Appendix J
Noise Calculations and Ambient Noise Figures

Appendix A
Acoustic Terminology

Acoustics	The science of sound.
Ambient Noise	The distinctive acoustical characteristics of a given space consisting of all noise sources audible at that location. In many cases, the term ambient is used to describe an existing or pre-project condition such as the setting in an environmental noise study.
Attenuation	The reduction of an acoustic signal.
A-Weighting	A frequency-response adjustment of a sound level meter that conditions the output signal to approximate human response.
Decibel or dB	Fundamental unit of sound, defined as one-tenth of the logarithm of the ratio of the sound pressure squared over the reference pressure squared.
CNEL	Community Noise Equivalent Level. Defined as the 24-hour average noise level with noise occurring during evening hours (7 - 10 p.m.) weighted by a factor of three and nighttime hours weighted by a factor of 10 prior to averaging.
Frequency	The measure of the rapidity of alterations of a periodic signal, expressed in cycles per second or hertz.
Ldn	Day/Night Average Sound Level. Similar to CNEL but with no evening weighting.
Leq	Equivalent or energy-averaged sound level.
Lmax	The highest root-mean-square (RMS) sound level measured over a given period of time.
Loudness	A subjective term for the sensation of the magnitude of sound.
Masking	The amount (or the process) by which the threshold of audibility is for one sound is raised by the presence of another (masking) sound.
Noise	Unwanted sound.
Peak Noise	The level corresponding to the highest (not RMS) sound pressure measured over a given period of time. This term is often confused with the "Maximum" level, which is the highest RMS level.
RT_{60}	The time it takes reverberant sound to decay by 60 dB once the source has been removed.
Sabin	The unit of sound absorption. One square foot of material absorbing 100% of incident sound has an absorption of 1 sabin.
Threshold of Hearing	The lowest sound that can be perceived by the human auditory system, generally considered to be 0 dB for persons with perfect hearing.
Threshold of Pain	Approximately 120 dB above the threshold of hearing.
Impulsive	Sound of short duration, usually less than one second, with an abrupt onset and rapid decay.
Simple Tone	Any sound which can be judged as audible as a single pitch or set of single pitches

Appendix B-1
FHWA-RD-77-108 Highway Traffic Noise Prediction Model
Data Input Sheet

Project #: 2002-068 West Roseville SP
Description: Existing
Ldn/CNEL: Ldn
Hard/Soft: Soft

Segment	Roadway Name	Segment Description From	To	ADT	Day %	Eve %	Night %	% Med. Trucks	% Heavy Trucks	Speed	Distance	Offset
1	S.R. 65	South Pleasant Grove		50600	82		18	2.5	10.9	65	100	
2	S.R. 65	Pleasant Grove	Blue Oaks	43300	82		18	2.5	10.9	65	100	
3	S.R. 65	Blue Oaks	Sunset	40000	82		18	2.5	10.9	65	100	
4	Roseville Parkway	S. of Pleasant Grove		19800	85		15	2	1	45	100	
5	Roseville Parkway	Pleasant Grove	Washington	7175	85		15	2	1	45	100	
6	Roseville Parkway	Washington	Foothills	NA	85			2	1	45	100	
7	Sunset	East SR 65		NA	85			2	1	45	100	
8	Foothills	Baseline	Junction	28400	85		15	2	1	45	100	
9	Foothills	Junction	Pleasant Grove	28300	85		15	2	1	45	100	
10	Foothills	Pleasant Grove	Blue Oaks	17000	85		15	2	1	45	100	
11	Woodcreek	Baseline	Junction	10100	85		15	2	1	45	100	
12	Woodcreek	Junction	Pleasant Grove	12600	85		15	2	1	45	100	
13	Woodcreek	Pleasant Grove	Blue Oaks	8800	85		15	2	1	45	100	
14	Woodcreek	N. of Blue Oaks		NA	85			2	1	45	100	
15	Fiddyment	S. of Baseline		NA	85			2	1	45	100	
16	Fiddyment	Baseline	Pleasant Grove	8800	85		15	2	1	45	100	
17	Fiddyment	Pleasant Grove	Blue Oaks	6000	85		15	2	1	45	100	
18	Fiddyment	Blue Oaks	Hayden	2400	85		15	2	1	45	100	
19	Fiddyment	N. of Hayden		2400	85		15	2	1	45	100	
20	Baseline	W. of Watt		NA	85			2	1	45	100	
21	Baseline	Watt	Fiddyment	20600	85		15	2	1	45	100	
22	Baseline	Fiddyment	Junction	NA	85			2	1	45	100	
23	Baseline	Junction	Woodcreek	12800	85		15	2	1	45	100	
24	Baseline	Woodcreek	Foothills	16200	85		15	2	1	45	100	
25	Baseline	Foothills	Washington	8200	85		15	2	1	45	100	
26	Junction	Baseline	Woodcreek	3200	85		15	2	1	45	100	
27	Junction	Woodcreek	Foothills	8400	85		15	2	1	45	100	
28	Junction	Foothills	Washington	NA	85			2	1	45	100	
29	Pleasant Grove	Westpark	Fiddyment	NA	85			2	1	45	100	
30	Pleasant Grove	Fiddyment	Woodcreek	11800	85		15	2	1	45	100	
31	Pleasant Grove	Woodcreek	Foothills	19300	85		15	2	1	45	100	
32	Pleasant Grove	Foothills	Washington	25100	85		15	2	1	45	100	
33	Pleasant Grove	Washington	Roseville Parkway	24300	85		15	2	1	45	100	
34	Pleasant Grove	Roseville Parkway	S.R. 65	23200	85		15	2	1	45	100	
35	Blue Oaks	Westpark	Hayden	NA	85			2	1	45	100	
36	Blue Oaks	Hayden	Fiddyment	NA	85			2	1	45	100	
37	Blue Oaks	E. of Fiddyment		7200	85		15	2	1	45	100	
38	Blue Oaks	W. of Woodcreek		7200	85		15	2	1	45	100	
39	Blue Oaks	Woodcreek	Foothills	12700	85		15	2	1	45	100	
40	Blue Oaks	Foothills	S.R. 65	23900	85		15	2	1	45	100	
41	Blue Oaks	S.R. 65	Sunset	5300	85		15	2	1	45	100	
42	Westpark	Baseline	Pleasant Grove	NA	85			2	1	45	100	
43	Westpark	Pleasant Grove	Blue Oaks	NA	85			2	1	45	100	
44	Hayden	N. of Blue Oaks		NA	85			2	1	45	100	
45	Hayden	S. of Blue Oaks		NA	85			2	1	45	100	

