



HEXAGON TRANSPORTATION CONSULTANTS, INC.

201-225 Los Gatos-Saratoga Road

Transportation Impact Analysis

Prepared for:

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Table of Contents

| | |
|---|----|
| Executive Summary..... | iv |
| 1. Introduction | 1 |
| 2. Existing Conditions | 10 |
| 3. Existing Plus Project Conditions | 22 |
| 4. Background Conditions..... | 35 |
| 5. Background Plus Project Conditions | 38 |
| 6. Cumulative Conditions | 41 |
| 7. Other Transportation Issues | 46 |
| 8. Conclusions | 63 |

Appendices

| | |
|-------------|---|
| Appendix A: | New Traffic Counts |
| Appendix B: | Town of Los Gatos Approved and Pending Projects |
| Appendix C: | Volume Summary Tables |
| Appendix D: | Intersection Level of Service Calculations |
| Appendix E: | Signal Warrant Worksheets |
| Appendix F: | VTA Auto Trip Reduction Statement |

List of Tables

| | | |
|------------|--|-----|
| Table ES-1 | Intersection Level of Service Summary..... | iii |
| Table 1 | Signalized Intersection Level of Service Definitions Based on Average Delay | 7 |
| Table 2 | Unsignalized Intersection Level of Service Definitions Based on Average Delay | 8 |
| Table 3 | Freeway Segment Capacity Evaluation..... | 8 |
| Table 4 | Existing Intersection Levels of Service | 18 |
| Table 5 | Project Trip Generation Estimates..... | 23 |
| Table 6 | Existing Plus Project Intersection Levels of Service | 26 |
| Table 7 | Background Intersection Levels of Service | 37 |
| Table 8 | Background Plus Project Intersection Levels of Service | 39 |
| Table 9 | Intersection Levels of Service Under Cumulative Conditions, With and Without the Project | 42 |
| Table 10 | Queuing Analysis..... | 58 |

List of Figures

| | | |
|-----------|---|----|
| Figure 1 | Site Location and Study Intersections | 3 |
| Figure 2 | Regional Location Map | 4 |
| Figure 3 | Site Plan | 5 |
| Figure 4 | Existing Transit Service | 13 |
| Figure 5 | Existing Bicycle Facilities | 14 |
| Figure 6 | Existing Lane Configurations | 16 |
| Figure 7 | Existing Traffic Volumes | 17 |
| Figure 8 | Project Trip Distribution Pattern (Office) | 27 |
| Figure 9 | Project Trip Distribution Pattern (Restaurant, Retail, Bank)..... | 28 |
| Figure 10 | Gross Project Trip Assignment..... | 29 |
| Figure 11 | Trip Assignment for Existing Land Uses | 30 |
| Figure 12 | Net Project Trip Assignment..... | 31 |
| Figure 13 | Alternate Routes for Inbound Trips from the North and East..... | 32 |
| Figure 14 | Alternate Routes for Outbound Traffic Heading North or West..... | 33 |
| Figure 15 | Existing Plus Project Traffic Volumes | 34 |
| Figure 16 | Background Traffic Volumes | 36 |
| Figure 17 | Background Plus Project Traffic Volumes..... | 40 |
| Figure 18 | Cumulative No Project Traffic Volumes | 43 |

| | | |
|-----------|--|----|
| Figure 19 | Cumulative Plus Project Traffic Volumes | 44 |
| Figure 20 | Modifications at N. Santa Cruz Avenue and SR 9 Intersection..... | 47 |
| Figure 21 | Total Project Trip Assignment at Project Driveway | 49 |
| Figure 22 | Massol Avenue Modifications..... | 52 |
| Figure 23 | Site Plan for Garage..... | 56 |

Executive Summary

This report presents the results of the Transportation Impact Analysis (TIA) prepared for the various proposed land uses for a site located at 201-225 Los Gatos-Saratoga Road in Los Gatos, California. The site is located on the southwest corner of the intersection of Los Gatos-Saratoga Road (SR 9) and N. Santa Cruz Avenue. Existing uses on the project site consist of 3,250 square feet of retail space and 8,222 square feet of office space. The project would demolish the existing buildings and replace them with two buildings. One proposed building, which would be located on the corner, would include 4,200 square feet that would be used as either a restaurant or as retail space. The second proposed building would include 15,500 square feet and would be used as general office space, medical office space, up to 4,000 s.f. for a bank, or some combination of these uses.

Access to the site is provided from Los Gatos-Saratoga Road via a driveway that would be located in between the two buildings. Due to the presence of a median on Los Gatos-Saratoga Road, access to the site would be right-turn-in and right-turn-out only provided from eastbound Los Gatos-Saratoga Road. The driveway would provide access to 11 surface parking spaces and a ramp leading to a below-grade parking garage with 58 parking spaces. The site also has the use of 15 parking spaces in the parking assessment district.

This study was conducted for the purpose of identifying potential traffic impacts related to the proposed project. The impacts of the project were evaluated following the standards and methodologies set forth by the Town of Los Gatos and the Santa Clara Valley Transportation Authority (VTA) Congestion Management Program (CMP). The study evaluated the traffic impacts of the project on three intersections and two freeway segments in the vicinity of the project site during the weekday AM and PM peak periods of traffic.

Project Trip Generation

The trip generation estimates in this TIA are based on a slightly larger total square footage for the project than is currently proposed, as of July 2016.¹ Thus, the trip generation estimates in this study are slightly overstated. Because it is not yet known precisely what land uses would occupy the two proposed buildings, the combination of uses that would generate the most trips was used as a basis for this TIA. If a different combination of uses ultimately occupies the site, the site would generate fewer trips than estimated in this study. Since restaurants generate more trips than retail uses, this study assumes that the corner building will include a restaurant. Since banks generate more trips than medical offices, and medical offices generate more trips than general offices, the second building is assumed to include a 4,000 s.f. bank (the maximum bank size proposed) and 12,000 s.f. of medical office space.

¹ The retail/restaurant space analyzed in this TIA is 4,622 s.f., which is 422 s.f. larger than the 4,200 s.f. proposed for the corner building as of July 2016. The office/bank space analyzed is 16,000 s.f., which is 500 s.f. larger than the 15,500 s.f. proposed for the second building as of July 2016. The entire project, as proposed in July 2016, is 922 s.f. smaller than the project as proposed in January 2016 and as analyzed in this traffic study. However, the July 2016 square footage amounts are used in this report for purposes of analyzing parking requirements.

Standard trip generation rates from the Institute of Transportation Engineers' (ITE) *Trip Generation Manual, 9th Edition*, for the potential uses to be included on the site were used. For the bank land use, trip generation rates developed by the San Diego Association of Governments (SANDAG) were used because good data are not available from the ITE manual for a bank without a drive-through window.

Pass-by reductions were applied for the PM peak hour to the restaurant and the bank, using SANDAG's recommended reductions for those uses. Driveway counts were also conducted at the existing uses on the site in order to give credit for the current site trip generation.

It is estimated that after giving credit for the existing uses on the site, the site would generate 90 new trips during the AM peak hour (56 in and 36 out) and 48 new trips during the PM peak hour (15 in and 33 out).

Intersection Level of Service Analysis

The results of the intersection level of service analysis show that neither of the signalized study intersections would be significantly impacted by the project, because they would continue to operate at an acceptable level of service during both the AM and PM peak hours under Existing Plus Project, Background Plus Project, and Cumulative Plus Project scenarios. The intersection of Santa Cruz Avenue and Los Gatos-Saratoga Road would continue to operate at LOS D during both the AM and PM peak hours under all operating scenarios. The intersection of University Avenue and Los Gatos-Saratoga Road would continue to operate at LOS C during the AM peak hour and LOS D during the PM peak hour under all operating scenarios.

At the unsignalized intersection of Massol Avenue and Los Gatos-Saratoga Road, the northbound left turn movement (from Massol Avenue to westbound SR 9) currently operates at LOS F during both the AM and PM peak hours and would continue to operate at LOS F under all operating scenarios. The westbound left turn movement (from SR 9 onto Massol Avenue) is not stop-controlled, but drivers must wait for a gap in eastbound traffic in order to complete their turn. With the existing lane configuration (no U-turns allowed), this movement would operate at LOS A in the AM peak hour and at LOS C in the PM peak hour under background plus project and cumulative plus project conditions. If the intersection were modified to allow U-turns, this movement was projected to continue to operate at LOS A in the AM peak hour and LOS C in the PM peak hour. Because Los Gatos does not have a level of service standard or significant impact criteria for unsignalized intersections, these results are shown for information purposes only.

The level of service results are summarized in Table ES-1.

Freeway Segments

Based on CMP guidelines, an analysis of freeway segment levels of service was not required because the project is estimated to add a negligible number of trips to the freeways in the area (i.e., less than one percent of the capacity of each freeway segment that was evaluated). A freeway segment capacity evaluation to substantiate this determination is presented in Chapter 1.

Site Access and Circulation

Site access and on-site circulation would be adequate. Due to the median on Los Gatos-Saratoga Road (SR 9), site access from westbound Los Gatos-Saratoga Road was analyzed, and the feasibility of permitting U-turns from westbound Los Gatos-Saratoga Road at Massol Avenue was evaluated. The first break in the median after passing the project site in the westbound direction is at Massol Avenue, but the presence of a pork chop island currently prevents vehicles from making a U-turn at that location. However, if the pork chop island were moved and the tip of the median next to the westbound left-turn pocket on SR 9 were shortened, it would be possible for vehicles to make a U-turn from westbound SR 9 to eastbound SR 9 at Massol Avenue, improving access to the project site and reducing the number of trips that would need to enter the residential neighborhood along Almendra Avenue and Tait Avenue in order to access the project driveway.

Hexagon estimates that approximately 173 vehicles per day are currently going around the block through the residential neighborhood in order to access the site. With the project and with U-turns permitted, Hexagon estimates that number would be reduced to only approximately 40 trips entering the residential neighborhood.

- **Recommendation:** Hexagon recommends making modifications to the 3-legged intersection of Los Gatos-Saratoga Road and Massol Avenue so that U-turns can be made from westbound Los Gatos-Saratoga Road. The pork chop island on the southeast corner of this intersection should be moved to provide adequate space for the U-turns to be completed. A portion of the median next to the left turn pocket on Los Gatos-Saratoga Road would need to be removed, and the crosswalk and lane striping would need to be repainted to correspond to the new location of the pork chop island. In addition, a sign should be posted to require vehicles turning right from Massol Avenue onto eastbound SR 9 to yield to vehicles making U-turns from westbound SR 9.
- **Recommendation:** Hexagon further recommends that if U-turns are allowed at Massol Avenue that the Town monitor the queues in the westbound left-turn pocket to see if they overflow its capacity during the PM peak hour. Although the TRAFFIX analysis and the queuing analysis indicate that adding U-turns at this location would not cause operational problems, our field observations suggest that the Town may wish to prohibit U-turns during certain hours if queuing becomes a problem when eastbound traffic is heavy.

The project driveway on Los Gatos-Saratoga Road should be free and clear of any obstructions in order to optimize sight distance, so that vehicles exiting the site can see approaching eastbound vehicles and bicyclists and pedestrians in both directions.

- **Recommendation:** Hexagon recommends that all landscaping and signage related to the project be placed to ensure that adequate sight distances are maintained at the driveway. Care should be taken in constructing the new driveway to the site to ensure that drivers entering and exiting the site can easily see approaching bicyclists and vehicles in the eastbound direction and pedestrians on the sidewalk in both directions. Adequate corner sight distance (sight distance triangles) should be provided in accordance with the Town's standards.

Queuing Analysis

An analysis of potential queuing issues indicated that the 95th percentile queue at the westbound left turn movement in the AM peak hour at N. Santa Cruz Avenue would exceed the storage capacity of the left turn pockets at that intersection under existing plus project and background plus project conditions, if no U-turns were allowed at Massol Avenue. The 95th percentile queue for the westbound left turn at University Avenue in the AM peak hour would also exceed that intersection's left turn pocket capacity if no U-turns were allowed at Massol Avenue. However, if U-turns were allowed at Massol Avenue, the drivers who would be making those left turns at N. Santa Cruz and University Avenues would make a U-turn at Massol Avenue instead, and the project would not result in any additional vehicles in those left turn lanes in the AM peak hour.

Parking

The site plan states that the project would provide a total of 84 parking spaces: 11 ground-level spaces, 58 spaces in a below-grade garage, and 15 spaces in the Parking Assessment District. Of the 58 spaces in the below-grade area, 8 would be tandem spaces (i.e., the second space in a 50-foot long tandem parking stall) and may not be counted towards the Town's parking requirements. Thus, the project would provide a total of 76 spaces that may be counted towards the Town's parking requirement (11 ground-level spaces, 50 garage spaces, and 15 Parking District spaces).

An analysis of the Town's parking requirements for the potential land uses that may occupy the site found that if the corner building were occupied by retail space, 76 parking spaces would be required for the entire site. If that building were occupied by a restaurant, 76 spaces would also be required for the entire site, if the restaurant included 56 seats. Thus, the 76 non-tandem spaces provided would meet the Town's parking requirement.

- **Recommendation:** The current site plan does not show the number of bicycle parking spaces that would be provided. The site plan should be revised to present the appropriate number of bicycle parking spaces in accordance with the Town's bicycle parking requirements.

Transit, Bicycle, and Pedestrian Facilities

The existing transit, bicycle, and pedestrian facilities in the study area are adequate to serve the site. No improvements are needed. Through the Town's Traffic Impact Fee program, if the land uses that ultimately occupy the site would generate more daily trips than the existing uses on the site, the project will contribute towards several projects that would make improvements to the bicycle and pedestrian facilities in the study area.

Transportation Demand Management

Transportation Demand Management (TDM) is a combination of services, incentives, facilities, and actions that reduce single-occupant vehicle trips to help relieve traffic congestion, parking demand, and air pollution problems. The purpose of a TDM Plan for a specific site is to develop TDM measures that are tailored to a project's location, size, and land use in order to promote alternative modes of travel, such as riding transit, bicycling, walking, and carpooling. We recommend that the applicant develop a TDM Plan that focuses primarily on reducing employee trips to the site, through such measures as transit ticket subsidies, the inclusion of bike racks and lockers for bicyclists, and provision of current information on alternative transportation modes.

**Table ES-1
Intersection Level of Service Summary**

| Study # | Intersection | Peak Hour | Existing | | Background | | Background + Project | | | | Cumulative | | Cumulative + Project | | | |
|---------|---|-----------|-----------------|----------|-----------------|----------|----------------------|----------|---------------------------|-------------------|-----------------|----------|----------------------|----------|---------------------------|-------------------|
| | | | Avg Delay (sec) | LOS | Ave Delay (sec) | LOS | Ave Delay (sec) | LOS | Chg. In Crit. Delay (sec) | Chg. In Crit. V/C | Ave Delay (sec) | LOS | Ave Delay (sec) | LOS | Chg. In Crit. Delay (sec) | Chg. In Crit. V/C |
| 1 | Massol Ave and Los Gatos-Saratoga Rd ** | AM | >120 | F | >120 | F | >120 | F | - | - | >120 | F | >120 | F | - | - |
| | | | 8.8 | A | 8.9 | A | 9.0 | A | - | - | 9.1 | A | 9.1 | A | - | - |
| | | PM | >120 | F | >120 | F | >120 | F | - | - | >120 | F | >120 | F | - | - |
| | | 14.4 | B | 15.0 | C | 15.0 | C | - | - | 15.0 | C | 15.1 | C | - | - | |
| 2 | Santa Cruz Ave and Los Gatos-Saratoga Rd.* | AM | 41.5 | D | 42.0 | D | 42.5 | D | 0.6 | 0.009 | 43.7 | D | 44.2 | D | 0.6 | 0.009 |
| | | PM | 48.3 | D | 48.6 | D | 48.8 | D | 0.5 | 0.013 | 50.0 | D | 50.3 | D | 0.6 | 0.013 |
| 3 | University Ave. and Los Gatos-Saratoga Rd.* | AM | 33.7 | C | 33.7 | C | 34.3 | C | 1.0 | 0.013 | 33.6 | C | 34.2 | C | 1.0 | 0.013 |
| | | PM | 39.7 | D | 39.7 | D | 39.9 | D | -0.1 | 0.001 | 39.6 | D | 39.8 | D | -0.1 | 0.001 |

Notes:
 * Denotes a CMP intersection
 ** For the unsignalized intersection, the level of service for the worst approach (left turns from Massol) is shown first. Exact amount of delay not shown because delay exceeds calculation parameters. The delay and level of service for the westbound left-turn movement are shown second.
BOLD indicates a substandard level of service

1. Introduction

This report presents the results of the Transportation Impact Analysis (TIA) prepared for the proposed development located at 201-225 Los Gatos-Saratoga Road (State Route 9) in Los Gatos, CA. The project site is on the southwest corner of the intersection of Los Gatos-Saratoga Road and N. Santa Cruz Avenue. Existing uses on the project site consist of 3,250 square feet of retail space and 8,222 square feet of office space. The project would demolish the existing buildings and replace them with two buildings. One proposed building, which would be located on the corner, would include 4,200 square feet that would be used as either a restaurant or as retail space. The second proposed building would include 15,500 square feet and would be used as general office space, medical office space, a bank, or some combination of these uses.

Access to the site is provided from Los Gatos-Saratoga Road via a driveway that would be located in between the two buildings. Due to the presence of a median on Los Gatos-Saratoga Road, access to the site would be right-turn-in and right-turn-out only provided from eastbound Los Gatos-Saratoga Road. The driveway would provide access to 11 surface parking spaces and a ramp leading to a below-grade parking area with 58 parking spaces. The site also has the use of 15 parking spaces in the parking assessment district's lot. Figure 1 shows the study area and project site location.

Scope of Study

This study was conducted for the purpose of identifying potential traffic impacts related to the proposed project. The impacts of the project were evaluated following the standards and methodologies set forth by the Town of Los Gatos and the Santa Clara Valley Transportation Authority (VTA) Congestion Management Program (CMP).

The study evaluated the potential traffic impacts of the project on three intersections and two freeway segments in the vicinity of the project site during the weekday AM and PM peak periods of traffic. The study's trip generation estimates are based on a total square footage that is 922 s.f. larger than the square footage proposed in July 2016.² Because of this difference in square footage, the trip generation estimates used in this TIA are slightly overstated and should be regarded as conservative estimates for the project.

Because it is not yet known precisely what land uses would occupy the two proposed buildings, the combination of uses that would generate the greatest number of trips was used as a basis for this TIA. If a different combination of uses ultimately occupies the site, the site would generate fewer trips than estimated in this study.

² The retail/restaurant space analyzed in this TIA was 4,622 s.f., which is 422 s.f. larger than the 4,200 s.f. proposed for the corner building in July 2016. The office/bank space analyzed was 16,000 s.f., which is 500 s.f. larger than the 15,500 s.f. proposed for the second building in July 2016. The project, as proposed in July 2016, is 922 s.f. smaller than the project as proposed in January 2016 and as analyzed in this traffic study. However, the July 2016 square footage amounts are used in this report for purposes of analyzing parking requirements.

Since restaurants generate more trips than retail uses, this study assumes that the corner building will include a restaurant. Since banks generate more trips than medical offices, and medical offices generate more trips than general offices, the second building is assumed to include a 4,000 s.f. bank (the maximum bank size proposed) and 12,000 s.f. of medical office space.

The study intersections and freeway segments are identified below. Two of the study intersections are CMP-designated intersections, as indicated by an asterisk (*) The unsignalized intersection of Los Gatos-Saratoga Road and Massol Avenue is a three-legged intersection with one-way stop control on the Massol Avenue approach.

Study Intersections

1. Los Gatos-Saratoga Road (SR 9) and Massol Avenue (unsignalized)
2. Los Gatos-Saratoga Road (SR 9) and N. Santa Cruz Avenue *
3. Los Gatos-Saratoga Road (SR 9) and University Avenue *

Study Freeway Segments

1. SR 17, between Bear Creek Road and SR 9
2. SR 17, between SR 9 and Lark Avenue

Traffic conditions at the signalized study intersections were analyzed for the weekday AM and PM peak hours of adjacent street traffic. The AM peak hour of adjacent street traffic is generally between 7:00 and 9:00 AM, and the PM peak hour of adjacent street traffic is typically between 4:00 and 6:00 PM. It is during these periods on an average weekday that the most congested traffic conditions occur.

Field observations were conducted at all study intersections and at the intersection of N. Santa Cruz Avenue and Bachman Avenue. Field observations were also conducted at all of the on-ramps and off-ramps connecting SR 17 and SR 9 during both the AM and PM peak periods.

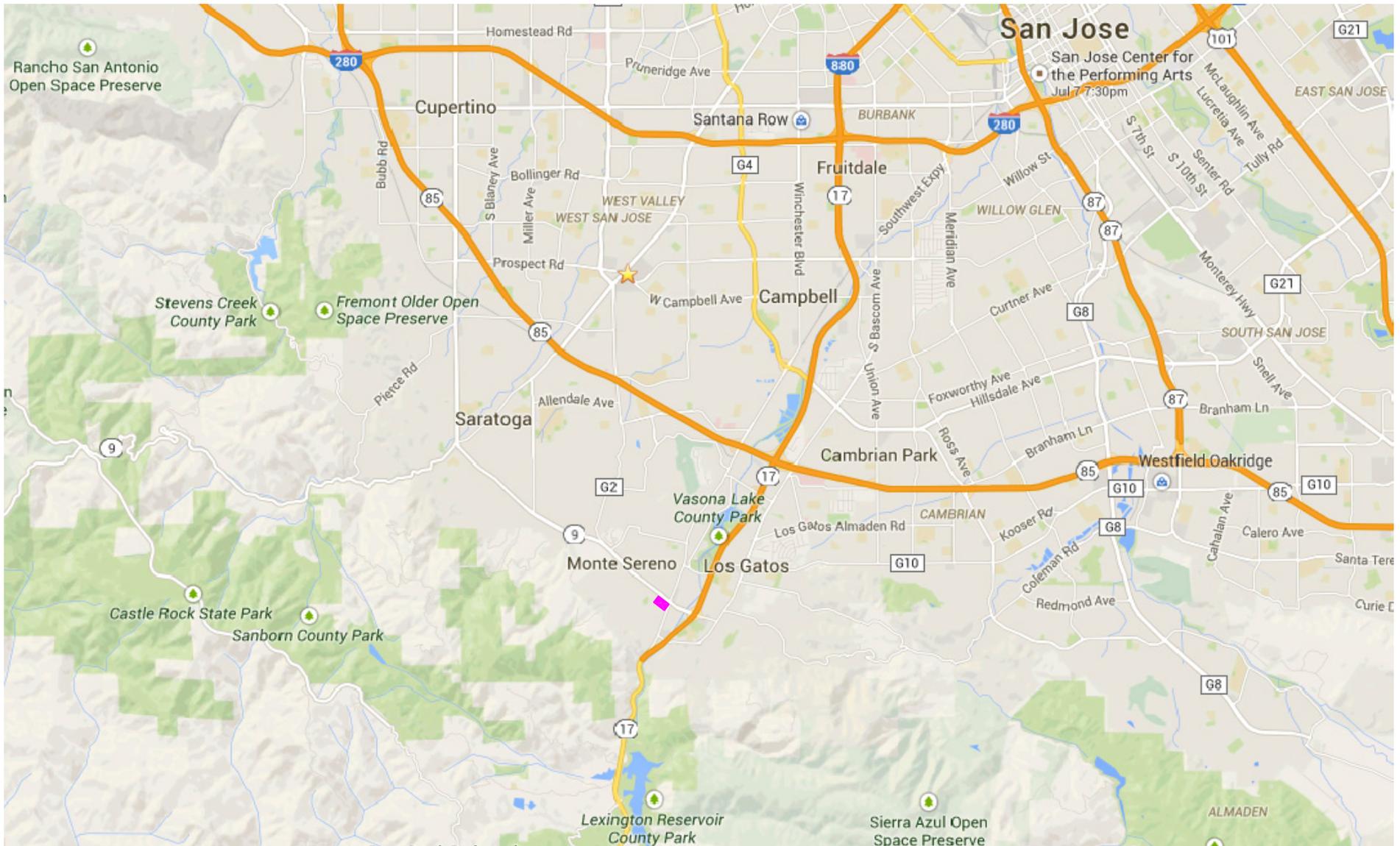
Figure 1 presents the site location and the three study intersections. Figure 2 provides the regional context for the site's location. Figure 3 presents the site plan for the project as of July 12, 2016.

Traffic conditions were evaluated for the following scenarios:

- Scenario 1:** *Existing Conditions.* Existing traffic volumes were obtained from manual turning-movement counts conducted in March 2016. The new intersection count data are included in Appendix A.
- Scenario 2:** *Existing Plus Project Conditions.* Existing plus project peak hour traffic volumes were estimated by adding to existing traffic volumes the additional traffic generated by the project option that would generate the greatest number of trips and subtracting traffic volumes generated by the uses that currently occupy the site. Existing plus project conditions were evaluated relative to existing conditions in order to determine the effects the project would have on existing traffic conditions.
- Scenario 3:** *Background Conditions.* Background traffic volumes were estimated by adding to existing peak hour volumes the projected volumes from approved but not yet completed developments. The added traffic from approved but not yet completed developments was provided by the Town of Los Gatos.
- Scenario 4:** *Background Plus Project Conditions.* Projected near-term peak hour traffic volumes with the project were estimated by adding to background traffic volumes the additional traffic generated by the project option that would generate the greatest number of trips and subtracting traffic volumes generated by the uses that currently occupy the site. Background plus project conditions were evaluated relative to background conditions in order to determine potential project impacts according to the Town of Los Gatos Level of Service Policy.



