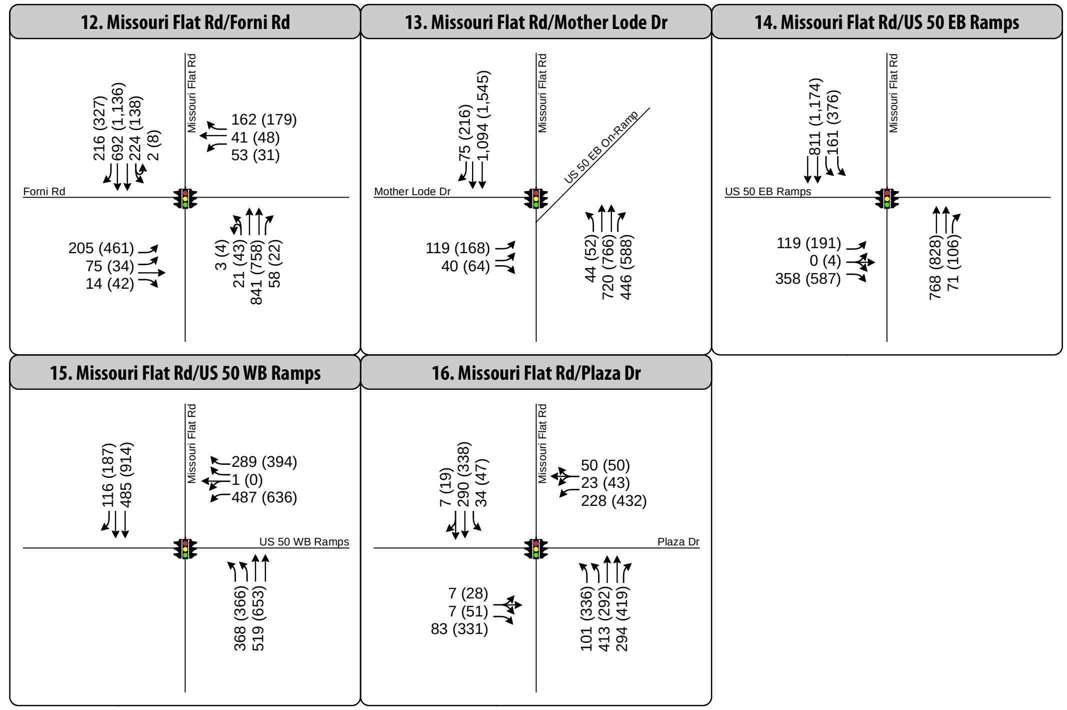



- Study Intersection
- Study Intersection shown in Figure 1B
- Project Site
- Turn Lane
- AM (PM) Peak Hour Traffic Volume
- Traffic Signal
- Stop Sign

Figure 1A

# Peak Hour Traffic Volumes and Lane Configurations - Existing Conditions




10 Study Intersection

1 Study Intersection shown in Figure 1

Project Site

Turn Lane

AM (PM) Peak Hour Traffic Volume

Traffic Signal

Stop Sign

Figure 1B

# Peak Hour Traffic Volumes and Lane Configurations - Existing Conditions

# EXISTING CONDITIONS PEAK HOUR VEHICLE LEVEL OF SERVICE

## INTERSECTIONS

Table 3 summarizes existing conditions AM and PM peak hour LOS for the study intersections. The LOS of a facility is a qualitative measure used to describe operating conditions. LOS ranges from A (best), which represents short delays, to LOS F (worst), which represents long delays and a facility that is operating at or near its functional capacity. Detailed LOS analysis sheets are contained in Appendix A. See Table 1 for a definition of LOS as it relates to intersection delay. As shown in Table 3, the Pleasant Valley Road/Racquet Way and Missouri Flat Road/China Garden Road intersections operate at LOS F during the PM peak hour. The remaining study intersections operate at LOS E or better during the AM and PM peak hours.

**TABLE 3 PEAK HOUR INTERSECTION LEVEL OF SERVICE – EXISTING CONDITIONS**

| Intersection | Control | AM Peak Hour | | PM Peak Hour | |
|---|---|---|---|---|---|
| | | Delay[1] | LOS | Delay[1] | LOS |
| 1. Pleasant Valley Road/Racquet Way | SSSC | 39 | E | **191** | **F** |
| 2. Pleasant Valley Road/Pearl Place | SSSC | 24 | C | 28 | D |
| 3. Pleasant Valley Road (SR 49)/Diamond Road (SR 49) | Signal | 22 | C | 16 | B |
| 4. Pleasant Valley Road (SR 49)/China Garden Road | SSSC | 23 | C | 25 | D |
| 5. Pleasant Valley Road (SR 49)/Missouri Flat Road | Signal | 12 | B | 41 | D |
| 6. Missouri Flat Road/China Garden Road | SSSC | 49 | E | **108** | **F** |
| 7. Missouri Flat Road/Golden Center Drive | Signal | 10 | B | 14 | B |
| 8. Diamond Road/Lime Kiln Road/ Black Rice Road | SSSC | 7 | A | 17 | B |
| 12. Missouri Flat Road/Forni Road | Signal | 23 | C | 29 | C |
| 13. Missouri Flat Road/Mother Lode Drive | Signal | 10 | B | 12 | B |
| 14. Missouri Flat Road/US 50 EB Ramps | Signal | 19 | B | 28 | C |
| 15. Missouri Flat Road/US 50 WB Ramps | Signal | 26 | C | 28 | C |
| 16. Missouri Flat Road/Plaza Drive | Signal | 17 | B | 25 | C |

Notes: SSSC = side street stop control, AWSC = all way stop control, N/A = Not Applicable (future intersection)
[1] For signalized and all-way stop controlled intersections, average intersection delay is reported in seconds per vehicle for the overall intersection. For unsignalized (side street stop controlled) intersections, average intersection delay is reported in seconds per vehicle for the overall intersection (worst movement). All results are rounded to the nearest second.
**Bold** text indicates LOS worse than established threshold.
Source: Fehr & Peers, 2015

## ROADWAY SEGMENTS

Table 4 summarizes existing conditions AM and PM peak hour LOS for the study roadway segments. All of the study roadway segments operate at acceptable levels (LOS E or better) during the AM and PM peak hours. Detailed LOS analysis sheets are provided in Appendix A. See Table 2 for a definition of LOS as it relates to roadway segments.

**TABLE 4 PEAK HOUR ROADWAY SEGMENT LEVEL OF SERVICE – EXISTING CONDITIONS**

| Roadway Segment | Classification | AM Peak Hour | | | PM Peak Hour | | |
|---|---|---|---|---|---|---|---|
| | | Peak Hour Volume[1] | LOS | v/c Ratio[2] | Peak Hour Volume[1] | LOS | v/c Ratio[2] |
| Missouri Flat Road – Golden Center Drive to US 50 | 4AU | 1,650 | C[3] | 0.53 | 1,900 | D | 0.61 |
| Missouri Flat Road – Pleasant Valley Road (SR 49) to Golden Center Dr | 2A | 1,290 | D | 0.78 | 1,540 | D | 0.93 |
| Pleasant Valley Road (SR 49) – Missouri Flat Road to SR 49 (West) | 2A | 1,090 | D | 0.66 | 1,070 | D | 0.65 |
| Pleasant Valley Road (SR 49) – Diamond Road (SR 49) to Missouri Flat Rd | 2A | 1,320 | D | 0.80 | 1,570 | E | 0.95 |
| Pleasant Valley Road (SR 49) – Canyon Valley Road to Diamond Road (SR 49) | 2A | 1,200 | D | 0.73 | 1,280 | D | 0.78 |
| Pleasant Valley Road (SR 49) – Big Cut Road to Canyon Valley Road | 2A | 1,070 | D | 0.65 | 1,100 | D | 0.67 |
| Diamond Road (SR 49) – Pleasant Valley Road to Happy Lane | 2A | 450 | C[3] | 0.27 | 930 | D | 0.56 |
| Diamond Road (SR 49) – Diamond Springs Parkway to Bradley Drive | 2A | 570 | C[3] | 0.35 | 790 | C[3] | 0.48 |
| China Garden Road – Missouri Flat Road to China Garden Court | 2A | 240 | C[3] | 0.15 | 330 | C[3] | 0.20 |
| Diamond Springs Parkway – Throwita Way to Missouri Flat Road | NA | NA | NA | NA | NA | NA | NA |

Notes: 4AU = Four-Lane Arterial, Undivided, 2A = Two-Lane Arterial, NA = Not Applicable (future roadway)
[1] Two-way peak hour traffic volume
[2] v/c = volume-to-capacity
[3] LOS at this location is C or better
Source: Fehr & Peers, 2015

## PEDESTRIAN CIRCULATION

Pedestrian facilities are limited near the project, with sporadic sections of sidewalk Pearl Place and Diamond Road (SR 49). There are a small number of very short segments of sidewalk on Pleasant Valley Road (SR 49) between China Garden Road and Diamond Road (SR 49). A short segment of sidewalk also exists on the west side of Missouri Flat Road north of Pleasant Valley Road adjacent to the Missouri Flat Storage Depot.

## BICYCLE CIRCULATION

Bicycle facilities are classified into three categories:

- Class I Bicycle Path – Off-street bike paths within exclusive right-of-way; usually shared with pedestrians
- Class II Bicycle Lane – Striped on-road bike lanes adjacent to the outside travel lane on preferred corridors for biking
- Class III Bicycle Route – Shared on-road facility, usually delineated by signage and pavement markings

In the study area, according to the *El Dorado Bicycle Transportation Plan, 2010 Update (El Dorado County Transportation Commission)* and field observations, the following major bikeway facilities are present within the study area:

- Class II bicycle lanes on Missouri Flat Road between Plaza Drive and Golden Center Drive.
- Class I bicycle path (El Dorado Trail) between Missouri Flat Road Diamond Road. The trail connects to the east side of Missouri Flat Road and extends northeast to Forni Road near the El Dorado County Jail in Placerville, California.