Appendix B-2
FHWA-RD-77-108 Highway Traffic Noise Prediction Model
Predicted Levels

Project # : 2002-068 West Roseville SP
Description: Existing
Ldn/CNEL: Ldn
Hard/Soft: Soft

Segment	Roadway Name	Segment Description From	To	Autos	Medium Trucks	Heavy Trucks	Total
1	S.R. 65	South Pleasant Grove		73.1	68.8	73.7	76.7
2	S.R. 65	Pleasant Grove	Blue Oaks	72.4	68.2	73.0	76.0
3	S.R. 65	Blue Oaks	Sunset	72.1	67.8	72.7	75.6
4	Roseville Parkway	S. of Pleasant Grove		64.4	55.8	57.3	65.7
5	Roseville Parkway	Pleasant Grove	Washington	60.0	51.4	52.9	61.3
6	Roseville Parkway	Washington	Foothills				
7	Sunset	East SR 65					
8	Foothills	Baseline	Junction	66.0	57.4	58.9	67.3
9	Foothills	Junction	Pleasant Grove	66.0	57.4	58.9	67.2
10	Foothills	Pleasant Grove	Blue Oaks	63.8	55.2	56.7	65.0
11	Woodcreek	Baseline	Junction	61.5	52.9	54.4	62.8
12	Woodcreek	Junction	Pleasant Grove	62.5	53.9	55.4	63.7
13	Woodcreek	Pleasant Grove	Blue Oaks	60.9	52.3	53.8	62.2
14	Woodcreek	N. of Blue Oaks					
15	Fiddyment	S. of Baseline					
16	Fiddyment	Baseline	Pleasant Grove	60.9	52.3	53.8	62.2
17	Fiddyment	Pleasant Grove	Blue Oaks	59.3	50.7	52.1	60.5
18	Fiddyment	Blue Oaks	Hayden	55.3	46.7	48.2	56.5
19	Fiddyment	N. of Hayden		55.3	46.7	48.2	56.5
20	Baseline	W. of Watt					
21	Baseline	Watt	Fiddyment	64.6	56.0	57.5	65.9
22	Baseline	Fiddyment	Junction				
23	Baseline	Junction	Woodcreek	62.6	53.9	55.4	63.6
24	Baseline	Woodcreek	Foothills	63.6	55.0	56.5	64.8
25	Baseline	Foothills	Washington	60.6	52.0	53.5	61.9
26	Junction	Baseline	Woodcreek	56.5	47.9	49.4	57.8
27	Junction	Woodcreek	Foothills	60.7	52.1	53.6	62.0
28	Junction	Foothills	Washington				
29	Pleasant Grove	Westpark	Fiddyment				
30	Pleasant Grove	Fiddyment	Woodcreek	62.2	53.6	55.1	63.4
31	Pleasant Grove	Woodcreek	Foothills	64.3	55.7	57.2	65.6
32	Pleasant Grove	Foothills	Washington	65.5	56.9	58.4	66.7
33	Pleasant Grove	Washington	Roseville Parkway	65.3	56.7	58.2	66.6
34	Pleasant Grove	Roseville Parkway	S.R. 65	65.1	56.5	58.0	66.4
35	Blue Oaks	Westpark	Hayden				
36	Blue Oaks	Hayden	Fiddyment				
37	Blue Oaks	E. of Fiddyment		60.1	51.4	52.9	61.3
38	Blue Oaks	W. of Woodcreek		60.1	51.4	52.9	61.3
39	Blue Oaks	Woodcreek	Foothills	62.5	53.9	55.4	63.8
40	Blue Oaks	Foothills	S.R. 65	65.3	56.7	58.1	66.5
41	Blue Oaks	S.R. 65	Sunset	58.7	50.1	51.6	60.0
42	Westpark	Baseline	Pleasant Grove				
43	Westpark	Pleasant Grove	Blue Oaks				
44	Hayden	N. of Blue Oaks					
45	Hayden	S. of Blue Oaks					

Appendix B-3
FHWA-RD-77-108 Highway Traffic Noise Prediction Model
Noise Contour Output

Project # : 2002-068 West Roseville SP
Description: Existing
Ldn/CNEL: Ldn
Hard/Soft: Soft

