October 30, 2014

Mr. Colin MacPhail
Larkmead Vineyards
1100 Larkmead Lane
Calistoga, CA 94515

Traffic Analysis for Larkmead Vineyards Expansion

Dear Mr. MacPhail;

Whitlock & Weinberger Transportation, Inc. (W-Trans) has completed a focused traffic analysis addressing potential traffic impacts and circulation needs for the proposed expansion of the winery located at 1100 Larkmead Lane in the County of Napa. The traffic study was completed in accordance with the criteria established by the County of Napa, and is consistent with standard traffic engineering techniques. Comments from staff at the County have been addressed and additional information incorporated in preparing this final report.

Project Description

The site is currently occupied by a winery which produces 36,000 gallons of wine annually and has a tasting room that attracts an average of 40 visitors daily. The proposed expansion would increase the wine production to 75,000 gallons per year, increase the projected average number of visitors at the tasting room to 69 per day on weekdays and 104 per day on weekend days (or maximums of 100 and 150, respectively), increase the number of full-time employees, and provide ten new parking spaces. The site is served by a single driveway on Larkmead Lane. The analysis was based on the most recent site plan, dated May 1, 2014, a copy of which is enclosed.

Study Area

The study area consists of the project site, Larkmead Lane and its terminating intersections at SR 29 and Silverado Trail. The project site is located on the west side of Larkmead Lane, with an existing driveway approximately 1,800 feet north of SR 29. Larkmead Lane is a two-lane undivided roadway that runs north-south in the study area, with eleven-foot travel lanes in each direction.

Existing Conditions

Mechanical tube counts were collected on five consecutive days in March 2014 on Larkmead Lane near the project site. The volume of traffic ranged from 509 to 602 vehicles per day on a weekday and 338 to 473 vehicles per day on a weekend day. This volume is well below the threshold of 2,000 vehicles per day, which is often used as the volumes that a local street can carry without losing its character. A copy of the count is enclosed.

Information in the *Napa County General Plan Update Draft Environmental Impact Report*, February 2007 (GPUDEIR), indicates that under 2003 volumes SR 29 was operating at LOS D between Lodi Lane and Deer Park Road (this is the nearest segment included in the analysis). Silverado Trail is identified in the same document as operating at LOS C under 2003 volumes.

Policy CIR-16 of the Napa County General Plan also 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." Both SR 29 and Silverado Trail are shown as 2-lane Rural Collectors on the Circulation Map (Figure CIR-1). It is understood from County staff that if a project would cause the level of service to deteriorate, then the project would result in a significant impact, and mitigation measures would be necessary to reduce the impact to less than significant.

Collision History

The collision history along Larkmead Lane between SR 29 and one-half mile north of the existing driveway was reviewed to determine any trends or patterns that may indicate a safety issue. Collision rates were calculated based on collision data available from the California Highway Patrol as published in their *Statewide Integrated Traffic Records System* (SWITRS) reports for a five-year period between January 1, 2006, and December 31, 2010. The calculated collision rate for the study segment 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 statewide average collision rate for a rural two-lane, flat road with a speed limit of 55 mph or less is 1.50 collisions/million vehicle miles (c/mvm). Over the five-year study period, two collisions were reported on Larkmead Lane, for a calculated collision rate of 2.51 c/mvm, which is higher than the statewide average noted. The higher collision rate can be partially attributed to the low traffic volumes on the study segment. A review of the crashes indicates that out of the two reported collisions, one was a hit-object collision, with driving under influence the primary collision factor. The other was a broadside with auto right-of-way violation the primary collision factor. Both the reported collisions were related to driver behavior rather than any characteristic of the roadway, so the above-average collision rate does not appear to indicate any sort of safety concern. Further, no fatalities were reported during the five-year study period. The collision rate calculation spreadsheet is enclosed.

Future Volumes

Future projected traffic volumes were obtained from the Solano Transportation Authority (STA) who maintains the joint Napa County/Solano County 2010-2030 Travel Demand Forecasting Model. This data was provided in the form of directional segment volumes along SR 29 and Silverado Trail during the a.m. and p.m. peak hours. Future projections on Larkmead Lane are not included in the model. Based on projected p.m. peak hour segment volumes near the study area on SR 29, an annual growth rate of 1.8 percent was estimated. The model does not include forecasts for average daily traffic; therefore, the weekday p.m. peak hour growth rate was applied to the weekday and weekend average daily traffic volumes to estimate future volumes. Using Year 2014 as the base year, a growth factor of 1.33 was applied to the existing volumes to estimate the 2030 build-out volumes of 800 trips daily on weekdays and 630 trips on weekend days. It is noted that traffic volumes are unlikely to increase as much on Larkmead Lane as they will on SR 29 and Silverado Trail, the primary north-south routes for the entire County of Napa. However, this model output is the best information available and provides a conservative assessment.

