

APPENDIX NOISE

TRAFFIC NOISE MEMORANDUM



December 3, 2019

Ryan Lee Sawyer
AES
1801 7th Street, Ste 100
Sacramento, CA 95811
rsawyer@analyticalcorp.com

Subject: Traffic Noise Increases – Maha Resort Project – Lake County, CA

Dear Ms. Sawyer:

Saxelby Acoustics has prepared an analysis of traffic noise increases on project-area roadway segments. The intent of this analysis is to provide an assessment of the day/night (L_{dn}) noise level along these segments for comparison to the standards of Lake County and CEQA.

Significance Criteria

CEQA does not define a threshold of “substantial increase” regarding noise exposure. Generally, a noise impact may be considered significant if it would generate a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance. Lake County Table 8-1 of the General Plan Noise Element establishes a normally acceptable exterior noise level standard of 55 dBA Ldn. Therefore, any increase in traffic which causes noise levels at a sensitive receptor to exceed 55 dBA Ldn, would be significant. Where noise levels already exceed 55 dBA Ldn, a determination of significance is based upon the magnitude of the increase.

The potential increase in traffic noise from the project is a factor in determining significance. Research into the human perception of changes in sound level indicates the following:

- A 3-dB change is barely perceptible,
- A 5-dB change is clearly perceptible, and
- A 10-dB change is perceived as being twice or half as loud.

A limitation of using a single noise level increase value to evaluate noise impacts is that it fails to account for pre-project-noise conditions. **Table 1** is based upon recommendations made by the Federal Interagency Committee on Noise (FICON) to provide guidance in the assessment of changes in ambient noise levels resulting from aircraft operations. The recommendations are based upon studies that relate aircraft noise levels to the percentage of persons highly annoyed by the noise. Although the FICON recommendations were specifically developed to assess aircraft noise impacts, it has been accepted that they are applicable to all sources of noise described in terms of cumulative noise exposure metrics such as the L_{dn} .

TABLE 1: SIGNIFICANCE OF CHANGES IN NOISE EXPOSURE

Ambient Noise Level Without Project, L_{dn}	Increase Required for Significant Impact
<60 dB	+5.0 dB or more
60-65 dB	+3.0 dB or more
>65 dB	+1.5 dB or more
Source: Federal Interagency Committee on Noise (FICON)	

Based on the **Table 1** data, an increase in the traffic noise level of 3.0 dB or more would be significant where the pre-project noise levels are within 60-65 dB L_{dn} . Extending this concept to higher noise levels, an increase in the traffic noise level of 1.5 dB or more may be significant where the pre-project traffic noise level exceeds 65 dB L_{dn} . The rationale for the **Table 1** criteria is that, as ambient noise levels increase, a smaller increase in noise resulting from a project is sufficient to cause annoyance.

Off-Site Traffic Noise Prediction Methodology

To predict noise levels due to traffic, the Federal Highway Administration's Highway Traffic Noise Prediction Model (FHWA RD-77-108) was used. The model is used in conjunction with the Calveno reference noise emission curves, and accounts for vehicle volume and speed, roadway configuration, distance to the receiver, and the acoustical characteristics of the project site. The FHWA Model was developed to predict hourly L_{eq} values for free-flowing traffic conditions. To calculate L_{dn} , average daily traffic (ADT) volume data is adjusted based on the assumed day/night distribution of traffic on the project roadways.

Traffic volumes for existing, baseline, and cumulative conditions without the project were obtained from the project traffic study the form of peak hour intersection movements. The peak hour traffic volumes were compiled into segment volumes and converted into daily traffic volumes using a multiplication factor of 6.7, based upon estimates from the project traffic engineer. Daily project trips were assumed to be five times the peak hour trips, also based upon estimates from the project traffic engineer. Truck usage and vehicle speeds on the local area roadways were estimated from field observations and Caltrans data, where available.

Traffic noise levels are predicted at the sensitive receptors located at the closest typical setback distance along each project-area roadway segment. This analysis includes assessment of existing, baseline, and cumulative traffic conditions with, and without, the project.

Table 2 summarizes the modeled traffic noise levels at the nearest sensitive receptors along each roadway segment in the Project area under existing conditions with and without the project. **Table 3** summarizes the modeled traffic noise levels at the nearest sensitive receptors along each roadway segment in the Project area under baseline conditions with and without the project. **Table 4** summarizes the modeled traffic noise levels at the nearest sensitive receptors along each roadway segment in the Project area under cumulative conditions with and without the project. **Table 5** summarizes the modeled traffic noise levels at the nearest sensitive receptors along each roadway segment in the Project area under cumulative conditions with and without the Phase 2 project.

Appendix A provides the complete inputs and results of the FHWA traffic modeling.

TABLE 2: PREDICTED TRAFFIC NOISE LEVELS (EXISTING CONDITIONS WITH AND WITHOUT THE PROJECT)

Roadway	Segment	Existing	Existing + Project	Change	Significance Threshold	Significant increase?
		dBA L _{dn}	dBA L _{dn}	dBA L _{dn}		
SR 53	North of SR 29	64.0	64.3	0.3	+3.0 dB	No
SR 29	SR 53 to N. Spruce Grove	63.4	64.1	0.7	+3.0 dB	No
SR 29	N. Spruce Grove to S. Spruce Grove	63.2	63.9	0.7	+3.0 dB	No
SR 29	S. Spruce Grove to Hidden Valley	59.1	59.8	0.7	+5.0 dB	No
SR 29	Hidden Valley to Hartmann	59.1	59.9	0.8	+5.0 dB	No
SR 29	Hartmann to Grange	55.3	55.9	0.6	+5.0 dB	No
SR 29	Grange to Butts Canyon	59.8	60.4	0.6	+5.0 dB	No
SR 29	Butts Canyon to Wardlaw	62.3	62.8	0.5	+3.0 dB	No
SR 29	Wardlaw to Young	60.5	61.0	0.5	+3.0 dB	No
SR 29	Young to Main	62.7	63.2	0.5	+3.0 dB	No
SR 29	Maint to Armstrong	62.4	62.8	0.3	+3.0 dB	No
SR 29	Armstrong to Douglas	62.4	62.8	0.3	+3.0 dB	No
SR 29	Douglas to Callayomi	62.3	62.6	0.3	+3.0 dB	No
SR 29	Callayomi to Lake	65.9	66.3	0.4	+1.5 dB	No
SR 29	Lake to Central Park	59.9	60.2	0.3	+5.0 dB	No
SR 29	South of Central Park	64.5	64.8	0.3	+3.0 dB	No
SR 29	West of SR 53	62.8	63.0	0.2	+3.0 dB	No
Morgan Valley Road	East of SR 53	60.0	60.2	0.2	+3.0 dB	No
N. Spruce Valley Road	East of SR 53	50.6	50.8	0.2	+5.0 dB or > 55 dB	No
S. Spruce Valley Road	East of SR 53	57.1	57.3	0.2	+5.0 dB	No
Hidden Valley Road	East of SR 53	52.9	53.4	0.5	+5.0 dB or > 55 dB	No
Hartmann Road	East of SR 53	56.4	56.4	0.0	+5.0 dB	No
Grange Road	East of SR 53	44.5	44.5	0.0	+5.0 dB or > 55 dB	No
Butts Canyon Road	SR 29 to Black Oak Hill	54.1	58.5	4.4	+5.0 dB or > 55 dB	Yes