Segment	Roadway Name	Segment Description From	To	-- Distances to Traffic Noise Contours -- 75	70	65	60	55
1	S.R. 65	South Pleasant Grove		129	278	598	1289	2777
2	S.R. 65	Pleasant Grove	Blue Oaks	116	251	540	1163	2507
3	S.R. 65	Blue Oaks	Sunset	110	238	512	1104	2378
4	Roseville Parkway	S. of Pleasant Grove		24	52	111	240	516
5	Roseville Parkway	Pleasant Grove	Washington	12	26	57	122	262
6	Roseville Parkway	Washington	Foothills	0	0	0	0	0
7	Sunset	East SR 65		0	0	0	0	0
8	Foothills	Baseline	Junction	30	66	141	305	656
9	Foothills	Junction	Pleasant Grove	30	65	141	304	655
10	Foothills	Pleasant Grove	Blue Oaks	22	47	100	216	466
11	Woodcreek	Baseline	Junction	15	33	71	153	330
12	Woodcreek	Junction	Pleasant Grove	18	38	82	177	382
13	Woodcreek	Pleasant Grove	Blue Oaks	14	30	65	140	301
14	Woodcreek	N. of Blue Oaks		0	0	0	0	0
15	Fiddyment	S. of Baseline		0	0	0	0	0
16	Fiddyment	Baseline	Pleasant Grove	14	30	65	140	301
17	Fiddyment	Pleasant Grove	Blue Oaks	11	23	50	108	233
18	Fiddyment	Blue Oaks	Hayden	6	13	27	59	126
19	Fiddyment	N. of Hayden		6	13	27	59	126
20	Baseline	W. of Watt		0	0	0	0	0
21	Baseline	Watt	Fiddyment	25	53	114	246	530
22	Baseline	Fiddyment	Junction	0	0	0	0	0
23	Baseline	Junction	Woodcreek	18	39	83	179	386
24	Baseline	Woodcreek	Foothills	21	45	97	210	451
25	Baseline	Foothills	Washington	13	29	62	133	287
26	Junction	Baseline	Woodcreek	7	15	33	71	153
27	Junction	Woodcreek	Foothills	14	29	63	135	291
28	Junction	Foothills	Washington	0	0	0	0	0
29	Pleasant Grove	Westpark	Fiddyment	0	0	0	0	0
30	Pleasant Grove	Fiddyment	Woodcreek	17	37	79	170	366
31	Pleasant Grove	Woodcreek	Foothills	24	51	109	236	507
32	Pleasant Grove	Foothills	Washington	28	60	130	281	605
33	Pleasant Grove	Washington	Roseville Parkway	27	59	127	275	592
34	Pleasant Grove	Roseville Parkway	S.R. 65	27	57	124	266	574
35	Blue Oaks	Westpark	Hayden	0	0	0	0	0
36	Blue Oaks	Hayden	Fiddyment	0	0	0	0	0
37	Blue Oaks	E. of Fiddyment		12	26	57	122	263
38	Blue Oaks	W. of Woodcreek		12	26	57	122	263
39	Blue Oaks	Woodcreek	Foothills	18	38	83	178	384
40	Blue Oaks	Foothills	S.R. 65	27	59	126	272	585
41	Blue Oaks	S.R. 65	Sunset	10	21	46	100	214
42	Westpark	Baseline	Pleasant Grove	0	0	0	0	0
43	Westpark	Pleasant Grove	Blue Oaks	0	0	0	0	0
44	Hayden	N. of Blue Oaks		0	0	0	0	0
45	Hayden	S. of Blue Oaks		0	0	0	0	0

Appendix B-1
FHWA-RD-77-108 Highway Traffic Noise Prediction Model
Data Input Sheet

Project #: 2002-068 West Roseville SP
Desciption: Existing + Project No MOU
Ldn/CNEL: Ldn
Hard/Soft: Soft

Segment	Roadway Name	Segment Description From	To	ADT	Day %	Eve %	Night %	% Med. Trucks	% Heavy Trucks	Speed	Distance	Offset
1	S.R. 65	South Pleasant Grove		54100	82		18	2.5	10.9	65	100	
2	S.R. 65	Pleasant Grove	Blue Oaks	47700	82		18	2.5	10.9	65	100	
3	S.R. 65	Blue Oaks	Sunset	39900	82		18	2.5	10.9	65	100	
4	Roseville Parkway	S. of Pleasant Grove		17200	85		15	2	1	45	100	
5	Roseville Parkway	Pleasant Grove	Washington	2900	85		15	2	1	45	100	
6	Roseville Parkway	Washington	Foothills	7500	85		15	2	1	45	100	
7	Sunset	East SR 65		11500	85		15	2	1	45	100	
8	Foothills	Baseline	Junction	32100	85		15	2	1	45	100	
9	Foothills	Junction	Pleasant Grove	28000	85		15	2	1	45	100	
10	Foothills	Pleasant Grove	Blue Oaks	12600	85		15	2	1	45	100	
11	Woodcreek	Baseline	Junction	7800	85		15	2	1	45	100	
12	Woodcreek	Junction	Pleasant Grove	16100	85		15	2	1	45	100	
13	Woodcreek	Pleasant Grove	Blue Oaks	5900	85		15	2	1	45	100	
14	Woodcreek	N. of Blue Oaks		2500	85		15	2	1	45	100	
15	Fiddyment	S. of Baseline		12700	85		15	2	1	45	100	
16	Fiddyment	Baseline	Pleasant Grove	18600	85		15	2	1	45	100	
17	Fiddyment	Pleasant Grove	Blue Oaks	17400	85		15	2	1	45	100	
18	Fiddyment	Blue Oaks	Hayden	15300	85		15	2	1	45	100	
19	Fiddyment	N. of Hayden		3400	85		15	2	1	45	100	
20	Baseline	W. of Watt		12400	85		15	2	1	45	100	
21	Baseline	Watt	Fiddyment	14500	85		15	2	1	45	100	
22	Baseline	Fiddyment	Junction	14900	85		15	2	1	45	100	
23	Baseline	Junction	Woodcreek	12100	85		15	2	1	45	100	
24	Baseline	Woodcreek	Foothills	16100	85		15	2	1	45	100	
25	Baseline	Foothills	Washington	10000	85		15	2	1	45	100	
26	Junction	Baseline	Woodcreek	2000	85		15	2	1	45	100	
27	Junction	Woodcreek	Foothills	6100	85		15	2	1	45	100	
28	Junction	Foothills	Washington	8000	85		15	2	1	45	100	
29	Pleasant Grove	Westpark	Fiddyment	11000	85		15	2	1	45	100	
30	Pleasant Grove	Fiddyment	Woodcreek	19100	85		15	2	1	45	100	
31	Pleasant Grove	Woodcreek	Foothills	25300	85		15	2	1	45	100	
32	Pleasant Grove	Foothills	Washington	38500	85		15	2	1	45	100	
33	Pleasant Grove	Washington	Roseville Parkway	28200	85		15	2	1	45	100	
34	Pleasant Grove	Roseville Parkway	S.R. 65	23000	85		15	2	1	45	100	
35	Blue Oaks	Westpark	Hayden	8900	85		15	2	1	45	100	
36	Blue Oaks	Hayden	Fiddyment	14500	85		15	2	1	45	100	
37	Blue Oaks	E. of Fiddyment		13600	85		15	2	1	45	100	
38	Blue Oaks	W. of Woodcreek		18500	85		15	2	1	45	100	
39	Blue Oaks	Woodcreek	Foothills	22000	85		15	2	1	45	100	
40	Blue Oaks	Foothills	S.R. 65	30600	85		15	2	1	45	100	
41	Blue Oaks	S.R. 65	Sunset	9300	85		15	2	1	45	100	
42	Westpark	Baseline	Pleasant Grove	NA	85			2	1	45	100	
43	Westpark	Pleasant Grove	Blue Oaks	8700	85		15	2	1	45	100	
44	Hayden	N. of Blue Oaks		7700	85		15	2	1	45	100	
45	Hayden	S. of Blue Oaks		6300	85		15	2	1	45	100	