According to the GPUDEIR, under projected 2030 volumes SR 29 is expected to operate at LOS F in the study area and, despite substantial increases in traffic, Silverado Trail is expected to continue operating at LOS C.

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 that would be generated by existing uses as well as the proposed expansion in uses. Copies of the worksheets are enclosed.

Since 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 trips 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 trips would be evenly split. A summary of the project's trip generation potential under both the current operation as well as with the proposed increase in production and visitation is provided in Table 1.

Table 1
Project Trip Generation

Land Use	Daily Trips		Weekday PM Peak			Weekend Midday Peak		
	Weekday	Weekend	Trips	In	Out	Trips	In	Out
Existing								
Winery plus Tasting Room	49	46	17	4	13	19	9	10
Proposed								
Winery plus Tasting Room	85	88	30	7	23	46	23	23
Total Net-New Trips	**36**	**42**	**13**	**3**	**10**	**27**	**14**	**13**

Note: Trip Generation does not include traffic associated with special events and traffic during a crush Saturday

While application of the County's standard trip generation form indicates that the project would generate trips during the peak periods, as part of the project's proposed operation some restrictions have been developed to eliminate this potential impact.

1. By-appointment tasting room visits added by the project will be scheduled to begin and end outside of the peak traffic periods of 4:00 to 6:00 p.m. on weekdays, and 2:00 to 4:00 p.m. on Saturdays.

2. Marketing events added by the project will be scheduled so that set up, arrival, and departure occur outside of weekday and Saturday peak traffic periods of 4:00 to 6:00 p.m. on weekdays and 2:00 to 4:00 p.m. on Saturdays.

Adherence to both of these measures can be monitored through the winery's visitation log, which includes the appointment times for visitors as well as event times and attendance.

Trip Distribution

Due to the proposed scheduling restrictions, the project is not expected to generate any new peak hour trips. However, conditions upon adding trips based on standard trip generation assumptions were evaluated to provide a conservative assessment of the potential impacts without implementation of the scheduling limitations discussed above. The pattern used to allocate new project trips to the street network was determined by reviewing existing average daily traffic volumes on Larkmead Lane. The project traffic accessing the site from the north via Silverado Trail and from the south via SR 29 was assumed to have an even split. Evening peak hour counts recently obtained at nearby Dunaweal Lane were used to estimate the splits at SR 29 and Silverado Trail. The resulting trip distribution is shown in Table 4.

Table 4
Trip Distribution Assumptions and Project-Added Trips

Origin/Destination	Percent of Trips	Daily Trips	PM Peak Trips	Weekend Trips
SR 29 north of Larkmead	15	5	2	4
SR 29 south of Larkmead	35	13	5	9
Silverado Trail north of Larkmead	35	13	5	9
Silverado Trail south of Larkmead	15	5	2	4
TOTAL		**36**	**14***	**26***

* Values do not equal trip generation exactly due to rounding

Plus Project Traffic Volumes

As can be seen in Table 4, the proposed expansion of uses at the Larkmead Winery would result in a very nominal increase in trips on any of the area's roadways. The additional traffic that the project would generate would reasonably be expected to be included in the growth projected by the County's traffic model. Further, with implementation of the scheduling restrictions for the proposed increase in visitation, the project will generate no new trips and therefore have a less-than-significant impact on traffic.

Site Access

Left-Turn Lane Warrants

The need for a left-turn lane on Larkmead Lane at the existing driveway was evaluated based on criteria contained in the *Napa County Road and Street Standards*, 2011. Projected future average daily traffic volumes on Larkmead Lane were used for this analysis as this represents the worst case scenario. Using the County's criteria, for an average daily traffic volume of 825 vehicles on a weekday, a left-turn lane would be warranted if a project driveway has an ADT of 190 vehicles or more. The proposed project would generate a weekday average of 72 daily trips. Even based on the peak generation of 142 trips on a Saturday during crush, a left-turn lane would not be warranted at the project driveway under future volumes. A copy of the warrant showing these values is enclosed for reference.

Conclusions and Recommendations

- The proposed project would generate an average of 36 new weekday daily trips, 42 new weekend daily trips, including 13 p.m. peak hour trips on a weekday and 27 trips during the weekend p.m.

peak hour based on application of standard trip generation rates. However, upon implementation of scheduling restrictions such that tastings and events would occur outside peak hours, the project is expected to result in no new peak hour trips.