Class II bicycle lanes are planned (where they do not currently exist) for Pleasant Valley Road, Diamond Road, Missouri Flat Road, and the future Diamond Springs Parkway.

## TRANSIT

Transit service in El Dorado County is provided by the El Dorado County Transit Authority (El Dorado Transit), which offers local fixed route, regional commuter route, dial-a-ride, and paratransit service. There are seven local fixed routes, four of which have stops on Missouri Flat Road and/or Pleasant Valley Road.

The Diamond Springs route runs from Folsom Lake College – El Dorado Center north of US 50, along Missouri Flat Road, to Pleasant Valley Road. The Diamond Springs route travels along Pleasant Valley Road between Oriental Street and Pearl Place. Weekday service is provided from 7:00 AM to 6:48 PM with one hour headways. The project is served by the Diamond Springs Line (Routh 30/35) and a bus stop is located within 500 feet of the project.

The Placerville route runs from the Missouri Flat Transfer Station to the Gold Country Inn in Placerville. Weekday service is provided from 7:00 AM to 7:00 PM with one hour headways.

The 50 Express route is a commuter route that runs from the Missouri Flat Transfer Station to the Folsom Iron Point light rail station. Weekday service is provided from 6:00 AM to 7:00 PM with one hour headways.

The Sacramento Commuter provides 11 morning trips and 11 afternoon trips between El Dorado County and downtown Sacramento. Weekday service is provided in the morning from 5:00 AM to 10:30 AM and in the afternoon from 2:00 PM to 6:30 PM.

# EXISTING PLUS PROJECT CONDITIONS

## TRIP GENERATION

Trip generation estimates were calculated based on methodologies and trip generation equations presented in the Institute of Transportation Engineers' *Trip Generation Manual*, 9th Edition. Table 5 shows the AM and PM peak hour trip generation estimates for the proposed project. As shown in the table, the project will generate 43 AM peak hour trips and 62 PM peak hour trips.

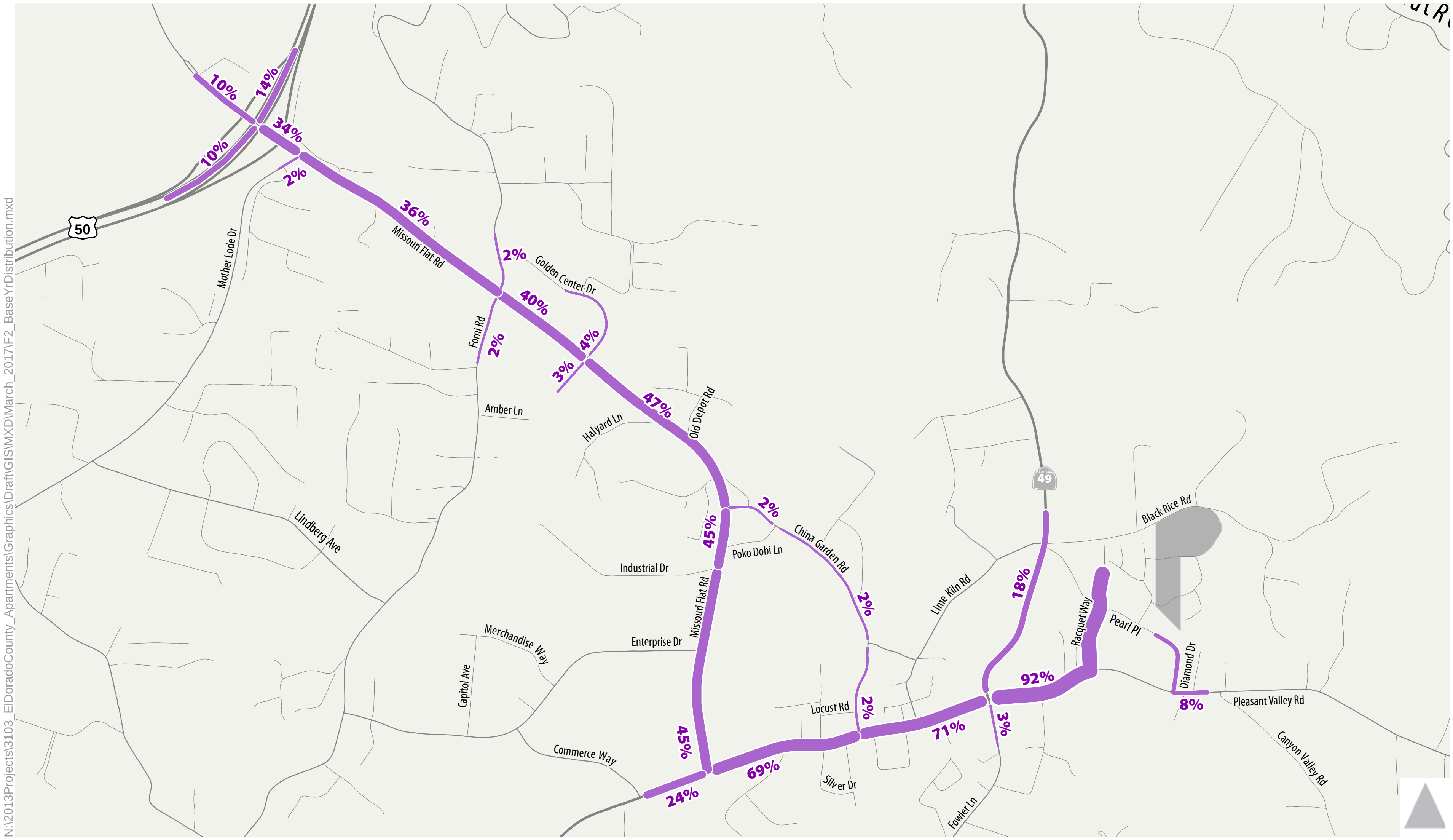
**TABLE 5 PROJECT TRIP GENERATION**

| Land Use | Quantity | AM Trips[1] | | | PM Trips[2] | | |
|---|---|---|---|---|---|---|---|
| | | Total | In | Out | Total | In | Out |
| Apartment (220) | 81 | 43 | 9 | 34 | 62 | 40 | 22 |

Notes: [1] AM trips calculated based on T=0.49(X)+3.73 (with 20% entering and 80% exiting). PM trips calculated based on T=0.55(X)+17.65 (with 65% entering and 35% exiting).
Source: Fehr & Peers, 2015

## TRIP DISTRIBUTION AND ASSIGNMENT

The expected distribution of project trips was developed using the El Dorado County travel demand model. A select zone analysis of the project traffic analysis zone (TAZ) was performed to determine how vehicles travelling to and from the proposed project would interact with nearby land uses and use the surrounding roadway network. Figure 2 shows the existing conditions project trip distribution for the project. As shown in the figure, approximately 40 percent of the project trips will travel north on Missouri Flat Road, 8 percent will travel east on Pleasant Valley Road (SR 49), 24 percent will travel west on Pleasant Valley Road (SR 49), 18 percent travel north on Diamond Road (SR 49), and 10 percent will remain on the local roads within Diamond Springs. Figure 3 shows the corresponding AM and PM peak hour intersection turning movement forecasts for Existing Plus Project conditions.