Butts Canyon Road	Black Oak Hill to Oat Hill	55.4	59.7	4.3	+5.0 dB	No
Butts Canyon Road	East of Oat Hill	45.6	50.4	4.8	+5.0 dB or > 55 dB	No
SR 175	SR 29 to Santa Clara	58.5	59.2	0.7	+5.0 dB	No
SR 175	West of Santa Clara	61.3	61.9	0.6	+3.0 dB	No
Pope Valley Road	West of Howell Mountain	51.0	52.1	1.1	+5.0 dB or > 55 dB	No
Tubbs Road	South of SR 29	53.5	53.7	0.2	+5.0 dB or > 55 dB	No
Tubbs Road	North of SR 128	59.7	59.8	0.1	+5.0 dB	No

Notes:

- Where existing noise levels are less than 60 dB an increase of 5 dB would be a significant increase. Additionally, any increase causing noise levels to exceed the County's Normally Acceptable 55 dB Ldn noise level standard at an existing outdoor activity area of a residential use would also be significant. Where existing noise levels exceed 60 dB but are less than 65 dB, an increase of 3 dB or more would be significant. Where existing noise levels exceed 65 dB, an increase of 1.5 dB or more would be significant.

TABLE 3: PREDICTED TRAFFIC NOISE LEVELS (BASELINE CONDITIONS WITH AND WITHOUT THE PROJECT)

Roadway	Segment	Baseline	Baseline + Project	Change	Significance Threshold	Significant increase?
		dBA L _{dn}	dBA L _{dn}	dBA L _{dn}		
SR 53	North of SR 29	64.6	64.9	0.3	+3.0 dB	No
SR 29	SR 53 to N. Spruce Grove	64.8	65.3	0.5	+3.0 dB	No
SR 29	N. Spruce Grove to S. Spruce Grove	64.7	65.2	0.5	+3.0 dB	No
SR 29	S. Spruce Grove to Hidden Valley	60.5	61.0	0.5	+3.0 dB	No
SR 29	Hidden Valley to Hartmann	60.7	61.3	0.6	+3.0 dB	No
SR 29	Hartmann to Grange	56.6	57.1	0.5	+5.0 dB	No
SR 29	Grange to Butts Canyon	61.1	61.6	0.5	+3.0 dB	No
SR 29	Butts Canyon to Wardlaw	63.3	63.7	0.4	+3.0 dB	No
SR 29	Wardlaw to Young	61.5	61.9	0.4	+3.0 dB	No
SR 29	Young to Main	63.7	64.1	0.4	+3.0 dB	No
SR 29	Maint to Armstrong	63.1	63.4	0.3	+3.0 dB	No
SR 29	Armstrong to Douglas	63.1	63.4	0.3	+3.0 dB	No
SR 29	Douglas to Callayomi	63.0	63.3	0.3	+3.0 dB	No
SR 29	Callayomi to Lake	66.6	66.9	0.3	+1.5 dB	No
SR 29	Lake to Central Park	60.6	60.9	0.3	+3.0 dB	No

SR 29	South of Central Park	65.2	65.5	0.3	+1.5 dB	No
SR 29	West of SR 53	63.4	63.6	0.2	+3.0 dB	No
Morgan Valley Road	East of SR 53	60.5	60.6	0.1	+3.0 dB	No
N. Spruce Valley Road	East of SR 53	51.1	51.3	0.2	+5.0 dB or > 55 dB	No
S. Spruce Valley Road	East of SR 53	57.5	57.6	0.1	+5.0 dB	No
Hidden Valley Road	East of SR 53	59.0	59.2	0.2	+5.0 dB	No
Hartmann Road	East of SR 53	56.6	56.6	0.0	+5.0 dB	No
Grange Road	East of SR 53	44.5	44.5	0.0	+5.0 dB or > 55 dB	No
Butts Canyon Road	SR 29 to Black Oak Hill	55.7	59.2	3.5	+5.0 dB	No
Butts Canyon Road	Black Oak Hill to Oat Hill	57.0	60.4	3.4	+5.0 dB	No
Butts Canyon Road	East of Oat Hill	47.4	51.1	3.7	+5.0 dB or > 55 dB	No
SR 175	SR 29 to Santa Clara	59.8	60.3	0.5	+5.0 dB	No
SR 175	West of Santa Clara	63.0	63.5	0.5	+3.0 dB	No
Pope Valley Road	West of Howell Mountain	53.0	53.7	0.7	+5.0 dB or > 55 dB	No
Tubbs Road	South of SR 29	54.0	54.2	0.2	+5.0 dB or > 55 dB	No
Tubbs Road	North of SR 128	60.0	60.1	0.1	+3.0 dB	No

Notes:

1 Where existing noise levels are less than 60 dB an increase of 5 dB would be a significant increase. Additionally, any increase causing noise levels to exceed the County's Normally Acceptable 55 dB Ldn noise level standard at an existing outdoor activity area of a residential use would also be significant. Where existing noise levels exceed 60 dB but are less than 65 dB, an increase of 3 dB or more would be significant. Where existing noise levels exceed 65 dB, an increase of 1.5 dB or more would be significant.

TABLE 4: PREDICTED TRAFFIC NOISE LEVELS (CUMULATIVE CONDITIONS WITH AND WITHOUT THE PROJECT)

Roadway	Segment	Cumulative	Cumulative + Project	Change	Significance Threshold	Significant increase?
		dBA L _{dn}	dBA L _{dn}	dBA L _{dn}		
SR 53	North of SR 29	65.1	65.3	0.2	+1.5 dB	No
SR 29	SR 53 to N. Spruce Grove	65.3	65.7	0.4	+1.5 dB	No
SR 29	N. Spruce Grove to S. Spruce Grove	65.2	65.6	0.4	+1.5 dB	No
SR 29	S. Spruce Grove to Hidden Valley	61.0	61.4	0.4	+3.0 dB	No
SR 29	Hidden Valley to Hartmann	61.2	61.7	0.5	+3.0 dB	No