Figure 1
Site Location and Study Intersections



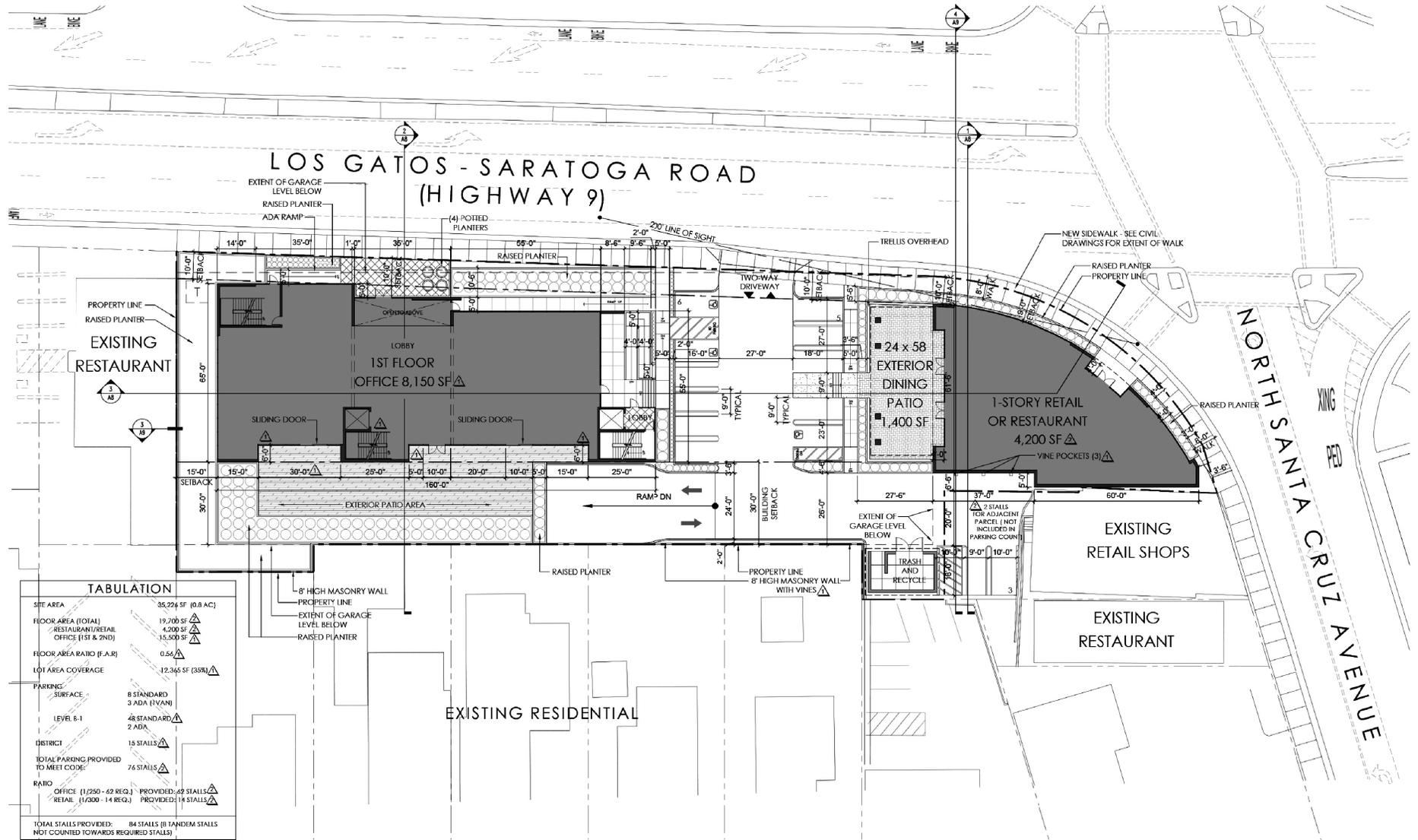
LEGEND

 = Project Site Location



Figure 2
Regional Location Map



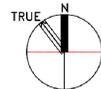
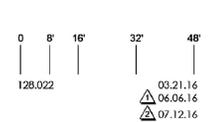


TABULATION

| | |
|--------------------------------------|--|
| SITE AREA | 35,224 SF (0.8 AC) |
| FLOOR AREA (TOTAL) | 19,700 SF |
| RESTAURANT/RETAIL OFFICE (1ST & 2ND) | 4,200 SF |
| OFFICE (1ST & 2ND) | 15,500 SF |
| FLOOR AREA RATIO (F.A.R.) | 0.54 |
| LOT AREA COVERAGE | 12,345 SF (35%) |
| PARKING SURFACE | 8 STANDARD 3 ADA (1 VAN) |
| LEVEL 6-1 | 48 STANDARD 2 ADA |
| DISTRICT | 15 STALLS |
| TOTAL PARKING PROVIDED TO MEET CODE | 76 STALLS |
| RATIO | OFFICE (1/250 - 42 REQ.) PROVIDED: 42 STALLS RETAIL (1/300 - 14 REQ.) PROVIDED: 14 STALLS |
| TOTAL STALLS PROVIDED: | 84 STALLS (8 TANDEM STALLS NOT COUNTED TOWARDS REQUIRED STALLS) |

NORTH SANTA CRUZ @ HIGHWAY 9
 LOS GATOS, CALIFORNIA
 KENNETH RODRIGUES & PARTNERS, INC.

LEVEL 1 FLOOR PLAN
 GROUND FLOOR



A-1

Figure 3
Site Plan

Scenario 5: *Cumulative Conditions.* The two CMP study intersections were evaluated for cumulative conditions, as stipulated by the CMP guidelines. Cumulative conditions include traffic growth projected to occur due to the approved development projects and other proposed but not yet approved (pending) development projects. The added traffic from pending development projects was provided by the Town of Los Gatos.

Scenario 6: *Cumulative Plus Project Conditions.* Cumulative plus project traffic volumes were estimated by adding to cumulative traffic volumes the trips associated with the additional traffic generated by the project option that would generate the greatest number of trips and subtracting traffic volumes generated by the uses that currently occupy the site.

Methodology

This section describes the methods used to determine the traffic conditions for each scenario described above. It includes descriptions of the data requirements, the analysis methodologies, and the applicable level of service standards.

Data Requirements

The data required for the analysis were obtained from new traffic counts, the Town of Los Gatos, and field observations. The following data were collected from these sources:

- Existing traffic volumes
- Approved and pending project trips
- Intersection lane configurations
- Signal timing and phasing

Analysis Methodologies and Level of Service Standards

Traffic conditions at the study intersections were evaluated using level of service (LOS). *Level of Service* is a qualitative description of operating conditions ranging from LOS A, or free-flow conditions with little or no delay, to LOS F, or jammed conditions with excessive delays. The various analysis methods are described below.

Town of Los Gatos Signalized Intersections

The Town of Los Gatos level of service methodology for signalized intersections is the 2000 *Highway Capacity Manual* (HCM) method. This method is applied using the TRAFFIX software. The 2000 HCM operations method evaluates signalized intersection operations on the basis of average control delay time for all vehicles at the intersection. Since TRAFFIX is also the CMP-designated intersection level of service methodology, the Town of Los Gatos methodology employs the CMP default values for the analysis parameters. The Town of Los Gatos level of service standard for all signalized intersections is LOS D or better. The correlation between average control delay and level of service for signalized intersections is shown in Table 1.

CMP Intersections

The designated level of service methodology for the CMP also is the 2000 HCM operations method for signalized intersections, using TRAFFIX. The only difference in level of service standards is that in the Town of Los Gatos the standard is LOS D or better, and the CMP level of service standard for signalized intersections is LOS E or better. However, CMP intersections within the Town of Los Gatos are evaluated according to Town of Los Gatos standards.

Unsignalized Intersections

The intersection of Los Gatos-Saratoga Road and Massol Avenue has one-way stop control on the Massol Avenue approach. Like the signalized intersections, this unsignalized intersection was analyzed using the

2000 HCM method with TRAFFIX software. Because the Town of Los Gatos does not have a level of service standard or a definition of significant impact for unsignalized intersections, this intersection was evaluated for informational purposes only under the different scenarios. The level of service definitions for unsignalized intersections is shown in Table 2.

An assessment of the need for signalization of the intersection was also conducted. The need for signalization of unsignalized intersections is assessed based on the Peak Hour Volume Warrant (Warrant 3) described in the *California Manual on Uniform Traffic Control Devices for Streets and Highways (CA MUTCD)*, Part 4, Highway Traffic Signals, 2010. This method makes no evaluation of intersection level of service, but simply provides an indication whether vehicular peak hour traffic volumes are, or would be, sufficient to justify installation of a traffic signal. Intersections that meet the peak hour warrant are subject to further analysis before determining that a traffic signal is necessary. Additional analysis may include unsignalized level of service analysis and/or operational analysis such as evaluating vehicle queuing and delay. Other options such as traffic control devices, signage, or geometric changes may be preferable based on existing field conditions.

Table 1
Signalized Intersection Level of Service Definitions Based on Average Delay

| Level of Service | Description | Average Control Delay Per Vehicle (sec.) |
|------------------|--|--|
| A | Signal progression is extremely favorable. Most vehicles arrive during the green phase and do not stop at all. Short cycle lengths may also contribute to the very low vehicle delay. | 10.0 or less |
| B | Operations characterized by good signal progression and/or short cycle lengths. More vehicles stop than with LOS A, causing higher levels of average vehicle delay. | 10.1 to 20.0 |
| C | Higher delays may result from fair signal progression and/or longer cycle lengths. Individual cycle failures may begin to appear at this level. The number of vehicles stopping is significant, though may still pass through the intersection without stopping. | 20.1 to 35.0 |
| D | The influence of congestion becomes more noticeable. Longer delays may result from some combination of unfavorable signal progression, long cycle lengths, or high volume-to-capacity (V/C) ratios. Many vehicles stop and individual cycle failures are noticeable. | 35.1 to 55.0 |
| E | This is considered to be the limit of acceptable delay. These high delay values generally indicate poor signal progression, long cycle lengths, and high volume-to-capacity (V/C) ratios. Individual cycle failures occur frequently. | 55.1 to 80.0 |
| F | This level of delay is considered unacceptable by most drivers. This condition often occurs with oversaturation, that is, when arrival flow rates exceed the capacity of the intersection. Poor progression and long cycle lengths may also be major contributing causes of such delay levels. | greater than 80.0 |

Source: Transportation Research Board, *2000 Highway Capacity Manual* (Washington, D.C., 2000) p10-16.

Table 2
Unsignalized Intersection Level of Service Definitions Based on Average Delay

| Level of Service | Description | Average Delay Per Vehicle (Sec.) |
|------------------|----------------------------|----------------------------------|
| A | Little or no traffic delay | 10.0 or less |
| B | Short traffic delays | 10.1 to 15.0 |
| C | Average traffic delays | 15.1 to 25.0 |
| D | Long traffic delays | 25.1 to 35.0 |
| E | Very long traffic delays | 35.1 to 50.0 |
| F | Extreme traffic delays | greater than 50.0 |

Source: Transportation Research Board, *2000 Highway Capacity Manual* (Washington, D.C., 2000) p17-2.

Freeway Segments

According to CMP guidelines, an analysis of freeway segment levels of service is only required if a project is estimated to add trips to a freeway segment equal to or greater than one percent of the capacity of that segment. For the two segments of SR 17 included in this TIA, one percent of capacity is equal to 44 trips in each direction. Since the number of project trips added to the freeway in the area (SR 17) is estimated to be well below the one percent threshold for the option that would generate the greatest number of total trips, based on the trip generation and trip distribution presented in Chapter 3, a detailed analysis of freeway segment levels of service was not performed. A simple freeway segment capacity evaluation to substantiate this determination is presented in Table 3.

Table 3
Freeway Segment Capacity Evaluation

| Freeway | Segment | Direction | # of Mixed Flow Lanes | Capacity ¹ (vph) | 1% of Capacity | Peak Hour | Project Trips |
|---------|--|-----------|-----------------------|-----------------------------|----------------|-----------|---------------|
| SR 17 | Bear Creek Rd to Los Gatos-Saratoga Rd | NB | 2 | 4400 | 44 | AM | 5 |
| | | | | | | PM | 2 |
| SR 17 | Los Gatos-Saratoga Rd to Lark Avenue | NB | 2 | 4400 | 44 | AM | 2 |
| | | | | | | PM | 11 |
| SR 17 | Lark Avenue to Los Gatos-Saratoga Rd | SB | 2 | 4400 | 44 | AM | 8 |
| | | | | | | PM | 4 |
| SR 17 | Los Gatos-Saratoga Rd to Bear Creek Rd | SB | 2 | 4400 | 44 | AM | 1 |
| | | | | | | PM | 6 |

Notes:
(1) Capacity is based on the capacity cited in the 2000 *Highway Capacity Manual* of 2,200 vehicles per hour per lane.

Significant Impact Criteria

Significance criteria are used to establish what constitutes an impact. Impacts on intersections are based on the significance criteria and level of service standards of the jurisdiction in which the intersection is located. For this analysis, significance criteria for impacts on signalized intersections are based on the Town of Los

Gatos level of service standard. As noted above, LOS D is an acceptable level of traffic operation at signalized intersections in Los Gatos.

In the Town of Los Gatos, a project is said to create a significant adverse impact on traffic conditions at an intersection if, for either peak hour, either of the following conditions occurs:

1. The addition of project traffic causes an intersection operating at LOS A, B, or C under no-project conditions to degrade more than one letter grade under with-project conditions, or
2. The level of service at an intersection is LOS D or worse under no-project conditions and the addition of project traffic causes a degradation of level of service to LOS E or F.

The project shall mitigate any intersection project impact so that the level of service will remain at an acceptable level (LOS D) or, if it is already at LOS E, to the level of service without project conditions or better.

As noted above, the CMP standard for an acceptable level of service is LOS E or better. The CMP definition of a significant impact states that a project is said to create significant adverse impact on traffic conditions at a CMP-designated signalized intersection if for either peak hour:

1. The level of service at the intersection degrades from an acceptable LOS E or better under without project conditions to an unacceptable LOS F under with project conditions, or
2. The level of service at the intersection is an unacceptable LOS F under without project conditions and the addition of project trips causes both the average control delay for critical movements at the intersection to increase by four (4) or more seconds **and** the critical volume-to-capacity ratio (V/C) to increase by one percent (0.01) or more.

An exception to this rule applies when the addition of project traffic reduces the amount of average delay for critical movements (i.e., the change in average delay for critical movements is negative). In this case, the threshold of significance is an increase in the critical V/C value by 0.01 or more.

A significant impact by CMP standards is said to be satisfactorily mitigated when measures are implemented that would restore intersection level of service to without project conditions or better.

Report Organization

The remainder of this report is divided into seven chapters. Chapter 2 describes existing conditions including the existing roadway network, transit service, and existing bicycle and pedestrian facilities. Chapter 3 presents the intersection operations under existing plus project conditions and describes the method used to estimate project traffic. Chapter 4 presents the intersection operations under background conditions. Chapter 5 presents the intersection operations under background plus project conditions and describes the project's impact on the near-term transportation system. Chapter 6 presents the intersection operations under cumulative traffic conditions, both with and without the project. Chapter 7 describes operational issues associated with the proposed project, including parking, site access and circulation. Chapter 7 also presents the results of the peak-hour signal warrant evaluation for the unsignalized intersection. Chapter 8 presents the conclusions of the Transportation Impact Analysis.

2. Existing Conditions

This chapter describes the existing conditions for all of the major transportation facilities in the vicinity of the project site, including the roadway network, transit service, and bicycle and pedestrian facilities. Also included are the existing levels of service of the three study intersections.

Existing Roadway Network

Regional access to the project site is provided by State Route 17 (SR 17). Local access to the project site is provided via Los Gatos-Saratoga Road (SR 9), N. Santa Cruz Avenue, University Avenue, Alameda Avenue, Tait Avenue and Massol Avenue. These facilities are described below.

SR 17 is a four-lane freeway in the vicinity of the study area. It extends south to Santa Cruz and north to I-280 in San Jose, at which point it makes a transition into I-880, which extends to Oakland. Access to the project site is provided via SR 17's interchange with Los Gatos-Saratoga Road (SR 9).

Los Gatos-Saratoga Road (SR 9) is a four lane arterial roadway adjacent to the project site. In the vicinity of the project site, Los Gatos-Saratoga Road includes Class II bike lanes and has a speed limit of 35 mph. It extends from Los Gatos Boulevard in a northwesterly direction. At the town boundary of Los Gatos and Monte Sereno, it changes names to Saratoga-Los Gatos Road. Saratoga-Los Gatos Road transitions to Saratoga-Sunnyvale Road at the intersection of Big Basin Way (which is the continuation of SR 9) and Saratoga Avenue. Los Gatos-Saratoga Road has a median that begins east of the SR 17 interchange and continues to Massol Avenue. In the vicinity of the project site, this arterial serves commercial uses and does not include any on-street parking.

N. Santa Cruz Avenue is a two-lane roadway that runs in a north-south direction and serves as the primary commercial street in downtown Los Gatos. Santa Cruz Avenue extends from SR 17 in the south to Blossom Hill Road, where it transitions to Winchester Boulevard, which continues north as a four-lane arterial through Los Gatos, Campbell, and San Jose to its terminus in Santa Clara. Within the Los Gatos central business district, N. Santa Cruz Avenue has two lanes, a 15 mph speed limit, and on-street parking.

University Avenue is a two-lane roadway that runs parallel to N. Santa Cruz Avenue. It extends from Main Street to Lark Avenue. It is primarily a residential street, except for the two blocks closest to Main Street, where it serves commercial uses. The speed limit is 25 mph, and on-street parking is allowed along the residential frontages, except on the blocks immediately north and south of Los Gatos-Saratoga Road.

Alameda Avenue is an east-west two-lane local street that runs parallel to Los Gatos-Sunnyvale Road, one block south of the project site. It extends between N. Santa Cruz Avenue and Massol Avenue and serves mostly residences and a few businesses near N. Santa Cruz Avenue. It includes on-street parking and has a 25 mph speed limit. There is a parking permit program in the residential neighborhood that includes

Almendra Avenue, Tait Avenue, and Massol Avenue. Only vehicles with a permit are allowed to park on the street between the hours of 6:00 PM and 9:00 AM. Between 9:00 AM and 6:00 PM, there is a 2-hour parking limit.

Tait Avenue is a north-south two-lane local street that extends between Main Street and Los Gatos-Saratoga Road one block west of N. Santa Cruz Avenue. It is primarily a residential street with a 25 mph speed limit and on-street parking. Because of the median on Los Gatos-Saratoga Road, it is not possible for northbound traffic on Tait to turn left onto Los Gatos-Saratoga Road or for westbound traffic on Los Gatos-Saratoga Road to turn left onto Tait Avenue.

Massol Avenue is a north-south two-lane local street that also runs parallel to N. Santa Cruz Avenue, two blocks west of the project site. It is a residential street with a 25 mph speed limit and on-street parking. Because of a break in the median, northbound traffic on Massol is able to turn left onto Los Gatos-Saratoga Road, and westbound traffic on Los Gatos-Saratoga Road is able to turn left onto Massol Avenue. However, because of the presence of a pork chop island, there is not adequate space for westbound traffic to make a U-turn at Massol Avenue.

Existing Transit Services

Existing transit service to the project site is provided by the Santa Clara Valley Transportation Authority (VTA). VTA provides bus service to the immediate project area via Route 48.

Local Route 48 provides service between the Los Gatos Civic Center and the Winchester Transit Center in Campbell. It runs on N. Santa Cruz Avenue in the southbound direction and on University Avenue and Los Gatos-Saratoga Road in the northbound direction, as shown on Figure 4. Route 48 operates with 30-minute headways in the AM and PM peak hours and 60-minute headways during the mid-day and on weekends. The route operates between approximately 6:30 AM and 8:00 PM on weekdays.

There are bus stops for Route 48 in both directions at the intersection of Los Gatos-Saratoga Road and N. Santa Cruz Avenue (see Figure 4). Pedestrian access to these bus stops is adequate, since there are sidewalks and crosswalks connecting them to the project site. Transit riders using the southbound bus could board or alight at the bus stop north of Los Gatos-Saratoga Road and then use the pedestrian-activated signal and crosswalk to cross the street to the project. Transit riders using the northbound bus could board or alight at the bus stop on the north side of Los Gatos-Saratoga Road, just east of Santa Cruz Avenue. Pedestrian-activated signals and crosswalks are present to facilitate crossing both Los Gatos-Saratoga Road and Santa Cruz Avenue to access that bus stop.

The Winchester Transit Center, the northern terminus of Route 48, is a station for VTA's light rail transit (LRT) service. The LRT line that terminates at the Winchester Transit Center provides service to downtown Mountain View, via downtown San Jose, Santa Clara, and Sunnyvale.

Existing Bicycle and Pedestrian Facilities

A Class I bicycle trail, the Los Gatos Creek Trail, is located near the project site, running in a north-south direction just west of Highway 17, as shown on Figure 5. A Class II bikeway (defined as a striped bike lane on the street) is present on Los Gatos-Saratoga Road (SR 9), beginning just east of the University Avenue intersection. Bike lanes are also present on:

- Winchester Boulevard between Lark Avenue and Daves Avenue,
- Main Street and Los Gatos Boulevard between the Los Gatos Creek Trail and Blossom Hill Road,
- Blossom Hill Road between N. Santa Cruz Avenue and Short Road, and
- University Avenue, between Blossom Hill Road and Farley West.

Although none of the residential streets near the project site are designated as bike routes, due to their low traffic volumes, many of them are conducive to bicycle usage.

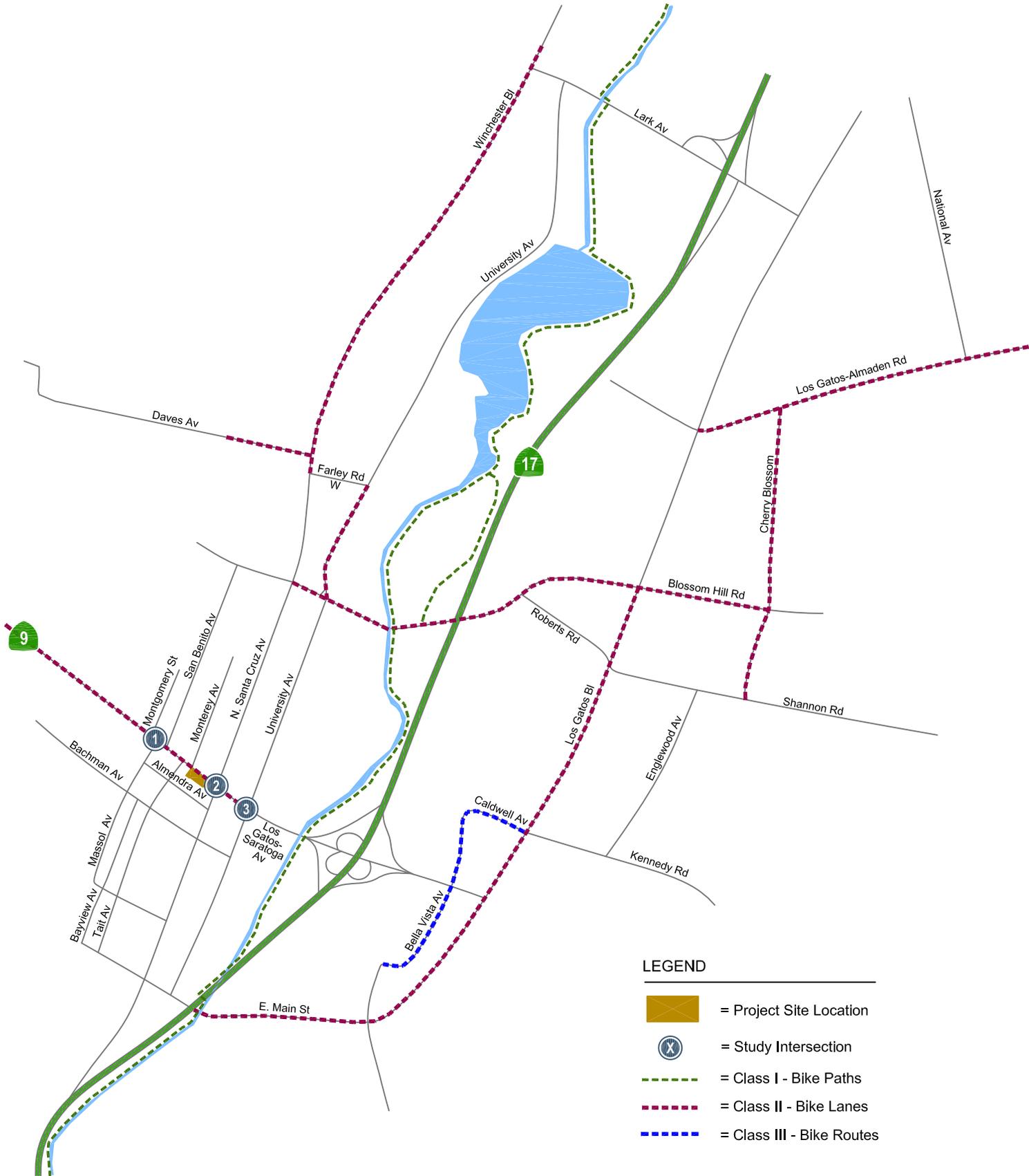
Pedestrian facilities consist mostly of sidewalks along both the commercial and residential streets in the immediate vicinity of the project site. Crosswalks with pedestrian signal heads and push buttons are located at all of the signalized intersections in the study area. In addition, the crosswalk across Los Gatos-Saratoga Road at Massol Avenue (which is an unsignalized intersection) near the project site has warning lights that can be activated by pedestrians wishing to cross the street. Although the study intersections at Santa Cruz Avenue and at Massol Avenue include ramps and paths through the pork chop islands for wheelchair users, they do not meet current ADA standards. The study intersection at University Avenue, which was modified in early 2015, appears to meet current ADA standards. Overall, the existing sidewalks in the area have good connectivity and provide pedestrians with safe routes to all of the surrounding land uses in the area.

In downtown Los Gatos, N. Santa Cruz Avenue has crosswalks with bulb-outs at all intersections and some mid-block locations, and amenities such as street benches, attractive landscaping, trash receptacles and ample street lighting. Downtown Los Gatos has been designed as and currently functions as an extremely pedestrian-friendly environment.

A gap in bicycle and pedestrian facilities near the project site exists on Los Gatos-Saratoga Road (SR 9) between University Avenue and Los Gatos Boulevard. Improved connectivity between the Los Gatos Creek Trail and Los Gatos-Saratoga Road has also been identified as a need. Both of these connectivity improvements have been included in the list of projects prepared by the Town of Los Gatos as eligible for funding from the Town's Traffic Impact Fee. The proposed project would be subject to the Town's Traffic Impact Fee. More information on this fee is included in Chapter 5.



Figure 4
Existing Transit Facilities



- LEGEND**
-  = Project Site Location
 -  = Study Intersection
 -  = Class I - Bike Paths
 -  = Class II - Bike Lanes
 -  = Class III - Bike Routes

Figure 5
Existing Bicycle Facilities

Existing Intersection Lane Configurations

The existing lane configurations at the study intersections were confirmed by observations in the field and are shown on Figure 6. Improvements constructed in early 2015 at the intersection of University Avenue and Los Gatos-Saratoga Road include the addition of a second left turn lane on the north approach and a separate right turn lane on the south approach. These improvements, plus the changes made in signal controls and phasing so that all left turns are protected, have been incorporated into the TRAFFIX analysis for this intersection.

We note that the 2014 CMP database counts were conducted prior to the completion of these modifications at University Avenue and Los Gatos-Saratoga Road and so do not reflect the current lane configuration and signal phasing. Thus, in order to accurately reflect current conditions, the lane geometry and signal phasing used in the Level of Service analysis at the University Avenue intersection do not correspond to the 2014 CMP database. In addition, Caltrans has re-timed the signals at both of the CMP intersections several times since 2014 in order to improve signal coordination and facilitate traffic flow, so signal cycle lengths in TRAFFIX have also been updated.