21% Trip Distribution

Project Site

Figure 2

## Peak Hour Trip Distribution - Existing Conditions

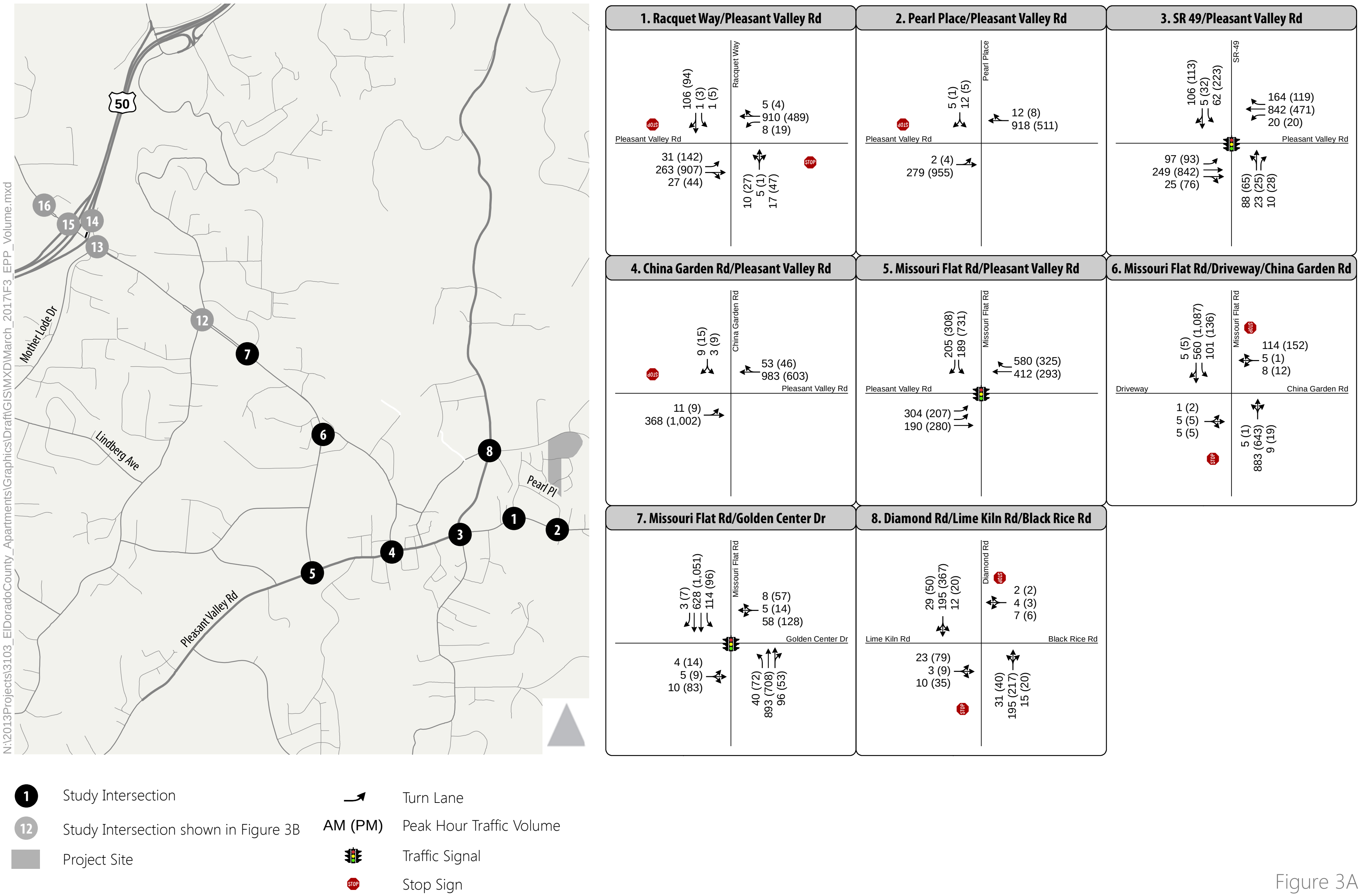
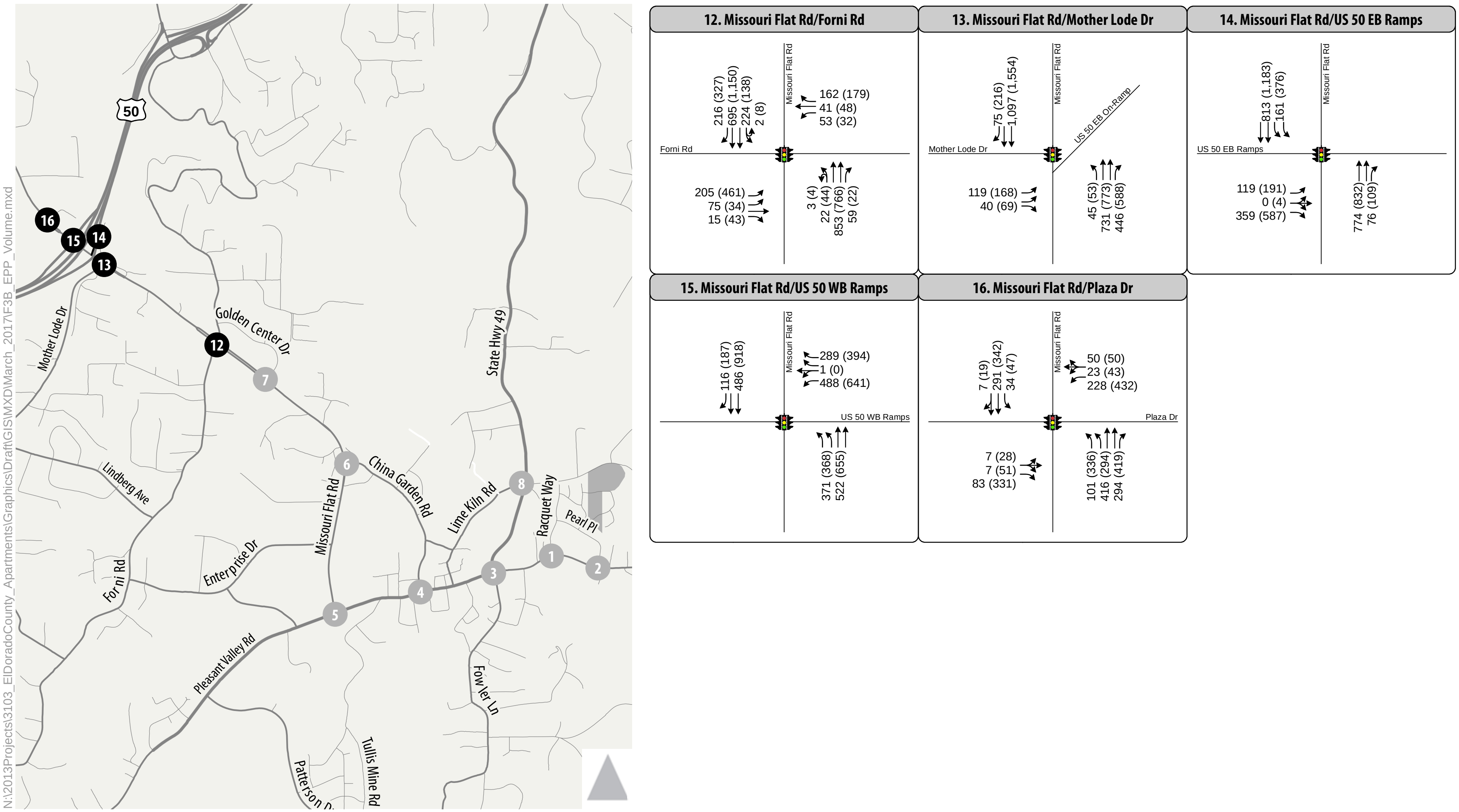



Figure 3A

# Peak Hour Traffic Volumes and Lane Configurations - Existing Plus Project Conditions




- 12 Study Intersection
- 1 Study Intersection shown in Figure 3
- Project Site
- Turn Lane
- AM (PM) Peak Hour Traffic Volume
- Traffic Signal
- Stop Sign

Figure 3B

# Peak Hour Traffic Volumes and Lane Configurations - Existing Plus Project Conditions

# PEAK HOUR VEHICLE LEVEL OF SERVICE

Project generated traffic volumes were added to the existing traffic volumes at the study intersections and roadway segments for the existing plus project conditions analysis.

## INTERSECTIONS

Analysis results, which are presented in Table 6, indicate that most study intersections will operate acceptably, except for the side street stop controlled Pleasant Valley Road/Racquet Way and Missouri Flat Road/China Garden Road intersections, which will operate at LOS F during the PM peak hour. Traffic generated by the project will result in potential impacts at the following locations:

- Pleasant Valley Road/Racquet Way (intersection 1) – This intersection operates at LOS F without the project. The project adds more than 100 seconds of delay to the side street approach during the PM peak hour. According to established significance criteria, the project is projected to "worsen" conditions, since it would add more than 10 trips and increase the overall intersection volume by more than 2 percent during the PM peak hour.
- Missouri Flat Road/China Garden Road (intersection 6) – This location operates at LOS F without the project. The project will increase delay at the intersection by 3 seconds during the PM peak hour. Based on established significance criteria, the project is projected to "worsen" conditions, since it would add more than 10 trips to the intersection during the PM peak hour.

| TABLE 6 PEAK HOUR INTERSECTION LEVEL OF SERVICE – EXISTING PLUS PROJECT CONDITIONS | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Intersection** | **Control** | **Existing** | | | | **Existing Plus Project** | | | |
| | | **AM Peak Hour** | | **PM Peak Hour** | | **AM Peak Hour** | | **PM Peak Hour** | |
| | | **Delay[1]** | **LOS** | **Delay[1]** | **LOS** | **Delay[1]** | **LOS** | **Delay[1]** | **LOS** |
| 1. Pleasant Valley Road/Racquet Way | SSSC | 39 | E | **191** | **F** | 41 | E | ***>300*** | ***F*** |
| 2. Pleasant Valley Road/Pearl Place | SSSC | 24 | C | 28 | D | 26 | D | 33 | D |
| 3. Pleasant Valley Road (SR 49)/Diamond Road (SR 49) | Signal | 22 | C | 16 | B | 24 | C | 17 | B |
| 4. Pleasant Valley Road (SR 49)/China Garden Road | SSSC | 23 | C | 25 | D | 24 | C | 27 | D |
| 5. Pleasant Valley Road (SR 49)/Missouri Flat Road | Signal | 12 | B | 41 | D | 12 | B | 50 | D |
| 6. Missouri Flat Road/China Garden Road | SSSC | 49 | E | **108** | **F** | 49 | E | ***111*** | ***F*** |
| 7. Missouri Flat Road/Golden Center Drive | Signal | 10 | B | 14 | B | 12 | B | 16 | B |
| 8. Diamond Road/Lime Kiln Road/ Black Rice Road | SSSC | 13 | B | 22 | C | 13 | B | 23 | C |
| 12. Missouri Flat Road/Forni Road | Signal | 23 | C | 29 | C | 21 | C | 26 | C |
| 13. Missouri Flat Road/Mother Lode Drive | Signal | 10 | B | 12 | B | 10 | B | 12 | B |
| 14. Missouri Flat Road/US 50 EB Ramps | Signal | 19 | B | 28 | C | 19 | B | 28 | C |
| 15. Missouri Flat Road/US 50 WB Ramps | Signal | 26 | C | 28 | C | 27 | B | 29 | C |
| 16. Missouri Flat Road/Plaza Drive | Signal | 17 | B | 25 | C | 17 | B | 25 | C |

Notes: SSSC = side street stop control, AWSC = all way stop control, N/A = Not Applicable (future intersection)
[1] For signalized and all-way stop controlled intersections, average intersection delay is reported in seconds per vehicle for the overall intersection. For unsignalized (side street stop controlled) intersections, average intersection delay is reported in seconds per vehicle for the overall intersection (worst movement). All results are rounded to the nearest second.
**Bold** text indicates LOS worse than established threshold. *Italic and underlined* text identifies a potential impact.
Source: Fehr & Peers, 2015

## VEHICLE QUEUING

Table 7 shows the average maximum queue length for selected movements in the project area under existing plus project conditions.