SR 29	Hartmann to Grange	57.1	57.5	0.4	+5.0 dB	No
SR 29	Grange to Butts Canyon	61.3	61.8	0.5	+3.0 dB	No
SR 29	Butts Canyon to Wardlaw	63.8	64.1	0.3	+3.0 dB	No
SR 29	Wardlaw to Young	62.0	62.3	0.3	+3.0 dB	No
SR 29	Young to Main	64.2	64.6	0.4	+3.0 dB	No
SR 29	Maint to Armstrong	63.6	63.9	0.3	+3.0 dB	No
SR 29	Armstrong to Douglas	63.6	63.9	0.3	+3.0 dB	No
SR 29	Douglas to Callayomi	63.5	63.8	0.3	+3.0 dB	No
SR 29	Callayomi to Lake	67.1	67.4	0.3	+1.5 dB	No
SR 29	Lake to Central Park	61.1	61.4	0.3	+3.0 dB	No
SR 29	South of Central Park	65.7	65.9	0.2	+1.5 dB	No
SR 29	West of SR 53	63.9	64.1	0.2	+3.0 dB	No
Morgan Valley Road	East of SR 53	60.9	61.1	0.2	+3.0 dB	No
N. Spruce Valley Road	East of SR 53	51.6	51.8	0.2	+5.0 dB or > 55 dB	No
S. Spruce Valley Road	East of SR 53	58.0	58.0	0.0	+5.0 dB	No
Hidden Valley Road	East of SR 53	59.5	59.6	0.1	+5.0 dB	No
Hartmann Road	East of SR 53	57.0	57.0	0.0	+5.0 dB	No
Grange Road	East of SR 53	45.0	45.0	0.0	+5.0 dB or > 55 dB	No
Butts Canyon Road	SR 29 to Black Oak Hill	56.2	59.4	3.2	+5.0 dB	No
Butts Canyon Road	Black Oak Hill to Oat Hill	57.5	60.6	3.2	+5.0 dB	No
Butts Canyon Road	East of Oat Hill	47.9	51.3	3.4	+5.0 dB or > 55 dB	No
SR 175	SR 29 to Santa Clara	60.2	60.7	0.5	+3.0 dB	No
SR 175	West of Santa Clara	63.5	63.9	0.4	+3.0 dB	No
Pope Valley Road	West of Howell Mountain	53.5	54.1	0.6	+5.0 dB or > 55 dB	No
Tubbs Road	South of SR 29	54.5	54.7	0.2	+5.0 dB or > 55 dB	No
Tubbs Road	North of SR 128	60.5	60.6	0.1	+3.0 dB	No

Notes:

- 1 Where existing noise levels are less than 60 dB an increase of 5 dB would be a significant increase. Additionally, any increase causing noise levels to exceed the County's Normally Acceptable 55 dB Ldn noise level standard at an existing outdoor activity area of a residential use would also be significant. Where existing noise levels exceed 60 dB but are less than 65 dB, an increase of 3 dB or more would be significant. Where existing noise levels exceed 65 dB, an increase of 1.5 dB or more would be significant.

TABLE 4: PREDICTED TRAFFIC NOISE LEVELS (CUMULATIVE CONDITIONS WITH AND WITHOUT THE PHASE 2 PROJECT)

Roadway	Segment	Cumulative	Cumulative + Project Phase 2	Change	Significance Threshold	Significant increase?
		dBA L _{dn}	dBA L _{dn}	dBA L _{dn}		
SR 53	North of SR 29	65.1	65.7	0.6	+1.5 dB	No
SR 29	SR 53 to N. Spruce Grove	65.3	66.4	1.1	+1.5 dB	No
SR 29	N. Spruce Grove to S. Spruce Grove	65.2	66.3	1.1	+1.5 dB	No
SR 29	S. Spruce Grove to Hidden Valley	61.0	62.1	1.1	+3.0 dB	No
SR 29	Hidden Valley to Hartmann	61.2	62.4	1.2	+3.0 dB	No
SR 29	Hartmann to Grange	57.1	58.2	1.1	+5.0 dB	No
SR 29	Grange to Butts Canyon	61.3	62.5	1.2	+3.0 dB	No
SR 29	Butts Canyon to Wardlaw	63.8	64.7	0.9	+3.0 dB	No
SR 29	Wardlaw to Young	62.0	62.9	0.9	+3.0 dB	No
SR 29	Young to Main	64.2	65.1	0.9	+3.0 dB	No
SR 29	Maint to Armstrong	63.6	64.3	0.7	+3.0 dB	No
SR 29	Armstrong to Douglas	63.6	64.3	0.7	+3.0 dB	No
SR 29	Douglas to Callayomi	63.5	64.2	0.7	+3.0 dB	No
SR 29	Callayomi to Lake	67.1	67.8	0.7	+1.5 dB	No
SR 29	Lake to Central Park	61.1	61.8	0.7	+3.0 dB	No
SR 29	South of Central Park	65.7	66.3	0.6	+1.5 dB	No
SR 29	West of SR 53	63.9	64.3	0.4	+3.0 dB	No
Morgan Valley Road	East of SR 53	60.9	61.3	0.4	+3.0 dB	No
N. Spruce Valley Road	East of SR 53	51.6	52.1	0.5	+5.0 dB or > 55 dB	No
S. Spruce Valley Road	East of SR 53	58.0	58.2	0.2	+5.0 dB	No
Hidden Valley Road	East of SR 53	59.5	59.8	0.3	+5.0 dB	No
Hartmann Road	East of SR 53	57.0	57.0	0.0	+5.0 dB	No
Grange Road	East of SR 53	45.0	45.0	0.0	+5.0 dB or > 55 dB	No
Butts Canyon Road	SR 29 to Black Oak Hill	56.2	62.1	5.9	+5.0 dB	Yes

Butts Canyon Road	Black Oak Hill to Oat Hill	57.5	63.3	5.8	+5.0 dB	Yes
Butts Canyon Road	East of Oat Hill	47.9	54.1	6.2	+5.0 dB or > 55 dB	Yes
SR 175	SR 29 to Santa Clara	60.2	61.3	1.1	+3.0 dB	No
SR 175	West of Santa Clara	63.5	64.5	1.0	+3.0 dB	No
Pope Valley Road	West of Howell Mountain	53.5	54.7	1.2	+5.0 dB or > 55 dB	No
Tubbs Road	South of SR 29	54.5	55.0	0.5	+5.0 dB or > 55 dB	No
Tubbs Road	North of SR 128	60.5	60.8	0.3	+3.0 dB	No

Notes:

- 1 Where existing noise levels are less than 60 dB an increase of 5 dB would be a significant increase. Additionally, any increase causing noise levels to exceed the County's Normally Acceptable 55 dB Ldn noise level standard at an existing outdoor activity area of a residential use would also be significant. Where existing noise levels exceed 60 dB but are less than 65 dB, an increase of 3 dB or more would be significant. Where existing noise levels exceed 65 dB, an increase of 1.5 dB or more would be significant.

