Final Report

Sylvan Corners Residential Project

Transportation Impact Study

Prepared for:

CITRUS HEIGHTS CALIFORNIA

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RS22-4176

Chapter 1. **Introduction**

This study addresses the potential transportation impacts associated with the proposed Sylvan Corners Residential Project to be situated in the northwest quadrant of the Auburn Boulevard/Sylvan Road/Old Auburn Road intersection in the City of Citrus Heights. Intersection operations, site access, and vehicle miles traveled (VMT) are analyzed in this report.

Page 29 of this report contains the study recommendations.

REPORT ORGANIZATION

This report is organized into the following seven chapters:

- Chapter 1 – Introduction
- Chapter 2 – Existing Conditions
- Chapter 3 – Existing Plus Project Conditions
- Chapter 4 – Cumulative Conditions
- Chapter 5 – Project Access and On-Site Circulation Review
- Chapter 6 – Vehicle Miles Traveled (VMT) Analysis Cumulative Conditions
- Chapter 7 – Recommendations

PROJECT OVERVIEW

According to the project site plan (*Sylvan Corners*, Baker Williams Engineering Group, June 2022), the proposed project includes construction of 95 single family dwelling units, including 80 market rate units and 15 affordable units. The project site is currently undeveloped and in the area of the city known as Sylvan Corners. Adjacent land uses include a cemetery and residential to the north, a middle school to the west, and a blend of retail/restaurant uses, and limited office, industrial, churches, and other supporting uses to the south and east.

Figure 1 displays the project site plan including proposed access points. As displayed, access is proposed via one left in/right in/right out intersection (Project Access 1) and one right in/right out intersection (Project Access 2) on Auburn Boulevard.

STUDY AREA AND TIME PERIODS

This study follows applicable procedures described in the *City of Citrus Heights Transportation Impact Study (TIS) Guidelines* (February 2021). The City's *TIS Guidelines* provide guidance on a variety of study parameters ranging from analysis scenarios, study locations, and specific analysis methods.

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Figure 1
Project Site Plan

Project effects are studied at the Sylvan Road/Auburn Boulevard/Old Auburn Road intersection, whose close proximity to the project site is illustrated on Figure 1. Additionally, the signalized midblock pedestrian crossing on Auburn Boulevard and southbound left turn lane between the two project accesses on Auburn Boulevard are also studied. Operations are analyzed for weekday AM and PM peak hour conditions.

ANALYSIS SCENARIOS

The following scenarios are analyzed in this study:

- Existing Conditions – represents baseline 2019 (pre-COVID-19 Pandemic) conditions.
- Existing Plus Project Conditions – represents existing conditions with the addition of the project.
- Cumulative No Project Conditions – reflects forecasted growth in the City to year 2040. This scenario assumes the Old Auburn Road Complete Streets Plan is completed and the proposed project site remains vacant.
- Cumulative Plus Project Conditions – reflects cumulative conditions with the addition of the project.

ANALYSIS METHODOLOGY

Level of service is a qualitative measure of traffic operating conditions whereby a letter grade, from A (the least congested) to F (the most congested), is assigned. These grades represent the perspective of drivers and are an indication of the comfort and convenience associated with driving. In general, LOS A represents free-flow conditions with no congestion, and LOS F represents severe congestion and delay under stop-and-go conditions. **Table 1** displays the average delay ranges associated with each LOS category. For signalized intersections, LOS is based on the average delay experienced by all vehicles passing through the intersection.

Table 1: Intersection Level of Service Definitions

Level of Service	Signalized Intersection Average Control Delay (seconds/vehicle) [1]
A	0 – 10.0
B	10.1 – 20.0
C	20.1 – 35.0
D	35.1 – 55.0
E	55.1 – 80.0
F	> 80.0

Notes:
[1] Control delay includes initial deceleration delay, queue move-up time, stopped delay, and acceleration delay based on Highway Capacity Manual (Transportation Research Board, 2016).
Source: Fehr & Peers, 2022.

Traffic operations at the study intersection were analyzed using procedures contained in the *Highway Capacity Manual, 6th Edition* (Transportation Research Board, 2016). These methodologies were applied using the SimTraffic software program, which is a micro-simulation model that considers the effects of lane utilization, turn pocket storage lengths, upstream/downstream queue spillbacks, and coordinated signal timings on intersection queuing and delays. Reported results are based on the average of 10 runs.

The City's *TIS Guidelines* specify the use of a 1.0 peak hour factor (PHF) to report average conditions over the entire peak hour. Applying a field-measured PHF (which is a measure of traffic intensity during the busiest 15-minutes) would otherwise result in reported conditions for that peak 15-minute period. Because this study relies on the existing conditions analysis completed in 2019 for the Old Auburn Complete Streets Plan, it utilizes the field-measured PHFs of 0.94 during the AM peak hour and 0.96 during the PM peak hour.[1]

LEVEL OF SERVICE STANDARDS

The *City of Citrus Heights General Plan* (amended 2019) contains various transportation related goals and policies. Those relevant to this study are listed below.

> *Policy 29.2: Measure customer satisfaction related to vehicle travel using level of service (LOS) according to procedures in the latest version of the Highway Capacity Manual published by the Transportation Research Board. The City will strive to achieve LOS E or better conditions for City roadways and intersections during peak hours (these may include weekday, AM, Mid-Day, and PM hours as well as Saturday Mid-Day or PM peak hours). The intent of this policy is to effectively utilize the roadway network capacity while balancing the desire to minimize potential adverse effects of vehicle travel on the environment and other modes.*
>
> *Exceptions to LOS E are allowed for both roadway segments and intersections along the following streets:*
>
> - *Sunrise Boulevard – south City limits to north City limits*
> - *Greenback Lane – west City limits to east City limits*
> - *Old Auburn Road – Sylvan Road to Fair Oaks Boulevard*
> - *Antelope Road – I-80 to Auburn Boulevard*
> - *Auburn Boulevard – Old Auburn Road to northern City limits*

According to this policy, an exception to LOS E is allowed at the study intersection given its location. Policy 29.2 specifies that turn pocket lengthening and signal timing modifications (in lieu of widening of exempt roadways) may be considered for development projects that adversely affect vehicle travel and other modes.

[1] These PHFs represent conditions with relatively little peaking. Had a 1.0 PHF instead been utilized, intersection delays would have increased only marginally (i.e., by a couple of seconds).

Chapter 2. **Existing Conditions**

This chapter describes the existing roadway, bicycle, pedestrian, and transit network within the study area.

EXISTING ROADWAY NETWORK

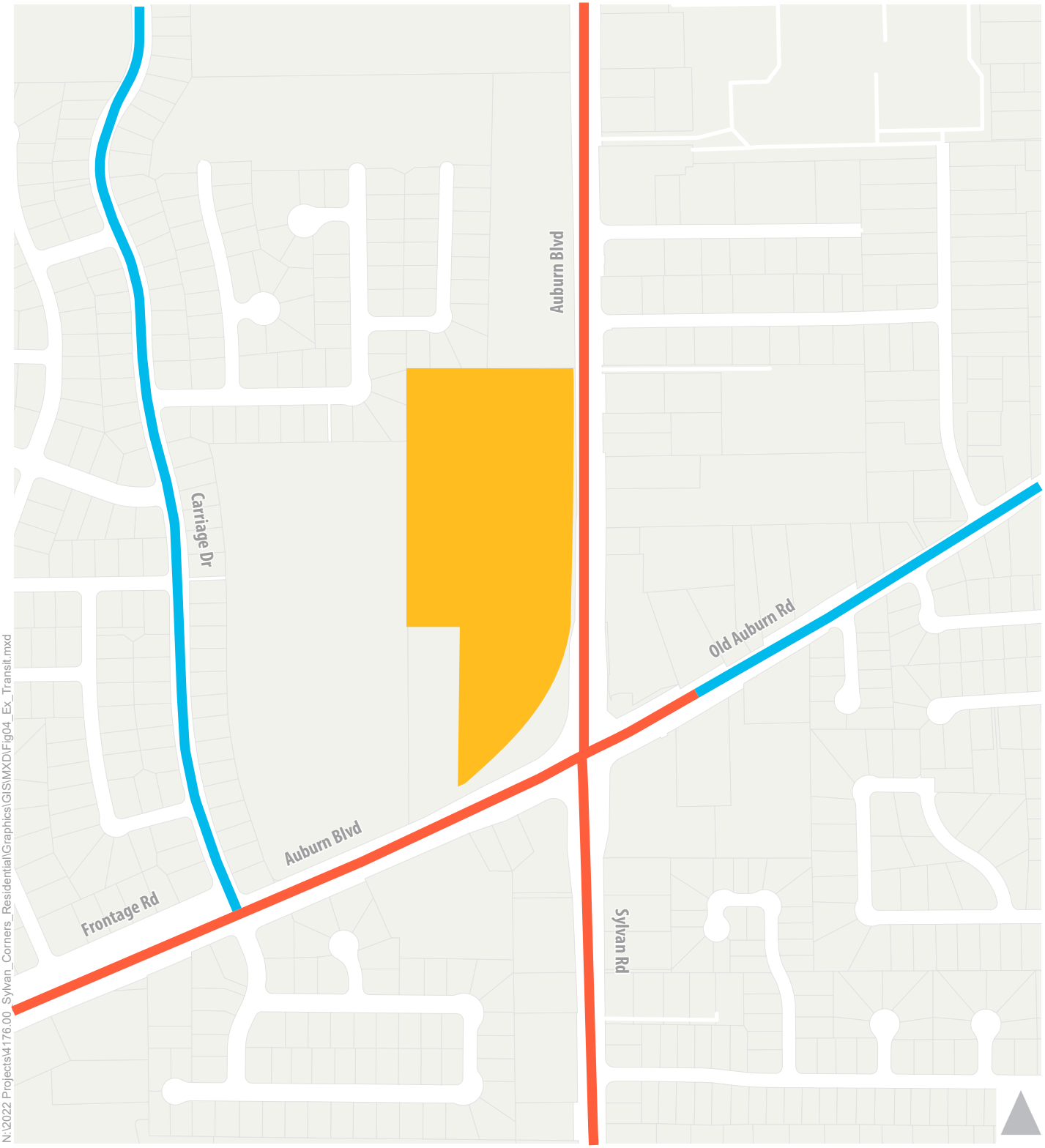
Figure 2 displays the existing roadway network in the study area. The following are descriptions of the primary roadways in the vicinity of the Project:

- **Auburn Boulevard (north)** is a four lane north/south, median-divided arterial that provides access to a variety of land uses, major east/west arterials, and ultimately connects to Interstate 80 (I-80) before turning into Riverside Avenue in Roseville. Within the project vicinity, it has a posted speed limit of 40 miles per hour (mph) and prohibits on-street parking. The City's truck route map identifies Auburn Boulevard from the north City limits to Stock Ranch Commercial Center as a local truck route.
- **Auburn Boulevard (west)** is a four lane east/west arterial that provides access to Greenback Lane and ultimately, I-80 and the Capital City Freeway. Auburn Boulevard provides access to the Stock Ranch Commercial Center. It has a posted speed limit of 40 mph.
- **Old Auburn Road** is generally an east/west minor arterial that fluctuates between 2-4 lanes. It provides access to a variety of land uses, major north/south arterials, and provides a connection between Citrus Heights and Roseville. It has a posted speed limit of 35 mph.
- **Sylvan Road** is a four lane north/south arterial between Sylvan Corners and Greenback Lane. It provides access primarily to residential land uses and City Hall, and is also used for general north/south travel through the City. It has a posted speed limit of 40 mph.