**TABLE 7 AVERAGE MAXIMUM QUEUE LENGTH – EXISTING PLUS PROJECT CONDITIONS**

| Intersection | Movement | Storage Length [feet] | PM Peak Hour |
|---|---|---|---|
| 12. Missouri Flat Road/Forni Road | EB LT | 200 | **<u>400</u>** |
| | EB TH | >1,000 | 550 |
| | EB RT | 160 | **<u>200</u>** |
| | NB LT | 240 | **<u>350</u>** |
| | NB TH | 1,025 | 575 |
| | NB RT | 160 | **<u>250</u>** |
| | WB LT | 200 | 125 |
| | WB TH | >1,000 | 175 |
| | WB RT | 200 | **<u>250</u>** |
| | SB LT | 300 | **<u>400</u>** |
| | SB TH | 2,315 | 1,325 |
| | SB RT | 160 | **<u>250</u>** |
| 13. Missouri Flat Road/Mother Lode Drive | NB TH | 2,315 | 500 |
| 14. Missouri Flat Road/US 50 EB Ramps | EB LT | 1,150 | 900 |
| | EB RT | 550 | **<u>775</u>** |
| | NB TH | 175 | **<u>225</u>** |
| | NB RT | 80 | **<u>200</u>** |
| | SB LT | 140 | **<u>250</u>** |
| | SB TH | 450 | **<u>500</u>** |
| 15. Missouri Flat Road/US 50 WB Ramps | NB LT | 140 | **<u>250</u>** |
| | NB TH | 450 | 400 |
| | WB LT/TH | 1,475 | 975 |
| | WB RT | 1,475 | 775 |
| | SB TH | 450 | **<u>500</u>** |
| | SB RT | 380 | **<u>450</u>** |

Notes: **<u>Bold and underline</u>** font indicate a queue that exceeds the storage length.
Source: Fehr & Peers, 2015

## ROADWAY SEGMENTS

Analysis results, which are presented in Table 8, indicate that all study roadway segments will operate acceptably during the AM and PM peak hours.

**TABLE 8 PEAK HOUR ROADWAY SEGMENT LEVEL OF SERVICE – EXISTING PLUS PROJECT CONDITIONS**

| Roadway Segment | Classification | Existing | | | | | | Existing Plus Project | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | AM Peak Hour | | | PM Peak Hour | | | AM Peak Hour | | | PM Peak Hour | | |
| | | Vol[1] | LOS | v/c[2] | Vol[1] | LOS | v/c[2] | Vol[1] | LOS | v/c[2] | Vol[1] | LOS | v/c[2] |
| Missouri Flat Road – Golden Center Drive to US 50 | 4AU | 1,650 | C[3] | 0.53 | 1,900 | D | 0.61 | 1,675 | C[3] | 0.54 | 1,934 | D | 0.62 |
| Missouri Flat Road – Pleasant Valley Road (SR 49) to Golden Center Dr | 2A | 1,290 | D | 0.78 | 1,540 | D | 0.93 | 1,318 | D | 0.80 | 1,578 | E | 0.96 |
| Pleasant Valley Road (SR 49) – Missouri Flat Road to SR 49 (West) | 2A | 1,090 | D | 0.66 | 1,070 | D | 0.65 | 1,105 | D | 0.67 | 1,090 | D | 0.66 |
| Pleasant Valley Road (SR 49) – Diamond Road (SR 49) to Missouri Flat Rd | 2A | 1,320 | D | 0.80 | 1,570 | E | 0.95 | 1,364 | D | 0.83 | 1,629 | E | 0.99 |
| Pleasant Valley Road (SR 49) – Canyon Valley Road to Diamond Road (SR 49) | 2A | 1,200 | D | 0.73 | 1,280 | D | 0.78 | 1,205 | D | 0.73 | 1,287 | D | 0.78 |
| Pleasant Valley Road (SR 49) – Big Cut Road to Canyon Valley Road | 2A | 1,070 | D | 0.65 | 1,100 | D | 0.67 | 1,075 | D | 0.65 | 1,107 | D | 0.67 |
| Diamond Road (SR 49) – Pleasant Valley Road to Happy Lane | 2A | 450 | C[3] | 0.27 | 930 | D | 0.56 | 461 | C[3] | 0.28 | 945 | D | 0.57 |
| Diamond Road (SR 49) – Diamond Springs Parkway to Bradley Drive | 2A | 570 | C[3] | 0.35 | 790 | C[3] | 0.48 | 581 | C[3] | 0.35 | 805 | C[3] | 0.49 |
| China Garden Road – Missouri Flat Road to China Garden Court | 2A | 240 | C[3] | 0.15 | 330 | C[3] | 0.20 | 241 | C[3] | 0.15 | 332 | C[3] | 0.20 |
| Diamond Springs Parkway – Throwita Way to Missouri Flat Road | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |

Notes: 4AU = Four-Lane Arterial, Undivided, 2A = Two-Lane Arterial, NA = Not Applicable (future roadway)
[1] Two-way peak hour traffic volume
[2] v/c = volume-to-capacity ratio
[3] LOS at this location is C or better
**Bold** text indicates LOS worse than established threshold. *Italic and underlined* text identifies a potential impact.
Source: Fehr & Peers, 2015

# CUMULATIVE CONDITIONS

This section presents the development and analysis of cumulative conditions.

## TRAVEL DEMAND FORECASTS

For this project, a modified version of the El Dorado County Travel Demand Forecasting Model (EDC-CAT_7525_090514) was used to develop traffic volume forecasts in the study area. The base year model validation for study area roadways was documented in a technical report for the Diamond Springs and El Dorado Area Mobility and Livable Community Plan (Fehr & Peers, February 2014), and is presented again below. As is standard practice with large area travel demand models, a thorough model review was completed and the model was refined to ensure that it produced reasonable results in the study area.

The following refinements were implemented in the study area:

- Added roadway network detail
- Updated land use to reflect existing commercial (i.e., retail and office) employment along the Missouri Flat Road corridor (i.e., near the US 50 interchange). Employment calculated was based on measured building area, existing land uses, and industry employment yields for retail and office land use, resulting in the addition of about 510 employees.
- Updated network attributes in the study area to reflect existing conditions (e.g. verified roadway network speeds, number of lanes on the roadway, and roadway capacities to reflect existing conditions)
- Updated the future year roadway network in the study area to reflect the County's Capital Improvement Program (2015 CIP)

Specific information related to the model's performance is described below.

### BASE YEAR MODEL VALIDATION

Before any model can be applied for use in a major specific plan application, it must first be evaluated to determine how the model performs relative to validation targets identified by Caltrans, the Federal Highways Administration (FHWA), and the California Transportation Commission (CTC). These targets were developed to ensure that a model is developed such that it can accurately forecast existing conditions based on land use and roadway network information, which improves the model's ability to accurately forecast future conditions. The state-of-the-practice is to use a valid base year model when developing defensible forecasts for changes in the roadway network and/or changes in proposed land use.

### Static Validation

The first step of any model validation is to ensure that the model generally produces similar results to existing counts. Please note that, since the model is being used to generate AM peak hour and PM peak hour forecasts, the model must be valid at our study facilities for both time periods.

Key metrics for model validation guidelines are described below:

- The volume-to-count ratio is computed by dividing the volume assigned by the model and the actual traffic count for individual roadways (or intersections). The volume-to-count ratio should be less than 10%.
- The deviation is the difference between the model volume and the actual count divided by the actual count. Caltrans provides guidance on the maximum allowable deviation by facility type (e.g. lower-volume roadways can have a higher deviation than higher-volume roadways). 75% of the study facilities should be within the maximum allowable deviation.
- The correlation coefficient estimates the correlation between the actual traffic counts and the estimated traffic volumes from the model. The correlation coefficient should be greater than 0.88.
- The percent Root Mean Square Error (RMSE) is the square root of the model volume minus the actual count squared divided by the number of counts. It is a measure similar to standard deviation in that it assesses the accuracy of the entire model. The RMSE should be less than 40%.

The model validation statistics are summarized in Table 9. As shown in Table 9, the model satisfies the identified model validation targets in the study area. As such, the model is deemed appropriate for use in this assessment.

| TABLE 9 TRAVEL DEMAND FORECASTING MODEL SUBAREA STATIC VALIDATION | | |
|---|---|---|
| **Metric** | **Model Performance** | **Performance Target** |
| ***AM Peak Hour*** | | |
| Model/Count Ratio | 0.97 | Between 0.90 and 1.10 |
| Percent Within Caltrans Maximum Deviation | 95% | > 75% |
| Percent Root Mean Square Error | 20% | < 40% |
| Correlation Coefficient | 0.97 | > 0.88 |
| ***PM Peak Hour*** | | |
| Model/Count Ratio | 1.00 | Between 0.90 and 1.10 |
| Percent Within Caltrans Maximum Deviation | 92% | > 75% |
| Percent Root Mean Square Error | 21% | < 40% |
| Correlation Coefficient | 0.96 | > 0.88 |
| Source: Fehr & Peers, 2015 | | |

### Dynamic Validation

Dynamic validation evaluates how a travel demand forecasting model responds to changes to model inputs. For this project, the El Dorado County travel demand model was used to develop forecasts for the study area (i.e., roadways and intersections) in response to planned population and employment growth and planned transportation improvements. Therefore, the dynamic validation focused on reviewing how the traffic model responded (i.e., in direction and magnitude) to changes to roadway network and land use inputs. The model responded in the correct direction and expected magnitude as inputs were changed. As such, the model is deemed appropriate for use in this assessment.

## FUTURE YEAR MODELING ASSUMPTIONS

All modifications incorporated into the validated Base Year model were incorporated into the future year (2035) travel demand forecasting model. Additionally, as previously mentioned, the model was also updated to include only the County's 2015 CIP.

As described above, the validated El Dorado County model was used to develop AM and PM peak hour forecasts for Cumulative No Project conditions, which corresponds to a 2035 horizon year that accounts for planned (and funded) roadway improvements, land use growth consistent with the 2004 General Plan, and with approved and reasonably foreseeable projects in the study area (based on coordination with the Missouri Flat Area Master Plan Circulation and Financing Plan Phase II), including the following:

- Crossings at El Dorado
- Social Security Administration Office
- Public Safety Facility
- Diamond Dorado Retail Center
- Creekside Plaza
- New Placerville Courthouse
- Piedmont Oaks

Consistent with accepted travel demand forecasting practice, model error was corrected using the methodologies identified in the National Cooperative Highway Research Program Report 255 (Transportation Research Board, 1982) using the "difference method" (e.g., add model predicted growth to existing volumes) for roadway segments and intersections.