Appendix B-2
FHWA-RD-77-108 Highway Traffic Noise Prediction Model
Predicted Levels

Project # : 2002-068 West Roseville SP
Description: Existing + Project No MOU
Ldn/CNEL: Ldn
Hard/Soft: Soft

Segment	Roadway Name	Segment Description From	To	Autos	Medium Trucks	Heavy Trucks	Total
1	S.R. 65	South Pleasant Grove		73.4	64.1	74.0	77.0
2	S.R. 65	Pleasant Grove	Blue Oaks	72.8	63.6	73.5	76.4
3	S.R. 65	Blue Oaks	Sunset	72.1	62.8	72.7	75.6
4	Roseville Parkway	S. of Pleasant Grove		63.8	55.2	56.7	65.1
5	Roseville Parkway	Pleasant Grove	Washington	56.1	47.5	49.0	57.3
6	Roseville Parkway	Washington	Foothills	60.2	51.6	53.1	61.5
7	Sunset	East SR 65		62.1	53.5	55.0	63.3
8	Foothills	Baseline	Junction	66.5	57.9	59.4	67.8
9	Foothills	Junction	Pleasant Grove	66.0	57.3	58.8	67.2
10	Foothills	Pleasant Grove	Blue Oaks	62.5	53.9	55.4	63.7
11	Woodcreek	Baseline	Junction	60.4	51.8	53.3	61.6
12	Woodcreek	Junction	Pleasant Grove	63.5	54.9	56.4	64.8
13	Woodcreek	Pleasant Grove	Blue Oaks	59.2	50.6	52.1	60.4
14	Woodcreek	N. of Blue Oaks		55.5	46.9	48.3	56.7
15	Fiddyment	S. of Baseline		62.5	53.9	55.4	63.8
16	Fiddyment	Baseline	Pleasant Grove	63.7	55.1	56.6	64.9
17	Fiddyment	Pleasant Grove	Blue Oaks	63.9	55.3	56.8	65.1
18	Fiddyment	Blue Oaks	Hayden	63.3	54.7	56.2	64.6
19	Fiddyment	N. of Hayden		58.8	48.2	49.7	58.0
20	Baseline	W. of Watt		62.4	53.8	55.3	63.7
21	Baseline	Watt	Fiddyment	63.1	54.5	56.0	64.3
22	Baseline	Fiddyment	Junction	63.2	54.6	56.1	64.5
23	Baseline	Junction	Woodcreek	62.3	53.7	55.2	63.6
24	Baseline	Woodcreek	Foothills	63.5	54.9	56.4	64.8
25	Baseline	Foothills	Washington	61.5	52.9	54.4	62.7
26	Junction	Baseline	Woodcreek	54.5	45.9	47.4	55.7
27	Junction	Woodcreek	Foothills	59.3	50.7	52.2	60.6
28	Junction	Foothills	Washington	60.5	51.9	53.4	61.8
29	Pleasant Grove	Westpark	Fiddyment	61.9	53.3	54.8	63.1
30	Pleasant Grove	Fiddyment	Woodcreek	64.3	55.7	57.2	65.5
31	Pleasant Grove	Woodcreek	Foothills	65.5	56.9	58.4	66.8
32	Pleasant Grove	Foothills	Washington	67.3	58.7	60.2	68.6
33	Pleasant Grove	Washington	Roseville Parkway	66.0	57.4	58.9	67.2
34	Pleasant Grove	Roseville Parkway	S.R. 65	65.1	56.5	58.0	66.3
35	Blue Oaks	Westpark	Hayden	61.0	52.4	53.9	62.2
36	Blue Oaks	Hayden	Fiddyment	63.1	54.5	56.0	64.3
37	Blue Oaks	E. of Fiddyment		62.8	54.2	55.7	64.1
38	Blue Oaks	W. of Woodcreek		64.2	55.5	57.0	65.4
39	Blue Oaks	Woodcreek	Foothills	64.9	56.3	57.8	66.1
40	Blue Oaks	Foothills	S.R. 65	66.3	57.7	59.2	67.6
41	Blue Oaks	S.R. 65	Sunset	61.2	52.6	54.0	62.4
42	Westpark	Baseline	Pleasant Grove				
43	Westpark	Pleasant Grove	Blue Oaks	60.9	52.3	53.8	62.1
44	Hayden	N. of Blue Oaks		60.3	51.7	53.2	61.6
45	Hayden	S. of Blue Oaks		59.5	50.9	52.4	60.7

