



Transportation Impact Analysis  
**TUSCANY MEADOWS RESIDENTIAL PROJECT**  
Subdivision 8654

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# **Tuscany Meadows Residential Project (Subdivision 8654) City of Pittsburg**

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## **TRANSPORTATION AND CIRCULATION**

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### **1) Executive Summary**

This traffic impact study describes the existing and future conditions for transportation with and without the proposed residential development which is proposed to include 917 single family homes and 375 apartment units. The study presents information on the regional and local roadway networks, pedestrian and transit conditions, and provides an analysis of the effects on transportation facilities associated with the project.

This study also describes the regulatory setting; the criterion used for determining the significance of environmental impacts; and summarizes potential environmental impacts and appropriate mitigation measures. This study has been conducted in accordance with the requirements and methodologies set forth by the City of Pittsburg, the Contra Costa Transportation Authority (CCTA), Caltrans, and the applicable provisions of CEQA.

**Summary of Required Mitigations** - The following is a summary of the proposed mitigation measures to address the transportation impacts of the project. With the implementation of these measures all project transportation impacts would be reduced to a less than significant level. It is important to note that all project mitigations are required for the Baseline plus Project scenario. The mitigations proposed for this scenario would also sufficiently address the impacts identified under the Existing Plus Project and Cumulative Plus Project Conditions.

**Impact #1** The project would contribute to LOS operations exceeding the established standards at the following seven intersections:

**Railroad Avenue at Leland Road (Intersection #3)  
Buchanan Road at Harbor Street (Intersection #7)  
Buchanan Road at Loveridge Road (Intersection #12)  
Buchanan Road at Ventura Drive (Intersection #13)  
Buchanan Road at Tuscany Meadows Drive (Intersection #15)  
Buchanan Road at the Tuscany Meadows Apartments (Intersection #17)  
Buchanan Road at Somersville Road (Intersection #22).**

The addition of traffic from the proposed project would contribute to these seven intersections exceeding the established LOS standards in the baseline plus project scenario (Scenario 4). Please note that an alternative mitigation has been included that could potentially replace the primary mitigations that would require widening

of Buchanan Road. This alternative mitigation would involve implementation of PM peak hour metering of southbound Kirker Pass Road at the Pheasant Drive intersection. It has been verified that this alternative mitigation would indeed mitigate the impacts identified for Buchanan Road but it should be noted that the mitigation to widen Railroad Avenue at E. Leland Road would still be required. This is the only intersection impact that would not be mitigated by the alternative mitigation for PM peak hour metering.

Without implementation of the recommended mitigations, the development of the proposed project would result in a **potentially significant** impact to the LOS at the above mentioned intersections. In addition, because the Buchanan Road mitigations are not funded and may not be feasible the impacts to the Buchanan Road intersections are considered **significant and unavoidable**. However, it is important to note that this is only the case with the six Buchanan Road intersections. Unlike the intersections on Buchanan Road, the Railroad Avenue/E. Leland Road intersection does have feasible mitigation options available with funding already allocated for roadway improvements.

### **Mitigation Measure #1(a)**

*The improvements listed below are not currently included in the City's Transportation Impact Fee Program. Prior to construction of the identified improvements the project would mitigate the above-identified impacts by either constructing the required improvements as outlined below or paying a proportionate share of the construction costs, subject to City approval. The intersection mitigations required for the project to meet the established LOS standards include the following:*

Railroad Avenue at E. Leland Road – Construction of an additional southbound left-turn lane and associated widening.

Buchanan Road at Harbor Street – Widening of Buchanan Road at the intersection to allow for the construction of two through lanes on the westbound approach as well as two receiving lanes on the west side of the intersection.

Buchanan Road at Loveridge Road – Widening of Buchanan Road at the intersection to allow for the construction of two through lanes on the westbound approach as well as two receiving lanes on the west side of the intersection.

Buchanan Road at Ventura Drive – Widening of Buchanan Road at the intersection to allow for the construction of two through lanes on the eastbound approach as well as two receiving lanes on the east side of the intersection. Alternative Mitigation: Implementation of PM peak hour metering of southbound Kirker Pass Road at Pheasant Drive (the project has a significant impact in the PM peak hour only).

Buchanan Road at Tuscan Meadows Drive – Widening of Buchanan Road at the intersection to allow for the construction of two through lanes on the eastbound approach as well as two

*receiving lanes on the east side of the intersection . Alternative Mitigation: Relocation of control point metering to this location and implementation of PM peak hour metering of southbound Kirker Pass Road at Pheasant Drive.*

*Buchanan Road at the Tuscany Meadows Apartments Entrance – Widening of Buchanan Road at the intersection to allow for the construction of two through lanes on the eastbound approach as well as two receiving lanes on the east side of the intersection . Alternative Mitigation: Implementation of PM peak hour metering of southbound Kirker Pass Road at Pheasant Drive (the project has a significant impact in the PM peak hour only).*

*Buchanan Road at Somersville Road – Construct an additional eastbound left turn lane to allow for a dual left turn movement onto northbound Somersville Road and an additional northbound lane to allow for a dual left turn movement onto westbound Buchanan Road. Alternative Mitigation: Implementation of PM peak hour metering of southbound Kirker Pass Road at Pheasant Drive.*

There are several significant roadway changes proposed for the project area and therefore at the request of the City a detailed analysis was also conducted of several alternative scenarios. These include analysis of traffic operations with and without the James Donlon Extension, analysis of traffic operations with and without Standard Oil Road, analysis of AM peak hour traffic operations with and without the current control point metering on Buchanan Road, and analysis of the traffic operations using the previously adopted CCTALOS methodology. A discussion of each of these scenarios and their supporting calculations are included in the technical appendix to this report. Although these alternative analysis scenarios are not required for the environmental review they are still being provided because they are still potentially relevant to the decision making process.

It is important to note that the primary traffic impact analysis that follows (used to review the project's environmental impacts) assumes completion of the James Donlon Boulevard Extension under cumulative build out conditions but does not assume construction of Standard Oil Road. This is based on the same assumptions used for planning purposes in County's travel demand model and is consistent with other traffic studies prepared in the area.<sup>1</sup>

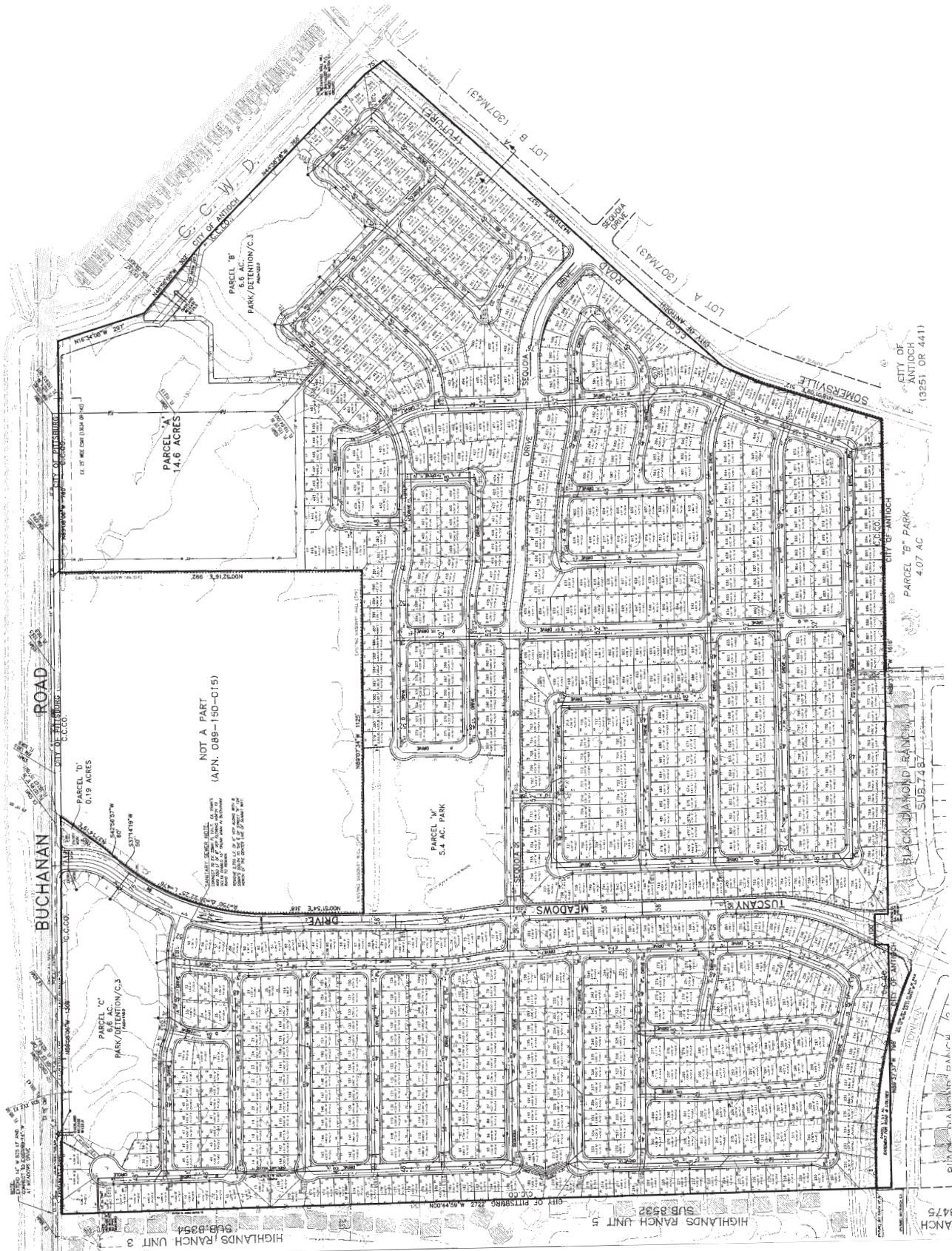
## **2) PROJECT DESCRIPTION**

The proposed project is a residential subdivision development expected to include 917 single family homes and 375 apartment units. The project is located south of Buchanan Road and just west of Somersville Road in the City of Pittsburg. All near-term access to the site will be from three signalized intersections, two on Buchanan Road and one on Somersville Road. In the future when the James Donlon Extension is completed the project will be required to construct a traffic signal at its intersection with Tuscany Meadows Drive. Within the project sidewalks would be provided on all streets and bicycle lanes will be included on the collector streets (Tuscany Meadows Drive and Sequoia Drive). **Figure 1** shows the location of the project and the surrounding roadway network. **Figure 2** shows the proposed site plan for the project.

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<sup>1</sup> *Buchanan Crossings Commercial Retail Project Traffic Impact Analysis*, Omni-Means, Ltd., Walnut Creek, CA, May, 2008.





**FIGURE 2 | PROJECT SITE PLAN**  
**TRANSPORTATION IMPACT ANALYSIS**  
 Tuscany Meadows Residential Project  
 City of Pittsburgh



The project site was previously an unincorporated island between the two cities until it was annexed into the City of Pittsburg after Pittsburg voters approved Measure I in 2011. Measure I amended the Urban Limit Line to include the project site and rezoned it to Single Family Residential and High Density Residential. The measure also eliminated the City's general plan policy that new development south of Buchanan Road is limited to a maximum density of three (3) dwelling units an acre.

Surrounding land uses include low density residential to the north, west and south; multi-family residential and open space to the east; and a former landfill to the southeast. In addition, an existing Chevron facility is located adjacent to (and partially surrounded by) the northern portion of the proposed residential project. It should be noted that the existing Chevron facility would remain industrial and is not a part of the proposed project.

### 3) ENVIRONMENTAL SETTING

This section of the report describes the roadways, traffic conditions and other existing transportation characteristics in the vicinity of the project. The primary basis of the analysis is the peak hour level of service for the key intersections. The hours identified as the "peak" hours are generally between 7:15 a.m. and 8:15 a.m. and 4:45 p.m. and 5:45 p.m. for all of the transportation facilities described. Throughout this report, these peak hours will be identified as the AM and PM peak hours, respectively.

#### 3.1 Project Study Intersections

Based on the project's trip generation and the potential for traffic impacts a list of project study intersections was prepared in coordination with the Cities of Pittsburg and Antioch. **Figure 1** shows the location of the project study intersections. As mentioned above, all near-term access to the site will be from three signalized intersections, two on Buchanan Road and one on Somersville Road. In the future when the James Donlon Extension is completed the project will be required to construct a traffic signal at its intersection with Tuscany Meadows Drive. There are thirty four (34) study intersections included in the analysis. All of the existing study intersections are controlled with traffic signals with the exception of intersections #16, 24, and 31. This includes the intersection of Buchanan Road with the Chateau Mobile Home Park and also the James Donlon Boulevard intersections with Somersville Road and with Metcalf Street. Please note that the Metcalf Street is planned to connect to Tuscany Meadows Drive once the James Donlon Boulevard Extension is completed. These three intersections are currently controlled with stop signs on the minor side street approaches.

##### Project Study Intersections

1. Railroad Ave & SR-4 WB Ramps
2. Railroad Ave & SR-4 EB Ramps
3. Railroad Ave & E. Leland Rd
4. Railroad Ave & Buchanan Rd
- 5.\* Kirker Pass Rd & James Donlon Boulevard (extended)
6. Harbor St & E Leland Rd
7. Harbor St & Buchanan Rd
8. California Ave & SR-4 WB ramps (Loveridge)
9. Loveridge Rd & California Ave
10. Loveridge Rd & SR-4 EB ramps
11. Loveridge Rd & E. Leland Rd
12. Loveridge Rd & Buchanan Rd
13. Buchanan Rd & Ventura Dr

- 14.\* Ventura Dr & James Donlon Blvd
- 15.\* Buchanan Rd & Tuscany Meadows Dr
16. Metcalf St/Tuscany Meadows Dr & James Donlon Blvd
- 17.\* Buchanan Rd & Tuscany Meadows Apartments
18. Auto Center Dr & Century Blvd
19. Somersville Rd & SR-4 WB ramps
20. Somersville Rd & SR-4 EB ramps
21. Somersville Rd & Delta Fair Blvd
22. Somersville Rd & Buchanan Rd
- 23.\* Somersville Rd & Sequoia Dr
24. Somersville Rd & James Donlon Blvd
25. Buchanan Rd & Delta Fair Blvd
26. James Donlon Blvd & Contra Loma Blvd
27. James Donlon Blvd & Lone Tree Way
28. Kirker Pass & Myrtle Dr
29. Ygnacio Valley Rd & Concord Blvd
30. Ygnacio Valley Rd & Clayton Blvd
31. Buchanan Rd & Chateau Mobile Park
32. Delta Fair Blvd & Century Blvd
33. Somersville Rd & Fairview Dr
34. Delta Fair Blvd & Fairview Dr

\* *future intersections*

It should be noted that some intersections along Ygnacio Valley Road where over 50 peak hour trips could be added were not included in the analysis because it was determined the critical movements would not be significantly impacted in consultation with the City Traffic Engineer. This was done according to the Contra Costa Transportation Authority (CCTA) technical procedures which state the following: “*Please note the CCTA Engineering judgment may be used to eliminate intersections from the analysis that are not controlling intersections or where critical movements are not affected as the project only adds through movements. The elimination of study intersections where 50 or more trips are projected to be added by the project should be done in consultation with the city engineer or transportation engineer for the local jurisdiction in which the affected intersection is located.*”<sup>2</sup>

### 3.2 Traffic Analysis Scenarios

The study intersections were evaluated for the following five scenarios:

- Scenario 1: *Existing Conditions* – Level of Service (LOS) based on existing peak hour volumes and existing intersection configurations.
- Scenario 2: *Existing Plus Project* – Existing traffic volumes plus trips from the proposed project without the Proposed James Donlon Boulevard Extension.
- Scenario 3: *Baseline (No Project) Conditions* – The Baseline scenario is based on the existing volumes plus growth in background traffic (for five years) plus the traffic from all reasonably foreseeable developments that could substantially affect the volumes at the project study intersections. These included the approved Black Diamond and Sky Ranch projects and the proposed Montreux development.

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<sup>2</sup> *Final Technical Procedures*, Contra Costa Transportation Authority, Walnut Creek, CA, January 16, 2013.

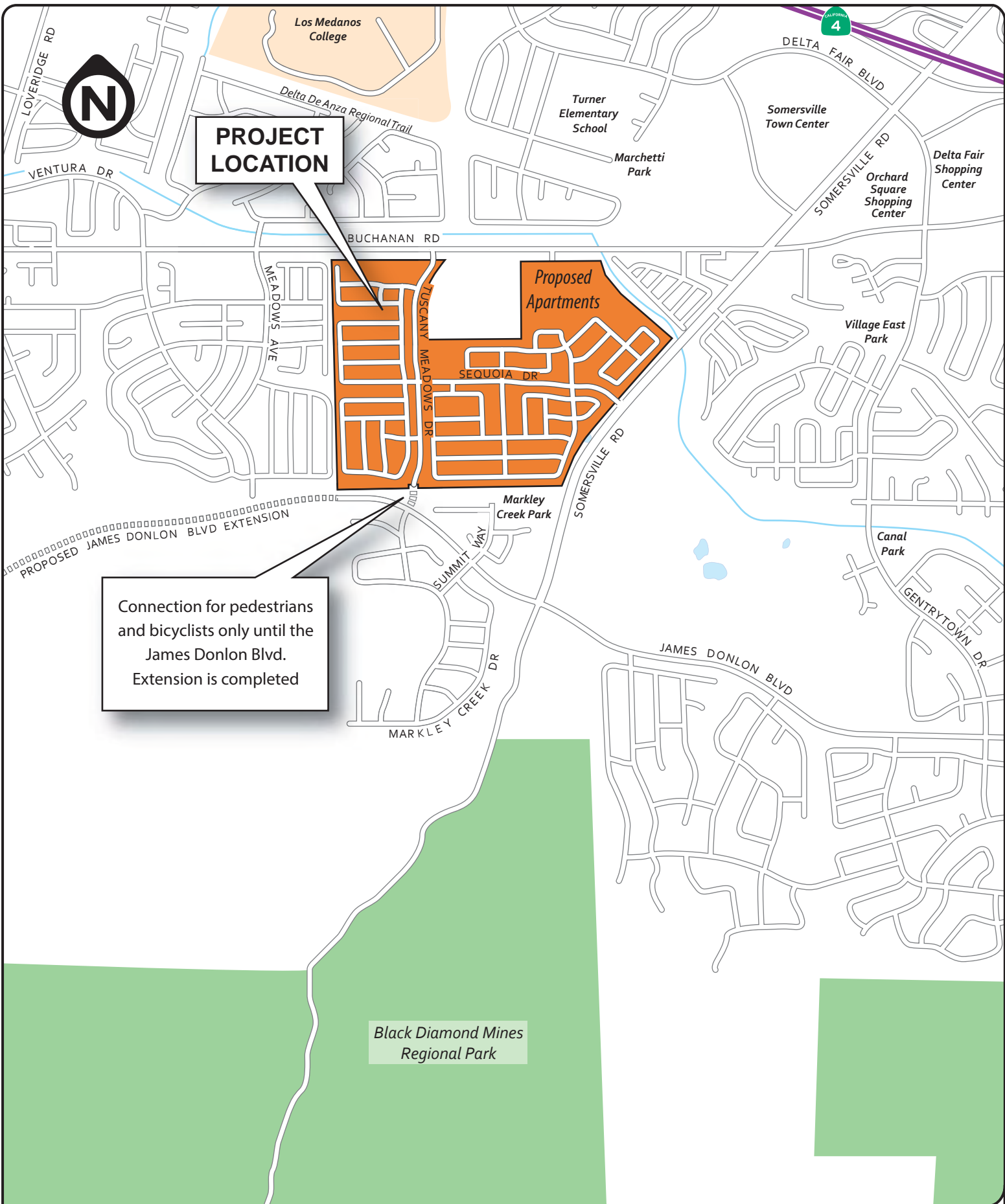
- Scenario 4: *Baseline Plus Project Conditions* – This scenario is based on the Baseline traffic volumes plus the trips from the proposed project. Please note this scenario does not include the James Donlon Blvd. Extension.
- Scenario 5: *Cumulative Conditions* – This scenario includes year 2035 cumulative volumes based on planned and approved projects and the most recent (March, 2013) release of the Countywide Travel Demand Model. This scenario assumes completion of the James Donlon Boulevard Extension.
- Scenario 6: *Cumulative Plus Project Conditions* – This scenario includes year 2035 cumulative volumes based on the most recent release of the Countywide Travel Demand Model plus the trips from the proposed project. This scenario assumes completion of the James Donlon Boulevard Extension.