Existing Traffic Volumes

Existing weekday AM (7:00-9:00 AM) and PM (4:00-6:00 PM) peak hour traffic volumes were obtained from manual turning-movement counts conducted at all three study intersections on Wednesday, March 2, 2016.

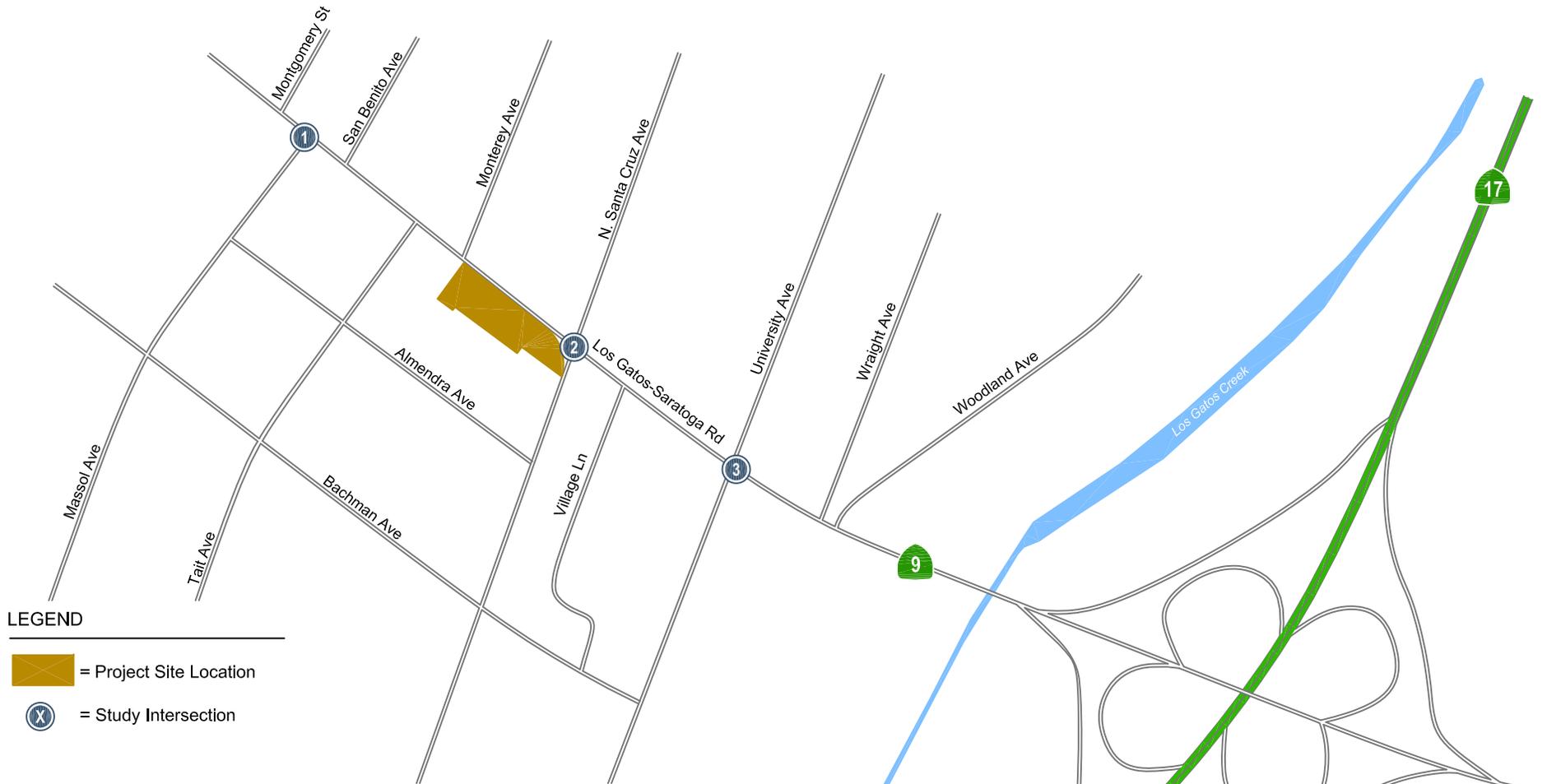
As noted above, both of the signalized intersections in this study are CMP intersections. Typically, a TIA uses PM peak-hour traffic volumes for CMP intersections from the most recent CMP database. The counts for the most recent CMP database were conducted in September 2014. Counts were also conducted at these intersections in January 2015 and March 2016 for purposes of preparing TIAs. Because of local concerns that eastbound traffic on SR 9 during the PM peak hour has increased since 2014, we compared the three PM peak hour counts at these two CMP intersections.

The eastbound volume entering the intersection of Los Gatos-Saratoga Road and N. Santa Cruz Avenue during the PM peak hour increased from 1,217 vehicles in the 2014 CMP count to 1,319 vehicles in the 2015 count to 1,417 vehicles in the 2016 count. Basically, the eastbound volume in the PM peak hour increased by approximately 100 vehicles per year at this intersection over this time period. At the intersection of Los Gatos-Saratoga Road and University Avenue, the eastbound traffic entering the intersection during the PM peak hour increased from 1,175 in the 2014 CMP count to 1,182 in the 2015 count to 1,278 in the 2016 count. Although the increase between 2014 and 2015 was negligible, the 2016 count showed an increase of approximately 100 vehicles over the 2014 and 2015 counts. Due to the local concerns over increased traffic on SR 9, it was decided to use the 2016 counts for Existing Conditions to more accurately reflect current traffic levels.

The existing peak hour traffic volumes are shown graphically on Figure 7. New count data are included in Appendix A. Appendix A also includes a table showing a comparison of recent counts at the study intersections.

Existing Intersection Levels of Service

The results of the intersection level of service analysis show that, measured against the Town of Los Gatos and CMP level of service standards, both signalized intersections currently operate at an acceptable level of service (LOS D or better) during both the AM and PM peak hours of traffic. The results of the intersection level of service analysis under existing conditions are summarized in Table 4.



LEGEND

-  = Project Site Location
-  = Study Intersection

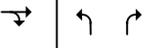
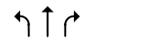
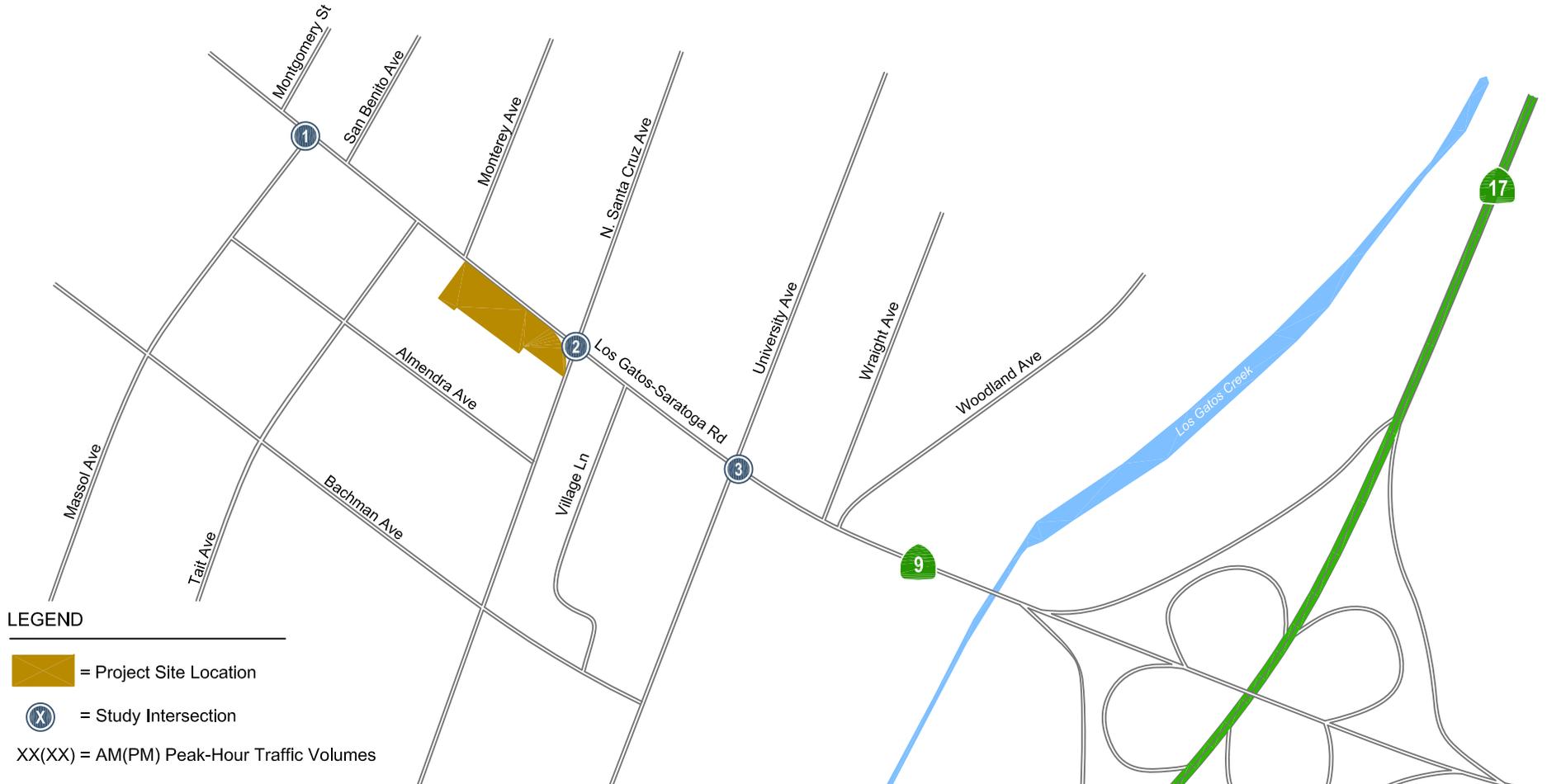
| | | | | | |
|-----------------------|---|-----------------------|---|-----------------------|--|
| 1 | | 2 | | 3 | |
| Los Gatos-Saratoga Rd |  | Los Gatos-Saratoga Rd |  | Los Gatos-Saratoga Rd |  |
| Massol Av |  | N. Santa Cruz Av |  | University Av |  |

Figure 6
Existing Lane Configurations



LEGEND

-  = Project Site Location
-  = Study Intersection
- XX(X) = AM(PM) Peak-Hour Traffic Volumes

| 1 | 2 | 3 |
|---|--|---|
| <p>Los Gatos-Saratoga Rd</p> <p>← 1518(591)</p> <p>← 114(168)</p> <hr/> <p>492(1200) →</p> <p>25(82) ↓</p> <p>53(14) →</p> <p>203(134) →</p> <p>Massol Av</p> | <p>Los Gatos-Saratoga Rd</p> <p>← 391(159)</p> <p>← 191(280)</p> <p>← 136(192)</p> <p>← 135(133)</p> <p>← 990(383)</p> <p>← 122(199)</p> <hr/> <p>182(306) →</p> <p>529(918) →</p> <p>76(193) ↓</p> <p>125(125) →</p> <p>176(183) →</p> <p>52(141) →</p> <p>N. Santa Cruz Av</p> | <p>Los Gatos-Saratoga Rd</p> <p>← 33(33)</p> <p>← 147(160)</p> <p>← 163(253)</p> <p>← 175(133)</p> <p>← 1172(598)</p> <p>← 228(245)</p> <hr/> <p>75(63) →</p> <p>620(1119) →</p> <p>65(96) ↓</p> <p>68(68) →</p> <p>180(126) →</p> <p>198(305) →</p> <p>University Av</p> |

Figure 7
Existing Traffic Volumes

For the unsignalized intersection, the delay for both the northbound left turn and the westbound left turn movements are shown. The northbound left turn from Massol Avenue onto westbound Los Gatos-Saratoga Road is the only stop-controlled approach and therefore is the worst approach at this intersection. The level of service for this turning movement is LOS F in both the AM and PM peak hours. This movement was analyzed using both TRAFFIX and Synchro software, but it was not possible to accurately estimate the number of seconds of delay because it exceeds the calculation parameters of the HCM method. It is an artifact of the HCM method that when delay for a given movement exceeds approximately two minutes, the calculated delay becomes less accurate. For all operating conditions in both the AM and PM peak hours, both with and without the project, the delay was estimated to be over two minutes for this movement. As discussed below, field observations confirmed that there are extremely long delays for that turning movement. However, because Los Gatos does not have a level of service standard for unsignalized intersections, this result is shown for information purposes only.

The westbound left turn movement does not have a stop sign, but drivers must wait for a sufficient gap in eastbound traffic to make their left turn. The level of service for that movement is LOS A in the AM peak hour and LOS B in the PM peak hour, which is consistent with the fact that eastbound traffic volumes are much higher during the evening commute period.

The intersection level of service calculation sheets are included in Appendix D.

Table 4
Existing Intersection Levels of Service

| Study Number | Intersection | Peak Hour | Count Date | Average Delay (sec) | LOS |
|--------------|---|-----------|------------|------------------------|---------------|
| 1 | Massol Ave and Los Gatos-Saratoga Rd ** | AM | 3/2/2016 | >120 8.9 | F A |
| | | PM. | 3/2/2016 | >120 14.4 | F B |
| 2 | Santa Cruz Ave and Los Gatos-Saratoga Rd.* | AM | 3/2/2016 | 41.5 | D |
| | | PM | 3/2/2016 | 48.3 | D |
| 3 | University Ave. and Los Gatos-Saratoga Rd.* | AM | 3/2/2016 | 33.7 | C |
| | | PM | 3/2/2016 | 39.7 | D |

Notes:
 * Denotes a CMP intersection
 ** For the unsignalized intersection, the level of service for the worst approach (left turns from Massol) is shown first. Exact amount of delay not shown because delay exceeds calculation parameters. Delay and level of service for the westbound left-turn movement are shown second.
BOLD indicates a substandard level of service

Observed Existing Traffic Conditions

Traffic conditions were observed in the field to identify existing operational deficiencies and to confirm the accuracy of calculated levels of service. The purpose of this effort was (1) to identify any existing traffic problems that may not be directly related to level of service, (2) to identify any locations where the level of service analysis does not accurately reflect actual existing traffic conditions and (3) to respond to comments received from Caltrans. Field observations were conducted on five occasions: in January, April, and June of 2015 and in March and July of 2016. Although the earlier observations enhanced Hexagon's understanding of the study intersections, the following discussion is based solely on the most recent set of observations, conducted on July 21, 2016.

N. Santa Cruz Avenue and Los Gatos-Saratoga Road (SR 9)

During the PM peak period, there is very heavy traffic flow in the eastbound direction, heading towards Highway 17, on Los Gatos-Saratoga Road. Because the intersections at University Avenue and at N. Santa

Cruz Avenue are only approximately 500 feet apart, there is potential for eastbound “spillback” from University Avenue at the N. Santa Cruz Avenue intersection during the PM peak hour. Spillback can occur between closely spaced intersections when there is insufficient storage space for all the queued vehicles at a downstream intersection, thereby preventing vehicles from an upstream intersection from proceeding during their green phase. During the most recent field observations, however, no spillback issues were observed. With the current signal timing implemented by Caltrans, all movements cleared within one signal cycle.

University Avenue and Los Gatos-Saratoga Road (SR 9)

During the AM peak hour, there is very heavy traffic flow in the westbound direction on Los Gatos-Saratoga Road. Therefore, spillback from the N. Santa Cruz Avenue intersection is more likely to occur at the University Avenue intersection during the morning peak period. However, no spillback issues were observed during the most recent field observations at this intersection.

Massol Avenue and Los Gatos-Saratoga Road (SR 9)

As mentioned above, the eastbound traffic flow on Los Gatos-Saratoga Road is very heavy during the PM peak period. Furthermore, because there are no signalized intersections west of the intersection at Massol Avenue, there are very few gaps in the eastbound traffic flow, making it difficult to turn left from westbound Los Gatos-Saratoga Road onto southbound Massol Avenue. In order to make the left turn during the PM peak hour, drivers have to take advantage of very small gaps in traffic and trust that the oncoming eastbound traffic will slow down sufficiently to allow them to complete the turn. Some eastbound drivers were observed to slow down substantially as they approached the intersection in order to allow a left-turning vehicle a long enough gap to turn in front of them. Most of the left turns observed by Hexagon during the PM peak hour occurred during very small gaps in eastbound traffic. When a driver was unwilling to turn left into such a small gap and waited for a larger gap, a queue of several vehicles was observed to develop in the left turn pocket.

Left turns from northbound Massol Avenue onto westbound Los Gatos-Saratoga Road are even more difficult during the heaviest part of the PM peak hour, since they require a gap in traffic in both directions. In 2015, Hexagon observed one car wait for a long time for a gap in both directions that would allow it to turn left, and then give up; the driver backed up so he could access the right turn lane on the other side of the pork chop island and turned right instead. Field observations in July 2016 indicated that northbound left turns frequently were made when a driver in the eastbound through direction deliberately paused at the intersection approach to allow a driver to turn left from Massol Avenue. Thus, although both the TRAFFIX analysis and Synchro analysis of this intersection indicate that this turning movement has a delay of over two minutes in both the AM and PM peak hours, a few drivers were observed to make this turn with shorter delays, due to the courtesy of other drivers.

The implication for this study is that if the pork chop island were moved so that westbound drivers on Los Gatos-Saratoga Road could make a U-turn in order to access the project site’s driveway, the heavy PM peak hour eastbound traffic would make such U-turns very difficult, because U-turns take longer to complete – and a larger gap in traffic – than left turns. Vehicles waiting for a sufficient gap to safely make a U-turn could cause even longer queues in the left-turn pocket in the PM peak hour than now occur. On the other hand, waiting for a sufficient gap in eastbound traffic to make a U-turn during the AM peak and non-peak periods would not be difficult.

N. Santa Cruz Avenue and Bachman Avenue

Although the intersection of N. Santa Cruz Avenue and Bachman Avenue was not initially included as a study intersection, Hexagon conducted field observations at this intersection during the AM and PM peak periods in 2015 and again in July 2016, based on a comment received from Caltrans on an earlier version of this TIA. This intersection is located in downtown Los Gatos, south of SR 9. It has two-way stop control on the Bachman Avenue approaches and bulb-outs for pedestrian crossings at all four corners. Hexagon observed no operational issues at this intersection during the AM or PM peak periods. No significant queuing was observed at any of the approaches. Sufficient gaps in traffic for all four left-turn movements were available without undue delay. Through movements on Bachman Avenue were also observed, and could be made without undue delay.

The heaviest volume observed was during the PM peak period in the southbound direction on N. Santa Cruz Avenue. Volumes in the AM peak period were much lighter in both directions, which is in accord with the fact that many shops and restaurants in the downtown area do not open until after the morning peak period has ended. Since traffic is uncontrolled on N. Santa Cruz Avenue at Bachman Avenue, the only time drivers stop is when a pedestrian crosses N. Santa Cruz Avenue or when a driver wants to turn left and the vehicles behind them must wait until the driver has completed the left turn. Despite the heavy southbound traffic flow on N. Santa Cruz Avenue during the PM peak period, Hexagon did not observe any queuing issues that affected SR 9. Since Hexagon assumes that most project-generated trips during the PM peak period would access the site by turning right from southbound N. Santa Cruz Avenue at Almendra Avenue, rather than Bachman Avenue, the project would have a negligible effect on this intersection.

SR 17 and SR 9 Interchange

Hexagon also conducted field observations at all of the on-ramps and off-ramps at the interchange connecting SR 17 and SR 9 (Los Gatos-Saratoga Road). A large volume of vehicles was observed exiting southbound SR 17 onto westbound SR 9 during the AM peak period. The first signalized intersection west of that off-ramp is at University Avenue. In July 2016, after Caltrans had adjusted the signal timing at University Avenue, the westbound queue from University Avenue did not extend as far as the SR 17 off-ramp. Vehicles were able to exit the off-ramp in order to travel west on SR 9 without any delay.

We note that none of the proposed project options would add a significant number of trips to the critical movement at this interchange, southbound SR 17 to westbound SR 9 during the AM peak hour. Specifically, the project is estimated to generate only 8 trips in the AM peak hour that would use the exit ramp from southbound SR 17 to westbound SR 9 and then drive to the project site. Such a small number of trips would have a negligible effect on this critical movement in the AM peak hour.

Los Gatos-Saratoga Road and Existing Site Driveway

The project site is currently served by two driveways on Los Gatos-Saratoga Road, one of which is close to the Santa Cruz Avenue intersection and in the same location that the proposed driveway would be. Due to the median on Los Gatos-Saratoga Road, drivers can only turn right when exiting this driveway. There are currently two thru lanes, one left-turn lane, and a short right-turn lane where this driveway intersects Los Gatos-Saratoga Road.

In order to determine if there are any operational problems related to this driveway location under existing conditions, Hexagon observed this driveway during the PM peak hour when eastbound traffic is heaviest. When exiting the site, all except one of the 30 observed outbound vehicles turned into the right-turn lane or into the through lane closest to the curb. One vehicle turned into the through lane further from the curb after the green phase at the signal had allowed all eastbound vehicles to clear and there was a gap in the traffic flow. No vehicles attempted to access the left turn lane.

In fact, due to the heavy eastbound traffic volumes in the PM peak hour, it was generally not possible for outbound vehicles to access the left-turn lane with the current signal phasing at the intersection. The eastbound left turn receives a green phase before the eastbound through movement. When the green phase for the left turns has allowed the left-turn pocket to clear, the vehicles in the through lanes are still waiting for a green phase and block access from the driveway to the left-turn pocket. By the time that the green phase for the eastbound through vehicles has allowed the through lanes to clear, the left-turn pocket usually already had several vehicles in it, so it was not possible for a vehicle to join the end of the queue from the driveway.

Accident Analysis

Based on data obtained from the Statewide Integrated Traffic Records System (SWITRS), there were five accidents at the intersection of SR 9 and University Avenue and three accidents at the intersection of SR 9 and Santa Cruz Avenue in the 3-year period between 10/1/2011 and 9/30/2014. The collision rate for these two intersections, calculated as the number of collisions per million vehicles entering the intersection, are 0.15 and 0.07, respectively. The statewide average collision rate for signalized 4-way intersections in suburban areas is 0.43, indicating that both of these intersections have an accident rate well below the statewide average. There were three accidents at the intersection of SR 9 and Massol Avenue during that same 3-year

period, resulting in a collision rate of 0.11. The statewide average collision rate for unsignalized 3-way (tee) intersections in suburban areas is 0.14, indicating that this intersection also has a lower accident rate than the statewide average for similar types of intersections.

3.

Existing Plus Project Conditions

This chapter describes existing plus project traffic conditions, including the method by which project traffic is estimated. Existing plus project traffic conditions could potentially occur if the project were to be occupied prior to the other approved projects in the area.

Transportation Network Under Existing Plus Project Conditions

It is assumed in this analysis that the transportation network under existing plus project conditions would be the same as the existing transportation network.

Project Trip Estimates

The magnitude of traffic produced by a new development and the locations where that traffic would appear are estimated using a three-step process: (1) trip generation, (2) trip distribution, and (3) trip assignment. In determining project trip generation, the magnitude of traffic entering and exiting the site is estimated for the AM and PM peak hours for the project option that would generate the most trips. As part of the project trip distribution, an estimate is made of the directions to and from which the project trips would travel. In the project trip assignment, the project trips are assigned to specific streets. These procedures are described further in the following sections.

Trip Generation

As noted in Chapter 1, the trip generation estimates developed for this TIA were based on the project's proposed square footage as of January 2016: 4,622 s.f. for the corner building and 16,000 s.f. for the second building. As of July 2016, the proposed square footage of these buildings is a bit smaller: 4,200 s.f. and 15,500 s.f., respectively. As a result of reducing the total square footage by 922 s.f., the trip generation estimates included in this study are slightly overstated.

Because it is not yet known precisely what land uses would occupy the two proposed buildings, the combination of uses that would generate the greatest number of trips was used as a basis for this TIA. If a different combination of uses ultimately occupies the site, the site would generate fewer trips than estimated in this study.

The building on the corner may include a restaurant or retail space. Since restaurants generate more trips than retail uses, this study assumes that the 4,622 s.f. corner building will include a restaurant. The ITE category "high turnover sit-down restaurant" was used for the restaurant space because that results in a higher trip estimate than "quality restaurant," which also represents a sit-down facility. The ITE category "fast-food restaurant" has an even higher trip generation rate, but that is not representative of the type of restaurant that is proposed for the site.

The site plan also shows a 1,400 square foot dining patio in front of the corner building. This area would not be used if the corner building were to be occupied by a retail business. However, it could be used by a restaurant. This traffic study does not count the dining patio as part of the restaurant square-footage for the purposes of trip generation. Therefore, if the patio were to be used for dining, it is assumed that an equivalent number of seats would be removed from the interior portion of the restaurant. The Parking section of this report provides additional discussion of the dining patio.

The second building may include general office space, medical/dental office space, and/or up to 4,000 s.f. for a bank. Since banks generate more trips than medical offices, and medical offices generate more trips than general offices, the second building is assumed to include a 4,000 s.f. bank (the maximum bank size proposed) and 12,000 s.f. of medical office space.

Trips generated by any new development can be estimated based on counts of existing development of the same land use type. For the high-turnover sit-down restaurant and the medical/dental office space, Hexagon has used trip generation rates published in the Institute of Transportation Engineers' (ITE) *Trip Generation Manual, Ninth Edition, 2012*, in order to estimate the number of trips that would be generated by those land uses, as shown in Table 5.

The ITE PM peak hour rate for banks without a drive-through window (ITE land use 911) is based on an extremely small sample size.³ An AM peak hour rate is not even provided by ITE for banks without a drive-through window. As an alternative, Hexagon has used the trip generation rates developed by the San Diego Association of Governments (SANDAG), which provides daily rates, AM peak hour rates, and PM peak hour rates for banks without a drive-through window.