- The calculated collision rate for the study segment was higher than the statewide average for similar facilities; however, as there were only two collisions reported over a five-year study period, the higher collision rate does not indicate a safety issue.
- A left-turn lane is not warranted at the project driveway based on Napa County's Left-Turn Lane Warrant criterion.
- The nominal increase in traffic volumes associated with this project based on standard winery trip generation estimating can reasonably be expected to cause no perceptible change in traffic operation, and therefore a less-than-significant impact. The proposed operational restrictions result in no new trips during peak periods, and therefore no impact.

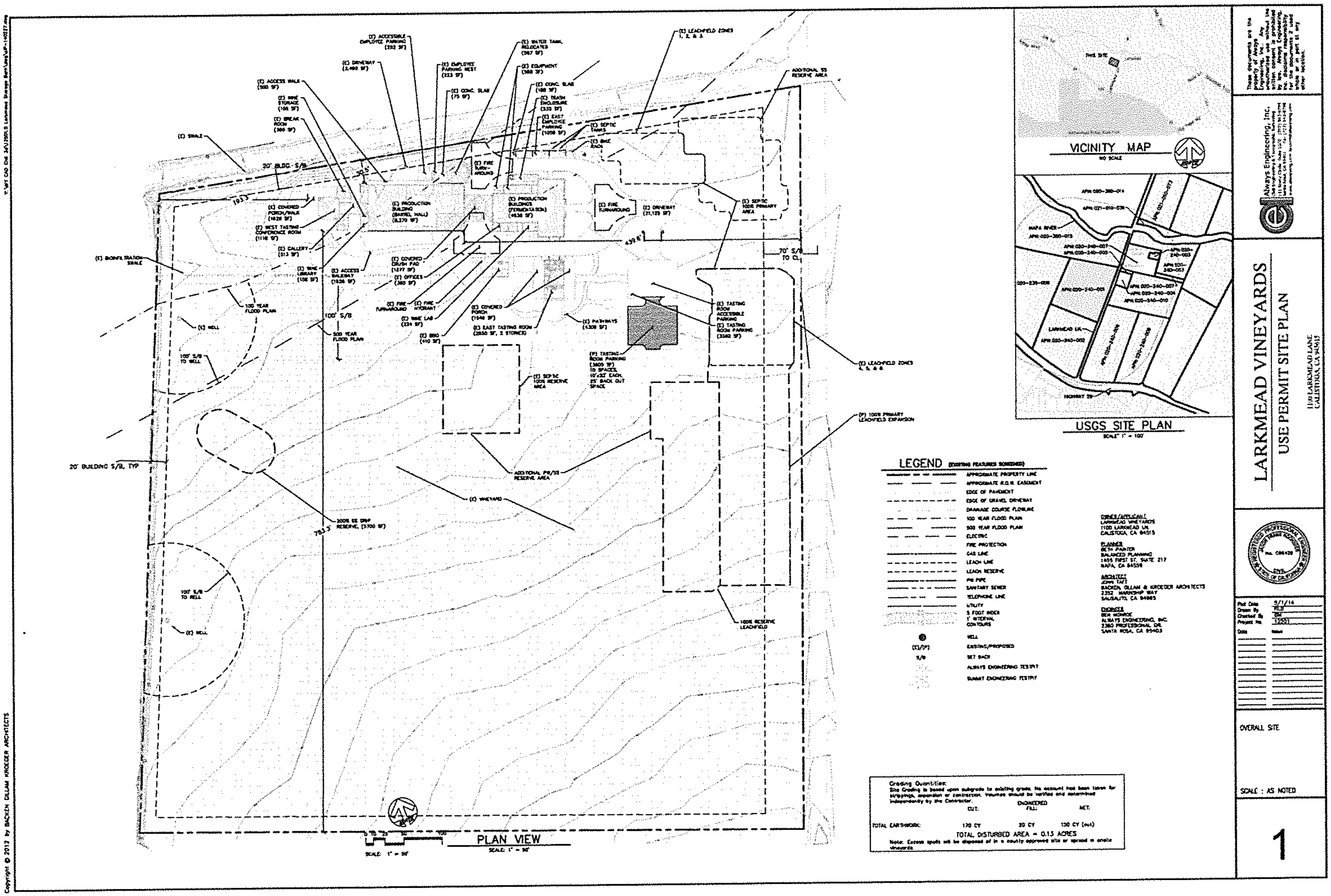
Thank you for giving W-Trans the opportunity to provide these services. Please call if you have any questions.