### 3.3 Existing Roadway Network

**Routes of Regional Significance** - Routes of Regional Significance (RRS) are major roadway and freeway corridors that serve regional traffic. These are identified in Action Plans adopted by the Contra Costa Transportation Authority under the countywide Measure J program. State Route 4, Kirker Pass Road, Railroad Avenue, E. Leland Road, Delta Fair Boulevard, Buchanan Road, Somersville Boulevard, Auto Center Drive, James Donlon Boulevard, Lone Tree Way, and Ygnacio Valley Road are all identified as RRS in the East County Action Plan.

As discussed previously, the project location and the surrounding roadway network are illustrated in **Figure 1**. The proposed project roadways and the local roadways in the immediate vicinity are shown in **Figure 3**. The following is a more detailed description of the Routes of Regional Significance that could be affected by the project:

- **State Route 4 (SR 4)/SR 4 Bypass** – SR 4 is the primary east-west corridor in Contra Costa County. It connects Interstate 80 in the city of Hercules to the west with SR 160 and the cities of Oakley and Brentwood to the east. SR 4 is currently a two-lane roadway through Oakley and Brentwood and is a divided freeway from Interstate 680 east through Concord, Pittsburg, and Antioch. It should be noted that the State Route 4 Bypass has been completed in Antioch and Brentwood providing an alternative to SR 4 in these Cities. Interchanges along SR 4 within the study area include Railroad Ave, Loveridge Rd, and Somersville Rd.
- **Kirker Pass Road/Ygnacio Valley Road** – Kirker Pass Road is a north-south roadway that runs between Buchanan Rd in Pittsburg and Clayton Rd in Concord. In the Pittsburg 2020 General Plan, Kirker Pass Road is identified as a major arterial. It has four lanes with a 55 mph speed limit and is divided by medians and barriers along most of its length. In the City of Concord it transitions into a six lane roadway with a 45 mph speed limit and turns into Ygnacio Valley Road at Clayton Road.
- **Railroad Ave** - Railroad Avenue is a north-south roadway with a 20 to 35 mph speed limit that starts at 3rd Street and ends at Buchanan Road where it turns into Kirker Pass Rd. Railroad Avenue is two lanes north of W. 10<sup>th</sup> Street and becomes a four-lane major arterial south of W 10<sup>th</sup> St, as identified in the Pittsburg 2020 General Plan.
- **East Leland Road/Delta Fair Boulevard** - East Leland Road is an east-west roadway with a 25 to 40 mph speed limit that runs between Century Boulevard and



**FIGURE 3 | PROPOSED PROJECT ROADWAYS AND ACCESS**  
**TRANSPORTATION IMPACT ANALYSIS**  
 Tuscany Meadows Residential Project  
 City of Pittsburg

turns into West Leland Road at Railroad Avenue. To the east of Century Boulevard the roadway changes names to Delta Fair Boulevard and then terminates to the east at Buchanan Road. Within the study area, East Leland Road is a four-lane major arterial with a bike lane in each direction and a raised median.

- **Buchanan Road** – Buchanan Road is an east-west roadway with a 35 to 45 mph speed limit that runs between Railroad Ave and Contra Loma Blvd. In the vicinity of the project area, Buchanan Road has two-lanes and a bike lane on both sides. In the Pittsburg 2020 General Plan Buchanan Road is identified as a major arterial in the roadway system.
- **Somersville Road/Auto Center Drive** – Somersville Road is a north-south roadway with a 35 mph speed limit that runs from Century Blvd south to Black Diamond Mines Regional Park. Auto Center Drive extends north from Century Boulevard to West 10th Street. From Century Blvd to James Donlon Blvd, Somersville Rd is identified as a Major Arterial in the Pittsburg 2020 General Plan with four lanes between Century Blvd and the Contra Costa Canal and two lanes between the Contra Costa Canal and James Donlon Boulevard. This two lane section is planned to be expanded to four lanes in the future along with a new traffic signal at James Donlon Boulevard and Somersville Road. South of James Donlon Boulevard Somersville Road provides access to the Black Diamond Mines Regional Park.
- **James Donlon Boulevard** – James Donlon Boulevard is an east-west roadway with a 40 mph speed limit that begins west of Somersville Road and ends at Lone Tree Way. This roadway is a four-lane arterial divided by raised medians. It is currently planned to be extended west to Kirker Pass Road under cumulative build-out conditions.
- **Lone Tree Way** – Lone Tree Way is major arterial that extends south from SR 4 and has speed limits ranging from 30 mph to 45 mph. This roadway is a four to six-lane arterial divided by medians and left turn pockets with sidewalks on both sides along most of its length. This route extends east to Brentwood Boulevard, providing linkages to the significant regional shopping destinations along these roadways in Antioch and Brentwood and connecting to State Route 4 and the SR 4 Bypass.

**Local Roadways** – There are also a number of local roadways that were included in the analysis including the following:

- **Harbor Street** - Harbor Street is a north-south roadway with a 25 to 35 mph speed limit that runs from 3rd Street to Buchanan Road. Within the study area, Harbor Street has two travel lanes with left turn pockets and is identified as a Minor Arterial in the Pittsburg 2020 General Plan.
- **Loveridge Road** - Loveridge Road is a north-south roadway with a 35 mph speed limit that runs between Waterfront Road and Buchanan Road. Within the study area, Loveridge Road is a four-lane Major Arterial with raised medians, bike lanes, and sidewalks, as identified in the Pittsburg 2020 General Plan.
- **Ventura Drive** – Ventura Drive is a two-lane residential roadway with a 25 mph speed limit that runs west from Harbor Street and terminates south of Buchanan Road in the vicinity of the future James Donlon Boulevard Extension.

- **Fairview Drive** – Fairview Drive is a two-lane commercial collector road with a 30 mph speed limit that runs along the back of the Somersville Towne Center between Delta Fair Boulevard and Somersville Road.
- **Century Boulevard** – Century Boulevard is an east-west roadway that begins west of Auto Center Drive and ends at Lone Tree Way. This roadway is a four-lane arterial divided by medians and left turn pockets with sidewalks on both sides except at its western end where it becomes a two lane roadway.

### 3.4 Intersection Analysis Methodology

Existing operational conditions at the thirty four (34) study intersections have been evaluated according to the requirements set forth by the Contra Costa County Transportation Authority (CCTA) using the methodology set forth in the Final Technical Procedures Update (dated July 19, 2006). Analysis of traffic operations was conducted using the 2010 *Highway Capacity Manual (HCM)* Level of Service (LOS) methodology with Synchro software.<sup>3</sup> Level of service is an expression, in the form of a scale, of the relationship between the capacity of an intersection (or roadway segment) to accommodate the volume of traffic moving through it at any given time. The level of service scale describes traffic flow with six ratings ranging from A to F, with “A” indicating relatively free flow of traffic and “F” indicating stop-and-go traffic characterized by traffic jams.

As the amount of traffic moving through a given intersection or roadway segment increases, the traffic flow conditions that motorists experience rapidly deteriorate as the capacity of the intersection or roadway segment is reached. Under such conditions, there is general instability in the traffic flow, which means that relatively small incidents (e.g., momentary engine stall) can cause considerable fluctuations in speeds and delays that lead to traffic congestion. This near-capacity situation is labeled level of service (LOS) E. Beyond LOS E, the intersection or roadway segment capacity has been exceeded, and arriving traffic will exceed the ability of the intersection to accommodate it.

It should be noted that the appendix includes a complete set of LOS calculations using the previous CCTALOS methodology to allow a direct comparison of the results to the volume to capacity ratio ( $V/C$ ) thresholds that are established in the City’s General Plan. The General Plan specifies a goal of maintaining a volume to capacity ratio less than or equal to 0.85 (with 0.95 permissible at intersections along Kirker Pass Road). The CCTALOS results are included in the technical appendix to allow verification that the conclusions do not change when CCTALOS methodology is used instead of the HCM methodology adopted by the CCTA in January of 2013.

For signalized intersections, The *HCM* methodology determines the capacity of each lane group approaching the intersection. The LOS is then based on average control delay (in seconds per vehicle) for the various movements within the intersection. A combined weighted average control delay and LOS are presented for the intersection. A summary of the HCM results and copies of the detailed HCM LOS calculations are included in the appendix to this report. **Table 1** summarizes the relationship between LOS, average control delay, and the volume to capacity ratio at signalized intersections.

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<sup>3</sup> 2010 *Highway Capacity Manual*, Transportation Research Board, Washington D.C., 2011

For unsignalized (all-way stop controlled and two-way stop controlled) intersections, the average control delay and LOS operating conditions are calculated by approach (e.g., northbound) and movement (e.g., northbound left-turn) for those movements that are subject to delay. In general, the operating conditions for unsignalized intersections are presented for the worst approach. **Table 2** summarizes the relationship between LOS and average control delay at unsignalized intersections.

### 3.5 Existing Intersection Capacity Conditions (Scenario 1)

The existing intersection geometry at each of the project study intersections can be seen in **Figure 4**. The traffic volumes at the study intersections for weekday AM and PM peak hours are presented in Figure A-1 of the Technical Appendix. Machine counts on Buchanan Road and traffic counts at the study intersections were conducted between May 2012 and March 2014 at times when local schools were in session. **Table 3** summarizes the associated LOS computation results for the existing weekday AM and PM peak hour conditions. Please note that the corresponding LOS analysis calculation sheets are presented in the *Traffic Analysis Appendix*. As shown in **Table 3**, all of the signalized study intersections currently have acceptable conditions (LOS D or better) during the weekday AM and PM peak hours with the exception of intersection #3, East Leland Road and Railroad Avenue, which has a V/C ratio greater than 0.85 and exceeds the thresholds established in the City's General Plan.

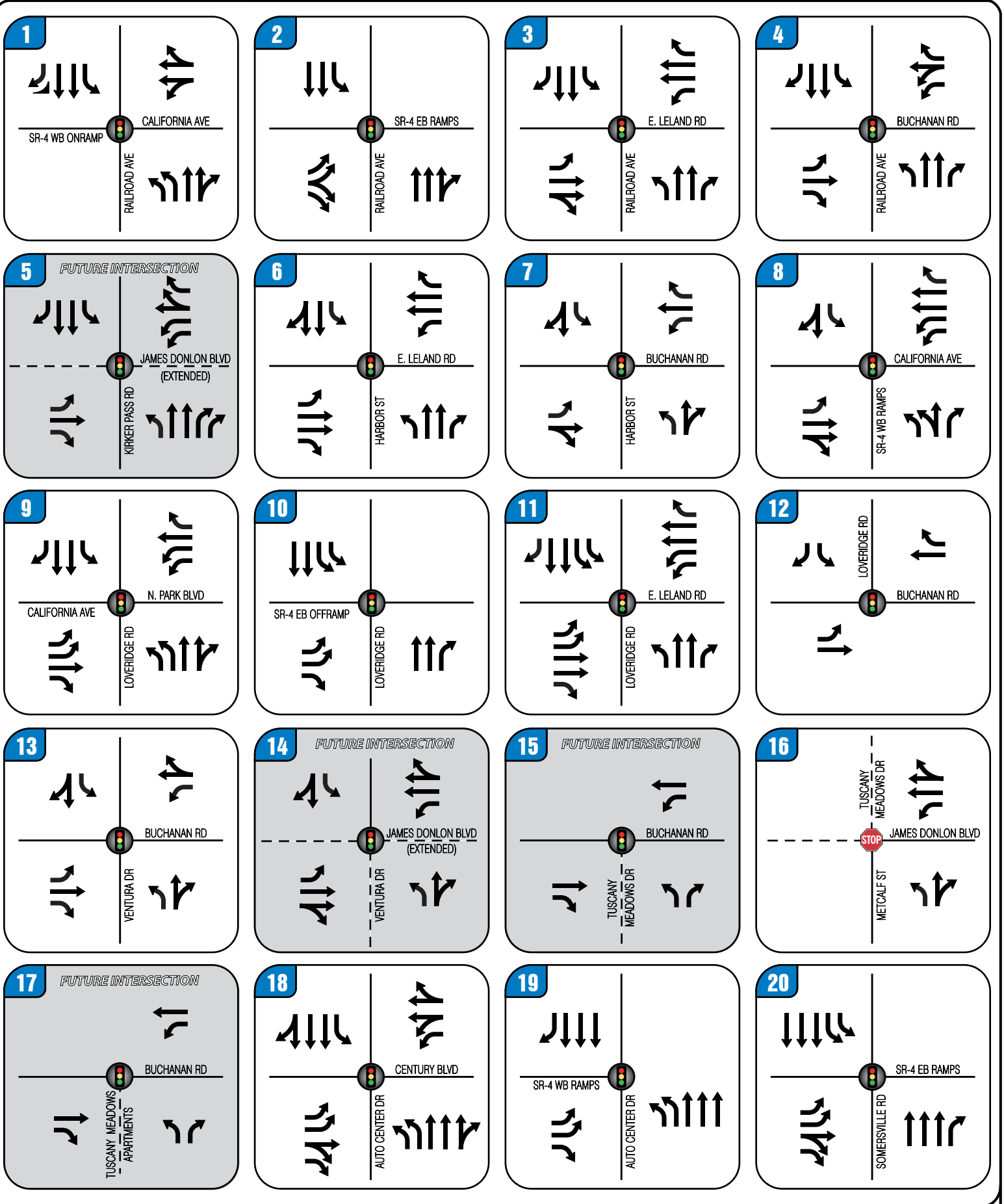
**AM Peak Hour Control Point Metering on Buchanan Road** - It is also important to note that some of the queuing and delay that occurs on westbound Buchanan Road is affected by control point metering at the Meadows Avenue traffic signal which limits the amount of traffic that can pass through the intersection during peak periods. The control point metering strategy was based on recommendations in the East Central Traffic Management Study.

The report's recommendations were ultimately adopted by Contra Costa County and the surrounding Cities and incorporated into the East County Action Plan for Routes of Regional Significance. Downstream of the control point metering traffic congestion during the AM peak hour often results in westbound queues that limit the volume of traffic that can travel through intersections further to the west. In other words, the resulting LOS calculations do not always provide a complete portrayal of the traffic operations because the volumes are restricted by the queuing problems that occur on Buchanan Road. For the purposes of this analysis it is assumed the metering will continue. However, as mentioned previously, the technical appendix includes a detailed analysis of queuing, which is summarized in Section 5.12, as well as an analysis of intersection operations on Buchanan Road both with and without control point metering.

### 3.6 Planned Roadway Improvements

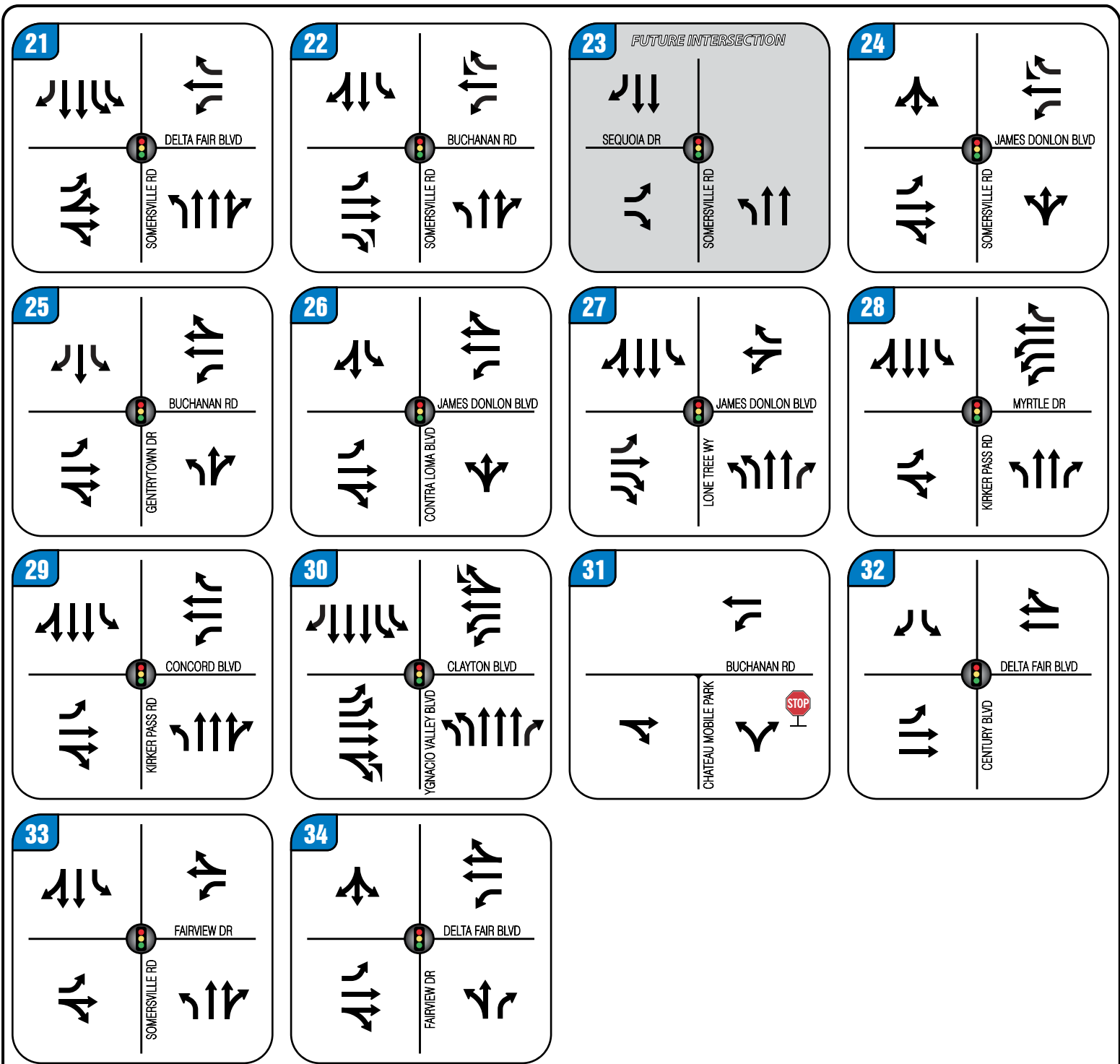
The most significant planned roadway improvement in the area is the proposed James Donlon Boulevard Extension. Please note that a portion of the James Donlon Boulevard Extension on the eastern side is complete (starting at Somersville Road and extending through the Black Diamond Estates Project). The project to complete the James Donlon Boulevard Extension is currently undergoing environmental review by the City of Pittsburg.

If this project is completed as planned, it would create a major east-west bypass that would alleviate congestion that occurs on Buchanan Road during peak periods. The roadway would connect the current terminus of James Donlon Blvd to Kirker Pass Road. This report includes an analysis using the most recent design for terminating the extension at a traffic signal on Kirker Pass Road.



**FIGURE 4 | EXISTING LANE CONFIGURATIONS - PAGE 1**  
 TRANSPORTATION IMPACT ANALYSIS  
 Tuscany Meadows Residential Project  
 City of Pittsburg





**FIGURE 4 | EXISTING LANE CONFIGURATION CONT. - PAGE 2**  
 TRANSPORTATION IMPACT ANALYSIS  
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**TABLE 1  
SIGNALIZED INTERSECTION LEVEL OF SERVICE DEFINITIONS**

<u>Level of Service</u>	<u>Description of Operations</u>	<u>Average Delay (sec/veh)</u>	<u>Volume to Capacity Ratio</u>
A	Insignificant Delays: No approach phase is fully used and no vehicle waits longer than one red indication.	$\leq 10$	< 0.60
B	Minimal Delays: An occasional approach phase is fully used. Drivers begin to feel restricted.	> 10 to 20	> 0.61 to 0.70
C	Acceptable Delays: Major approach phase may become fully used. Most drivers feel somewhat restricted.	> 20 to 35	> 0.71 to 0.80
D	Tolerable Delays: Drivers may wait through no more than one red indication. Queues may develop but dissipate rapidly without excessive delays.	> 35 to 55	> 0.81 to 0.90
E	Significant Delays: Volumes approaching capacity. Vehicles may wait through several signal cycles and long vehicle queues from upstream.	> 55 to 80	> 0.91 to 1.00
F	Excessive Delays: Represents conditions at capacity, with extremely long delays. Queues may block upstream intersections.	> 80	> 1.00

**SOURCES:** 2010 *Highway Capacity Manual*, Transportation Research Board, 2011. *Technical Procedures Update*, Contra Costa Transportation Authority, January 16, 2013.