Table 5
Project Trip Generation Estimates

| Land Use | ITE Code | Size | Daily Rate | Daily Trips | AM Peak Hour | | | PM Peak Hour | | | | | |
|--|----------|-------------|------------|-------------|--------------|----------|-----------|--------------|-----------|----------|-----------|-------------|-----------|
| | | | | | Peak Rate | Trips In | Trips Out | Total Trips | Peak Rate | Trips In | Trips Out | Total Trips | |
| <u>Existing Use</u>¹ | | | | | | | | | | | | | |
| Office Space and Retail | | 11,472 s.f. | | | | | 12 | 1 | 13 | | 33 | 35 | 68 |
| <u>Proposed Use with highest trip generation rates</u> | | | | | | | | | | | | | |
| High-Turnover Restaurant ² | 932 | 4,622 s.f. | 127.15 | 588 | 10.81 | 28 | 22 | 50 | 9.85 | 28 | 18 | 46 | |
| <i>PM Pass-by reduction</i> ⁴ | | | | | | | | | | -6 | -3 | -9 | |
| Bank ³ | SANDAG | 4,000 s.f. | 150.00 | 600 | 6.00 | 17 | 7 | 24 | 12.00 | 19 | 29 | 48 | |
| <i>PM Pass-by reduction</i> ⁴ | | | | | | | | | | -5 | -7 | -12 | |
| Medical Office Space ² | 720 | 12,000 s.f. | 36.13 | 434 | 2.39 | 23 | 6 | 29 | 3.57 | 12 | 31 | 43 | |
| Proposed Use TOTAL | | | | 1622 | | 68 | 35 | 103 | | 48 | 68 | 116 | |
| <u>Net Trips (Proposed Use less Existing Use)</u> | | | | | | | 56 | 34 | 90 | | 15 | 33 | 48 |
| <u>Notes:</u> | | | | | | | | | | | | | |
| (1) Existing Use trips based on peak period driveway counts conducted on 1/21/15 and 1/22/15. Trips shown are the average of the peak hour volumes for two days. | | | | | | | | | | | | | |
| (2) Trip rates for high-turnover sit-down restaurant and medical office space are from Institute of Transportation Engineers' <i>Trip Generation Manual, 9th Edition, 2012</i> . Average rates used for land uses 932 and 720. | | | | | | | | | | | | | |
| (3) Trip rates for bank (without a drive-up window) was developed by San Diego Association of Governments (SANDAG). Source: City of San Diego, <i>Trip Generation Manual, 2003</i> . | | | | | | | | | | | | | |
| (4) PM Peak Pass-By Reduction percentages are from City of San Diego, <i>Trip Generation Manual, 2003</i> , as follows: High-Turnover Restaurant: 20%; Bank: 25%. Totals may not add due to rounding. | | | | | | | | | | | | | |

³ VTA's TIA Guidelines specifically note that when ITE data is based on a small sample size, an alternative source of trip generation rates should be used. The SANDAG trip generation rates are identified as an alternate source.

Pass-By Reductions

The restaurant and bank uses will attract some of their customers from people who are passing by the site on Los Gatos-Saratoga Road or on Santa Cruz Avenue and will not need to make a separate vehicle trip to get there. Because both of the roadways adjacent to the project site are major arterials, there is significant potential for pass-by trips at this location. Pass-by reductions are typically only applied to the PM peak hour.

Hexagon used the following pass-by reductions developed by SANDAG for these land uses:

- High-Turnover Sit-down Restaurant: 20%
- Bank: 25%

Since the *CMP Transportation Impact Analysis Guidelines* published in October 2014 state that the pass-by trip reduction should generally not be more than 30%, these pass-by rates are in accordance with those guidelines.

Trip Generation from Existing Uses

The analysis of the proposed project includes the application of a credit for the existing office and retail uses on the site. Traffic counts were done at the project driveways on two weekdays (Tuesday, January 20, 2015 and Wednesday, January 21, 2015) during the AM and PM peak periods to determine the number of peak hour trips generated by the existing uses. Based on the 2-day average of these driveway counts, the existing uses are generating a total of 13 trips in the AM peak hour and 68 trips during the PM peak hour.

Net Project Trips

Table 5 shows the project trip generation for the proposed combination of uses that would generate the greatest number of peak hour trips. Based on the ITE trip generation rates for medical office space and high-turnover sit-down restaurants, the SANDAG trip generation rates for banks without a drive-through window, and the pass-by rates recommended by SANDAG, the project would generate a total of 103 AM peak hour trips and 116 PM peak hour trips. After applying credit for the existing uses on the site, the net project trips are estimated as 90 additional AM peak hour trips (56 inbound and 34 outbound trips) and 48 additional PM peak hour trips (15 inbound and 33 outbound trips).

Trip Distribution

Two trip distribution patterns for the project were developed based on existing travel patterns on the surrounding roadway system, the locations of complementary land uses, and the projected geographic area from which each land use is likely to draw.

A general office or medical office is likely to draw employees from a fairly large area, many of whom would access the study area via SR 17, although most patients are likely to come from a more localized area. Figure 8 shows the trip distribution pattern for the space that would be used as a medical office or general office.

By contrast, it is assumed that few customers of the high-turnover sit-down restaurant or the bank would come from very far away, so the distribution for those uses assumes those customers would be drawn from a more localized area and that fewer would arrive via SR 17. Figure 9 presents the trip distribution pattern for the restaurant use and the bank. If the corner building were occupied by a retail use, it would also likely follow the same more localized distribution as a restaurant.

Trip Assignment

The gross and net peak hour trips generated by the project were assigned to the roadway system in accordance with the two trip distribution patterns. The trip assignment reflects the different routes that drivers may use to enter and exit the project site, given that the project driveway has only right-turn-in and right-turn-out access. Figure 10 shows the assignment of gross project trips during the AM and PM peak hours at each study intersection for the project. Figure 11 shows the assignment of trips generated by the existing uses on the site. Figure 12 shows the net project trip assignment, i.e., the gross project trips minus the trips from the

existing uses. In addition, the following three additional intersections that would experience the greatest number of project trips going around the block through the residential neighborhood to enter or exit the project site are shown in these three figures:

- N. Santa Cruz Avenue and Almendra Avenue
- Tait Avenue and Almendra Avenue
- Tait Avenue and Los Gatos-Saratoga Road

Trip Assignment for Inbound Trips

The proposed U-turn at Massol Avenue is not included in the inbound trip assignment during the AM or PM peak hours. Accordingly, all inbound trips from the north and the east are assumed to travel “around the block” on N. Santa Cruz Avenue, Almendra Avenue, and Tait Avenue (or on University Avenue, Bachman Avenue and Tait Avenue), and then eastbound SR 9 in order to enter the project driveway. Figure 13 shows the routes that trips entering the site may use, when approaching from the north and the east.

For inbound vehicles coming from southbound University Avenue, it is assumed that some vehicles will turn right on SR 9, then left on Santa Cruz Avenue, and then access the site by going around the block on Almendra and Tait Avenues, and then turning right on SR 9. But, some vehicles were assigned to an alternate route of continuing south on University past SR 9, and then using Bachman Avenue and Tait Avenue to access the site. Although this route is longer, it allows a driver to avoid waiting at the Santa Cruz Avenue signal. Both of these routes are shown in Figure 13. Similarly, the trip assignment assumes that some drivers coming from westbound SR 9 will turn left at Santa Cruz Avenue to access the site and some will turn left at University Avenue (and avoid waiting at a second signal). Office workers who drive to the site every day from Highway 17 or from further east on SR 9 can be assumed to become familiar with the local street network and will realize that, depending on the signal phase when they approach University Avenue, they would be able to turn left at University and take the alternate route with less delay than waiting for a second signal at Santa Cruz Avenue.

Trip Assignment for Outbound Trips

Due to the difficulty that outbound trips from the site would have in making a left turn or U-turn at N. Santa Cruz Avenue during the PM peak period, different trip assignments were used for the AM and PM peak hours for drivers exiting the site and then heading north or west. Because the proposed driveway is located near the intersection of SR 9 and N. Santa Cruz Avenue and because of the heavy eastbound traffic volumes in the PM peak hour, it would not be possible for drivers to exit the driveway and cross the through lanes in order to gain access to the left-turn lane. As noted in the field observations discussed in Chapter 2, no vehicles attempted to access the left-turn lane during the PM peak hour because of the length of the queue in the left-turn pocket and the fact that eastbound through vehicles blocked access to it during the left-turn green phase. During most of the signal cycle, the left-turn queue extended beyond the point where the project driveway intersects SR 9, such that exiting drivers were not able to join the queue. Accordingly, the PM project trip assignment assumes that none of the drivers exiting the driveway would make a left-turn or a U-turn during the PM peak hour, and all would use an alternate route to proceed north on Santa Cruz Avenue or west on SR 9. The AM trip assignment assumes, however, that drivers exiting the project driveway would be able to access the left-turn lane during the AM peak hour in order to make a left-turn or U-turn.

Figure 14 shows several routes that drivers leaving the site during the PM peak hour may use, when heading north or west. One route includes going around the block on Almendra Avenue, Tait Avenue, and Bachman Avenue and then making a left turn onto northbound Santa Cruz Avenue. Upon reaching SR 9, the driver can go straight to head north or turn left to head west. This route may be taken in a clockwise or counter-clockwise direction, but, for simplicity, the assignment assumes all vehicles would turn right on Almendra and then left on Tait and go around the block in a counter-clockwise direction. Some drivers may also simply make a right turn on Almendra or Bachman Avenue and make a 3-point turn to turn around and then make a left turn onto Santa Cruz Avenue. Other routes include going “around the block” on University Avenue, Bachman Avenue, and Santa Cruz Avenue (again, this could be done in a clockwise or counter-clockwise direction). Making a U-turn at University Avenue is another possible route, but we assume that very few drivers would choose to make a U-turn at University Avenue, because, after crossing N. Santa Cruz Avenue,

the left lane of SR 9 is typically much more congested than the right lane. All of these routes allow the driver to make a left turn or U-turn at a signalized intersection with protected left turns.

Another possible route for outbound trips would include a right turn at the project driveway, a right turn at Santa Cruz Avenue, a right turn at Almendra Avenue, a right turn at Massol Avenue, and then a left turn at Los Gatos-Saratoga Road. However, it is extremely difficult to make a left turn onto Los Gatos-Saratoga Road from northbound Massol Avenue during the PM peak hour, as noted in Chapter 2 under field observations and as described in greater detail in Chapter 7. Because this trip assignment is for the PM peak hour, it is assumed that no one would choose a route that includes a northbound left turn at that unsignalized intersection when there is very heavy eastbound traffic.

Existing Plus Project Traffic Volumes

The net project trips were added to existing traffic volumes to obtain existing plus project traffic volumes (see Figure 15). Traffic volumes for all components of traffic are tabulated in Appendix C.

Intersection Levels of Service Under Existing Plus Project Conditions

The results of the intersection level of service analysis under existing plus project conditions show that, measured against the Town of Los Gatos and CMP level of service standards, both signalized intersections would continue to operate at an acceptable level of service (LOS D or better) during both the AM and PM peak hours of traffic (see Table 6). Therefore, under existing plus project conditions, neither of the signalized intersections would be significantly impacted by the project.

Table 6
Existing Plus Project Intersection Levels of Service

| Study Number | Intersection | Peak Hour | Existing | | Existing + Project | | | |
|--------------|---|-----------|---------------------|-----|---------------------|-----|--------------------------------|------------------------|
| | | | Average Delay (sec) | LOS | Average Delay (sec) | LOS | Change in Critical Delay (sec) | Change in Critical V/C |
| 1 | Massol Ave and Los Gatos-Saratoga Rd ** | AM | >120 | F | >120 | F | - | - |
| | | | 8.8 | A | 8.8 | A | - | - |
| | | PM | >120 | F | >120 | F | - | - |
| | | | 14.4 | B | 14.5 | B | - | - |
| 2 | Santa Cruz Ave and Los Gatos-Saratoga Rd.* | AM | 41.5 | D | 41.9 | D | 2.3 | -0.005 |
| | | PM | 48.3 | D | 48.6 | D | 0.5 | 0.013 |
| 3 | University Ave. and Los Gatos-Saratoga Rd.* | AM | 33.7 | C | 34.3 | C | 0.9 | 0.012 |
| | | PM | 39.7 | D | 39.9 | D | -0.1 | 0.002 |

Notes:
 * Denotes a CMP intersection
 ** For the unsignalized intersection, the level of service for the worst approach (left turns from Massol) is shown first. Exact amount of delay not shown because delay exceeds calculation parameters. Delay and level of service for the westbound left-turn movement are shown second.
BOLD indicates a substandard level of service

For the unsignalized intersection, the level of service for the worst approach (left turns from Massol Avenue onto westbound SR 9) would continue to be LOS F under existing plus project conditions. The project is not projected to add any trips to the left-turn movement from Massol Avenue onto westbound SR 9. However, because the project would add trips to Los Gatos-Saratoga Road, the delay for that turning movement would increase with the project.

Table 6 also presents the delay estimated for the westbound left turn movement at the intersection of Massol Avenue and Los Gatos-Saratoga Road. The westbound left turn movement is uncontrolled, but vehicles must wait for a gap in eastbound traffic in order to turn left. The westbound left-turn movement would operate at LOS A and LOS B in the AM and PM peak hours, respectively, under existing plus project conditions.

Because Los Gatos does not have a level of service standard or significant impact criteria for unsignalized intersections, these results are shown for information purposes only. The intersection level of service calculation sheets are included in Appendix D.

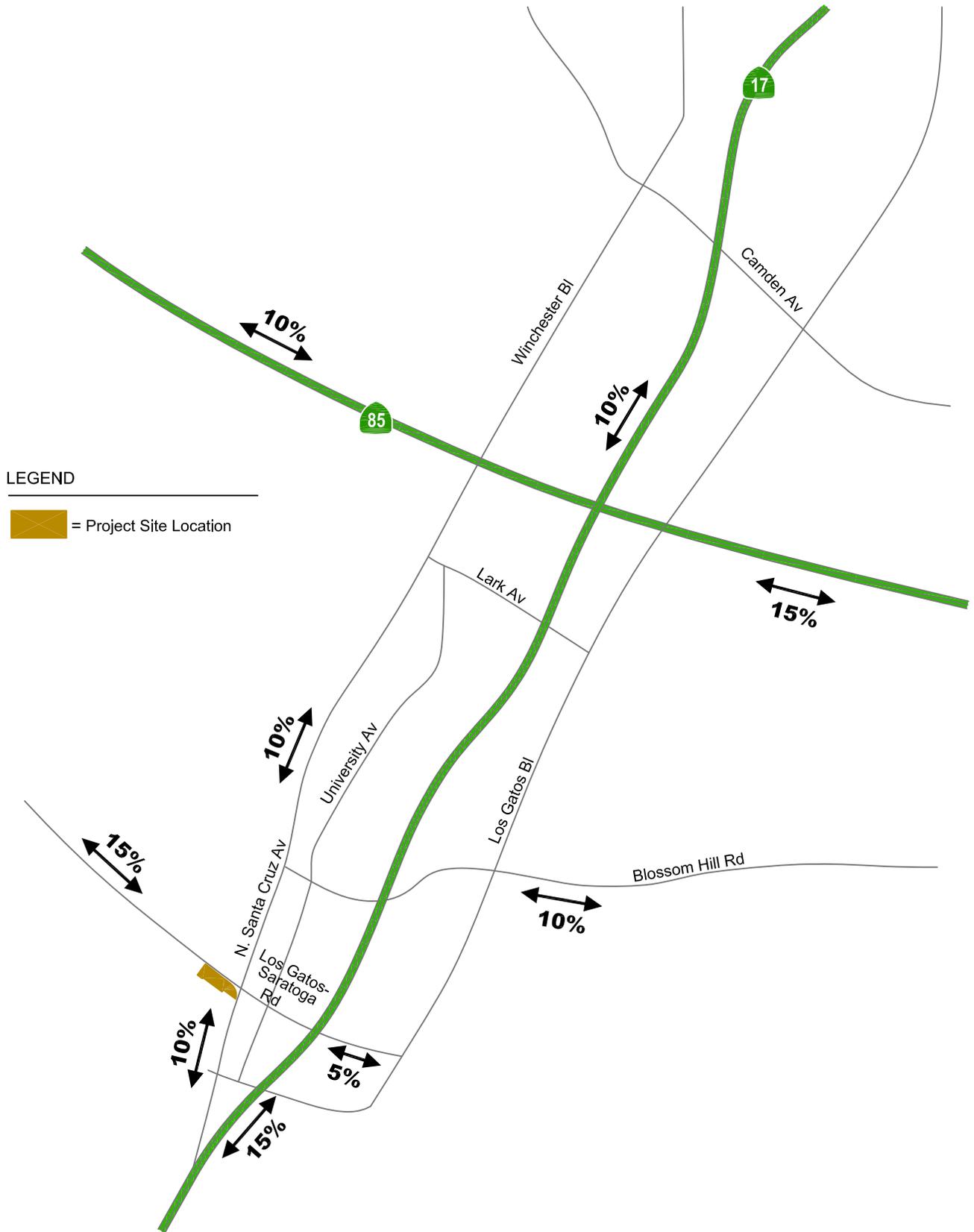
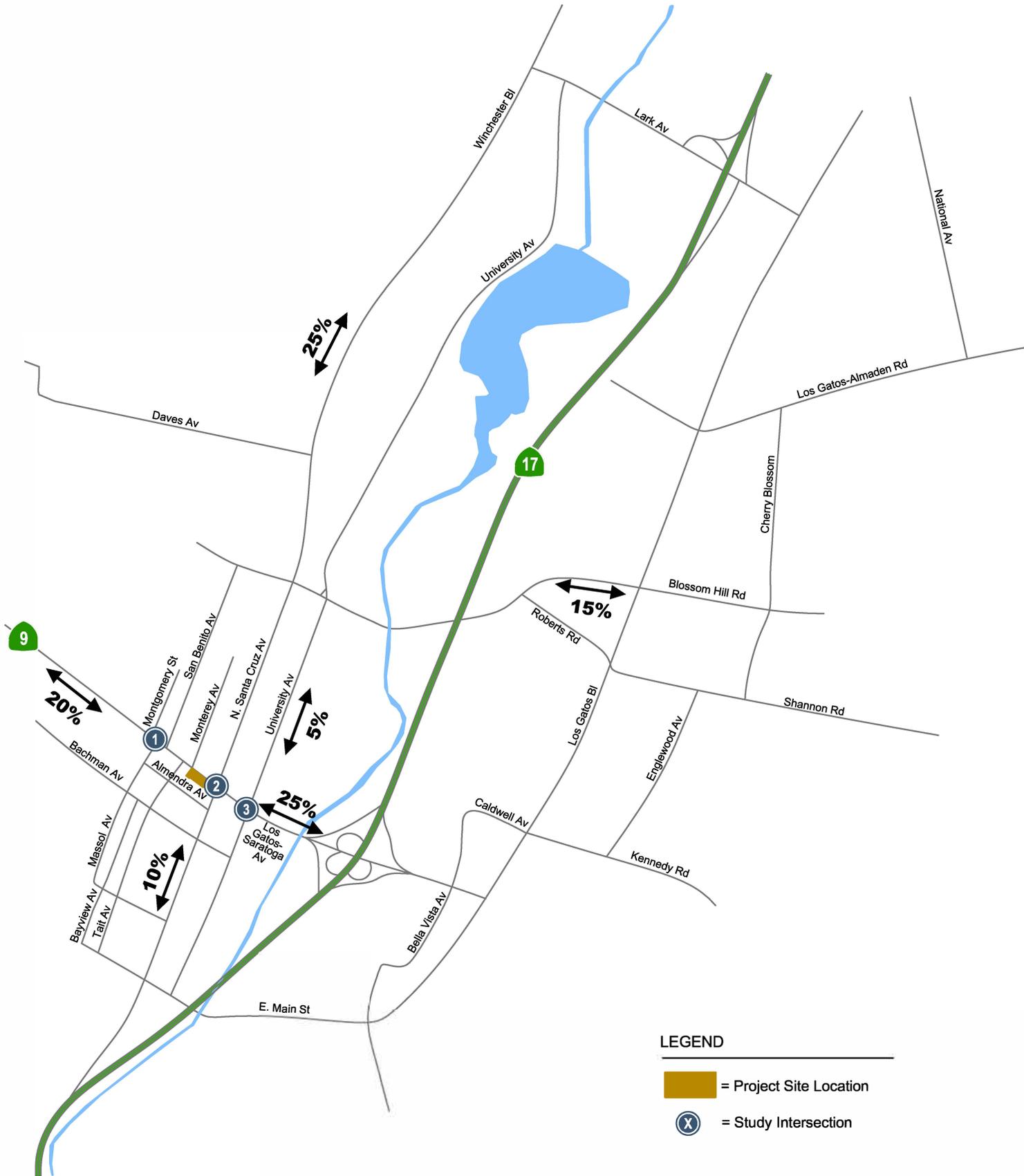


