



April 25, 2016  
File: 2064021287

Gary Blake  
Oak Hills Estate, LLC

Email: gblake@livingwaterranch.net

**Reference: Supplemental Traffic Analysis for the Oak Hills Estates, Vandenberg Village, CA**

Dear Mr. Blake,

Stantec has prepared a supplemental traffic analysis for subject development. The original traffic study was prepared on June 23, 2014 (Penfield & Smith) and contained an analysis of PM peak hour conditions. The County has requested that the analysis be expanded to include analysis of the AM peak hour under cumulative conditions. The following paragraphs update the cumulative section in the traffic study.

**Cumulative Traffic Forecasts**

Cumulative traffic forecasts were derived from the *Santa Barbara County Housing Element Focused Rezone Program* and adjusted based on updated cumulative traffic data contained in the updated traffic analysis for the *Burton Ranch Project*. The cumulative forecasts assume development of the approved and pending projects in the region, including buildout of Providence Landing and the Burton Ranch Project. The cumulative traffic volumes are shown in the attached Exhibit A.

**Cumulative Roadway and Intersection Operations**

Project volumes were added to the cumulative volumes and levels of service were calculated for cumulative and cumulative plus project conditions. The attached Exhibit B illustrated the cumulative plus project volumes. Table 1 shows the AM peak hour level of service calculations for the study area intersections under cumulative and cumulative plus project conditions.



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**Table 1**  
**AM Peak Hour**  
**Cumulative + Project Intersection Levels of Service**

<b>Intersection</b>	<b>Cumulative LOS</b>	<b>Cumulative + Project LOS</b>	<b>Impact?</b>
SR 1 SB Ramps/Constellation Rd	0.65/LOS A	0.65/LOS A	No
SR 1 NB Ramps/Constellation Rd	0.59/LOS B	0.59/LOS B	No
Burton Mesa Blvd/ Constellation Rd	13.0 sec/LOS B	13.2 sec/LOS B	No

As shown, the study area intersections are forecast to operate in the LOS A-B range during the AM peak hour under cumulative and cumulative plus project conditions, which is considered acceptable based on County level of service standards. No cumulative mitigations are therefore required.

This concludes our supplemental traffic analysis for the Oak Hills Estates project.