**TABLE 2  
UNSIGNALIZED INTERSECTION LEVEL OF SERVICE DEFINITIONS**

<u>Level of Service</u>	<u>Description of Operations</u>	<u>Average Delay (seconds/vehicle)</u>
A	No delay for stop-controlled approaches.	0 to 10
B	Operations with minor delays.	> 10 to 15
C	Operations with moderate delays.	> 15 to 25
D	Operations with some delays.	> 25 to 35
E	Operations with high delays and long queues.	> 35 to 50
F	Operation with extreme congestion, with very high delays and long queues unacceptable to most drivers.	> 50

**SOURCE:** 2010 *Highway Capacity Manual*, Transportation Research Board, 2011.

**TABLE 3  
EXISTING INTERSECTION LEVEL OF SERVICE CONDITIONS**

INTERSECTION		CONTROL	PEAK HOUR	EXISTING	
				Delay	LOS
1	RAILROAD AVE & SR-4 WB RAMPS	Traffic Signal	AM	32.9	C
			PM	19.7	B
2	RAILROAD AVE & SR-4 EB RAMPS	Traffic Signal	AM	28.3	C
			PM	25.3	C
3	RAILROAD AVE & E. LELAND RD	Traffic Signal	AM	36.6	D
			PM	51.2	D
4	RAILROAD AVE & BUCHANAN RD	Traffic Signal	AM	15.9	B
			PM	37.9	D
5	KIRKER PASS RD & MONTREUX ENTRANCE	Traffic Signal	AM	N/A	N/A
			PM	N/A	N/A
6	HARBOR ST & E LELAND RD	Traffic Signal	AM	24.9	C
			PM	37.3	D
7	HARBOR ST & BUCHANAN RD	Traffic Signal	AM	38.5	D
			PM	23.6	C
8	CALIFORNIA AVE & SR-4 WB RAMPS (LOVERIDGE)	Traffic Signal	AM	18.4	B
			PM	28.0	C
9	LOVERIDGE RD & CALIFORNIA AVE	Traffic Signal	AM	34.4	C
			PM	23.2	C
10	LOVERIDGE RD & SR-4 EB RAMPS	Traffic Signal	AM	22.3	C
			PM	26.2	C
11	LOVERIDGE RD & E. LELAND RD	Traffic Signal	AM	23.5	C
			PM	29.8	C
12	LOVERIDGE RD & BUCHANAN RD	Traffic Signal	AM	38.8	D
			PM	25.4	C
13	BUCHANAN RD & VENTURA DR	Traffic Signal	AM	15.3	B
			PM	22.2	C
14	VENTURA DR & JAMES DONLON BLVD	Traffic Signal	AM	N/A	N/A
			PM	N/A	N/A
15	BUCHANAN RD & TUSCANY MEADOWS DR	Traffic Signal	AM	N/A	N/A
			PM	N/A	N/A
16	METCALF ST & JAMES DONLON BLVD	Side Street Stop	AM	N/A	N/A
			PM	N/A	N/A
17	BUCHANAN RD & TUSCANY MEADOWS APARTMENTS	Traffic Signal	AM	N/A	N/A
			PM	N/A	N/A
18	AUTO CENTER DR & CENTURY BLVD	Traffic Signal	AM	17.1	B
			PM	21.1	C
19	SOMERSVILLE RD & SR-4 WB RAMPS	Traffic Signal	AM	24.3	C
			PM	22.9	C
20	SOMERSVILLE RD & SR-4 EB RAMPS	Traffic Signal	AM	12.2	B
			PM	20.8	C

**SOURCE:** Abrams Associates, 2014

**NOTES:** HCM LOS results are presented in terms of average intersection delay in seconds per vehicle. For stop controlled intersections the results for the worst side street approach are presented.

**TABLE 3 (CONT.)  
EXISTING INTERSECTION LEVEL OF SERVICE CONDITIONS**

INTERSECTION		CONTROL	PEAK HOUR	EXISTING	
				Delay	LOS
21	SOMERSVILLE RD & DELTA FAIR BLVD	Traffic Signal	AM	19.3	B
			PM	19.8	B
22	SOMERSVILLE RD & BUCHANAN RD	Traffic Signal	AM	33.5	C
			PM	29.6	C
23	SOMERSVILLE RD & TUSCANY MEADOWS	Traffic Signal	AM	N/A	N/A
			PM	N/A	N/A
24	SOMERSVILLE RD & JAMES DONLON BLVD	Traffic Signal	AM	9.9	A
			PM	8.5	A
25	BUCHANAN RD & DELTA FAIR BLVD	Traffic Signal	AM	9.8	A
			PM	12.0	B
26	JAMES DONLON BLVD & CONTRA LOMA BLVD	Traffic Signal	AM	17.8	B
			PM	13.1	B
27	JAMES DONLON BLVD & LONE TREE WAY	Traffic Signal	AM	19.2	B
			PM	23.2	C
28	KIRKER PASS & MYRTLE DR	Traffic Signal	AM	6.7	A
			PM	4.6	A
29	YGNACIO VALLEY RD & CONCORD BLVD	Traffic Signal	AM	34.1	C
			PM	30.0	C
30	YGNACIO VALLEY RD & CLAYTON BLVD	Traffic Signal	AM	35.9	D
			PM	36.5	D
31	BUCHANAN RD & CHATEAU MOBILE PARK	Side Street Stop	AM	11.9	B
			PM	21.3	C
32	DELTA FAIR BLVD & CENTURY BLVD	Traffic Signal	AM	12.9	B
			PM	15.8	B
33	SOMERSVILLE RD & FAIRVIEW DR	Traffic Signal	AM	16.7	B
			PM	32.3	C
34	DELTA FAIR BLVD & FAIRVIEW DR	Traffic Signal	AM	17.5	B
			PM	20.1	C

**SOURCE:** Abrams Associates, 2014

**NOTES:** HCM LOS results are presented in terms of average intersection delay in seconds per vehicle. For stop controlled intersections the results for the worst side street approach are presented.

**Baseline Roadway Improvements Assumed in the Impact Analysis** – The Baseline scenarios assume completion of several key roadway improvements in the area. These include the following:

- 1) *Interchange improvements at Loveridge Road* - This project is fully funded and estimated to be completed in 2014.
- 2) *Interchange improvements Somersville Road* - This project is fully funded and estimated to be completed in 2014.
- 3) *Widening of SR 4 through the Loveridge Road and Somersville Road interchanges* - This project is fully funded and estimated to be completed in mid-2015.
- 4) *Widening of Buchanan Road west of Somersville Road* - As part of the approved Buchanan Crossings Shopping Center in Antioch Buchanan Road will be widened from one lane to two in the westbound direction, extending west from Somersville Road and then tapering back to one lane before the Pittsburg City limits.
- 5) *Construction of a southbound right turn lane on Somerville Road at Buchanan Road* – The Buchanan Crossings project will also construct an additional right turn lane on the southbound Somersville Road approach to Buchanan Road.
- 6) *Construction of a new traffic signal on Buchanan Road at the Buchanan Crossing Shopping Center Main Entrance* - The approved Buchanan Crossings project will also construct a traffic signal at its main entrance which is planned to line up with the entrance to the existing Chateau Mobile Home Park.
- 7) *Construction of a new sidewalk/meandering trail on Somersville Road* - Construction of a new sidewalk/meandering trail along the west side of Somersville Road extending south from the canal (at the edge of the Chateau Mobile Home Park) to its intersection with James Donlon Boulevard.

**Cumulative Roadway Improvements Assumed in the Impact Analysis** – As mentioned above, for the purposes of the impact analysis the James Donlon Boulevard Extension (the “Extension”) is assumed to be in place under the Cumulative and Cumulative Plus Project scenarios. The Extension is a planned and partially funded project included in the County’s Regional Transportation Plan. However, given that the project is in the preliminary engineering phase this report also includes a detailed analysis of the Cumulative transportation conditions with and without the proposed Extension. Please note that the Cumulative scenario does not assume construction of Standard Oil Road. This is based on the same assumptions used for planning purposes in County’s travel demand model and is consistent with other traffic studies prepared in the area.

### **3.7 Pedestrian and Bicycle Facilities**

Bicycle paths, lanes and routes are typical examples of bicycle transportation facilities, which are defined by Caltrans as being in one of the following three classes:

*Class I* – Provides a completely separated facility designed for the exclusive use of bicyclists and pedestrians with crossing points minimized.

*Class II* – Provides a restricted right-of-way designated lane for the exclusive or semi-exclusive use of bicycles with through travel by motor vehicles or pedestrians prohibited, but with vehicle parking and cross-flows by pedestrians and motorists permitted.

*Class III* – Provides a route designated by signs or permanent markings and shared with pedestrians and motorists.

There are two major multi-use trails (i.e. Class I trails) in the project area that include the Delta De Anza Trail and the Mokelumne Trail. **Figure 5** shows the existing pedestrian and bicycle facilities in the vicinity of the proposed project. Please note there are existing Class II bicycle lanes on Buchanan Road, James Donlon Boulevard, E. Leland Road, and Loveridge Road and also numerous paved trails and hiking trails in the area.

### **3.8 Mass Transit Service**

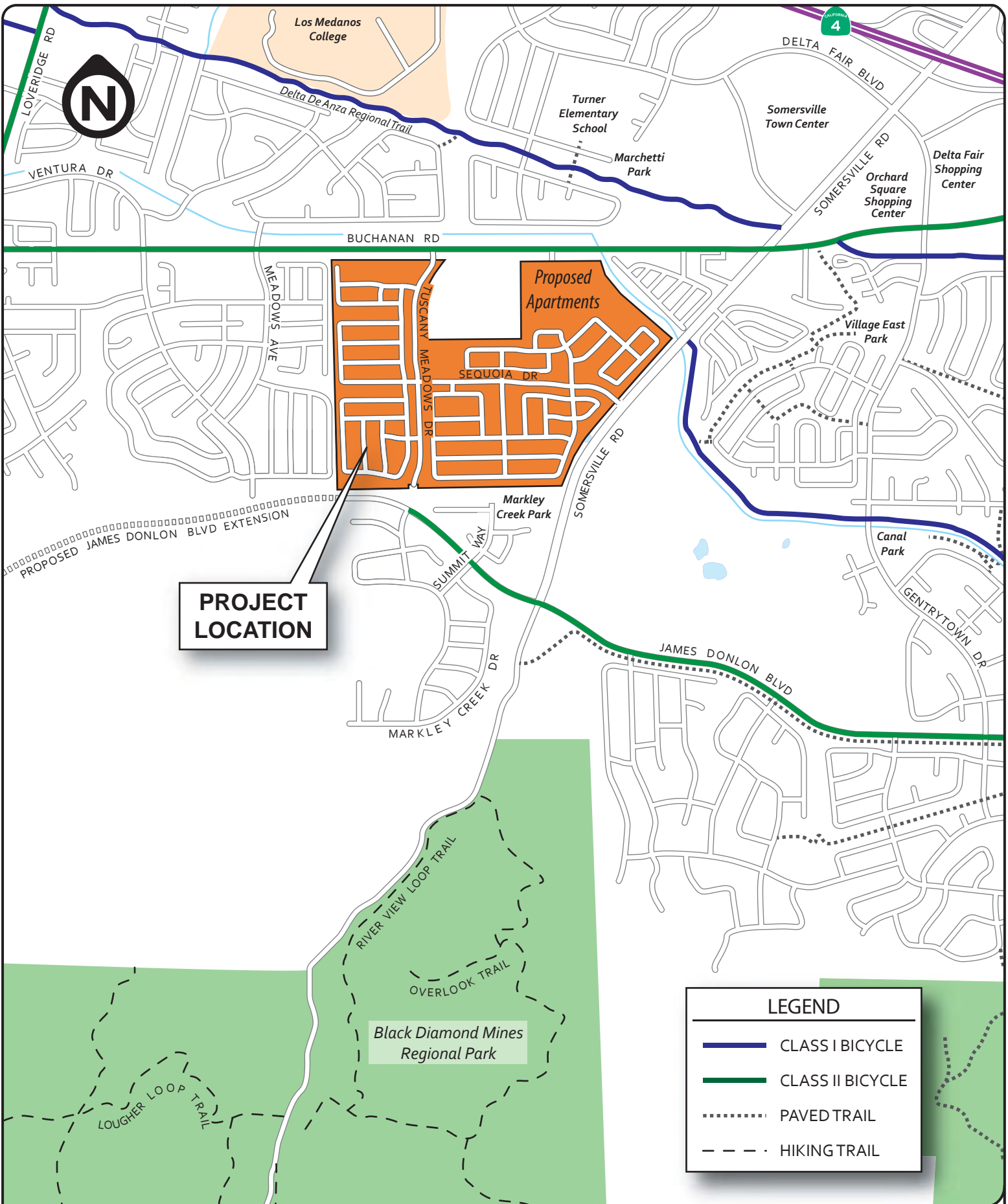
Three major public mass transit operators provide service within or adjacent to the study area. These include BART, the Eastern Contra Costa Transit Authority (or Tri Delta Transit), and the County Connection. These operators are described below.

**Bay Area Rapid Transit (BART)** – BART is a rapid mass transit system which provides regional transportation connections to much of the Bay Area. It runs from the North Bay Area in Richmond to the South Bay Area in Fremont. In the east-west direction it runs from Pittsburg to the San Francisco Airport and Milbrae with several connections in Oakland.

The Pittsburg/Bay Point BART station, which is closest to the proposed project, serves all of Pittsburg, Bay Point, Antioch, and all other surrounding cities and runs from 4:00 am to 12:00 am daily, with a weekday frequency of 15 minutes. A future E-BART extension to Hillcrest Avenue in Antioch is currently under construction. This service will connect with BART at the Bay Point BART station. Please note there is also a planned E-BART Station at Railroad Avenue and widening of SR 4 to accommodate the project is currently underway within Pittsburg.

**Tri Delta Transit** - Tri Delta Transit serves the East County including Brentwood, Oakley, Pittsburg, Antioch, Bay Point and unincorporated areas of East County. Tri Delta Transit operates fourteen local bus routes from Monday to Friday, including three express services, and three local bus routes during weekends and Holidays. The Tri Delta Transit route that runs closest to the proposed project are routes 380, 390, and 394. Route 390 has bus stops approximately 1,500 feet from the project near Buchanan Road and Somersville Road.

**County Connection Transit** – The County Connection currently operates a total of 31 fixed-route bus routes on weekdays throughout Central Contra Costa County with limited service to the East County area. The route that serves the East County area is route 93X. This is an express route that runs from the Hillcrest Park 'N Ride in Antioch, along Kirker Pass Road, along Ygnacio Valley Road, and ends at the Walnut Creek BART station. This route has a frequency of 30 minutes and runs from 5:07 am to 7:41 pm during the weekdays. Currently, the bus stop for route 93X nearest to the proposed project is approximately 1,500 feet from the project at Buchanan Road and Somersville Road.



**FIGURE 5 | EXISTING PEDESTRIAN AND BICYCLE FACILITIES**  
**TRANSPORTATION IMPACT ANALYSIS**  
 Tuscan Meadows Residential Project  
 City of Pittsburg

## 4) REGULATORY CONTEXT

Existing policies, laws and regulations that apply to the proposed project are summarized below.

### 4.1 State

The California Department of Transportation (Caltrans) has jurisdiction over State highways. Therefore, Caltrans controls all construction, modification, and maintenance of State highways, such as SR 4. Any improvements to these roadways would require Caltrans' approval. The Guide for the Preparation of Traffic Impact Studies provides consistent guidance for Caltrans staff who review local development and land use change proposals. The Guide also informs local agencies about the information needed for Caltrans to analyze the traffic impacts to state highway facilities which include freeway segments, on- or off-ramps, and signalized intersections.

### 4.2 Local

**Contra Costa Countywide Comprehensive Transportation Plan Update (2009)** - The transportation policies that are currently applicable within Contra Costa County are based on the Contra Costa County Comprehensive Transportation Plan. This document identifies the criteria for analyzing transportation impacts and sets forth plans for future roadway improvements in the county.

**City of Pittsburg General Plan** - The Transportation and Circulation Element included in the City of Pittsburg General Plan was prepared pursuant to Section 65302(b) of the California Government Code. The Transportation and Circulation Element addresses the location and extent of existing and planned transportation routes, terminals, and other local public utilities and facilities. The General Plan identifies roadway and transit goals and policies that have been adopted to ensure that the transportation system of the City will have adequate capacity to serve planned growth. These goals and policies are intended to provide a plan and implementation measures for an integrated, multi-modal transportation system that will safely and efficiently meet the transportation needs of all economic and social segments of the City.

### 4.3 Significance Criteria

The goal of the City of Pittsburg is to maintain a mid-Level of Service (LOS) D during the peak hours (volume to capacity ratio less than or equal to 0.85) with mid LOS E permissible at intersections along Kirker Pass Road, according to the General Plan. However, this analysis also includes intersections under the jurisdiction of the Cities of Antioch and Concord, Contra Costa County, and Caltrans. Please note that for the Caltrans freeway facilities being studied the operational standards and significance criteria are established by the Contra Costa Transportation Authority (CCTA) acting as the designated Congestion Management Agency (CMA) representing the jurisdictions of Contra Costa County. As the acting CMA the CCTA establishes the traffic LOS standards for all state highway facilities in Contra Costa County, which supersede the general Caltrans operational standard for all state highways.<sup>4</sup>

**Table 4** summarizes the applicable LOS standards at each of the project study intersections.

<sup>4</sup> 2011 Contra Costa Congestion Management Plan, Contra Costa Transportation Authority, Walnut Creek, CA, 94598.



Please note that both the older CCTALOS and currently adopted HCM standards are provided in Table 4. This is because the CCTA Technical Procedures specify that the HCM methodology shall be used unless it is being compared to a standard that was established using the previously adopted methodology, in which cast the CCTALOS method may be used.

As the designated Congestion Management Agency (CMA) representing the jurisdictions of Contra Costa County, the Contra Costa Transportation Authority (the Authority) is responsible for preparing and adopting a Congestion Management Program (CMP). Consistent with the CMP legislation, the Authority has established a level-of-service standard of LOS E for all parts of the CMP network except those that were already operating at worse levels of service in 1991.

Signalized Intersections - Project-related operational impacts on the signalized study intersections in the City of Pittsburg and Antioch are considered significant if project-related traffic causes the Level of Service (LOS) rating to deteriorate from mid LOS D (V/C of 0.85) or better to high LOS D, LOS E or F, or from LOS E to LOS F. In the City of Concord the Kirker Pass Road and Ygnacio Valley Road intersections are considered to have significant impacts if project-related traffic causes the Level of Service (LOS) rating to deteriorate from LOS D or better to LOS E, LOS F, or from LOS E to LOS F.

Please note that additional multi-modal transportation service objectives for certain signalized intersections have been established as part of the adopted East County Action Plan. The East County Action Plan covers the several adopted Traffic Management Programs (TMP) sites on selected arterials in East Contra Costa County. As part of this plan, adopted by all affected Cities, these TMP sites are permitted to use single point metering strategies at selected intersections to improve overall traffic flow.

At present, selected intersections on the following routes are subject to a TMP: Buchanan Road, Railroad Avenue, and Kirker Pass Road. During the hours of TMP operations, performance measures other than V/C may be used to evaluate corridor operations. Therefore, for the purpose of MTSO monitoring, the MTSOs and LOS standards described for the above mentioned roadways do not apply during the hours of TMP operations. In the case of Buchanan Road, the AM peak hour LOS standards do not apply at the intersection where the control point metering is currently implemented in the morning (Meadows Avenue).