EXISTING BICYCLE AND PEDESTRIAN NETWORK

Figure 3 displays the existing bicycle and pedestrian network in the study area. As displayed, contiguous Class II bike lanes (on-street with appropriate pavement markings and signage) are present on Sylvan Road, Auburn Boulevard, and Old Auburn Boulevard. The channelized right-turn islands in the northwest, southwest, and northeast quadrants of the intersection feature poles with push-button bicycle detection immediately adjacent to the Class II bike lane, allowing activation of the crosswalk in the northbound, southbound, and westbound directions. During the AM peak hour, there were a total of 11 pedestrian crossings and nine bicyclists. During the PM peak hour, there were 24 pedestrian crossings and 10 bicyclists.

Sidewalks are continuous along the project frontages on Auburn Boulevard. Crosswalks are present on all legs of the Sylvan Road/Auburn Boulevard/Old Auburn Road intersection and feature yellow striping (indicative of the presence of a school) and a red brick pavement treatment for enhanced visibility.



Project Site

Number of Lanes

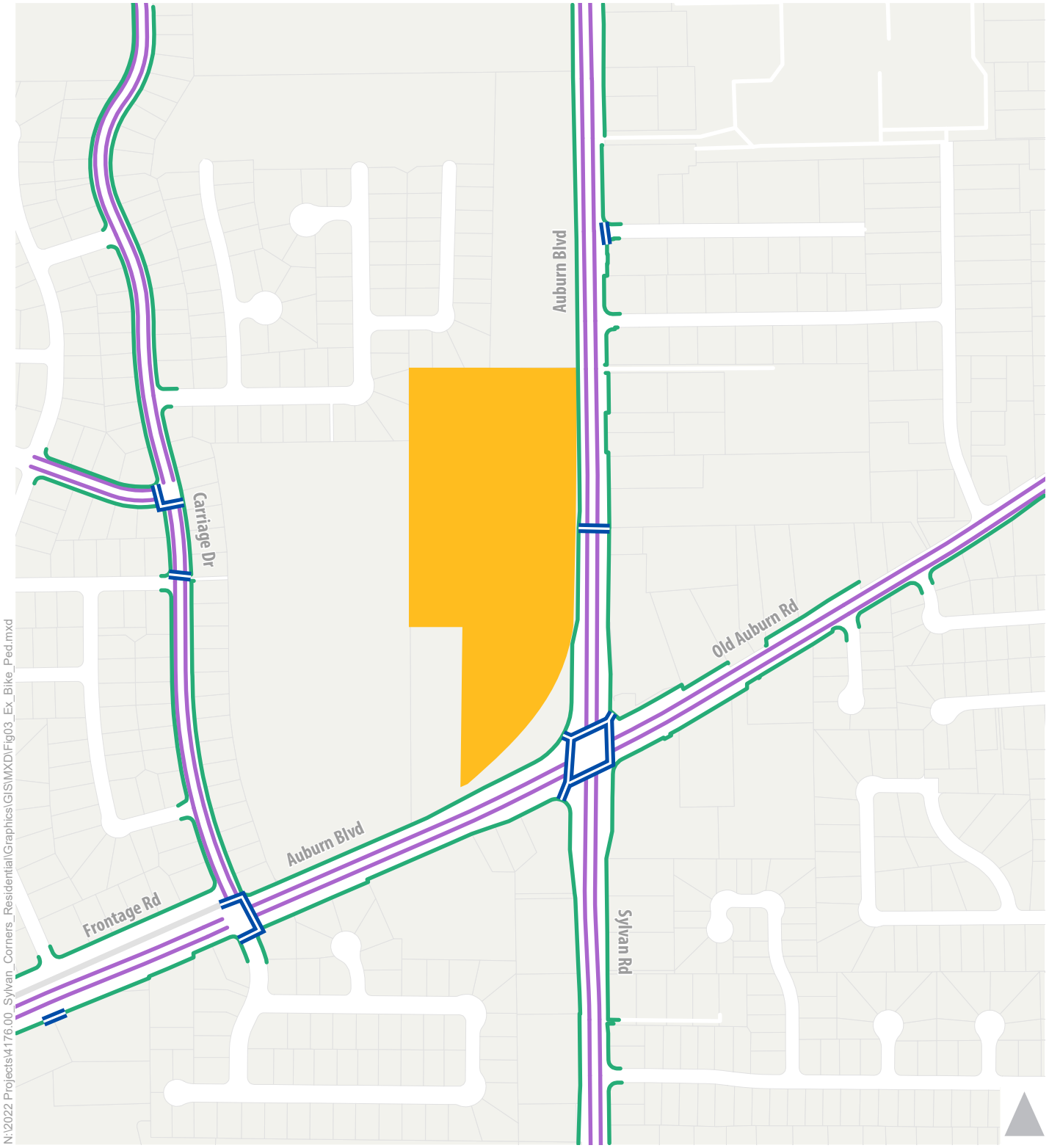
2

4

Note: Number of lanes only shown for Arterial and Collector streets.

Figure 2

Existing Roadway Network



Note: Bicycle and Pedestrian facilities are not shown for local and residential roadways.

Figure 3

Existing Bicycle and Pedestrian Facilities

A mid-block signalized pedestrian crosswalk is present on Auburn Boulevard about 580 feet north of the Sylvan Road/Auburn Boulevard/Old Auburn Road intersection.

EXISTING TRANSIT FACILITIES AND SERVICES

Figure 4 displays existing facilities and services in the study area. As displayed, Sacramento Regional Transit (SacRT) Route 25 operates within the study area. This route begins at the Louis / Orlando Transit center near the Roseville/Citrus Heights border, and extends southeasterly, terminating at the Marconi/Arcade light rail station. Buses operate on 30 minute headways from approximately 6 AM to 11 PM on weekdays.

As shown on Figure 4, southbound buses stop on Auburn Boulevard immediately south of the mid-block crosswalk. Northbound buses stop on Auburn Boulevard at two locations: one is 275 feet north of the mid-block crosswalk and the other is 330 feet south of the mid-block crosswalk. At all locations shown, buses stop in the Class II bike lane. None of the stops feature pullout lanes or shelters.

SacRT also offers SmaRT Ride, which is a door-to-door transit service provided in select geographic areas (such as Citrus Heights). Riders can request a ride by making a request on a mobile app, and specifying the pick-up and destination address, both of which must be within the Citrus Heights service zone. The mobile app will provide passengers with an estimated pick-up time and drop off window, which is a function of overall demand.

TRAFFIC VOLUMES

Traffic counts were conducted at the Sylvan Road/Auburn Boulevard/Old Auburn Road intersection on January 23, 2019 for the Old Auburn Road Complete Streets Plan. The counts included intersection turning movements, heavy vehicles, bicyclists, and pedestrians. During the counts, weather conditions were dry, schools were in session, and no unusual traffic events occurred. The AM peak hour occurred between 7:15 AM to 8:15 AM, and the PM peak hour occurred between 5:00 and 6:00 PM. Trucks represented 1% of AM peak hour traffic and 2% of PM peak hour traffic.

Fehr & Peers conducted a new set of traffic counts at the study intersection on April 7, 2022 while schools were in session. As expected, traffic volumes were generally lower than the January 2019 counts due to the continued effects of the COVID-19 Pandemic on travel.[2] Thus, this study relies on the January 2019 counts (refer to **Appendix A** for existing volumes).

[2] The April 2022 counts were 6% lower during the AM peak hour and 8% lower during the PM peak hour than the January 2019 traffic counts.

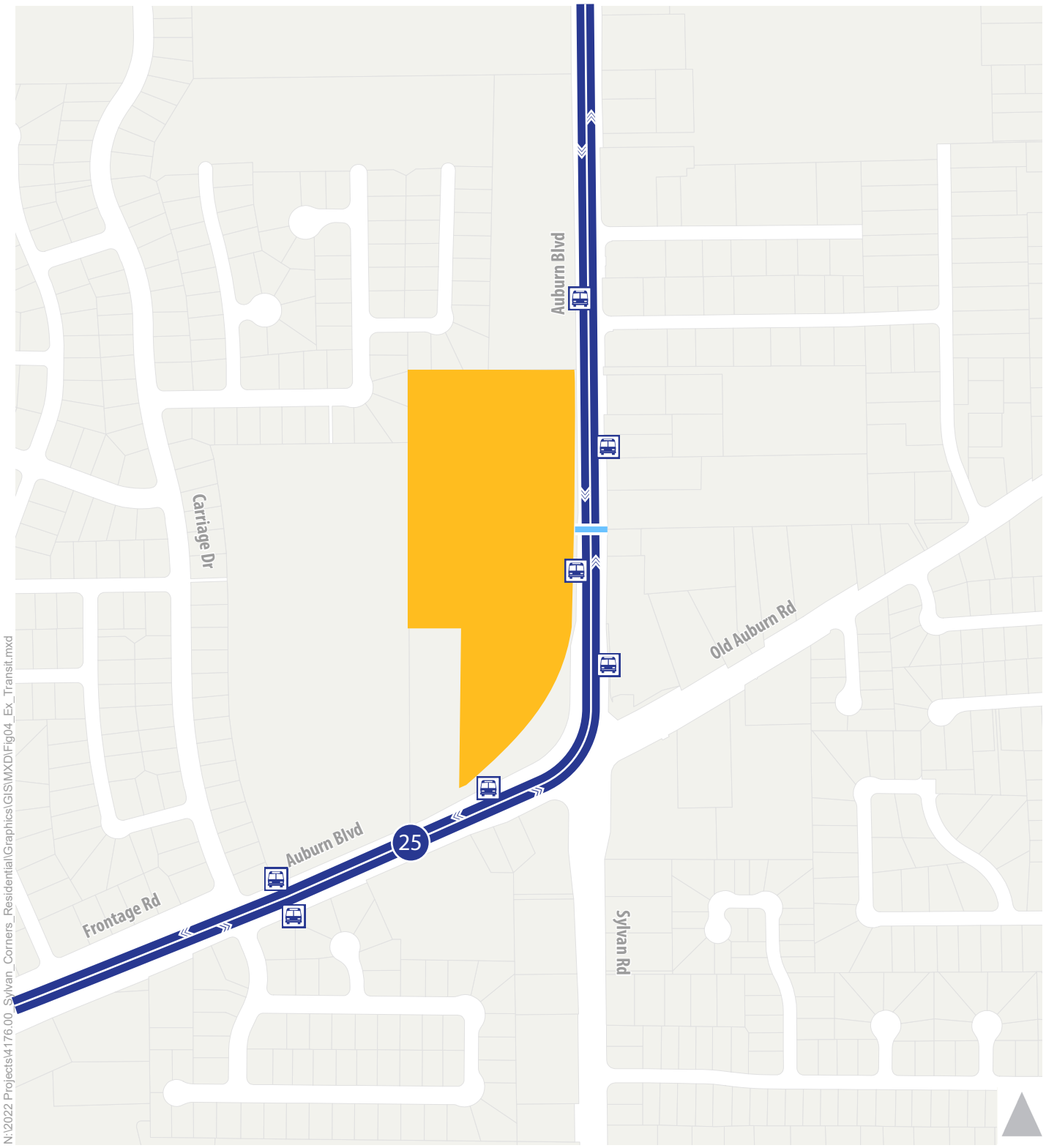


Figure 4

Existing Transit Facilities

The April 2022 counts included maximum queue observations for the southbound left-turn pocket (due to the project's expected usage of this lane. **Table 2** compares the January 2019 versus April 2022 counts for this movement. While the turning volumes are considered modest, the number of queued vehicles was considerable (7 or 8 vehicles during each peak hour).