Appendix B-3
FHWA-RD-77-108 Highway Traffic Noise Prediction Model
Noise Contour Output

Project # : 2002-068 West Roseville SP
Description: Existing + Project No MOU
Ldn/CNEL: Ldn
Hard/Soft: Soft

Segment	Roadway Name	Segment Description From	To	-- Distances to Traffic Noise Contours -- 75	70	65	60	55
1	S.R. 65	South Pleasant Grove		135	291	626	1350	2908
2	S.R. 65	Pleasant Grove	Blue Oaks	124	267	576	1241	2674
3	S.R. 65	Blue Oaks	Sunset	110	237	511	1102	2374
4	Roseville Parkway	S. of Pleasant Grove		22	47	101	218	470
5	Roseville Parkway	Pleasant Grove	Washington	7	14	31	67	143
6	Roseville Parkway	Washington	Foothills	13	27	58	125	270
7	Sunset	East SR 65		17	36	77	167	359
8	Foothills	Baseline	Junction	33	71	153	331	712
9	Foothills	Junction	Pleasant Grove	30	65	140	302	650
10	Foothills	Pleasant Grove	Blue Oaks	18	38	82	177	382
11	Woodcreek	Baseline	Junction	13	28	60	129	277
12	Woodcreek	Junction	Pleasant Grove	21	45	97	209	450
13	Woodcreek	Pleasant Grove	Blue Oaks	11	23	50	107	230
14	Woodcreek	N. of Blue Oaks		6	13	28	60	130
15	Fiddyment	S. of Baseline		18	38	83	178	384
16	Fiddyment	Baseline	Pleasant Grove	21	46	99	213	459
17	Fiddyment	Pleasant Grove	Blue Oaks	22	47	102	220	474
18	Fiddyment	Blue Oaks	Hayden	20	43	94	202	435
19	Fiddyment	N. of Hayden		7	16	34	74	159
20	Baseline	W. of Watt		18	38	81	175	376
21	Baseline	Watt	Fiddyment	19	42	90	195	419
22	Baseline	Fiddyment	Junction	20	43	92	198	427
23	Baseline	Junction	Woodcreek	17	37	80	173	372
24	Baseline	Woodcreek	Foothills	21	45	97	209	450
25	Baseline	Foothills	Washington	15	33	71	152	327
26	Junction	Baseline	Woodcreek	5	11	24	52	112
27	Junction	Woodcreek	Foothills	11	24	51	109	235
28	Junction	Foothills	Washington	13	28	61	131	282
29	Pleasant Grove	Westpark	Fiddyment	16	35	75	162	349
30	Pleasant Grove	Fiddyment	Woodcreek	23	50	109	234	504
31	Pleasant Grove	Woodcreek	Foothills	28	61	131	282	608
32	Pleasant Grove	Foothills	Washington	37	80	173	373	804
33	Pleasant Grove	Washington	Roseville Parkway	30	65	141	303	653
34	Pleasant Grove	Roseville Parkway	S.R. 65	26	57	123	265	570
35	Blue Oaks	Westpark	Hayden	14	30	65	141	303
36	Blue Oaks	Hayden	Fiddyment	19	42	90	195	419
37	Blue Oaks	E. of Fiddyment		19	40	87	186	402
38	Blue Oaks	W. of Woodcreek		23	49	106	229	493
39	Blue Oaks	Woodcreek	Foothills	26	55	119	257	554
40	Blue Oaks	Foothills	S.R. 65	32	69	149	320	690
41	Blue Oaks	S.R. 65	Sunset	14	31	67	145	312
42	Westpark	Baseline	Pleasant Grove	0	0	0	0	0
43	Westpark	Pleasant Grove	Blue Oaks	14	30	64	138	298
44	Hayden	N. of Blue Oaks		13	27	59	128	275
45	Hayden	S. of Blue Oaks		11	24	52	112	241

Appendix B-1
FHWA-RD-77-108 Highway Traffic Noise Prediction Model
Data Input Sheet

Project #: 2002-068 West Roseville SP
Description: Existing + Project Full MDU
Ldn/CNEL: Ldn
Hard/Soft: Soft