Figure 8
Trip Distribution for Medical Office Space



LEGEND

= Project Site Location

X = Study Intersection

Figure 9
Trip Distribution for Restaurant and Bank

201-225 Los Gatos-Saratoga Road

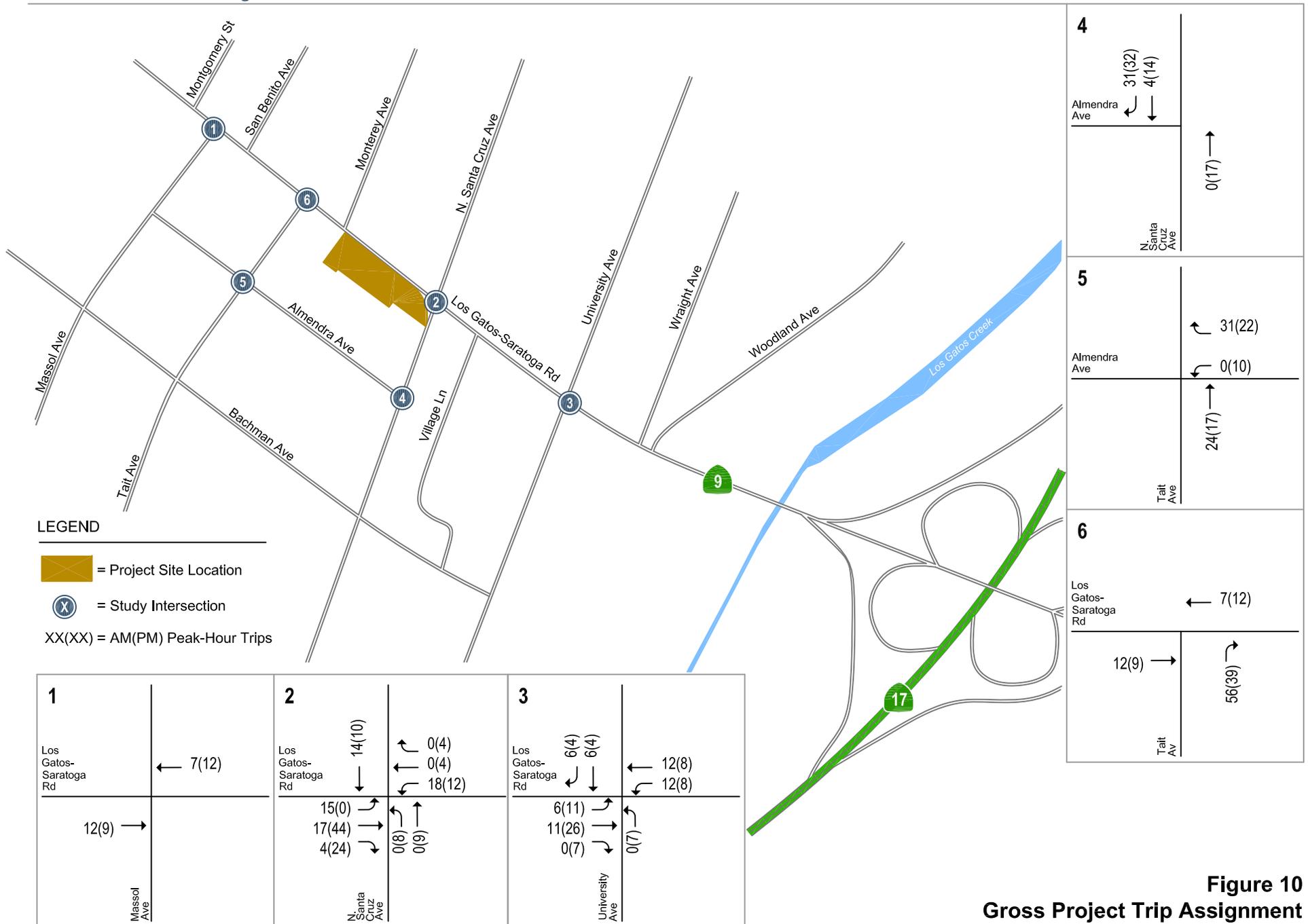


Figure 10
Gross Project Trip Assignment

201-225 Los Gatos-Saratoga Road

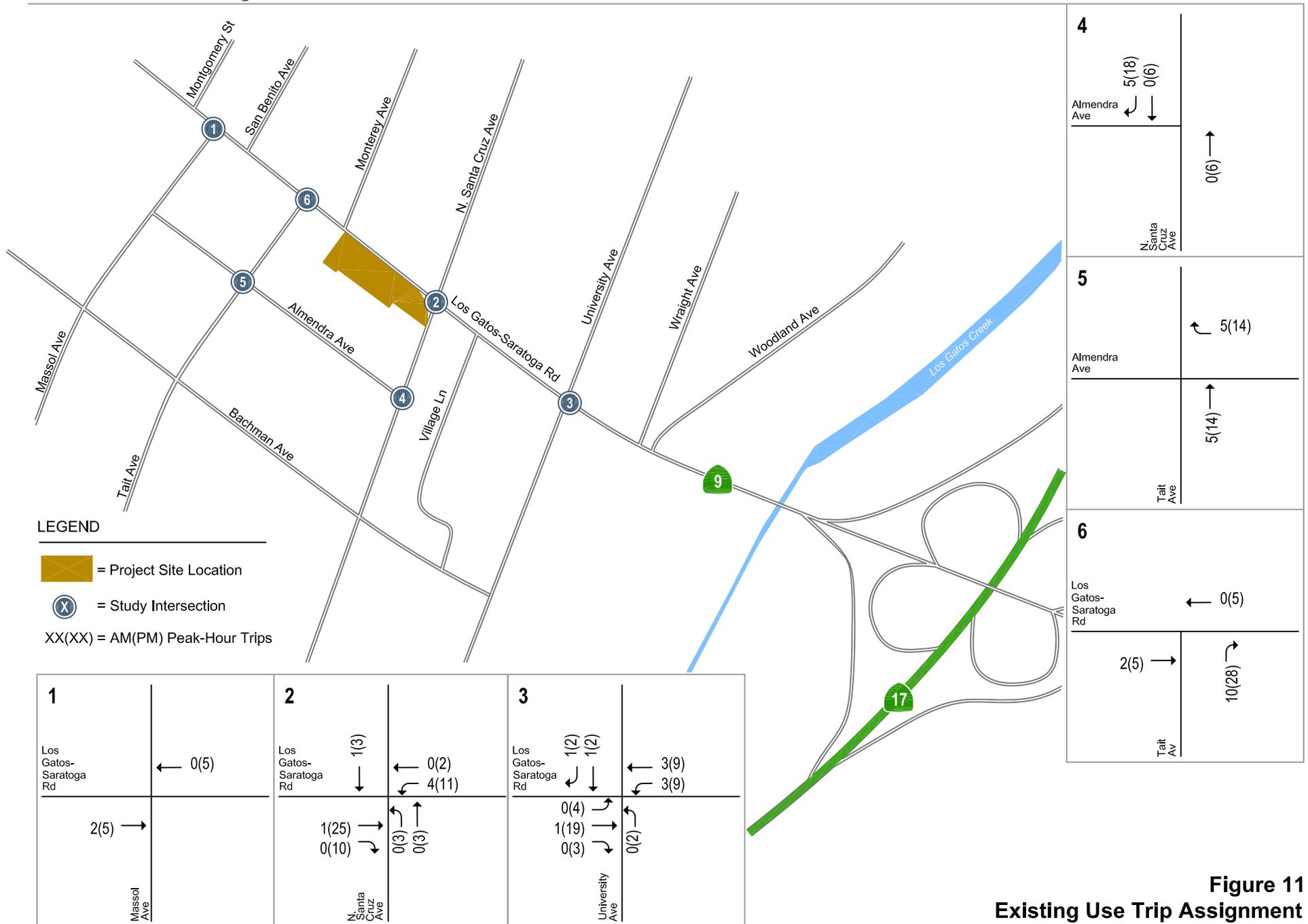


Figure 11
Existing Use Trip Assignment

201-225 Los Gatos-Saratoga Road

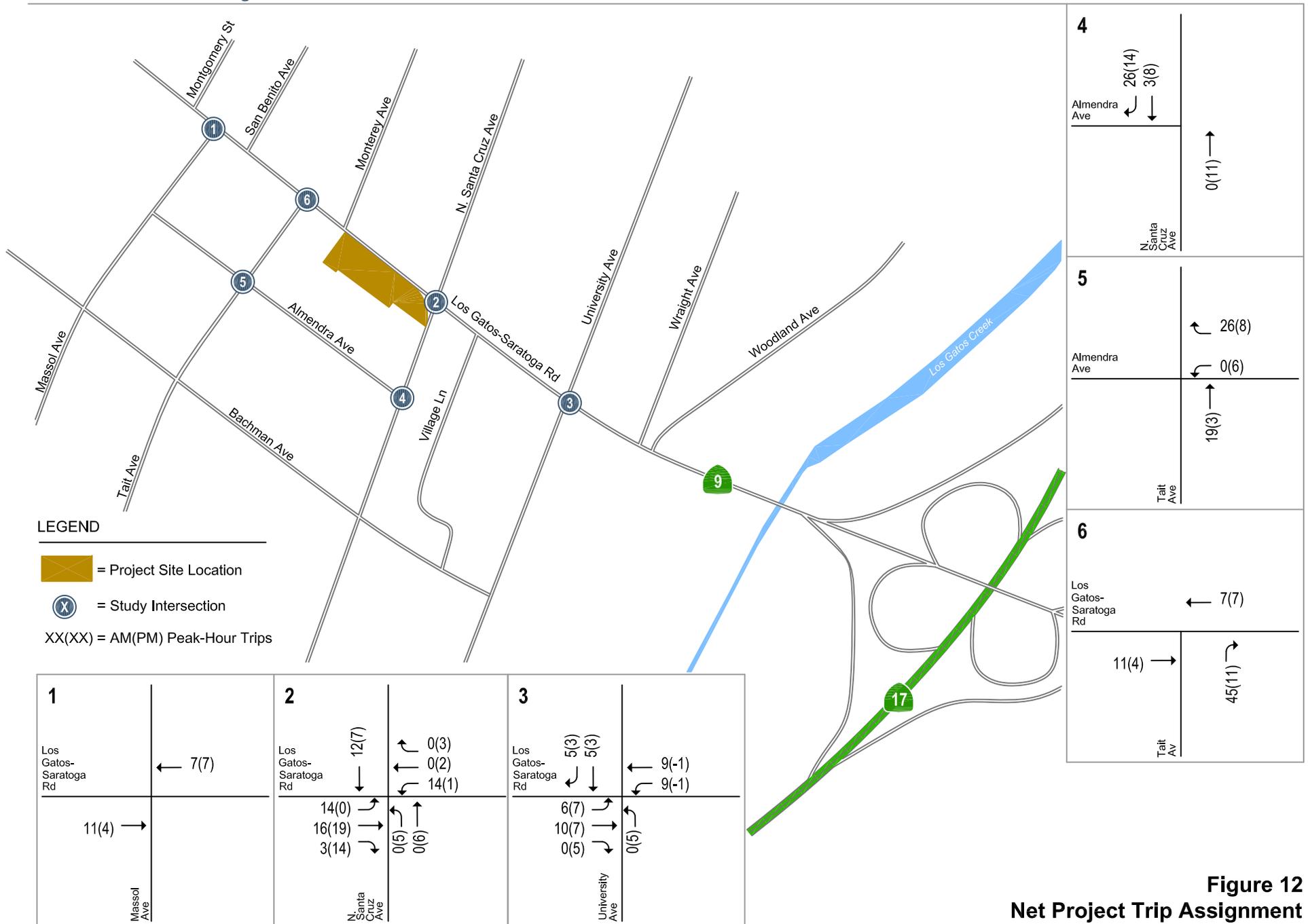


Figure 12
Net Project Trip Assignment



Figure 13
Alternate Routes for INBOUND Trips Coming from North or East

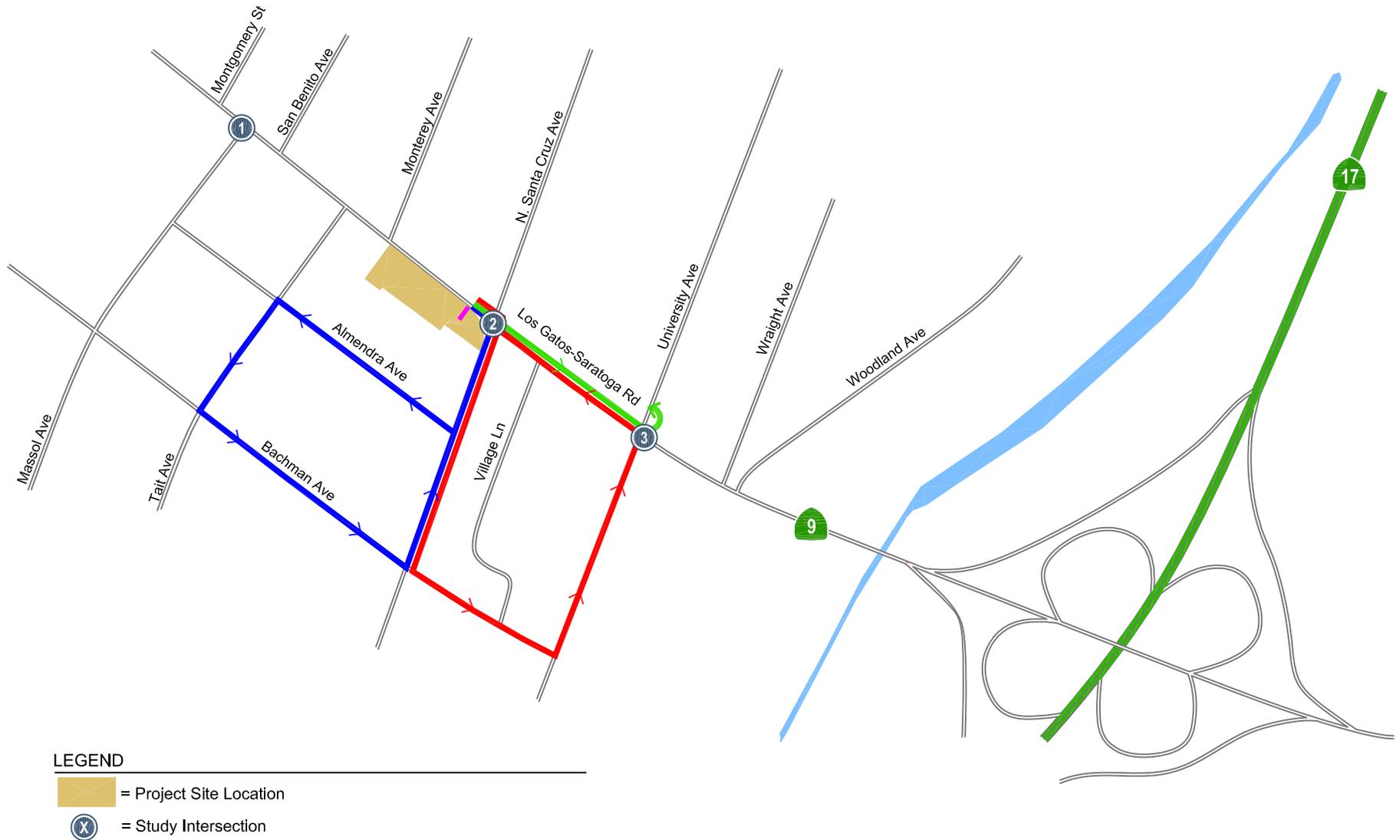
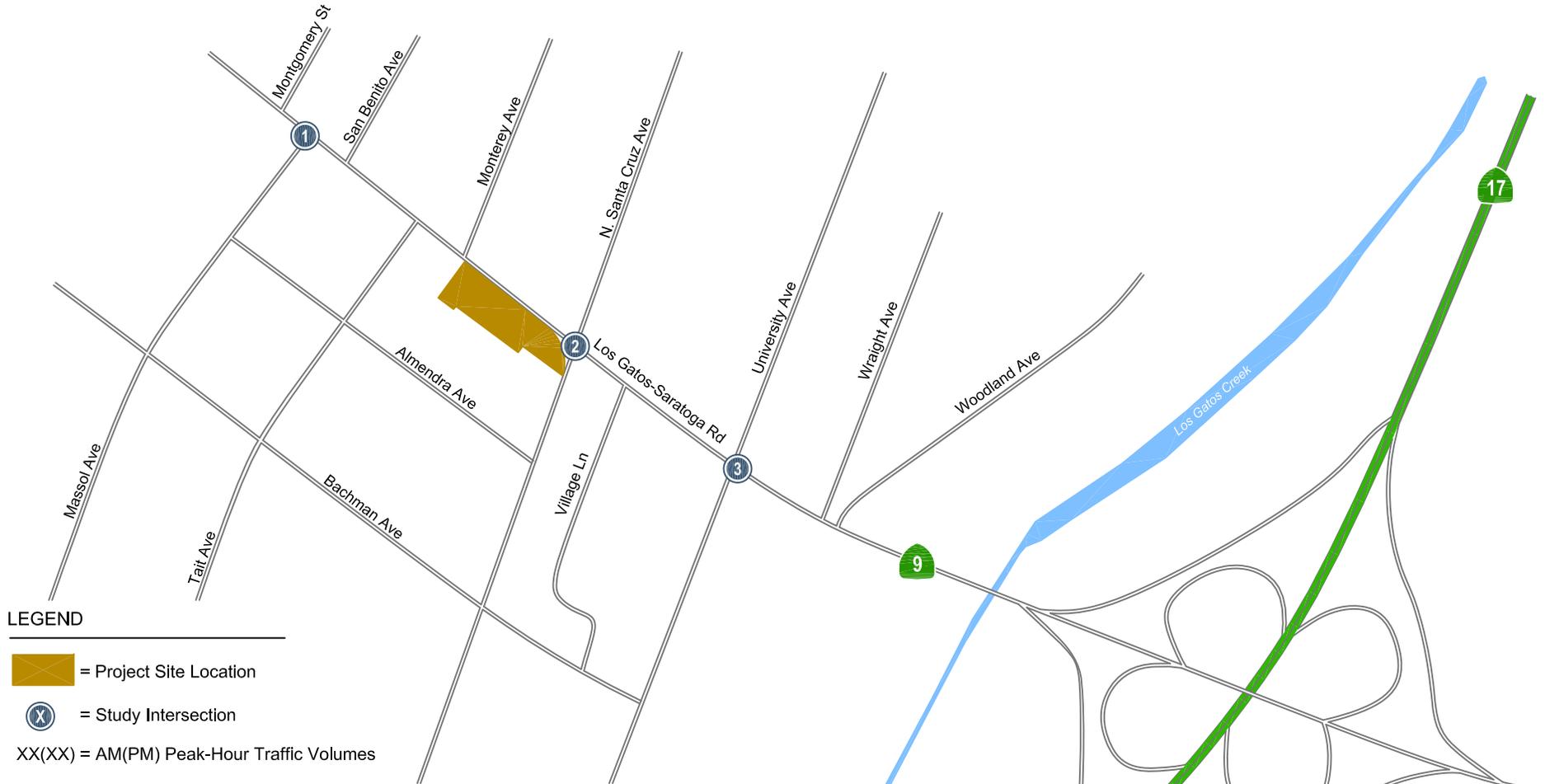


Figure 14
Alternate Routes for OUTBOUND Trips Heading
North or West in PM Peak-Hour



LEGEND

-  = Project Site Location
-  = Study Intersection
- XX(X) = AM(PM) Peak-Hour Traffic Volumes

| 1 | 2 | 3 |
|---|--|--|
| <p>Los Gatos-Saratoga Rd</p> <p>← 1525(598)</p> <p>← 114(168)</p> <hr/> <p>503(1204) →</p> <p>25(82) ↓</p> <p>53(14) →</p> <p>203(134) →</p> <p>Massol Av</p> | <p>Los Gatos-Saratoga Rd</p> <p>← 391(159)</p> <p>← 203(287)</p> <p>← 136(192)</p> <p>← 135(136)</p> <p>← 990(385)</p> <p>← 136(200)</p> <hr/> <p>196(306) →</p> <p>545(937) →</p> <p>79(207) ↓</p> <p>125(130) →</p> <p>176(189) →</p> <p>52(141) →</p> <p>N. Santa Cruz Av</p> | <p>Los Gatos-Saratoga Rd</p> <p>← 38(36)</p> <p>← 152(163)</p> <p>← 163(253)</p> <p>← 175(133)</p> <p>← 1181(597)</p> <p>← 237(244)</p> <hr/> <p>81(70) →</p> <p>630(1126) →</p> <p>65(101) ↓</p> <p>68(73) →</p> <p>180(126) →</p> <p>198(305) →</p> <p>University Av</p> |

Figure 15
Existing Plus Project Traffic Volumes

4. Background Conditions

This chapter presents background traffic conditions, which are defined as conditions just prior to completion of the proposed project. Traffic volumes for background conditions comprise volumes from existing traffic counts plus traffic generated by other approved developments in the vicinity of the site. This chapter describes the procedure used to determine background traffic volumes and the resulting traffic conditions. The background scenario predicts a realistic traffic condition that would occur as approved development projects get built and occupied.

Background Transportation Network

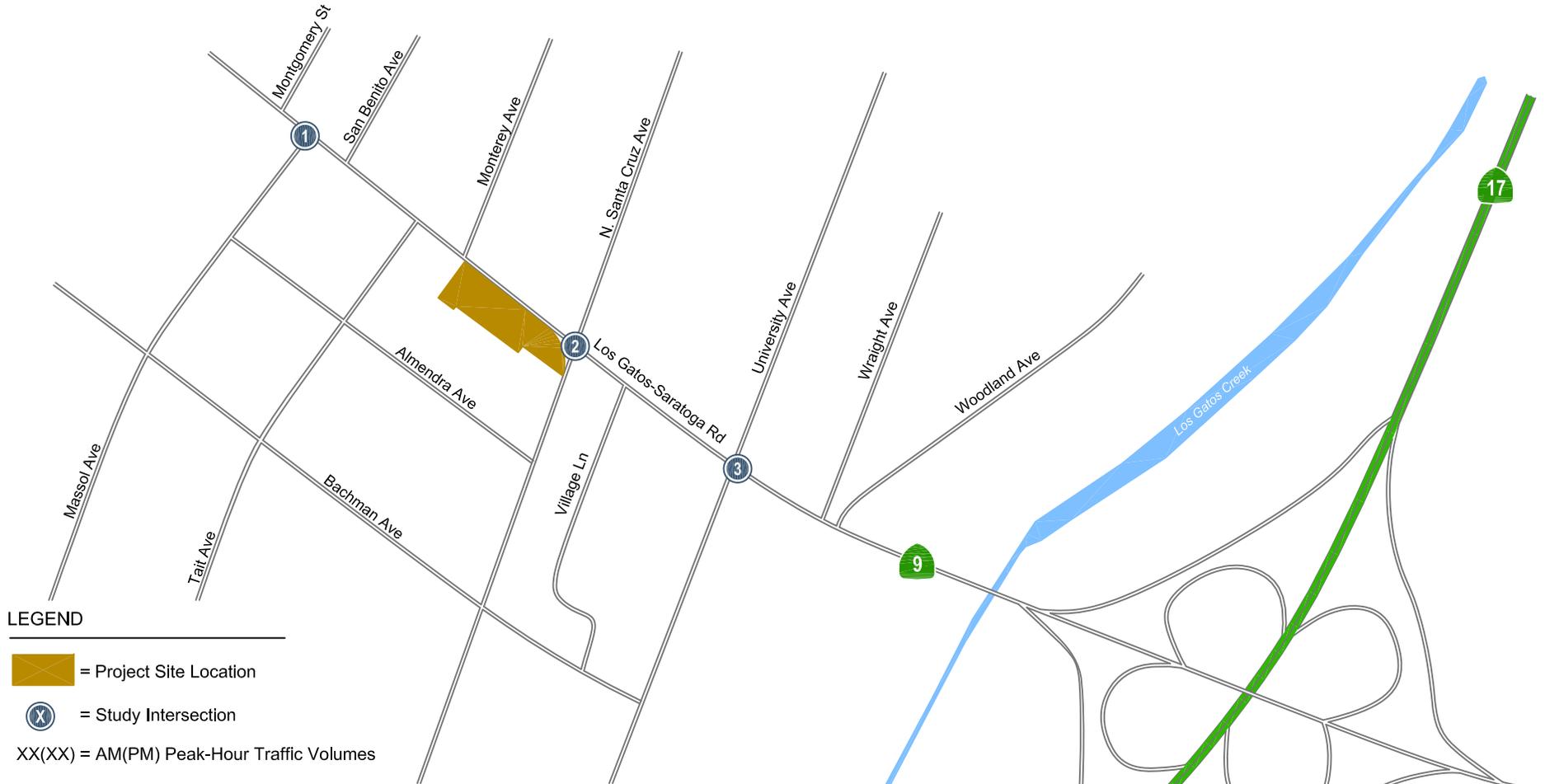
It was assumed in this analysis that the transportation network under background conditions would be the same as the existing network.

Background Traffic Volumes

Approved developments are those developments that have been approved by local agencies, are under construction, or are built but not yet occupied. The approved project list was obtained from the Town of Los Gatos and is listed below in its entirety and included in Appendix B.

1. Albright Way: Replace 250,000 s.f. of office with 485,000 s.f. of office
2. 620 Blossom Hill Road: Increase square footage of auto dealer from 26,085 to 31,909 s.f.
3. 146 Gemini Court: 3-home subdivision
4. 20 High School Court: Improvements at high school; increase enrollment by 200 students
5. 550 Hubbell Way: 4 single-family homes
6. 375 Knowles Drive: 33 single-family homes
7. North 40 Specific Plan on Los Gatos Boulevard: Construct residential units, hotel, retail space, medical/dental offices, and general offices.
8. 55 Los Gatos-Saratoga Road: Demolish 3 hotel rooms and add retail, office and restaurant
9. 400 More Avenue: Renovation of Santa Clara Valley Water District's Rinconada Plant
10. Placer Oaks Road: 10-unit residential subdivision
11. 100 Prospect Avenue: Demolish convent and construct 17 single-family homes
12. 15700 Shady Lane: New residential subdivision

Based on a review of traffic studies prepared for these projects, a recent TRAFFIX file provided by the Town of Los Gatos, the types and sizes of these developments, and their distances from the project site, Hexagon determined which of these approved developments would add traffic to at least one of the study intersections during at least one of the peak hour periods. Background peak hour traffic volumes were calculated by adding to existing volumes the estimated traffic from the approved developments that were projected to add



LEGEND

-  = Project Site Location
-  = Study Intersection
- XX(X) = AM(PM) Peak-Hour Traffic Volumes

| 1 | 2 | 3 |
|---|--|---|
| <p>Los Gatos-Saratoga Rd</p> <p>← 1533(643)</p> <p>← 114(168)</p> <hr/> <p>529(1242) →</p> <p>25(82) ↓</p> <p>53(14) →</p> <p>203(134) →</p> <p>Massol Av</p> | <p>Los Gatos-Saratoga Rd</p> <p>← 402(208)</p> <p>← 200(305)</p> <p>← 138(196)</p> <p>← 140(134)</p> <p>← 992(386)</p> <p>← 122(199)</p> <hr/> <p>210(342) →</p> <p>535(924) →</p> <p>76(193) ↓</p> <p>125(125) →</p> <p>191(202) →</p> <p>52(141) →</p> <p>N. Santa Cruz Av</p> | <p>Los Gatos-Saratoga Rd</p> <p>← 33(33)</p> <p>← 147(161)</p> <p>← 166(255)</p> <p>← 177(135)</p> <p>← 1181(609)</p> <p>← 228(245)</p> <hr/> <p>75(63) →</p> <p>633(1131) →</p> <p>65(96) ↓</p> <p>68(68) →</p> <p>180(127) →</p> <p>198(305) →</p> <p>University Av</p> |

Figure 16
Background Traffic Volumes

trips to one or more of the study intersections. Vehicle trips from each of the approved projects were obtained from the TRAFFIX file provided by the Town of Los Gatos or from the project's traffic impact study. The estimated trips were assigned to the study intersections according to the distributions and assignments identified in the Town's TRAFFIX file or the relevant traffic studies. Background traffic volumes are shown graphically on Figure 16.

Intersection Levels of Service Under Background Conditions

The results of the intersection level of service analysis under background conditions are shown in Table 7. The results show that both signalized intersections would operate at an acceptable level of service (LOS D or better) during both the AM and PM peak hours of traffic under background conditions.

For the unsignalized intersection, the level of service for the worst approach (left turns from Massol Avenue onto westbound SR 9) is projected to be LOS F under background conditions in both the AM and PM peak hours. The level of service for the westbound left turn movement would operate at LOS A and LOS C in the AM and PM peak hours, respectively, under background conditions. However, because Los Gatos does not have a level of service standard or significant impact criteria for unsignalized intersections, these results are shown for information purposes only.

The intersection level of service calculation sheets are included in Appendix D.

Table 7
Background Intersection Levels of Service

| Study Number | Intersection | Peak Hour | Existing | | Background | |
|--------------|---|-----------|---------------------|-----|---------------------|-----|
| | | | Average Delay (sec) | LOS | Average Delay (sec) | LOS |
| 1 | Massol Ave and Los Gatos-Saratoga Rd ** | AM | >120 | F | >120 | F |
| | | | 8.8 | A | 8.9 | A |
| | | PM | >120 | F | >120 | F |
| | | | 14.4 | B | 15.0 | C |
| 2 | Santa Cruz Ave and Los Gatos-Saratoga Rd.* | AM | 41.5 | D | 42.0 | D |
| | | PM | 48.3 | D | 48.6 | D |
| 3 | University Ave. and Los Gatos-Saratoga Rd.* | AM | 33.7 | C | 33.7 | C |
| | | PM | 39.7 | D | 39.7 | D |

Notes:

* Denotes a CMP intersection

** For the unsignalized intersection, the level of service for the worst approach (left turns from Massol) is shown first. Exact amount of delay not shown because delay exceeds calculation parameters. Delay and level of service for the westbound left-turn movement are shown second.

BOLD indicates a substandard level of service

5. Background Plus Project Conditions

This chapter describes near-term traffic conditions that most likely would occur when the project is complete. Background plus project conditions were evaluated relative to background conditions in order to determine potential project impacts. This traffic scenario represents a more congested traffic condition than the existing plus project scenario, since it includes traffic generated by approved but not yet built projects in the area.

Transportation Network Under Background Plus Project Conditions

It is assumed in this analysis that the transportation network under background plus project conditions would be the same as the existing transportation network.

Background Plus Project Traffic Volumes

The net peak hour trips generated by the project were added to background traffic volumes to obtain background plus project traffic volumes (see Figure 17). The net project trips generated by the project option that would generate the greatest number of trips and the trip distribution patterns used to assign those trips to the roadway system were discussed in Chapter 3. Traffic volumes for all components of traffic are tabulated in Appendix C.

Intersection LOS Under Background Plus Project Conditions

The results of the intersection level of service analysis under background plus project conditions show that, measured against the Town of Los Gatos and CMP level of service standards, both signalized intersections would continue to operate at an acceptable level of service (LOS D or better) during both the AM and PM peak hours of traffic (see Table 8). Therefore, under background plus project conditions, neither of the signalized intersections would be significantly impacted by the project.

For the unsignalized intersection, the level of service for the worst approach (left turns from Massol Avenue onto westbound SR 9) are shown. The level of service for that turning movement would continue to be LOS F under background plus project conditions in both the AM and PM peak hours. The project is not projected to add any trips to the left-turn movement from Massol Avenue onto westbound SR 9. However, because the project would add trips to Los Gatos-Saratoga Road, the delay for that turning movement would increase with the project.

Table 8 also presents the delay estimated for the westbound left turn movement at the intersection of Massol Avenue and Los Gatos-Saratoga Road. The westbound left turn movement is uncontrolled, but vehicles must wait for a gap in eastbound traffic in order to turn left. The westbound left-turn movement would operate at LOS A and LOS C in the AM and PM peak hours, respectively, under background plus project conditions.

Because Los Gatos does not have a level of service standard or significant impact criteria for unsignalized intersections, these results are shown for information purposes only.

The intersection level of service calculation sheets are included in Appendix D.