Under cumulative conditions, the future Diamond Springs Parkway is expected to be constructed; therefore, the project trip distribution will change. Project trips were added to the study intersection using the trip distribution show on Figure 4. As shown in the figure, the overall distribution will remain the same, however approximately 19 percent of trips will use Diamond Springs Parkway rather than Pleasant Valley Road to travel north on Missouri Flat Road. Figures 5A and 5B present AM and PM peak hour traffic volume forecasts under Cumulative conditions.

# PEAK HOUR VEHICLE LEVEL OF SERVICE

## INTERSECTIONS

Table 10 summarizes the AM and PM peak hour intersection operations under cumulative plus project conditions. The analysis results indicate that three study intersections will operate acceptably during the AM peak hour and four study intersections will operate acceptably during the PM peak hour. Traffic generated by the project will result in potential impacts at the following locations:

- Pleasant Valley Road/Racquet Way (Intersection 1) – This intersection will operate at LOS F under cumulative plus project conditions during the AM and PM peak hours. According to established significance criteria, the project is projected to "significantly worsen" conditions, since it would add more than 10 trips and increase the overall intersection volume by more than 2 percent during the AM and PM peak hours.
- Pleasant Valley Road /Pearl Place (Intersection 2) – This intersection will operate at LOS F under cumulative plus project conditions during the AM and PM peak hours. According to established

significance criteria, the project is not projected to "significantly worsen" conditions, since it would add less than 10 trips during the AM and PM peak hours.

- Missouri Flat Road/China Garden Road (Intersection 6) – This intersection will operate at LOS F under cumulative plus project conditions during the AM and PM peak hours. According to established significance criteria, the project is projected to "significantly worsen" conditions, since it would add more than 10 trips during the PM peak hour.
- Missouri Flat Road/Forni Road (Intersection 12) – This intersection will operate at LOS F under cumulative plus project conditions during the PM peak hours. According to established significance criteria, the project is projected to "significantly worsen" conditions, since it would add more than 10 trips during the PM peak hour.
- Missouri Flat Road/Plaza Drive (Intersection 16) – This intersection will operate at LOS F under cumulative plus project conditions during the PM peak hours. According to established significance criteria, the project is not projected to "significantly worsen" conditions, since it would add less than 10 trips during the PM peak hour.

**TABLE 10 PEAK HOUR INTERSECTION LEVEL OF SERVICE – CUMULATIVE CONDITIONS**

| Intersection | Control | Cumulative Plus Project | | | |
|---|---|---|---|---|---|
| | | AM Peak Hour | | PM Peak Hour | |
| | | Delay[1] | LOS | Delay[1] | LOS |
| 1. Pleasant Valley Road/Racquet Way | SSSC | ***>300*** | ***F*** | ***>300*** | ***F*** |
| 2. Pleasant Valley Road/Pearl Place | SSSC | ***100*** | ***F*** | ***104*** | ***F*** |
| 3. Pleasant Valley Road (SR 49)/Diamond Road (SR 49) | Signal | 74 | E | 35 | D |
| 4. Pleasant Valley Road (SR 49)/China Garden Road | SSSC | 26 | D | 21 | C |
| 5. Missouri Flat Road /Pleasant Valley Road (SR 49) | Signal | 15 | B | 22 | C |
| 6. Missouri Flat Road /China Garden Road | SSSC | ***53*** | ***F*** | E | 48 |
| 7. Missouri Flat Road /Golden Center Drive | Signal | 20 | C | 29 | C |
| 8. Diamond Road (SR 49)/Lime Kiln Road/Black Rice Road | SSSC | 7 | A | 11 | B |
| 9. Missouri Flat Road /Diamond Springs Parkway | Signal | 23 | C | 29 | C |
| 10. Diamond Springs Pkwy/Throwita Way | Signal | 18 | B | 23 | C |
| 11. Diamond Road (SR 49)/Diamond Springs Parkway | Signal | 24 | C | 35 | C |
| 12. Missouri Flat Road /Forni Road | Signal | 40 | D | ***112*** | ***F*** |
| 13. Missouri Flat Road /Mother Lode Drive | Signal | 15 | B | 31 | C |
| 14. Missouri Flat Road /US 50 EB Ramps | Signal | 22 | C | 50 | D |

| TABLE 10 PEAK HOUR INTERSECTION LEVEL OF SERVICE – CUMULATIVE CONDITIONS | | | | | |
|---|---|---|---|---|---|
| **Intersection** | **Control** | **Cumulative Plus Project** | | | |
| | | **AM Peak Hour** | | **PM Peak Hour** | |
| | | **Delay[1]** | **LOS** | **Delay[1]** | **LOS** |
| 15. Missouri Flat Road /US 50 WB Ramps | Signal | 21 | C | 72 | E |
| 16. Missouri Flat Road /Plaza Drive | Signal | 16 | B | ***166*** | ***F*** |

Notes: SSSC = side street stop control, AWSC = all way stop control
[1] For signalized and all-way stop controlled intersections, average intersection delay is reported in seconds per vehicle for the overall intersection. For unsignalized (side street stop controlled) intersections, average intersection delay is reported in seconds per vehicle for the overall intersection (worst movement). All results are rounded to the nearest second.
**Bold** text indicates LOS worse than established threshold. *Italic and underlined* text identifies a potential impact.
Source: Fehr & Peers, 2015

## VEHICLE QUEUING

Table 11 shows the average maximum queue length for selected movements in the project area under cumulative plus project conditions.

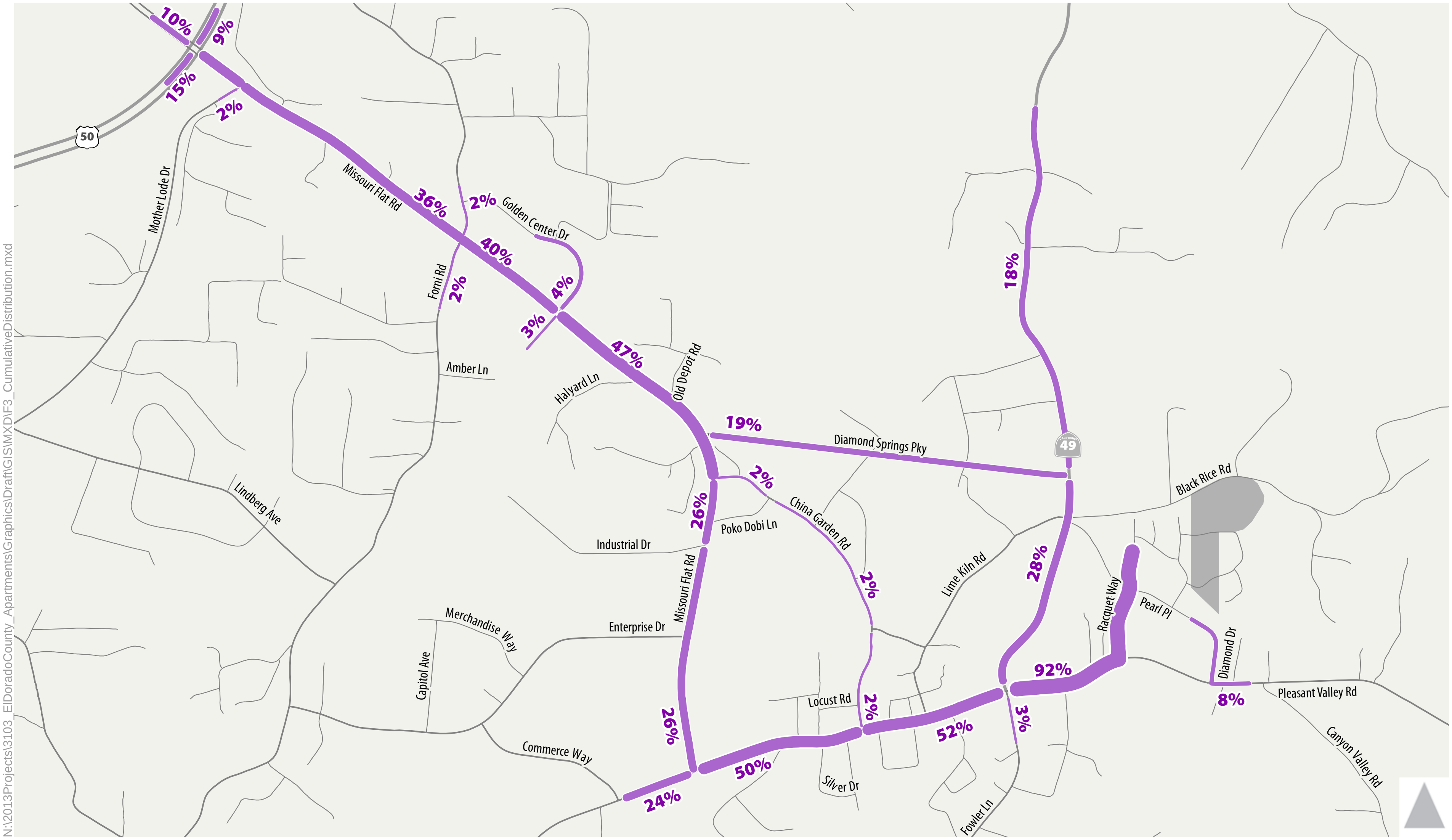
| TABLE 11 AVERAGE MAXIMUM QUEUE LENGTH – CUMULATIVE PLUS PROJECT CONDITIONS | | | |
|---|---|---|---|
| **Intersection** | **Movement** | **Storage Length [feet]** | **PM Peak Hour** |
| 15. Missouri Flat Road/US 50 WB Ramps | NB LT | 140 | **250** |
| | NB TH | 450 | 425 |
| | WB LT | 1,475 | 825 |
| | WB RT | 1,475 | 870 |
| | SB TH | 450 | **500** |
| | SB RT | 380 | **450** |
| 14. Missouri Flat Road/US 50 EB Ramps | EB LT | 1,150 | 500 |
| | EB RT | 550 | **750** |
| | NB TH | 175 | **200** |
| | NB RT | 80 | **175** |
| | SB LT | 140 | **250** |
| | SB TH | 450 | **500** |
| 13. Missouri Flat Road/Mother Lode Drive | NB TH | 2,315 | 525 |
| 12. Missouri Flat Road/Forni Road | EB LT | 200 | **400** |
| | EB TH | >1,000 | 800 |
| | EB RT | 160 | **200** |
| | NB LT | 240 | **350** |