Sincerely,

Dalene J. Whitlock, PE, PTOE
Principal

DJW/djw/NAX078.L2

Enclosures: Site Plan
Traffic Count
Collision Rate Calculation Spreadsheet
Winery Traffic Information/Trip Generation Sheet
Napa County Left-Turn Lane Warrant


LARKMEAD VINEYARDS
USE PERMIT SITE PLAN
1100 LARKMEAD LANE
CALISTOGA, CA 94515
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VICINITY MAP
NO SCALE
USGS SITE PLAN
SCALE 1" = 100'
PLAN VIEW
SCALE: 1" = 50'
LEGEND (EXISTING FEATURES SCREENED)
APPROXIMATE PROPERTY LINE
APPROXIMATE R.O.W. EASEMENT
EDGE OF PAVEMENT
EDGE OF GRAVEL DRIVEWAY
DRAINAGE COURSE FLOWLINE
100 YEAR FLOOD PLAIN
500 YEAR FLOOD PLAIN
ELECTRIC
FIRE PROTECTION
GAS LINE
LEACH LINE
LEACH RESERVE
PW PIPE
SANITARY SEWER
TELEPHONE LINE
UTILITY
5 FOOT INDEX
1' INTERVAL
CONTOURS
WELL
(E)/(P) EXISTING/PROPOSED
S/B SET BACK
ALWAYS ENGINEERING TESTPIT
SUMMIT ENGINEERING TESTPIT
OWNER/APPLICANT
LARKMEAD VINEYARDS
1100 LARKMEAD LN.
CALISTOGA, CA 94515
PLANNER
BETH PAINTER
BALANCED PLANNING
1455 FIRST ST. SUITE 217
NAPA, CA 94559
ARCHITECT
JOHN TAFT
BACKEN, GILLAM & KROEGER ARCHITECTS
2352 MARINSHIP WAY
SAUSALITO, CA 94965
ENGINEER
BEN MONROE
ALWAYS ENGINEERING, INC.
2360 PROFESSIONAL DR.
SANTA ROSA, CA 95403
Grading Quantities:
TOTAL EARTHWORK: 170 CY 20 CY 150 CY (cut)
TOTAL DISTURBED AREA = 0.13 ACRES
Plot Date 5/1/14
Project No. 12551
OVERALL SITE
SCALE : AS NOTED
1
Copyright © 2012 by BACKEN GILLAM KROEGER ARCHITECTS

Volumes for: Thursday, March 06, 2014 City: Napa County Project #: 14-7138-001
Location: Larkmead Lane west of 1100 Larkmead Lane

Start	Eastbound		Hour Totals		Westbound		Hour Totals		Combined Totals	
Time	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon
12:00	0	8			0	6				
12:15	0	3			0	6				
12:30	0	5			0	4				
12:45	0	3	0	19	0	3	0	19	0	38
1:00	0	3			0	3				
1:15	0	7			0	6				
1:30	0	9			0	4				
1:45	0	10	0	29	0	7	0	20	0	49
2:00	0	5			0	6				
2:15	0	5			0	4				
2:30	0	2			0	7				
2:45	0	3	0	15	0	5	0	22	0	37
3:00	0	4			0	10				
3:15	0	6			0	6				
3:30	0	5			0	5				
3:45	0	5	0	20	0	7	0	28	0	48
4:00	1	6			0	4				
4:15	0	5			0	4				
4:30	0	7			0	18				
4:45	0	3	1	21	0	10	0	36	1	57
5:00	0	1			0	8				
5:15	0	2			1	5				
5:30	0	3			0	7				
5:45	1	2	1	8	0	3	1	23	2	31
6:00	2	4			1	1				
6:15	4	0			2	7				
6:30	11	3			1	5				
6:45	9	0	26	7	1	2	5	15	31	22
7:00	5	1			2	2				
7:15	2	0			2	0				
7:30	11	0			1	3				
7:45	7	1	25	2	1	1	6	6	31	8
8:00	5	1			3	1				
8:15	10	2			3	0				
8:30	10	0			6	0				
8:45	3	0	28	3	4	1	16	2	44	5
9:00	5	0			2	0				
9:15	11	0			0	0				
9:30	4	0			4	0				
9:45	8	1	28	1	4	0	10	0	38	1
10:00	6	0			5	1				
10:15	4	2			4	1				
10:30	6	1			6	0				
10:45	4	0	20	3	4	0	19	2	39	5
11:00	2	0			3	0				
11:15	3	0			5	0				
11:30	3	0			5	0				
11:45	5	0	13	0	4	1	17	1	30	1
Total	142	128	142	128	74	174	74	174	216	302
Combined Total	270		270		248		248		518	
AM Peak	7:30 AM				11:30 AM					
Vol.	33				21					
P.H.F.	0.750				0.875					
PM Peak		1:15 PM				4:30 PM				
Vol.		31				41				
P.H.F.		0.775				0.569				
Percentage	52.6%	47.4%			29.8%	70.2%				

Prepared by NDS/ATD

Volumes for: Friday, March 07, 2014 City: Napa County Project #: 14-7138-001
Location: Larkmead Lane west of 1100 Larkmead Lane