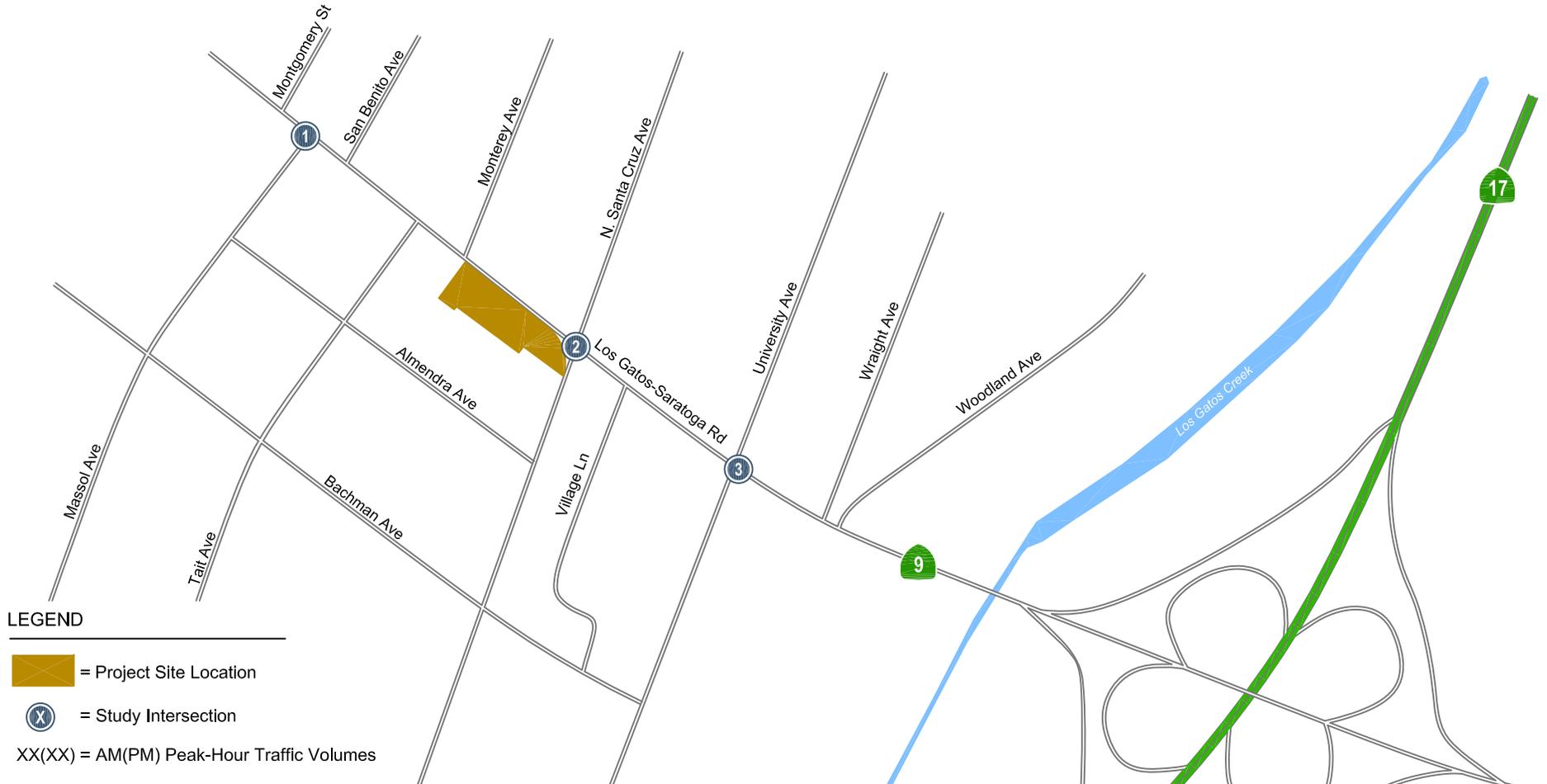
Table 8
Background Plus Project Intersection Levels of Service

| Study Number | Intersection | Peak Hour | Background | | Background + Project | | Change in Critical Delay (sec) | Change in Critical V/C |
|--------------|---|-----------|---------------------|----------|----------------------|----------|--------------------------------|------------------------|
| | | | Average Delay (sec) | LOS | Average Delay (sec) | LOS | | |
| 1 | Massol Ave and Los Gatos-Saratoga Rd ** | AM | >120 | F | >120 | F | - | - |
| | | | 8.9 | A | 9.0 | A | - | - |
| | | PM | >120 | F | >120 | F | - | - |
| | | | 15.0 | C | 15.0 | C | - | - |
| 2 | Santa Cruz Ave and Los Gatos-Saratoga Rd.* | AM | 42.0 | D | 42.5 | D | 0.6 | 0.009 |
| | | PM | 48.6 | D | 48.8 | D | 0.5 | 0.013 |
| 3 | University Ave. and Los Gatos-Saratoga Rd.* | AM | 33.7 | C | 34.3 | C | 1.0 | 0.013 |
| | | PM | 39.7 | D | 39.9 | D | -0.1 | 0.001 |

Notes:
 * Denotes a CMP intersection
 ** For the unsignalized intersection, the level of service for the worst approach (left turns from Massol) is shown first. Exact amount of delay not shown because delay exceeds calculation parameters. Delay and level of service for the westbound left-turn movement are shown second.
BOLD indicates a substandard level of service

Even though the project would not have a significant impact on the study intersections, it would be required to pay a Traffic Impact Fee, as does all new development in the Town of Los Gatos, if it generates more daily trips than the existing uses on the site. The Town's Traffic Impact Fee is unrelated to whether or not a project has any impacts under CEQA, and is required of all new development projects that generate additional trips on the Town's roadway network. The Traffic Impact Fee would therefore apply if the project option selected generates more daily trips than the existing uses, based on the ITE daily trip generation rates. The current fee is \$879 per new average daily trip generated. The purpose of the fee is to help fund transportation projects that are needed to accommodate vehicle trip growth. Among the projects that will be funded with Traffic Impact Fees are three that are on SR 9, near the project site:

- Intersection Improvements at SR 9 and N. Santa Cruz Avenue;
- SR 9 -Los Gatos Creek Trail connector – New path and bridge for bikes and pedestrians;
- Complete Street Improvements – SR 9 from University Avenue to Los Gatos Blvd.



LEGEND

-  = Project Site Location
-  = Study Intersection
- XX(X) = AM(PM) Peak-Hour Traffic Volumes

| 1 | 2 | 3 |
|---|--|--|
| <p>Los Gatos-Saratoga Rd</p> <p>← 1540(650)</p> <p>← 114(168)</p> <hr/> <p>540(1246) →</p> <p>25(82) ↓</p> <p>53(14) →</p> <p>203(134) →</p> <p>Massol Av</p> | <p>Los Gatos-Saratoga Rd</p> <p>← 402(208)</p> <p>← 212(312)</p> <p>← 138(196)</p> <p>← 140(137)</p> <p>← 992(388)</p> <p>← 136(200)</p> <hr/> <p>224(342) →</p> <p>551(943) →</p> <p>79(207) ↓</p> <p>125(130) →</p> <p>191(208) →</p> <p>52(141) →</p> <p>N. Santa Cruz Av</p> | <p>Los Gatos-Saratoga Rd</p> <p>← 38(36)</p> <p>← 152(164)</p> <p>← 166(255)</p> <p>← 177(135)</p> <p>← 1190(608)</p> <p>← 237(244)</p> <hr/> <p>81(70) →</p> <p>643(1138) →</p> <p>65(101) ↓</p> <p>68(73) →</p> <p>180(127) →</p> <p>198(305) →</p> <p>University Av</p> |

Figure 17
Background Plus Project Traffic Volumes

6. Cumulative Conditions

This chapter describes cumulative traffic conditions both with and without the proposed project. Cumulative conditions reflect the traffic conditions that are projected to occur in the future if all of the development projects that have been proposed in the study area were constructed and occupied. Cumulative traffic volumes reflect traffic generated by the approved development projects (as included in the Background scenario) and other proposed but not yet approved (pending) development projects. This chapter describes the procedure used to determine cumulative traffic volumes and the resulting traffic conditions, as well as the cumulative plus project conditions.

Roadway Network

It is assumed in this analysis that the transportation network under cumulative conditions would be the same as that described under existing conditions.

Pending Developments

Pending developments are those that have been proposed to local agencies but have not been approved. The following pending project list was obtained from the Town of Los Gatos and is listed below in its entirety and included in Appendix B.

1. Housing Element Affordable Housing Overlay Zone (AHOZ): Residential projects at 4 locations
2. 401 Alberto Way: Replace 30,000 s.f. office with 93,500 s.f. office complex
3. Dell Avenue Area Plan (Campbell): Add approx. 3 million s.f. office
4. 16845 Hicks Road: Increase square footage of existing church
5. 16151 Los Gatos Boulevard: Add 1,097 s.f. to auto dealer
6. 15600 and 15650 Los Gatos Blvd: Demolish auto dealership and build commercial buildings
7. 15380 Los Gatos Blvd: Replace convenience store at existing gas station with larger one
8. 16212 Los Gatos Blvd: Construct 11 single-family homes
9. 15500 Los Gatos Blvd: Buick site redevelopment
10. 101 Newall Ave: Demolish lodge and construct 4 single-family homes
11. Samaritan Drive: Net increase of 365,000 s.f. medical office (475,000 s.f. total)
12. 15215 Shannon Rd: 5-lot subdivision on vacant lot
13. Twin Oaks Drive: Construct 10 single-family homes
14. 15975 Union Ave: 3-home subdivision with net increase of 2 homes
15. 258 Union Avenue: Construct 7 single-family homes on vacant lot
16. 15860 Winchester: Demolish 4 homes and construct 30,680 s.f. office

Based on a review of traffic studies prepared for these projects, a recent TRAFFIX file provided by the Town of Los Gatos, the types and sizes of these developments, and their distances from the project site, Hexagon determined which of these pending projects would add traffic to at least one of the study intersections during at least one of the peak hour periods.

Cumulative (No Project) Traffic Volumes

Cumulative peak hour traffic volumes were calculated by adding to background volumes the estimated traffic from the pending developments that were projected to add trips to one or more of the study intersections. Vehicle trips for each of the pending projects were obtained from the TRAFFIX file provided by the Town of Los Gatos or from the project's traffic impact study. The estimated trips were assigned to the study intersections according to the distributions and assignments identified in the Town's TRAFFIX file or the relevant traffic studies. Cumulative traffic volumes are shown graphically on Figure 18.

Cumulative (No Project) Intersection Levels of Service

The results of the intersection level of service analysis under cumulative conditions without the proposed project are summarized in Table 9. The level of service calculation sheets are included in Appendix D. Under cumulative conditions, the intersection of Santa Cruz Avenue and Los Gatos-Saratoga Road would operate at LOS D during both the AM and PM peak hours. The intersection of University Avenue and Los Gatos-Saratoga Road would operate at LOS C during the AM peak hour and at LOS D during the PM peak hour.

Table 9
Intersection Levels of Service Under Cumulative Conditions, With and Without the Project

| Study Number | Intersection | Peak Hour | Cumulative | | Cumulative + Project | | Change in Critical Delay (sec) | Change in Critical V/C |
|--------------|---|-----------|---------------------|-----|----------------------|-----|--------------------------------|------------------------|
| | | | Average Delay (sec) | LOS | Average Delay (sec) | LOS | | |
| 1 | Massol Ave and Los Gatos-Saratoga Rd ** | AM | >120 | F | >120 | F | - | - |
| | | | 9.1 | A | 9.1 | A | - | - |
| | | PM | >120 | F | >120 | F | - | - |
| | | | 15.0 | C | 15.1 | C | - | - |
| 2 | Santa Cruz Ave and Los Gatos-Saratoga Rd.* | AM | 43.7 | D | 44.2 | D | 0.6 | 0.009 |
| | | PM | 50.0 | D | 50.3 | D | 0.6 | 0.013 |
| 3 | University Ave. and Los Gatos-Saratoga Rd.* | AM | 33.6 | C | 34.2 | C | 1.0 | 0.013 |
| | | PM | 39.6 | D | 39.8 | D | -0.1 | 0.001 |

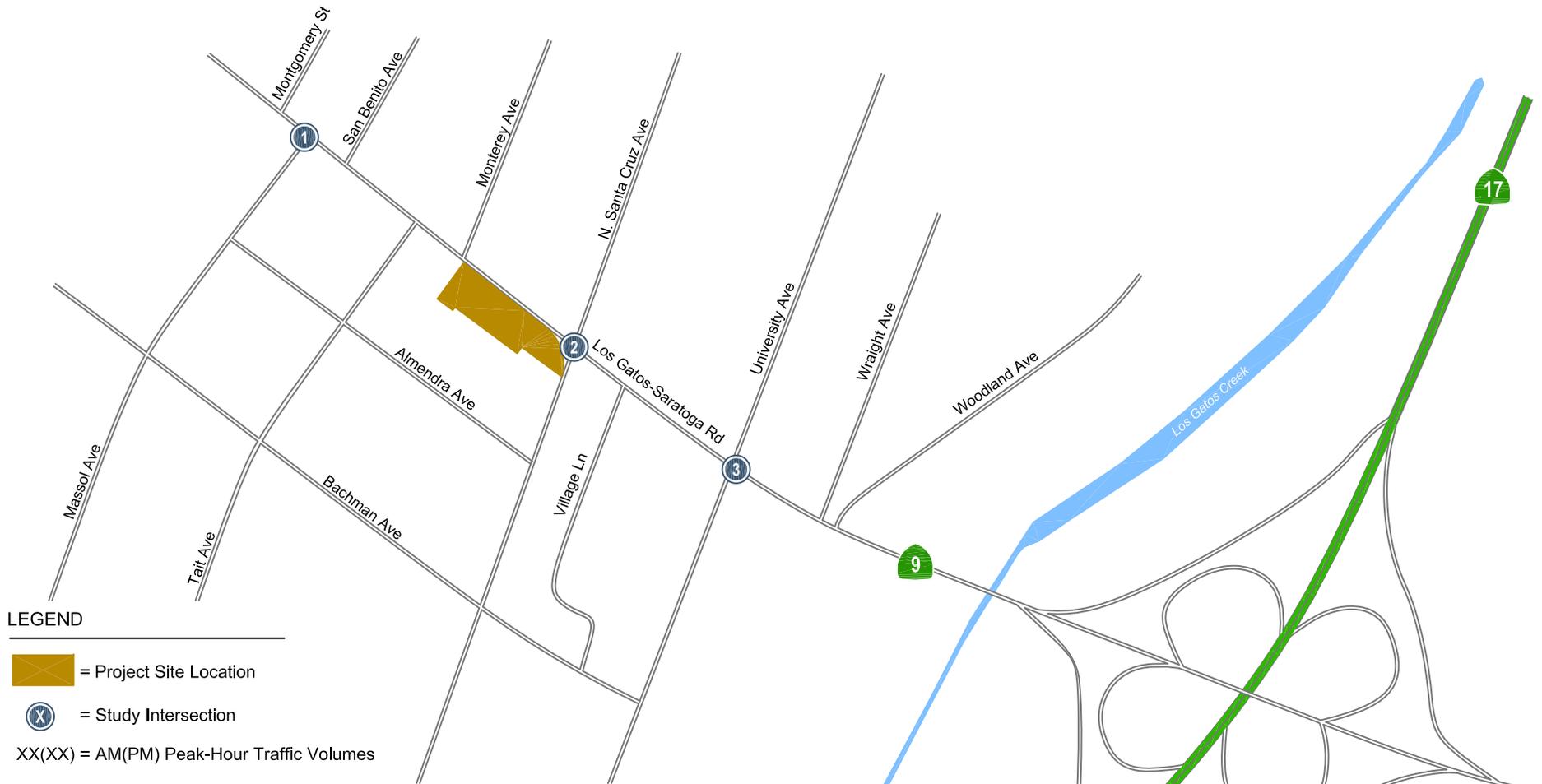
Notes:
 * Denotes a CMP intersection
 ** For the unsignalized intersection, the level of service for the worst approach (left turns from Massol) is shown first. Exact amount of delay not shown because delay exceeds calculation parameters. The delay and level of service for the westbound left-turn movement are shown second.
BOLD indicates a substandard level of service

Cumulative Plus Project Traffic Volumes

The net peak hour trips generated by the project were added to cumulative traffic volumes to obtain cumulative plus project traffic volumes (see Figure 19). The net project trips generated by the project and the trip distribution patterns used to assign them to the roadway system were discussed in Chapter 3. Traffic volumes for all components of traffic are tabulated in Appendix C.

Intersection LOS Under Cumulative Plus Project Conditions

The results of the intersection level of service analysis under cumulative plus project conditions show that, measured against the Town of Los Gatos and CMP level of service standards, both signalized intersections would continue to operate at an acceptable level of service (LOS D or better) during both the AM and PM peak hours of traffic (see Table 9). Therefore, under cumulative plus project conditions, neither of the signalized intersections would be significantly impacted by the project.

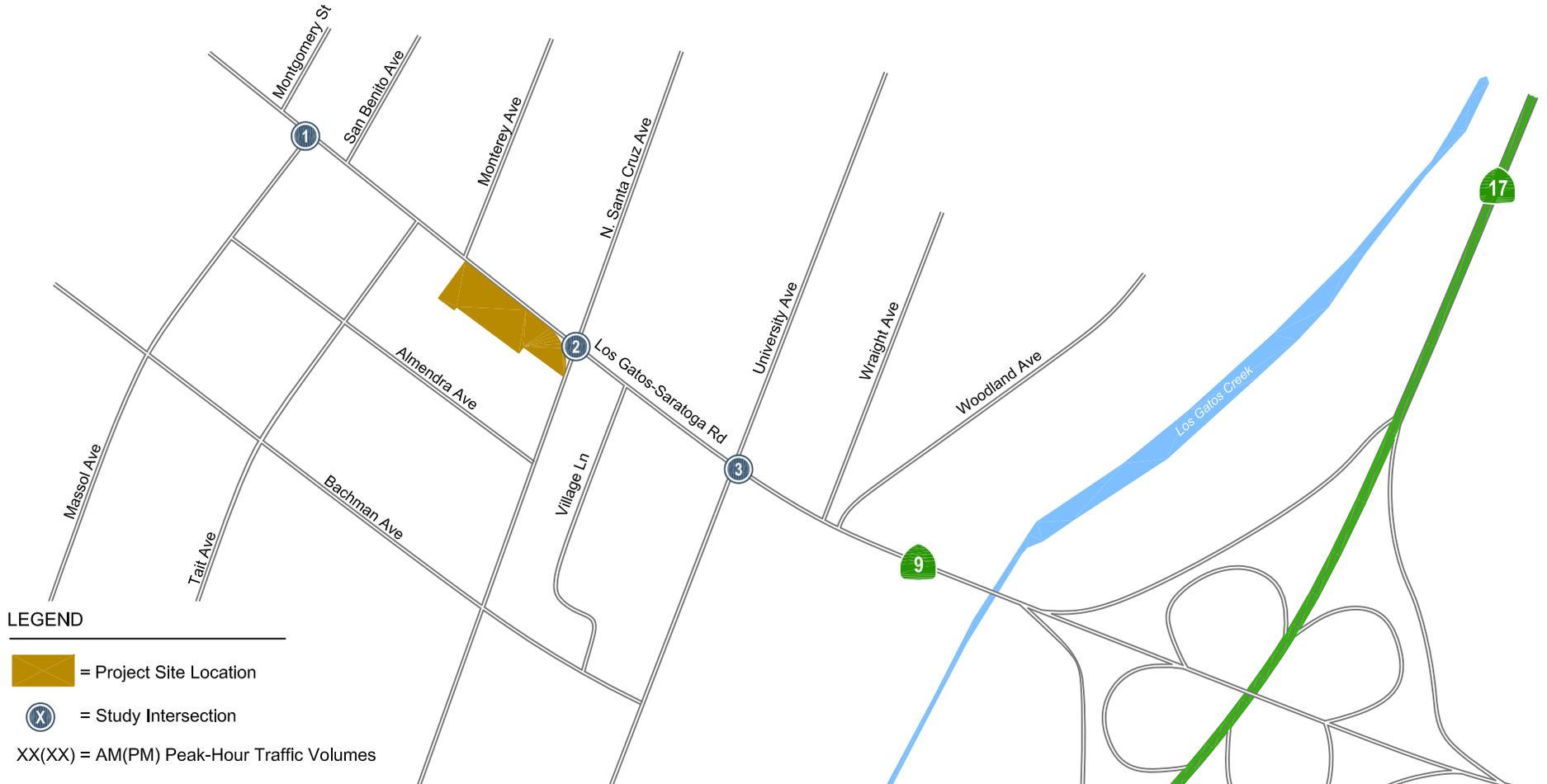


LEGEND

-  = Project Site Location
-  = Study Intersection
- XX(X) = AM(PM) Peak-Hour Traffic Volumes

| 1 | 2 | 3 |
|---|--|---|
| <p>Los Gatos-Saratoga Rd</p> <p>← 1560(699)</p> <p>← 114(168)</p> <hr/> <p>563(1246) →</p> <p>25(82) ↓</p> <p>53(14) →</p> <p>203(134) →</p> <p>Massol Av</p> | <p>Los Gatos-Saratoga Rd</p> <p>← 406(239)</p> <p>← 227(359)</p> <p>← 144(210)</p> <p>← 151(142)</p> <p>← 994(407)</p> <p>← 130(206)</p> <hr/> <p>241(347) →</p> <p>559(923) →</p> <p>76(193) ↓</p> <p>125(125) →</p> <p>234(238) →</p> <p>57(150) →</p> <p>N. Santa Cruz Av</p> | <p>Los Gatos-Saratoga Rd</p> <p>← 33(33)</p> <p>← 147(161)</p> <p>← 170(262)</p> <p>← 182(137)</p> <p>← 1202(645)</p> <p>← 228(247)</p> <hr/> <p>76(63) →</p> <p>667(1152) →</p> <p>65(96) ↓</p> <p>68(68) →</p> <p>180(127) →</p> <p>201(305) →</p> <p>University Av</p> |

Figure 18
Cumulative No Project Traffic Volumes



LEGEND

-  = Project Site Location
-  = Study Intersection
- XX(X) = AM(PM) Peak-Hour Traffic Volumes

| 1 | 2 | 3 |
|---|--|--|
| <p>Los Gatos-Saratoga Rd</p> <p>← 1567(706)</p> <p>↙ 114(168)</p> <hr/> <p>574(1250) →</p> <p>25(82) ↘</p> <p>Massol Av</p> <p>53(14) →</p> <p>203(134) →</p> | <p>Los Gatos-Saratoga Rd</p> <p>↖ 406(239)</p> <p>↙ 239(366)</p> <p>↘ 144(210)</p> <p>↗ 151(145)</p> <p>↖ 994(409)</p> <p>↘ 144(207)</p> <hr/> <p>255(347) →</p> <p>575(942) →</p> <p>79(207) ↘</p> <p>N. Santa Cruz Av</p> <p>125(130) →</p> <p>234(244) →</p> <p>57(150) →</p> | <p>Los Gatos-Saratoga Rd</p> <p>↖ 38(36)</p> <p>↙ 152(164)</p> <p>↘ 170(262)</p> <p>↗ 182(137)</p> <p>↖ 1211(644)</p> <p>↘ 237(246)</p> <hr/> <p>81(70) →</p> <p>677(1159) →</p> <p>65(101) ↘</p> <p>University Av</p> <p>68(73) →</p> <p>180(127) →</p> <p>201(305) →</p> |

Figure 19
Cumulative Plus Project Traffic Volumes

For the unsignalized intersection, the level of service for the worst approach (left turns from Massol Avenue onto westbound SR 9) would continue to be LOS F under cumulative plus project conditions. The project is not projected to add any trips to the left-turn movement from Massol Avenue onto westbound SR 9. However, because the project would add trips to Los Gatos-Saratoga Road, the delay for that turning movement would increase with the project.

Table 9 also presents the delay estimated for the westbound left turn movement at the intersection of Massol Avenue and Los Gatos-Saratoga Road. The westbound left turn movement is uncontrolled, but vehicles must wait for a gap in eastbound traffic in order to turn left. The westbound left-turn movement would operate at LOS A and LOS C in the AM and PM peak hours, respectively, under cumulative plus project conditions.

Because Los Gatos does not have a level of service standard or significant impact criteria for unsignalized intersections, this result is shown for information purposes only.

The intersection level of service calculation sheets are included in Appendix D.

Even though the project would not have a significant impact on the study intersections, it would be required to pay a Traffic Impact Fee, as does all new development in the Town of Los Gatos, if it generates more daily trips than the existing uses on the site. The Town's Traffic Impact Fee is unrelated to whether or not a project has any impacts under CEQA, and is required of all new development projects that generate additional trips on the Town's roadway network. The Traffic Impact Fee would therefore apply if the project option selected generates more daily trips than the existing uses, based on the ITE daily trip generation rate. The current fee is \$879 per new average daily trip generated. The purpose of the fee is to help fund transportation projects that are needed to accommodate vehicle trip growth. Among the projects that will be funded with Traffic Impact Fees are three that are on SR 9, near the project site:

- Intersection Improvements at SR 9 and N. Santa Cruz Avenue;
- SR 9 - Los Gatos Creek Trail connector – New path and bridge for bikes and pedestrians;
- Complete Street Improvements – SR 9 from University Avenue to Los Gatos Blvd.

7. Other Transportation Issues

This chapter presents an analysis of other transportation issues associated with the project, including:

- Modifications at the N. Santa Cruz Avenue and Los Gatos-Saratoga Road intersection
- Site access and on-site circulation
- Modifications to Massol Avenue to permit U-turns from westbound SR 9
- Queuing analysis at selected intersections
- Parking analysis
- Potential project impacts to transit, bicycle, and pedestrian facilities

Unlike the level of service impact methodology, which is adopted by the Town Council, the analyses in this chapter are based on professional judgment in accordance with the standards and methods employed by the traffic engineering community.

Modifications at N. Santa Cruz Avenue Intersection

The Town of Los Gatos plans to make modifications to the intersection of Los Gatos-Saratoga Road (SR 9) and N. Santa Cruz Avenue. Figure 20 presents a conceptual drawing of these planned improvements. The Town proposes elimination of the existing pork chop islands and “squaring off” three of the corners, which would enhance pedestrian safety. Reducing the radius of the curves on the corners would require drivers to slow down more when making a right turn, which would provide more opportunity for them to see pedestrians in the crosswalk. ADA-compliant ramps would also be added at each of the four corners.

The Town also proposes to add two additional lanes to the eastbound intersection approach: a right-turn lane and a second left-turn lane. The eastbound right-turn lane would be directly adjacent to the project site. As shown on Figure 20, a narrow strip of right-of-way would be taken from the project site in order to widen the roadway sufficiently to add two additional eastbound lanes to this intersection approach. A preliminary check of the Town’s conceptual drawing of the modifications indicates that the right-of-way that would be taken would not include the footprint of the proposed corner building. We recommend, however, that the applicant’s architect work with the Town to ensure that the building does not encroach into the necessary right-of-way for the roadway widening.

In order to make room for two additional lanes, the median on the west approach would be narrowed and moved so that the eastbound lanes could be shifted north slightly. Modifications would also be needed to the median on the east approach so that the receiving lanes would line up properly.

The project’s site plan appears to be compatible with these improvements, as shown on Figure 20, although we recommend that the project architect confirm this point. The project would pay a fair share towards the cost of these intersection improvements through the Town’s Traffic Impact Fee.

Site Access and Circulation

The site access and circulation evaluation is based on the site plan dated July 12, 2016, prepared by Kenneth Rodrigues & Partners, Inc. (see Figure 3). This site plan applies to all of the potential land use options proposed for the site. On-site vehicular circulation was reviewed in accordance with generally accepted traffic engineering standards.

Project Driveway

Vehicular access to the project site would be provided via a single driveway on Los Gatos-Saratoga Road. Due to the median on Los Gatos-Saratoga Road, access to the driveway would be possible only from eastbound Los Gatos-Saratoga Road, and the driveway would be right-turn-in and right-turn-out only.

The driveway would serve both inbound and outbound trips for both buildings. The total (gross) number of trips that would enter and exit the site at the driveway is shown in Figure 21. As shown on the site plan (Figure 3), the driveway would provide access to a surface parking lot between the two buildings, the ramp leading to and from a below-grade parking garage, the project's trash and recycling enclosure, and three parking stalls for an adjacent property.

