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Traffic Study

Flora Springs Winery P15-00111-MOD
Planning Commission Hearing Date May 3, 2017

Traffic Impact Study for Flora Springs Winery

Prepared for the County of Napa

Submitted by
W-Trans

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Executive Summary

The Flora Springs Winery project is an existing winery with a proposed modification to the Use Permit to increase daily visitation to a maximum of 100 people per day and marketing events as small as 25 people and as large as 350 people. The project's anticipated trip generation includes 42 new daily trips on average during a weekday and 19 new trips on average during a weekend day, with 11 new trips during each of the p.m. peak and weekend midday peak hours.

The study area was established by the County and includes the intersection of SR 29/Zinfandel Lane as well as SR 29 just north and south of Zinfandel Lane. The study intersection experienced a collision rate that is higher than the statewide average during the five-year period reviewed. Most of the collisions were rear-end or broadside types, likely attributable to the congested conditions that occur on SR 29.

Analysis indicates that the study intersection is operating acceptably at LOS C or better during the peak periods under Existing and Existing plus Approved Project conditions. The intersection is expected to operate unacceptably at LOS F under Future conditions and neither the County nor Caltrans have indicated plans to improve the intersection. The project volumes have a less-than-significant impact under all scenarios, including those where the study intersection is operating unacceptably without project-added volumes, as the project-added volumes represent less than one percent of projected future volumes.

Vehicles will continue to access the project via Zinfandel Lane, which terminates into the project driveway. No changes to access or circulation are proposed.

Should the County establish a traffic impact fee prior to the processing of the application to modify the Use Permit, the applicant should pay appropriate mitigation fees to contribute to future infrastructure improvements that could include signalization of SR 29/Zinfandel Lane, although the project's traffic impacts are expected to be less-than-significant.

Introduction

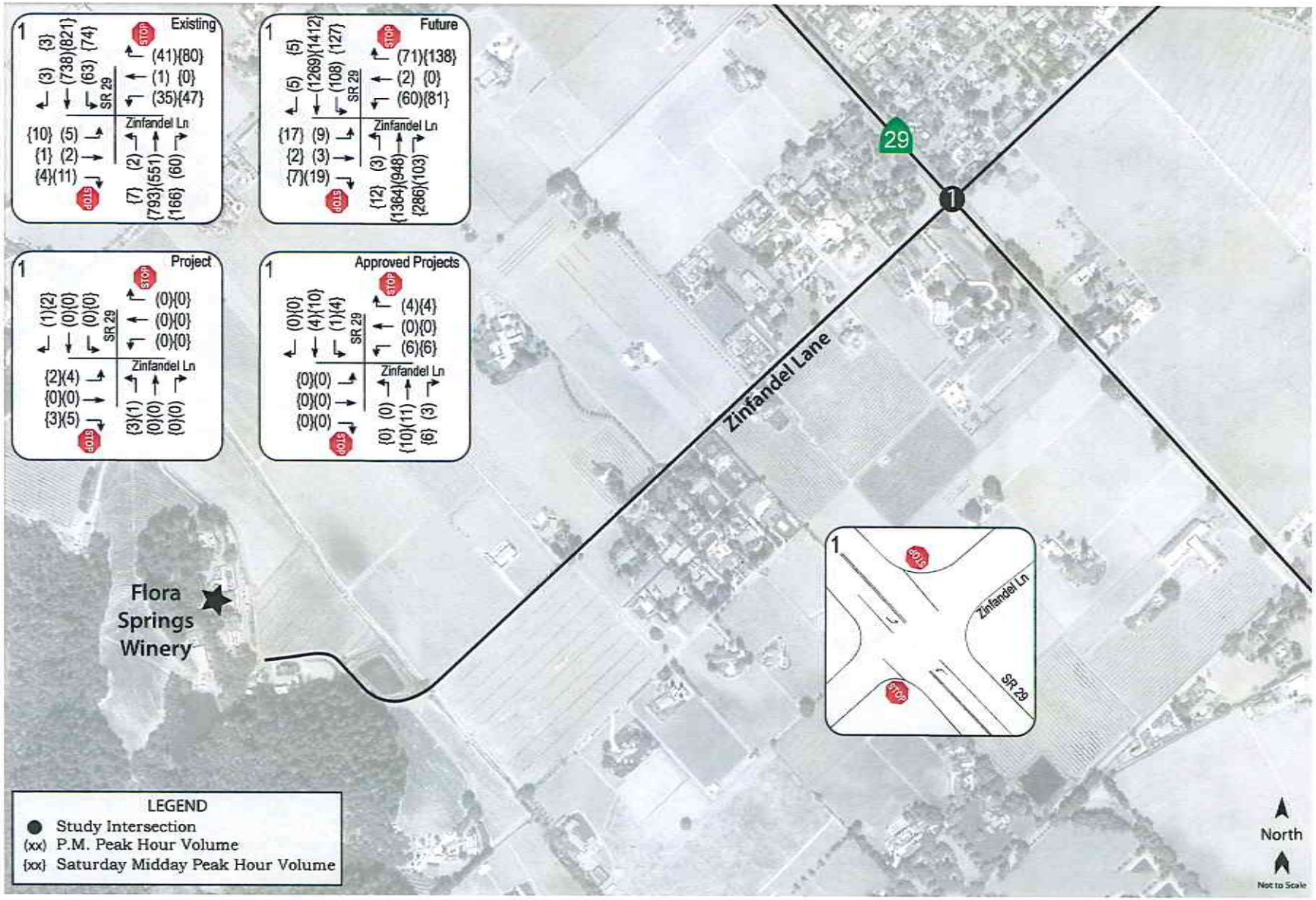
This report presents an analysis of the potential traffic impacts that would be associated with a proposed modification to the Flora Springs Winery Use Permit to increase daily visitation and marketing events. The winery is located at 1978 Zinfandel Lane in the County of Napa. The traffic study was completed in accordance with the criteria established by the County of Napa, reflects a scope of work approved by County of Napa staff, and is consistent with standard traffic engineering techniques.

Prelude

The purpose of a traffic impact study is to provide County staff and policy makers with data that they can use to make an informed decision regarding the potential traffic impacts of a proposed project, and any associated improvements that would be required in order to mitigate these impacts to a level of insignificance as defined by the County's General Plan or other policies. Vehicular traffic impacts are typically evaluated by determining the number of new trips that the proposed use would be expected to generate, distributing these trips to the surrounding street system based on existing travel patterns or anticipated travel patterns specific to the proposed project, then analyzing the impact the new traffic would be expected to have on critical intersections or roadway segments.

Project Profile

The existing Flora Springs Winery is proposing to increase their daily visitation and marketing events while keeping the same 120,000 gallons of production. The project site is located at 1978 Zinfandel Lane, as shown in Figure 1.



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Traffic Impact Study for Flora Springs Winery

Figure 1 – Lane Configurations and Traffic Volumes

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Transportation Setting

Operational Analysis

Study Area and Periods

The study area consists of the intersection of SR 29/Zinfandel Lane and the segment of SR 29 on either approach to Zinfandel Lane. Operating conditions during the weekday p.m. and weekend midday peak periods were evaluated as these time periods reflect the highest traffic volumes area-wide and for the proposed project. The evening peak hour occurs between 4:00 and 6:00 p.m. and typically reflects the highest level of congestion of the day during the homeward bound commute, while the weekend midday peak occurs between 2:00 and 4:00 p.m.

Study Intersection

SR 29/Zinfandel Lane is a two-way stop controlled intersection with stop signs on the eastbound and westbound Zinfandel Lane approaches. There are left-turn lanes on both approaches of SR 29. The location of the study intersection and the existing lane configuration and controls are shown in Figure 1.

Study Roadway

SR 29 runs north-south with one lane in either direction and a center two-way left-turn lane. The posted speed limit in the area is 45 miles per hour (mph).

Collision History

The collision history for the study area was reviewed to determine any trends or patterns that may indicate a safety issue. Collision rates were calculated based on records available from the California Highway Patrol as published in their Statewide Integrated Traffic Records System (SWITRS) reports. The most current five-year period available is October 1, 2008 through September 30, 2013.

As presented in Table 1, the calculated collision rate for the study intersection was compared to the average collision rate for similar facilities statewide, as indicated in *2010 Collision Data on California State Highways*, California Department of Transportation (Caltrans). The collision rate for the intersection of SR 29/ Zinfandel Lane was 0.58 collisions per million vehicles entering (c/mve) for the five-year study period, which is nearly three times the statewide collision rate for similar facilities in rural areas. Most of the collisions at the intersection were either rear-ends or broadsides, while the primary collision factor in 14 of the 17 crashes was unsafe speed or auto right of way violations. Both types of collisions that predominate at the location could be attributed to the congested conditions that occur during periods of peak flow. The collision rate calculations are provided in Appendix A.