| TABLE 11 AVERAGE MAXIMUM QUEUE LENGTH – CUMULATIVE PLUS PROJECT CONDITIONS | | | |
|---|---|---|---|
| **Intersection** | **Movement** | **Storage Length [feet]** | **PM Peak Hour** |
| | NB TH | 1,025 | 600 |
| | NB RT | 160 | **250** |
| | WB LT | 200 | 125 |
| | WB TH | >1,000 | 175 |
| | WB RT | 200 | **250** |
| | SB LT | 300 | **400** |
| | SB TH | 2,315 | **2,375** |
| | SB RT | 160 | **250** |
| 9. Missouri Flat Road/Diamond Springs Parkway | EB LT | 275 | **325** |
| | EB TH | 1,400 | 425 |
| | EB RT | 350 | **425** |
| | NB LT | 800 | 350 |
| | NB TH/RT | 315 | 225 |
| | WB LT | 430 | 175 |
| | WB TH | 2,250 | 275 |
| | WB RT | 180 | 100 |
| | SB LT/TH/RT | 200 | 100 |
| 10. Diamond Road (SR 49)/Diamond Springs Parkway | EB LT | 375 | 375 |
| | EB TH | 1,000 | 150 |
| | EB RT | 1,000 | 450 |
| | NB LT | 750 | 250 |
| | NB TH/RT | 750 | 350 |
| | WB LT/TH | 820 | 200 |
| | WB RT | 150 | 50 |
| | SB LT | 150 | **250** |
| | SB TH | 600 | 600 |
| | SB RT | 150 | **250** |

Notes: **Bold and underline** font indicate a queue that exceeds the storage length.
Source: Fehr & Peers, 2015

## ROADWAY SEGMENTS

Analysis results, which are presented in Table 12, indicate that most study roadway segments will operate acceptably during the AM and PM peak hours except for the segment of Missouri Flat Road from Diamond Springs Parkway to US 50, which will operate at LOS F (at the LOS E/LOSF threshold).



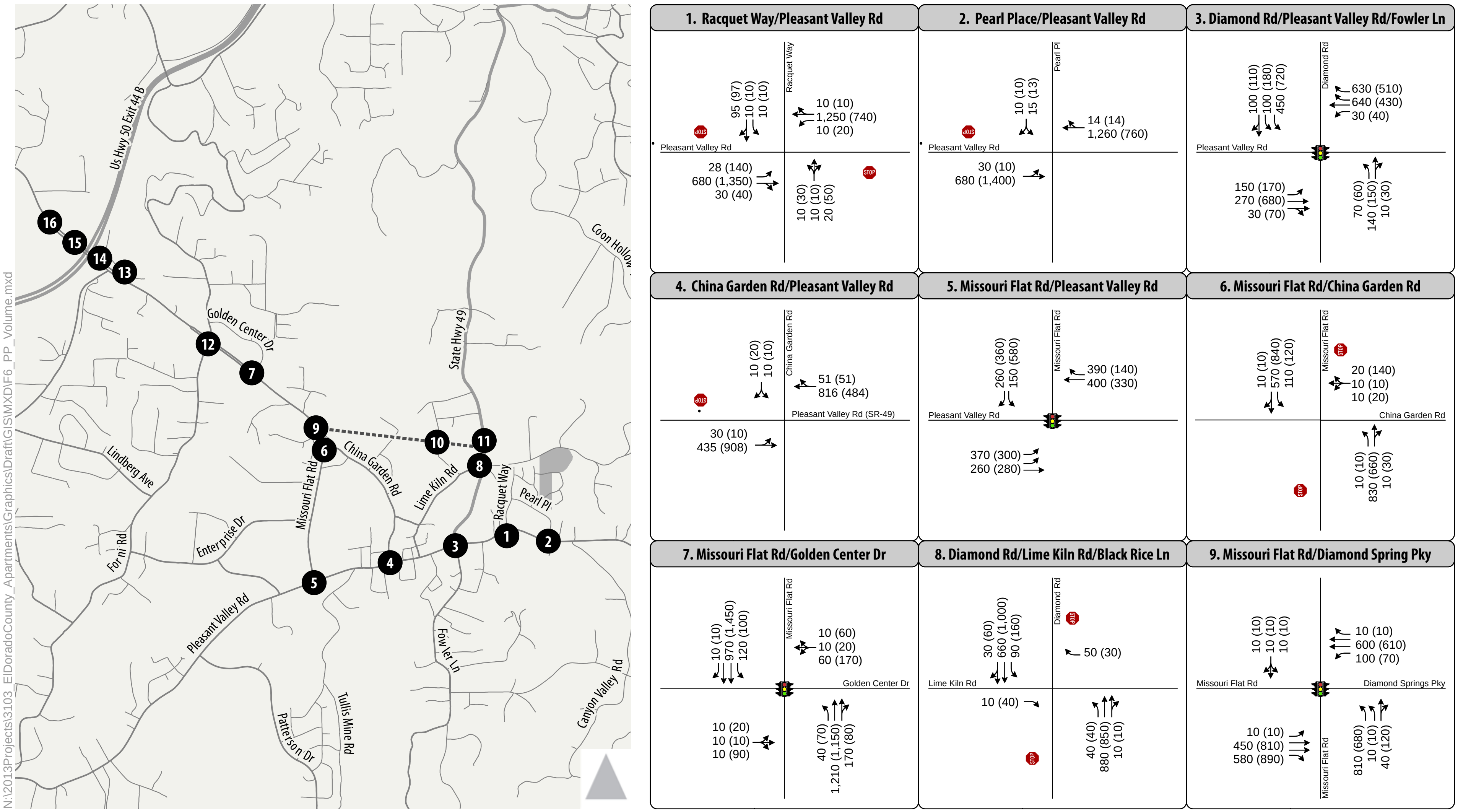

N:\2013Projects\3103_ElDoradoCounty_Apartments\Graphics\Draft\GIS\MXD\F3_CumulativeDistribution.mxd

21% Trip Distribution

Project Site

Figure 4

# Peak Hour Trip Distribution - Cumulative Conditions




Study Intersection

Planned Roadway

Project Site

Turn Lane

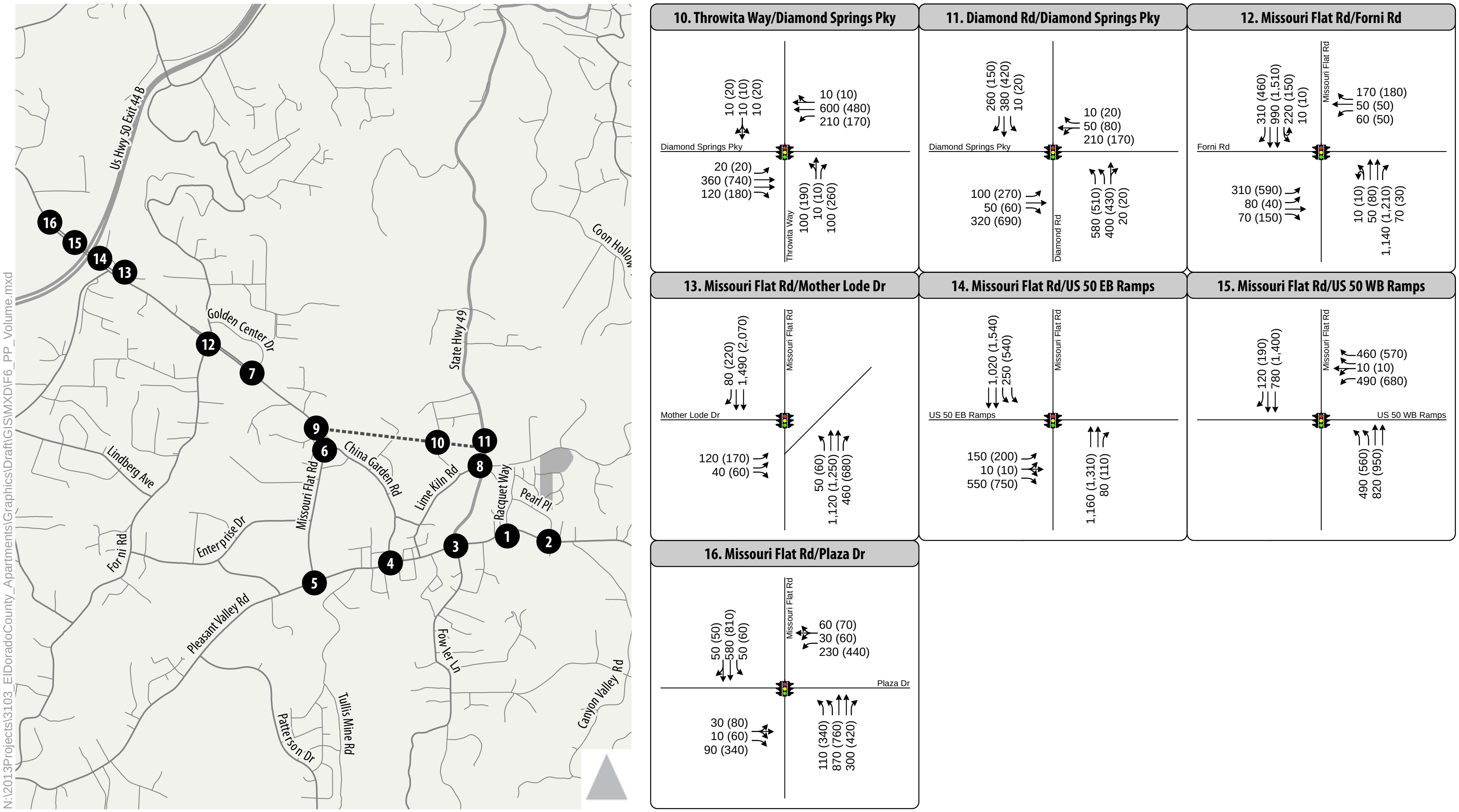
AM (PM) Peak Hour Traffic Volume

Traffic Signal

Stop Sign

Figure 5A

# Peak Hour Traffic Volumes and Lane Configurations - Cumulative Plus Project




Study Intersection
Planned Roadway
Project Site
Turn Lane
AM (PM) Peak Hour Traffic Volume
Traffic Signal
Stop Sign