**TABLE 4  
INTERSECTION LEVEL OF SERVICE SIGNIFICANCE CRITERIA**

	INTERSECTION	CONTROL	CCTALOS STANDARDS*		HCM STANDARDS**	
			V/C Ratio	LOS	Delay	LOS
1	RAILROAD AVE & SR-4 WB RAMPS	Traffic Signal	< 0.85	mid D	< 45 sec	mid D
2	RAILROAD AVE & SR-4 EB RAMPS	Traffic Signal	< 0.85	mid D	< 45 sec	mid D
3	RAILROAD AVE & E. LELAND RD	Traffic Signal	< 1.0	E	< 80 sec	E
4	RAILROAD AVE & BUCHANAN RD	Traffic Signal	< 0.95	mid E	< 65 sec	mid E
5	KIRKER PASS RD & MONTREUX ENTRANCE	Traffic Signal	< 0.95	mid E	< 65 sec	mid E
6	HARBOR ST & E LELAND RD	Traffic Signal	< 0.85	mid D	< 45 sec	mid D
7	HARBOR ST & BUCHANAN RD	Traffic Signal	< 0.85	mid D	< 45 sec	mid D
8	CALIFORNIA AVE & SR-4 WB RAMPS (LOVERIDGE)	Traffic Signal	< 0.90	D	< 55 sec	D
9	LOVERIDGE RD & CALIFORNIA AVE	Traffic Signal	< 0.90	D	< 55 sec	D
10	LOVERIDGE RD & SR-4 EB RAMPS	Traffic Signal	< 0.90	D	< 55 sec	D
11	LOVERIDGE RD & E. LELAND RD	Traffic Signal	< 0.85	mid D	< 45 sec	mid D
12	LOVERIDGE RD & BUCHANAN RD	Traffic Signal	< 0.85	mid D	< 45 sec	mid D
13	BUCHANAN RD & VENTURA DR	Traffic Signal	< 0.85	mid D	< 45 sec	mid D
14	VENTURA DR & JAMES DONLON BLVD	Traffic Signal	< 0.85	mid D	< 45 sec	mid D
15	BUCHANAN RD & TUSCANY MEADOWS DR	Traffic Signal	< 0.85	mid D	< 45 sec	mid D
16	TUSCANY MEADOWS DR & JAMES DONLON BLVD	Traffic Signal	< 0.85	mid D	< 45 sec	mid D
17	BUCHANAN RD & TUSCANY MEADOWS APARTMENTS	Traffic Signal	< 0.85	mid D	< 45 sec	mid D
18	AUTO CENTER DR & CENTURY BLVD	Traffic Signal	< 0.85	mid D	< 45 sec	mid D
19	SOMERSVILLE RD & SR-4 WB RAMPS	Traffic Signal	< 0.85	mid D	< 45 sec	mid D
20	SOMERSVILLE RD & SR-4 EB RAMPS	Traffic Signal	< 0.85	mid D	< 45 sec	mid D

**TABLE 4 (CONT.)  
INTERSECTION LEVEL OF SERVICE SIGNIFICANCE CRITERIA**

	INTERSECTION	CONTROL	CCTALOS STANDARDS*		HCM STANDARDS**	
			V/C Ratio	LOS	Delay	LOS
21	SOMERSVILLE RD & DELTA FAIR BLVD	Traffic Signal	< 0.85	mid D	< 45 sec	mid D
22	SOMERSVILLE RD & BUCHANAN RD	Traffic Signal	< 0.85	mid D	< 45 sec	mid D
23	SOMERSVILLE RD & TUSCANY MEADOWS	Traffic Signal	< 0.85	mid D	< 45 sec	mid D
24	SOMERSVILLE RD & JAMES DONLON BLVD	Traffic Signal	< 0.85	mid D	< 45 sec	mid D
25	BUCHANAN RD & DELTA FAIR BLVD	Traffic Signal	< 0.85	mid D	< 45 sec	mid D
26	JAMES DONLON BLVD & CONTRA LOMA BLVD	Traffic Signal	< 0.85	mid D	< 45 sec	mid D
27	JAMES DONLON BLVD & LONE TREE WAY	Traffic Signal	< 0.85	mid D	< 45 sec	mid D
28	KIRKER PASS & MYRTLE DR	Traffic Signal	< 0.90	D	< 55 sec	D
29	YGNACIO VALLEY RD & CONCORD BLVD	Traffic Signal	< 0.90	D	< 55 sec	D
30	YGNACIO VALLEY RD & CLAYTON BLVD	Traffic Signal	< 1.0	E	< 80 sec	E
31	BUCHANAN RD & CHATEAU MOBILE PARK	Traffic Signal	< 0.85	mid D	< 45 sec	mid D
32	DELTA FAIR BLVD & CENTURY BLVD	Traffic Signal	< 0.85	mid D	< 45 sec	mid D
33	SOMERSVILLE RD & FAIRVIEW DR	Traffic Signal	< 0.85	mid D	< 45 sec	mid D
34	DELTA FAIR BLVD & FAIRVIEW DR	Traffic Signal	< 0.85	mid D	< 45 sec	mid D

**NOTES:** \* Previously adopted CCTA standards based on the CCTALOS methodology.  
\*\* Currently adopted CCTA standards based on the 2010 Highway Capacity Manual methodology.

Unsignalized Intersections - Project-related operational impacts on unsignalized intersections are considered significant if project generated traffic causes the worst-case movement (or average of all movements for all-way stop-controlled intersections and roundabouts) to deteriorate from LOS D or better to LOS E or F.

According to CEQA guidelines, a project would have a significant impact if it would:

- Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness 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.
- Conflict with an applicable congestion management program, including, but not limited to, level-of-service standards, and travel demand measures, or other standards established by a county congestion management agency for designated roadways.
- Result in inadequate emergency vehicle 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.
- Result in a projected future over-capacity freeway condition where current long-range planning studies show an under-capacity condition.
- Result in an internal circulation system design that does not meet City standards.

*SR 4 Freeway Delay Index* - For the State Route 4 freeway the East County Action Plan specifies a maximum delay index of 2.5.<sup>5</sup> It is important to note that achievement of the MTSO delay index and average speed is measured over the length of SR 4 from Willow Pass Grade to SR 160.

## 5) IMPACTS AND MITIGATION MEASURES

### 5.1 Project Trip Generation

The proposed project will consist of include 917 single family residential units and 375 apartment units. The trip generation calculations are shown in **Table 5**. They are based on the fitted curve equations for Single-Family Detached Housing (Land Use Code 210) and for Apartments (Land Use Code 220) from the Institute of Transportation Engineer's (ITE) Trip Generation Manual, 9<sup>th</sup> Edition.

**TABLE 5  
TRIP GENERATION CALCULATIONS**

<i>Land Use</i>	<i>Size</i>	<i>ADT</i>	<i>AM Peak Hour</i>			<i>PM Peak Hour</i>		
			<i>In</i>	<i>Out</i>	<i>Total</i>	<i>In</i>	<i>Out</i>	<i>Total</i>
Single-Family Detached Housing	917 units	8,070	163	488	651	485	287	772
Apartments	375 units	2,393	38	150	188	146	79	225
<i>Subtotals</i>		<i>10,463</i>	<i>200</i>	<i>639</i>	<i>839</i>	<i>631</i>	<i>366</i>	<i>997</i>
Transit/Bicycle Reduction – 5%		523	10	32	42	32	18	50
<b>Net New Project Trips</b>	<b>1,292 units</b>	<b>9,940</b>	<b>190</b>	<b>607</b>	<b>797</b>	<b>599</b>	<b>348</b>	<b>947</b>

The total trip generation reflects all vehicle trips that would be counted at the project driveways, both inbound and outbound. Since the project is residential there were no adjustments applied to account for pass-by or internal trips. However, based on the potential for transit and bicycle use a 5% reduction has been applied to the project trip generation. This is based on information provided by ITE on trip reductions for developments located adjacent to bicycle lanes and/or bus transit corridors.<sup>6</sup> These reductions assume that direct, safe connections will be made between residences, transit stops, and nearby commercial areas. Please note these reductions therefore assume the project will provide bus turnouts at the entrances to the project on

<sup>5</sup> *Draft East County Action Plan for Routes of Regional Significance*, Fehr & Peers Associates, Walnut Creek, CA, November 2013.

<sup>6</sup> *ITE Trip Generation Handbook, 2<sup>nd</sup> Edition, Appendix B*, Institute of Transportation Engineers, Washington D.C., 2012.

Buchanan Road and on Somerville Road. It also assumes that the proposed pedestrian and bicycle facilities identified in Section 5.8 would be constructed. As a result, the bus turnouts and proposed pedestrian and bicycle facilities are required as mitigations, as specified in Section 5.15. The project is forecast to generate approximately 800 vehicle trips during the AM peak hour and 950 trips during the PM peak hour.

For purposes of determining the reasonable worst-case impacts of traffic on the surrounding street network from a proposed project, the trips generated by this proposed development are estimated for the peak commute hours of 7:15 a.m. and 8:15 a.m. and 4:45 p.m. and 5:45 p.m., which represent the peak of “*adjacent street traffic*”. This is the time period when the project traffic would generally contribute to the greatest amount of congestion.

It should also be noted that under cumulative conditions it was assumed, as per ITE guidelines, that there would be some additional internal trips between Tuscany Meadows and the adjacent subdivisions in the Cumulative Plus Project scenario where the James Donlon Boulevard Extension is assumed to be completed. This factor was assumed to result in a reduction of about 5% (about 50 peak hour trips) to the external trips generated by the project and this was only accounted for in the analysis Cumulative impacts.

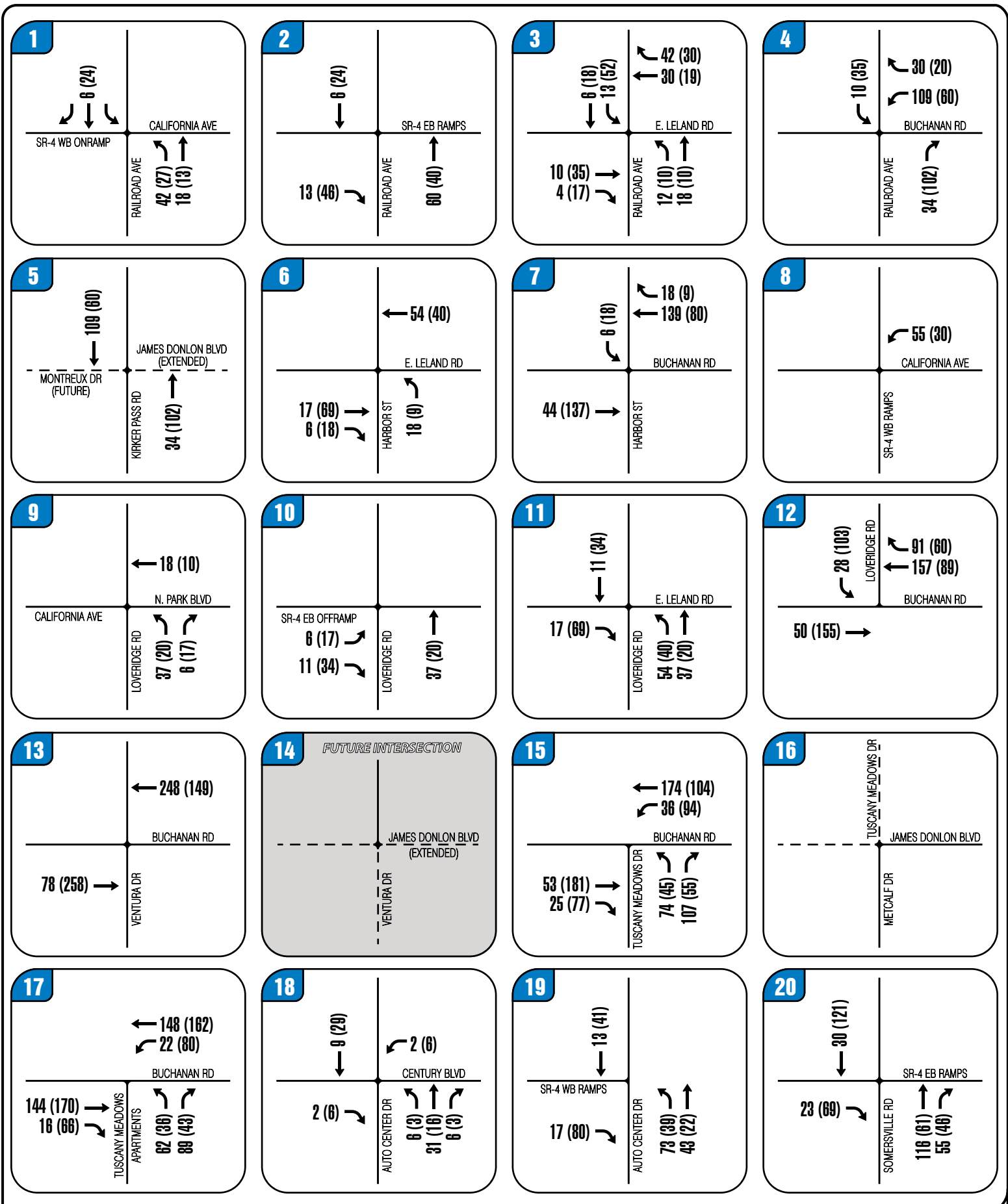
## 5.2 Project Trip Distribution

The trip distribution assumptions have been based on the project’s proximity to freeway interchanges, the existing directional split at nearby residential neighborhoods and local intersections, and the overall land use patterns in the area as determined from the most recent (January 2013) update to the Countywide Travel Demand Model. **Table 6** shows the percentage of project traffic assigned to various study roadways in both the AM and PM peak hours. **Figure 6** shows the project traffic that would be added at each of the study intersections.

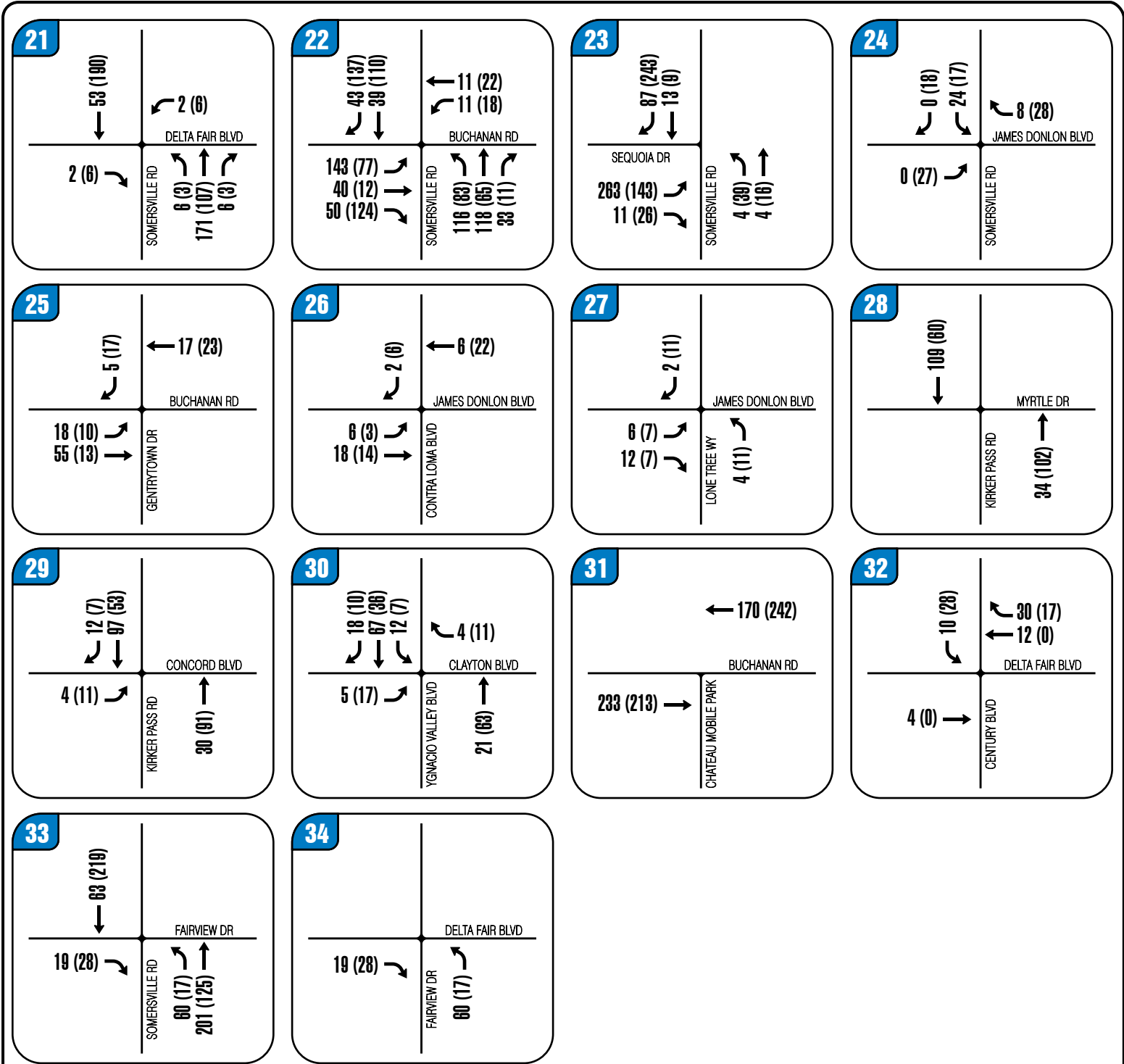
Additional research was conducted to verify the project trip distribution and the percent of project traffic assigned to use Kirker Pass Road and Ygnacio Valley Road. Based the existing traffic volume data Kirker Pass Road carries a PM peak hour volume of approximately 2,400 vehicles per hour west of the City of Pittsburg (total of both directions). Based on Caltrans traffic data State Route 4 carries a total PM peak volume of approximately 8,600 vehicles per hour. The Countywide Travel Demand Model indicates that up to 45% of PM peak hour trips could be to and from destinations to the west. Based on this it is estimated that approximately 10% of project traffic would use Kirker Pass Road and 35% would use State Route 4.

However, based on the project’s location and traffic counts taken at other nearby residential projects it was conservatively assumed that up to 20% of the project traffic would head west over Kirker Pass Road. That traffic was then proportionally distributed to Ygnacio Valley Road, Clayton Road, and Concord Boulevard based on the relative volume of traffic on each roadway and the intersection turning movement counts. This resulted in the conclusion that 11% of the total project traffic would travel to and from the west on Ygnacio Valley Road. Again, 20% of the project traffic was assigned over Kirker Pass towards Concord but based on the turning movements at the Concord study intersections 11% of that traffic was ultimately assumed to continue west on Ygnacio Valley Road towards Walnut Creek.

Please note that multiple peak hour traffic counts were conducted at the intersection of Pheasant Drive and Kirker Pass Road to determine the trip distribution of the Kirker Creek Apartments as a way to provide additional verification of the project trip distribution assumptions. The entrance intersection serves as the only access to this exclusively residential project (like the proposed project) and therefore can provide some comparable data to verify the



**FIGURE 6 | NEAR-TERM PROJECT AM (PM) PEAK HOUR TRIPS - PAGE 1**  
**TRANSPORTATION IMPACT ANALYSIS**



**FIGURE 6 | NEAR TERM PROJECT AM (PM) PEAK HOUR TRIPS CONT. - PAGE 2**  
 TRANSPORTATION IMPACT ANALYSIS

**TABLE 6  
PROJECT TRIP DISTRIBUTION ASSUMPTIONS**

<i>Origin / Destination</i>	<i>AM Peak Hour Trip Percentages</i>	<i>PM Peak Hour Trip Percentages</i>
North on Railroad Ave	3%	4%
To and from the West via SR-4 @ Railroad Ave	7%	8%
West on W. Leland Rd	7%	8%
West on Concord Blvd	2%	2%
West on Clayton Blvd	3%	3%
East on Clayton Blvd	2%	2%
South on Ygnacio Valley Blvd	11%	11%
To and from the West via SR-4 at Loveridge Rd	9%	9%
North on Century Blvd at E. Leland & Delta Fair Blvd	2%	2%
Somersville Shopping Centre	3%	3%
West on Delta Fair Blvd at Somersville Rd	1%	1%
East on Delta Fair Blvd at Somersville Rd	1%	1%
North on Delta Fair Blvd at Buchanan Rd & Gentrytown Dr	3%	3%
East on Buchanan Rd	9%	4%
East on Century Blvd at Auto Center Dr	1%	1%
North on Auto Center Dr	5%	5%
East on Mahogany Way at Auto Center Dr	1%	1%
To and from the West via SR-4 at Somersville Rd	12%	12%
To and from the West via SR-4 at Somersville Rd	9%	14%
North on Contra Loma Blvd at James Donlon Blvd	1%	1%
North on Lone Tree Way at James Donlon Blvd	1%	2%
South on Lone Tree Way at James Donlon Blvd	2%	2%
Turner Elementary School	3%	0%
Los Medanos College	2%	1%

expected travel characteristics of the proposed project's residents. Based on the traffic counts conducted at the project entrance about 20% of the traffic generated by this existing residential area was found to travel to and from the west on Kirker Pass Road and 80% traveled to and from the east towards Pittsburg. These traffic counts provide further verification of the trip distribution assumptions used in this analysis.