Table 1 – Collision Rate at the Study Intersection

Study Intersection	Number of Collisions (2008-2013)	Calculated Collision Rate (c/mve)	Statewide Average Collision Rate (c/mve)
1. SR 29/Zinfandel Ln	17	**0.62**	0.23

Note: c/mve = collisions per million vehicles entering; **Bold** text represents a collision rate higher than the statewide average

Capacity Analysis

Intersection Level of Service Methodologies

Level of Service (LOS) is used to rank traffic operation on various types of facilities based on traffic volumes and roadway capacity using a series of letter designations ranging from A to F. Generally, Level of Service A represents free flow conditions and Level of Service F represents forced flow or breakdown conditions. A unit of measure that indicates a level of delay generally accompanies the LOS designation.

The study intersection was analyzed using methodologies published in the *Highway Capacity Manual* (HCM), Transportation Research Board, 2000. This source contains methodologies for various types of intersection control, all of which are related to a measurement of delay in average number of seconds per vehicle.

The Levels of Service for the intersection was analyzed using the "Two-Way Stop-Controlled" intersection capacity method from the HCM. This methodology determines a level of service for each minor turning movement by estimating the level of average delay in seconds per vehicle. Results are presented for individual movements together with the weighted overall average delay for the intersection.

The ranges of delay associated with the various levels of service are indicated in Table 2.

Table 2 – Two-Way Stop-Controlled Intersection Level of Service Criteria	
LOS A	Delay of 0 to 10 seconds. Gaps in traffic are readily available for drivers exiting the minor street.
LOS B	Delay of 10 to 15 seconds. Gaps in traffic are somewhat less readily available than with LOS A, but no queuing occurs on the minor street.
LOS C	Delay of 15 to 25 seconds. Acceptable gaps in traffic are less frequent, and drivers may approach while another vehicle is already waiting to exit the side street.
LOS D	Delay of 25 to 35 seconds. There are fewer acceptable gaps in traffic, and drivers may enter a queue of one or two vehicles on the side street.
LOS E	Delay of 35 to 50 seconds. Few acceptable gaps in traffic are available, and longer queues may form on the side street.
LOS F	Delay of more than 50 seconds. Drivers may wait for long periods before there is an acceptable gap in traffic for exiting the side streets, creating long queues.

Reference: *Highway Capacity Manual*, Transportation Research Board, 2000

Traffic Operation Standards

Policy CIR-13 in the *Napa County General Plan* states, "The County seeks to provide a roadway system that maintains current roadway capacities in most locations and is both safe and efficient in terms of providing local access."

Policy CIR-16 of the *Napa County General Plan* provides guidance for roadways, indicating that, "The County shall seek to maintain an arterial Level of Service D or better on all county roadways, except where maintaining this desired level of service would require the installation of more travel lanes than shown on the Circulation Map. SR 29 is shown as a 2-lane Rural Throughway on the Circulation Map (Figure CIR-1). A one-percent criteria for the threshold of significance is used for this analysis because it is well within the range of daily variation in traffic as well as the range of accuracy of travel demand forecast models and therefore not likely to be noticeable to drivers.

While the traffic study relies on the County's LOS D standard, if operation falls below this threshold, an increase which is less than one-percent of cumulative volumes is considered less-than-significant.

Policy CIR-18 of the *Napa County General Plan* states, "Traffic safety and adequate local access will be priorities on roadway segments and at signalized intersections where Level of Service D or better cannot be achieved. Therefore, proposed capital improvements and development projects in these areas shall be evaluated to determine their effect on safety or local access. Projects that improve safety, improve local access, or alieve congestion will be prioritized."

Existing Conditions

The Existing Conditions scenario provides an evaluation of current operation based on existing traffic volumes during the weekday p.m. and weekend midday peak periods. This condition does not include project-generated traffic volumes. Volume data was collected on Saturday, June 27, 2015 and Tuesday June 30, 2015. The existing traffic volumes on SR 29 are summarized in Table 3.

Table 3 – Existing Traffic Volumes

Study Segment	Weekday		Weekday PM Peak		Saturday		Weekend MD Peak	
	SB	NB	SB	NB	SB	NB	SB	NB
SR 29 North of Zinfandel Ln	8,040	5,970	804	597	9,878	9,713	898	883
SR 29 South of Zinfandel Ln	7,840	6,130	784	613	9,592	10,626	872	966

Intersection Levels of Service

Under existing conditions, the study intersection is operating acceptably at LOS A overall during the weekday p.m. peak period and LOS C during the weekend midday peak period. The westbound approach is operating at LOS F during both peak periods, while the eastbound approach operates at LOS E during the weekend midday peak period. These results indicate excessive delay on the westbound approach, though the overall LOS C operation indicates that this is considered an acceptable condition. The existing traffic volumes are shown in Figure 1. A summary of the intersection level of service calculations is contained in Table 4, and copies of the Level of Service calculations are provided in Appendix B.

Table 4 – Existing Peak Hour Intersection Levels of Service

Study Intersection *Approach*	PM Peak		Midday Peak	
	Delay	LOS	Delay	LOS
SR 29/Zinfandel Ln	3.2	A	17.0	C
Westbound Approach	*48.4*	*E*	**	*F*
Eastbound Approach	*28.9*	*D*	*114.0*	*F*

Notes: Delay is measured in average seconds per vehicle; LOS = Level of Service; Results for minor approaches to two-way stop-controlled intersections are indicated in *italics;*
** = delay greater than 120 seconds

Existing plus Approved Conditions

Existing plus Approved volumes were developed to include trips from other approved and pending projects that would add traffic to the segment of SR 29 within the vicinity of Flora Springs Winery. As directed by County staff, the following projects were included to evaluate Existing plus Approved conditions:

- **Accendo Cellars** – 50,000 gallon winery on Zinfandel Lane, east of SR 29 with up to 32 visitors per day and three employees
- **WHL Winery** – 10,000 gallon winery on Whitehall Lane, west of SR 29 with no tasting room and 10 employees
- **LMR Rutherford Estate Winery** – 100,000 gallon winery on SR 29, between Mee Lane and SR 128 (Rutherford Road) with 50 visitors and eight employees

The Existing plus Approved traffic volumes on SR 29 are summarized in Table 5.

Table 5 – Existing plus Approved Traffic Volumes

Study Segment	Weekday		Weekday PM Peak		Saturday		Weekend MD Peak	
	SB	NB	SB	NB	SB	NB	SB	NB
SR 29 North of Zinfandel Ln	8,080	6,130	808	613	10,043	9,878	913	898
SR 29 South of Zinfandel Ln	7,920	6,280	792	628	9,779	10,813	889	983

Under Existing plus Approved conditions, the study intersection is expected to continue operating acceptably at LOS A overall during the weekday p.m. peak period and LOS C during the weekend midday peak period. The westbound approach will continue to experience high delays during both peak periods and delay is expected to increase on the eastbound approach to drop to LOS F operation during the weekend midday peak period. A summary of the intersection level of service calculations is contained in Table 6, volumes are shown in Figure 1 and copies of the Level of Service calculations are provided in Appendix B.

Table 6 – Existing plus Approved Peak Hour Intersection Levels of Service

Study Intersection *Approach*	PM Peak		Midday Peak	
	Delay	LOS	Delay	LOS
SR 29/Zinfandel Ln	4.1	A	24.0	C
Westbound Approach	*59.2*	*F*	**	*F*
Eastbound Approach	*29.8*	*D*	**	*F*

Notes: Delay is measured in average seconds per vehicle; LOS = Level of Service; Results for minor approaches to two-way stop-controlled intersections are indicated in *italics;*
** = delay greater than 120 seconds

Future Conditions

Segment volumes for the horizon year of 2030 are typically obtained from the County's gravity demand model. However, at SR 29 near Zinfandel Lane, the model shows a 148 percent increase between 2010 and 2030 volumes, which does not appear reasonable or achievable. In order to arrive at more reasonable future volumes, an average was taken of the percent increase per year based on published Caltrans volumes between 1993 and 2007 and translated to a growth factor over 20 years. It is noted that volumes from 2008 on were not used as this was when volumes started substantially decreasing due to the recession. Using this method, there was an average of 2.76

percent growth in traffic volumes per year in the area of SR 29/Zinfandel Lane, which equates to a growth factor of 1.72 for 20 years. The future traffic volumes on SR 29 arrived at by applying this growth factor are summarized in Table 7.

Table 7 – Future Traffic Volumes

Study Segment	Weekday		Weekday PM Peak		Saturday		Weekend MD Peak	
	SB	NB	SB	NB	SB	NB	SB	NB
SR 29 North of Zinfandel Ln	13,830	10,270	1,383	1,027	16,995	16,709	1,545	1,519
SR 29 South of Zinfandel Ln	13,480	10,540	1,348	1,054	16,500	18,282	1,500	1,662

Under the anticipated Future volumes, the study intersection is expected to operate unacceptably at LOS F overall as well on both the eastbound and westbound stop-controlled approaches. Future volumes are shown in Figure 1 and operating conditions are summarized in Table 8.