Conclusions

Based upon the predicted traffic noise increases shown in **Tables 2-5**, the proposed project is predicted to cause increased traffic noise which would exceed the impact thresholds along Butts Canyon Road. Increases along Butts Canyon Road are predicted to be in the range of 4.4-6.2 dBA. In order to reduce this impact, the use of sound walls or quiet pavement would be required. However, sound walls are unlikely to be a practical noise control measure considering that driveway openings would be required for vehicle access. Quiet pavements are typically assumed to provide a 3-5 dBA reduction. Assuming an average 4 dBA reduction, quiet pavement placed along sensitive receptor areas could reduce project noise level increases to 0.4-2.2 dBA. This would reduce traffic noise increases to less than significant.

No other exceedances of the Lake County significant increase thresholds are predicted for any other segments or project alternatives.

Please call or email me if you have any questions regarding this analysis.

Sincerely,

Saxelby Acoustics LLC



Luke Saxelby, INCE Bd. Cert.
Principal Consultant
Board Certified, Institute of Noise Control Engineering

Appendix A-1

FHWA-RD-77-108 Highway Traffic Noise Prediction Model

Data Input Sheet

Project #: 191102

Description: Maha Resort - Existing Traffic

Ldn/CNEL: Ldn

Hard/Soft: Soft



Segment	Roadway Segment	Segment	ADT	Day %	Eve %	Night %	% Med. Trucks	% Hvy. Trucks	Speed	Distance	Offset (dB)	Contours (ft.) -			
												No Offset			Level, dBA
												70 dBA	65 dBA	60 dBA	
1	SR 53	North of SR 29	10,032	83	0	17	5.9%	1.5%	45	100	0	40	86	185	64.0
2	SR 29	SR 53 to N. Spruce Grove	6,564	83	0	17	2.0%	1.0%	55	100	0	36	78	169	63.4
3	SR 29	N. Spruce Grove to S. Spruce Grove	6,226	83	0	17	2.0%	1.0%	55	100	0	35	76	163	63.2
4	SR 29	S. Spruce Grove to Hidden Valley	6,814	83	0	17	2.0%	1.0%	55	200	0	37	80	173	59.1
5	SR 29	Hidden Valley to Hartmann	6,422	83	0	17	2.0%	1.0%	55	190	0	36	77	166	59.1
6	SR 29	Hartmann to Grange	8,153	83	0	17	2.0%	1.0%	55	400	0	42	90	195	55.3
7	SR 29	Grange to Butts Canyon	8,065	83	0	17	2.0%	1.0%	55	200	0	42	90	193	59.8
8	SR 29	Butts Canyon to Wardlaw	8,335	83	0	17	2.0%	1.0%	45	100	0	30	66	141	62.3
9	SR 29	Wardlaw to Young	7,497	83	0	17	2.0%	1.0%	30	70	0	16	35	75	60.5
10	SR 29	Young to Main	7,524	83	0	17	2.0%	1.0%	30	50	0	16	35	75	62.7
11	SR 29	Maint to Armstrong	7,125	83	0	17	2.0%	1.0%	30	50	0	16	34	73	62.4
12	SR 29	Armstrong to Douglas	7,112	83	0	17	2.0%	1.0%	30	50	0	16	34	72	62.4
13	SR 29	Douglas to Callayomi	6,888	83	0	17	2.0%	1.0%	30	50	0	15	33	71	62.3
14	SR 29	Callayomi to Lake	6,841	83	0	17	2.0%	1.0%	45	50	0	27	58	124	65.9
15	SR 29	Lake to Central Park	6,814	83	0	17	2.0%	1.0%	50	150	0	32	68	147	59.9
16	SR 29	South of Central Park	6,943	83	0	17	2.0%	1.0%	50	75	0	32	69	149	64.5
17	SR 29	West of SR 53	6,206	83	0	17	2.0%	1.0%	50	90	0	30	64	138	62.8
18	Morgan Valley Road	East of SR 53	2,400	88	0	12	1.0%	0.5%	45	50	0	11	23	50	60.0
19	N. Spruce Valley Road	East of SR 53	967	88	0	12	1.0%	0.5%	35	75	0	4	8	18	50.6
20	S. Spruce Valley Road	East of SR 53	2,231	88	0	12	1.0%	0.5%	40	60	0	8	18	39	57.1
21	Hidden Valley Road	East of SR 53	649	88	0	12	1.0%	0.5%	35	40	0	3	6	14	52.9
22	Hartmann Road	East of SR 53	4,421	88	0	12	1.0%	0.5%	45	130	0	16	35	75	56.4
23	Grange Road	East of SR 53	162	88	0	12	1.0%	0.5%	45	90	0	2	4	8	44.5
24	Butts Canyon Road	SR 29 to Black Oak Hill	1,338	88	0	12	1.0%	0.5%	55	120	0	10	22	48	54.1
25	Butts Canyon Road	Black Oak Hill to Oat Hill	1,372	88	0	12	1.0%	0.5%	55	100	0	11	23	49	55.4
26	Butts Canyon Road	East of Oat Hill	1,142	88	0	12	1.0%	0.5%	55	400	0	9	20	44	45.6
27	SR 175	SR 29 to Santa Clara	2,461	88	0	12	9.0%	1.4%	35	60	0	10	22	48	58.5
28	SR 175	West of Santa Clara	2,265	83	0	17	9.0%	1.4%	45	60	0	16	34	73	61.3
29	Pope Valley Road	West of Howell Mountain	1,088	83	0	17	1.0%	0.5%	50	160	0	9	19	40	51.0
30	Tubbs Road	South of SR 29	2,643	88	0	12	1.0%	0.5%	50	175	0	14	30	64	53.5
31	Tubbs Road	North of SR 128	2,224	88	0	12	1.0%	0.5%	50	60	0	12	27	57	59.7