Table 2 – Existing Southbound Left-Turn Lane Volumes and Queues at the Sylvan Road/Auburn Boulevard/Old Auburn Road Intersection

Movement	Available Storage	AM Peak Hour			PM Peak Hour		
		January 2019 Traffic Volume [1,2]	April 2022 Traffic Volume [2]	April 2022 Maximum Queue [3]	January 2019 Traffic Volume [1,2]	April 2022 Traffic Volume [2]	April 2022 Maximum Queue [3]
Southbound Left/U-Turn	260 feet	48 veh	67 veh	175 feet	69 veh	46 veh	200 feet

Notes:
[1] Maximum queue observations were not collected in January 2019.
[2] Near switch in January 2019 and April 2022 AM and PM peak hour volumes is a coincidence and not a technical erratum.
[3] Calculated assuming 25 feet per queued vehicle.
Source: Fehr & Peers, 2022

This level of queuing is driven the following:

1. Peak 15-Minute Flows – Utilization of the southbound left-turn surged from 8:15 to 8:30 AM and from 5:15 – 5:30 PM[3], due perhaps to nearby school start times and/or the workday concluding.
2. Lengthy Cycle Length – During peak hours, this intersection operates with cycle lengths in the 120 to 180 second range (depending on vehicle demand and pedestrian WALK interval requests). Longer cycle lengths are often associated with more lengthy queues.
3. Leading Left Phase – the northbound and southbound left-turn movements operate with concurrent, leading protected left-turn phasing. However, by the time this phase is called, southbound through queues have typically built up, causing left-turning motorists to not be able to access the turn lane. The consequence is a buildup of left-turning vehicles that accumulate in the left-turn pocket (after the left-turn green interval has ended). **Image 1** below illustrates this condition.

[3] The southbound left-turn exhibited a PHF in the range of 0.70- 0.75.

Image 1: View of southbound through traffic blocking access to left-turn lane.

The following additional data was collected in April 2022:

- *Number of pedestrians/bicyclists using signalized midblock crosswalk during the PM peak hour.* During the PM peak hour, 4 pedestrians used the signalized crosswalk.
- *Number of southbound left turning vehicles and (illegal) u-turning vehicles on Auburn Boulevard at Sylvan Corners Plaza during the AM and PM peak hours*. There were fewer than 5 vehicles per hour turning left into the Sylvan Corners Plaza during each peak hour. A "No-Turn" sign is posted in the median. Field observations did not reveal any illegal u-turns.

INTERSECTION OPERATIONS

The Sylvan Road/Auburn Boulevard/Old Auburn Road intersection operates with protected left-turn phasing on the northbound and southbound approaches. The eastbound and westbound approaches operate with split phasing.[4] The intersection currently operates at LOS C (34 seconds of delay per vehicle) during the AM peak hour and LOS D (43 seconds of delay per vehicle) during the PM peak hour (see **Appendix A** for calculations).

[4] Although no shared left/through lanes are present, the intersection is not operated with protected left-turns because left-turns cannot be made simultaneously due to the intersection skew (see skip striping within intersection).

Chapter 3. **Existing Plus Project Conditions**

This chapter analyzes the potential traffic impacts of the proposed project on the surrounding roadway system under existing conditions.

PROJECT SITE PLAN AND VEHICULAR ACCESS

As previously noted, the project proposes access via two intersections on Auburn Boulevard. The northern intersection (Project Access 1) would be left in/right in/right out only and while the southern intersection (Project Access 2) would be right in/right out only. These accesses would be 825 feet and 350 feet, respectively, north of the southbound limit line at the Sylvan Road/Auburn Boulevard/Old Auburn Road intersection

PROJECT TRAVEL CHARACTERISTICS

Trip Generation

The City of Citrus Heights' *Transportation Impact Analysis Guidelines* (2021) indicate that, when possible, trip generation rates should be derived from local empirical data, rather than trip rates identified in the most recent version of the Institute of Transportation Engineer's *Trip Generation Manual*. The Guidelines note that the sample used for non-standard (i.e. non-ITE) trip rates should include at least three similar facilities in Citrus Heights or neighboring jurisdictions with similar characteristics.

Fehr & Peers collected local empirical data in May 2017 for the Mitchell Farms EIR. The data was collected at three existing detached single family residential sites located in Citrus Heights over two days during the AM (7:00 AM – 9:00 AM) and PM (4:00 PM – 6:30 PM) peak periods. Daily, AM peak hour, and PM peak hour trip rates for each site were developed based on the data collected. These trip rates were used to develop one weighted average trip rate for detached single family developments for each respective time period. **Table 3** displays the location of each count, number of units, the individual trip rates for each site, and the weighted average trip rate for the single family detached developments that were counted.

The weighted average daily, AM peak hour, and PM peak hour trip rates displayed in Table 3 are used to estimate the proposed project's trip generation as these rates represent local empirical data and were collected under pre-COVID-19 conditions. **Table 4** displays the project trip generation using the rates previously described. As shown, the project is estimated to generate approximately 680 daily trips with 61 occurring during the AM peak hour and 65 occurring during the PM peak hour.

Table 3 – Trip Generation Study Site Characteristics

Project Location	Number of Units	Type	Trip Rate[1]						
			Daily Rate[2]	AM Peak Hour			PM Peak Hour		
				Rate	% In	% Out	Rate	% In	% Out
Sundance Drive	141	Single-family detached	7.00	0.61	0.21	0.79	0.68	0.64	0.36
Wigwam Drive	42	Single-family detached	7.12	0.65	0.35	0.65	0.65	0.69	0.31
Kifisia Way	59	Single-family detached	7.56	0.69	0.32	0.68	0.70	0.51	0.49
Single-Family (SF) Weighted Average			**7.16**	**0.64**	**0.26**	**0.74**	**0.68**	**0.62**	**0.38**

Notes:
[1] Fehr & Peers conducted counts in the AM (7:00 AM – 9:00 AM) and PM (4:00 PM – 6:30 PM) peak periods over 2 days, on May 9 and 10, 2017. Fehr & Peers calculated the peak hour of each peak period, and then the average number of peak hour trips.
[2] In order to determine daily rates, Fehr & Peers developed a K-factor between ITE peak hour rates and ITE daily rates. This equation was the sum of the observed trip rates for AM and PM peak hours, divided by the sum of the ITE trip rates for AM and PM peak hours, multiplied by the daily ITE trip rate.
Source: Fehr & Peers, 2017.

Table 4 – Project Trip Generation

Land Use	Quantity (DU)	Daily	AM Peak Hour			PM Peak Hour		
			In	Out	Total	In	Out	Total
Single Family	95	680	16	45	61	40	25	65

Notes:
[1] Trip generation is based on trip rates developed using data collected for the Mitchell Farms EIR in 2017.
Source: Fehr & Peers, 2022

Trip Distribution

The project site is located within the City's Neighborhood Association #2 (Rusch Park), which is bounded by Auburn Boulevard to the south and east, Van Maren Lane to the west, and I-80 to the north. The area north and west of the project site is predominantly residential (though a couple of schools and businesses are also situated in this area). The travel behavior of this neighborhood was estimated by reviewing the directionality of

vehicles entering/exiting its primary access points along Auburn Boulevard.[5] Given the project's close proximity to this primarily residential area, it would be expected to have similar spatial trip distribution characteristics. In 2000 and 2004, Fehr & Peers collected traffic counts at the following intersections:

- Auburn Boulevard/Kanai Avenue
- Auburn Boulevard/San Tomas Drive
- Auburn Boulevard/Raintree Drive
- Auburn Boulevard/Carriage Drive

Because the area was built out by that time and residential trip generation rates are unlikely to have materially changed between the two dates, the difference in count years was not of concern. The project's expected trip distribution is expected to differ by travel direction given the permitted driveway movements. Refer to **Figure 5** for expected percentages, which were informed by the 2000/2004 counts, existing (2022) turning movement volumes at the study intersection, and the location of complementary land uses (e.g., shopping, employment, and schools).

Inbound Trips

Figure 5 indicates that 40% of inbound project trips would arrive from the south on Sylvan Road. Inbound trips to residential developments are greatest during the PM peak hour. During this time period, project residents would be returning home from a variety of destinations to the south including employment centers and shopping along Greenback Lane. This route would also be used for longer distance commute trips returning from the job centers in Rancho Cordova to the south.

Outbound Trips

Figure 5 shows that 35% of outbound project trips would be distributed to/from the west on Auburn Boulevard. This percentage reflects the project's location near the Stock Ranch Retail Center to the west, and the ease of accessing westbound I-80 (to reach downtown Sacramento) via Greenback Lane. Figure 5 indicates 20% of outbound trips would be distributed to the north on Auburn Boulevard. Due to the fact that left outs are prohibited at both project driveways, motorists would have to travel south on Auburn Boulevard and make a u-turn at the Sylvan Road/Auburn Boulevard/Old Auburn Road intersection.

Figure 6 displays project-only trips at both project access points and the Sylvan Road/Auburn Boulevard/Old Auburn Road intersection based on the trip generation and distribution estimates described above.

[5] This approach acknowledges that some of these trips may enter/exit the neighborhood via connections on Antelope Road or Van Maren Lane. The final trip distribution percentages consider the limitation inherent in this approach.