Table 8 – Future Peak Hour Intersection Levels of Service

Study Intersection *Approach*	PM Peak		Midday Peak	
	Delay	LOS	Delay	LOS
SR 29/Zinfandel Ln	**103.1**	**F**	**	**F**
Westbound Approach	**	***F***	**	***F***
Eastbound Approach	**	***F***	**	***F***

Notes: Delay is measured in average seconds per vehicle; LOS = Level of Service; Results for minor approaches to two-way stop-controlled intersections are indicated in *italics;* ** = delay greater than 120 seconds; **Bold** text = deficient operation

Recommendation – The County and Caltrans should consider installing a traffic signal at the intersection of SR 29/ Zinfandel Lane to avoid unacceptable operation of this intersection in the future. This project could be included in the County's Traffic Impact Fee program at such time as one is established.

Project Description

The project consists of a Use Permit Modification application to update the number of special events and tasting room visitors. Flora Springs Winery proposes to modify their use permit to allow a maximum of 100 visitors per day, two lunchtime events and two wine club events for up to 50 people, and two dinnertime events for up to 25 people per week. The application also includes three wine club release events for up to 250 guests, one trilogy wine club release event for up to 350 guests and one wine auction event for up to 60 guests annually. It is anticipated that some of the existing part-time staff would be converted to full-time staff with the additional guests and events.

Trip Generation

The anticipated trip generation for a proposed project is typically estimated using standard rates published by the Institute of Transportation Engineers (ITE) in *Trip Generation Manual*, 9th Edition, 2012. However, the publication contains no such information for a winery. Therefore, the County of Napa's Winery Traffic Information/Trip Generation Sheet was used to determine the anticipated traffic generated both the production that is already

permitted at the site and with the proposed changes to the Use Permit. The trip generation worksheet is provided in Appendix C.

As the County of Napa's Winery Traffic Information/Trip Generation Sheet does not include guidance on inbound versus outbound trips, it was assumed that 75 percent of trip ends at the winery would be outbound during the weekday p.m. peak hour since most of the trips would be associated with employees and customers leaving at closure of the winery. For the weekend midday peak hour it was assumed that inbound and outbound trip ends would be evenly split.

As indicated in Table 9, the proposed change to the Flora Springs Winery's Use Permit is expected to result in an average of 42 additional trip ends on weekdays and 19 on weekend days, including 11 additional trip ends each during the weekday p.m. and weekday midday peak periods.

Table 9 – Trip Generation Summary

Land Use	Daily		Weekday PM Peak Hour			Weekend MD Peak Hour		
	Weekday	Weekend	Trips	In	Out	Trips	In	Out
Existing								
Employees	45	9	14	3	11	3	2	1
Tasting Visitors	52	52	24	7	17	32	16	16
Truck Traffic	2	0	0	0	0	0	0	0
Subtotal	*99*	*61*	*38*	*10*	*28*	*35*	*18*	*17*
Proposed								
Employees	51	9	16	4	12	3	1	2
Tasting Visitors	77	71	33	8	25	43	22	21
Truck Traffic	2	0	0	0	0	0	0	0
Subtotal	*130*	*80*	*49*	*12*	*37*	*46*	*23*	*23*
Net New Trips	**42**	**19**	**11**	**2**	**9**	**11**	**5**	**6**

Note: Trip generation as estimated above does not include special events

Trip Distribution

The pattern used to allocate new project trips to the street network was based on turning movements at the intersection of SR 29 and Zinfandel Lane. The applied distribution assumptions and resulting trips are shown in Table 10.

Table 10 – Trip Distribution Assumptions

Route	Percent	Daily Trips	Weekend Trips	PM Trips	Midday Trips
to/from SR 29 North	40%	17	8	4	4
to/from SR 29 South	55%	23	10	6	6
to/from Zinfandel Ln East	5%	2	1	1	1
TOTAL	**100%**	**42**	**19**	**11**	**11**

Special Events

Three different sized wine-marketing and agricultural promotion events are proposed as part of the Use Permit modification, including two 25-person events and four 50-person events per week, and one 60-person event, three 250-person events, and one 350-person event per year. It was assumed that a maximum-sized 350-person event would require a staff of 18 in addition to any winery staff that would assist with the event. Using the County-established occupancy of 2.8 persons per vehicle for guests and solo occupancy for staff, a maximum-sized 350-person event would be expected to generate 290 trip ends on the west leg of Zinfandel Lane, including 145 inbound trips and 145 outbound trips. This once-per-year event is proposed to take place between 11:00 a.m. to 10:00 p.m., with staff arriving an hour or more prior to the start of the event and leaving an hour or more after its conclusion. Guests would generate 125 trips for arrival and 125 for departure, with these trips generally occurring over more than an hour's time. Distributed evenly to the north and south, the maximum-sized special event would be expected to generate a maximum of 67 trips during any single hour on each of the segments of SR 29 to the north and south of Zinfandel Lane. Given that this and the other large special events are infrequent, are not part of typical daily operation, and often occur outside the peak period for traffic, together with the minimal increase in traffic associated with all but the very largest, special event traffic was not included in the daily trip generation and resulting intersection operation analysis.

Intersection Operation

Existing plus Project Conditions

Volumes on SR 29 north and south of Zinfandel Lane both without and with project trips included are shown in Table 11. As can readily be seen, the 11 hourly trips result in a maximum of 4 additional trips on any single segment of SR 29.

Table 11 – Existing and Existing plus Project Traffic Volumes

Study Segment	Existing Conditions				Existing plus Project Conditions			
	Weekday PM Peak		Weekend Midday Peak		Weekday PM Peak		Weekend Midday Peak	
	SB	NB	SB	NB	SB	NB	SB	NB
SR 29 North of Zinfandel Ln	804	597	898	883	805	601	900	886
SR 29 South of Zinfandel Ln	784	613	872	966	788	615	875	969

Upon the addition of project-related traffic to the Existing volumes, the intersection is expected to continue operating acceptably overall at LOS A during the weekday p.m. peak period and LOS C during the weekend midday peak period. The westbound approach is expected to continue operating at LOS F during both peak periods and the eastbound approach is expected to continue operating at LOS E during the weekend midday peak period; no changes in service level are projected as a result of the project. These results are summarized in Table 12. Project traffic volumes are shown in Figure 1.

Table 12 – Existing and Existing plus Project Peak Hour Intersection Levels of Service								
Study Intersection *Approach*	**Existing Conditions**				**Existing plus Project**			
	PM Peak		**Midday Peak**		**PM Peak**		**Midday Peak**	
	Delay	**LOS**	**Delay**	**LOS**	**Delay**	**LOS**	**Delay**	**LOS**
SR 29/Zinfandel Ln	3.2	A	17.0	C	3.5	A	17.9	C
Westbound Approach	***48.4***	***E***	**	***F***	***49.9***	***E***	**	*F*
Eastbound Approach	*28.9*	*D*	***114.0***	***F***	*32.0*	*D*	***114.9***	***F***

Notes: Delay is measured in average seconds per vehicle; LOS = Level of Service; Results for minor approaches to two-way stop-controlled intersections are indicated in *italics;* ** = delay greater than 120 seconds; **Bold** text = deficient operation

Finding – The study intersections are expected to continue operating acceptably at the same levels of service upon the addition of project-generated traffic.

Existing plus Approved plus Project Conditions

Existing plus Approved volumes on SR 29 north and south of Zinfandel Lane are shown in Table 13 along with the projected volumes upon adding the traffic associated with the proposed Use Permit modification.

Table 13 – Existing plus Approved and Existing plus Approved plus Project Traffic Volumes								
Study Segment	**Existing plus Approved Conditions**				**Existing plus Approved plus Project**			
	Weekday PM Peak		**Weekend Midday Peak**		**Weekday PM Peak**		**Weekend Midday Peak**	
	SB	**NB**	**SB**	**NB**	**SB**	**NB**	**SB**	**NB**
SR 29 North of Zinfandel Ln	808	613	913	898	809	617	915	901
SR 29 South of Zinfandel Ln	792	628	889	983	796	630	892	986

With project-related traffic added to Existing plus Approved volumes, the intersection is expected to operate acceptably overall at LOS A during the weekday p.m. peak period, though it will drop to LOS D overall during the weekend midday peak period. Because operation remains at the LOS C/D threshold (0.2 seconds into the LOS D range), this operation would continue to be acceptable under the Caltrans standards applied. The westbound approach is expected to continue operating at LOS F during both peak periods, with the eastbound approach at LOS F during the weekend midday peak period. These results are summarized in Table 14.

Table 14 – Existing plus Approved and Existing plus Approved plus Project Peak Hour Levels of Service								
Study Intersection *Approach*	**Existing plus Approved Conditions**				**Existing plus Approved plus Project**			
	PM Peak		**Midday Peak**		**PM Peak**		**Midday Peak**	
	Delay	**LOS**	**Delay**	**LOS**	**Delay**	**LOS**	**Delay**	**LOS**
SR 29/Zinfandel Ln	4.1	A	24.0	C	4.4	A	25.2	D
Westbound Approach	***59.2***	***F***	**	***F***	***61.4***	***F***	**	***F***
Eastbound Approach	*29.8*	*D*	**	***F***	33.2	D	**	***F***

Notes: Delay is measured in average seconds per vehicle; LOS = Level of Service; Results for minor approaches to two-way stop-controlled intersections are indicated in *italics;* ** = delay greater than 120 seconds; **Bold** text = deficient operation

Finding – The study intersections are expected to continue operating acceptably at LOS A during the weekday p.m. peak period and at the LOS C/D threshold during the weekend midday peak period upon the addition of project-generated traffic.