Appendix A-2

FHWA-RD-77-108 Highway Traffic Noise Prediction Model

Data Input Sheet

Project #: 191102

Description: Maha Resort - Existing Plus Project Traffic

Ldn/CNEL: Ldn

Hard/Soft: Soft



Segment	Roadway Segment	Segment	ADT	Day %	Eve %	Night %	% Med. Trucks	% Hvy. Trucks	Speed	Distance	Offset (dB)	Contours (ft.) -			
												No Offset			Level, dBA
												70 dBA	65 dBA	60 dBA	
1	SR 53	North of SR 29	10,697	83	0	17	5.9%	1.5%	45	100	0	42	89	193	64.3
2	SR 29	SR 53 to N. Spruce Grove	7,654	83	0	17	2.0%	1.0%	55	100	0	40	87	187	64.1
3	SR 29	N. Spruce Grove to S. Spruce Grove	7,366	83	0	17	2.0%	1.0%	55	100	0	39	85	182	63.9
4	SR 29	S. Spruce Grove to Hidden Valley	8,009	83	0	17	2.0%	1.0%	55	200	0	41	89	193	59.8
5	SR 29	Hidden Valley to Hartmann	7,697	83	0	17	2.0%	1.0%	55	190	0	40	87	188	59.9
6	SR 29	Hartmann to Grange	9,428	83	0	17	2.0%	1.0%	55	400	0	46	100	215	55.9
7	SR 29	Grange to Butts Canyon	9,340	83	0	17	2.0%	1.0%	55	200	0	46	99	213	60.4
8	SR 29	Butts Canyon to Wardlaw	9,420	83	0	17	2.0%	1.0%	45	100	0	33	71	153	62.8
9	SR 29	Wardlaw to Young	8,477	83	0	17	2.0%	1.0%	30	70	0	18	38	81	61.0
10	SR 29	Young to Main	8,504	83	0	17	2.0%	1.0%	30	50	0	18	38	82	63.2
11	SR 29	Maint to Armstrong	7,710	83	0	17	2.0%	1.0%	30	50	0	16	35	76	62.8
12	SR 29	Armstrong to Douglas	7,697	83	0	17	2.0%	1.0%	30	50	0	16	35	76	62.8
13	SR 29	Douglas to Callayomi	7,473	83	0	17	2.0%	1.0%	30	50	0	16	35	75	62.6
14	SR 29	Callayomi to Lake	7,401	83	0	17	2.0%	1.0%	45	50	0	28	61	131	66.3
15	SR 29	Lake to Central Park	7,374	83	0	17	2.0%	1.0%	50	150	0	33	72	155	60.2
16	SR 29	South of Central Park	7,473	83	0	17	2.0%	1.0%	50	75	0	34	73	156	64.8
17	SR 29	West of SR 53	6,526	83	0	17	2.0%	1.0%	50	90	0	31	66	143	63.0
18	Morgan Valley Road	East of SR 53	2,505	88	0	12	1.0%	0.5%	45	50	0	11	24	51	60.2
19	N. Spruce Valley Road	East of SR 53	1,017	88	0	12	1.0%	0.5%	35	75	0	4	8	18	50.8
20	S. Spruce Valley Road	East of SR 53	2,286	88	0	12	1.0%	0.5%	40	60	0	8	18	39	57.3
21	Hidden Valley Road	East of SR 53	729	88	0	12	1.0%	0.5%	35	40	0	3	7	15	53.4
22	Hartmann Road	East of SR 53	4,421	88	0	12	1.0%	0.5%	45	130	0	16	35	75	56.4
23	Grange Road	East of SR 53	162	88	0	12	1.0%	0.5%	45	90	0	2	4	8	44.5
24	Butts Canyon Road	SR 29 to Black Oak Hill	3,698	88	0	12	1.0%	0.5%	55	120	0	21	44	95	58.5
25	Butts Canyon Road	Black Oak Hill to Oat Hill	3,732	88	0	12	1.0%	0.5%	55	100	0	21	44	96	59.7
26	Butts Canyon Road	East of Oat Hill	3,502	88	0	12	1.0%	0.5%	55	400	0	20	43	92	50.4
27	SR 175	SR 29 to Santa Clara	2,856	88	0	12	9.0%	1.4%	35	60	0	11	25	53	59.2
28	SR 175	West of Santa Clara	2,640	83	0	17	9.0%	1.4%	45	60	0	17	37	81	61.9
29	Pope Valley Road	West of Howell Mountain	1,383	83	0	17	1.0%	0.5%	50	160	0	10	22	48	52.1
30	Tubbs Road	South of SR 29	2,788	88	0	12	1.0%	0.5%	50	175	0	14	31	67	53.7
31	Tubbs Road	North of SR 128	2,284	88	0	12	1.0%	0.5%	50	60	0	13	27	58	59.8

Appendix A-3

FHWA-RD-77-108 Highway Traffic Noise Prediction Model

Data Input Sheet

Project #: 191102

Description: Maha Resort - Baseline Traffic

Ldn/CNEL: Ldn

Hard/Soft: Soft



Segment	Roadway Segment	Segment	ADT	Day %	Eve %	Night %	% Med. Trucks	% Hvy. Trucks	Speed	Distance	Offset (dB)	Contours (ft.) -			Level, dBA
												No Offset			
												70 dBA	65 dBA	60 dBA	
1	SR 53	North of SR 29	11,634	83	0	17	5.9%	1.5%	45	100	0	44	95	204	64.6
2	SR 29	SR 53 to N. Spruce Grove	9,031	83	0	17	2.0%	1.0%	55	100	0	45	97	209	64.8
3	SR 29	N. Spruce Grove to S. Spruce Grove	8,802	83	0	17	2.0%	1.0%	55	100	0	44	95	205	64.7
4	SR 29	S. Spruce Grove to Hidden Valley	9,518	83	0	17	2.0%	1.0%	55	200	0	47	100	216	60.5
5	SR 29	Hidden Valley to Hartmann	9,227	83	0	17	2.0%	1.0%	55	190	0	46	98	212	60.7
6	SR 29	Hartmann to Grange	11,005	83	0	17	2.0%	1.0%	55	400	0	51	110	238	56.6
7	SR 29	Grange to Butts Canyon	10,850	83	0	17	2.0%	1.0%	55	200	0	51	109	236	61.1
8	SR 29	Butts Canyon to Wardlaw	10,559	83	0	17	2.0%	1.0%	45	100	0	36	77	165	63.3
9	SR 29	Wardlaw to Young	9,491	83	0	17	2.0%	1.0%	30	70	0	19	41	88	61.5
10	SR 29	Young to Main	9,525	83	0	17	2.0%	1.0%	30	50	0	19	41	88	63.7
11	SR 29	Maint to Armstrong	8,396	83	0	17	2.0%	1.0%	30	50	0	17	38	81	63.1
12	SR 29	Armstrong to Douglas	8,369	83	0	17	2.0%	1.0%	30	50	0	17	37	81	63.1
13	SR 29	Douglas to Callayomi	8,139	83	0	17	2.0%	1.0%	30	50	0	17	37	79	63.0
14	SR 29	Callayomi to Lake	8,098	83	0	17	2.0%	1.0%	45	50	0	30	64	139	66.6
15	SR 29	Lake to Central Park	8,065	83	0	17	2.0%	1.0%	50	150	0	35	76	165	60.6
16	SR 29	South of Central Park	8,200	83	0	17	2.0%	1.0%	50	75	0	36	77	166	65.2
17	SR 29	West of SR 53	7,166	83	0	17	2.0%	1.0%	50	90	0	33	71	152	63.4
18	Morgan Valley Road	East of SR 53	2,670	88	0	12	1.0%	0.5%	45	50	0	12	25	54	60.5
19	N. Spruce Valley Road	East of SR 53	1,095	88	0	12	1.0%	0.5%	35	75	0	4	9	19	51.1
20	S. Spruce Valley Road	East of SR 53	2,407	88	0	12	1.0%	0.5%	40	60	0	9	19	41	57.5
21	Hidden Valley Road	East of SR 53	2,650	88	0	12	1.0%	0.5%	35	40	0	7	16	35	59.0
22	Hartmann Road	East of SR 53	4,556	88	0	12	1.0%	0.5%	45	130	0	16	36	77	56.6
23	Grange Road	East of SR 53	162	88	0	12	1.0%	0.5%	45	90	0	2	4	8	44.5
24	Butts Canyon Road	SR 29 to Black Oak Hill	1,947	88	0	12	1.0%	0.5%	55	120	0	13	29	62	55.7
25	Butts Canyon Road	Black Oak Hill to Oat Hill	1,981	88	0	12	1.0%	0.5%	55	100	0	14	29	63	57.0
26	Butts Canyon Road	East of Oat Hill	1,744	88	0	12	1.0%	0.5%	55	400	0	12	27	58	47.4
27	SR 175	SR 29 to Santa Clara	3,265	88	0	12	9.0%	1.4%	35	60	0	12	27	58	59.8
28	SR 175	West of Santa Clara	3,394	83	0	17	9.0%	1.4%	45	60	0	21	44	95	63.0
29	Pope Valley Road	West of Howell Mountain	1,690	83	0	17	1.0%	0.5%	50	160	0	12	25	54	53.0
30	Tubbs Road	South of SR 29	3,015	88	0	12	1.0%	0.5%	50	175	0	15	33	70	54.0
31	Tubbs Road	North of SR 128	2,400	88	0	12	1.0%	0.5%	50	60	0	13	28	60	60.0