Segment	Roadway Name	Segment Description From	To	ADT	Day %	Eve %	Night %	% Med. Trucks	% Heavy Trucks	Speed	Distance	Offset
1	S.R. 65	South Pleasant Grove		55700	82		18	2.5	10.9	65	100	
2	S.R. 65	Pleasant Grove	Blue Oaks	49100	82		18	2.5	10.9	65	100	
3	S.R. 65	Blue Oaks	Sunset	39900	82		18	2.5	10.9	65	100	
4	Roseville Parkway	S. of Pleasant Grove		18100	85		15	2	1	45	100	
5	Roseville Parkway	Pleasant Grove	Washington	3000	85		15	2	1	45	100	
6	Roseville Parkway	Washington	Foothills	7500	85		15	2	1	45	100	
7	Sunset	East SR 65		11900	85		15	2	1	45	100	
8	Foothills	Baseline	Junction	30600	85		15	2	1	45	100	
9	Foothills	Junction	Pleasant Grove	25600	85		15	2	1	45	100	
10	Foothills	Pleasant Grove	Blue Oaks	12500	85		15	2	1	45	100	
11	Woodcreek	Baseline	Junction	5800	85		15	2	1	45	100	
12	Woodcreek	Junction	Pleasant Grove	13700	85		15	2	1	45	100	
13	Woodcreek	Pleasant Grove	Blue Oaks	6100	85		15	2	1	45	100	
14	Woodcreek	N. of Blue Oaks		2400	85		15	2	1	45	100	
15	Fiddyment	S. of Baseline		17200	85		15	2	1	45	100	
16	Fiddyment	Baseline	Pleasant Grove	24600	85		15	2	1	45	100	
17	Fiddyment	Pleasant Grove	Blue Oaks	21300	85		15	2	1	45	100	
18	Fiddyment	Blue Oaks	Hayden	16700	85		15	2	1	45	100	
19	Fiddyment	N. of Hayden		5300	85		15	2	1	45	100	
20	Baseline	W. of Watt		16900	85		15	2	1	45	100	
21	Baseline	Watt	Fiddyment	19100	85		15	2	1	45	100	
22	Baseline	Fiddyment	Junction	22600	85		15	2	1	45	100	
23	Baseline	Junction	Woodcreek	17300	85		15	2	1	45	100	
24	Baseline	Woodcreek	Foothills	20300	85		15	2	1	45	100	
25	Baseline	Foothills	Washington	11200	85		15	2	1	45	100	
26	Junction	Baseline	Woodcreek	2200	85		15	2	1	45	100	
27	Junction	Woodcreek	Foothills	7700	85		15	2	1	45	100	
28	Junction	Foothills	Washington	8500	85		15	2	1	45	100	
29	Pleasant Grove	Westpark	Fiddyment	15800	85		15	2	1	45	100	
30	Pleasant Grove	Fiddyment	Woodcreek	20800	85		15	2	1	45	100	
31	Pleasant Grove	Woodcreek	Foothills	26000	85		15	2	1	45	100	
32	Pleasant Grove	Foothills	Washington	40800	85		15	2	1	45	100	
33	Pleasant Grove	Washington	Roseville Parkway	30100	85		15	2	1	45	100	
34	Pleasant Grove	Roseville Parkway	S.R. 65	24000	85		15	2	1	45	100	
35	Blue Oaks	Westpark	Hayden	18300	85		15	2	1	45	100	
36	Blue Oaks	Hayden	Fiddyment	21200	85		15	2	1	45	100	
37	Blue Oaks	E. of Fiddyment		18600	85		15	2	1	45	100	
38	Blue Oaks	W. of Woodcreek		22000	85		15	2	1	45	100	
39	Blue Oaks	Woodcreek	Foothills	25200	85		15	2	1	45	100	
40	Blue Oaks	Foothills	S.R. 65	33000	85		15	2	1	45	100	
41	Blue Oaks	S.R. 65	Sunset	9600	85		15	2	1	45	100	
42	Westpark	Baseline	Pleasant Grove	20500	85		15	2	1	45	100	
43	Westpark	Pleasant Grove	Blue Oaks	20500	85		15	2	1	45	100	
44	Hayden	N. of Blue Oaks		7100	85		15	2	1	45	100	
45	Hayden	S. of Blue Oaks		6600	85		15	2	1	45	100	

Appendix B-2

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

Predicted Levels

Project #: 2002-068 West Roseville SP
Description: Existing + Project Full MOU
Ldn/CNEL: Ldn
Hard/Soft: Soft

Segment	Roadway Name	Segment Description From	To	Autos	Medium Trucks	Heavy Trucks	Total
1	S.R. 65	South Pleasant Grove		73.5	64.3	74.1	77.1
2	S.R. 65	Pleasant Grove	Blue Oaks	73.0	63.7	73.6	76.5
3	S.R. 65	Blue Oaks	Sunset	72.1	62.8	72.7	75.6
4	Roseville Parkway	S. of Pleasant Grove		64.1	55.4	56.9	65.3
5	Roseville Parkway	Pleasant Grove	Washington	56.3	47.6	49.1	57.5
6	Roseville Parkway	Washington	Foothills	60.2	51.6	53.1	61.5
7	Sunset	East SR 65		62.2	53.6	55.1	63.5
8	Foothills	Baseline	Junction	66.3	57.7	59.2	67.6
9	Foothills	Junction	Pleasant Grove	65.5	56.9	58.4	66.8
10	Foothills	Pleasant Grove	Blue Oaks	62.4	53.8	55.3	63.7
11	Woodcreek	Baseline	Junction	59.1	50.5	52.0	60.4
12	Woodcreek	Junction	Pleasant Grove	62.8	54.2	55.7	64.1
13	Woodcreek	Pleasant Grove	Blue Oaks	59.3	50.7	52.2	60.6
14	Woodcreek	N. of Blue Oaks		55.3	46.7	48.2	56.5
15	Fiddyment	S. of Baseline		63.8	55.2	56.7	65.1
16	Fiddyment	Baseline	Pleasant Grove	65.4	56.8	58.3	66.7
17	Fiddyment	Pleasant Grove	Blue Oaks	64.8	56.2	57.6	66.0
18	Fiddyment	Blue Oaks	Hayden	63.7	55.1	56.6	65.0
19	Fiddyment	N. of Hayden		58.7	50.1	51.6	60.0
20	Baseline	W. of Watt		63.8	55.2	56.6	65.0
21	Baseline	Watt	Fiddyment	64.3	55.7	57.2	65.5
22	Baseline	Fiddyment	Junction	65.0	56.4	57.9	66.3
23	Baseline	Junction	Woodcreek	63.9	55.3	56.7	65.1
24	Baseline	Woodcreek	Foothills	64.6	55.9	57.4	65.8
25	Baseline	Foothills	Washington	62.0	53.4	54.9	63.2
26	Junction	Baseline	Woodcreek	54.9	46.3	47.8	56.1
27	Junction	Woodcreek	Foothills	60.3	51.7	53.2	61.6
28	Junction	Foothills	Washington	60.8	52.2	53.7	62.0
29	Pleasant Grove	Westpark	Fiddyment	63.5	54.9	56.3	64.7
30	Pleasant Grove	Fiddyment	Woodcreek	64.7	56.1	57.5	65.9
31	Pleasant Grove	Woodcreek	Foothills	65.6	57.0	58.5	66.9
32	Pleasant Grove	Foothills	Washington	67.6	59.0	60.4	68.8
33	Pleasant Grove	Washington	Roseville Parkway	66.3	57.7	59.1	67.5
34	Pleasant Grove	Roseville Parkway	S.R. 65	65.3	56.7	58.2	66.5
35	Blue Oaks	Westpark	Hayden	64.1	55.5	57.0	65.3
36	Blue Oaks	Hayden	Fiddyment	64.7	56.1	57.6	66.0
37	Blue Oaks	E. of Fiddyment		64.2	55.6	57.1	65.4
38	Blue Oaks	W. of Woodcreek		64.9	56.3	57.8	66.1
39	Blue Oaks	Woodcreek	Foothills	65.5	56.9	58.4	66.7
40	Blue Oaks	Foothills	S.R. 65	66.7	58.1	59.5	67.9
41	Blue Oaks	S.R. 65	Sunset	61.3	52.7	54.2	62.5
42	Westpark	Baseline	Pleasant Grove	64.6	56.0	57.5	65.8
43	Westpark	Pleasant Grove	Blue Oaks	64.6	56.0	57.5	65.8
44	Hayden	N. of Blue Oaks		60.0	51.4	52.9	61.2
45	Hayden	S. of Blue Oaks		59.7	51.1	52.6	60.9