Start	Eastbound		Hour Totals		Westbound		Hour Totals		Combined Totals	
Time	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon
12:00	0	3			1	6				
12:15	0	5			0	3				
12:30	0	8			0	4				
12:45	0	7	0	23	0	6	1	19	1	42
1:00	0	9			0	8				
1:15	0	7			0	11				
1:30	0	8			0	7				
1:45	0	8	0	32	0	5	0	31	0	63
2:00	0	9			0	11				
2:15	0	5			0	9				
2:30	0	7			0	8				
2:45	0	6	0	27	0	14	0	42	0	69
3:00	0	9			0	17				
3:15	0	12			0	9				
3:30	1	8			0	12				
3:45	0	4	1	33	0	7	0	45	1	78
4:00	0	4			0	3				
4:15	0	2			0	7				
4:30	0	3			0	18				
4:45	1	0	1	9	0	6	0	34	1	43
5:00	0	3			2	3				
5:15	0	2			0	5				
5:30	0	0			0	2				
5:45	2	1	2	6	0	4	2	14	4	20
6:00	1	1			0	2				
6:15	3	0			1	2				
6:30	12	0			0	6				
6:45	11	1	27	2	1	3	2	13	29	15
7:00	2	1			0	0				
7:15	5	0			4	1				
7:30	8	2			5	1				
7:45	6	0	21	3	2	0	11	2	32	5
8:00	8	0			6	1				
8:15	7	0			0	1				
8:30	7	1			4	0				
8:45	11	1	33	2	0	0	10	2	43	4
9:00	8	1			3	1				
9:15	5	0			4	0				
9:30	9	1			3	2				
9:45	5	1	27	3	10	0	20	3	47	6
10:00	8	1			3	0				
10:15	3	0			3	1				
10:30	7	0			3	1				
10:45	1	1	19	2	4	0	13	2	32	4
11:00	4	0			14	0				
11:15	7	0			6	1				
11:30	9	0			4	2				
11:45	7	0	27	0	8	1	32	4	59	4
Total	158	142	158	142	91	211	91	211	249	353
Combined Total	300		300		302		302		602	
AM Peak	8:00 AM				11:00 AM					
Vol.	33				32					
P.H.F.	0.750				0.571					
PM Peak		2:45 PM				2:45 PM				
Vol.		35				52				
P.H.F.		0.729				0.765				
Percentage	52.7%	47.3%			30.1%	69.9%				

Prepared by NDS/ATD

Volumes for: Saturday, March 08, 2014 City: Napa County Project #: 14-7138-001
Location: Larkmead Lane west of 1100 Larkmead Lane

Start	Eastbound		Hour Totals		Westbound		Hour Totals		Combined Totals	
Time	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon
12:00	0	1			1	18				
12:15	0	10			2	8				
12:30	1	7			1	6				
12:45	0	2	1	20	0	4	4	36	5	56
1:00	0	4			0	8				
1:15	0	1			0	7				
1:30	0	5			0	6				
1:45	0	9	0	19	0	7	0	28	0	47
2:00	0	7			0	6				
2:15	0	3			0	3				
2:30	0	8			0	8				
2:45	0	4	0	22	0	4	0	21	0	43
3:00	0	14			0	6				
3:15	0	9			0	9				
3:30	0	3			0	9				
3:45	0	6	0	32	0	9	0	33	0	65
4:00	0	5			0	5				
4:15	0	5			0	8				
4:30	0	3			0	9				
4:45	0	0	0	13	0	7	0	29	0	42
5:00	0	3			0	4				
5:15	1	1			0	6				
5:30	0	2			0	5				
5:45	0	1	1	7	0	6	0	21	1	28
6:00	3	1			0	2				
6:15	2	1			0	4				
6:30	8	0			1	4				
6:45	1	2	14	4	0	0	1	10	15	14
7:00	0	0			1	0				
7:15	0	0			1	0				
7:30	3	0			1	0				
7:45	2	1	5	1	0	1	3	1	8	2
8:00	1	1			2	1				
8:15	4	0			1	2				
8:30	3	2			2	1				
8:45	1	0	9	3	2	0	7	4	16	7
9:00	9	1			4	0				
9:15	4	3			1	1				
9:30	4	1			0	0				
9:45	4	0	21	5	5	0	10	1	31	6
10:00	6	1			5	3				
10:15	2	0			4	1				
10:30	2	0			2	1				
10:45	2	0	12	1	3	0	14	5	26	6
11:00	8	0			7	0				
11:15	5	0			10	1				
11:30	7	0			7	1				
11:45	4	1	24	1	4	0	28	2	52	3
Total	87	128	87	128	67	191	67	191	154	319
Combined Total	215		215		258		258		473	
AM Peak	11:00 AM				11:15 AM					
Vol.	24				39					
P.H.F.	0.750				0.542					
PM Peak		2:30 PM				12:00 PM				
Vol.		35				36				
P.H.F.		0.625				0.500				
Percentage	40.5%	59.5%			26.0%	74.0%				