The proposed driveway would be in approximately the same location as one of the existing driveways that now serves the site. From a traffic operations standpoint, it would be preferable to place the driveway farther from the Santa Cruz Avenue intersection in order to provide a greater distance for outbound drivers to enter a traffic lane before reaching the intersection. However, because an adjacent parcel has requested access to the rear of their property, it is not feasible to place the driveway on the other end of the project site. Providing access to the adjacent property's three parking spaces (see Figure 3) represents a significant design constraint for the site plan.

As discussed in Chapter 3 regarding the project trip assignment, the proximity of the driveway to the intersection at Santa Cruz Avenue would make it extremely difficult for drivers exiting the site to access the left-turn lane during the PM peak period when eastbound traffic volumes are high. Because the queue in the left-turn pocket extended past the point where the driveway intersects SR 9 during much of the PM peak hour, drivers would not be able to enter the left-turn queue. As noted in the field observations in Chapter 2, however, no operational problems were noted with the existing driveway. Out of 30 drivers exiting the site from the existing driveway, no one was observed to attempt to access the left-turn lane during the PM peak hour. Most vehicles entered the right-turn lane and turned right onto Santa Cruz Avenue, and all but one of the others entered the through lane closest to the curb. One vehicle entered the through lane further from the curb immediately after the signal had cleared the through lanes. Thus, during the PM peak hour, drivers leaving the site would only be able to turn right or go straight through the intersection. Earlier in the day, when eastbound traffic volumes are not as great, drivers would be able to wait for gaps in eastbound traffic in order to access the left-turn lane.

Project Access

Because of the median on Los Gatos-Saratoga Road, the key access issue for the project site relates to site access for vehicles on westbound Los Gatos-Saratoga Road. The median extends from N. Santa Cruz Avenue to Massol Avenue. However, because of the presence of a pork chop island on Massol Avenue, it is not currently possible to make a U-turn from westbound Los Gatos-Saratoga Road at Massol Avenue. Furthermore, there are no other opportunities for a U-turn further west. Thus, vehicles traveling west on Los Gatos-Saratoga Road past the project site have no opportunity under existing conditions to make a U-turn in order to enter the site.

Thus, as explained in the trip assignment discussion in Chapter 3, under current conditions, the most direct route for a vehicle coming from east of the project site to enter the project's driveway would be to turn left from westbound Los Gatos-Saratoga Road onto southbound N. Santa Cruz Avenue, turn right on Almendra Avenue, turn right on Tait Avenue, and then turn right on Los Gatos-Saratoga Road (see Figure 13). Similarly, vehicles approaching the site from the north on N. Santa Cruz Avenue would likely proceed straight through the intersection at SR 9, and then follow the same "around



- LEGEND**
- = Project Site Location
 - X = Study Intersection
 - XX(X) = AM(PM) Peak-Hour Trips
 - = Project Driveway

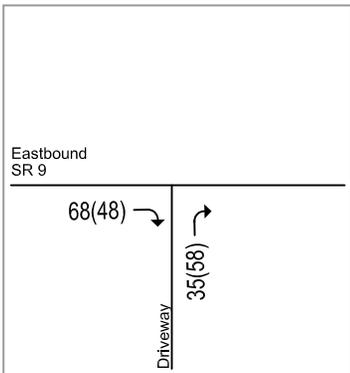


Figure 21
Total Project Trips at Project Driveways

the block” route on Almendra Avenue, Tait Avenue, and then eastbound SR 9. Clearly, many other routes are possible to approach the site from westbound SR 9, including using the residential streets of Bachmann Avenue and Massol Avenue, and the trip assignment for this study assumes that some drivers would prefer to avoid the signal at Santa Cruz Avenue by taking University Avenue and Bachman Avenue to access the site.

Since the existing buildings on the site have the same access issue, we estimate that the project would result in approximately 45 additional trips using the nearby residential streets during the AM peak hour. During the PM peak hour, we estimate an additional 11 trips going around the block to enter the site. Based on our field observations, Almendra, Bachman, and Tait Avenues have ample capacity to accommodate those additional around the block trips, and there would be no operational problems due to those trips.

Allowing U-Turns at Massol Avenue

The advantage of facilitating a U-turn at Massol Avenue is that it would provide an access route to the project site for those inbound vehicles without entering the residential neighborhood on Almendra, Bachman, or Tait Avenues. (Note that vehicles coming from downtown Los Gatos and heading northbound on Santa Cruz Avenue would likely turn left on Bachmann Avenue or Almendra Avenue before reaching SR 9, and the option of making a U-turn at Massol Avenue would not change their route.)

As noted previously, the 3-legged intersection of Los Gatos-Saratoga Road and Massol Avenue is a one-way stop controlled intersection; traffic on Los Gatos-Saratoga Road is uncontrolled. An important feature of this intersection is that Los Gatos-Saratoga Road has a single eastbound lane west of Massol Avenue (i.e., at the west approach), and a second eastbound lane is added east of the Massol Avenue intersection. Thus, vehicles turning right from Massol Avenue have direct access to that additional lane after proceeding past the pork chop island, and do not need to wait for gaps in eastbound traffic in order to turn right onto Los Gatos-Saratoga Avenue. The pork chop island serves to protect the additional eastbound lane on SR 9 from eastbound through traffic on SR 9, so that right turns from Massol Avenue do not need to wait for a gap in eastbound traffic.

As shown on Figure 22, it would be possible to move the pork chop island on Massol Avenue so that U-turns could be made from westbound SR 9. By moving the pork chop island westward, so that it is as close as possible to the right side of the Massol Avenue left-turn lane, vehicles would have enough space to make a U-turn from westbound SR 9. A portion of the median on SR 9 (the tip of the median next to the westbound left-turn pocket) would also need to be removed so that vehicles could begin their turning movement from the pocket earlier. The crosswalk and lane striping would also need to be repainted to correspond to the new location of the pork chop island. In addition, a sign should be posted to require vehicles turning right from Massol Avenue onto eastbound SR 9 to yield to vehicles making U-turns from westbound SR 9. With these changes, all vehicles except large trucks (i.e, semi-trailers with three or more axles) would be able to make the U-turn from westbound SR 9 to eastbound SR 9.

By making this change at Massol Avenue, vehicles going to the project site would be able to make a U-turn to reach the project’s driveway and would not need to use either of the around the block routes described above (on N. Santa Cruz Avenue, Almendra Avenue, and Tait Avenue or on University Avenue, Bachman Avenue, and Tait Avenue) and shown on Figure 13.

Hexagon evaluated the level of service for the westbound left-turn movement on SR 9, with and without U-turns. The delay and level of service for that movement with the existing lane geometry (no U-turns allowed) is shown in Table 10 and summarizes the findings for that movement, as presented in the previous level of service tables in this report. To analyze the effect of allowing U-turns, it was assumed that both project trips and non-project-related trips would make U-turns if it were possible to do so. Hexagon doubled the gross number of project trips that would make the U-turn in order to estimate the number of non-project-related trips that would also make the U-turn. The existing, background, and cumulative “no project” scenarios assume that trips from the existing uses on the site and non-project-related trips would make the U-turn if it were allowed.

Table 10 shows the delay and level of service for all operating scenarios when the U-turns are added to the left-turn volume for westbound Los Gatos-Saratoga Road at Massol Avenue. The level of service evaluation

indicates that if U-turns were permitted, this movement would operate at LOS A in the AM peak hour and LOS C in the PM peak hour under all operating scenarios.⁴

Table 10
Level of Service for Westbound Left Turn Movement at Massol Avenue With and Without U-Turns

| Scenario | Peak Hour | WBL Without U-Turns | | WBL With U-Turns | |
|-----------------------------------|-----------|----------------------|-----|----------------------|-----|
| | | Avg. Delay (sec/veh) | LOS | Avg. Delay (sec/veh) | LOS |
| Existing ¹ | AM | 8.8 | A | 9.0 | A |
| | PM | 14.4 | B | 16.1 | C |
| Existing + Project ² | AM | 8.8 | A | 9.3 | A |
| | PM | 14.5 | B | 16.5 | C |
| Background ¹ | AM | 8.9 | A | 9.2 | A |
| | PM | 15.0 | C | 16.8 | C |
| Background + Project ² | AM | 9.0 | A | 9.5 | A |
| | PM | 15.0 | C | 17.2 | C |
| Cumulative ¹ | AM | 9.1 | A | 9.4 | A |
| | PM | 15.0 | C | 16.8 | C |
| Cumulative + Project ² | AM | 9.1 | A | 9.6 | A |
| | PM | 15.1 | C | 17.3 | C |

Notes:

¹ It is assumed that if U-turns were allowed under "No Project" scenarios, trips from the existing uses on the site and non-project-related trips would make U-turns.

² It is assumed that if U-turns were allowed under "Plus Project" scenarios, project trips and non-project-related trips would make U-turns.

As described in Chapter 2, Hexagon's field observations and the traffic counts indicate that such a U-turn would not be difficult during the morning, mid-day, and late evening hours, and most drivers coming southbound on Santa Cruz Avenue or westbound on SR 9 would choose a route that includes such a U-turn to access the site, except during the PM peak hour. During the PM peak hour, there is very heavy traffic in the eastbound direction, making left turns from westbound Los Gatos-Saratoga Road onto Massol Avenue difficult.⁵ Since there are no signals west of Massol Avenue, the eastbound traffic approaches the intersection in a steady continuous flow, rather than in platoons. Since a U-turn requires more time and a longer gap in traffic than a left turn, U-turns would be more difficult during the portions of the PM commute period with the heaviest eastbound traffic. Based on our field observations, many left turns onto Massol Avenue during the PM peak hour are currently facilitated by eastbound drivers who slow down to allow a driver to turn left in front of them. As discussed further below, however, the Town may wish to limit U-turns during the PM peak period if U-turns cause operational issues when the eastbound traffic flow is heavy.

⁴ Hexagon conducted this evaluation using both the TRAFFIX and Synchro 9 software packages, which yielded the same level of service results. Both software packages treat U-turns as additional left turns and do not account for the fact that U-turns take longer than left turns to complete. Therefore, the average seconds of delay presented in Table 10 understates the delay that would actually occur if U-turns were allowed.

⁵ The intersection counts conducted in March 2016 document that traffic flows are far heavier in the eastbound direction in the evening than in the morning. Eastbound thru volume on SR 9 at Massol was 492 vehicles in the AM peak hour and 1,200 vehicles in the PM peak hour.

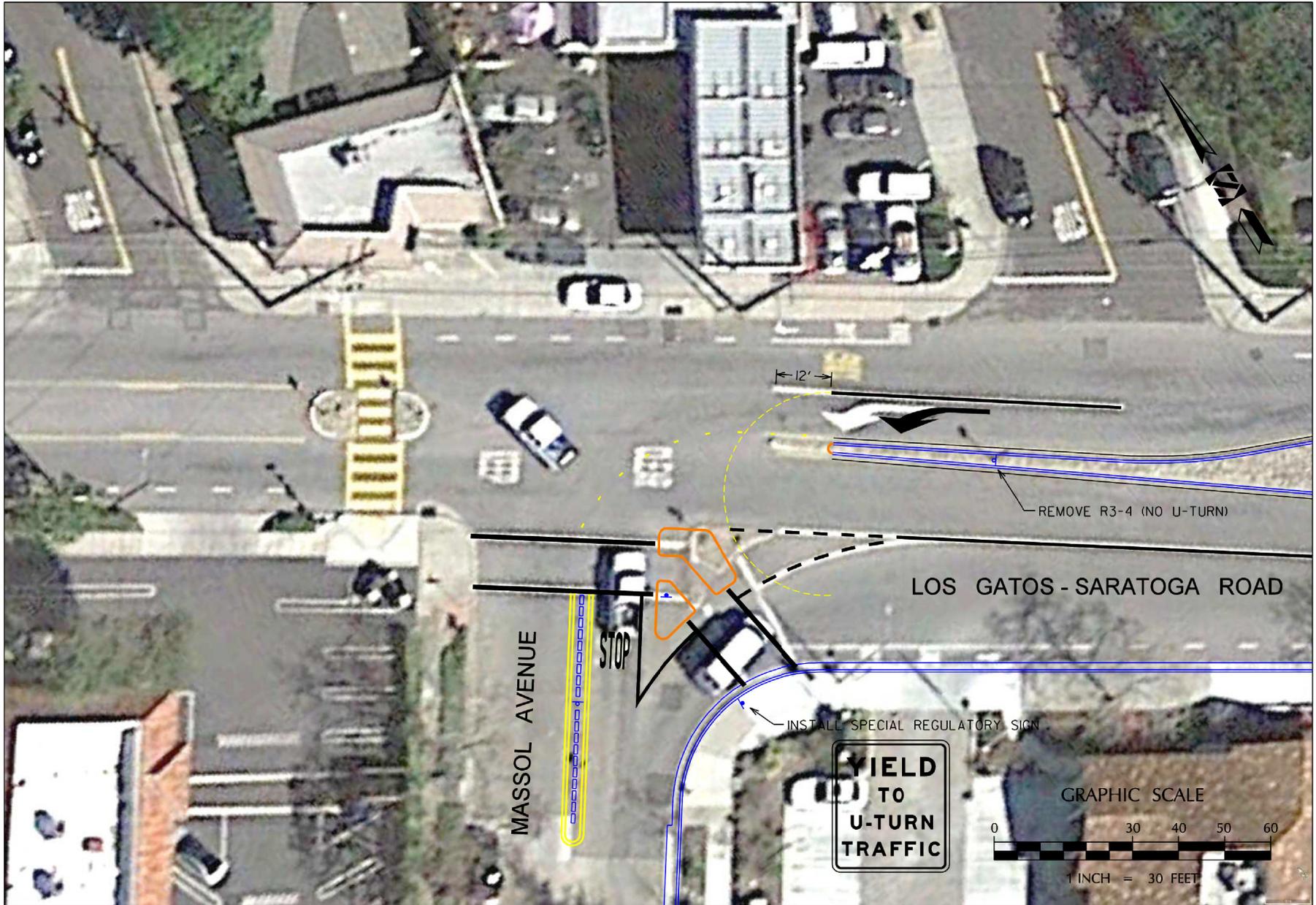


Figure 22
Massol Avenue Modification

Traffic Signal Check at Massol Avenue

One way to address the difficulty of left turns and U-turns during the PM peak hour would be to install a signal at this intersection and provide a protected left turn phase for the westbound SR 9 left turn lane. A signal would also benefit drivers wishing to turn left from Massol Avenue onto westbound SR 9. Hexagon conducted a signal warrant check for this intersection under background plus project conditions, but the traffic volume and pedestrian volume on Massol Avenue are not sufficient to meet the peak hour volume warrant for a traffic signal.

The delay for left turns from Massol Avenue onto westbound SR 9 were calculated by TRAFFIX to be over two minutes in both the AM and PM peak hours under existing conditions. Because left turns from Massol Avenue require a gap in both directions of traffic on SR 9, this result is consistent with Hexagon's field observations in both the AM and PM peak hours. During both time periods, Hexagon observed a vehicle give up on making a left turn onto westbound SR 9, back up, and make a right turn instead. Hexagon also observed vehicles pull out to begin their left turn from Massol Avenue during a gap in eastbound traffic, and then wait in the intersection for a small gap in the westbound direction.

However, despite the very long delays for drivers wishing to make a left turn from Massol Avenue onto westbound SR 9 during AM and PM peak hours, Hexagon does not recommend a signal at this intersection, due to the low northbound left-turn volume. Right turns from Massol Avenue were excluded from the signal warrant volume because they currently experience no delay when making their turn. Although it may be theoretically possible for a right-turning vehicle to experience delay because of an extremely long queue of left-turning vehicles and the presence of parked vehicles on Massol Avenue, Hexagon did not observe this to occur during any of our field observations. Even though Massol Avenue has only one northbound lane, the roadway is wide enough near the intersection for vehicles wishing to make a right turn to pass a short queue of vehicles waiting to make a left turn. Therefore, the right-turning volumes were not included in the signal warrant check.

Adding a signal at this location would also create the potential for spillback issues between Santa Cruz Avenue and Massol Avenue during times of high traffic volumes. Because it is important to traffic flow on SR 9 that the signals at University Avenue and Santa Cruz Avenue be well coordinated to avoid spillback issues, adding a third signal in close proximity is not recommended. In addition, adding a signal at this location would encourage more traffic to use Massol Avenue instead of N. Santa Cruz Avenue. In general, it is preferable to implement traffic controls that encourage drivers to stay on arterials rather than use local streets. See Appendix E for the signal warrant worksheets.

Residential Neighborhood Traffic from Trips Entering the Project Site

Modifications at Massol Avenue so that U-turns would be possible would improve access for drivers entering the project site (inbound project trips). In order to evaluate the impact that allowing U-turns at Massol Avenue would have on the residential neighborhood streets, Hexagon compared the estimated daily site-related traffic that currently must use those streets to access the site and the estimated daily traffic generated by the project that would use those streets if U-turns could be made at Massol Avenue. We also estimated the number of additional trips that would likely go through the residential neighborhood when leaving the project site because they would not be able to access the left-turn lane during the PM peak hour.

The first step in that comparison is to develop an estimate of the number of site-related vehicles that are currently going around the block to enter the site, as shown on Figure 13. Based on the number of AM and PM peak hour inbound trips generated by the existing uses on the site (12 and 33, respectively, as shown in Table 5), Hexagon estimates that daily inbound traffic generated by the site is approximately 230 trips. Applying the trip distribution developed for office space, approximately 75% of those inbound trips likely approach the site from westbound Los Gatos-Saratoga Road or from southbound Santa Cruz Avenue and would need to go around the block to enter the site's existing driveways. Thus, we estimate that approximately 173 vehicles per day are currently going through the residential neighborhood to enter the project site. (Although vehicles traveling to other destinations on Los Gatos-Saratoga Road between Massol Avenue and N. Santa Cruz Avenue are also currently going around the block, this analysis is limited to project site-related traffic.)

If the pork chop island at Massol Avenue were moved so that U-turns could be made from westbound Los Gatos-Saratoga Avenue, we estimate that only 34 vehicles per day would enter the residential neighborhood in order to enter the project site. This estimate is based on the assumption that if U-turns were possible at Massol Avenue, virtually all the trips accessing the site from westbound Los Gatos-Saratoga Avenue and southbound Santa Cruz Avenue would choose to do so, except during the PM peak hour when heavy eastbound traffic would make such a U-turn difficult. During the PM peak hour, drivers would likely prefer to use the existing around the block route to enter the site, if they are coming from the north or the east.

Based on the estimate of 48 gross inbound trips generated by the project during the PM peak hour (as shown on Table 5) and applying the trip distribution patterns for the land uses, there would be an estimated 34 inbound trips that would enter the residential neighborhood during the PM peak hour rather than make a U-turn at Massol Avenue. In practice, there may be a small percentage of drivers during the day who continue to go around the block rather than use the U-turn route and there may be a small percentage during the PM peak hour who use the U-turn route rather than go around the block, but these would likely cancel each other out. If one of the other possible land uses with a lower trip generation rate than the uses assumed for this study (e.g. retail instead of a restaurant in the corner building or general offices instead of medical offices in the second building) occupied the site, there would be even fewer than 34 trips through the residential neighborhood by drivers wishing to enter the site.

Residential Neighborhood Traffic from Trips Leaving the Project Site

In addition to the drivers that would continue to go around the block during the PM peak hour in order to enter the site, the project would also generate additional trips that would go around the block through the residential neighborhood during the PM peak hour when leaving the site. This is because the project driveway is so close to the intersection that all drivers exiting the site would need to go straight or turn right, because they would not be able to access the left-turn lane during the PM peak hour. Since the existing outbound driveway for the site is in approximately the same location as the proposed project driveway, outbound vehicles currently experience the same issue of accessing the eastbound left-turn lane during the PM peak hour under existing conditions.

Assuming left turns and U-turns would not be feasible during the PM peak hour for drivers exiting the project driveway, there are several possible routes that a driver might take instead in order to head north on N. Santa Cruz Avenue or west on SR 9. Several of these alternate routes were shown on Figure 14 and described in Chapter 3.

Since the site has the same issue for outbound trips in the PM peak hour under existing conditions, the only increase in residential neighborhood traffic would be due to the net new outbound trips (proposed use less existing use). We estimate that approximately 6 additional outbound trips from the project site during the PM peak hour would take a route that uses the residential streets of Almendra, Tait and/or Bachman Avenues.

Residential Neighborhood Traffic from All Project Trips

Combining the estimated 34 inbound trips and the 6 outbound trips yields approximately 40 project trips that would enter the residential neighborhood if U-turns were possible at Massol Avenue. This is far fewer than the 173 vehicles per day that are estimated to be going around the block under current conditions to enter and leave the site. Even if the number of project trips were doubled to account for the two-hour PM peak period, rather than just the single PM peak hour, there would still be fewer trips through the neighborhood on a daily basis if U-turns were allowed at Massol Avenue than under current conditions.

Since all traffic – not just project-related traffic – must now enter the residential neighborhood to go around the block, allowing U-turns at Massol Avenue would likely reduce traffic in the nearby residential neighborhood beyond the numbers presented above, which are based only on project-related traffic.

Allowing U-turns at Massol Avenue would also increase the volume of vehicles in the left-turn pocket on Los Gatos-Saratoga Road, since vehicles that used to use an around the block route would instead proceed west on SR 9 and make a U-turn at Massol Avenue. The potential for queues that exceed the capacity of the left-turn pocket is addressed separately in the queuing analysis below.

Sight Distance

The project driveway on Los Gatos-Saratoga Road should be free and clear of any obstructions in order to optimize sight distance, so that vehicles exiting the site can see approaching eastbound vehicles and bicyclists. No parking zones have already been established adjacent to the project driveway, in order to provide space for the bike lane. Because the driveway is centered in a small parking area and would not be right next to a building, drivers exiting the site would also be able to see pedestrians in both directions on the sidewalk.

We recommend that all landscaping and signage related to the project be placed so as to ensure that adequate sight distance is maintained at the driveway. Care should be also taken in constructing the new driveway to ensure that the bike lane on Los Gatos-Saratoga Road remains clearly defined and that drivers entering and exiting the site can easily see approaching bicyclists in the eastbound direction and pedestrians on the sidewalk in both directions. Adequate corner sight distance (sight distance triangles) should be provided in accordance with the Town's standards. Sight distance triangles for the final site plan should be measured approximately 15 feet back from the traveled way.

Sight distance requirements vary, depending on roadway speeds. The speed limit on Los Gatos-Saratoga Road is 35 mph. The stopping sight distance recommended by Caltrans in the *Highway Design Manual* for 35 mph is 250 feet.

On-Site Circulation and Parking Garage Access

On-site vehicular circulation was reviewed for the project in accordance with generally accepted traffic engineering standards. The surface parking area would include 11 perpendicular parking spaces, five on the east side of the project driveway and six on the west side of the project driveway (see site plan in Figure 3). The drive aisle between the parking stalls would be 27 feet wide, which would allow adequate space for vehicles to exit their parking stall easily. The drive aisle leads to a ramp for the below-grade parking garage. Drivers would make a right turn to enter the ramp and a left turn to exit. The ramp is shown to be 24 feet wide at its entry point, which would allow adequate space for turning when entering and leaving the garage ramp.

After descending the ramp into the garage, the driver would make another right turn. The perpendicular drive aisle at the bottom of the ramp is shown to be 27 feet wide, again providing adequate space for that turning movement (see Figure 23). The primary drive aisle would be 28 feet wide, which is adequate for perpendicular parking stalls.

The garage includes 58 parking spaces, of which 8 would be tandem parking stalls that can accommodate two vehicles. In addition, a turn-around stall is provided at the end of the drive aisle, so that vehicles in the last tandem parking stalls can turn around in order to exit.

The Town's requirement for standard spaces is that they be at least 8 feet 6 inches (8'6") by 18 feet (18'). The site plan indicates that, with the exception of the tandem stalls, the parking stalls in the garage would be 9 feet wide and 20 feet long, which exceeds the Town's requirements. The tandem stalls would be 9 feet wide and 25 feet long each, for a total length of 50 feet for each tandem space. All parking stalls on the surface lot would be 9 feet wide by 18 feet long (some of the stalls have a two-foot overhang into landscaping), which meets the Town's requirements. .

The trash/recycling enclosure is on the southeast corner of the site, where trucks would have adequate access to it, via a 26 foot wide drive aisle. That drive aisle would also provide access to three parking spaces on an adjacent parcel. On-site circulation for trash trucks would be facilitated by the garage driveway, which would allow a truck to back up, complete a 3-point turn, and then drive forward out of the project driveway. Because the driveway and all drive aisles are at least 25 feet wide, they would be adequate for emergency vehicle access. The Town does not require loading zones for retail uses less than 10,000 s.f., and the only proposed retail use would be in the corner building that includes 4,200 s.f.

Intersection Queuing Analysis

The operations analysis is based on vehicle queuing for high-demand left-turn movements at intersections where 10 or more project trips were added. Vehicle queues were estimated using a Poisson probability distribution, which estimates the probability of “n” vehicles for a vehicle movement using the following formula:

$$P(x = n) = \frac{\lambda^n e^{-\lambda}}{n!}$$

Where:

$P(x = n)$ = probability of “n” vehicles in queue per lane

n = number of vehicles in the queue per lane

λ = Average number of vehicles in the queue per lane (vehicles per hour per lane/signal cycles per hour)

Using a Poisson probability distribution, the basis of the analysis is as follows: (1) the Poisson probability distribution is used to estimate the 95th percentile maximum number of queued vehicles for a particular movement; (2) the estimated maximum number of vehicles in the queue is translated into a queue length, assuming 25 feet per vehicle; and (3) the estimated maximum queue length is compared to the existing or planned available storage capacity for the movement to determine if adequate storage is available to accommodate the 95th percentile queues. This analysis thus provides a basis for determining whether the addition of project trips would exacerbate peak hour queues and delays, as well as estimating future storage requirements at intersections.

The 95th percentile queue length value indicates that during the peak hour, a queue of this length or less would occur on 95 percent of the signal cycles. Or, a queue length larger than the 95th percentile queue would only occur on 5 percent of the signal cycles (about one cycle during the peak hours at the signalized study intersections, which run at a 150-second cycle length). Therefore, left-turn storage pocket designs based on the 95th percentile queue length would ensure that storage space would be exceeded only 5 percent of the time.

The following turn movements were analyzed for vehicular queues:

- N. Santa Cruz Avenue and Los Gatos-Saratoga Road – the eastbound left-turn movement in the AM peak hour. This movement would experience additional trips in the AM peak hour, but it is assumed no project trips would access the left-turn lane in the PM peak hour.
- N. Santa Cruz Avenue and Los Gatos-Saratoga Road – the westbound left-turn movement in the AM peak hour. This movement would experience additional trips from inbound vehicles if no U-turns were allowed at Massol Avenue.
- University Avenue and Los Gatos-Saratoga Road – the westbound left-turn movement in the AM peak hour. This movement would experience additional trips from inbound vehicles if no U-turns were allowed at Massol Avenue.
- Massol Avenue and Los Gatos-Saratoga Road – the westbound left and U-turn movement. This movement would experience inbound project trips and other non-project trips if U-turns were allowed at Massol Avenue. If U-turns were not allowed, the project would not add any trips to this movement.