Appendix B-3
FHWA-RD-77-108 Highway Traffic Noise Prediction Model
Noise Contour Output

Project # : 2002-068 West Roseville SP
Description: Existing + Project Full MOU
Ldn/CNEL: Ldn
Hard/Soft: Soft

Segment	Roadway Name	Segment Description From	To	-- Distances to Traffic Noise Contours -- 75	70	65	60	55
1	S.R. 65	South Pleasant Grove		138	296	638	1376	2965
2	S.R. 65	Pleasant Grove	Blue Oaks	127	273	587	1265	2726
3	S.R. 65	Blue Oaks	Sunset	110	237	511	1102	2374
4	Roseville Parkway	S. of Pleasant Grove		23	49	105	226	486
5	Roseville Parkway	Pleasant Grove	Washington	7	15	32	68	147
6	Roseville Parkway	Washington	Foothills	13	27	58	125	270
7	Sunset	East SR 65		17	37	79	171	368
8	Foothills	Baseline	Junction	32	69	149	320	690
9	Foothills	Junction	Pleasant Grove	28	61	132	284	611
10	Foothills	Pleasant Grove	Blue Oaks	18	38	82	176	380
11	Woodcreek	Baseline	Junction	11	23	49	106	228
12	Woodcreek	Junction	Pleasant Grove	19	40	87	187	404
13	Woodcreek	Pleasant Grove	Blue Oaks	11	24	51	109	235
14	Woodcreek	N. of Blue Oaks		6	13	27	59	126
15	Fiddyment	S. of Baseline		22	47	101	218	470
16	Fiddyment	Baseline	Pleasant Grove	28	60	129	278	600
17	Fiddyment	Pleasant Grove	Blue Oaks	25	54	117	252	542
18	Fiddyment	Blue Oaks	Hayden	21	46	99	214	461
19	Fiddyment	N. of Hayden		10	21	46	100	214
20	Baseline	W. of Watt		22	46	100	216	464
21	Baseline	Watt	Fiddyment	23	50	109	234	504
22	Baseline	Fiddyment	Junction	26	56	121	262	564
23	Baseline	Junction	Woodcreek	22	47	102	219	472
24	Baseline	Woodcreek	Foothills	24	52	113	244	525
25	Baseline	Foothills	Washington	16	35	76	164	353
26	Junction	Baseline	Woodcreek	6	12	26	55	119
27	Junction	Woodcreek	Foothills	13	27	59	128	275
28	Junction	Foothills	Washington	14	29	63	136	294
29	Pleasant Grove	Westpark	Fiddyment	21	44	96	206	444
30	Pleasant Grove	Fiddyment	Woodcreek	25	53	115	248	533
31	Pleasant Grove	Woodcreek	Foothills	29	62	133	287	619
32	Pleasant Grove	Foothills	Washington	39	83	179	387	833
33	Pleasant Grove	Washington	Roseville Parkway	32	68	147	317	682
34	Pleasant Grove	Roseville Parkway	S.R. 65	27	59	126	272	587
35	Blue Oaks	Westpark	Hayden	23	49	106	227	490
36	Blue Oaks	Hayden	Fiddyment	25	54	116	251	540
37	Blue Oaks	E. of Fiddyment		23	50	107	230	495
38	Blue Oaks	W. of Woodcreek		26	55	119	257	554
39	Blue Oaks	Woodcreek	Foothills	28	61	131	281	606
40	Blue Oaks	Foothills	S.R. 65	34	73	156	337	726
41	Blue Oaks	S.R. 65	Sunset	15	32	69	148	319
42	Westpark	Baseline	Pleasant Grove	25	53	114	245	528
43	Westpark	Pleasant Grove	Blue Oaks	25	53	114	245	528
44	Hayden	N. of Blue Oaks		12	26	56	121	261
45	Hayden	S. of Blue Oaks		12	25	53	115	248

Appendix B-1
FHWA-RD-77-108 Highway Traffic Noise Prediction Model
Data Input Sheet

Project #: 2002-068 West Roseville SP
Description: Cumulative No Project
Ldn/CNEL: Ldn
Hard/Soft: Soft