Prepared by NDS/ATD

Volumes for: Sunday, March 09, 2014 City: Napa County Project #: 14-7138-001
Location: Larkmead Lane west of 1100 Larkmead Lane

Start	Eastbound		Hour Totals		Westbound		Hour Totals		Combined Totals	
Time	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon
12:00	0	3			1	7				
12:15	0	5			2	11				
12:30	0	3			1	2				
12:45	0	8	0	19	0	4	4	24	4	43
1:00	0	2			0	5				
1:15	1	5			0	3				
1:30	0	3			0	10				
1:45	0	3	1	13	0	2	0	20	1	33
2:00	0	3			0	6				
2:15	0	7			0	6				
2:30	0	2			0	4				
2:45	0	6	0	18	0	4	0	20	0	38
3:00	0	5			0	8				
3:15	0	5			0	4				
3:30	0	0			0	4				
3:45	0	3	0	13	0	7	0	23	0	36
4:00	1	1			0	2				
4:15	0	2			0	6				
4:30	0	1			0	4				
4:45	0	2	1	6	0	6	0	18	1	24
5:00	0	1			0	2				
5:15	2	1			0	2				
5:30	0	1			2	1				
5:45	3	0	5	3	1	1	3	6	8	9
6:00	2	0			1	0				
6:15	2	0			2	0				
6:30	1	1			0	1				
6:45	1	0	6	1	2	0	5	1	11	2
7:00	0	1			2	3				
7:15	3	0			0	0				
7:30	1	0			2	0				
7:45	6	2	10	3	2	0	6	3	16	6
8:00	1	1			1	1				
8:15	1	0			2	1				
8:30	2	1			0	0				
8:45	5	0	9	2	3	1	6	3	15	5
9:00	2	0			3	0				
9:15	4	0			4	0				
9:30	1	1			2	0				
9:45	8	0	15	1	3	0	12	0	27	1
10:00	3	0			5	0				
10:15	4	0			3	1				
10:30	2	0			7	0				
10:45	0	0	9	0	6	0	21	1	30	1
11:00	5	1			2	1				
11:15	1	0			2	0				
11:30	3	0			4	0				
11:45	4	0	13	1	4	0	12	1	25	2
Total	69	80	69	80	69	120	69	120	138	200
Combined Total	149		149		189		189		338	
AM Peak	9:45 AM				11:30 AM					
Vol.	17				26					
P.H.F.	0.531				0.591					
PM Peak		2:15 PM				12:00 PM				
Vol.		20				24				
P.H.F.		0.714				0.545				
Percentage	46.3%	53.7%			36.5%	63.5%				

Volumes for: Monday, March 10, 2014 City: Napa County Project #: 14-7138-001
Location: Larkmead Lane west of 1100 Larkmead Lane

Start	Eastbound		Hour Totals		Westbound		Hour Totals		Combined Totals	
Time	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon
12:00	0	2			0	5				
12:15	0	7			0	8				
12:30	0	3			0	4				
12:45	0	5	0	17	0	8	0	25	0	42
1:00	0	5			0	6				
1:15	0	2			0	8				
1:30	0	4			0	7				
1:45	0	4	0	15	0	3	0	24	0	39
2:00	0	2			0	9				
2:15	0	3			0	7				
2:30	0	5			0	3				
2:45	0	3	0	13	0	8	0	27	0	40
3:00	0	2			0	5				
3:15	0	4			0	4				
3:30	0	4			0	10				
3:45	0	3	0	13	0	11	0	30	0	43
4:00	1	3			2	12				
4:15	1	1			0	10				
4:30	0	3			0	4				
4:45	1	0	3	7	0	1	2	27	5	34
5:00	0	1			0	5				
5:15	2	0			0	5				
5:30	11	0			1	2				
5:45	12	5	25	6	3	2	4	14	29	20
6:00	5	1			1	4				
6:15	14	1			2	1				
6:30	11	0			4	2				
6:45	2	2	32	4	5	1	12	8	44	12
7:00	9	0			4	0				
7:15	5	1			1	0				
7:30	10	0			2	1				
7:45	9	1	33	2	1	0	8	1	41	3
8:00	8	0			3	0				
8:15	5	0			2	0				
8:30	6	0			2	0				
8:45	1	0	20	0	7	0	14	0	34	0
9:00	2	0			1	0				
9:15	6	2			3	0				
9:30	6	0			3	1				
9:45	9	0	23	2	7	0	14	1	37	3
10:00	3	0			4	1				
10:15	3	0			7	2				
10:30	9	0			4	1				
10:45	8	0	23	0	5	0	20	4	43	4
11:00	2	0			7	0				
11:15	7	0			4	0				
11:30	3	0			8	0				
11:45	3	0	15	0	2	0	21	0	36	0
Total	174	79	174	79	95	161	95	161	269	240
Combined Total	253		253		256		256		509	
AM Peak	5:30 AM				10:45 AM					
Vol.	42				24					
P.H.F.	0.750				0.750					
PM Peak		12:15 PM				3:30 PM				
Vol.		20				43				
P.H.F.		0.714				0.896				
Percentage	68.8%	31.2%			37.1%	62.9%				