X% / Y%

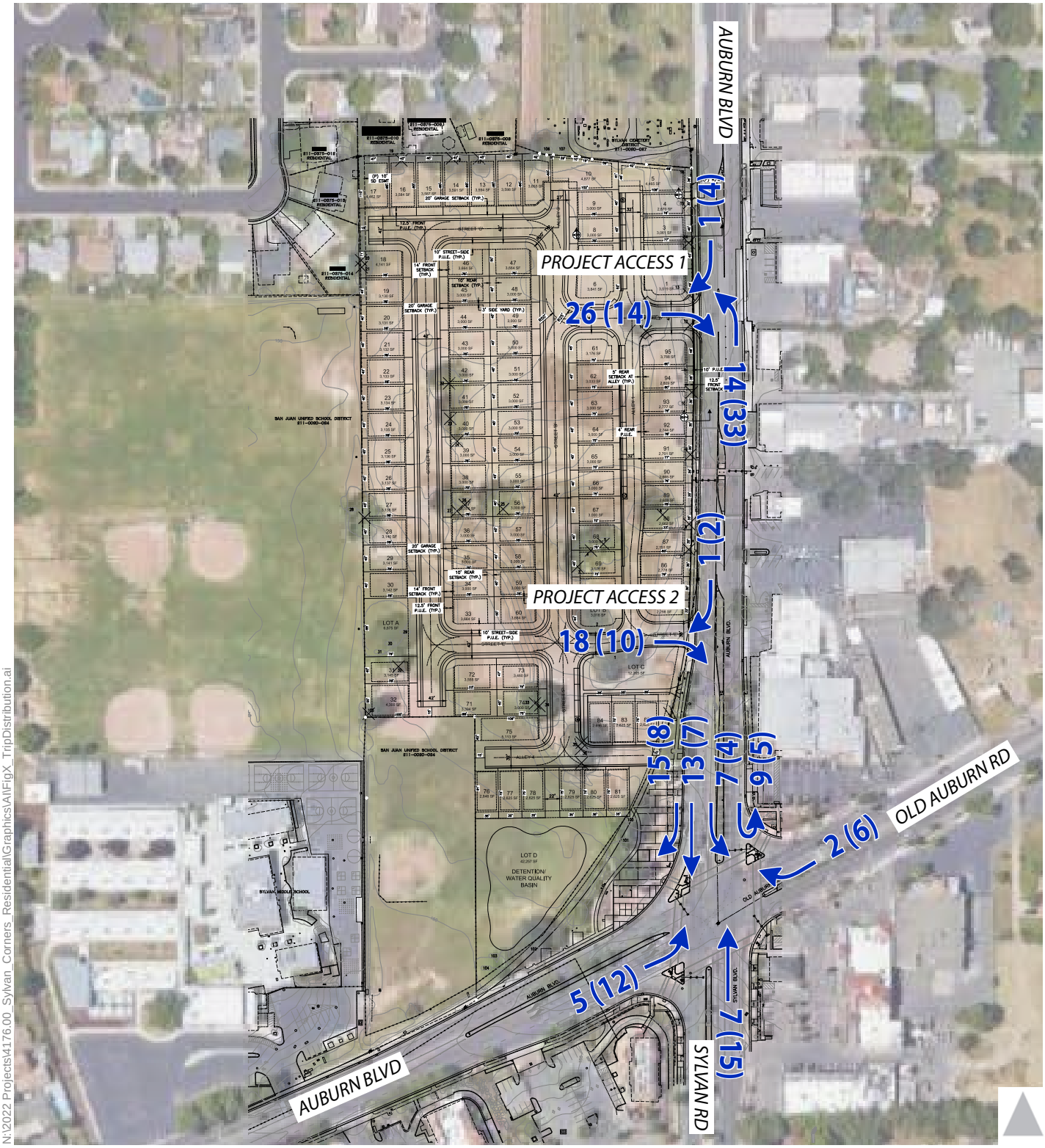
Inbound / Outbound Trip Distribution Percentage

Project Site

Note: Outbound left-turns would be prohibited at each project access. Thus, project trips destined to the north would need to perform a u-turn at the Auburn Blvd/Auburn Rd/Sylvan Rd intersection.

Figure 5

Project Trip Distribution



x (x) AM (PM) Volumes

Figure 6

Peak Hour Traffic Volumes and Lane Configurations - Project Only Conditions

INTERSECTION OPERATIONS

Table 5 displays the operational results at the study intersection under Existing Plus Project conditions (refer to **Appendix B** for technical calculations). As shown, the project would result in modest increases in delay during the AM peak hour and no changes in delay during the PM peak hour.

Table 5. Intersection Operations – Existing Plus Project Conditions

Intersection	Control	Existing Conditions		Existing Plus Project Conditions	
		AM Peak Hour	PM Peak Hour	AM Peak Hour	PM Peak Hour
1. Sylvan Road/Auburn Boulevard/Old Auburn Road	Signal	C / 34	D / 43	D / 37	D / 43

Notes:
For signal control, the overall intersection LOS and control delay (in seconds per vehicle) is reported.
Source: Fehr & Peers, 2022.

The project would add 44 AM peak hour trips and 24 PM peak hour trips to the southbound Auburn Boulevard approach to the Sylvan Road/Auburn Boulevard/Old Auburn Road intersection. This would represent a 4% increase in AM peak hour traffic and 2% increase in PM peak hour traffic over existing volumes. SimTraffic results showed almost no changes in vehicle queuing on this approach[6]. The project would add 16 AM peak hour trips and 9 PM peak hour trips to the southbound left-turn lane. As indicated in Table 3, maximum queues in this lane do not currently occupy the entirety of the turn lane storage. Project trips would not cause the queue to exceed the available storage. Hence, no changes in turn lane storage are required to accommodate project trips.

[6] Some movements experienced a 25-foot increase in the maximum queue, while others experienced a 25-foot decrease in the maximum queue. Given the project's modest changes in traffic, these changes are due to random variation in the SimTraffic model runs and output.

Chapter 4. **Cumulative Conditions**

This chapter analyzes the impacts of the proposed project under cumulative conditions.

TRAFFIC FORECASTS

The cumulative no project forecasts represent anticipated growth in the City of Citrus Heights and surrounding communities by 2040. The following data points/sources were identified:

- The Sacramento Area Council of Government's (SACOG) SACSIM travel demand model predicts a 7% increase in total traffic at the Sylvan Road/Auburn Boulevard/Old Auburn Road intersection between 2016 and 2040.
- Between 2000 and 2019, the total increase in traffic at the Sylvan Road/Auburn Boulevard/Old Auburn Road intersection (excluding movements to/from Auburn Blvd. to the west due to Stock Ranch Retail Center construction after 2000) was 4% during the AM peak hour and 3% during the PM peak hour.
- Fehr & Peers recently completed the Development Impact Fee (DIF) road fee study for the City. That study used SACOG land use projections, which showed a 7% increase in residential and 26% increase in jobs. However, much of that growth is within the Sunrise Tomorrow Specific Plan (Sunrise Mall property) and is unlikely to pass through the study intersection.

Given the above and a preference to be reasonably conservative, City staff and Fehr & Peers determined that a 10% increase in the existing volumes at the study intersection would be a reasonable approach to develop a cumulative no project condition.

INTERSECTION OPERATIONS

The cumulative analysis assumes the Old Auburn Road Complete Streets Plan improvements are constructed, which results in the following changes at the Sylvan Road/Auburn Boulevard/Old Auburn Road intersection:

- The westbound approach is modified to remove one left turn lane and extend the remaining left turn lane to 300 feet.
- The eastbound and westbound approaches are modified to operate with protected left-turn (versus current split) phasing. Due to the intersection's geometry, the left-turns cannot operate concurrently, thereby resulting in lead/lag left-turns.

Signal timings were optimized under Cumulative No Project conditions. No other intersection modifications are included in the analysis.

Project trips were added to Cumulative No Project forecasts consistent with the trip distribution displayed on Figure 5. **Table 6** displays the operational results at the study intersection under Cumulative No Project and Cumulative Plus Project Conditions. As shown, the project would result in modest increases in delay (i.e., two seconds or less) during both the AM and PM peak hours.

Table 6. Intersection Operations – Cumulative Conditions

Intersection	Control	Cumulative No Project Conditions		Cumulative Plus Project Conditions	
		AM Peak Hour	PM Peak Hour	AM Peak Hour	PM Peak Hour
1. Sylvan Road/Auburn Boulevard/Old Auburn Road	Signal	D / 35	D / 53	D / 36	E / 55

Notes:
For signal control, the overall intersection LOS and control delay (in seconds per vehicle) is reported.
Source: Fehr & Peers, 2022.

Chapter 5. **Project Access and On-Site Circulation Review**

This chapter reviews project access and on-site circulation.

PROJECT ACCESS REVIEW

Project Access Throat Depths

SimTraffic was used to estimate the required throat depth for the eastbound (outbound) movement at each intersection. **Table 7** displays the expected maximum queue under Cumulative Plus Project Conditions (when queuing is anticipated to be greatest). Technical calculations are displayed in **Appendix C**.

Table 7: Maximum Queue – Cumulative Conditions

Intersection	Movement	Storage	AM Peak Hour	PM Peak Hour
1. Auburn Boulevard/Project Access 1	Eastbound Right Turn	100 feet	75 feet	50 feet
2. Auburn Boulevard/Project Access 2	Eastbound Right Turn	75 feet	50 feet	75 feet

Notes:
Results based on SimTraffic.
Storage is estimated based on the project site plan.
Source: Fehr & Peers, 2022.

As shown, the throat depth provided at each project access is sufficient to accommodate the expected outbound queues at each intersection. Hence, no site plan modifications are required to accommodate outbound vehicle storage.

Northbound Left Turn Ingress Lane at Project Access 1

As part of the Auburn Boulevard Complete Streets improvements project constructed in 2013/2014, a channelized northbound left-turn lane with 160 feet of vehicle storage was constructed at Project Access 1[7]. The SimTraffic model results for Cumulative Plus Project conditions show a maximum queue in the northbound

[7] At the time this turn lane was constructed, Sylvan Middle School occupied the subject property. That school was subsequently relocated and this turn lane has been closed to vehicular travel by a series of plastic bollards blocking access to the turn lane.

left-turn lane of 50 feet during the AM peak hour and 75 feet during the PM peak hour. Thus, no queuing problems are expected at this driveway.

Field observations during the PM peak hour revealed that queued traffic occasionally spills back from the Auburn Boulevard/Sylvan Road/Old Auburn Road intersection beyond Project Access 1 (see **Image 2** below). This would hinder the ability of northbound left-turn movements to be made.

Image 2: Project site location within City of Citrus Heights Census Block Groups

The queue spillback occurs in a random fashion, caused by the timing of the release of large platoons of traffic from the Antelope Road signalized intersection, and the length of green time provided on the eastbound and westbound approaches at the study intersection. The queue dissipates soon after the southbound through green interval is provided. Queuing conditions also temporarily worsen when pedestrians activate the mid-block signalized pedestrian crossing.

Two other aspects of this turn lane are notable:

1. *A "No U-turn" Sign is present*. This sign is necessary given that Auburn Boulevard does not have sufficient width to accommodate u-turns.
2. *The northbound left-turn lane is face-to-face with a southbound left-turn lane*. The southbound left-turn lane serves a lawn mower and fencing business. The raised median design of these turn lanes provides flexibility for simultaneously present motorists to maneuver their vehicles to see around one another.

Southbound Left Turn at Sylvan Corners Plaza

A southbound left-turn lane serving the Sylvan Corners Plaza exists on Auburn Boulevard about 400 feet south of Project Access 1. A "No U-turn" Sign is present at this location. Some project trips desiring to travel northbound on Auburn Boulevard may be tempted to perform an illegal u-turn at this location or enter the Sylvan Corners Plaza site and then exit, heading northerly on Auburn Boulevard. Both movements would likely be quicker than continuing southbound and performing a u-turn at Sylvan Road/Old Auburn Road.

If the proposed project is constructed, it is recommended that these undesirable movements be monitored (either through traffic counts or complaints filed with the City). Should these behaviors need to be addressed, enforcement and/or increased signage are the primary options.

Project Access Design Dimensions

The project site plan shows each project access consisting of an approximate 38-foot width. This is adequate to accommodate not only passenger vehicles and SUVs, but also garbage trucks and larger delivery/moving trucks turning to/from Auburn Boulevard.

BICYCLE, PEDESTRIAN, AND TRANSIT CONSIDERATIONS

Bicycle Considerations

The City's *Bikeway Master Plan* (2015) does not show any planned facilities within the project vicinity, besides the existing Class II Bike Lanes. Bicyclists exiting Project Access 1 or 2 and traveling southbound in the Class II bike lane would encounter an 85-foot merge area (in advance of the study intersection) in which bike lane striping is not present. This area experiences 350 AM peak hour vehicles and 150 PM peak hour vehicles that turn right onto westbound Auburn Boulevard. Refer to Chapter 7 for recommended improvements to address these multi-modal conflicts.