Appendix A-4

FHWA-RD-77-108 Highway Traffic Noise Prediction Model

Data Input Sheet

Project #: 191102

Description: Maha Resort - Baseline Plus Project Traffic

Ldn/CNEL: Ldn

Hard/Soft: Soft



Segment	Roadway Segment	Segment	ADT	Day %	Eve %	Night %	% Med. Trucks	% Hvy. Trucks	Speed	Distance	Offset (dB)	Contours (ft.) -			
												No Offset			Level, dBA
												70 dBA	65 dBA	60 dBA	
1	SR 53	North of SR 29	12,299	83	0	17	5.9%	1.5%	45	100	0	46	98	212	64.9
2	SR 29	SR 53 to N. Spruce Grove	10,121	83	0	17	2.0%	1.0%	55	100	0	48	104	225	65.3
3	SR 29	N. Spruce Grove to S. Spruce Grove	9,942	83	0	17	2.0%	1.0%	55	100	0	48	103	222	65.2
4	SR 29	S. Spruce Grove to Hidden Valley	10,713	83	0	17	2.0%	1.0%	55	200	0	50	109	234	61.0
5	SR 29	Hidden Valley to Hartmann	10,502	83	0	17	2.0%	1.0%	55	190	0	50	107	231	61.3
6	SR 29	Hartmann to Grange	12,280	83	0	17	2.0%	1.0%	55	400	0	55	119	256	57.1
7	SR 29	Grange to Butts Canyon	12,125	83	0	17	2.0%	1.0%	55	200	0	55	118	254	61.6
8	SR 29	Butts Canyon to Wardlaw	11,644	83	0	17	2.0%	1.0%	45	100	0	38	82	177	63.7
9	SR 29	Wardlaw to Young	10,471	83	0	17	2.0%	1.0%	30	70	0	20	44	94	61.9
10	SR 29	Young to Main	10,505	83	0	17	2.0%	1.0%	30	50	0	20	44	94	64.1
11	SR 29	Maint to Armstrong	8,981	83	0	17	2.0%	1.0%	30	50	0	18	39	85	63.4
12	SR 29	Armstrong to Douglas	8,954	83	0	17	2.0%	1.0%	30	50	0	18	39	84	63.4
13	SR 29	Douglas to Callayomi	8,724	83	0	17	2.0%	1.0%	30	50	0	18	39	83	63.3
14	SR 29	Callayomi to Lake	8,658	83	0	17	2.0%	1.0%	45	50	0	31	67	145	66.9
15	SR 29	Lake to Central Park	8,625	83	0	17	2.0%	1.0%	50	150	0	37	80	172	60.9
16	SR 29	South of Central Park	8,730	83	0	17	2.0%	1.0%	50	75	0	37	81	174	65.5
17	SR 29	West of SR 53	7,486	83	0	17	2.0%	1.0%	50	90	0	34	73	157	63.6
18	Morgan Valley Road	East of SR 53	2,775	88	0	12	1.0%	0.5%	45	50	0	12	26	55	60.6
19	N. Spruce Valley Road	East of SR 53	1,145	88	0	12	1.0%	0.5%	35	75	0	4	9	20	51.3
20	S. Spruce Valley Road	East of SR 53	2,462	88	0	12	1.0%	0.5%	40	60	0	9	19	41	57.6
21	Hidden Valley Road	East of SR 53	2,730	88	0	12	1.0%	0.5%	35	40	0	8	16	35	59.2
22	Hartmann Road	East of SR 53	4,556	88	0	12	1.0%	0.5%	45	130	0	16	36	77	56.6
23	Grange Road	East of SR 53	162	88	0	12	1.0%	0.5%	45	90	0	2	4	8	44.5
24	Butts Canyon Road	SR 29 to Black Oak Hill	4,307	88	0	12	1.0%	0.5%	55	120	0	23	49	105	59.2
25	Butts Canyon Road	Black Oak Hill to Oat Hill	4,341	88	0	12	1.0%	0.5%	55	100	0	23	49	106	60.4
26	Butts Canyon Road	East of Oat Hill	4,104	88	0	12	1.0%	0.5%	55	400	0	22	47	102	51.1
27	SR 175	SR 29 to Santa Clara	3,660	88	0	12	9.0%	1.4%	35	60	0	13	29	62	60.3
28	SR 175	West of Santa Clara	3,769	83	0	17	9.0%	1.4%	45	60	0	22	48	102	63.5
29	Pope Valley Road	West of Howell Mountain	1,985	83	0	17	1.0%	0.5%	50	160	0	13	28	60	53.7
30	Tubbs Road	South of SR 29	3,160	88	0	12	1.0%	0.5%	50	175	0	16	34	72	54.2
31	Tubbs Road	North of SR 128	2,460	88	0	12	1.0%	0.5%	50	60	0	13	28	61	60.1