### **5.3 Existing Plus Project Traffic Capacity Conditions (Scenario 2)**

This scenario evaluates the existing conditions with the addition of traffic from the proposed project. The capacity calculations for the Existing Plus Project scenario are shown in Table 5. Please note that the corresponding LOS analysis calculation sheets are presented in the Traffic Analysis Appendix. As shown in **Table 7**, all of the signalized study intersections would have acceptable conditions (LOS D or better) during the weekday AM and PM peak hours except for three intersections which would each have an average delay of more than 45 seconds during



either the AM or PM peak hours. These include the intersections of East Leland Road and Railroad Avenue, Buchanan Road at Harbor Street, and Buchanan Road at Somersville Road. Mitigations to improve operations at these intersections are discussed in Section 5.15.

**TABLE 7  
EXISTING PLUS PROJECT INTERSECTION LEVEL OF SERVICE CONDITIONS**

INTERSECTION		CONTROL	PEAK HOUR	EXISTING		EXISTING PLUS PROJECT	
				Delay	LOS	Delay	LOS
1	RAILROAD AVE & SR-4 WB RAMPS	Traffic Signal	AM	32.9	C	34.0	C
			PM	19.7	B	19.9	B
2	RAILROAD AVE & SR-4 EB RAMPS	Traffic Signal	AM	28.3	C	28.7	C
			PM	25.3	C	25.5	C
3	RAILROAD AVE & E. LELAND RD	Traffic Signal	AM	36.6	D	40.7	D
			PM	<b>51.2</b>	<b>D</b>	<b>60.4</b>	<b>E</b>
4	RAILROAD AVE & BUCHANAN RD	Traffic Signal	AM	15.9	B	18.2	B
			PM	37.9	D	38.4	D
5	KIRKER PASS RD & MONTREUX ENTRANCE	Traffic Signal	AM	N/A	N/A	N/A	N/A
			PM	N/A	N/A	N/A	N/A
6	HARBOR ST & E LELAND RD	Traffic Signal	AM	24.9	C	25.6	C
			PM	37.3	D	39.4	D
7	HARBOR ST & BUCHANAN RD	Traffic Signal	AM	38.5	D	<b>45.6</b>	<b>D</b>
			PM	23.6	C	25.2	C
8	CALIFORNIA AVE & SR-4 WB RAMPS (LOVERIDGE)	Traffic Signal	AM	18.4	B	18.2	B
			PM	28.0	C	28.2	C
9	LOVERIDGE RD & CALIFORNIA AVE	Traffic Signal	AM	34.4	C	36.5	D
			PM	23.2	C	23.7	C
10	LOVERIDGE RD & SR-4 EB RAMPS	Traffic Signal	AM	22.3	C	22.4	C
			PM	26.2	C	26.8	C
11	LOVERIDGE RD & E. LELAND RD	Traffic Signal	AM	23.5	C	25.1	C
			PM	29.8	C	32.1	C
12	LOVERIDGE RD & BUCHANAN RD	Traffic Signal	AM	38.8	D	43.5	D
			PM	25.4	C	30.6	C
13	BUCHANAN RD & VENTURA DR	Traffic Signal	AM	15.3	B	17.7	B
			PM	22.2	C	30.4	C
14	VENTURA DR & JAMES DONLON BLVD	Traffic Signal	AM	N/A	N/A	N/A	N/A
			PM	N/A	N/A	N/A	N/A
15	BUCHANAN RD & TUSCANY MEADOWS DR	Traffic Signal	AM	N/A	N/A	41.5	D
			PM	N/A	N/A	30.2	C
16	TUSCANY MEADOWS DR & JAMES DONLON BLVD	Traffic Signal	AM	N/A	N/A	N/A	N/A
			PM	N/A	N/A	N/A	N/A
17	BUCHANAN RD & TUSCANY MEADOWS APARTMENTS	Traffic Signal	AM	N/A	N/A	23.6	C
			PM	N/A	N/A	40.7	D
18	AUTO CENTER DR & CENTURY BLVD	Traffic Signal	AM	17.1	B	17.2	B
			PM	21.1	C	21.5	C
19	SOMERSVILLE RD & SR-4 WB RAMPS	Traffic Signal	AM	24.3	C	30.3	C
			PM	22.9	C	24.9	C
20	SOMERSVILLE RD & SR-4 EB RAMPS	Traffic Signal	AM	12.2	B	12.3	B
			PM	20.8	C	21.0	C

**SOURCE:** Abrams Associates, 2014

**NOTES:** HCM LOS results are presented in terms of average intersection delay in seconds per vehicle. For stop controlled intersections the results for the worst side street approach are presented.

**TABLE 7 (CONT.)  
EXISTING PLUS PROJECT INTERSECTION LEVEL OF SERVICE CONDITIONS**

	INTERSECTION	CONTROL	PEAK HOUR	EXISTING		EXISTING PLUS PROJECT	
				Delay	LOS	Delay	LOS
21	SOMERSVILLE RD & DELTA FAIR BLVD	Traffic Signal	AM	19.3	B	20.7	C
			PM	19.8	B	19.9	B
22	SOMERSVILLE RD & BUCHANAN RD	Traffic Signal	AM	33.5	C	64.2	E
			PM	29.6	C	58.3	E
23	SOMERSVILLE RD & TUSCANY MEADOWS	Traffic Signal	AM	N/A	N/A	8.3	A
			PM	N/A	N/A	4.8	A
24	SOMERSVILLE RD & JAMES DONLON BLVD	Traffic Signal	AM	9.9	A	9.9	A
			PM	8.5	A	8.5	A
25	BUCHANAN RD & DELTA FAIR BLVD	Traffic Signal	AM	9.8	A	10.4	B
			PM	12.0	B	12.3	B
26	JAMES DONLON BLVD & CONTRA LOMA BLVD	Traffic Signal	AM	17.8	B	18.0	B
			PM	13.1	B	13.2	B
27	JAMES DONLON BLVD & LONE TREE WAY	Traffic Signal	AM	19.2	B	19.3	B
			PM	23.2	C	23.5	C
28	KIRKER PASS & MYRTLE DR	Traffic Signal	AM	6.7	A	6.7	A
			PM	4.6	A	4.7	A
29	YGNACIO VALLEY RD & CONCORD BLVD	Traffic Signal	AM	34.1	C	35.8	D
			PM	30.0	C	31.3	C
30	YGNACIO VALLEY RD & CLAYTON BLVD	Traffic Signal	AM	35.9	D	36.6	D
			PM	36.5	D	37.1	D
31	BUCHANAN RD & CHATEAU MOBILE PARK	Side Street Stop	AM	11.9	B	13.8	B
			PM	21.3	C	27.5	D
32	DELTA FAIR BLVD & CENTURY BLVD	Traffic Signal	AM	12.9	B	13.2	B
			PM	15.8	B	16.4	B
33	SOMERSVILLE RD & FAIRVIEW DR	Traffic Signal	AM	16.7	B	16.1	B
			PM	32.3	C	39.4	D
34	DELTA FAIR BLVD & FAIRVIEW DR	Traffic Signal	AM	17.5	B	20.4	C
			PM	20.1	C	23.6	C

**SOURCE:** Abrams Associates, 2014

**NOTES:** HCM LOS results are presented in terms of average intersection delay in seconds per vehicle. For stop controlled intersections the results for the worst side street approach are presented.

### 5.4 Baseline Traffic Capacity Conditions (Scenario 3)

The Baseline scenario evaluates the existing conditions with the addition of traffic from reasonably foreseeable projects in the area. This includes traffic from the approved Sky Ranch Project (415 units), the approved Black Diamond Residential Project (286 units), the Buchanan Crossings Commercial Project (103,000 square feet), and the planned Montreux Residential Project (368 units). In addition, the general baseline growth in traffic was developed based on the assumption that the project completion date would be 2018, in part because this is when the various approved projects are expected to be completed. This scenario was prepared in coordination with the City of Pittsburg and includes all reasonably foreseeable projects that would significantly affect the traffic volumes in the area. Figure A-2 of the Technical Appendix presents the resulting baseline volumes at each of the project study intersections.

**Table 8** summarizes the associated LOS computation results for the Baseline and Baseline Plus Project weekday AM and PM peak hour conditions without the James Donlon Boulevard

**TABLE 8  
BASELINE PLUS PROJECT INTERSECTION LEVEL OF SERVICE CONDITIONS**

	INTERSECTION	CONTROL	PEAK HOUR	BASELINE		BASELINE PLUS PROJECT	
				Delay	LOS	Delay	LOS
1	RAILROAD AVE & SR-4 WB RAMPS	Traffic Signal	AM	36.4	D	37.5	D
			PM	21.0	C	23.3	C
2	RAILROAD AVE & SR-4 EB RAMPS	Traffic Signal	AM	29.8	C	30.6	C
			PM	26.3	C	26.9	C
3	RAILROAD AVE & E. LELAND RD	Traffic Signal	AM	40.2	D	<b>47.4</b>	<b>D</b>
			PM	<b>59.8</b>	<b>E</b>	<b>68.6</b>	<b>E</b>
4	RAILROAD AVE & BUCHANAN RD	Traffic Signal	AM	18.2	B	21.2	C
			PM	29.1	C	50.8	D
5	KIRKER PASS RD & MONTREUX ENTRANCE	Traffic Signal	AM	8.0	A	8.5	A
			PM	5.6	A	5.7	A
6	HARBOR ST & E LELAND RD	Traffic Signal	AM	26.2	C	27.1	C
			PM	39.8	D	42.2	D
7	HARBOR ST & BUCHANAN RD	Traffic Signal	AM	42.2	D	<b>52.6</b>	<b>D</b>
			PM	24.4	C	27.4	C
8	CALIFORNIA AVE & SR-4 WB RAMPS (LOVERIDGE)	Traffic Signal	AM	18.4	B	18.3	B
			PM	28.1	C	28.3	C
9	LOVERIDGE RD & CALIFORNIA AVE	Traffic Signal	AM	39.8	D	41.1	D
			PM	24.9	C	25.3	C
10	LOVERIDGE RD & SR-4 EB RAMPS	Traffic Signal	AM	22.5	C	22.9	C
			PM	26.9	C	28.3	C
11	LOVERIDGE RD & E. LELAND RD	Traffic Signal	AM	24.8	C	26.6	C
			PM	31.6	C	34.1	C
12	LOVERIDGE RD & BUCHANAN RD	Traffic Signal	AM	42.8	D	<b>52.3</b>	<b>D</b>
			PM	28.2	C	37.4	D
13	BUCHANAN RD & VENTURA DR	Traffic Signal	AM	21.4	C	28.9	C
			PM	27.4	C	<b>47.2</b>	<b>D</b>
14	VENTURA DR & JAMES DONLON BLVD	Traffic Signal	AM	N/A	N/A	2.5	A
			PM	N/A	N/A	2.2	A
15	BUCHANAN RD & TUSCANY MEADOWS DR	Traffic Signal	AM	N/A	N/A	<b>52.5</b>	<b>D</b>
			PM	N/A	N/A	<b>55.8</b>	<b>E</b>
16	TUSCANY MEADOWS DR & JAMES DONLON BLVD	Traffic Signal	AM	N/A	N/A	N/A	N/A
			PM	N/A	N/A	N/A	N/A
17	BUCHANAN RD & TUSCANY MEADOWS APARTMENTS	Traffic Signal	AM	N/A	N/A	26.2	C
			PM	N/A	N/A	<b>59.6</b>	<b>E</b>
18	AUTO CENTER DR & CENTURY BLVD	Traffic Signal	AM	17.6	B	17.6	B
			PM	21.6	C	21.6	C
19	SOMERSVILLE RD & SR-4 WB RAMPS	Traffic Signal	AM	27.6	C	25.9	C
			PM	26.6	C	26.6	C
20	SOMERSVILLE RD & SR-4 EB RAMPS	Traffic Signal	AM	12.0	B	12.2	B
			PM	21.4	C	30.0	C

**SOURCE:** Abrams Associates, 2014

**NOTES:** HCM LOS results are presented in terms of average intersection delay in seconds per vehicle. For stop controlled intersections the results for the worst side street approach are presented.

**TABLE 8 (CONT.)**  
**BASELINE PLUS PROJECT INTERSECTION LEVEL OF SERVICE CONDITIONS**

INTERSECTION		CONTROL	PEAK HOUR	BASELINE		BASELINE PLUS PROJECT	
				Delay	LOS	Delay	LOS
21	SOMERSVILLE RD & DELTA FAIR BLVD	Traffic Signal	AM	20.8	C	20.9	C
			PM	20.3	C	23.5	C
22	SOMERSVILLE RD & BUCHANAN RD	Traffic Signal	AM	42.2	D	<b>78.4</b>	<b>E</b>
			PM	29.9	C	<b>50.3</b>	<b>D</b>
23	SOMERSVILLE RD & TUSCANY MEADOWS	Traffic Signal	AM	N/A	N/A	8.8	A
			PM	N/A	N/A	4.9	A
24	SOMERSVILLE RD & JAMES DONLON BLVD	Traffic Signal	AM	11.0	B	11.0	B
			PM	10.2	B	11.1	B
25	BUCHANAN RD & DELTA FAIR BLVD	Traffic Signal	AM	10.3	B	10.9	B
			PM	12.8	B	13.1	B
26	JAMES DONLON BLVD & CONTRA LOMA BLVD	Traffic Signal	AM	20.0	C	21.7	C
			PM	13.5	B	13.7	B
27	JAMES DONLON BLVD & LONE TREE WAY	Traffic Signal	AM	20.0	B	20.3	C
			PM	24.1	C	24.2	C
28	KIRKER PASS & MYRTLE DR	Traffic Signal	AM	6.8	A	6.9	A
			PM	4.8	A	5.0	A
29	YGNACIO VALLEY RD & CONCORD BLVD	Traffic Signal	AM	37.1	D	39.3	D
			PM	32.5	C	33.6	C
30	YGNACIO VALLEY RD & CLAYTON BLVD	Traffic Signal	AM	37.7	D	38.6	D
			PM	38.4	D	38.9	D
31	BUCHANAN RD & CHATEAU MOBILE PARK	Side Street Stop	AM	4.7	A	4.3	A
			PM	6.4	A	6.5	A
32	DELTA FAIR BLVD & CENTURY BLVD	Traffic Signal	AM	13.3	B	13.6	B
			PM	16.8	B	17.1	B
33	SOMERSVILLE RD & FAIRVIEW DR	Traffic Signal	AM	17.1	B	20.3	C
			PM	32.0	C	37.3	D
34	DELTA FAIR BLVD & FAIRVIEW DR	Traffic Signal	AM	18.5	B	22.2	C
			PM	22.4	C	26.3	C

**SOURCE:** Abrams Associates, 2014

**NOTES:** HCM LOS results are presented in terms of average intersection delay in seconds per vehicle. For stop controlled intersections the results for the worst side street approach are presented.

Extension. The corresponding LOS analysis calculation sheets are presented in the *Traffic Analysis Appendix*. As shown in **Table 8**, with addition of traffic from the proposed project all study intersections would continue to have acceptable conditions (LOS D or better) during the weekday AM and PM peak hours with the exception of East Leland Road at Railroad Avenue.

### **5.5 Baseline Plus Project Traffic Capacity Conditions (Scenario 4)**

The Baseline plus proposed project traffic forecasts were developed by adding project-related traffic to the baseline traffic volumes. Figure A-3 of the Technical Appendix presents the Baseline Plus Project traffic volumes that were used in the analysis. As noted above, **Table 8** summarizes the LOS results for the Baseline and Baseline Plus Project weekday AM and PM peak hour conditions without the James Donlon Boulevard Extension (i.e. the existing roadway network). Please note that the corresponding LOS analysis calculation sheets are presented in the appendix.

As shown in **Table 8**, all of the signalized study intersections would continue to have acceptable conditions (LOS D or better) during the weekday AM and PM peak hours except for seven intersections which would operate at LOS E or F during either the AM or PM peak hours. These include the intersections of Railroad Avenue and Leland Road, Buchanan Road and Harbor Street, Buchanan Road and Loveridge Road, Buchanan Road at Ventura Drive, Buchanan Road at Tuscan Meadows Drive, Buchanan Road at the Tuscan Meadows Apartments Entrance, and Buchanan Road at Somersville Road. Mitigations to improve operations at these intersections are discussed in Section 5.15. Please note that the AM peak hour impacts at the intersections of Railroad Avenue and Leland Road, Buchanan Road and Harbor Street, Buchanan Road and Loveridge Road, and Buchanan Road at Ventura Drive could all theoretically continue to meet the established LOS standards with some adjustments to the AM peak hour control point metering on Buchanan Road.

### **5.6 Internal Circulation and Access**

No internal site circulation or access issues have been identified that would cause a traffic safety problem or any unusual traffic congestion or delay. The volumes on the internal residential roadways (with homes fronting on them) would be light enough so that no significant conflicts would be expected with through traffic and vehicles backing out of the driveways and/or garages within the project. Please note that once the James Donlon Boulevard Extension is completed it is planned that Tuscan Meadows Drive will be connected to the extension via a new signalized intersection to be constructed by the project.

At the main project entrances on Buchanan Road and Somersville Road there were no capacity problems identified with the lane configurations at the proposed project entrances. Due to the control point metering on Buchanan Road the main intersection at Tuscan Meadows Drive would operate at LOS F during the AM peak hour. However, as discussed in Section 5.13 this is unrelated to the lane configuration and the intersection would be forecast to operate at LOS C if the control point metering were not in place.

It should also be noted that there could potentially be some AM peak hour operational issues at the new signalized intersection on Buchanan Road proposed for the Tuscany Meadows Apartments. This intersection would be upstream (to the east) of the control point metering and it is expected that the AM peak hour queues from the metering could extend back into this intersection.

Based on the volumes forecast to be using the intersection in the future this would not result in any significant ancillary impacts that would require mitigation. However, as an improvement measure it is recommended that the City consider constructing a receiving lane/acceleration lane to facilitate northbound left turns onto Buchanan Road at the intersection during the morning peak period.

**Analysis of Project Phasing** – A detailed project phasing plan was not yet available at the time this report was published. However, in response to a request from the City we analyzed the number of single family homes that could be constructed in a first phase that only had access to Buchanan Road via Tuscany Meadows Drive (and without the apartments).

Based on a detailed analysis of traffic operations in the area it was concluded that up to 550 units could be constructed before the project would require either 1) the Sequoia Drive connection to Somersville Road to be established or 2) mitigation of the PM peak hour operations at Buchanan Road and Somersville Road. In other words, without the Sequoia Drive connection we estimate that only 550 units could be constructed before the intersection standards would be exceeded and mitigations identified in Section 5.15 would be required, particularly at the intersection of Buchanan Road and Somersville Road.

## 5.7 Parking Impacts

The proposed project would provide an adequate supply of off-street parking based on the City's requirements. The project is currently proposing to meet the City's parking requirements and subject to final City approval of the proposed parking plan there would be no significant parking impacts expected to the surrounding properties.

## 5.8 Pedestrian and Bicycle Impacts

Due to its proximity to bicycle lanes and trails the proposed project would generate additional pedestrian and bicycle traffic in the area, thereby potentially increasing conflicts between vehicles, bicycles, and pedestrians. Within the project sidewalks would be provided on all streets and bicycle lanes will be included on the collector streets (Tuscany Meadows Drive and Sequoia Drive). Please note it is also recommended that a pedestrian connection be provided between the proposed apartments and the single family home portion of the project to allow access to the planned park areas.