Future plus Project Conditions

Future volumes on SR 29 north and south of Zinfandel Lane are shown in Table 15, both without project traffic added and with it.

Table 15 – Future and Future plus Project Traffic Volumes								
Study Segment	**Future Conditions**				**Future plus Project Conditions**			
	Weekday PM Peak		**Weekend Midday Peak**		**Weekday PM Peak**		**Weekend Midday Peak**	
	SB	**NB**	**SB**	**NB**	**SB**	**NB**	**SB**	**NB**
SR 29 North of Zinfandel Ln	1,383	1,027	1,545	1,519	1,384	1,031	1,547	1,522
SR 29 South of Zinfandel Ln	1,348	1,054	1,500	1,662	1,353	1,055	1,503	1,665

Upon the addition of project-generated traffic to the anticipated Future volumes, the study intersection is expected to continue to operate unacceptably at LOS F overall as well on the eastbound and westbound approaches. The Future plus Project operating conditions are summarized in Table 16.

Table 16 – Future and Future plus Project Peak Hour Levels of Service								
Study Intersection *Approach*	**Future Conditions**				**Future plus Project**			
	PM Peak		**Midday Peak**		**PM Peak**		**Midday Peak**	
	Delay	**LOS**	**Delay**	**LOS**	**Delay**	**LOS**	**Delay**	**LOS**
SR 29/Zinfandel Ln	**103.1**	**F**	**	**F**	**110.3**	**F**	**	**F**
Westbound Approach	**	***F***	**	***F***	**	***F***	**	***F***
Eastbound Approach	**	***F***	**	***F***	**	***F***	**	***F***

Notes: Delay is measured in average seconds per vehicle; LOS = Level of Service; Results for minor approaches to two-way stop-controlled intersections are indicated in *italics;* ** = delay greater than 120 seconds; **Bold** text = deficient operation

Finding – The study intersection will continue operating unacceptably with project traffic added, at the same Levels of Service as without it. Under Future conditions, project trips contribute 0.42 percent of total trips through the intersection during the weekday p.m. peak period and 0.32 percent of total trips during the weekend midday peak period, both of which are less than the 1 percent threshold at which the increase is considered significant. The impact is therefore *less-than-significant.*

Recommendation – The applicant should pay appropriate traffic impact fees if established prior to completion of this application.

Access and Circulation

Site Access

Flora Springs Winery is currently accessed by a private driveway that connects to Zinfandel Lane where it terminates. Because of the alignment there is no need for sight distance analysis as there would be no right or left turns; all visitors and employees continue to drive straight on Zinfandel Lane until it turns into the project driveway.

At the intersection of SR 29/Zinfandel Lane, there are existing left-turn lanes on both the northbound and southbound SR 29 approaches.

On-Site Circulation

The site layout is not changing with the addition of tasting room visitors or special events. A field review of the site indicates adequate space for vehicle and truck circulation.

Conclusions and Recommendations

Conclusions

- The proposed changes to the Use Permit would generate a net increase of 42 daily trips, including 11 weekday p.m. peak period trips and 11 weekend midday peak period trips.
- The study intersection of SR 29/Zinfandel Lane is expected to continue to operate acceptably under Existing and Existing plus Approved conditions without and with project-added trips.
- The intersection is expected to operate unacceptably under Future conditions and Future plus Project conditions. Because project trips account for less than 1 percent of future volumes, the impact is considered less-than-significant.
- The largest special event would be one 350-person event per year with approximately 18 special event employees.
- There is no change in site access or site circulation.

Recommendations

- Should the County establish a traffic impact fee prior to the processing of the application to modify the Use Permit, the applicant should pay appropriate mitigation fees to contribute to future infrastructure improvements that could include signalization of SR 29/Zinfandel Lane.

Study Participants and References

Study Participants

Principal in Charge	Dalene J. Whitlock, PE, PTOE
Assistant Engineer	Lauren Davini, EIT
Technician/Graphics	Deborah J. Mizell
Editing/Formatting	Angela McCoy

References

2010 Collision Data on California State Highways, California Department of Transportation, 2010
Highway Capacity Manual, Transportation Research Board, 2000
Napa County General Plan, County of Napa, 2013
Statewide Integrated Traffic Records System (SWITRS), California Highway Patrol, 2008-2013
Trip Generation Manual, 9th Edition, Institute of Transportation Engineers, 2012

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Appendix A

Collision Rate Calculations

Intersection Collision Rate Calculations

Flora Springs Winery

Intersection # 1: SR 29 & Zinfandel Ln
Date of Count: Tuesday, June 30, 2015

Number of Collisions: 17
Number of Injuries: 4
Number of Fatalities: 0
ADT: 15,100
Start Date: October 1, 2008
End Date: September 30, 2013
Number of Years: 5

Intersection Type: Four-Legged
Control Type: Stop & Yield Controls
Area: Rural

$$\text{collision rate} = \frac{\text{Number of Collisions} \times 1 \text{ Million}}{\text{ADT} \times 365 \text{ Days per Year} \times \text{Number of Years}}$$

$$\text{collision rate} = \frac{17 \times 1{,}000{,}000}{15{,}100 \times 365 \times 5}$$

	Collision Rate	Fatality Rate	Injury Rate
Study Intersection	0.62 c/mve	0.0%	23.5%
Statewide Average*	0.23 c/mve	2.0%	40.4%

ADT = average daily total vehicles entering intersection
c/mve = collisions per million vehicles entering intersection
* 2010 Collision Data on California State Highways, Caltrans

Appendix B

Intersection Level of Service Calculations

PM Peak Hour - Existing Conditions
Flora Springs Winery Use Permit Modification
County of Napa

Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #1 SR 29/Zinfandel

Average Delay (sec/veh): 3.2 Worst Case Level Of Service: E[48.4]

Street Name:	SR 29						Zinfandel					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Lanes:	1 0	0	1 0	1 0	0	1 0	0 0	1!	0 0	0 0	1!	0 0
Volume Module: >> Count Date: 30 Jun 2015 << 16:30-17:30												
Base Vol:	2	551	60	63	738	3	5	2	11	35	1	41
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	2	551	60	63	738	3	5	2	11	35	1	41
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
PHF Volume:	2	574	63	66	769	3	5	2	11	36	1	43
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	2	574	63	66	769	3	5	2	11	36	1	43
Critical Gap Module:												
Critical Gp:	4.1	xxxx	xxxxx	4.1	xxxx	xxxxx	7.1	6.5	6.2	7.1	6.5	6.2
FollowUpTim:	2.2	xxxx	xxxxx	2.2	xxxx	xxxxx	3.5	4.0	3.3	3.5	4.0	3.3
Capacity Module:												
Cnflict Vol:	772	xxxx	xxxxx	636	xxxx	xxxxx	1533	1542	770	1518	1513	605
Potent Cap.:	852	xxxx	xxxxx	957	xxxx	xxxxx	96	116	404	99	121	501
Move Cap.:	852	xxxx	xxxxx	957	xxxx	xxxxx	83	108	404	89	113	501
Volume/Cap:	0.00	xxxx	xxxx	0.07	xxxx	xxxx	0.06	0.02	0.03	0.41	0.01	0.09
Level Of Service Module:												
2Way95thQ:	0.0	xxxx	xxxxx	0.2	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	9.2	xxxx	xxxxx	9.0	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	A	*	*	A	*	*	*	*	*	*	*	*
Movement:	LT - LTR - RT			LT - LTR - RT			LT - LTR - RT			LT - LTR - RT		
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	169	xxxxx	xxxx	160	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	0.4	xxxxx	xxxxx	2.4	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	28.9	xxxxx	xxxxx	48.4	xxxxx
Shared LOS:	*	*	*	*	*	*	*	D	*	*	E	*
ApproachDel:	xxxxxx			xxxxxx			28.9			48.4		
ApproachLOS:	*			*			D			E		

Note: Queue reported is the number of cars per lane.