Appendix A-5

FHWA-RD-77-108 Highway Traffic Noise Prediction Model

Data Input Sheet

Project #: 191102

Description: Maha Resort - Cumulative Traffic

Ldn/CNEL: Ldn

Hard/Soft: Soft



Segment	Roadway Segment	Segment	ADT	Day %	Eve %	Night %	% Med. Trucks	% Hvy. Trucks	Speed	Distance	Offset (dB)	Contours (ft.) -			
												No Offset			Level, dBA
												70 dBA	65 dBA	60 dBA	
1	SR 53	North of SR 29	13,013	83	0	17	5.9%	1.5%	45	100	0	47	102	220	65.1
2	SR 29	SR 53 to N. Spruce Grove	10,093	83	0	17	2.0%	1.0%	55	100	0	48	104	225	65.3
3	SR 29	N. Spruce Grove to S. Spruce Grove	9,843	83	0	17	2.0%	1.0%	55	100	0	48	103	221	65.2
4	SR 29	S. Spruce Grove to Hidden Valley	10,640	83	0	17	2.0%	1.0%	55	200	0	50	108	233	61.0
5	SR 29	Hidden Valley to Hartmann	10,316	83	0	17	2.0%	1.0%	55	190	0	49	106	228	61.2
6	SR 29	Hartmann to Grange	12,310	83	0	17	2.0%	1.0%	55	400	0	55	119	256	57.1
7	SR 29	Grange to Butts Canyon	11,526	83	0	17	2.0%	1.0%	55	200	0	53	114	245	61.3
8	SR 29	Butts Canyon to Wardlaw	11,810	83	0	17	2.0%	1.0%	45	100	0	38	83	178	63.8
9	SR 29	Wardlaw to Young	10,613	83	0	17	2.0%	1.0%	30	70	0	20	44	95	62.0
10	SR 29	Young to Main	10,647	83	0	17	2.0%	1.0%	30	50	0	20	44	95	64.2
11	SR 29	Maint to Armstrong	9,390	83	0	17	2.0%	1.0%	30	50	0	19	40	87	63.6
12	SR 29	Armstrong to Douglas	9,363	83	0	17	2.0%	1.0%	30	50	0	19	40	87	63.6
13	SR 29	Douglas to Callayomi	9,099	83	0	17	2.0%	1.0%	30	50	0	18	40	85	63.5
14	SR 29	Callayomi to Lake	9,058	83	0	17	2.0%	1.0%	45	50	0	32	69	149	67.1
15	SR 29	Lake to Central Park	9,018	83	0	17	2.0%	1.0%	50	150	0	38	82	177	61.1
16	SR 29	South of Central Park	9,167	83	0	17	2.0%	1.0%	50	75	0	39	83	179	65.7
17	SR 29	West of SR 53	8,017	83	0	17	2.0%	1.0%	50	90	0	35	76	164	63.9
18	Morgan Valley Road	East of SR 53	2,981	88	0	12	1.0%	0.5%	45	50	0	12	27	58	60.9
19	N. Spruce Valley Road	East of SR 53	1,224	88	0	12	1.0%	0.5%	35	75	0	4	10	21	51.6
20	S. Spruce Valley Road	East of SR 53	2,690	88	0	12	1.0%	0.5%	40	60	0	9	20	44	58.0
21	Hidden Valley Road	East of SR 53	2,961	88	0	12	1.0%	0.5%	35	40	0	8	17	37	59.5
22	Hartmann Road	East of SR 53	5,090	88	0	12	1.0%	0.5%	45	130	0	18	38	82	57.0
23	Grange Road	East of SR 53	183	88	0	12	1.0%	0.5%	45	90	0	2	4	9	45.0
24	Butts Canyon Road	SR 29 to Black Oak Hill	2,177	88	0	12	1.0%	0.5%	55	120	0	14	31	67	56.2
25	Butts Canyon Road	Black Oak Hill to Oat Hill	2,211	88	0	12	1.0%	0.5%	55	100	0	15	31	68	57.5
26	Butts Canyon Road	East of Oat Hill	1,947	88	0	12	1.0%	0.5%	55	400	0	13	29	62	47.9
27	SR 175	SR 29 to Santa Clara	3,650	88	0	12	9.0%	1.4%	35	60	0	13	29	62	60.2
28	SR 175	West of Santa Clara	3,792	83	0	17	9.0%	1.4%	45	60	0	22	48	103	63.5
29	Pope Valley Road	West of Howell Mountain	1,893	83	0	17	1.0%	0.5%	50	160	0	13	27	59	53.5
30	Tubbs Road	South of SR 29	3,380	88	0	12	1.0%	0.5%	50	175	0	16	35	76	54.5
31	Tubbs Road	North of SR 128	2,684	88	0	12	1.0%	0.5%	50	60	0	14	30	65	60.5

Appendix A-6

FHWA-RD-77-108 Highway Traffic Noise Prediction Model

Data Input Sheet

Project #: 191102

Description: Maha Resort - Cumulative Plus Project Traffic

Ldn/CNEL: Ldn

Hard/Soft: Soft



Segment	Roadway Segment	Segment	ADT	Day %	Eve %	Night %	% Med. Trucks	% Hvy. Trucks	Speed	Distance	Offset (dB)	Contours (ft.) -			Level, dBA
												No Offset			
												70 dBA	65 dBA	60 dBA	
1	SR 53	North of SR 29	13,678	83	0	17	5.9%	1.5%	45	100	0	49	105	227	65.3
2	SR 29	SR 53 to N. Spruce Grove	11,183	83	0	17	2.0%	1.0%	55	100	0	52	112	241	65.7
3	SR 29	N. Spruce Grove to S. Spruce Grove	10,983	83	0	17	2.0%	1.0%	55	100	0	51	110	238	65.6
4	SR 29	S. Spruce Grove to Hidden Valley	11,835	83	0	17	2.0%	1.0%	55	200	0	54	116	250	61.4
5	SR 29	Hidden Valley to Hartmann	11,591	83	0	17	2.0%	1.0%	55	190	0	53	114	246	61.7
6	SR 29	Hartmann to Grange	13,585	83	0	17	2.0%	1.0%	55	400	0	59	127	274	57.5
7	SR 29	Grange to Butts Canyon	12,801	83	0	17	2.0%	1.0%	55	200	0	57	122	263	61.8
8	SR 29	Butts Canyon to Wardlaw	12,895	83	0	17	2.0%	1.0%	45	100	0	41	88	189	64.1
9	SR 29	Wardlaw to Young	11,593	83	0	17	2.0%	1.0%	30	70	0	22	47	100	62.3
10	SR 29	Young to Main	11,627	83	0	17	2.0%	1.0%	30	50	0	22	47	101	64.6
11	SR 29	Maint to Armstrong	9,975	83	0	17	2.0%	1.0%	30	50	0	20	42	91	63.9
12	SR 29	Armstrong to Douglas	9,948	83	0	17	2.0%	1.0%	30	50	0	20	42	91	63.9
13	SR 29	Douglas to Callayomi	9,684	83	0	17	2.0%	1.0%	30	50	0	19	41	89	63.8
14	SR 29	Callayomi to Lake	9,618	83	0	17	2.0%	1.0%	45	50	0	34	72	156	67.4
15	SR 29	Lake to Central Park	9,578	83	0	17	2.0%	1.0%	50	150	0	40	86	185	61.4
16	SR 29	South of Central Park	9,697	83	0	17	2.0%	1.0%	50	75	0	40	86	186	65.9
17	SR 29	West of SR 53	8,337	83	0	17	2.0%	1.0%	50	90	0	36	78	168	64.1
18	Morgan Valley Road	East of SR 53	3,086	88	0	12	1.0%	0.5%	45	50	0	13	27	59	61.1
19	N. Spruce Valley Road	East of SR 53	1,274	88	0	12	1.0%	0.5%	35	75	0	5	10	21	51.8
20	S. Spruce Valley Road	East of SR 53	2,745	88	0	12	1.0%	0.5%	40	60	0	10	21	44	58.0
21	Hidden Valley Road	East of SR 53	3,041	88	0	12	1.0%	0.5%	35	40	0	8	18	38	59.6
22	Hartmann Road	East of SR 53	5,090	88	0	12	1.0%	0.5%	45	130	0	18	38	82	57.0
23	Grange Road	East of SR 53	183	88	0	12	1.0%	0.5%	45	90	0	2	4	9	45.0
24	Butts Canyon Road	SR 29 to Black Oak Hill	4,537	88	0	12	1.0%	0.5%	55	120	0	24	51	109	59.4
25	Butts Canyon Road	Black Oak Hill to Oat Hill	4,571	88	0	12	1.0%	0.5%	55	100	0	24	51	110	60.6
26	Butts Canyon Road	East of Oat Hill	4,307	88	0	12	1.0%	0.5%	55	400	0	23	49	105	51.3
27	SR 175	SR 29 to Santa Clara	4,045	88	0	12	9.0%	1.4%	35	60	0	14	31	67	60.7
28	SR 175	West of Santa Clara	4,167	83	0	17	9.0%	1.4%	45	60	0	24	51	109	63.9
29	Pope Valley Road	West of Howell Mountain	2,188	83	0	17	1.0%	0.5%	50	160	0	14	30	64	54.1
30	Tubbs Road	South of SR 29	3,525	88	0	12	1.0%	0.5%	50	175	0	17	36	78	54.7
31	Tubbs Road	North of SR 128	2,744	88	0	12	1.0%	0.5%	50	60	0	14	31	66	60.6