Very truly yours,

**STANTEC CONSULTING SERVICES INC.**

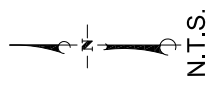
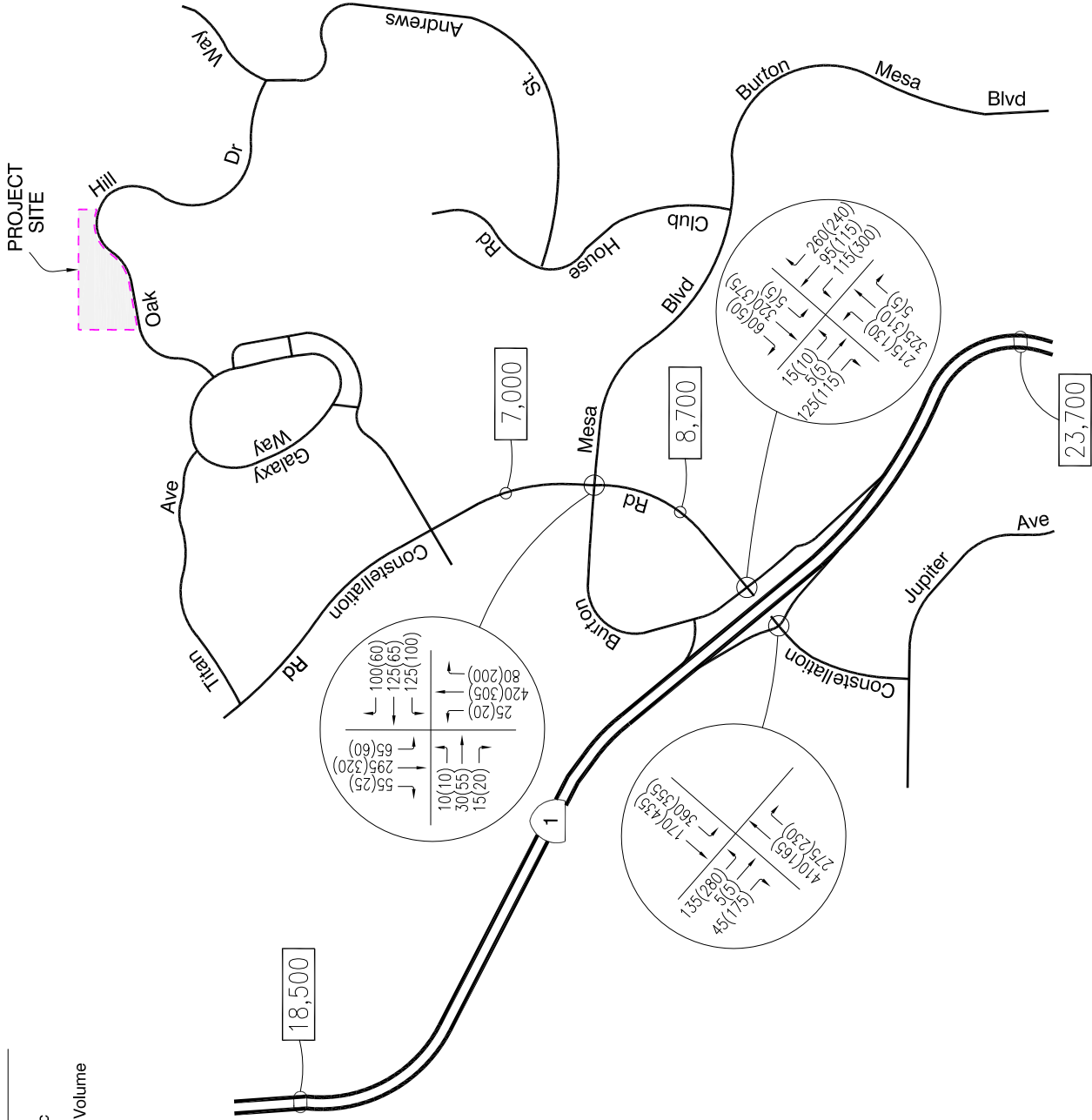
Dennis Lammers, P.T.P.  
Senior Transportation Planner