To achieve the City's desired Transportation Demand Management (TDM) and Greenhouse Gas (GHG) reduction goals for the project it is also recommended that construction of a new multi-use trail connection to the Delta De Anza Trail (via the planned Buchanan Crossings Shopping Center) be included as a mitigation for the project. Please see Section 5.15 for additional detail.

The trail connection could be constructed to form the fourth leg of the proposed new traffic signal on Buchanan Road at Tuscany Meadow. This connection would clearly encourage walking trips to Los Medanos College and Turner Elementary School as well as other nearby shopping centers and employment destinations. The proposed bicycle lanes and multi-use trail connection are shown in **Figure 7**. It is recommended that this trail connection be included as mitigation for the project.

## 5.9 Mass Transit Impacts

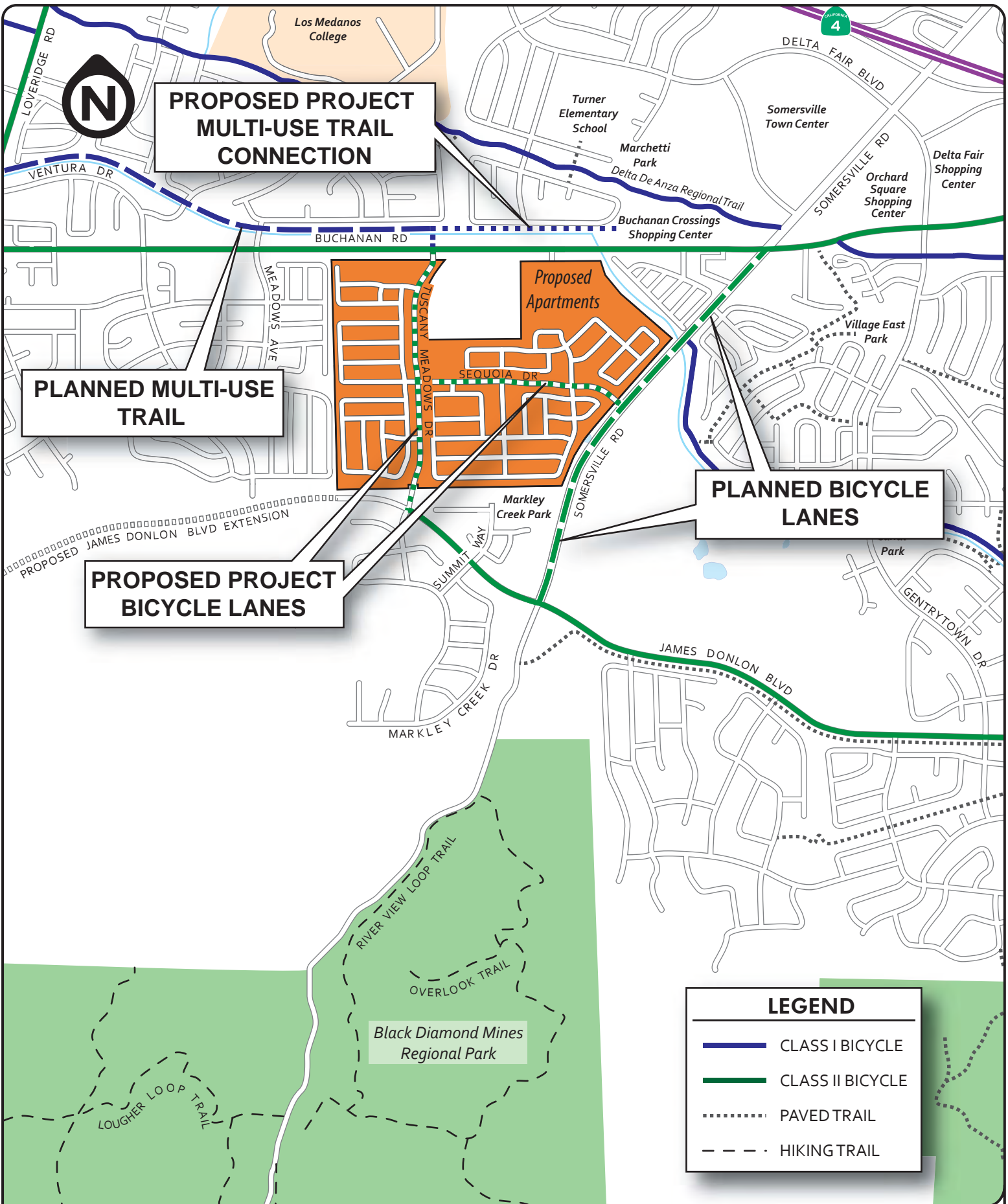
The proposed project would not interfere with any existing bus routes and would not remove or relocate any existing bus stops. In addition, the project could potentially increase transit opportunities by providing new bus turnouts on Buchanan Road. The proposed Project could also support existing bus services with additional transit ridership and would not conflict with any transit plans or goals of the City or the Contra Costa Transportation Authority.

Some of the project's residents would be expected to utilize the future Railroad Avenue E-BART station and would provide additional ridership for local bus companies. Therefore, with the implementation of the proposed mitigation measure outlined in Section 5.15, including the installation of bus turnouts, the impact of the proposed Project on existing transit operations (or adopted plans related to transit) would be less than significant.

## 5.10 Cumulative Traffic Capacity Conditions (Scenario 5)

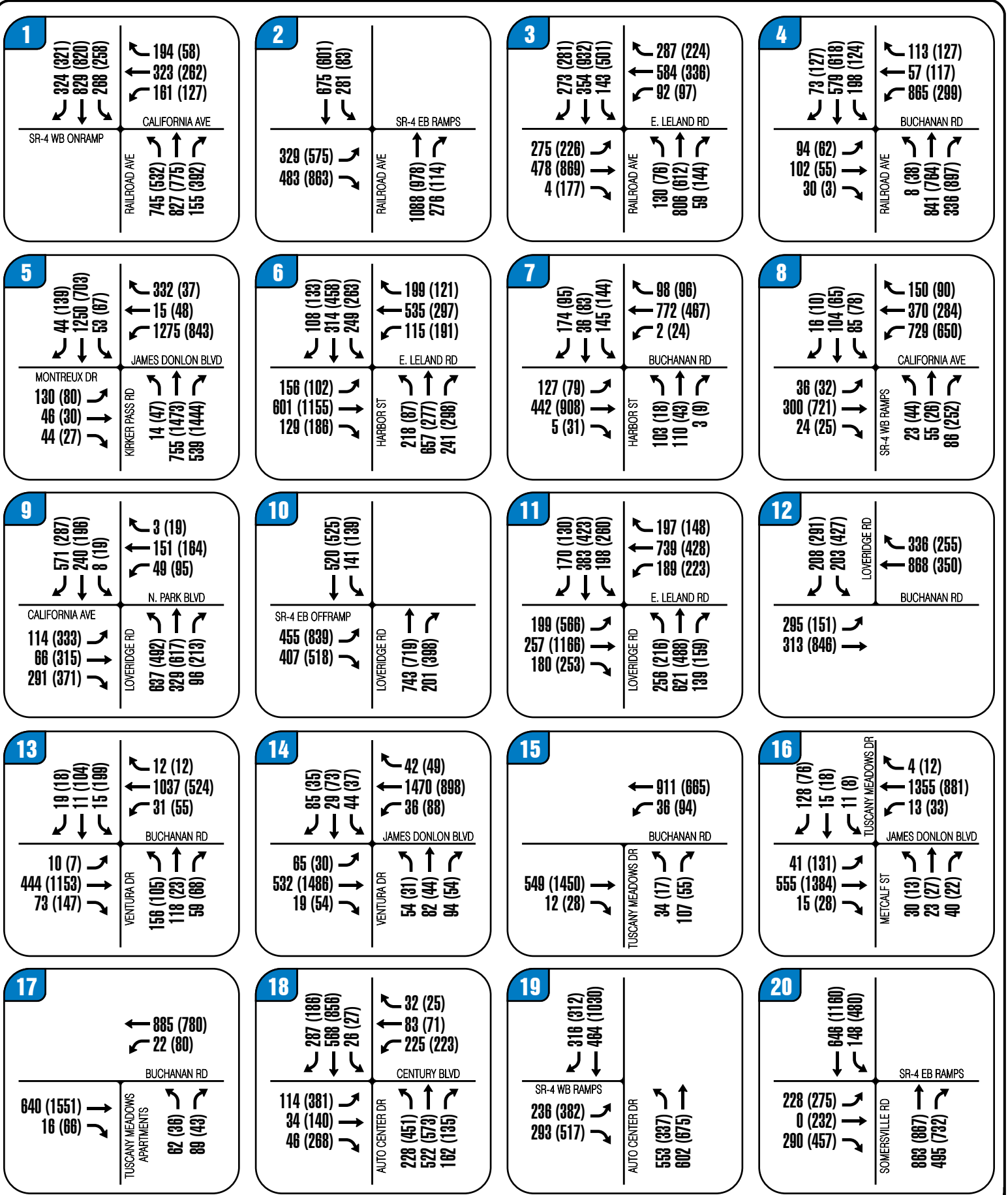
For the cumulative conditions, the intersection traffic volumes were based on the existing turning movements with the addition of traffic from all planned and approved projects such as the Concord Naval Weapons Station Reuse Plan, plus the addition of incremental growth in background traffic estimated by the County's traffic model. **Figure 8** presents the cumulative build-out traffic volumes including the traffic from the proposed residential project. **Figure 9** shows the revised distribution of project trips that is forecast with the planned James Donlon Boulevard Extension, which is assumed to be in place under cumulative conditions.

**Table 9** summarizes the LOS results for the Cumulative (Year 2035) traffic conditions at each of the project study intersections. As mentioned previously, this scenario assumes completion of the James Donlon Boulevard Extension. As shown on this table, all of the signalized study intersections would continue to have acceptable conditions during the weekday AM and PM peak commute hours except for the intersection of Railroad Avenue and Leland Road which would operate at LOS E during the PM peak hour. Mitigations to improve operations at these intersections are discussed in Section 5.15.

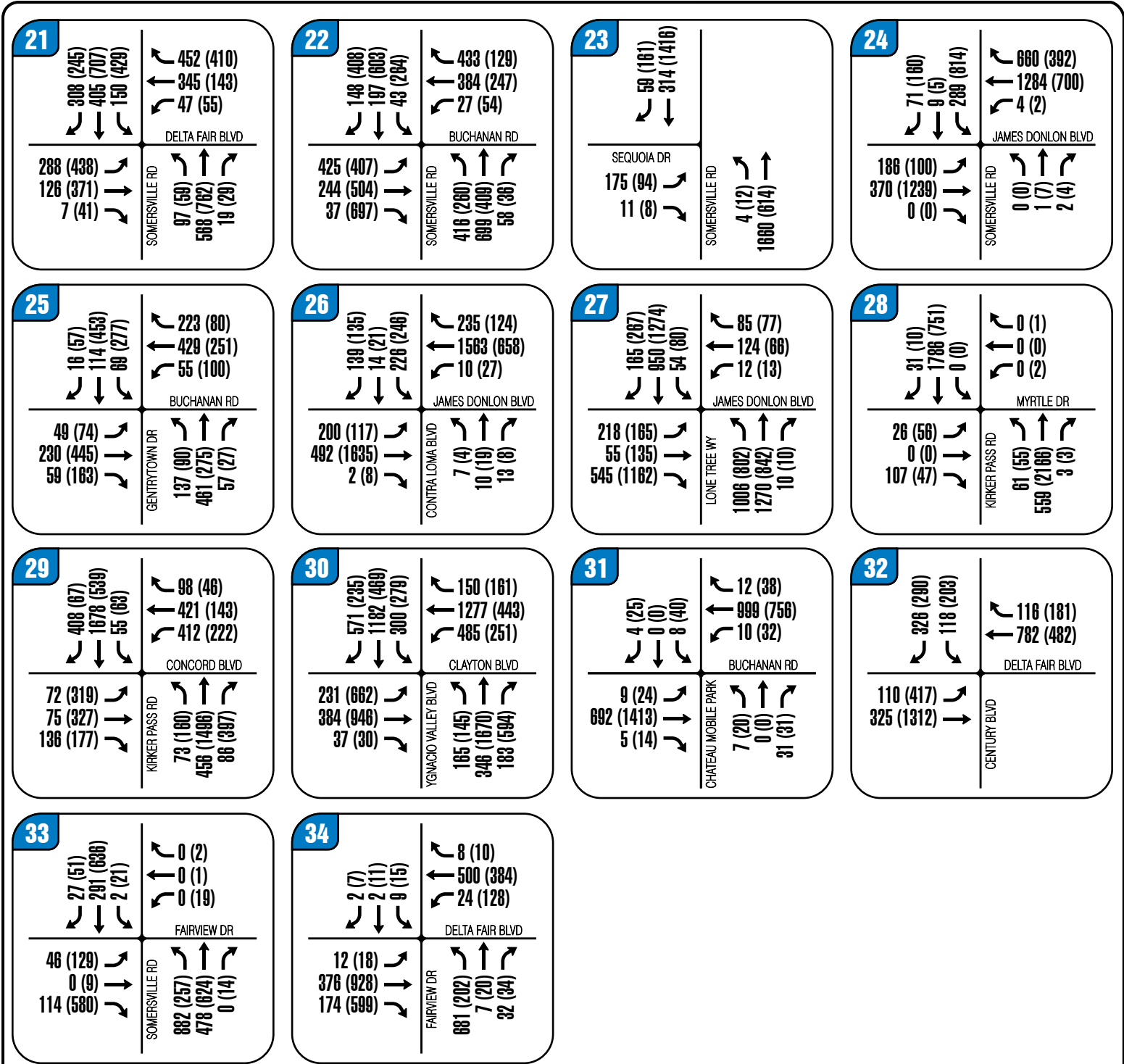


**FIGURE 7 | PLANNED PEDESTRIAN AND BICYCLE FACILITIES**  
 TRANSPORTATION IMPACT ANALYSIS  
 Tuscan Meadows Residential Project  
 City of Pittsburgh

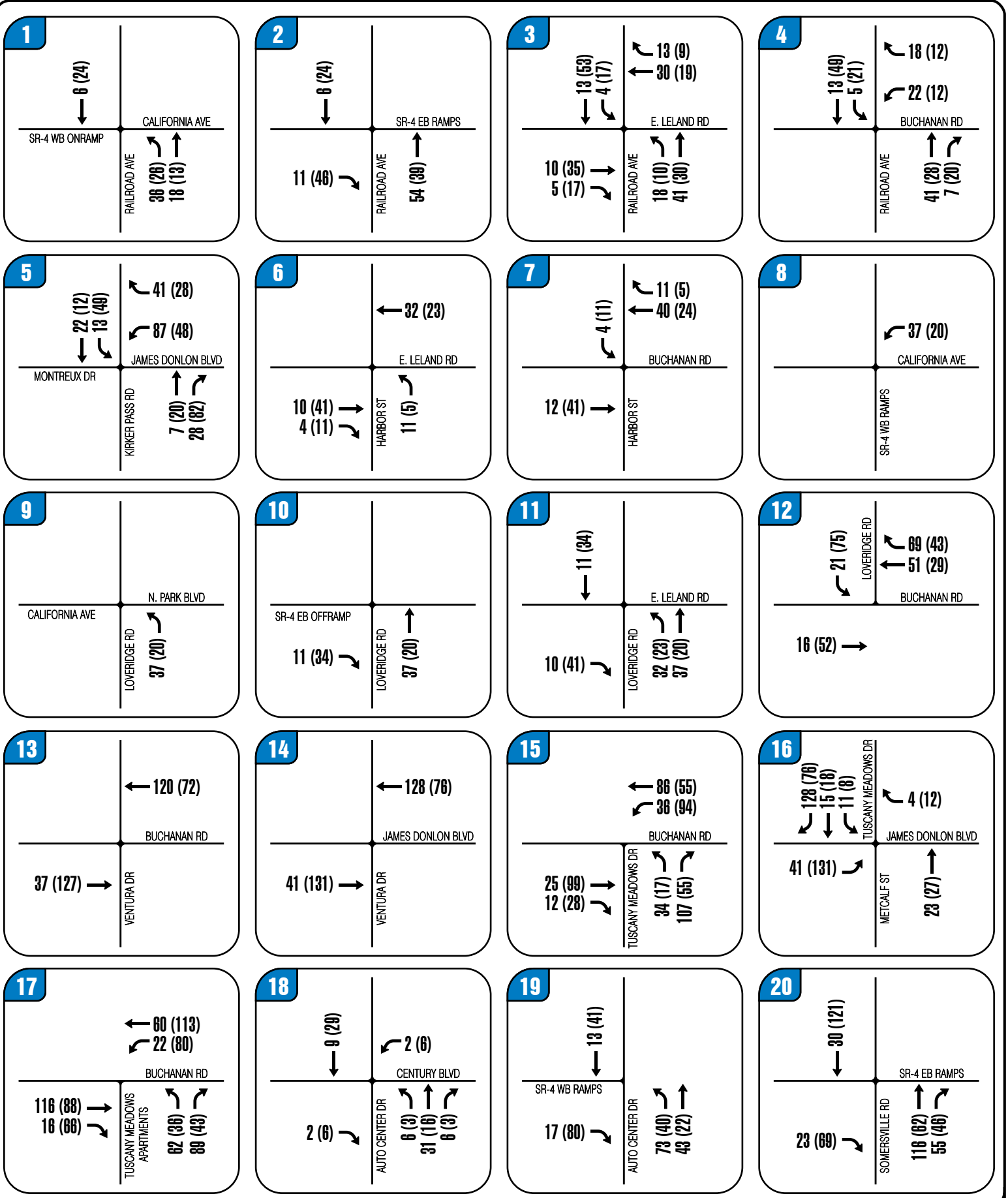




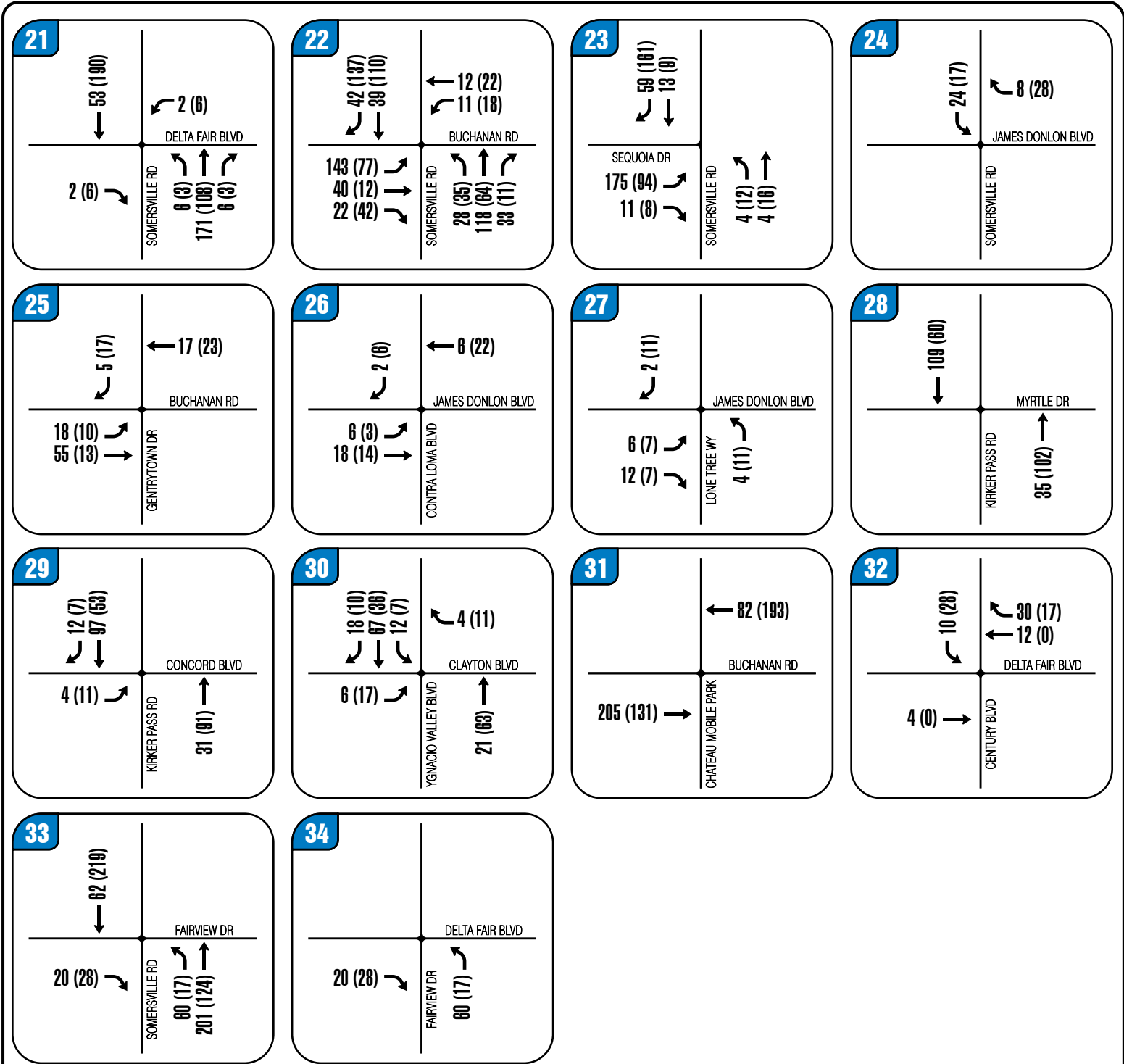
**FIGURE 8 | CUMULATIVE + PROJECT WITH JDE - AM (PM) PEAK HOUR VOLUMES - PAGE 1**  
**TRANSPORTATION IMPACT ANALYSIS**