Appendix A-7

FHWA-RD-77-108 Highway Traffic Noise Prediction Model

Data Input Sheet

Project #: 191102

Description: Maha Resort - Cumulative Plus Phase 2 Traffic

Ldn/CNEL: Ldn

Hard/Soft: Soft



Segment	Roadway Segment	Segment	ADT	Day %	Eve %	Night %	% Med. Trucks	% Hvy. Trucks	Speed	Distance	Offset (dB)	Contours (ft.) -			
												No Offset			Level, dBA
												70 dBA	65 dBA	60 dBA	
1	SR 53	North of SR 29	14,773	83	0	17	5.9%	1.5%	45	100	0	51	111	239	65.7
2	SR 29	SR 53 to N. Spruce Grove	12,978	83	0	17	2.0%	1.0%	55	100	0	57	123	266	66.4
3	SR 29	N. Spruce Grove to S. Spruce Grove	12,863	83	0	17	2.0%	1.0%	55	100	0	57	123	264	66.3
4	SR 29	S. Spruce Grove to Hidden Valley	13,805	83	0	17	2.0%	1.0%	55	200	0	60	129	277	62.1
5	SR 29	Hidden Valley to Hartmann	13,696	83	0	17	2.0%	1.0%	55	190	0	59	128	275	62.4
6	SR 29	Hartmann to Grange	15,690	83	0	17	2.0%	1.0%	55	400	0	65	140	302	58.2
7	SR 29	Grange to Butts Canyon	14,906	83	0	17	2.0%	1.0%	55	200	0	63	135	291	62.5
8	SR 29	Butts Canyon to Wardlaw	14,690	83	0	17	2.0%	1.0%	45	100	0	44	96	206	64.7
9	SR 29	Wardlaw to Young	13,213	83	0	17	2.0%	1.0%	30	70	0	24	51	110	62.9
10	SR 29	Young to Main	13,247	83	0	17	2.0%	1.0%	30	50	0	24	51	110	65.1
11	SR 29	Maint to Armstrong	10,950	83	0	17	2.0%	1.0%	30	50	0	21	45	97	64.3
12	SR 29	Armstrong to Douglas	10,923	83	0	17	2.0%	1.0%	30	50	0	21	45	96	64.3
13	SR 29	Douglas to Callayomi	10,659	83	0	17	2.0%	1.0%	30	50	0	20	44	95	64.2
14	SR 29	Callayomi to Lake	10,548	83	0	17	2.0%	1.0%	45	50	0	36	77	165	67.8
15	SR 29	Lake to Central Park	10,508	83	0	17	2.0%	1.0%	50	150	0	42	91	196	61.8
16	SR 29	South of Central Park	10,572	83	0	17	2.0%	1.0%	50	75	0	42	92	197	66.3
17	SR 29	West of SR 53	8,862	83	0	17	2.0%	1.0%	50	90	0	38	81	175	64.3
18	Morgan Valley Road	East of SR 53	3,261	88	0	12	1.0%	0.5%	45	50	0	13	28	61	61.3
19	N. Spruce Valley Road	East of SR 53	1,359	88	0	12	1.0%	0.5%	35	75	0	5	10	22	52.1
20	S. Spruce Valley Road	East of SR 53	2,835	88	0	12	1.0%	0.5%	40	60	0	10	21	45	58.2
21	Hidden Valley Road	East of SR 53	3,176	88	0	12	1.0%	0.5%	35	40	0	8	18	39	59.8
22	Hartmann Road	East of SR 53	5,090	88	0	12	1.0%	0.5%	45	130	0	18	38	82	57.0
23	Grange Road	East of SR 53	183	88	0	12	1.0%	0.5%	45	90	0	2	4	9	45.0
24	Butts Canyon Road	SR 29 to Black Oak Hill	8,437	88	0	12	1.0%	0.5%	55	120	0	36	77	165	62.1
25	Butts Canyon Road	Black Oak Hill to Oat Hill	8,471	88	0	12	1.0%	0.5%	55	100	0	36	77	166	63.3
26	Butts Canyon Road	East of Oat Hill	8,207	88	0	12	1.0%	0.5%	55	400	0	35	75	162	54.1
27	SR 175	SR 29 to Santa Clara	4,690	88	0	12	9.0%	1.4%	35	60	0	16	34	74	61.3
28	SR 175	West of Santa Clara	4,777	83	0	17	9.0%	1.4%	45	60	0	26	56	120	64.5
29	Pope Valley Road	West of Howell Mountain	2,668	83	0	17	1.0%	0.5%	50	160	0	16	34	74	54.9
30	Tubbs Road	South of SR 29	3,765	88	0	12	1.0%	0.5%	50	175	0	18	38	81	55.0
31	Tubbs Road	North of SR 128	2,839	88	0	12	1.0%	0.5%	50	60	0	15	31	67	60.8