Saturday Midday Peak Hour - Existing Conditions
Flora Springs Winery Use Permit Modification
County of Napa

Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #1 SR 29/Zinfandel

Average Delay (sec/veh): 17.0 Worst Case Level Of Service: F[247.8]

Street Name:	SR 29						Zinfandel					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Lanes:	1 0	0	1 0	1 0	0	1 0	0 0	1!	0 0	0 0	1!	0 0
Volume Module: >> Count Date: 27 Jun 2015 << 14:45-15:45												
Base Vol:	7	793	166	74	821	3	10	1	4	47	0	80
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	7	793	166	74	821	3	10	1	4	47	0	80
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
PHF Volume:	7	809	169	76	838	3	10	1	4	48	0	82
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	7	809	169	76	838	3	10	1	4	48	0	82
Critical Gap Module:												
Critical Gp:	4.1	xxxx	xxxxx	4.1	xxxx	xxxxx	7.1	6.5	6.2	7.1	6.5	6.2
FollowUpTim:	2.2	xxxx	xxxxx	2.2	xxxx	xxxxx	3.5	4.0	3.3	3.5	4.0	3.3
Capacity Module:												
Cnflict Vol:	841	xxxx	xxxxx	979	xxxx	xxxxx	1939	1983	839	1901	1900	894
Potent Cap.:	803	xxxx	xxxxx	713	xxxx	xxxxx	50	62	369	53	70	343
Move Cap.:	803	xxxx	xxxxx	713	xxxx	xxxxx	35	55	369	47	62	343
Volume/Cap:	0.01	xxxx	xxxx	0.11	xxxx	xxxx	0.29	0.02	0.01	1.01	0.00	0.24
Level Of Service Module:												
2Way95thQ:	0.0	xxxx	xxxxx	0.4	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	9.5	xxxx	xxxxx	10.6	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	A	*	*	B	*	*	*	*	*	*	*	*
Movement:	LT - LTR - RT			LT - LTR - RT			LT - LTR - RT			LT - LTR - RT		
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	47	xxxxx	xxxx	103	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	1.1	xxxxx	xxxxx	8.8	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	114	xxxxx	xxxxx	248	xxxxx
Shared LOS:	*	*	*	*	*	*	*	F	*	*	F	*
ApproachDel:	xxxxxx			xxxxxx			114.0			247.8		
ApproachLOS:	*			*			F			F		

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Existing plus Project Conditions
Flora Springs Winery Use Permit Modification
County of Napa

Trip Generation Report

Forecast for PM Project

Zone #	Subzone	Amount	Units	Rate In	Rate Out	Trips In	Trips Out	Total Trips	% Of Total
1	Flora Spring	1.00	Winery	2.00	9.00	2	9	11	100.0
	Zone 1 Subtotal					2	9	11	100.0
TOTAL						2	9	11	100.0

Saturday Midday Peak Hour - Existing Conditions
Flora Springs Winery Use Permit Modification
County of Napa

Trip Generation Report

Forecast for MD Project

Zone #	Subzone	Amount	Units	Rate In	Rate Out	Trips In	Trips Out	Total Trips	% Of Total
1	Flora Spring	1.00	Winery	5.00	6.00	5	6	11	100.0
	Zone 1 Subtotal					5	6	11	100.0
TOTAL						5	6	11	100.0

PM Peak Hour - Existing plus Project Conditions
Flora Springs Winery Use Permit Modification
County of Napa

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #1 SR 29/Zinfandel

Average Delay (sec/veh): 3.5 Worst Case Level Of Service: E[49.9]

Street Name:	SR 29						Zinfandel					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Lanes:	1 0	0	1 0	1 0	0	1 0	0 0	1!	0 0	0 0	1!	0 0
Volume Module: >> Count Date: 30 Jun 2015 << 16:30-17:30												
Base Vol:	2	551	60	63	738	3	5	2	11	35	1	41
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	2	551	60	63	738	3	5	2	11	35	1	41
Added Vol:	1	0	0	0	0	1	4	0	5	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	3	551	60	63	738	4	9	2	16	35	1	41
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
PHF Volume:	3	574	63	66	769	4	9	2	17	36	1	43
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	3	574	63	66	769	4	9	2	17	36	1	43
Critical Gap Module:												
Critical Gp:	4.1	xxxx	xxxxx	4.1	xxxx	xxxxx	7.1	6.5	6.2	7.1	6.5	6.2
FollowUpTim:	2.2	xxxx	xxxxx	2.2	xxxx	xxxxx	3.5	4.0	3.3	3.5	4.0	3.3
Capacity Module:												
Cnflict Vol:	773	xxxx	xxxxx	636	xxxx	xxxxx	1535	1545	771	1523	1516	605
Potent Cap.:	851	xxxx	xxxxx	957	xxxx	xxxxx	96	116	403	98	121	501
Move Cap.:	851	xxxx	xxxxx	957	xxxx	xxxxx	82	107	403	87	112	501
Volume/Cap:	0.00	xxxx	xxxx	0.07	xxxx	xxxx	0.11	0.02	0.04	0.42	0.01	0.09
Level Of Service Module:												
2Way95thQ:	0.0	xxxx	xxxxx	0.2	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	9.2	xxxx	xxxxx	9.0	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	A	*	*	A	*	*	*	*	*	*	*	*
Movement:	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	161	xxxxx	xxxx	157	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	0.6	xxxxx	xxxxx	2.5	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	32.0	xxxxx	xxxxx	49.9	xxxxx
Shared LOS:	*	*	*	*	*	*	*	D	*	*	E	*
ApproachDel:	xxxxxx			xxxxxx			32.0			49.9		
ApproachLOS:	*			*			D			E		

Note: Queue reported is the number of cars per lane.

Saturday Midday Peak Hour - Existing Conditions
Flora Springs Winery Use Permit Modification
County of Napa

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #1 SR 29/Zinfandel

Average Delay (sec/veh): 17.9 Worst Case Level Of Service: F[259.5]

Street Name:	SR 29						Zinfandel					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Lanes:	1 0	0	1 0	1 0	0	1 0	0 0	1!	0 0	0 0	1!	0 0
Volume Module: >> Count Date: 27 Jun 2015 << 14:45-15:45												
Base Vol:	7	793	166	74	821	3	10	1	4	47	0	80
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	7	793	166	74	821	3	10	1	4	47	0	80
Added Vol:	3	0	0	0	0	2	2	0	3	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	10	793	166	74	821	5	12	1	7	47	0	80
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
PHF Volume:	10	809	169	76	838	5	12	1	7	48	0	82
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	10	809	169	76	838	5	12	1	7	48	0	82
Critical Gap Module:												
Critical Gp:	4.1	xxxx	xxxxx	4.1	xxxx	xxxxx	7.1	6.5	6.2	7.1	6.5	6.2
FollowUpTim:	2.2	xxxx	xxxxx	2.2	xxxx	xxxxx	3.5	4.0	3.3	3.5	4.0	3.3
Capacity Module:												
Cnflict Vol:	843	xxxx	xxxxx	979	xxxx	xxxxx	1946	1990	840	1910	1908	894
Potent Cap.:	802	xxxx	xxxxx	713	xxxx	xxxxx	49	61	368	52	69	343
Move Cap.:	802	xxxx	xxxxx	713	xxxx	xxxxx	34	54	368	46	61	343
Volume/Cap:	0.01	xxxx	xxxx	0.11	xxxx	xxxx	0.36	0.02	0.02	1.04	0.00	0.24
Level Of Service Module:												
2Way95thQ:	0.0	xxxx	xxxxx	0.4	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	9.5	xxxx	xxxxx	10.6	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	A	*	*	B	*	*	*	*	*	*	*	*
Movement:	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	52	xxxxx	xxxx	101	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	1.4	xxxxx	xxxxx	9.0	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	115	xxxxx	xxxxx	259	xxxxx
Shared LOS:	*	*	*	*	*	*	*	F	*	*	F	*
ApproachDel:	xxxxxx			xxxxxx			114.9			259.5		
ApproachLOS:	*			*			F			F		

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Existing plus Approved
Flora Springs Winery Use Permit Modification
County of Napa

Trip Generation Report

Forecast for PM Approved

Zone #	Subzone	Amount	Units	Rate In	Rate Out	Trips In	Trips Out	Total Trips	% Of Total
2		1.00	Accendo Cellar	3.00	10.00	3	10	13	26.0
	Zone 2 Subtotal					3	10	13	26.0
3		1.00	WHL Winery	3.00	9.00	3	9	12	24.0
	Zone 3 Subtotal					3	9	12	24.0
4		1.00	Rutherford Est	6.00	19.00	6	19	25	50.0
	Zone 4 Subtotal					6	19	25	50.0
TOTAL						12	38	50	100.0

Saturday Midday Peak Hour - Existing plus Approved
Flora Springs Winery Use Permit Modification
County of Napa

Trip Generation Report

Forecast for MD Approved

Zone #	Subzone	Amount	Units	Rate In	Rate Out	Trips In	Trips Out	Total Trips	% Of Total
2		1.00	Accendo Cellar	9.00	9.00	9	9	18	25.7
	Zone 2 Subtotal					9	9	18	25.7
3		1.00	WHL Winery	9.00	9.00	9	9	18	25.7
	Zone 3 Subtotal					9	9	18	25.7
4		1.00	Rutherford Est	17.00	17.00	17	17	34	48.6
	Zone 4 Subtotal					17	17	34	48.6
TOTAL						35	35	70	100.0

PM Peak Hour - Existing plus Approved
Flora Springs Winery Use Permit Modification
County of Napa

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #1 SR 29/Zinfandel

Average Delay (sec/veh): 4.1 Worst Case Level Of Service: F[59.2]