**FIGURE 8 | CUMULATIVE + PROJECT WITH JDE AM (PM) PEAK HOUR VOLUMES - PAGE 2**  
**TRANSPORTATION IMPACT ANALYSIS**



**FIGURE 9 | CUMULATIVE AM (PM) PEAK HOUR PROJECT TRIPS - PAGE 1**  
**TRANSPORTATION IMPACT ANALYSIS**



**FIGURE 9 | CUMULATIVE AM (PM) PEAK HOUR PROJECT TRIPS - PAGE 2**

**TRANSPORTATION IMPACT ANALYSIS**

Tuscany Meadows Residential Project  
City of Pittsburg

**TABLE 9  
CUMULATIVE PLUS PROJECT INTERSECTION LEVEL OF SERVICE CONDITIONS**

INTERSECTION		CONTROL	PEAK HOUR	CUMULATIVE		CUMULATIVE PLUS PROJECT	
				Delay	LOS	Delay	LOS
1	RAILROAD AVE & SR-4 WB RAMPS	Traffic Signal	AM	31.8	C	32.0	C
			PM	25.1	C	25.2	C
2	RAILROAD AVE & SR-4 EB RAMPS	Traffic Signal	AM	27.8	C	28.3	C
			PM	23.9	C	24.6	C
3	RAILROAD AVE & E. LELAND RD	Traffic Signal	AM	35.0	D	38.0	D
			PM	<b>56.0</b>	<b>E</b>	<b>61.1</b>	<b>E</b>
4	RAILROAD AVE & BUCHANAN RD	Traffic Signal	AM	21.6	C	22.9	C
			PM	20.4	C	23.4	C
5	KIRKER PASS RD & MONTREUX ENTRANCE	Traffic Signal	AM	23.0	C	25.8	C
			PM	17.4	B	20.6	C
6	HARBOR ST & E LELAND RD	Traffic Signal	AM	33.9	C	33.8	C
			PM	40.8	D	41.3	D
7	HARBOR ST & BUCHANAN RD	Traffic Signal	AM	39.1	D	39.9	D
			PM	25.8	C	25.9	C
8	CALIFORNIA AVE & SR-4 WB RAMPS (LOVERIDGE)	Traffic Signal	AM	19.1	B	19.3	B
			PM	30.1	C	30.3	C
9	LOVERIDGE RD & CALIFORNIA AVE	Traffic Signal	AM	51.4	D	52.9	D
			PM	30.0	C	30.6	C
10	LOVERIDGE RD & SR-4 EB RAMPS	Traffic Signal	AM	23.7	C	24.6	C
			PM	28.8	C	29.9	C
11	LOVERIDGE RD & E. LELAND RD	Traffic Signal	AM	27.6	C	28.7	C
			PM	36.0	D	38.1	D
12	LOVERIDGE RD & BUCHANAN RD	Traffic Signal	AM	31.1	C	30.4	C
			PM	28.5	C	26.3	C
13	BUCHANAN RD & VENTURA DR	Traffic Signal	AM	18.9	B	20.1	C
			PM	30.8	C	31.2	C
14	VENTURA DR & JAMES DONLON BLVD	Traffic Signal	AM	18.9	B	20.5	C
			PM	15.4	B	16.4	B
15	BUCHANAN RD & TUSCANY MEADOWS DR	Traffic Signal	AM	N/A	N/A	31.3	C
			PM	N/A	N/A	39.0	D
16	TUSCANY MEADOWS DR & JAMES DONLON BLVD	Traffic Signal	AM	3.6	A	14.0	B
			PM	4.1	A	12.8	B
17	BUCHANAN RD & TUSCANY MEADOWS APARTMENTS	Traffic Signal	AM	N/A	N/A	24.0	C
			PM	N/A	N/A	35.4	D
18	AUTO CENTER DR & CENTURY BLVD	Traffic Signal	AM	19.2	B	19.2	B
			PM	23.2	C	23.3	C
19	SOMERSVILLE RD & SR-4 WB RAMPS	Traffic Signal	AM	31.6	C	33.2	C
			PM	26.5	C	29.7	C
20	SOMERSVILLE RD & SR-4 EB RAMPS	Traffic Signal	AM	13.0	B	12.7	B
			PM	21.2	C	22.9	C

**SOURCE:** Abrams Associates, 2014

**NOTES:** HCM LOS results are presented in terms of average intersection delay in seconds per vehicle. For stop controlled intersections the results for the worst side street approach are presented.

**TABLE 9 (CONT.)  
CUMULATIVE PLUS PROJECT INTERSECTION LEVEL OF SERVICE CONDITIONS**

INTERSECTION		CONTROL	PEAK HOUR	CUMULATIVE		CUMULATIVE PLUS PROJECT	
				Delay	LOS	Delay	LOS
21	SOMERSVILLE RD & DELTA FAIR BLVD	Traffic Signal	AM	30.1	C	31.0	C
			PM	18.6	B	21.9	C
22	SOMERSVILLE RD & BUCHANAN RD	Traffic Signal	AM	39.4	D	<b>62.7</b>	<b>E</b>
			PM	34.6	C	<b>60.6</b>	<b>E</b>
23	SOMERSVILLE RD & TUSCANY MEADOWS	Traffic Signal	AM	N/A	N/A	6.8	A
			PM	N/A	N/A	3.6	A
24	SOMERSVILLE RD & JAMES DONLON BLVD	Traffic Signal	AM	20.2	C	21.0	C
			PM	25.6	C	26.1	C
25	BUCHANAN RD & DELTA FAIR BLVD	Traffic Signal	AM	12.0	B	12.7	B
			PM	15.9	B	16.2	B
26	JAMES DONLON BLVD & CONTRA LOMA BLVD	Traffic Signal	AM	41.8	D	43.7	D
			PM	19.6	B	19.9	B
27	JAMES DONLON BLVD & LONE TREE WAY	Traffic Signal	AM	22.8	C	23.1	C
			PM	27.4	C	27.8	C
28	KIRKER PASS & MYRTLE DR	Traffic Signal	AM	7.4	A	7.5	A
			PM	5.5	A	5.7	A
29	YGNACIO VALLEY RD & CONCORD BLVD	Traffic Signal	AM	47.0	D	50.0	D
			PM	37.3	D	38.0	D
30	YGNACIO VALLEY RD & CLAYTON BLVD	Traffic Signal	AM	43.2	D	44.4	D
			PM	45.0	D	46.5	D
31	BUCHANAN RD & CHATEAU MOBILE PARK	Traffic Signal	AM	4.9	A	4.6	A
			PM	6.8	A	6.9	A
32	DELTA FAIR BLVD & CENTURY BLVD	Traffic Signal	AM	14.9	B	15.5	B
			PM	19.4	B	19.7	B
33	SOMERSVILLE RD & FAIRVIEW DR	Traffic Signal	AM	30.2	C	27.6	C
			PM	29.0	C	40.2	D
34	DELTA FAIR BLVD & FAIRVIEW DR	Traffic Signal	AM	22.9	C	29.6	C
			PM	31.5	C	34.2	C

**SOURCE:** Abrams Associates, 2014

**NOTES:** HCM LOS results are presented in terms of average intersection delay in seconds per vehicle. For stop controlled intersections the results for the worst side street approach are presented.

## 5.11 Cumulative Plus Project Traffic Capacity Conditions (Scenario 6)

**Table 9** summarizes the LOS results for the Cumulative Plus Project (Year 2035) traffic conditions at each of the project study intersection. As mentioned previously, this scenario assumes completion of the James Donlon Boulevard Extension. As shown on this table, all of the signalized study intersections would continue to have acceptable conditions during the weekday AM and PM peak commute hours except for two intersections which would operate at LOS E or F during either the AM or PM peak hours.

The two intersections are the intersections of Railroad Avenue at East Leland Road and Buchanan Road at Somersville Road. Mitigations to improve operations at these intersections are discussed in Section 5.15

## 5.12 Analysis of AM Peak Hour Queuing on Buchanan Road

Vehicle queuing can influence traffic flow in ways not captured by simple intersection LOS analysis. Specifically, AM peak hour control point metering has the potential to lead to queue spillback between intersections on Buchanan Road. If queues from the control point metering were to spill back into the Somersville Road intersection it could create operational and safety concerns in that area. Currently there is approximately 5,500 feet of queue storage available between the current control point metering (at Meadows Drive) and the next major intersection at Somersville Road.

To examine vehicle queuing conditions, a queuing analysis was performed using Synchro software that simulates the 95th percentile queue for each study intersection approach. This 95th percentile queue at a signalized intersection is intended to be representative of maximum queues that would occur for 95 percent of the signal cycles during the peak hour at that intersection. Queuing estimates are based on an average vehicle length of 25 feet per vehicle. This length takes buffer space in front of and behind of a queued vehicle into account.

As mentioned previously, the control point metering strategy was based on the East Central Traffic Management Study which was adopted by Contra Costa County and the Cities of Antioch, Clayton, Concord, Pittsburg, and Walnut Creek. For the purposes of this analysis it is assumed the metering will continue. However, the technical appendix includes a detailed analysis of queuing and intersection operations both with and without control point metering.

The existing control point metering already limits the maximum flow of westbound traffic that can use Buchanan Road in the morning so the addition of project traffic was only one factor that needed to be reviewed. Another change that is assumed as part of the project is the relocation of the control point metering from the Meadows Drive intersection approximately 1,900 feet to the east to the proposed Tuscany Meadows Drive intersection. **Table 10** summarizes the results of the queuing analysis for the various project study scenarios.

**Table 10** also includes a column with the resulting distance from the end of the queue to the Somersville Road intersection which accounts for the relocation of the metering point. It is important to note that these queuing estimates are intended to represent the forecast change to average traffic conditions. Due to the random arrival nature of traffic and other factors (such as roadway construction) there can be days where there are spikes in the traffic volumes which could sometimes result in queues that exceed these estimates.

Based on this analysis the project would not be expected to result in any significant changes to average queuing conditions in the AM peak period and would not result in traffic backing up into Somersville Road intersection. This is, in part, due to the fact that the approved Buchanan Crossings Shopping Center will be widening westbound Buchanan Road in this area from one lane to two which will significantly increase the roadway's ability to store vehicles. The analysis in this report assumes only one lane to store vehicles on westbound Buchanan Road in this area so the results should be considered conservative.

**TABLE 10**  
**ANALYSIS OF AM PEAK HOUR QUEUING ON WESTBOUND BUCHANAN ROAD**

<i>Scenario</i>	<i>Control Point Metering Location</i>	<i>Queuing Details</i>		<i>Total Distance from the Metering Point to Somersville Road (feet)*</i>
		<i>Single Lane Queue Length (feet)</i>	<i>Average Distance from end of the queue to Somersville Rd (feet)</i>	
Existing AM	Meadows Avenue	1,840	3,720	5,560
Existing + Project AM	Tuscany Meadows Dr.	1,930	1,670	3,600
Baseline AM	Meadows Avenue	1,980	3,580	5,560
Baseline + Project AM	Tuscany Meadows Dr.	2,060	1,540	3,600
Cumulative + Project +Bypass AM	Tuscany Meadows Dr.	1,720	1,880	3,600
Cumulative + Project without Bypass	Tuscany Meadows Dr.	2,250	1,350	3,600

**NOTE:** \* 5,560 feet = length of storage for metering (from Meadows Avenue).  
3,600 feet = length of storage for metering (from Tuscany Meadows Drive).

### 5.13 Analysis of the Delay Index on the State Route 4 Freeway

The delay index measures travel congestion and is expressed as the ratio of the time required to travel between two points during the peak hour (the congested travel time) and the time required during un-congested off-peak times. A delay index of 2.0 means that congested travel time is twice as long as during an off-peak travel time. The following shows the formula for calculating delay indices:

$$\text{Delay Index} = \text{Free Flow Travel Time} / \text{Measured Peak Hour Travel Time}$$

The denominator of the delay index formula, measured peak hour travel time, was measured by conducting speed runs along State Route 4 during the AM and PM peak hours in March, 2014. The numerator of the delay index formula, the free flow travel time is defined as “the time it takes to traverse a roadway segment at the speed limit including the average uncongested delay experienced at traffic signals.” It is important to note that achievement of the MTSO delay index and average speed is measured over the length of SR 4 from Willow Pass Grade to SR 160.

For SR 4 the East County Action Plan specifies a maximum delay index of 2.5.<sup>7</sup> As shown in **Table 11** the proposed project would not significantly increase the delay index under existing or cumulative conditions and it would continue to be well within the MTSO of 2.5.

<sup>7</sup> Draft East County Action Plan for Routes of Regional Significance, Fehr & Peers Associates, Walnut Creek, CA, November 2013.



**TABLE 11  
STATE ROUTE 4 FREEWAY DELAY INDEX CALCULATION RESULTS  
WITH AND WITHOUT THE PROPOSED PROJECT**

<i>Scenario</i>	<i>Direction</i>	<i>MTSO</i>	<i>No Project</i>	<i>With Project</i>
Existing AM Peak Hour (2014)	Eastbound	2.5	1.1	1.1
	Westbound	2.5	1.6	1.7
Existing PM Peak Hour (2014)	Eastbound	2.5	1.5	1.6
	Westbound	2.5	1.3	1.3
Cumulative AM Peak Hour (2035)	Eastbound	2.5	1.2	1.3
	Westbound	2.5	1.8	1.9
Cumulative PM Peak Hour (2035)	Eastbound	2.5	1.6	1.7
	Westbound	2.5	1.3	1.3

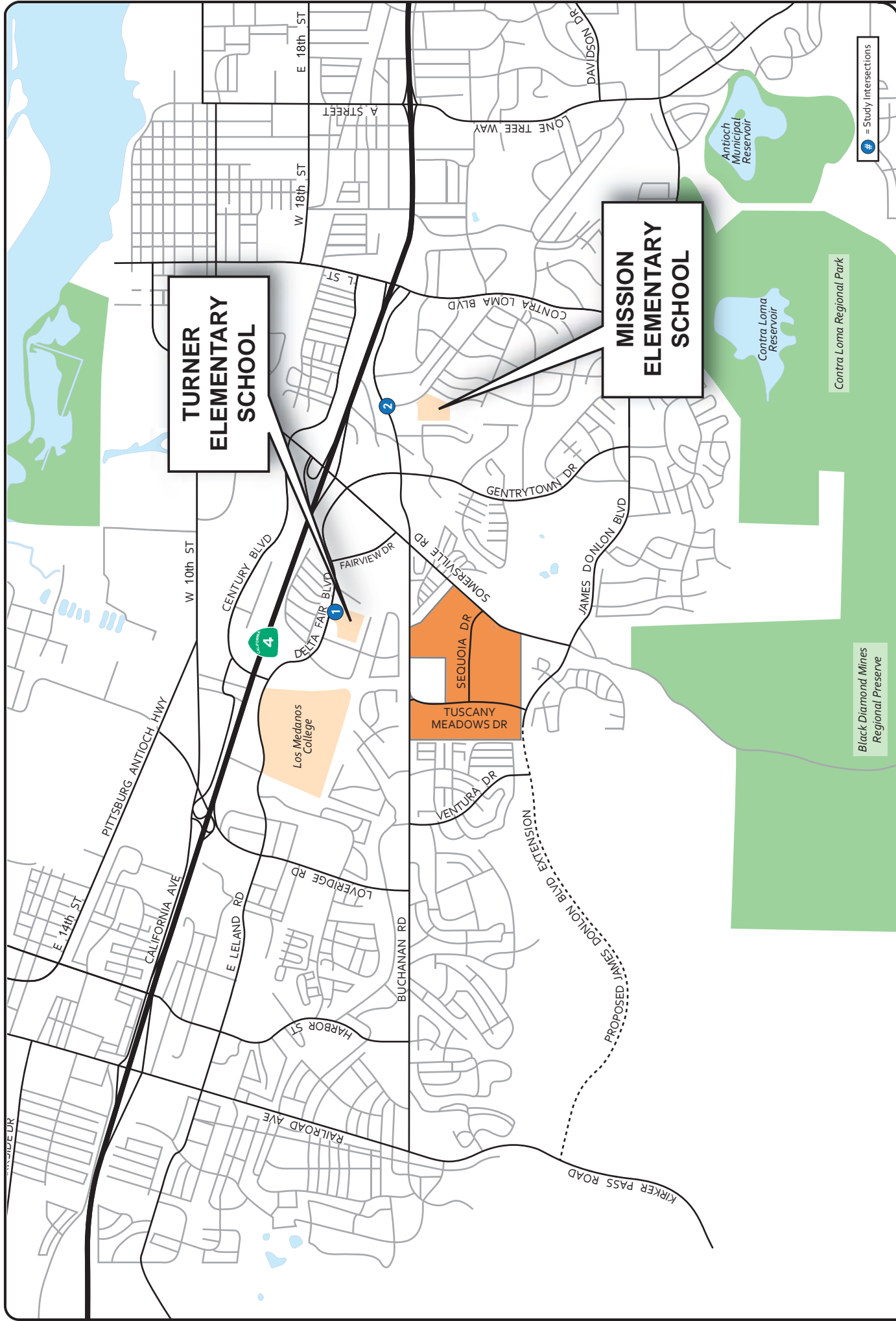
**SOURCE:** Abrams Associates, 2014

## 5.14 Analysis of Impacts to Traffic Operations at Local Elementary Schools

The families that would live in the proposed residential project would generate additional traffic to and from local schools. We evaluated the potential for additional impacts on transportation facilities on the routes to local schools. Census data for the area indicated that of the school age children in the area approximately half (51%) are of elementary school age, 19% are of middle school age, and 30% are of high school age.<sup>8</sup> Given the large proportion of elementary school students a more detailed review of the routes to local elementary schools was conducted. The project is within the attendance boundary for Turner Elementary School but based on comments received from the City of Antioch (and in the absence of any school expansion plans) it was determined that students would also be expected to attend Mission Elementary School. The locations of these two schools with respect to the proposed project are shown in **Figure 10**.

Using census data the number of elementary school children per household was calculated and converted into estimates of trip generation to local elementary schools. It was conservatively estimated that up to 12% of AM peak hour project traffic could be travelling to and from each of the local elementary schools (as much as 24% of AM peak hour traffic). Based on a review of the routes to these schools it was determined there were two additional signalized intersections that should be analyzed to evaluate the potential effects of the project. These included the intersections of Buchanan Road with Mission Drive and Delta Fair Boulevard with School Street. **Table 12** summarizes the LOS results for the analysis of the two school study intersections.