Derek Rapp, T.E.  
Senior Project Manager

Attachments

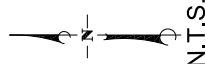
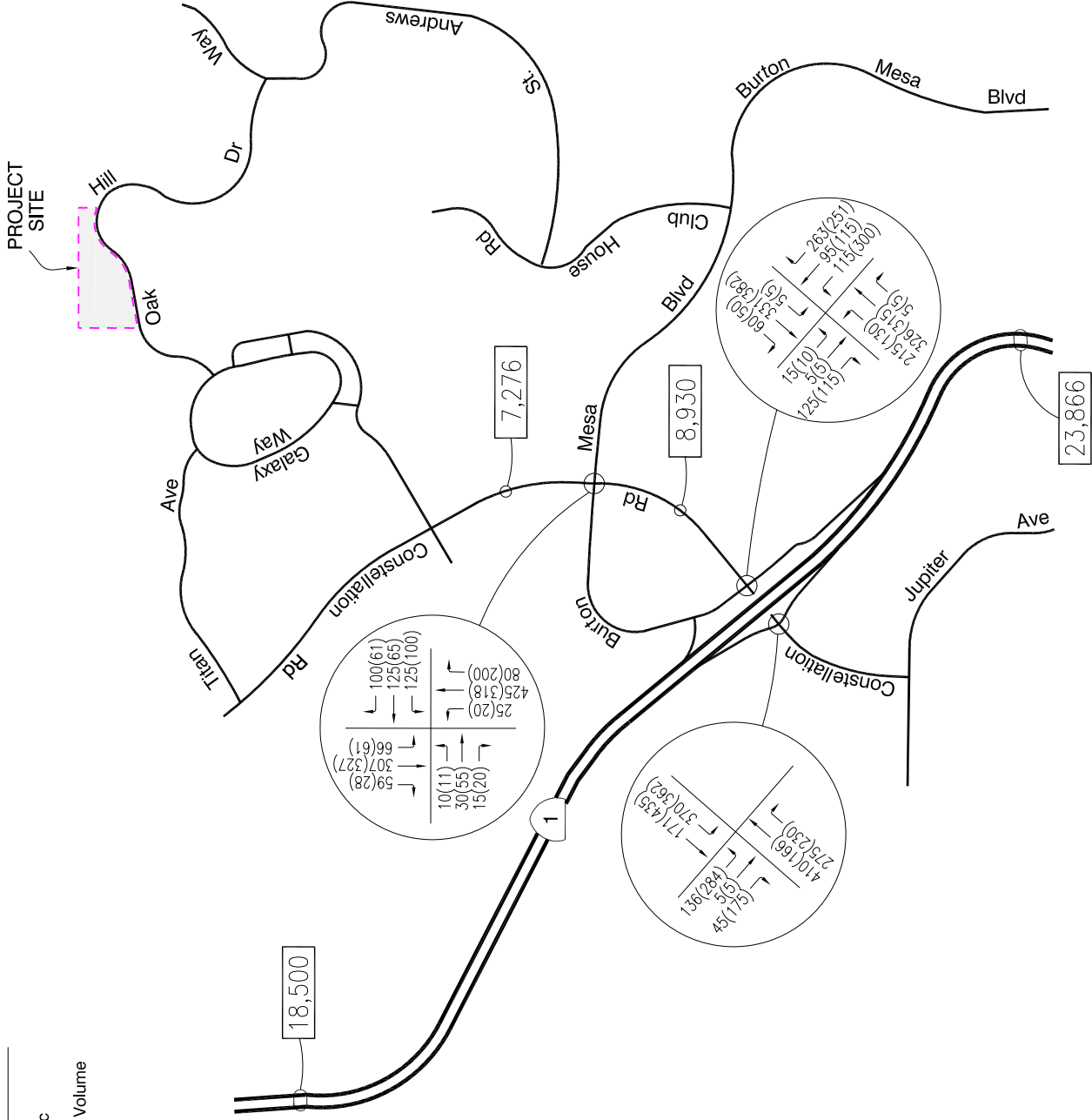
**LEGEND**

- XXXX - Average Daily Traffic
- XX - AM(PM) Peak Hour Volume
- ↔ - Traffic Movement



**LEGEND**

- XXXX - Average Daily Traffic
- XX - AM(PM) Peak Hour Volume
- ↔ - Traffic Movement



## INTERSECTION CAPACITY UTILIZATION

**INTERSECTION NUMBER:** 1  
**NORTH/SOUTH STREET:** S.R. 1 Southbound Ramps  
**EAST/WEST STREET:** Constellation Rd  
**SCENARIO:** Cumulative  
**TIME PERIOD:** AM Peak Hour  
**COUNT DATE:** 2/14/14  
**WORK ORDER #:** 21287.01

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
AM Peak	0	0	0	135	5	45	0	410	275	360	170	0
Project Trips	0	0	0	1	0	0	0	0	0	10	1	0
<b>GEOMETRY</b>				L	LTR				T	R	L	T

Move- ment	Level of Service Calculations					
	Lanes		Volume		V/C Ratio	
	Lane	Capacity	Base	Project	Base	Project
NBL	0.0	0	0	0	0.00 *	0.00 *
NBT	0.0	0	0	0	0.00	0.00
NBR	0.0	0	0	0	0.00	0.00
SBL	0.0	0	135	136	0.00	0.00
SBT	2.0	3,200	5	5	0.06 *	0.06 *
SBR	0.0	0	45	45	0.00	0.00
EBL	0.0	0	0	0	0.00	0.00
EBT	1.0	1,600	410	410	0.26 *	0.26 *
EBR	1.0	1,600	275	275	0.00	0.00
WBL	1.0	1,600	360	370	0.23 *	0.23 *
WBT	1.0	1,600	170	171	0.11	0.11
WBR	0.0	0	0	0	0.00	0.00
N/S Critical Movements					0.06	0.06
E/W Critical Movements					0.49	0.49
Right Turn Critical Movement					0.00	0.00
Clearance Interval					0.10	0.10
ICU					0.65	0.65
Level of Service (LOS)					B	B