Pedestrian Considerations

The City's *Pedestrian Master Plan* (2016) does not show any planned facilities within the project vicinity. According to the project site plan, pedestrians would be able to enter/exit the project site from the following locations:

- A pedestrian connection is provided in the southeast corner of project site to the pedestrian plaza in the northwest quadrant of the Auburn Boulevard/Sylvan Road intersection. This area is about one-third of an acre, featuring paved walkways, benches, historical features, landscaping, and trees that provide shade.

The site plan shows sidewalks on both sidewalks of the north access, but no sidewalks on the south access. The lack of sidewalks on the south access presumably considers the close proximity of this access to the pedestrian connection directly to the Auburn Boulevard/Sylvan Road intersection.

Project residents would likely use the southerly pedestrian connection to reach nearby destinations in Sylvan Corners. Residents would need to cross the southbound right-turn lane, which is yield-controlled, has a large radius curve, and is about 18 feet wide See **Image 3**). When not required to yield to oncoming traffic or persons in the crosswalk, some motorists perform this movement at speeds of 20 to 30 mph. These same residents would also need to navigate the channelized free-right lanes in the southwest and northeast corners of the intersection. Recommendations to enhance pedestrian comfort and safety at these locations are presented in Chapter 7.

Image 3: View of southbound right-turn lane at Auburn Boulevard/Sylvan Road/Old Auburn Road intersection

ON-SITE CIRCULATION REVIEW

According to the project site plan, the primary internal streets will be 32 feet wide with 5-foot sidewalks on both sides of the street. Alleys would be either 24 or 27 feet wide, some of which would provide an additional 8-feet for parallel parking. Within the site, 20-foot or 25-foot curb return radii would be provided at on-site intersections. The combination of street widths and curb return radii would allow garbage trucks and truck deliveries to navigate these streets.

The average lot size would be about 3,100 square feet. The applicant (Woodside Homes) has constructed a similar product type in Rocklin (near University Avenue) in which lots are in the 3,600 square foot range. These lots include a driveway that could park two vehicles. Streets in that neighborhood are 36-feet wide and permit on-street parking.

The project site plan and corresponding typical street cross-sections does not indicate whether on-street parallel parking would be permitted on the 32-foot wide streets. The site plan shows a total of 20 parallel on-street parking spaces within the site, 16 of which would be provided on the north-south alley.

SIGNALIZED MID-BLOCK PEDESTRIAN CROSSWALK ON AUBURN BOULEVARD

This crosswalk was originally installed to support students who desired to cross Auburn Boulevard to access Sylvan Middle School situated immediately to the west. When the school was relocated over a decade ago to a site on Auburn Boulevard west of Sylvan Road, usage of this crosswalk diminished. With the now vacant school site and adjacent property being considered for redevelopment, now is an appropriate time to evaluate whether the signalized crosswalk should remain.

As part of a separate study, Fehr & Peers collected data to analyze this crossing in accordance with Warrant 5 (School Crossing) of the *California Manual of Uniform Traffic Control Devices* (MUTCD, 2014). It was determined that the signal warrant is no longer met. The data collection, analysis, and conclusions of that work have been documented as part of a separate technical memorandum.

Chapter 6. **Vehicle Miles Traveled Analysis**

A vehicle miles traveled (VMT) analysis for the project was completed using methodologies and information documented in the *SB 743 Implementation Guidelines for the City of Citrus Heights* (February 2021). The SB 743 Guidelines include the following checklist which can be used to determine if a VMT analysis is required for a given project.

Checklist for VMT Thresholds of Significance for Land Use Projects [1]

Exemptions (i.e., VMT impacts presumed less-than-significant)

- *Small Projects*: up to 19 single-family units, 32 multi-family units, or 14,000 square feet of office
- *Projects near High-Quality Transit*[2]: Situated within cross-hatched areas of Figures 3-5.
- *Affordable Housing*
- *Redevelopment Projects*: project results in a net decrease in VMT.
- *Local-Serving Retail*: Projects that consist of 50,000 square feet of retail space or less.

Project Screening

- Projects that are situated in "low VMT generating" census block groups (see Figures 3-5) are presumed less-than-significant.

Other Considerations

- Use of "Blending/Adjacency" evaluations for certain projects (see Chapter V for details).
- Projects that result in a net decrease in overall VMT.

1: Applies only to projects that are subject to CEQA.

2: Subject to being transit supportive, providing parking that is no more than 20% over the City code requirement, and not removing affordable housing.

Source: *SB 743 Implementation Guidelines for the City of Citrus Heights* (February 2021).

If a VMT analysis is required, thresholds of significance are provided for various types of land uses. For residential developments, a project would cause a significant impact if it would:

- Not qualify under one of the applicable exemption categories, and its VMT exceeded 85 percent of the regional per capita average. If the above conditions are met, the project's VMT impact could still be found to be less-than-significant if it did not cause the total VMT generated by the City of Citrus Heights to increase.

The proposed project does not qualify for any of the above exemptions. The project is situated in a census block group (CBG) whose last four digits end with 1112 (see **Image 4**). This CBG is large, comprising 280 acres that extends to Antelope Road and nearly to Van Maren Lane and includes a variety of land uses. Given the CBG size and variety of land uses within it, residential travel characteristics within this area are not homogenous.

In accordance with the *SB 743 Implementation Guidelines for the City of Citrus Heights*, a "blending/adjacency" evaluation was completed for the proposed project. The SB 743 Guidelines state that a blending/adjacency evaluation should consider a project sites' relative placement within a CBG and the travel characteristics of an adjacent CBG containing similar land uses. If an adjacent CBG containing similar land uses and travel characteristics to the proposed project has low generating VMT, it can be concluded that the proposed project would result in similar VMT and can be deemed less than significant.

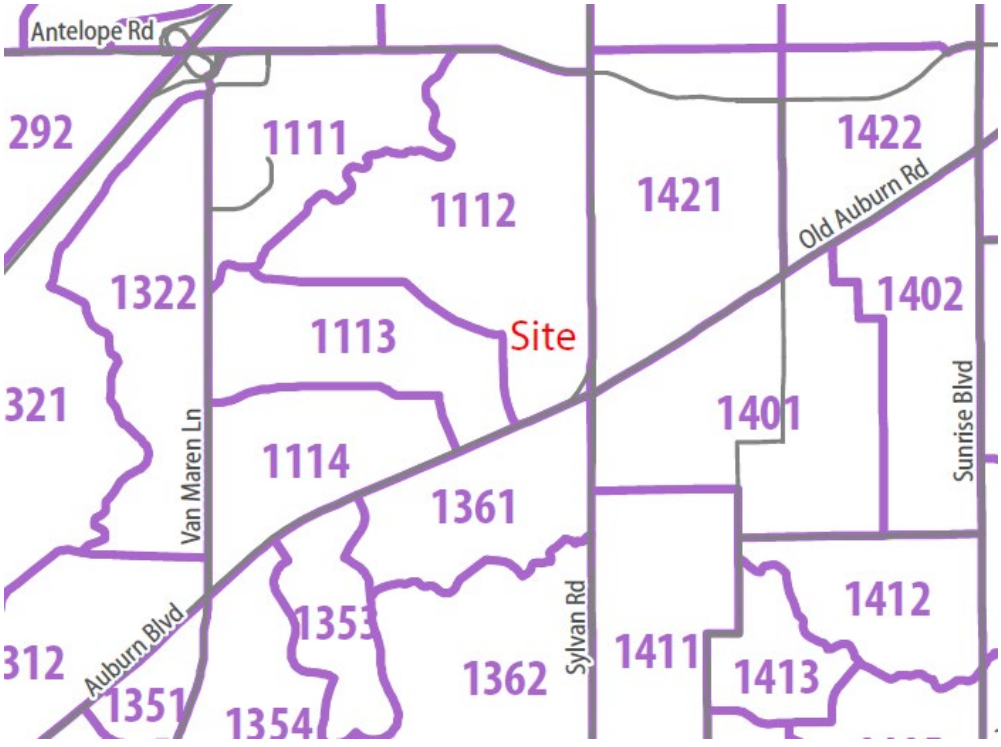


Image 4: Project site location within City of Citrus Heights Census Block Groups
Source: *SB 743 Implementation Guidelines for the City of Citrus Heights* (February 2021).

CBG 1112 generates an average of 20.9 VMT per resident, which is above both the Citywide average (17.4 VMT per resident) and SACOG regional average (20.1 VMT per resident). However, the proposed project site is adjacent to CBGs 1113, 1361, and 1401. These CBGs include similar land uses to CBG 1112 and given their proximity to the project site, it can be concluded that residents of the proposed project would have similar travel characteristics to the residents in the existing adjacent CBGs. The following presents the VMT per resident for the adjacent CBGs:

- CBG 1113 - 16.9 VMT per resident
- CBG 1361 - 15.0 VMT per resident
- CBG 1401 - 15.7 VMT per resident

Given the location of the proposed project site, it can be concluded that project residents would have travel characteristics more similar to residents in CBGs 1113, 1361, and 1401 (versus 1112). These three CBGs have VMT per resident averages that are less than 85 percent of the SACOG regional average. Therefore, the proposed project would have a less than significant VMT impact.

Chapter 7. **Recommendations**

This chapter presents the study recommendations.

RECOMMENDATION #1: AUBURN BOULEVARD/SYLVAN ROAD INTERSECTION

To address increased levels of queuing on Auburn Boulevard and additional pedestrian activity by project residents, it is recommended that the project applicant modify the intersection as follows:

- Modify signal phasing to operate the eastbound and westbound approaches with lead/lag protected left-turn phasing (versus current split phasing).
- Signalize the channelized southbound, eastbound, and westbound right-turn lanes, providing push-button pedestrian detection in each crosswalk[8].
- Extend the southbound Class II bike lane by providing green skip striping (to designate a merge area) to provide for a continuous and more visible facility.

Coordination with the city will be required to determine the extent to which some of these improvements could qualify as fair share contributions. The improvements would directly benefit the project by virtue of shorter queues on southbound Auburn Boulevard (i.e., fewer blockages of north project access) and improved conditions for project residents walking/biking in the area.

RECOMMENDATION #2: ILLEGAL SOUTHBOUND U-TURNS ON AUBURN BLVD

If the proposed project is constructed, some project trips desiring to travel northbound on Auburn Boulevard may choose to perform an illegal u-turn at the southbound left-turn lane serving the Sylvan Corners Plaza. Fehr & Peers recommends the following:

- Monitor (either through counts or complaints filed with the City) this turn lane for unlawful movements, and if warranted, increase enforcement and/or post additional signage to discourage those behaviors.

RECOMMENDATION #3: ON-SITE PARKING

As noted in Chapter 5, it is unclear whether on-street parking will be permitted or not. The following is recommended:

- The project applicant and City should coordinate regarding whether on-street parking will be permitted or prohibited on various street segments.

[8] This signal could also be operated such that a red arrow (no right-turn on red) indication occurs when the westbound through and northbound left-turn movements have green intervals.