SEGMENT COLLISION RATE CALCULATIONS

Larkmead Vineyards

Location: 1100 Larkmead Lane

Date of Count: Thursday, March 06, 2014
ADT: 520

Number of Collisions: 2
Number of Injuries: 1
Number of Fatalities: 0
Start Date: January 1, 2006
End Date: December 31, 2010
Number of Years: 5

Highway Type: Conventional 2 lanes or less
Area: Rural
Design Speed: ≤55
Terrain: Flat

Segment Length: 0.8 miles
Direction: North/South

$$\frac{\text{Number of Collisions x 1 Million}}{\text{ADT x 365 Days per Year x Segment Length x Number of Years}}$$

$$\frac{2 \times 1{,}000{,}000}{520 \times 365 \times 0.84 \times 5}$$

	Collision Rate		Fatality Rate	Injury Rate
Study Segment	**2.51**	**c/mvm**	**0.0%**	**50.0%**
Statewide Average*	**1.50**	**c/mvm**	**2.4%**	**40.1%**

ADT = average daily traffic volume
c/mvm = collisions per million vehicle miles
* 2010 Collision Data on California State Highways, Caltrans

Winery Traffic Information / Trip Generation Sheet

Project Name: Larkmead Winery

Project Scenario: Existing Conditions

Traffic during a Typical Weekday

Number of FT employees: 6 x 3.05 one-way trips per employee = 18 daily trips.

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

Average number of weekday visitors: 28 / 2.6 visitors per vehicle x 2 one-way trips = 22 daily trips.

Gallons of production: 75000 / 1,000 x .009 truck trips daily[3] x 2 one-way trips = 1 daily trips.

Total = 49 **daily trips.**

(№ of FT employees) + (№ of PT employees/2) + (sum of visitor and truck trips x .38) = 17 **PM peak trips.**

Traffic during a Typical Saturday

Number of FT employees (on Saturdays): 6 x 3.05 one-way trips per employee = 18 daily trips.

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

Average number of Saturday visitors: 28 / 2. 8 visitors per vehicle x 2 one-way trips = 20 daily trips.

Total = 46 **daily trips.**

(№ of FT employees) + (№ of PT employees/2) + (visitor trips x .57) = 19 **PM peak trips.**

Traffic during a Crush Saturday

Number of FT employees (during crush): 6 x 3.05 one-way trips per employee = 18 daily trips.

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

Average number of Saturday visitors: 60 / 2. 8 visitors per vehicle x 2 one-way trips = 43 daily trips.

Gallons of production: 75000 / 1,000 x .009 truck trips daily x 2 one-way trips = 1 daily trips.

Avg. annual tons of grape on-haul: 0 / 144 truck trips daily [4] x 2 one-way trips = 0 daily trips.

Total = 70 **daily trips.**

Largest Marketing Event- Additional Traffic

Number of event staff (largest event): 10 x 2 one-way trips per staff person = 20 trips.

Number of visitors (largest event): 120 / 2.8 visitors per vehicle x 2 one-way trips = 86 trips.

Number of special event truck trips (largest event): 4 x 2 one-way trips = 8 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: Larkmead Winery

Project Scenario: Proposed Conditions

Traffic during a Typical Weekday

Number of FT employees: 8 x 3.05 one-way trips per employee = 24 daily trips.

Number of PT employees: 3 x 1.90 one-way trips per employee = 6 daily trips.

Average number of weekday visitors: 69 / 2.6 visitors per vehicle x 2 one-way trips = 53 daily trips.

Gallons of production: 75000 / 1,000 x .009 truck trips daily[3] x 2 one-way trips = 1 daily trips.

Total = 85 **daily trips.**

(№ of FT employees) + (№ of PT employees/2) + (sum of visitor and truck trips x .38) = 30 **PM peak trips.**

Traffic during a Typical Saturday

Number of FT employees (on Saturdays): 2 x 3.05 one-way trips per employee = 6 daily trips.

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

Average number of Saturday visitors: 104 / 2. 8 visitors per vehicle x 2 one-way trips = 74 daily trips.