Vehicle queuing estimates are provided in Table 11 and are generally consistent with the field observations of existing conditions presented in Chapter 2, although the westbound left-turn pocket at Massol Avenue was observed to exceed its storage capacity during the PM peak hour somewhat more often than suggested by this analysis.

Table 11
Queuing Analysis

| Measurement | N. Santa Cruz & Los Gatos-Saratoga Rd | | University Ave & Los Gatos-Saratoga Rd | Massol Ave & Los Gatos-Saratoga Rd (No WB U-turns allowed) | | Massol Ave & Los Gatos-Saratoga Rd (With WB U-turns allowed) ³ | |
|--------------------------------|---------------------------------------|-----|--|--|------|---|------|
| | EBL | WBL | WBL | WBL | WBL | WBL | WBL |
| | AM | AM | AM | AM | PM | AM | PM |
| Existing | | | | | | | |
| Cycle/Delay ¹ (sec) | 150 | 150 | 150 | 8.8 | 14.4 | 9.0 | 16.1 |
| Volume (vph) | 182 | 122 | 228 | 114 | 168 | 170 | 225 |
| Avg. Queue (veh) | 7.6 | 5.1 | 9.5 | 0.3 | 0.7 | 0.4 | 1.0 |
| Avg. Queue (ft.) | 190 | 127 | 238 | 7 | 17 | 11 | 25 |
| 95th % Queue (veh) | 12 | 9 | 15 | 1 | 2 | 2 | 3 |
| 95th % Queue (ft.) | 300 | 225 | 375 | 25 | 50 | 50 | 75 |
| Storage | 425 | 225 | 300 | 75 | 75 | 75 | 75 |
| Adequate (Y/N) | Y | Y | N | Y | Y | Y | Y |
| Existing Plus Project | | | | | | | |
| Cycle/Delay ¹ (sec) | 150 | 150 | 150 | 8.8 | 14.5 | 9.3 | 16.5 |
| Volume (vph) | 196 | 136 | 237 | 114 | 168 | 209 | 235 |
| Avg. Queue (veh) | 8.2 | 5.7 | 9.9 | 0.3 | 0.7 | 0.5 | 1.1 |
| Avg. Queue (ft.) | 204 | 142 | 247 | 7 | 17 | 13 | 27 |
| 95th % Queue (veh) | 13 | 10 | 15 | 1 | 2 | 2 | 3 |
| 95th % Queue (ft.) | 325 | 250 | 375 | 25 | 50 | 50 | 75 |
| Storage | 425 | 225 | 300 | 75 | 75 | 75 | 75 |
| Adequate (Y/N) | Y | N | N | Y | Y | Y | Y |
| Background | | | | | | | |
| Cycle/Delay ¹ (sec) | 150 | 150 | 150 | 8.9 | 15.0 | 9.2 | 16.8 |
| Volume (vph) | 210 | 122 | 228 | 114 | 168 | 170 | 225 |
| Avg. Queue (veh) | 8.8 | 5.1 | 9.5 | 0.3 | 0.7 | 0.4 | 1.1 |
| Avg. Queue (ft.) | 219 | 127 | 238 | 7 | 18 | 11 | 26 |
| 95th % Queue (veh) | 14 | 9 | 15 | 1 | 2 | 2 | 3 |
| 95th % Queue (ft.) | 350 | 225 | 375 | 25 | 50 | 50 | 75 |
| Storage | 425 | 225 | 300 | 75 | 75 | 75 | 75 |
| Adequate (Y/N) | Y | Y | N | Y | Y | Y | Y |
| Background Plus Project | | | | | | | |
| Cycle/Delay ¹ (sec) | 150 | 150 | 150 | 9.0 | 15.0 | 9.5 | 17.2 |
| Volume (vph) | 224 | 136 | 237 | 114 | 168 | 209 | 235 |
| Avg. Queue (veh) | 9.3 | 5.7 | 9.9 | 0.3 | 0.7 | 0.6 | 1.1 |
| Avg. Queue (ft.) | 233 | 142 | 247 | 7 | 18 | 14 | 28 |
| 95th % Queue (veh) | 15 | 10 | 15 | 1 | 2 | 2 | 3 |
| 95th % Queue (ft.) | 375 | 250 | 375 | 25 | 50 | 50 | 75 |
| Storage | 425 | 225 | 300 | 75 | 75 | 75 | 75 |
| Adequate (Y/N) | Y | N | N | Y | Y | Y | Y |

¹ Vehicle queue calculations based on cycle length for signalized intersections, and movement delay for unsignalized intersections.
² Assumes 25 Feet Per Vehicle Queued
³ Existing and Background scenarios assume non-project-related trips and trips from existing use would make U-turns if they were allowed.
 Existing Plus Project and Background Plus Project scenarios assume non-project-related trips and project trips would make U-turns if they were allowed.

The storage length for the eastbound left-turn pocket at the Santa Cruz Avenue intersection assumes the existing lane configuration with a single left turn lane. The Town has proposed adding a second eastbound left turn lane, as discussed above and shown in Figure 20, but the total storage capacity of that proposed modification is not known.

The eastbound right-turn movement in the PM peak hour at the intersection of N. Santa Cruz Avenue and Los Gatos-Saratoga Road would also experience more than 10 additional trips because outbound vehicles would not be able to access the left turn lane. Hexagon observed many eastbound right-turn drivers to turn “right on red.” Therefore, these right-turning vehicles did not generally experience the full cycle length delay that is

assumed in the Poisson queuing analysis, so this right turn movement was not analyzed in Table 11. Also, as discussed above and shown in Figure 20, the Town has already proposed to construct a longer eastbound right-turn lane at this intersection.

Under existing and background conditions, volumes for the westbound left turn at the intersection of N. Santa Cruz Avenue and Los Gatos-Saratoga Road in the AM peak hour are contained within the provided storage space. However, under existing plus project and background plus project conditions, the 95th percentile queues at this intersection would exceed the provided storage space.

Under all examined scenarios, 95th percentile queues for the westbound left turn at the intersection of University Avenue and Los Gatos-Saratoga Road in the AM peak hour would exceed the provided storage length. However, because the signal at this intersection operates on a fully-actuated lead-lag progression, there can be times when the left-turn queue exceeds the storage capacity of the pocket and extends into the leftmost through lane, but all left-turning vehicles are still able to clear the intersection during the westbound left-turn phase.

The trips that the project would add to the westbound left-turns at both of these intersections would be inbound trips to the project site that must go around the block to access the project driveway. If U-turns were allowed at Massol Avenue, these trips would not need to make these left-turn movements in the AM peak hour, and the project would not add any volume to these movements.

The westbound left-turn pocket was also examined at the intersection of Massol Avenue and Los Gatos-Saratoga Road, both with and without U-turns allowed. Based on the delay for that movement calculated by the TRAFFIX software, the 95th percentile queue would not exceed the storage capacity of that left-turn pocket even with the addition of U-turns from inbound project trips and from non-project-related trips. (Hexagon doubled the number of gross project trips estimated to make a U-turn in order to approximate the number of non-project-related trips that would also make a U-turn.) This result indicates that modifying this intersection to facilitate U-turns would adequately address the issue of overflowing westbound turn pockets at the Santa Cruz Avenue and University Avenue intersections.

However, Hexagon's field observations noted that the westbound left-turn pocket at Massol Avenue does overflow occasionally during the PM peak hour. The queuing analysis seems to somewhat understate the potential for long queues when eastbound traffic is heavy. During most times of the day, adding more trips to the left-turn pocket would not present a problem, since both left turns and U-turns could be made without undue delay, and long queues would not be expected. However, during the PM peak hour, when left turns are difficult due to the heavy eastbound traffic flow, our observations suggest that adding U-turn trips to the left-turn pocket at Massol Avenue could create lengthy queues. Also, since making a U-turn would require a longer gap in eastbound traffic than a left turn, adding even a few U-turns to the pocket has the potential to increase the left-turn queue disproportionately to the U-turn volume. We recommend that the Town carefully monitor the queues if U-turns are allowed and consider prohibiting U-turns during certain hours if queuing becomes a problem when eastbound traffic volumes would require drivers to wait longer for an adequate gap in which to complete a U-turn.

Parking

The project would provide 69 parking spaces on the site: 58 in the below-grade garage and 11 in the surface parking area. In addition, the site has 15 parking spaces in the parking assessment district, for a total of 84 spaces. However, because 8 of these 84 spaces would be in tandem stalls (see Figure 23) and cannot be counted towards meeting the Town's parking requirement for the project, there would be 76 spaces that may be counted towards the parking requirement.

Hexagon has calculated the number of parking spaces that would be required under the Town of Los Gatos municipal code Sec. 29.10.150 for each of the potential land uses that might occupy the site. The Town has different parking requirements for some land uses downtown than for the rest of the town.

The Town requires one parking space per 250 square feet for office space and banks in the downtown area. Medical or dental offices are required to provide one parking space per 250 square feet or six spaces per doctor, whichever is more restrictive. We have assumed that if the second building were occupied by a

medical office, it would use the same parking requirement as general offices (one space per 250 square feet). Thus, since all three possible uses of the 15,500 square foot building (bank, professional office, and/or medical office) would need one space per 250 square feet, that building would require 62 parking spaces.

Retail space is required to provide one space per 300 square feet. For restaurants, the Town requires one parking space per four seats (assuming there is no separate bar), and we have converted the number of parking spaces provided to a maximum number of seats that would be allowed in a restaurant.

If the 4,200 s.f. corner building were occupied by retail space, 14 parking spaces would be required. If it were occupied by a restaurant, those 14 spaces would indicate that a total of 56 seats would be permitted in the restaurant combined with the dining patio, based on a parking ratio of one space per four seats.

If the corner building were occupied by retail space, then the total parking requirement for the entire site would be 76 spaces ($14 + 62 = 76$). If the corner building were occupied by a restaurant with 56 seats (including the dining patio), then the total parking requirement for the site would be the same. In either case, the 76 spaces provided (61 non-tandem spaces provided on-site plus the 15 spaces in the parking assessment district), would meet the Town's parking requirement.

As noted above, there would actually be 69 spaces provided on-site (84 total, including the 15 in the parking assessment district) because the garage includes eight tandem stalls which could hold 16 vehicles, not just the eight counted towards the Town's requirement. If the second building is ultimately fully or partially occupied by medical/dental offices or professional offices, the tandem stalls may be most suitable for use by employees of the medical/dental or professional offices, most of whom would likely park for the entire day. If office employees used the tandem spaces, then the medical/dental patients and the patrons of the bank, restaurant, or retail uses could self-park as they arrive for shorter periods of time. If the corner building is occupied by a restaurant, there would be an excellent opportunity for shared parking after about 5:00 PM and on weekends, when most of the office and/or bank employees and patrons would have vacated their parking spaces.

Per the California Building Code (CBC) Section 11B-208, one accessible parking space is required for parking facilities with 1 – 25 spaces and three accessible parking spaces are required for parking facilities with 51 – 75 spaces. Thus, the surface parking lot with 11 spaces would need to include one accessible space. The garage with 58 spaces counted towards the Town's requirement would need to include three accessible spaces. Since the total accessible space requirement is less than six spaces, none of them are required to be van accessible. If the building were to be used for rehabilitation or outpatient physical therapy, however, a higher requirement of 20 percent of patient parking would apply.

The current site plan shows three accessible spaces on the surface parking lot and two accessible spaces in the parking garage. Therefore, the five accessible spaces provided exceeds the required number by one accessible space.

The site plan does not show how many bicycle parking spaces would be provided. Once it is known what land uses would occupy the site, the site plan should be revised to include the appropriate number of bicycle spaces in accordance with the Town's bicycle parking requirements. Since the Town of Los Gatos does not have its own bicycle parking requirements, VTA's bicycle parking guidelines should be used.

Pedestrian and Bicycle Facilities

Pedestrian facilities consist of sidewalks along all of the streets in the study area. Crosswalks with pedestrian signal heads and push buttons are located at all of the signalized intersections in the study area. In addition, the crosswalk across Los Gatos-Saratoga Road at Massol Avenue has warning lights that can be activated by pedestrians wishing to cross the street. In downtown Los Gatos, N. Santa Cruz Avenue has crosswalks with bulb-outs at all intersections and some mid-block locations. Thus, the project site enjoys excellent pedestrian accessibility and is located in a pedestrian-friendly downtown area.

As discussed earlier in this chapter, the Town plans to make modifications to the intersection of N. Santa Cruz Avenue and Los Gatos-Saratoga Road that would enhance pedestrian safety. The current design of the intersection requires pedestrians to cross a right-turn lane to access a pork chop island, but the radius of the

curve at each corner allows drivers to make right turns at fairly high speeds. The Town plans to eliminate the existing pork chop islands and square off the corners, as shown in Figure 20. Reducing the radius of the curves on the corners would require drivers to slow down more when making a right turn, which would provide more opportunity for them to see pedestrians in the crosswalk. ADA-compliant ramps would also be added at each of the four corners. The project would contribute its fair share towards the cost of these intersection improvements through the Town's Traffic Impact Fee.

Los Gatos-Saratoga Road includes a Class II bike lane immediately adjacent to the project site. That bike lane continues west on Los Gatos-Saratoga Road (SR 9) and provides good bicycle access to the project site from the west. Additional bike lanes are present on Winchester Boulevard, Main Street/Los Gatos Boulevard, Blossom Hill Road, and University Avenue. A Class I bike trail, the Los Gatos Creek Trail, is close to the project site and provides excellent bicycle access from the north and south. The project site enjoys good bicycle access, and the project is expected to generate only a minor number of bicycle trips. Therefore, no improvements are needed to the existing bicycle facilities in conjunction with the project.

As noted in Chapter 2, a gap in the Town's pedestrian/bicycle facilities exists on Los Gatos-Saratoga Road (SR 9) between University Avenue and Los Gatos Boulevard. One of the projects that would be funded by Traffic Impact Fees collected by the Town of Los Gatos is a "Complete Streets" improvement to SR 9 between University Avenue and Los Gatos Boulevard to address that gap. Another project on the Town's list of improvements to be funded with Traffic Impact Fees is a new path and bridge for pedestrians and bicyclists between SR 9 and the Los Gatos Creek Trail. Thus, through the Traffic Impact Fees paid by the proposed project to the Town of Los Gatos, it will participate in improving the bicycle and pedestrian facilities in the study area.

Transit Services

Employees and customers of the proposed uses for the site may use VTA Local Route 48. As noted in Chapter 2, Route 48 provides service to the Winchester Transit Center, where connections to VTA's light rail transit service are available. The presence of bus stops in both directions at the intersection of N. Santa Cruz Avenue and Los Gatos-Saratoga Road makes transit extremely convenient to the project site and should encourage transit usage.

We assume that the mode split for most of the proposed uses (restaurant, retail, a bank, and professional or medical offices) would be the same as the mode split for the downtown area of Los Gatos generally. It is estimated that the new riders for any of the proposed uses could be accommodated by the current available capacities of the bus service and LRT service in the area.

Transportation Demand Management

Transportation Demand Management (TDM) is a combination of services, incentives, facilities, and actions that reduce single-occupant vehicle trips to help relieve traffic congestion, parking demand, and air pollution problems. The purpose of TDM is to promote more efficient utilization of existing transportation facilities and to ensure that new developments are designed to maximize the potential for sustainable transportation usage.

The purpose of a TDM Plan for a specific site is to develop TDM measures that are tailored to a project's location, size, and land use in order to promote alternative modes of travel, such as riding transit, bicycling, walking, and carpooling. Given this project site's proximity to bus stops, bike lanes, and a highly pedestrian-friendly downtown environment, the location lends itself well to usage of alternative modes of transportation.

Because this project includes less than 20,000 s.f., its size should be considered in developing measures that are appropriate for it; some measures that are typical for very large projects may not be reasonable for a project of this size.. Also, a project's land uses should be considered. Since the project may include a restaurant, retail space, and/or a bank, it would generate both employee trips and customer trips. If it includes a medical office, it would also generate patient trips. Although some TDM measures can apply to both customers and employees, other measures, such as transit ticket subsidies, would make sense only for employees.

The following TDM measures reflect current best practices in the TDM field and would be appropriate for this site:

- **Transit Ticket Subsidies:** Transit ticket subsidies encourage employees to commute via transit by offering discounted fares. Subsidized ticket prices along with the project's location close to a bus stop improve the convenience of riding public transit for employees.
- **Preferential parking for ridesharing vehicles:** Preferential parking provides reserved parking in a desirable priority location. The initiative encourages employees to rideshare by making it more convenient for users, and reduces the demand for parking.
- **Bike racks and lockers:** Bike lockers provide safe storage for employees' bicycles. By offering accessible and safe storage, employees who live nearby can commute by bicycle. Bike racks provide a convenient location for customers to park their bikes, and raises the visibility of the project's commitment to alternative transportation.
- **Showers and changing rooms for employees who bicycle:** Providing showers enables active commuters to arrive early and prepare for the day without hygienic concerns.
- **"Online Kiosk" website for project site with information on alternative transportation modes, such as:**
 - Maps of nearby bike routes, information on taking bikes on transit, etc.
 - Information on Park-and-Ride lots for use by carpool participants
 - Links to VTA and transit schedules
 - Information about 511.org and other ridematching services
- **EV charge stations:** An EV charge station in the garage would not reduce the number of single-occupant vehicle trips generated by the project, but may contribute to the Town's goal to reduce greenhouse gas emissions.

Vehicle Miles Traveled

In accordance with SB 743, daily VMT for projects in Los Gatos versus the average of the San Francisco Bay area are presented based on the Metropolitan Transportation Commission (MTC) travel demand forecast model (<http://analytics.mtc.ca.gov/foswiki/Main/VmtPerWorker>). MTC has provided information on VMT by household, which would be relevant for residential projects, and VMT by workplace, which is relevant for employee trips at the proposed project. MTC has not provided comparative data that would apply to customer trips.

The proposed project is a combination of uses that would generate both employee trips for all potential uses and customer trips for the restaurant, retail space, and/or bank. Because of the location of the project site and the fact that the customer-oriented uses would likely draw from a fairly localized area, the VMT for customer trips is likely to be less than the Bay Area average. For employees who work at the site, MTC's forecasted daily VMT is 28.5 miles per worker employed in this area of Los Gatos, while the San Francisco Bay Area average daily VMT is 23.8 miles per worker. However, some office employees who currently commute longer distances to locations elsewhere in Silicon Valley may welcome the opportunity to reduce their commute by working closer to home if they live in or near Los Gatos or "over the hill" in Scotts Valley or Santa Cruz.

Given that no standard approach or guidelines have been finalized under SB 743, the VMT presented in this report is for informational purposes only. It is not intended to provide any indication of the transportation impacts of the project under SB 743.

8. Conclusions

Several land uses have been proposed for the site at 201-225 Los Gatos-Saratoga Road, including a restaurant, retail space, a bank, professional office space, and medical/dental office space. The potential impacts of the combination of uses that would generate the greatest number of peak hour trips were evaluated in accordance with the standards set forth by the Town of Los Gatos and the Congestion Management Program (CMP) of Santa Clara County. The study included the analysis of AM and PM peak hour traffic conditions for two signalized intersections, one unsignalized intersection, and two freeway segments. Project impacts on other transportation facilities, such as bicycle facilities and transit services, were determined on the basis of engineering judgment.

Intersection Level of Service Analysis

The results of the intersection level of service analysis show that, measured against the Town of Los Gatos and CMP level of service impact criteria, neither of the signalized study intersections would be significantly impacted by the project. The intersection of Santa Cruz Avenue and Los Gatos-Saratoga Road would continue to operate at LOS D during both the AM and PM peak hours under all operating scenarios. The intersection of University Avenue and Los Gatos-Saratoga Road would continue to operate at LOS C in the AM peak hour and at LOS D in the PM peak hour under all operating scenarios.

At the unsignalized intersection of Massol Avenue and Los Gatos-Saratoga Road, the northbound left turn movement (from Massol Avenue to westbound SR 9) currently operates at LOS F during both the AM and PM peak hours and would continue to operate at LOS F under all operating scenarios. The westbound left turn movement (from SR 9 onto Massol Avenue) is not stop-controlled, but drivers must wait for a gap in eastbound traffic in order to complete their turn. With the existing lane configuration (no U-turns allowed), this movement would operate at LOS A in the AM peak hour and at LOS C in the PM peak hour under background plus project and cumulative plus project conditions. If the intersection were modified to allow U-turns, this movement was projected to continue to operate at LOS A in the AM peak hour and LOS C in the PM peak hour. Because Los Gatos does not have a level of service standard or significant impact criteria for unsignalized intersections, these results are shown for information purposes only.

Freeway Segment Capacity Evaluation

According to CMP guidelines, an analysis of freeway segment levels of service is only required if a project is estimated to add trips to a freeway segment equal to or greater than one percent of the capacity of that segment. Since the number of project trips added to the freeways in the area is estimated to be well below the one percent threshold, a detailed analysis of freeway segment levels of service was not performed.

Site Access and Circulation

Site access and on-site circulation would be adequate. Due to the median on Los Gatos-Saratoga Road (SR 9), site access from westbound Los Gatos-Saratoga Road was analyzed and the feasibility of permitting U-turns from westbound Los Gatos-Saratoga Road at Massol Avenue was evaluated. The first break in the median after passing the project site in the westbound direction is at Massol Avenue, but the presence of a pork chop island currently prevents vehicles from making a U-turn at that location. However, if the pork chop island were moved and the tip of the median next to the westbound left-turn pocket on SR 9 were shortened, it would be possible for vehicles to make a U-turn from westbound SR 9 to eastbound SR 9 at Massol Avenue, improving access to the project site and reducing the number of trips that would need to enter the residential neighborhood along Almendra Avenue in order to access the project driveway.

Hexagon estimates that approximately 173 vehicles per day are currently going around the block on Santa Cruz Avenue, Almendra Avenue, and Tait Avenue in order to access the site. With the project and with U-turns permitted, Hexagon estimates that number would be reduced to only approximately 40 trips entering the residential neighborhood.

- **Recommendation:** Hexagon recommends making modifications to the 3-legged intersection of Los Gatos-Saratoga Road and Massol Avenue so that U-turns can be made from westbound Los Gatos-Saratoga Road. The pork chop island on the southeast corner of this intersection should be moved to provide adequate space for the U-turns to be completed. A portion of the median next to the left turn pocket on Los Gatos-Saratoga Road would need to be removed, and the crosswalk and lane striping would need to be repainted to correspond to the new location of the pork chop island. In addition, a sign should be posted to require vehicles turning right from Massol Avenue onto eastbound SR 9 to yield to vehicles making U-turns from westbound SR 9.
- **Recommendation:** Hexagon further recommends that if U-turns are allowed at Massol Avenue that the Town monitor the queues in the westbound left-turn pocket to see if they overflow its capacity during the PM peak hour. Although the TRAFFIX analysis and the queuing analysis indicate that adding U-turns at this location would not cause operational problems, our field observations suggest that the Town may wish to prohibit U-turns during certain hours if queuing becomes a problem when eastbound traffic is heavy.

The project driveway on Los Gatos-Saratoga Road should be free and clear of any obstructions in order to optimize sight distance, so that vehicles exiting the site can see approaching eastbound vehicles and bicyclists and pedestrians in both directions.

- **Recommendation:** Hexagon recommends that all landscaping and signage related to the project be placed to ensure that adequate sight distances are maintained at the driveway. Care should be taken in constructing the new driveway to the site to ensure that drivers entering and exiting the site can easily see approaching bicyclists and vehicles in the eastbound direction and pedestrians on the sidewalk in both directions. Adequate corner sight distance (sight distance triangles) should be provided in accordance with the Town's standards.

Queuing Analysis

An analysis of potential queuing issues indicated that the 95th percentile queue at the westbound left turn movement in the AM peak hour at N. Santa Cruz Avenue would exceed the storage capacity of the left turn pockets at that intersection under existing plus project and background plus project conditions, if no U-turns were allowed at Massol Avenue. The 95th percentile queue for the westbound left turn at University Avenue in the AM peak hour would also exceed that intersection's left turn pocket capacity if no U-turns were allowed at Massol Avenue. However, if U-turns were allowed at Massol Avenue, the drivers who would be making those left turns at N. Santa Cruz and University Avenues would make a U-turn at Massol Avenue instead, and the project would not result in any additional vehicles in those left turn lanes in the AM peak hour.

Parking

The site plan states that the project would provide a total of 84 parking spaces: 11 ground-level spaces, 58 spaces in a below-grade garage, and 15 spaces in the Parking Assessment District. Of the 58 spaces in the below-grade area, 8 would be tandem spaces (i.e., the second space in a 50-foot long tandem parking stall) and may not be counted towards the Town's parking requirements. Thus, the project would provide a total of 76 spaces that may be counted towards the Town's parking requirement (11 surface spaces, 50 garage spaces, and 15 Parking District spaces).

An analysis of the Town's parking requirements for the potential land uses that may occupy the site found that if the corner building were occupied by retail space, 76 parking spaces would be required for the entire site. If that building were occupied by a restaurant, 76 spaces would also be required for the entire site, if the restaurant included 56 seats (including the dining patio). Thus, the 76 non-tandem spaces provided would meet the Town's parking requirement.

- **Recommendation:** The current site plan does not show the number of bicycle parking spaces that would be provided. The site plan should be revised to present the appropriate number of bicycle parking spaces in accordance with the Town's bicycle parking requirements.

Transit, Bicycle, and Pedestrian Facilities

The existing transit, bicycle, and pedestrian facilities in the study area are adequate to serve the site. No improvements are needed. Through the Town's Traffic Impact Fee program, if the land uses that ultimately occupy the site would generate more daily trips than the existing uses on the site, the project will contribute towards several projects that would make improvements to the bicycle and pedestrian facilities in the study area.

Transportation Demand Management

Transportation Demand Management (TDM) is a combination of services, incentives, facilities, and actions that reduce single-occupant vehicle trips to help relieve traffic congestion, parking demand, and air pollution problems. The purpose of a TDM Plan for a specific site is to develop TDM measures that are tailored to a project's location, size, and land use in order to promote alternative modes of travel, such as riding transit, bicycling, walking, and carpooling. We recommend that the applicant develop a TDM Plan that focuses primarily on reducing employee trips to the site, through such measures as transit ticket subsidies, the inclusion of bike racks and lockers for bicyclists, and provision of current information on alternative transportation modes.

201-225 Los Gatos-Saratoga Road
Transportation Impact Analysis
Technical Appendices

Appendix A
New Traffic Counts

Appendix B

Town of Los Gatos Approved and Pending Projects

Appendix C

Volume Summary Tables

Appendix D

Intersection Level of Service Calculations

Appendix E

Signal Warrant Worksheets

Appendix F

VTA Auto Trip Reduction Statement