Street Name:	SR 29						Zinfandel					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Lanes:	1 0	0	1 0	1 0	0	1 0	0 0	1!	0 0	0 0	1!	0 0
Volume Module: >> Count Date: 30 Jun 2015 << 16:30-17:30												
Base Vol:	2	551	60	63	738	3	5	2	11	35	1	41
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	2	551	60	63	738	3	5	2	11	35	1	41
Added Vol:	0	11	3	1	4	0	0	0	0	6	0	4
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	2	562	63	64	742	3	5	2	11	41	1	45
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
PHF Volume:	2	585	66	67	773	3	5	2	11	43	1	47
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	2	585	66	67	773	3	5	2	11	43	1	47
Critical Gap Module:												
Critical Gp:	4.1	xxxx	xxxxx	4.1	xxxx	xxxxx	7.1	6.5	6.2	7.1	6.5	6.2
FollowUpTim:	2.2	xxxx	xxxxx	2.2	xxxx	xxxxx	3.5	4.0	3.3	3.5	4.0	3.3
Capacity Module:												
Cnflict Vol:	776	xxxx	xxxxx	651	xxxx	xxxxx	1554	1563	774	1537	1532	618
Potent Cap.:	849	xxxx	xxxxx	945	xxxx	xxxxx	93	113	401	96	118	493
Move Cap.:	849	xxxx	xxxxx	945	xxxx	xxxxx	79	105	401	86	109	493
Volume/Cap:	0.00	xxxx	xxxx	0.07	xxxx	xxxx	0.07	0.02	0.03	0.49	0.01	0.10
Level Of Service Module:												
2Way95thQ:	0.0	xxxx	xxxxx	0.2	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	9.3	xxxx	xxxxx	9.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	A	*	*	A	*	*	*	*	*	*	*	*
Movement:	LT -	LTR -	RT	LT -	LTR -	RT	LT -	LTR -	RT	LT -	LTR -	RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	164	xxxxx	xxxx	151	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	0.4	xxxxx	xxxxx	3.2	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	29.8	xxxxx	xxxxx	59.2	xxxxx
Shared LOS:	*	*	*	*	*	*	*	D	*	*	F	*
ApproachDel:	xxxxxx			xxxxxx			29.8			59.2		
ApproachLOS:	*			*			D			F		

Note: Queue reported is the number of cars per lane.

Saturday Midday Peak Hour - Existing plus Approved
Flora Springs Winery Use Permit Modification
County of Napa

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #1 SR 29/Zinfandel

Average Delay (sec/veh): 24.0 Worst Case Level Of Service: F[337.8]

Street Name:	SR 29						Zinfandel					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Lanes:	1 0	0	1 0	1 0	0	1 0	0 0	1!	0 0	0 0	1!	0 0
Volume Module: >> Count Date: 27 Jun 2015 << 14:45-15:45												
Base Vol:	7	793	166	74	821	3	10	1	4	47	0	80
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	7	793	166	74	821	3	10	1	4	47	0	80
Added Vol:	0	10	6	4	10	0	0	0	0	6	0	4
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	7	803	172	78	831	3	10	1	4	53	0	84
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
PHF Volume:	7	819	176	80	848	3	10	1	4	54	0	86
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	7	819	176	80	848	3	10	1	4	54	0	86
Critical Gap Module:												
Critical Gp:	4.1	xxxx	xxxxx	4.1	xxxx	xxxxx	7.1	6.5	6.2	7.1	6.5	6.2
FollowUpTim:	2.2	xxxx	xxxxx	2.2	xxxx	xxxxx	3.5	4.0	3.3	3.5	4.0	3.3
Capacity Module:												
Cnflict Vol:	851	xxxx	xxxxx	995	xxxx	xxxxx	1973	2018	849	1933	1932	907
Potent Cap.:	796	xxxx	xxxxx	703	xxxx	xxxxx	47	59	364	50	67	337
Move Cap.:	796	xxxx	xxxxx	703	xxxx	xxxxx	32	52	364	45	59	337
Volume/Cap:	0.01	xxxx	xxxx	0.11	xxxx	xxxx	0.32	0.02	0.01	1.21	0.00	0.25
Level Of Service Module:												
2Way95thQ:	0.0	xxxx	xxxxx	0.4	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	9.6	xxxx	xxxxx	10.8	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	A	*	*	B	*	*	*	*	*	*	*	*
Movement:	LT -	LTR -	RT	LT -	LTR -	RT	LT -	LTR -	RT	LT -	LTR -	RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	44	xxxxx	xxxx	95	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	1.2	xxxxx	xxxxx	10.5	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	127	xxxxx	xxxxx	338	xxxxx
Shared LOS:	*	*	*	*	*	*	*	F	*	*	F	*
ApproachDel:	xxxxxx			xxxxxx			126.6			337.8		
ApproachLOS:	*			*			F			F		

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Existing plus Approved plus Project
Flora Springs Winery Use Permit Modification
County of Napa

Trip Generation Report

Forecast for PM Project

Zone #	Subzone	Amount	Units	Rate In	Rate Out	Trips In	Trips Out	Total Trips	% Of Total
1	Flora Spring	1.00	Winery	2.00	9.00	2	9	11	18.0
	Zone 1 Subtotal					2	9	11	18.0
TOTAL						2	9	11	18.0

Saturday Midday Peak Hour - Existing plus Approved plus Project
Flora Springs Winery Use Permit Modification
County of Napa

Trip Generation Report

Forecast for MD Project

Zone #	Subzone	Amount	Units	Rate In	Rate Out	Trips In	Trips Out	Total Trips	% Of Total
1	Flora Spring	1.00	Winery	5.00	6.00	5	6	11	13.6
	Zone 1 Subtotal					5	6	11	13.6
TOTAL						5	6	11	13.6

PM Peak Hour - Existing plus Approved plus Project
Flora Springs Winery Use Permit Modification
County of Napa

Trip Generation Report

Forecast for PM Approved

Zone #	Subzone	Amount	Units	Rate In	Rate Out	Trips In	Trips Out	Total Trips	% Of Total
2		1.00	Accendo Cellar	3.00	10.00	3	10	13	21.3
	Zone 2 Subtotal					3	10	13	21.3
3		1.00	WHL Winery	3.00	9.00	3	9	12	19.7
	Zone 3 Subtotal					3	9	12	19.7
4		1.00	Rutherford Est	6.00	19.00	6	19	25	41.0
	Zone 4 Subtotal					6	19	25	41.0
TOTAL						12	38	50	82.0

Saturday Midday Peak Hour - Existing plus Approved plus Project
Flora Springs Winery Use Permit Modification
County of Napa

Trip Generation Report

Forecast for MD Approved

Zone #	Subzone	Amount	Units	Rate In	Rate Out	Trips In	Trips Out	Total Trips	% Of Total
2		1.00	Accendo Cellar	9.00	9.00	9	9	18	22.2
	Zone 2 Subtotal					9	9	18	22.2
3		1.00	WHL Winery	9.00	9.00	9	9	18	22.2
	Zone 3 Subtotal					9	9	18	22.2
4		1.00	Rutherford Est	17.00	17.00	17	17	34	42.0
	Zone 4 Subtotal					17	17	34	42.0
TOTAL						35	35	70	86.4

PM Peak Hour - Existing plus Approved plus Project
Flora Springs Winery Use Permit Modification
County of Napa

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #1 SR 29/Zinfandel

Average Delay (sec/veh): 4.4 Worst Case Level Of Service: F[61.4]

Street Name:	SR 29						Zinfandel					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Lanes:	1 0	0	1 0	1 0	0	1 0	0 0	1! 0	0	0 0	1! 0	0
Volume Module: >> Count Date: 30 Jun 2015 << 16:30-17:30												
Base Vol:	2	551	60	63	738	3	5	2	11	35	1	41
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	2	551	60	63	738	3	5	2	11	35	1	41
Added Vol:	1	11	3	1	4	1	4	0	5	6	0	4
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	3	562	63	64	742	4	9	2	16	41	1	45
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
PHF Volume:	3	585	66	67	773	4	9	2	17	43	1	47
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	3	585	66	67	773	4	9	2	17	43	1	47
Critical Gap Module:												
Critical Gp:	4.1	xxxx	xxxxx	4.1	xxxx	xxxxx	7.1	6.5	6.2	7.1	6.5	6.2
FollowUpTim:	2.2	xxxx	xxxxx	2.2	xxxx	xxxxx	3.5	4.0	3.3	3.5	4.0	3.3
Capacity Module:												
Cnflict Vol:	777	xxxx	xxxxx	651	xxxx	xxxxx	1557	1566	775	1542	1535	618
Potent Cap.:	848	xxxx	xxxxx	945	xxxx	xxxxx	93	112	401	95	117	493
Move Cap.:	848	xxxx	xxxxx	945	xxxx	xxxxx	79	104	401	84	109	493
Volume/Cap:	0.00	xxxx	xxxx	0.07	xxxx	xxxx	0.12	0.02	0.04	0.51	0.01	0.10
Level Of Service Module:												
2Way95thQ:	0.0	xxxx	xxxxx	0.2	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	9.3	xxxx	xxxxx	9.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	A	*	*	A	*	*	*	*	*	*	*	*
Movement:	LT -	LTR -	RT	LT -	LTR -	RT	LT -	LTR -	RT	LT -	LTR -	RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	155	xxxxx	xxxx	148	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	0.6	xxxxx	xxxxx	3.2	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	33.2	xxxxx	xxxxx	61.4	xxxxx
Shared LOS:	*	*	*	*	*	*	*	D	*	*	F	*
ApproachDel:	xxxxxx			xxxxxx			33.2			61.4		
ApproachLOS:	*			*			D			F		

Note: Queue reported is the number of cars per lane.