Notes: V/C - Volume to Capacity Ratio  
 Right Turn Conditions:

## INTERSECTION CAPACITY UTILIZATION

**INTERSECTION NUMBER:** 2  
**NORTH/SOUTH STREET:** Burton Mesa Blvd/Apollo Wy  
**EAST/WEST STREET:** Constellation Rd  
**SCENARIO:** Cumulative  
**TIME PERIOD:** AM Peak Hour  
**COUNT DATE:** 2/14/14  
**WORK ORDER #:** 21287.01

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
AM Peak	215	325	5	5	320	60	15	5	125	115	95	260
Project Trips	0	1	0	0	11	0	0	0	0	0	0	3
GEOMETRY	L	TR		L	TR		L	T	TR	L	T	TR

Move- ment	Level of Service Calculations					
	Lanes		Volume		V/C Ratio	
	Lane	Capacity	Base	Project	Base	Project
NBL	1.0	1,600	215	215	0.13 *	0.13 *
NBT	1.0	1,600	325	326	0.21	0.21
NBR	0.0	0	5	5	0.00	0.00
SBL	1.0	1,600	5	5	0.00	0.00
SBT	1.0	1,600	320	331	0.24 *	0.24 *
SBR	0.0	0	60	60	0.00	0.00
EBL	1.0	1,600	15	15	0.01 *	0.01 *
EBT	2.0	3,200	5	5	0.04	0.04
EBR	0.0	0	125	125	0.00	0.00
WBL	1.0	1,600	115	115	0.07	0.07
WBT	2.0	3,200	95	95	0.11 *	0.11 *
WBR	0.0	0	260	263	0.00	0.00
N/S Critical Movements					0.37	0.37
E/W Critical Movements					0.12	0.12
Right Turn Critical Movement					0.00	0.00
Clearance Interval					0.10	0.10
ICU					0.59	0.59
Level of Service (LOS)					A	A

Notes: V/C - Volume to Capacity Ratio  
 Right Turn Conditions:

# ALL-WAY STOP CONTROL ANALYSIS

General Information		Site Information	
Analyst	DJL	Intersection	BURON MESA BLVD/CONSTELLATION
Agency/Co.	P&S	Jurisdiction	SB COUNTY
Date Performed	6/10/2014	Analysis Year	CUMULATIVE CONDITIONS
Analysis Time Period	AM PEAK HOUR		

Project ID W.O. 21287.01

East/West Street: BURTON MESA BLVD

North/South Street: CONSTELLATION RD

## Volume Adjustments and Site Characteristics

Approach	Eastbound			Westbound		
	L	T	R	L	T	R
Movement						
Volume (veh/h)	10	30	15	125	125	100
%Thrus Left Lane						

Approach	Northbound			Southbound		
	L	T	R	L	T	R
Movement						
Volume (veh/h)	25	210	80	65	295	55
%Thrus Left Lane				50		

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration	L	TR	L	TR	L	TR	LT	TR
PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Flow Rate (veh/h)	10	45	125	225	25	290	212	203
% Heavy Vehicles	4	4	4	4	4	4	4	4
No. Lanes	2		2		2		2	
Geometry Group	5		5		5		5	
Duration, T	1.00							

## Saturation Headway Adjustment Worksheet

Prop. Left-Turns	1.0	0.0	1.0	0.0	1.0	0.0	0.3	0.0
Prop. Right-Turns	0.0	0.3	0.0	0.4	0.0	0.3	0.0	0.3
Prop. Heavy Vehicle	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
hLT-adj	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
hRT-adj	-0.7	-0.7	-0.7	-0.7	-0.7	-0.7	-0.7	-0.7
hHV-adj	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
hadj, computed	0.6	-0.2	0.6	-0.2	0.6	-0.1	0.2	-0.1