Appendix A – Existing Technical Calculations

Intersection 1 **Sylvan Rd/Auburn Bl-Old Auburn Rd** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	165	168	101.9%	53.6	5.3	D
	Through	747	754	100.9%	30.2	2.1	C
	Right Turn	133	128	95.9%	8.1	1.8	A
	Subtotal	1,045	1,049	100.4%	30.9	2.2	C
SB	Left Turn	48	47	98.8%	65.6	17.6	E
	Through	668	676	101.2%	36.3	2.6	D
	Right Turn	349	358	102.6%	9.5	2.1	A
	Subtotal	1,065	1,081	101.5%	28.6	2.2	C
EB	Left Turn	229	220	95.9%	45.2	7.8	D
	Through	351	367	104.7%	46.4	5.4	D
	Right Turn	282	280	99.3%	7.0	2.0	A
	Subtotal	862	867	100.6%	34.2	3.8	C
WB	Left Turn	187	188	100.3%	39.4	5.8	D
	Through	555	560	101.0%	47.0	5.8	D
	Right Turn	74	73	99.1%	23.8	9.2	C
	Subtotal	816	821	100.6%	43.1	5.4	D
Total		3,788	3,819	100.8%	33.6	2.3	C

Intersection 2 **Mariposa Av/Old Auburn Rd** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	12	12	103.3%	40.5	22.9	D
	Through	41	40	98.0%	27.5	8.4	C
	Right Turn	55	54	98.9%	19.5	9.3	B
	Subtotal	108	107	99.1%	25.9	10.0	C
SB	Left Turn	67	68	100.7%	31.0	9.7	C
	Through	22	25	115.0%	23.8	7.3	C
	Right Turn	93	92	98.5%	15.9	4.7	B
	Subtotal	182	184	101.3%	23.0	5.0	C
EB	Left Turn	37	36	96.2%	36.2	17.6	D
	Through	489	502	102.6%	19.1	9.4	B
	Right Turn	9	9	100.0%	13.7	19.9	B
	Subtotal	535	546	102.1%	20.1	9.8	C
WB	Left Turn	26	26	101.5%	43.2	14.1	D
	Through	656	659	100.5%	16.3	3.5	B
	Right Turn	74	74	100.3%	11.5	5.4	B
	Subtotal	756	760	100.5%	16.8	3.9	B
Total		1,581	1,598	101.0%	19.3	5.5	B

Intersection 1 **Sylvan Rd/Auburn Bl-Old Auburn Rd** **Signal**

Direction	Lane Group	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	95th Queue (ft) Average	95th Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Block Time Pocket	Block Time Upstream
EB	U/Left Turns	325	75	11	125	20	150	27	0%	0%
	Left Turn	325	100	9	150	11	175	24	0%	0%
	Through	2,300	150	16	250	35	300	68	4%	0%
	Right Turn	175	50	15	175	34	200	0	0%	0%
NB	U/Left Turns	275	75	6	150	15	150	21	0%	0%
	Left Turn	275	100	4	150	12	175	29	0%	0%
	Through	275	200	19	300	24	325	23	10%	3%
	Right Turn	175	75	13	200	28	200	0	0%	0%
SB	U/Left Turns	275	50	11	125	43	200	103	0%	0%
	Through	1,125	225	23	350	32	400	37	13%	0%
	Right Turn	1,125	100	10	200	9	150	0	1%	0%
WB	U/Left Turns	125	50	5	125	9	150	15	0%	0%
	Left Turn	375	125	10	225	17	275	21	2%	0%
	Through	1,800	275	25	425	41	550	48	11%	0%
	Through/Right	200	200	7	275	5	225	0	9%	0%

Intersection 2 **Mariposa Av/Old Auburn Rd** **Signal**

Direction	Lane Group	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	95th Queue (ft) Average	95th Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Block Time Pocket	Block Time Upstream
EB	Left Turn	200	50	15	125	40	200	44	0%	0%
	Through	1,075	200	21	425	50	525	81	12%	0%
	Right Turn	150	25	4	25	30	50	74	0%	0%
NB	Left Turn	125	25	3	50	6	75	12	0%	0%
	Through/Right	1,250	50	7	100	14	125	30	1%	0%
SB	Left Turn	200	50	4	75	9	100	16	0%	0%
	Through/Right	1,000	50	7	100	15	125	29	0%	0%
WB	Left Turn	200	25	6	100	28	175	64	0%	0%
	Through/Right	675	200	35	400	69	550	98	8%	0%

Intersection 1 **Sylvan Rd/Auburn Bl-Old Auburn Rd** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	347	339	97.7%	55.3	6.6	E
	Through	735	732	99.6%	35.4	5.6	D
	Right Turn	150	145	96.8%	13.1	3.4	B
	Subtotal	1,232	1,216	98.7%	38.6	5.1	D
SB	Left Turn	69	69	99.3%	79.0	25.2	E
	Through	743	739	99.4%	52.1	5.5	D
	Right Turn	271	279	102.8%	8.6	3.5	A
	Subtotal	1,083	1,086	100.3%	43.2	5.7	D
EB	Left Turn	375	380	101.2%	41.0	6.4	D
	Through	578	578	100.0%	49.2	10.4	D
	Right Turn	358	361	100.8%	10.9	4.9	B
	Subtotal	1,311	1,318	100.5%	36.6	7.2	D
WB	Left Turn	234	224	95.5%	59.0	14.2	E
	Through	504	502	99.5%	65.6	15.6	E
	Right Turn	81	73	89.8%	33.8	19.8	C
	Subtotal	819	798	97.4%	60.9	15.2	E
Total		4,445	4,418	99.4%	43.1	6.6	D

Intersection 2 **Mariposa Av/Old Auburn Rd** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	8	8	93.8%	23.5	16.0	C
	Through	26	28	108.8%	33.5	12.3	C
	Right Turn	42	44	105.5%	16.4	4.8	B
	Subtotal	76	80	105.4%	23.4	5.7	C
SB	Left Turn	77	68	87.7%	26.1	6.9	C
	Through	49	49	100.8%	27.2	7.0	C
	Right Turn	56	53	94.6%	14.4	4.5	B
	Subtotal	182	170	93.4%	22.6	4.6	C
EB	Left Turn	44	40	91.4%	37.6	11.8	D
	Through	669	667	99.7%	25.6	7.5	C
	Right Turn	22	23	103.6%	14.9	9.1	B
	Subtotal	735	730	99.3%	25.8	7.5	C
WB	Left Turn	59	61	102.7%	33.8	9.1	C
	Through	697	687	98.6%	22.3	4.6	C
	Right Turn	73	72	98.6%	19.7	5.8	B
	Subtotal	829	820	98.9%	22.9	4.8	C
Total		1,822	1,800	98.8%	24.1	3.7	C

Intersection 1 **Sylvan Rd/Auburn Bl-Old Auburn Rd** **Signal**

Direction	Lane Group	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	95th Queue (ft) Average	95th Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Block Time Pocket	Block Time Upstream
EB	U/Left Turns	325	125	6	175	8	200	21	0%	0%
	Left Turn	325	150	7	225	29	300	80	0%	0%
	Through	2,300	225	21	350	52	450	92	20%	0%
	Right Turn	175	100	30	275	38	250	0	2%	0%
NB	U/Left Turns	275	175	8	250	19	300	12	0%	1%
	Left Turn	275	150	10	225	17	250	6	0%	0%
	Through	275	225	12	300	21	325	19	12%	4%
	Right Turn	175	75	22	200	50	250	0	0%	0%
SB	U/Left Turns	275	75	16	225	42	300	1	0%	0%
	Through	1,125	300	24	425	52	500	66	29%	0%
	Right Turn	1,125	100	23	250	32	225	0	0%	0%
WB	U/Left Turns	125	75	6	125	11	150	8	1%	0%
	Left Turn	275	100	7	150	15	200	45	3%	0%
	Through	275	225	15	350	20	350	11	15%	6%
	Through/Right	200	200	7	275	7	225	0	15%	0%

Intersection 2 **Mariposa Av/Old Auburn Rd** **Signal**

Direction	Lane Group	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	95th Queue (ft) Average	95th Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Block Time Pocket	Block Time Upstream
EB	Left Turn	200	50	11	150	27	225	1	0%	0%
	Through	1,075	300	41	550	92	650	115	20%	0%
	Right Turn	150	25	13	100	51	200	66	0%	0%
NB	Left Turn	125	25	3	50	5	50	14	0%	0%
	Through/Right	1,250	50	3	75	5	100	15	0%	0%
SB	Left Turn	200	50	7	100	14	100	22	0%	0%
	Through/Right	1,000	50	6	100	12	100	12	0%	0%
WB	Left Turn	200	50	12	175	37	250	3	0%	0%
	Through/Right	675	275	28	500	63	575	92	15%	0%

Appendix B – Existing Plus Project Conditions Technical Calculations

SimTraffic Post-Processor **Sylvan Corners**
Average Results from 10 Runs **Existing Plus Project Conditions**
Volume and Delay by Movement **AM Peak Hour**

Intersection 1 **Sylvan Rd/Auburn Bl-Old Auburn Rd** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	165	164	99.6%	61.4	12.4	E
	Through	754	752	99.7%	37.8	6.4	D
	Right Turn	133	127	95.8%	14.7	6.0	B
	Subtotal	1,052	1,044	99.2%	38.4	6.6	D
SB	Left Turn	64	61	94.7%	63.7	13.5	E
	Through	681	676	99.3%	39.4	5.2	D
	Right Turn	364	351	96.4%	11.1	3.4	B
	Subtotal	1,109	1,087	98.0%	32.0	5.2	C
EB	Left Turn	234	230	98.3%	48.3	6.2	D
	Through	351	353	100.5%	51.4	5.7	D
	Right Turn	282	283	100.3%	7.6	2.0	A
	Subtotal	867	866	99.9%	35.8	4.0	D
WB	Left Turn	187	188	100.6%	39.8	6.3	D
	Through	555	550	99.1%	44.9	8.0	D
	Right Turn	76	80	104.6%	17.7	8.0	B
	Subtotal	818	818	100.0%	41.1	7.4	D
Total		3,846	3,814	99.2%	36.5	4.5	D

Intersection 2 **Auburn Boulevard/Project Access 1** **Side-street Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	14	14	98.6%	4.3	2.7	A
	Through	1,055	1,057	100.2%	0.6	0.1	A
	Right Turn						
	Subtotal	1,069	1,071	100.1%	0.7	0.1	A
SB	Left Turn						
	Through	1,066	1,046	98.1%	0.6	0.1	A
	Right Turn	1	1	90.0%	0.0	0.0	A
	Subtotal	1,067	1,047	98.1%	0.6	0.1	A
EB	Left Turn						
	Through						
	Right Turn	26	26	98.1%	5.1	1.5	A
	Subtotal	26	26	98.1%	5.1	1.5	A
WB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
Total		2,162	2,143	99.1%	0.7	0.1	A

SimTraffic Post-Processor **Sylvan Corners**
Average Results from 10 Runs **Existing Plus Project Conditions**
Volume and Delay by Movement **AM Peak Hour**

Intersection 3 **Auburn Boulevard/Project Access 2** **Side-street Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	1,069	1,070	100.1%	4.2	0.3	A
	Right Turn						
	Subtotal	1,069	1,070	100.1%	4.2	0.3	A
SB	Left Turn						
	Through	1,091	1,072	98.2%	1.5	0.7	A
	Right Turn	1	2	150.0%	0.0	0.0	A
	Subtotal	1,092	1,073	98.3%	1.5	0.7	A
EB	Left Turn						
	Through						
	Right Turn	18	20	112.2%	9.1	5.0	A
	Subtotal	18	20	112.2%	9.1	5.0	A
WB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
Total		2,179	2,164	99.3%	2.9	0.4	A