Figure 5B

# Peak Hour Traffic Volumes and Lane Configurations - Cumulative Plus Project

**TABLE 12 PEAK HOUR ROADWAY SEGMENT LEVEL OF SERVICE – CUMULATIVE CONDITIONS**

| Roadway Segment | Classification | Cumulative Plus Project | | | | | |
|---|---|---|---|---|---|---|---|
| | | AM Peak Hour | | | PM Peak Hour | | |
| | | Vol[1] | LOS | v/c[2] | Vol[1] | LOS | v/c[2] |
| Missouri Flat Road – Diamond Springs Parkway to US 50[4] | 4AD | 2,650 | D | 0.81 | 3,300 | ***F*** | ***1.00*** |
| Missouri Flat Road – Pleasant Valley Road (SR 49) to Diamond Springs Parkway | 3A | 1,540 | B | 0.62 | 1,770 | C | 0.72 |
| Pleasant Valley Road (SR 49) – Missouri Flat Road to SR 49 (West) | 2A | 1,290 | C | 0.78 | 1,270 | C | 0.77 |
| Pleasant Valley Road (SR 49) – Diamond Road (SR 49) to Missouri Flat Road | 2A | 1,260 | C | 0.76 | 1,520 | D | 0.92 |
| Pleasant Valley Road (SR 49) – Canyon Valley Road to Diamond Road (SR 49) | 2A | 1,375 | D | 0.83 | 1,507 | D | 0.91 |
| Pleasant Valley Road (SR 49) – Big Cut Road to Canyon Valley Road | 2A | 1,255 | D | 0.76 | 1,337 | D | 0.81 |
| Diamond Road (SR 49) – Pleasant Valley Road to Happy Lane | 4AD | 1,570 | C[3] | 0.48 | 1,840 | C[3] | 0.56 |
| Diamond Road (SR 49) – Diamond Springs Parkway to Bradley Drive | 2A | 1,160 | D | 0.70 | 1,310 | D | 0.79 |
| China Garden Road – Missouri Flat Road to China Garden Court | 2A | 160 | C[3] | 0.10 | 320 | C[3] | 0.19 |
| Diamond Springs Parkway – Throwita Way to Missouri Flat Road | 4AD | 1,210 | C[3] | 0.37 | 1,630 | C[3] | 0.50 |

Notes: 4AU = Four-Lane Arterial, Undivided, 2A = Two-Lane Arterial
[1] Two-way peak hour traffic volume
[2] v/c = volume-to-capacity ratio
[3] LOS at this location is C or better
[4] Average of roadway segments between Mother Lode Drive and Forni Road, Forni Road to Gold Center Drive, and Gold Center Drive to Diamond Springs Parkway.
**Bold** text indicates LOS worse than established threshold. *Italic and underlined* text identifies a potential impact.
Source: Fehr & Peers, 2015

# IMPACT STATEMENTS AND MITIGATION MEASURES

Project impacts were determined by comparing conditions with the project to conditions without the project in accordance with the established significance criteria presented in the Thresholds of Significance section.

## EXISTING PLUS PROJECT

Existing plus project conditions analysis results, presented in Tables 6 and 8, indicate that the addition of the project would exacerbate unacceptable operations at two intersections. The following discusses these impacts and associated mitigations. Table 13 summarizes the AM and PM peak hour intersection operations under existing plus project conditions with proposed mitigation.

### INTERSECTIONS

*Impacts*

Impact 1 - Pleasant Valley Road/Racquet Way (Intersection 1) – This intersection operates at LOS F without the project during the PM peak hour. The project adds more than 100 seconds of delay to the side street approach during the PM peak hour. According to established significance criteria, the project is projected to "significantly worsen" conditions, since it would add more than 10 trips to the intersection during the PM peak hour. **This is a significant impact.**

Impact 2 - Missouri Flat Road/China Garden Road (Intersection 6) – This location operates at LOS F without the project the PM peak hour. The project will increase delay at the intersection by 3 seconds during the PM peak hour. Based on established significance criteria, the project is projected to "significantly worsen" conditions, since it would add more than 10 trips to the intersection during the PM peak hour. **This is a significant impact.**

*Mitigation*

Mitigation 1 - Pleasant Valley Road/Racquet Way (Intersection 1) – Implement one of the following improvements:

- Install traffic signal control at the Pleasant Valley Road/Racquet Way intersection. With traffic signal control, the intersection would operate acceptably at LOS B or better operation during the AM and PM peak hours.

The CIP includes a line item for unprogrammed traffic signal installation and operational and safety improvements at intersections, including improvements like construction of new traffic signals, construction of turn pockets, and the upgrade of existing traffic signal systems. The County annually monitors intersections with potential need for improvement through the Intersection Needs Prioritization Process. The Intersection Needs Prioritization Process is then used to inform the annual update to the CIP, and potential intersection improvements can be added, by the Board of Supervisors, to the CIP as funding becomes available.

Appropriate mitigation, as determined by the CDA, would include payment of traffic impact mitigation fees to satisfy the project's fair share obligation towards this improvement or construction of the improvement with reimbursement or fee credit for costs that exceed the project's proportional share if the improvement is needed but not included in future updates to the CIP or constructed by others. The project's proportional share of traffic entering the intersection is about 4.5 percent.

OR

- Provide a public road connection to Diamond Road, by way of Black Rice Road, and maintain side street stop control at the Diamond Road/Black rice Road/Lime Kiln Road intersection.

With either of these improvements, this impact would be **less than significant**.

Mitigation 2 - Missouri Flat Road/China Garden Road (Intersection 6) – Implement one of the following improvements:

- Install traffic signal control at the Missouri Flat Road/China Garden Road intersection. With traffic signal control, the intersection would operate acceptably at LOS C or better operation during the AM and PM peak hours.

The CIP includes a line item for unprogrammed traffic signal installation and operational and safety improvements at intersections, including improvements like construction of new traffic signals, construction of turn pockets, and the upgrade of existing traffic signal systems. The County annually monitors intersections with potential need for improvement through the Intersection Needs Prioritization Process. The Intersection Needs Prioritization Process is then used to inform the annual update to the CIP, and potential intersection improvements can be added, by the Board of Supervisors, to the CIP as funding becomes available.

Appropriate mitigation, as determined by the CDA, would include payment of traffic impact mitigation fees to satisfy the project's fair share obligation towards this improvement or construction of the improvement with reimbursement or fee credit for costs that exceed the project's proportional share if the improvement is needed but not included in future updates to the CIP or constructed by others. The project's proportional share of traffic entering the intersection is about 1.5 percent.

OR

- Restrict access on the eastbound and westbound approaches to left-in, right-in/right-out only

With either of these improvements, this impact would be **less than significant**.

| TABLE 13 PEAK HOUR INTERSECTION LEVEL OF SERVICE – EXISTING PLUS PROJECT CONDITIONS WITH MITIGATIONS | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Intersection** | **Control** | **Existing** | | | | **Existing Plus Project** | | | | **Existing Plus Project with Mitigations** | | | |
| | | **AM Peak Hour** | | **PM Peak Hour** | | **AM Peak Hour** | | **PM Peak Hour** | | **AM Peak Hour** | | **PM Peak Hour** | |
| | | **Delay[1]** | **LOS** | **Delay[1]** | **LOS** | **Delay[1]** | **LOS** | **Delay[1]** | **LOS** | **Delay[1]** | **LOS** | **Delay[1]** | **LOS** |
| 1. Pleasant Valley Road/Racquet Way | SSSC | 39 | E | **191** | **F** | 41 | E | ***>300*** | ***F*** | 14 | B | 16 | B |
| 6. Missouri Flat Road/China Garden Road (Mitigation – Right-in/Right-out only) | SSSC | 49 | E | **108** | **F** | 49 | E | ***111*** | ***F*** | 23 | C | 21 | C |

Notes: SSSC = side street stop control, AWSC = all way stop control, N/A = Not Applicable (future intersection)

[1] For signalized and all-way stop controlled intersections, average intersection delay is reported in seconds per vehicle for the overall intersection. For unsignalized (side street stop controlled) intersections, average intersection delay is reported in seconds per vehicle for the overall intersection (worst movement). All results are rounded to the nearest second.

**Bold** text indicates LOS worse than established threshold. *Italic and underlined* text identifies a potential impact.

Source: Fehr & Peers, 2015

# CUMULATIVE PLUS PROJECT

Cumulative plus project conditions analysis results, presented in Tables 10 and 12, indicate that the addition of the project would exacerbate unacceptable operations at two intersections. The following discusses these impacts and associated mitigations. Table 14 summarizes the AM and PM peak hour intersection operations under cumulative plus project conditions with proposed mitigation.