## Departure Headway and Service Time

hd, initial value (s)	3.20	3.20	3.20	3.20	3.20	3.20	3.20	3.20
x, initial	0.01	0.04	0.11	0.20	0.02	0.26	0.19	0.18
hd, final value (s)	7.62	6.89	7.08	6.27	6.87	6.18	6.39	6.05
x, final value	0.02	0.09	0.25	0.39	0.05	0.50	0.38	0.34
Move-up time, m (s)	2.3		2.3		2.3		2.3	
Service Time, t <sub>s</sub> (s)	5.3	4.6	4.8	4.0	4.6	3.9	4.1	3.8

## Capacity and Level of Service

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Capacity (veh/h)	260	295	375	475	275	540	462	453
Delay (s/veh)	10.49	10.24	12.09	13.00	9.91	14.95	12.94	11.88
LOS	B	B	B	B	A	B	B	B
Approach: Delay (s/veh)	10.28		12.67		14.55		12.42	
LOS	B		B		B		B	
Intersection Delay (s/veh)	12.99							
Intersection LOS	B							

# ALL-WAY STOP CONTROL ANALYSIS

General Information		Site Information	
Analyst	DJL	Intersection	BURON MESA BLVD/CONSTELLATION
Agency/Co.	P&S	Jurisdiction	SB COUNTY
Date Performed	6/10/2014	Analysis Year	CUMULATIVE+PROJECT CONDITIONS
Analysis Time Period	AM PEAK HOUR		

Project ID W.O. 21287.01

East/West Street: BURTON MESA BLVD

North/South Street: CONSTELLATION RD

## Volume Adjustments and Site Characteristics

Approach	Eastbound			Westbound		
	L	T	R	L	T	R
Movement						
Volume (veh/h)	10	30	15	125	125	100
%Thrus Left Lane						

Approach	Northbound			Southbound		
	L	T	R	L	T	R
Movement						
Volume (veh/h)	25	213	80	66	307	59
%Thrus Left Lane				50		

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration	L	TR	L	TR	L	TR	LT	TR
PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Flow Rate (veh/h)	10	45	125	225	25	293	219	213
% Heavy Vehicles	4	4	4	4	4	4	4	4
No. Lanes	2		2		2		2	
Geometry Group	5		5		5		5	
Duration, T	1.00							

## Saturation Headway Adjustment Worksheet

Prop. Left-Turns	1.0	0.0	1.0	0.0	1.0	0.0	0.3	0.0
Prop. Right-Turns	0.0	0.3	0.0	0.4	0.0	0.3	0.0	0.3
Prop. Heavy Vehicle	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
hLT-adj	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
hRT-adj	-0.7	-0.7	-0.7	-0.7	-0.7	-0.7	-0.7	-0.7
hHV-adj	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
hadj, computed	0.6	-0.2	0.6	-0.2	0.6	-0.1	0.2	-0.1

## Departure Headway and Service Time

hd, initial value (s)	3.20	3.20	3.20	3.20	3.20	3.20	3.20	3.20
x, initial	0.01	0.04	0.11	0.20	0.02	0.26	0.19	0.19
hd, final value (s)	7.68	6.94	7.13	6.32	6.90	6.21	6.41	6.06
x, final value	0.02	0.09	0.25	0.39	0.05	0.51	0.39	0.36
Move-up time, m (s)	2.3		2.3		2.3		2.3	
Service Time, t <sub>s</sub> (s)	5.4	4.6	4.8	4.0	4.6	3.9	4.1	3.8

## Capacity and Level of Service

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Capacity (veh/h)	260	295	375	475	275	543	469	463
Delay (s/veh)	10.54	10.30	12.17	13.12	9.95	15.22	13.18	12.14
LOS	B	B	B	B	A	C	B	B
Approach: Delay (s/veh)	10.35		12.78		14.80		12.67	
LOS	B		B		B		B	
Intersection Delay (s/veh)	13.18							
Intersection LOS	B							