Intersection 1 **Sylvan Rd/Auburn Bl-Old Auburn Rd** **Signal**

Direction	Lane Group	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	95th Queue (ft) Average	95th Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Block Time Pocket	Block Time Upstream
EB	U/Left Turns	325	75	8	125	19	150	27	0%	0%
	Left Turn	325	100	9	150	22	200	72	0%	0%
	Through	2,300	150	14	250	36	300	55	4%	0%
	Right Turn	175	50	14	175	28	200	0	1%	0%
NB	U/Left Turns	275	75	10	150	11	150	17	0%	0%
	Left Turn	275	100	9	150	11	175	18	0%	0%
	Through	1,100	225	15	350	30	450	42	11%	0%
	Right Turn	175	75	13	200	28	200	0	0%	0%
SB	U/Left Turns	275	50	14	125	44	200	89	0%	0%
	Through	750	200	12	350	21	425	19	16%	0%
	Right Turn	275	100	11	200	7	150	0	0%	0%
WB	U/Left Turns	125	50	7	125	15	150	15	0%	0%
	Left Turn	350	100	7	200	17	275	38	2%	0%
	Through	1,050	250	12	375	22	525	28	14%	0%
	Through/Right	200	200	6	275	9	225	0	5%	0%

Intersection 2 **Auburn Boulevard/Project Access 1** **Side-street Stop**

Direction	Lane Group	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	95th Queue (ft) Average	95th Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Block Time Pocket	Block Time Upstream
EB	Right Turn	275	25	3	50	3	50	14	0%	0%
NB	Left Turn	150	25	3	50	5	50	1	0%	0%
0										
0										

Intersection 3 **Auburn Boulevard/Project Access 2** **Side-street Stop**

Direction	Lane Group	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	95th Queue (ft) Average	95th Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Block Time Pocket	Block Time Upstream
EB	Right Turn	225	25	4	50	5	50	12	0%	0%
SB	Through	400	25	2	25	19	50	55	0%	0%
	Through/Right	400	25	4	50	20	100	38	0%	0%
0										
0										

SimTraffic Post-Processor **Sylvan Corners**
Average Results from 10 Runs **Existing Plus Project Conditions**
Volume and Delay by Movement **PM Peak Hour**

Intersection 1 **Sylvan Rd/Auburn Bl-Old Auburn Rd** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	347	343	98.7%	57.7	6.0	E
	Through	750	760	101.4%	35.9	5.7	D
	Right Turn	150	151	100.5%	11.0	1.4	B
	Subtotal	1,247	1,254	100.5%	39.2	4.2	D
SB	Left Turn	78	77	98.7%	69.3	22.0	E
	Through	750	735	98.0%	54.2	5.1	D
	Right Turn	279	283	101.3%	11.7	3.6	B
	Subtotal	1,107	1,095	98.9%	44.5	4.5	D
EB	Left Turn	387	380	98.3%	46.2	3.6	D
	Through	578	577	99.7%	51.4	4.4	D
	Right Turn	358	356	99.4%	12.0	2.8	B
	Subtotal	1,323	1,313	99.2%	38.8	2.4	D
WB	Left Turn	234	233	99.5%	48.1	8.7	D
	Through	504	496	98.3%	58.6	7.8	E
	Right Turn	87	91	104.7%	22.0	8.1	C
	Subtotal	825	820	99.3%	51.5	6.4	D
Total		4,502	4,481	99.5%	42.6	1.9	D

Intersection 2 **Auburn Boulevard/Project Access 1** **Side-street Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	33	33	99.4%	5.8	2.4	A
	Through	1,196	1,204	100.7%	0.8	0.2	A
	Right Turn						
	Subtotal	1,229	1,237	100.7%	0.9	0.2	A
SB	Left Turn						
	Through	1,085	1,075	99.1%	0.5	0.1	A
	Right Turn	4	4	100.0%	0.0	0.0	A
	Subtotal	1,089	1,079	99.1%	0.5	0.1	A
EB	Left Turn						
	Through						
	Right Turn	14	14	96.4%	4.2	2.1	A
	Subtotal	14	14	96.4%	4.2	2.1	A
WB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
Total		2,332	2,330	99.9%	0.7	0.1	A

SimTraffic Post-Processor **Sylvan Corners**
Average Results from 10 Runs **Existing Plus Project Conditions**
Volume and Delay by Movement **PM Peak Hour**

Intersection 3 **Auburn Boulevard/Project Access 2** **Side-street Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	1,229	1,238	100.7%	4.3	0.6	A
	Right Turn						
	Subtotal	1,229	1,238	100.7%	4.3	0.6	A
SB	Left Turn						
	Through	1,097	1,087	99.1%	2.4	1.2	A
	Right Turn	2	2	80.0%	0.0	0.1	A
	Subtotal	1,099	1,089	99.0%	2.4	1.2	A
EB	Left Turn						
	Through						
	Right Turn	10	8	83.0%	12.0	14.8	B
	Subtotal	10	8	83.0%	12.0	14.8	B
WB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
Total		2,338	2,334	99.8%	3.4	0.7	A

SimTraffic Post-Processor **Sylvan Corners**
Average Results from 10 Runs **Existing Plus Project Conditions**
Queue Length **PM Peak Hour**

Intersection 1 **Sylvan Rd/Auburn Bl-Old Auburn Rd** **Signal**

Direction	Lane Group	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	95th Queue (ft) Average	95th Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Block Time Pocket	Block Time Upstream
EB	U/Left Turns	325	125	10	200	17	250	47	0%	0%
	Left Turn	325	150	13	250	36	350	80	0%	0%
	Through	2,300	250	23	400	49	475	82	21%	0%
	Right Turn	175	125	24	300	22	250	0	3%	0%
NB	U/Left Turns	275	175	11	250	12	300	26	0%	0%
	Left Turn	275	150	11	225	17	250	18	0%	0%
	Through	875	225	9	275	18	325	19	14%	0%
	Right Turn	175	100	16	225	32	250	0	0%	0%
SB	U/Left Turns	275	100	19	225	36	300	1	0%	0%
	Through	725	275	12	375	21	450	20	27%	0%
	Right Turn	275	125	16	275	14	225	0	0%	0%
WB	U/Left Turns	125	75	5	150	8	150	1	1%	0%
	Left Turn	275	125	8	175	13	200	27	7%	0%
	Through	350	275	36	375	62	450	68	19%	0%
	Through/Right	200	200	8	275	12	225	0	12%	0%

Intersection 2 **Auburn Boulevard/Project Access 1** **Side-street Stop**

Direction	Lane Group	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	95th Queue (ft) Average	95th Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Block Time Pocket	Block Time Upstream
EB	Right Turn	250	25	3	50	6	50	1	0%	0%
NB	Left Turn	150	25	4	50	8	75	18	0%	0%
0										
0										

Intersection 3 **Auburn Boulevard/Project Access 2** **Side-street Stop**

Direction	Lane Group	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	95th Queue (ft) Average	95th Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Block Time Pocket	Block Time Upstream
EB	Right Turn	275	25	2	50	4	50	0	0%	0%
SB	Through	400	25	6	50	27	100	45	0%	0%
	Through/Right	400	25	5	50	29	125	60	0%	0%
0										
0										

Appendix C – Cumulative Conditions Technical Calculations

SimTraffic Post-Processor **Sylvan Corners**
Average Results from 10 Runs **Cumulative No Project**
Volume and Delay by Movement **AM Peak Hour**

Intersection 1 **Sylvan Rd/Auburn Bl-Old Auburn Rd** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	181	179	99.0%	54.7	8.0	D
	Through	822	812	98.8%	36.6	5.0	D
	Right Turn	146	144	98.8%	13.8	2.4	B
	Subtotal	1,149	1,135	98.8%	36.5	4.5	D
SB	Left Turn	53	53	99.8%	57.2	9.3	E
	Through	735	738	100.4%	40.2	7.1	D
	Right Turn	384	380	99.0%	15.0	5.1	B
	Subtotal	1,172	1,171	99.9%	32.7	6.4	C
EB	Left Turn	252	251	99.5%	39.9	4.1	D
	Through	386	397	102.7%	32.9	3.3	C
	Right Turn	310	302	97.4%	7.3	1.7	A
	Subtotal	948	949	100.1%	27.1	1.7	C
WB	Left Turn	206	207	100.6%	56.4	6.0	E
	Through	611	612	100.1%	44.1	3.9	D
	Right Turn	81	83	102.5%	19.6	5.4	B
	Subtotal	898	902	100.4%	44.9	3.0	D
Total		4,167	4,157	99.8%	35.1	2.9	D

Intersection 1 **Sylvan Rd/Auburn Bl-Old Auburn Rd** **Signal**

Direction	Lane Group	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	95th Queue (ft) Average	95th Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Block Time Pocket	Block Time Upstream
EB	U/Left Turns	325	75	11	125	21	150	24	0%	0%
	Left Turn	325	100	7	150	13	175	22	0%	0%
	Through	2,300	125	7	225	16	300	50	2%	0%
	Right Turn	175	50	20	175	39	200	0	1%	0%
NB	U/Left Turns	275	75	8	125	13	150	20	0%	0%
	Left Turn	275	75	9	150	16	150	31	0%	0%
	Through	2,350	250	26	400	47	500	52	15%	0%
	Right Turn	175	100	21	250	32	200	0	0%	0%
SB	U/Left Turns	275	50	10	125	39	225	94	0%	0%
	Through	750	250	17	375	33	425	28	22%	0%
	Right Turn	275	125	13	200	6	150	0	2%	0%
WB	U/Left Turns	325	175	17	300	32	325	19	0%	0%
	Through	3,025	250	20	450	40	525	28	11%	0%
	Through/Right	200	200	5	250	8	225	0	9%	0%

SimTraffic Post-Processor **Sylvan Corners**
Average Results from 10 Runs **Cumulative No Project Conditions**
Volume and Delay by Movement **PM Peak Hour**

Intersection 1 **Sylvan Rd/Auburn Bl-Old Auburn Rd** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	382	377	98.7%	109.9	43.4	F
	Through	809	797	98.5%	47.2	20.6	D
	Right Turn	165	161	97.8%	21.9	21.6	C
	Subtotal	1,356	1,335	98.4%	62.4	27.9	E
SB	Left Turn	76	73	95.8%	74.5	17.0	E
	Through	817	804	98.4%	72.3	25.2	E
	Right Turn	298	291	97.6%	27.3	21.0	C
	Subtotal	1,191	1,167	98.0%	61.0	24.7	E
EB	Left Turn	412	419	101.6%	45.8	4.2	D
	Through	636	646	101.6%	43.7	4.6	D
	Right Turn	394	398	101.1%	14.3	2.9	B
	Subtotal	1,442	1,463	101.4%	36.5	3.1	D
WB	Left Turn	257	226	87.7%	60.4	10.6	E
	Through	554	492	88.8%	54.1	10.6	D
	Right Turn	89	75	84.4%	28.0	8.3	C
	Subtotal	900	793	88.1%	53.5	9.7	D
Total		4,889	4,758	97.3%	52.5	10.1	D