<sup>8</sup> 2007-2011 American Community Survey 5 –Year Estimates, U.S. Census Bureau, Washington D.C., December, 2012.



**FIGURE 10 | ELEMENTARY SCHOOL STUDY INTERSECTIONS**  
**TRANSPORTATION IMPACT ANALYSIS**  
 Tuscany Meadows Residential Project  
 City of Pittsburg

As seen in **Table 12**, the LOS analysis indicated that with the additional project traffic (based on the above mentioned assumptions) both of the school study intersections would continue to have acceptable operations during the weekday AM commute period.

**TABLE 12  
AM PEAK HOUR INTERSECTION LEVEL OF SERVICE AT LOCAL ELEMENTARY  
SCHOOLS WITH AND WITHOUT THE PROPOSED PROJECT**

<i>Scenario</i>	<i>Intersection</i>	<i>No Project Scenario</i>		<i>Plus Project Scenario</i>	
		<i>Delay</i>	<i>LOS</i>	<i>Delay</i>	<i>LOS</i>
Existing	Delta Fair Blvd./School St.	5.2	A	5.9	A
	Buchanan Rd./Mission Dr.	8.8	A	9.4	A
Baseline	Delta Fair Blvd./School St.	11.1	B	11.9	B
	Buchanan Rd./Mission Dr.	8.9	A	9.5	A
Cumulative	Delta Fair Blvd./School St.	11.2	B	12.1	B
	Buchanan Rd./Mission Dr.	9.1	A	9.9	A

**SOURCE:** Abrams Associates, 2014

**NOTES:** HCM LOS results are presented in terms of average intersection delay in seconds per vehicle.

## 5.15 Project-Specific Impacts and Mitigation Measures

The following is a list of project impacts and proposed mitigation measures to address the transportation impacts of the project. With the implementation of the mitigation measures described in this section, all project transportation impacts would be reduced to a less than significant level.

It is important to note that all project mitigations are required for the Baseline plus Project scenario. The mitigations proposed for this scenario would also sufficiently address the impacts identified under the Existing Plus Project and Cumulative Plus Project Conditions. **Table 13** presents a summary of the intersection traffic operations with and without each of the proposed mitigations under both the Baseline and Cumulative scenarios.

**Impact #1** The project would contribute to LOS operations exceeding the established standards at the following seven intersections:

- Railroad Avenue at Leland Road (Intersection #3)**
- Buchanan Road at Harbor Street (Intersection #7)**
- Buchanan Road at Loveridge Road (Intersection #12)**
- Buchanan Road at Ventura Drive (Intersection #13)**
- Buchanan Road at Tuscany Meadows Drive (Intersection #15)**
- Buchanan Road at the Tuscany Meadows Apartments (Intersection #17)**
- Buchanan Road at Somersville Road (Intersection #22).**

As discussed previously in Section 5.5, the addition of traffic from the proposed project standards in the baseline plus project scenario (Scenario 4) would contribute to seven intersections exceeding the established LOS standards. These include the following: Railroad Avenue at Leland Road, Buchanan Road at Ventura Drive, Buchanan Road at Tuscany Meadows Drive, Buchanan Road at the Tuscany Meadows Apartments Entrance, and Buchanan Road at Somersville Road.

Beyond these intersections, the analysis indicates the project would not cause any other significant impacts to traffic operations in the area. Please note that mitigations are only proposed to address PM peak hour conditions at the signalized intersection of Buchanan Road with Tuscany Meadows Drive. No mitigations are required to address AM conditions at this intersection because, as discussed in Section 5.5, AM peak hour traffic operations on Buchanan Road are covered by a traffic management plan (TMP) which was adopted as part of the East County Action Plan.

Please note that an alternative mitigation has been included that could potentially replace the mitigations that require widening of Buchanan Road. This alternative mitigation would involve implementation of PM peak hour metering of southbound Kirker Pass Road at the Pheasant Drive intersection. It has been verified that this alternative mitigation to meter the eastbound PM peak hour flowrate on Buchanan Road to 1,400 vehicles per hour would indeed mitigate the impacts identified for Buchanan Road. However, it should be noted that the mitigation to widen Railroad Avenue at E. Leland Road would still be required (i.e. it is the only intersection impact that would not be mitigated by the alternative mitigation for PM peak hour metering).

Without implementation of the recommended mitigations, the development of the proposed project would result in a **potentially significant** impact to the LOS at the above mentioned intersections. In addition, because the Buchanan Road mitigations are not funded and may not be feasible the impacts to the Buchanan Road intersections are considered **significant and unavoidable**. However, it is important to note that this is only the case with the six Buchanan Road intersections. Unlike the intersections on Buchanan Road, the Railroad Avenue/E. Leland Road intersection does have feasible mitigation options available with funding already allocated for roadway improvements.

Mitigation Measure(s)

Based on a detailed analysis of traffic operations with and without each of the proposed mitigations summarized in **Table 13**, implementation of the following mitigation measures would reduce the impact to a *less-than-significant* level.

The improvements listed below are not currently included in the City's Transportation Impact Fee Program. Prior to construction of the first unit the project would mitigate the above-identified impacts by either constructing the required improvements as outlined below or paying a proportionate share of the construction costs if there is an established funding source available for the remainder of the costs (subject to City approval). The intersection mitigations required for the project to meet the established LOS standards include the following:

**Mitigation Measure #1(a)**

Railroad Avenue at E. Leland Road – Construction of an additional southbound left-turn lane and associated widening.

**Mitigation Measure #1(b)**

Buchanan Road at Harbor Street – Widening of Buchanan Road to allow for the construction of two through lanes on the westbound approach as well as two receiving lanes on the west side of the intersection.

**Mitigation Measure #1(c)**

Buchanan Road at Loveridge Road – Widening of Buchanan Road to allow for the construction of two through lanes on the westbound approach as well as two receiving lanes on the west side of the intersection.

**TABLE 13  
INTERSECTION LEVEL OF SERVICE WITH AND WITHOUT PROPOSED MITIGATIONS**

INTERSECTION	SCENARIO	PEAK HOUR	WITHOUT MITIGATION		WITH MITIGATION	
			Delay	LOS	Delay	LOS
3. RAILROAD AVE & LELAND RD	EXISTING + PROJECT	AM	40.7	D	32.3	C
		PM	<b>60.4</b>	E	38.2	D
	BASELINE + PROJECT	AM	<b>47.4</b>	<b>D</b>	37.9	D
		PM	<b>68.6</b>	E	44.8	D
	CUMULATIVE+PROJECT WITH JDE	AM	38.0	D	34.3	C
		PM	<b>61.1</b>	E	37.9	D
7. BUCHANAN RD & HARBOR ST	EXISTING + PROJECT	AM	<b>45.6</b>	<b>D</b>	28.3	C
		PM	25.2	C	24.1	C
	BASELINE + PROJECT	AM	<b>52.6</b>	<b>D</b>	28.9	C
		PM	27.4	C	26.5	C
	CUMULATIVE+PROJECT WITH JDE	AM	39.9	D	29.9	C
		PM	25.9	C	25.3	C
12. BUCHANAN RD & LOVERIDGE RD	EXISTING + PROJECT	AM	43.5	D	23.5	C
		PM	30.6	C	25.7	C
	BASELINE + PROJECT	AM	<b>52.3</b>	<b>D</b>	15.8	B
		PM	37.4	D	31.2	C
	CUMULATIVE+PROJECT WITH JDE	AM	30.4	C	20.7	C
		PM	25.2	C	25.5	C
13. BUCHANAN RD & VENTURA DR	EXISTING + PROJECT	AM	17.7	B	16.6	B
		PM	30.4	C	11.4	B
	BASELINE + PROJECT	AM	28.9	C	26.3	C
		PM	<b>47.2</b>	<b>D</b>	16.5	B
	CUMULATIVE+PROJECT WITH JDE	AM	20.1	C	20.0	C
		PM	31.2	C	13.5	B

**TABLE 13 - Continued**  
**INTERSECTION LEVEL OF SERVICE WITH AND WITHOUT PROPOSED MITIGATIONS**

INTERSECTION	SCENARIO	PEAK HOUR	WITHOUT MITIGATION		WITH MITIGATION	
			Delay	LOS	Delay	LOS
15. BUCHANAN RD & TUSCANY MEADOWS DR	EXISTING + PROJECT	AM	41.5	D	40.0	D
		PM	30.2	C	10.2	B
	BASELINE + PROJECT	AM	<b>52.5</b>	<b>D</b>	50.3	D
		PM	<b>55.8</b>	<b>E</b>	9.9	A
	CUMULATIVE+PROJECT WITH JDE	AM	31.3	C	29.6	C
		PM	39.0	D	8.1	A
17. BUCHANAN RD & TUSCANY MEADOWS APARTMENTS	EXISTING + PROJECT	AM	23.6	C	25.4	C
		PM	40.7	D	5.2	A
	BASELINE + PROJECT	AM	26.2	C	28.2	C
		PM	<b>59.6</b>	<b>E</b>	4.9	A
	CUMULATIVE+PROJECT WITH JDE	AM	24.0	C	17.0	B
		PM	35.4	D	9.8	A
22. BUCHANAN RD & SOMERSVILLE RD	EXISTING + PROJECT	AM	<b>64.2</b>	<b>E</b>	32.0	C
		PM	<b>58.3</b>	<b>E</b>	23.3	C
	BASELINE + PROJECT	AM	<b>78.4</b>	<b>E</b>	36.2	D
		PM	<b>50.3</b>	<b>D</b>	26.1	C
	CUMULATIVE+PROJECT WITH JDE	AM	<b>62.7</b>	<b>E</b>	29.8	C
		PM	<b>60.6</b>	<b>E</b>	30.7	C

**SOURCE:** Abrams Associates, 2014

**NOTES:** HCM LOS results at signalized intersections are presented in terms of average intersection delay in seconds per vehicle. All intersections in this table have a threshold of 45 seconds established as the maximum allowable average delay.

**Mitigation Measure #1(d)**

Buchanan Road at Ventura Drive – Widening of Buchanan Road to allow for the construction of two through lanes on the eastbound approach as well as two receiving lanes on the east side of the intersection. Alternative Mitigation: Implementation of PM peak hour metering of southbound Kirker Pass Road at Pheasant Drive (the project has a significant impact in the PM peak hour only).

**Mitigation Measure #1(e)**

Buchanan Road at Tuscan Meadows Drive – Widening of Buchanan Road at the intersection to allow for the construction of two through lanes on the eastbound approach as well as two receiving lanes on the east side of the intersection. Alternative Mitigation: Relocation of control point metering to this intersection and implementation of PM peak hour metering of southbound Kirker Pass Road at Pheasant Drive.

**Mitigation Measure #1(f)**

Buchanan Road at the Tuscan Meadows Apartments Entrance – Widening of Buchanan Road at the intersection to allow for the construction of two through

lanes on the eastbound approach as well as two receiving lanes on the east side of the intersection. Alternative Mitigation: Implementation of PM peak hour metering of southbound Kirker Pass Road at Pheasant Drive (the project has a significant impact in the PM peak hour only).

**Mitigation Measure #1(g)**

Buchanan Road at Somersville Road – Construct an additional eastbound left turn lane to allow for a dual left turn movement onto northbound Somersville Road and an additional northbound lane to allow for a dual left turn movement onto westbound Buchanan Road. Alternative Mitigation: Implementation of PM peak hour metering of southbound Kirker Pass Road at Pheasant Drive.

**Impact #2 Demolition and construction activities associated with the proposed project would result in an increase in traffic to and from the site and could lead to unsafe conditions near the project site.**

The increase in traffic as a result of demolition and construction activities associated with the proposed project has been quantified assuming a worst-case single phase construction period of 24 months.

*Heavy Equipment*

Approximately eight pieces of heavy equipment are estimated to be transported on and off the site each month throughout the demolition and construction of the proposed project. Heavy equipment transport to and from the site could cause traffic impacts in the vicinity of the project site during construction. However, each load would be required to obtain all necessary permits, which would include conditions. Prior to issuance of grading and building permits, the project applicant would be required to submit a Traffic Control Plan.

The requirements within the Traffic Control Plan include, but are not limited to, the following: truck drivers would be notified of and required to use the most direct route between the site and SR 4, as determined by the City Engineering Department; all site ingress and egress would occur only at the main driveways to the project site and construction activities may require installation of temporary (or ultimate) traffic signals as determined by the City Engineer; specifically designated travel routes for large vehicles would be monitored and controlled by flaggers for large construction vehicle ingress and egress; warning signs indicating frequent truck entry and exit would be posted on Somersville and Buchanan Roads; and any debris and mud on nearby streets caused by trucks would be monitored daily and may require instituting a street cleaning program. In addition, eight loads of heavy equipment being hauled to and from the site each month would be short-term and temporary.

*Employees*

The weekday work is expected to begin around 7:00 AM and end around 4:00 PM. The construction worker arrival peak would occur between 6:30 AM and 7:30 AM, and the departure peak would occur between 4:00 PM and 5:00 PM. These peak hours are slightly before the citywide commute peaks. It should be noted that the

number of trips generated during construction would not only be temporary, but would also be substantially less than the proposed project at buildout. Based on past construction of similar projects, construction workers could require parking for up to 250 vehicles during the peak construction period. Additionally, deliveries, visits, and other activities may generate peak non-worker parking demand of 10 to 15 trucks and automobiles per day. Therefore, up to 265 vehicle parking spaces may be required during the peak construction period for the construction employees. Furthermore the Traffic Control Plan requires construction employee parking be provided on the project site to eliminate conflicts with nearby residential areas. Because the construction of the project can be staggered so that employee parking demand is met by using on-site parking, the impacts of construction-related employee traffic and parking are considered less-than-significant.

#### *Construction Material Import*

The project would also require the importation of construction material, including raw materials for the building pads, the buildings, the parking area, and landscaping. Based on past construction of similar projects, importing this material is estimated to require approximately 6,000 trucks for raw materials, approximately 800 trucks of concrete, and a maximum of 1,500 trucks for the parking lots, asphalt paving, and landscaping material, totaling approximately 8,300 trucks. Each truck will generate one inbound and one outbound trip, accounting for two trips for a total of 16,600 trips. During the maximum peak construction period, the project could generate approximately 300 truck trips per day. Furthermore, under the provisions of the Traffic Control Plan, if importation and exportation of material becomes a traffic nuisance, then the City Engineer may limit the hours the activities can take place.

#### *Traffic Control Plan*

The Traffic Control Plan would indicate how parking for construction workers would be provided during construction and ensure a safe flow of traffic in the project area during construction. This analysis assumed construction of the entire project in one phase to identify the potential worst-case traffic effects. If the project is built in phases over time, the effects of each phase will be the same or less. Each phase will be subject to a Traffic Control Plan and oversight by the City Engineer. The last phase may require added worker parking measures, depending on the circumstances, as there will not be any remaining vacant land for parking. Therefore, the demolition and construction activities associated with the proposed project or its individual phases would not lead to noticeable congestion in the vicinity of the site or the perception of decreased traffic safety resulting in a ***less-than-significant*** impact.

#### Mitigation Measure(s)

*None required.*

### **Impact #3 Impacts to freeway operations.**

The development of the proposed project would increase the total traffic during both AM and PM peak hours. However, the proposed project is already included in the General Plans of Pittsburg, Antioch, and Contra Costa County and has already



been assumed in all cumulative build-out traffic forecasts that have been used in the design of freeway facilities in the area. Recently freeway construction has been causing poor operations and increased delay but upon completion of all planned freeway and mass transit improvements in the area (i.e. E-BART) all freeway facilities in the area would operate at acceptable conditions according to Caltrans standards.

For SR 4 the East County Action Plan specifies a maximum delay index of 2.5. As shown in Table 11 in Section 5.13 the proposed project would not significantly increase the delay index under existing or cumulative conditions and it would continue to be well within the MTSO of 2.5.

Therefore the proposed project would have a *less-than-significant* impact to freeway operations.

Mitigation Measure(s)

*None required.*

**Impact #4 Impacts related to alternative transportation facilities.**

The proposed project would generate additional pedestrian and bicycle traffic in the area, thereby potentially increasing conflicts between vehicles, bicycles, and pedestrians. Within the project sidewalks would be provided on all streets and bicycle lanes will be included on the collector streets (Tuscany Meadows Drive and Sequoia Drive).

To provide safe access for school age pedestrians to nearby schools and the adjacent Delta De Anza Multi-Use Trail it is recommended that the multi-use trail connection identified in Section 5.8 be included as a mitigation. This mitigation would also assist the City in meeting the goals for improving air quality and reducing auto dependency. The trail connection could be constructed to form the fourth leg of the proposed new traffic signal on Buchanan Road at Tuscany Meadow. This connection would clearly encourage walking trips to Los Medanos College and Turner Elementary School as well as other nearby shopping centers and employment destinations including the proposed Buchanan Crossings Shopping Center which is envisioned as a major commercial center. The proposed bicycle lanes and multi-use trail connection are shown in **Figure 7**.

To be consistent with the City's adopted goals with respect to transit and air quality the project could potentially increase transit opportunities by providing new bus turnouts on Buchanan Road. To assist the City in meeting the goals for improving air quality and reducing auto dependency it is recommended that the bus turnout identified in Section 5.9 be included as mitigation.

Mitigation Measure(s)

Implementation of the following mitigation two measures would reduce impacts related to alternative transportation facilities to a *less-than-significant* level.

**Mitigation Measure #4(a)**

*The proposed project would be required to complete the segment of the multi-use trail adjacent to the project along Buchanan Road as identified in Figure 7-4 of the City's General Plan. Alternatively, the project could provide a multi-use path connection to the to the Delta De Anza Trail, as identified in **Figure 7**, via the approved Buchanan Crossings Shopping Center.*

**Mitigation Measure #4(b)**

*The proposed project would be required to install bus turnouts, including shelters and bicycle racks, on both sides of Buchanan Road adjacent to the proposed intersection with Tuscany Meadows Drive.*

**Impact #5 Impacts related to site access and circulation.**

The proposed project's residential development would have a signalized primary entrance on Buchanan Road at the main residential entrance, another signalized entrance into the apartments, and another signalized entrance on Somersville Road. In addition, the project would have a future signalized connection to the James Donlon Boulevard Extension.

It should also be noted that there could potentially be some AM peak hour operational issues at the new signalized intersection on Buchanan Road proposed for the Tuscany Meadows Apartments. This intersection would be upstream (to the east) of the control point metering and it is expected that the AM peak hour queues from the metering could extend back into this intersection. However, based on the volumes forecast to be using the intersection in the future this would not result in any significant ancillary impacts that would require mitigation. However, as an improvement measure it is recommended that the City consider constructing a receiving lane/acceleration lane to facilitate northbound left turns onto Buchanan Road at the intersection during the morning peak period.

Based on a review of the proposed site plan it was determined that the site circulation should function well and would not cause any safety or operational problems. The project site design has been required to conform to City design standards and is not expected to create any significant impacts to pedestrians, bicyclists or traffic operations. Therefore, impacts related to site access and circulation to the proposed project would be ***less-than-significant***.

Mitigation Measure(s)

*None required.*

**Impact #6 Impacts regarding emergency vehicle access on and surrounding the proposed project site.**

Sufficient emergency access is determined by factors such as number of access points, roadway width, and proximity to fire stations. The land use plan for the proposed project would include a signalized primary entrance on Buchanan Road at the main residential entrance, another signalized entrance into the apartments, and another signalized entrance on Somersville Road. In addition, the project would have a future signalized connection to the James Donlon Boulevard Extension. All lane widths within the project would meet the minimum width that

can accommodate an emergency vehicle; therefore, the width of the internal roadways would be adequate. Therefore, the development of the proposed project is expected to have ***less-than-significant*** impacts regarding emergency vehicle access.

Mitigation Measure(s)

*None required.*

**Impact #7 Impacts relating to the presence and availability of adequate parking.**

The proposed project is expected to provide a minimum of two off-street parking spaces for each residential unit and would provide adequate on-street parking for guests to ensure consistency with the City requirements. New on-street parking spaces would be created along the new internal project roadways and would not infringe upon other streets in the area. Therefore, the proposed project is not expected to create parking impacts on the surrounding areas, and impacts related to adequate parking would be ***less-than-significant***.

Mitigation Measure(s)

*None required.*