## INTERSECTIONS

*Impacts*

Impact 3 - Pleasant Valley Road/Racquet Way (Intersection 1) – This intersection will operate at LOS F without the project during the AM and PM peak hours. According to established significance criteria, the project is projected to "significantly worsen" conditions, since it would add more than 10 trips to the intersection during the AM and PM peak hours. **This is a significant impact.**

Impact 4 - Missouri Flat Road/China Garden Road (Intersection 6) – This intersection will operate at LOS F without the project during the AM and PM peak hours. According to established significance criteria, the project is projected to "significantly worsen" conditions, since it would add more than 10 trips to the intersection during the AM and PM peak hours. **This is a significant impact.**

Impact 5 - Missouri Flat Road/Forni Road (Intersection 12) – This intersection will operate at LOS F without the project during the PM peak hour. According to established significance criteria, the project is projected to "significantly worsen" conditions, since it would add more than 10 trips to the intersection during the AM and PM peak hours. However, the County's General Plan allows this section of Missouri Flat Road to operate at LOS F up to a v/c ratio of 1.20. The two-way PM peak hour volume for Missouri Flat Road (Mother Lode Drive to Diamond Springs Parkway) is 3,300 vehicles per hour. The peak-hour roadway capacity for a four-lane divided arterial is 3,740 vehicles per hour (El Dorado County General Plan EIR, Table 5.4-1). The resulting v/c ratio is 0.88. As a result, this is not a project impact. **This is a less than significant impact.**

*Mitigation*

Mitigation 3 - Pleasant Valley Road/Racquet Way (Intersection 1) – Implement one of the following improvements:

- Install traffic signal control at the Pleasant Valley Road/Racquet Way intersection. With traffic signal control, the intersection would operate acceptably at LOS C and LOS D operation during the AM and PM peak hours, respectively.

The Cumulative analysis includes planned roadway improvements, growth consistent with the 2004 General Plan, and with approved and reasonably foreseeable projects within the study area. This is found to be an impact in the cumulative scenario without the project, which includes other foreseeable but unapproved projects. Therefore, the project is responsible for its proportional share of the proposed mitigation under cumulative conditions. Since the impact is identified under the cumulative scenario, the timing of the improvement is a function of the rate of population and employment growth. The County's traffic impact mitigation fee program provides a mechanism for collecting fair share contributions for improvements in the 2015 CIP.

The CIP includes a line item for unprogrammed traffic signal installation and operational and safety improvements at intersections, including improvements like construction of new traffic signals, construction of turn pockets, and the upgrade of existing traffic signal systems. The County annually monitors intersections with potential need for improvement through the Intersection Needs Prioritization Process. The Intersection Needs Prioritization Process is then used to inform the annual update to the CIP, and potential intersection improvements can be added, by the Board of Supervisors, to the CIP as funding becomes available.

Appropriate mitigation, as determined by the CDA, would include payment of traffic impact mitigation fees to satisfy the project's fair share obligation towards this improvement or construction of the improvement with reimbursement or fee credit for costs that exceed the project's proportional share if the improvement is needed but not included in future updates to the CIP or constructed by others. The project's proportional share of traffic entering the intersection is about 3.0 percent.

OR

- Provide a public road connection to Diamond Road, by way of Black Rice Road, and maintain side street stop control at the Diamond Road/Black rice Road/Lime Kiln Road intersection.

With either of these improvements, this impact would be **less than significant**.

Mitigation 4 - Missouri Flat Road/China Garden Road (Intersection 6) – Implementation of one of the following improvements:

- Install traffic signal control at the Missouri Flat Road/China Garden Road intersection. With traffic signal control, the intersection would operate acceptably at LOS C or better during the AM and PM peak hours.

The Cumulative analysis includes planned roadway improvements, growth consistent with the 2004 General Plan, and with approved and reasonably foreseeable projects within the study area. This is found to be an impact in the cumulative scenario without the project, which includes other foreseeable but unapproved projects. Therefore, the project is responsible for its proportional share of the proposed mitigation under cumulative conditions. Since the impact is identified under the cumulative scenario, the timing of the improvement is a function of the rate of population and employment growth. The County's traffic impact mitigation fee program provides a mechanism for collecting fair share contributions for improvements in the 2015 CIP.

The CIP includes a line item for unprogrammed traffic signal installation and operational and safety improvements at intersections, including improvements like construction of new traffic signals, construction of turn pockets, and the upgrade of existing traffic signal systems. The County annually monitors intersections with potential need for improvement through the Intersection Needs Prioritization Process. The Intersection Needs Prioritization Process is then used to inform the annual update to the CIP, and potential intersection improvements can be added, by the Board of Supervisors, to the CIP as funding becomes available.

Therefore, appropriate mitigation, as determined by the CDA, would include payment of traffic impact mitigation fees to satisfy the project's fair share obligation towards this improvement or construction of the improvement with reimbursement or fee credit for costs that exceed the project's proportional share if the improvement is needed but not included in future updates to the CIP or constructed by others. The project's proportional share of traffic entering the intersection is about 1.0 percent.

OR

- Restrict access on the eastbound and westbound approaches to left-in, right-in/right-out only. This is the County's preferred mitigation.

With either of these improvements, this impact would be **less than significant**.

## BICYCLE AND PEDESTRIAN CIRCULATION

Implementation of the proposed project will increase demand for pedestrian and bicycle facilities. The project will connect and integrate with existing and planned facilities adjacent to the project as conditioned by the El Dorado County CDA. Therefore, the proposed project will not conflict with adopted policies, plans, or programs related to bicycle and pedestrian facilities, or otherwise decrease the performance or safety of such facilities. **This is a less than significant impact.**

## TRANSIT

Implementation of the proposed project will increase demand transit, but at a level consistent with historic population growth rates in El Dorado County. Consequently, the growth in transit demand would not likely exceed the ability to serve this ridership growth through existing funding sources for transit that are tied to population growth. The project is served by the Diamond Springs Line (Routh 30/35) and a bus stop is located within 500 feet of the project. **This is a less than significant impact.**

| TABLE 14 PEAK HOUR INTERSECTION LEVEL OF SERVICE – CUMULATIVE PLUS PROJECT CONDITIONS WITH MITIGATIONS | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Intersection** | **Control** | **Cumulative Plus Project** | | | | **Cumulative Plus Project with Mitigations** | | | |
| | | **AM Peak Hour** | | **PM Peak Hour** | | **AM Peak Hour** | | **PM Peak Hour** | |
| | | **Delay[1]** | **LOS** | **Delay[1]** | **LOS** | **Delay[1]** | **LOS** | **Delay[1]** | **LOS** |
| 1. Pleasant Valley Road/Racquet Way (Mitigation – Traffic Signal Control) | SSSC / Signal | ***>300*** | ***F*** | ***>300*** | ***F*** | 5 | A | 19 | B |
| 6. Missouri Flat Road/China Garden Road (Mitigation – Restricted Access) | SSSC / Signal | ***F 53*** | ***F*** | E | 48 | 13 | B | 21 | C |

Notes: SSSC = side street stop control, AWSC = all way stop control, N/A = Not Applicable (future intersection)

[1] For signalized and all-way stop controlled intersections, average intersection delay is reported in seconds per vehicle for the overall intersection. For unsignalized (side street stop controlled) intersections, average intersection delay is reported in seconds per vehicle for the overall intersection (worst movement). All results are rounded to the nearest second.

**Bold** text indicates LOS worse than established threshold. *Italic and underlined* text identifies a potential impact.

Source: Fehr & Peers, 2015

# OTHER CONSIDERATIONS

## PEAK HOUR TRAFFIC SIGNAL WARRANT EVALUATION

An evaluation of the need for traffic signal installation was conducted using the peak hour traffic signal warrant methodologies from the California Manual on Uniform Traffic Control Devices, January 2012. The peak hour traffic signal warrant was evaluated for the following existing stop-controlled intersections:

- Pleasant Valley Road/Racquet Way
- Pleasant Valley Road/Pearl Place
- Missouri Flat Road/China Garden Road

Tables 15 displays the results of the peak hour volume warrant for existing plus project and cumulative plus project conditions, respectively. The Pleasant Valley Road/Racquet Way and the Missouri Flat Road/China Garden Road intersections would satisfy the peak hour warrant based on AM and PM peak hour traffic volumes.

| TABLE 15 PEAK HOUR SIGNAL WARRANT EXISTING PLUS PROJECT AND CUMULATIVE PLUS PROJECT CONDITIONS | | | | |
|---|---|---|---|---|
| **Intersection** | **Existing Plus Project** | | **Cumulative Plus Project** | |
| | **AM** | **PM** | **AM** | **PM** |
| 1. Pleasant Valley Road / Racquet Way | Yes | Yes | Yes | Yes |
| 1. Pleasant Valley Road / Pearl Place | No | No | No | No |
| 6. Missouri Flat Road / China Garden Road | Yes | Yes | No | Yes |
| Source: Fehr & Peers, 2015 | | | | |

## COLLISION HISTORY REVIEW

A review of the County of El Dorado Transportation Division Annual Accident Location Study (2015) was conducted to identify if any study facilities were identified as high accident rate facilities warranting possible investigation. The 2015 Annual Accident Location Study identified Forni Road near Missouri Flat Road for future review for possible improvement by signing and/or delineation. For the three-year period from January 1, 2013 to December 31, 2015, seven collisions were reported on this portion of Forni Road. One of the seven collisions resulted in an injury with three of the seven collisions being broadside collisions. The section of Forni Road has an accident rate of 1.00 accidents per million entering vehicles. The County applies a benchmark as 1.00 accidents per million entering vehicles as the acceptable rate for single sites to select sites for additional action. The project is estimated to add about one trip to the facility during the AM and PM peak hours.

## PARKING

The proposed project is providing 190 parking spaces, including 174 standard spaces, four compact spaces, and 12 accessible space. The project is required to provide 174 spaces. Therefore, the project is providing adequate parking.

## SITE ACCESS

The project will access two existing roadways, Deuce Drive and Service Drive. Sight distance at the project access points to these roadways is adequate.

# APPENDIX A: INTERSECTION AND ROADWAY COUNTS AND EXISTING CONDITIONS TECHNICAL CALCULATIONS

# APPENDIX B: EXISTING PLUS PROJECT TECHNICAL CALCULATIONS

**APPENDIX C:  CUMULATIVE NO PROJECT TECHNICAL CALCULATIONS**

# APPENDIX D: CUMULATIVE PLUS PROJECT TECHNICAL CALCULATIONS

# APPENDIX E:  MITIGATION TECHNICAL CALCULATIONS

# APPENDIX F: SIGNAL WARRANT ANALYSIS