Total = 88 **daily trips.**

(№ of FT employees) + (№ of PT employees/2) + (visitor trips x .57) = 46 **PM peak trips.**

Traffic during a Crush Saturday

Number of FT employees (during crush): 20 x 3.05 one-way trips per employee = 61 daily trips.

Number of PT employees (during crush): 10 x 1.90 one-way trips per employee = 19 daily trips.

Average number of Saturday visitors: 60 / 2. 8 visitors per vehicle x 2 one-way trips = 43 daily trips.

Gallons of production: 75000 / 1,000 x .009 truck trips daily x 2 one-way trips = 1 daily trips.

Avg. annual tons of grape on-haul: 1000 / 144 truck trips daily [4] x 2 one-way trips = 14 daily trips.

Total = 138 **daily trips.**

Largest Marketing Event- Additional Traffic

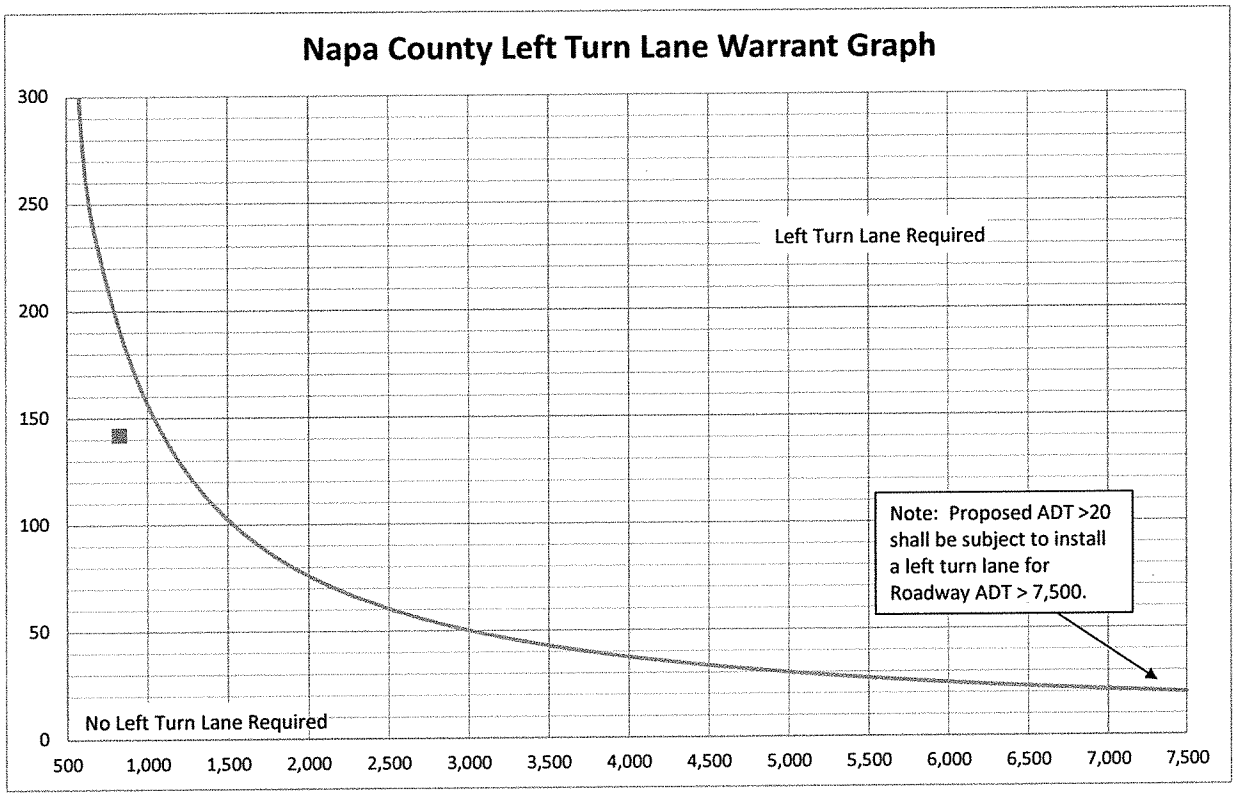
Number of event staff (largest event): 30 x 2 one-way trips per staff person = 60 trips.

Number of visitors (largest event): 500 / 2.8 visitors per vehicle x 2 one-way trips = 357 trips.

Number of special event truck trips (largest event): 10 x 2 one-way trips = 20 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).


Napa County Left Turn Lane Warrant Graph
300
250
200
150
100
50
0
500
1,000
1,500
2,000
2,500
3,000
3,500
4,000
4,500
5,000
5,500
6,000
6,500
7,000
7,500
Left Turn Lane Required
No Left Turn Lane Required
Note: Proposed ADT >20 shall be subject to install a left turn lane for Roadway ADT > 7,500.