Saturday Midday Peak Hour - Existing plus Approved plus Project
Flora Springs Winery Use Permit Modification
County of Napa

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #1 SR 29/Zinfandel

Average Delay (sec/veh): 25.2 Worst Case Level Of Service: F[352.6]

Street Name:	SR 29						Zinfandel					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Lanes:	1 0	0	1 0	1 0	0	1 0	0 0	1! 0	0	0 0	1! 0	0
Volume Module: >> Count Date: 27 Jun 2015 << 14:45-15:45												
Base Vol:	7	793	166	74	821	3	10	1	4	47	0	80
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	7	793	166	74	821	3	10	1	4	47	0	80
Added Vol:	3	10	6	4	10	2	2	0	3	6	0	4
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	10	803	172	78	831	5	12	1	7	53	0	84
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
PHF Volume:	10	819	176	80	848	5	12	1	7	54	0	86
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	10	819	176	80	848	5	12	1	7	54	0	86
Critical Gap Module:												
Critical Gp:	4.1	xxxx	xxxxx	4.1	xxxx	xxxxx	7.1	6.5	6.2	7.1	6.5	6.2
FollowUpTim:	2.2	xxxx	xxxxx	2.2	xxxx	xxxxx	3.5	4.0	3.3	3.5	4.0	3.3
Capacity Module:												
Cnflict Vol:	853	xxxx	xxxxx	995	xxxx	xxxxx	1980	2025	851	1941	1940	907
Potent Cap.:	795	xxxx	xxxxx	703	xxxx	xxxxx	47	58	363	50	66	337
Move Cap.:	795	xxxx	xxxxx	703	xxxx	xxxxx	31	51	363	43	58	337
Volume/Cap:	0.01	xxxx	xxxx	0.11	xxxx	xxxx	0.39	0.02	0.02	1.24	0.00	0.25
Level Of Service Module:												
2Way95thQ:	0.0	xxxx	xxxxx	0.4	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	9.6	xxxx	xxxxx	10.8	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	A	*	*	B	*	*	*	*	*	*	*	*
Movement:	LT -	LTR -	RT	LT -	LTR -	RT	LT -	LTR -	RT	LT -	LTR -	RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	48	xxxxx	xxxx	93	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	1.5	xxxxx	xxxxx	10.7	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	128	xxxxx	xxxxx	353	xxxxx
Shared LOS:	*	*	*	*	*	*	*	F	*	*	F	*
ApproachDel:	xxxxxx			xxxxxx			128.4			352.6		
ApproachLOS:	*			*			F			F		

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Future Conditions
Flora Springs Winery Use Permit Modification
County of Napa

Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #1 SR 29/Zinfandel

Average Delay (sec/veh): 103.1 Worst Case Level Of Service: F[1936.5]

Street Name:	SR 29									Zinfandel					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Lanes:	1	0	0	1	0	1	0	0	1	0	0	0	1!	0	0	0	0	1!	0	0
Volume Module: >> Count Date: 30 Jun 2015 << 16:30-17:30																				
Base Vol:	2	551	60	63	738	3	5	2	11	35	1	41
Growth Adj:	1.72	1.72	1.72	1.72	1.72	1.72	1.72	1.72	1.72	1.72	1.72	1.72
Initial Bse:	3	948	103	108	1269	5	9	3	19	60	2	71
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	3	948	103	108	1269	5	9	3	19	60	2	71
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	3	948	103	108	1269	5	9	3	19	60	2	71
Critical Gap Module:																				
Critical Gp:	4.1	xxxx	xxxxx	4.1	xxxx	xxxxx	7.1	6.5	6.2	7.1	6.5	6.2
FollowUpTim:	2.2	xxxx	xxxxx	2.2	xxxx	xxxxx	3.5	4.0	3.3	3.5	4.0	3.3
Capacity Module:																				
Cnflict Vol:	1275	xxxx	xxxxx	1051	xxxx	xxxxx	2531	2546	1272	2506	2497	999
Potent Cap.:	552	xxxx	xxxxx	670	xxxx	xxxxx	19	27	207	20	29	298
Move Cap.:	552	xxxx	xxxxx	670	xxxx	xxxxx	12	23	207	14	24	298
Volume/Cap:	0.01	xxxx	xxxx	0.16	xxxx	xxxx	0.73	0.15	0.09	4.37	0.07	0.24
Level Of Service Module:																				
2Way95thQ:	0.0	xxxx	xxxxx	0.6	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	11.6	xxxx	xxxxx	11.4	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	B	*	*	B	*	*	*	*	*	*	*	*
Movement:	LT - LTR - RT			LT - LTR - RT			LT - LTR - RT			LT - LTR - RT		
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	32	xxxxx	xxxx	28	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	3.3	xxxxx	xxxxx	16.1	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	332	xxxxx	xxxxx	1936	xxxxx
Shared LOS:	*	*	*	*	*	*	*	F	*	*	F	*
ApproachDel:	xxxxxx			xxxxxx			332.1			1936.5		
ApproachLOS:	*			*			F			F		

Note: Queue reported is the number of cars per lane.

Saturday Midday Peak Hour - Future Conditions
Flora Springs Winery Use Permit Modification
County of Napa

Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #1 SR 29/Zinfandel

Average Delay (sec/veh): 1021.2 Worst Case Level Of Service: F[35820.6]

Street Name:	SR 29									Zinfandel					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Lanes:	1	0	0	1	0	1	0	0	1	0	0	0	1!	0	0	0	0	1!	0	0
Volume Module: >> Count Date: 27 Jun 2015 << 14:45-15:45																				
Base Vol:	7	793	166	74	821	3	10	1	4	47	0	80
Growth Adj:	1.72	1.72	1.72	1.72	1.72	1.72	1.72	1.72	1.72	1.72	1.72	1.72
Initial Bse:	12	1364	286	127	1412	5	17	2	7	81	0	138
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	12	1364	286	127	1412	5	17	2	7	81	0	138
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	12	1364	286	127	1412	5	17	2	7	81	0	138
Critical Gap Module:																				
Critical Gp:	4.1	xxxx	xxxxx	4.1	xxxx	xxxxx	7.1	6.5	6.2	7.1	6.5	6.2
FollowUpTim:	2.2	xxxx	xxxxx	2.2	xxxx	xxxxx	3.5	4.0	3.3	3.5	4.0	3.3
Capacity Module:																				
Cnflict Vol:	1417	xxxx	xxxxx	1649	xxxx	xxxxx	3269	3343	1415	3204	3203	1507
Potent Cap.:	487	xxxx	xxxxx	397	xxxx	xxxxx	5	8	170	6	10	150
Move Cap.:	487	xxxx	xxxxx	397	xxxx	xxxxx	0	5	170	3	7	150
Volume/Cap:	0.02	xxxx	xxxx	0.32	xxxx	xxxx	51.25	0.32	0.04	24.62	0.00	0.92
Level Of Service Module:																				
2Way95thQ:	0.1	xxxx	xxxxx	1.4	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	12.6	xxxx	xxxxx	18.3	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	B	*	*	C	*	*	*	*	*	*	*	*
Movement:	LT - LTR - RT			LT - LTR - RT			LT - LTR - RT			LT - LTR - RT		
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	0	xxxxx	xxxx	9	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	5.1	xxxxx	xxxxx	29.1	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	*	*	*	*	*	*	F	*	*	F	*
ApproachDel:	xxxxxx			xxxxxx			xxxxxx			xxxxxx		
ApproachLOS:	*			*			F			F		

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Future plus Project Conditions
Flora Springs Winery Use Permit Modification
County of Napa

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #1 SR 29/Zinfandel

Average Delay (sec/veh): 110.3 Worst Case Level Of Service: F[2020.4]