SimTraffic Post-Processor **Sylvan Corners**
Average Results from 10 Runs **Cumulative No Project Conditions**
Queue Length **PM Peak Hour**

Intersection 1 **Sylvan Rd/Auburn Bl-Old Auburn Rd** **Signal**

Direction	Lane Group	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	95th Queue (ft) Average	95th Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Block Time Pocket	Block Time Upstream
EB	U/Left Turns	325	150	8	225	11	250	33	0%	0%
	Left Turn	325	175	10	275	31	350	63	0%	0%
	Through	2,300	275	22	400	41	475	49	23%	0%
	Right Turn	175	175	20	325	11	250	0	7%	0%
NB	U/Left Turns	275	250	23	350	19	325	12	0%	17%
	Left Turn	275	200	25	300	24	275	17	0%	6%
	Through	875	300	99	400	150	450	139	20%	0%
	Right Turn	175	100	26	250	39	250	0	0%	0%
SB	U/Left Turns	275	125	18	300	31	300	0	0%	0%
	Through	725	375	65	475	87	525	80	45%	0%
	Right Turn	275	150	17	300	8	225	0	1%	0%
WB	U/Left Turns	325	200	9	325	22	325	0	1%	0%
	Through	2,925	250	17	400	44	500	67	14%	0%
	Through/Right	200	200	6	275	9	225	0	14%	0%

Intersection 1 **Sylvan Rd/Auburn Bl-Old Auburn Rd** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	181	181	100.2%	58.2	8.2	E
	Through	829	826	99.7%	37.4	5.1	D
	Right Turn	146	142	97.3%	15.3	3.7	B
	Subtotal	1,156	1,150	99.4%	37.9	5.2	D
SB	Left Turn	69	68	99.1%	59.8	6.9	E
	Through	748	755	100.9%	39.0	5.3	D
	Right Turn	399	389	97.5%	15.6	4.5	B
	Subtotal	1,216	1,212	99.7%	32.8	5.2	C
EB	Left Turn	257	267	103.9%	41.1	4.7	D
	Through	386	392	101.6%	32.3	3.7	C
	Right Turn	310	302	97.5%	7.3	1.9	A
	Subtotal	953	962	100.9%	26.9	3.0	C
WB	Left Turn	206	190	92.2%	54.5	9.9	D
	Through	611	622	101.8%	49.1	11.4	D
	Right Turn	83	84	101.2%	27.8	11.3	C
	Subtotal	900	896	99.5%	48.3	11.0	D
Total		4,225	4,219	99.9%	36.2	4.7	D

Intersection 2 **Auburn Boulevard/Project Access 1** **Side-street Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	14	13	92.1%	6.7	4.5	A
	Through	1,159	1,164	100.4%	0.8	0.2	A
	Right Turn						
	Subtotal	1,173	1,176	100.3%	0.8	0.2	A
SB	Left Turn						
	Through	1,173	1,166	99.4%	1.5	0.2	A
	Right Turn	1	1	140.0%	0.8	1.3	A
	Subtotal	1,174	1,168	99.4%	1.5	0.2	A
EB	Left Turn						
	Through						
	Right Turn	26	28	109.2%	4.8	1.1	A
	Subtotal	26	28	109.2%	4.8	1.1	A
WB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
Total		2,373	2,372	100.0%	1.2	0.2	A

SimTraffic Post-Processor **Sylvan Corners**
Average Results from 10 Runs **Cumulative Plus Project**
Volume and Delay by Movement **AM Peak Hour**

Intersection 3 **Auburn Boulevard/Project Access 2** **Side-street Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	1,173	1,178	100.4%	4.0	0.5	A
	Right Turn						
	Subtotal	1,173	1,178	100.4%	4.0	0.5	A
SB	Left Turn						
	Through	1,198	1,193	99.6%	1.9	0.7	A
	Right Turn	1	1	120.0%	0.0	0.1	A
	Subtotal	1,199	1,194	99.6%	1.9	0.7	A
EB	Left Turn						
	Through						
	Right Turn	18	19	104.4%	14.7	10.3	B
	Subtotal	18	19	104.4%	14.7	10.3	B
WB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
Total		2,390	2,391	100.0%	3.0	0.4	A

SimTraffic Post-Processor **Sylvan Corners**
Average Results from 10 Runs **Cumulative Plus Project**
Queue Length **AM Peak Hour**

Intersection 1 **Sylvan Rd/Auburn Bl-Old Auburn Rd** **Signal**

Direction	Lane Group	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	95th Queue (ft) Average	95th Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Block Time Pocket	Block Time Upstream
EB	U/Left Turns	325	75	5	150	12	175	18	0%	0%
	Left Turn	325	100	6	175	10	175	15	0%	0%
	Through	2,300	125	11	225	24	275	42	1%	0%
	Right Turn	175	50	14	175	32	200	2	2%	0%
NB	U/Left Turns	275	75	8	125	13	150	15	0%	0%
	Left Turn	275	100	7	150	11	150	14	0%	0%
	Through	2,350	250	16	400	28	550	37	16%	0%
	Right Turn	175	100	20	225	28	200	0	0%	0%
SB	U/Left Turns	275	75	13	150	37	225	82	0%	0%
	Through	750	250	27	400	42	450	46	23%	0%
	Right Turn	275	125	7	200	4	150	0	3%	0%
WB	U/Left Turns	325	175	23	300	53	325	40	0%	0%
	Through	3,025	275	40	500	83	575	65	13%	0%
	Through/Right	200	200	6	250	7	225	0	12%	0%

Intersection 2 **Auburn Boulevard/Project Access 1** **Side-street Stop**

Direction	Lane Group	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	95th Queue (ft) Average	95th Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Block Time Pocket	Block Time Upstream
EB	Right Turn	275	25	4	75	7	75	16	0%	0%
NB	Left Turn	150	25	3	50	5	50	12	0%	0%
0										
0										

Intersection 3 **Auburn Boulevard/Project Access 2** **Side-street Stop**

Direction	Lane Group	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	95th Queue (ft) Average	95th Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Block Time Pocket	Block Time Upstream
EB	Right Turn	225	25	3	50	3	50	11	0%	0%
SB	Through	400	25	5	50	28	75	71	0%	0%
	Through/Right	400	25	11	75	40	150	74	0%	0%
0										
0										

Intersection 1 **Sylvan Rd/Auburn Bl-Old Auburn Rd** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	382	381	99.8%	98.1	26.3	F
	Through	824	818	99.3%	44.4	5.9	D
	Right Turn	165	169	102.5%	16.3	3.3	B
	Subtotal	1,371	1,369	99.8%	56.4	9.8	E
SB	Left Turn	85	82	96.9%	100.1	40.5	F
	Through	824	821	99.7%	87.0	29.8	F
	Right Turn	306	296	96.9%	42.9	27.6	D
	Subtotal	1,215	1,200	98.8%	76.9	29.8	E
EB	Left Turn	424	421	99.2%	45.6	3.9	D
	Through	636	630	99.0%	44.5	5.3	D
	Right Turn	394	393	99.7%	14.0	2.7	B
	Subtotal	1,454	1,443	99.3%	36.7	3.5	D
WB	Left Turn	257	229	89.1%	64.5	11.4	E
	Through	554	491	88.6%	54.0	10.2	D
	Right Turn	95	83	86.9%	23.9	8.0	C
	Subtotal	906	803	88.6%	54.2	9.5	D
Total		4,946	4,815	97.3%	55.2	8.7	E

Intersection 2 **Auburn Boulevard/Project Access 1** **Side-street Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	33	31	93.0%	10.0	5.9	A
	Through	1,315	1,297	98.6%	0.8	0.1	A
	Right Turn						
	Subtotal	1,348	1,327	98.5%	1.0	0.2	A
SB	Left Turn						
	Through	1,193	1,188	99.5%	1.3	1.0	A
	Right Turn	4	4	100.0%	0.4	0.9	A
	Subtotal	1,197	1,192	99.5%	1.3	1.0	A
EB	Left Turn						
	Through						
	Right Turn	14	14	98.6%	6.5	3.7	A
	Subtotal	14	14	98.6%	6.5	3.7	A
WB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
Total		2,559	2,533	99.0%	1.2	0.5	A

SimTraffic Post-Processor **Sylvan Corners**
Average Results from 10 Runs **Cumulative Plus Project Conditions**
Volume and Delay by Movement **PM Peak Hour**

Intersection 3 **Auburn Boulevard/Project Access 2** **Side-street Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	1,348	1,327	98.4%	4.3	0.4	A
	Right Turn						
	Subtotal	1,348	1,327	98.4%	4.3	0.4	A
SB	Left Turn						
	Through	1,205	1,194	99.1%	14.9	13.3	B
	Right Turn	2	3	160.0%	14.0	22.0	B
	Subtotal	1,207	1,197	99.2%	14.9	13.3	B
EB	Left Turn						
	Through						
	Right Turn	10	9	93.0%	93.2	132.7	F
	Subtotal	10	9	93.0%	93.2	132.7	F
WB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
Total		2,565	2,533	98.8%	9.7	6.9	A

SimTraffic Post-Processor **Sylvan Corners**
Average Results from 10 Runs **Cumulative Plus Project Conditions**
Queue Length **PM Peak Hour**

Intersection 1 **Sylvan Rd/Auburn Bl-Old Auburn Rd** **Signal**

Direction	Lane Group	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	95th Queue (ft) Average	95th Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Block Time Pocket	Block Time Upstream
EB	U/Left Turns	325	150	11	225	19	250	26	0%	0%
	Left Turn	325	175	13	250	36	300	71	0%	0%
	Through	2,300	275	28	400	195	600	610	21%	0%
	Right Turn	175	175	18	325	8	250	0	9%	0%
NB	U/Left Turns	275	250	19	350	18	325	15	0%	13%
	Left Turn	275	200	16	300	14	275	14	0%	2%
	Through	875	300	22	400	37	475	46	22%	0%
	Right Turn	175	125	20	275	29	250	0	0%	0%
SB	U/Left Turns	275	125	28	300	57	300	0	0%	0%
	Through	725	425	74	600	95	675	82	51%	1%
	Right Turn	275	175	15	300	7	225	0	3%	0%
WB	U/Left Turns	325	225	12	325	22	325	1	1%	0%
	Through	2,925	250	29	450	66	550	62	15%	0%
	Through/Right	200	200	7	275	8	225	0	15%	0%

Intersection 2 **Auburn Boulevard/Project Access 1** **Side-street Stop**

Direction	Lane Group	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	95th Queue (ft) Average	95th Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Block Time Pocket	Block Time Upstream
EB	Right Turn	250	25	4	50	6	50	0	0%	0%
NB	Left Turn	150	25	3	50	4	75	12	0%	0%
	Through	800	25	3	25	21	50	46	0%	0%
	Through/Right	800	25	2	25	15	25	31	0%	0%
SB										
0										

Intersection 3 **Auburn Boulevard/Project Access 2** **Side-street Stop**

Direction	Lane Group	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	95th Queue (ft) Average	95th Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Block Time Pocket	Block Time Upstream
EB	Right Turn	275	25	9	50	25	75	30	0%	0%
SB	Through	400	100	68	275	137	350	99	0%	1%
	Through/Right	400	100	66	275	129	350	96	0%	1%
0										
0										