Street Name:	SR 29									Zinfandel					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Lanes:	1 0	0	1 0	1 0	0	1 0	0	0	1! 0	0	0	1! 0	0
Volume Module: >> Count Date: 30 Jun 2015 << 16:30-17:30													
Base Vol:	2	551	60	63	738	3	5	2	11	35	1	41
Growth Adj:	1.72	1.72	1.72	1.72	1.72	1.72	1.72	1.72	1.72	1.72	1.72	1.72
Initial Bse:	3	948	103	108	1269	5	9	3	19	60	2	71
Added Vol:	1	0	0	0	0	1	4	0	5	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	4	948	103	108	1269	6	13	3	24	60	2	71
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	4	948	103	108	1269	6	13	3	24	60	2	71
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	4	948	103	108	1269	6	13	3	24	60	2	71
Critical Gap Module:												
Critical Gp:	4.1	xxxx	xxxxx	4.1	xxxx	xxxxx	7.1	6.5	6.2	7.1	6.5	6.2
FollowUpTim:	2.2	xxxx	xxxxx	2.2	xxxx	xxxxx	3.5	4.0	3.3	3.5	4.0	3.3
Capacity Module:												
Cnflict Vol:	1276	xxxx	xxxxx	1051	xxxx	xxxxx	2533	2549	1272	2511	2500	999
Potent Cap.:	551	xxxx	xxxxx	670	xxxx	xxxxx	19	27	207	19	29	298
Move Cap.:	551	xxxx	xxxxx	670	xxxx	xxxxx	12	23	207	13	24	298
Volume/Cap:	0.01	xxxx	xxxx	0.16	xxxx	xxxx	1.07	0.15	0.12	4.54	0.07	0.24
Level Of Service Module:												
2Way95thQ:	0.0	xxxx	xxxxx	0.6	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	11.6	xxxx	xxxxx	11.4	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	B	*	*	B	*	*	*	*	*	*	*	*
Movement:	LT - LTR - RT			LT - LTR - RT			LT - LTR - RT			LT - LTR - RT		
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	30	xxxxx	xxxx	27	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	4.6	xxxxx	xxxxx	16.2	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	481	xxxxx	xxxxx	2020	xxxxx
Shared LOS:	*	*	*	*	*	*	*	F	*	*	F	*
ApproachDel:	xxxxxx			xxxxxx			480.9			2020.4		
ApproachLOS:	*			*			F			F		

Note: Queue reported is the number of cars per lane.

Saturday Midday Peak Hour - Future plus Project Conditions
Flora Springs Winery Use Permit Modification
County of Napa

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #1 SR 29/Zinfandel

Average Delay (sec/veh): 1126.2 Worst Case Level Of Service: F[38444.0]

Street Name:	SR 29									Zinfandel					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Lanes:	1 0	0	1 0	1 0	0	1 0	0	0	1! 0	0	0	1! 0	0
Volume Module: >> Count Date: 27 Jun 2015 << 14:45-15:45													
Base Vol:	7	793	166	74	821	3	10	1	4	47	0	80
Growth Adj:	1.72	1.72	1.72	1.72	1.72	1.72	1.72	1.72	1.72	1.72	1.72	1.72
Initial Bse:	12	1364	286	127	1412	5	17	2	7	81	0	138
Added Vol:	3	0	0	0	0	2	2	0	3	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	15	1364	286	127	1412	7	19	2	10	81	0	138
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	15	1364	286	127	1412	7	19	2	10	81	0	138
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	15	1364	286	127	1412	7	19	2	10	81	0	138
Critical Gap Module:												
Critical Gp:	4.1	xxxx	xxxxx	4.1	xxxx	xxxxx	7.1	6.5	6.2	7.1	6.5	6.2
FollowUpTim:	2.2	xxxx	xxxxx	2.2	xxxx	xxxxx	3.5	4.0	3.3	3.5	4.0	3.3
Capacity Module:												
Cnflict Vol:	1419	xxxx	xxxxx	1649	xxxx	xxxxx	3276	3350	1416	3213	3211	1507
Potent Cap.:	486	xxxx	xxxxx	397	xxxx	xxxxx	5	8	170	6	10	150
Move Cap.:	486	xxxx	xxxxx	397	xxxx	xxxxx	0	5	170	3	7	150
Volume/Cap:	0.03	xxxx	xxxx	0.32	xxxx	xxxx	58.16	0.32	0.06	25.70	0.00	0.92
Level Of Service Module:												
2Way95thQ:	0.1	xxxx	xxxxx	1.4	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	12.6	xxxx	xxxxx	18.3	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	B	*	*	C	*	*	*	*	*	*	*	*
Movement:	LT - LTR - RT			LT - LTR - RT			LT - LTR - RT			LT - LTR - RT		
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	1	xxxxx	xxxx	8	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	5.8	xxxxx	xxxxx	29.1	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	*	*	*	*	*	*	F	*	*	F	*
ApproachDel:	xxxxxx			xxxxxx			xxxxxx			xxxxxx		
ApproachLOS:	*			*			F			F		

Note: Queue reported is the number of cars per lane.

Appendix C

Winery Trip Generation Worksheet

Winery Traffic Information / Trip Generation Sheet

Project Name: Flora Spring Winery Project Scenario: Existing Conditions

Traffic during a Typical Weekday

Number of FT employees: 12 x 3.05 one-way trips per employee = 37 daily trips.

Number of PT employees: 4 x 1.90 one-way trips per employee = 8 daily trips.

Average number of weekday visitors: 68 / 2.6 visitors per vehicle x 2 one-way trips = 52 daily trips.

Gallons of production: 120000 / 1,000 x .009 truck trips daily[3] x 2 one-way trips = 2 daily trips.

Total = 99 **daily trips.**

Number of total weekday trips x .38 = 38 **PM peak trips.**

Traffic during a Typical Saturday

Number of FT employees (on Saturdays): 3 x 3.05 one-way trips per employee = 9 daily trips.

Number of PT employees (on Saturdays): 0 x 1.90 one-way trips per employee = 0 daily trips.

Average number of weekend visitors: 73 / 2.8 visitors per vehicle x 2 one-way trips = 52 daily trips.

Total = 61 **daily trips.**

Number of total Saturday trips x .57 = 35 **PM peak trips.**

Traffic during a Crush Saturday

Number of FT employees (during crush): 12 x 3.05 one-way trips per employee = 37 daily trips.

Number of PT employees (during crush): 4 x 1.90 one-way trips per employee = 8 daily trips.

Average number of weekend visitors: 73 / 2.8 visitors per vehicle x 2 one-way trips = 52 daily trips.

Gallons of production: 120000 / 1,000 x .009 truck trips daily x 2 one-way trips = 2 daily trips.

Avg. annual tons of grape on-haul: 1400 x .11 truck trips daily [4] x 2 one-way trips = 19 daily trips.

Total = 118 **daily trips.**

Number of total Saturday trips x .57 = 67 **PM peak trips.**

Largest Marketing Event- Additional Traffic

Number of event staff (largest event): 6 x 2 one-way trips per staff person = 12 trips.

Number of visitors (largest event): 70 / 2.8 visitors per vehicle x 2 one-way trips = 50 trips.

Number of special event truck trips (largest event): 2 x 2 one-way trips = 4 trips.

[3] Assumes 1.47 materials & supplies trips + 0.8 case goods trips per 1,000 gallons of production / 250 days per year (see *Traffic Information Sheet Addendum* for reference).

[4] Assumes 4 tons per trip / 36 crush days per year (see *Traffic Information Sheet Addendum* for reference).

Winery Traffic Information / Trip Generation Sheet

Project Name: Flora Spring Winery Project Scenario: Proposed Conditions

Traffic during a Typical Weekday

Number of FT employees: 16 x 3.05 one-way trips per employee = 49 daily trips.

Number of PT employees: 1 x 1.90 one-way trips per employee = 2 daily trips.

Average number of weekday visitors: 100 / 2.6 visitors per vehicle x 2 one-way trips = 77 daily trips.

Gallons of production: 120000 / 1,000 x .009 truck trips daily[3] x 2 one-way trips = 2 daily trips.

Total = 130 daily trips.

Number of total weekday trips x .38 = 49 PM peak trips.

Traffic during a Typical Saturday

Number of FT employees (on Saturdays): 3 x 3.05 one-way trips per employee = 9 daily trips.

Number of PT employees (on Saturdays): 0 x 1.90 one-way trips per employee = 0 daily trips.

Average number of weekend visitors: 100 / 2.8 visitors per vehicle x 2 one-way trips = 71 daily trips.

Total = 80 daily trips.

Number of total Saturday trips x .57 = 46 PM peak trips.

Traffic during a Crush Saturday

Number of FT employees (during crush): 16 x 3.05 one-way trips per employee = 49 daily trips.

Number of PT employees (during crush): 8 x 1.90 one-way trips per employee = 15 daily trips.

Average number of weekend visitors: 100 / 2.8 visitors per vehicle x 2 one-way trips = 71 daily trips.

Gallons of production: 120000 / 1,000 x .009 truck trips daily x 2 one-way trips = 2 daily trips.

Avg. annual tons of grape on-haul: 1400 x .11 truck trips daily[4] x 2 one-way trips = 19 daily trips.

Total = 157 daily trips.

Number of total Saturday trips x .57 = 89 PM peak trips.

Largest Marketing Event- Additional Traffic

Number of event staff (largest event): 18 x 2 one-way trips per staff person = 36 trips.

Number of visitors (largest event): 350 / 2.8 visitors per vehicle x 2 one-way trips = 250 trips.

Number of special event truck trips (largest event): 2 x 2 one-way trips = 4 trips.

[3] Assumes 1.47 materials & supplies trips + 0.8 case goods trips per 1,000 gallons of production / 250 days per year (see *Traffic Information Sheet Addendum* for reference).

[4] Assumes 4 tons per trip / 36 crush days per year (see *Traffic Information Sheet Addendum* for reference).