Segment	Roadway Name	Segment Description From	To	ADT	Day %	Eve %	Night %	% Med. Trucks	% Heavy Trucks	Speed	Distance	Offset
1	S.R. 65	South Pleasant Grove		76000	82		18	2.5	10.9	65	100	
2	S.R. 65	Pleasant Grove	Blue Oaks	75300	82		18	2.5	10.9	65	100	
3	S.R. 65	Blue Oaks	Sunset	82300	82		18	2.5	10.9	65	100	
4	Roseville Parkway	S. of Pleasant Grove		53700	85		15	2	1	45	100	
5	Roseville Parkway	Pleasant Grove	Washington	28200	85		15	2	1	45	100	
6	Roseville Parkway	Washington	Foothills	34800	85		15	2	1	45	100	
7	Sunset	East SR 65		27500	85		15	2	1	45	100	
8	Foothills	Baseline	Junction	48400	85		15	2	1	45	100	
9	Foothills	Junction	Pleasant Grove	47800	85		15	2	1	45	100	
10	Foothills	Pleasant Grove	Blue Oaks	34600	85		15	2	1	45	100	
11	Woodcreek	Baseline	Junction	11100	85		15	2	1	45	100	
12	Woodcreek	Junction	Pleasant Grove	32000	85		15	2	1	45	100	
13	Woodcreek	Pleasant Grove	Blue Oaks	21100	85		15	2	1	45	100	
14	Woodcreek	N. of Blue Oaks		11400	85		15	2	1	45	100	
15	Fiddyment	S. of Baseline		25000	85		15	2	1	45	100	
16	Fiddyment	Baseline	Pleasant Grove	33500	85		15	2	1	45	100	
17	Fiddyment	Pleasant Grove	Blue Oaks	14900	85		15	2	1	45	100	
18	Fiddyment	Blue Oaks	Hayden	7500	85		15	2	1	45	100	
19	Fiddyment	N. of Hayden		7500	85		15	2	1	45	100	
20	Baseline	W. of Watt		31300	85		15	2	1	45	100	
21	Baseline	Watt	Fiddyment	49100	85		15	2	1	45	100	
22	Baseline	Fiddyment	Junction	42800	85		15	2	1	45	100	
23	Baseline	Junction	Woodcreek	25500	85		15	2	1	45	100	
24	Baseline	Woodcreek	Foothills	30200	85		15	2	1	45	100	
25	Baseline	Foothills	Washington	11300	85		15	2	1	45	100	
26	Junction	Baseline	Woodcreek	21400	85		15	2	1	45	100	
27	Junction	Woodcreek	Foothills	17600	85		15	2	1	45	100	
28	Junction	Foothills	Washington	26100	85		15	2	1	45	100	
29	Pleasant Grove	Westpark	Fiddyment	NA	85			2	1	45	100	
30	Pleasant Grove	Fiddyment	Woodcreek	25400	85		15	2	1	45	100	
31	Pleasant Grove	Woodcreek	Foothills	46500	85		15	2	1	45	100	
32	Pleasant Grove	Foothills	Washington	49800	85		15	2	1	45	100	
33	Pleasant Grove	Washington	Roseville Parkway	45300	85		15	2	1	45	100	
34	Pleasant Grove	Roseville Parkway	S.R. 65	60300	85		15	2	1	45	100	
35	Blue Oaks	Westpark	Hayden	NA	85			2	1	45	100	
36	Blue Oaks	Hayden	Fiddyment	NA	85			2	1	45	100	
37	Blue Oaks	E. of Fiddyment		11900	85		15	2	1	45	100	
38	Blue Oaks	W. of Woodcreek		23200	85		15	2	1	45	100	
39	Blue Oaks	Woodcreek	Foothills	38100	85		15	2	1	45	100	
40	Blue Oaks	Foothills	S.R. 65	55300	85		15	2	1	45	100	
41	Blue Oaks	S.R. 65	Sunset	37100	85		15	2	1	45	100	
42	Westpark	Baseline	Pleasant Grove	NA	85			2	1	45	100	
43	Westpark	Pleasant Grove	Blue Oaks	NA	85			2	1	45	100	
44	Hayden	N. of Blue Oaks		NA	85			2	1	45	100	
45	Hayden	S. of Blue Oaks		NA	85			2	1	45	100	

Appendix B-2
FHWA-RD-77-108 Highway Traffic Noise Prediction Model
Predicted Levels

Project # : 2002-068 West Roseville SP
Description: Cumulative No Project
Ldn/CNEL: Ldn
Hard/Soft: Soft

Segment	Roadway Name	Segment Description From	To	Autos	Medium Trucks	Heavy Trucks	Total
1	S.R. 65	South Pleasant Grove		74.9	65.6	75.5	78.4
2	S.R. 65	Pleasant Grove	Blue Oaks	74.8	65.6	75.4	78.4
3	S.R. 65	Blue Oaks	Sunset	75.2	66.0	75.8	78.8
4	Roseville Parkway	S. of Pleasant Grove		68.8	60.2	61.7	70.0
5	Roseville Parkway	Pleasant Grove	Washington	66.0	57.4	58.9	67.2
6	Roseville Parkway	Washington	Foothills	66.9	58.3	59.8	68.1
7	Sunset	East SR 65		65.9	57.3	58.8	67.1
8	Foothills	Baseline	Junction	68.3	59.7	61.2	69.6
9	Foothills	Junction	Pleasant Grove	68.3	59.7	61.2	69.5
10	Foothills	Pleasant Grove	Blue Oaks	66.9	58.3	59.8	68.1
11	Woodcreek	Baseline	Junction	61.9	53.3	54.8	63.2
12	Woodcreek	Junction	Pleasant Grove	66.5	57.9	59.4	67.6
13	Woodcreek	Pleasant Grove	Blue Oaks	64.7	56.1	57.6	66.0
14	Woodcreek	N. of Blue Oaks		62.0	53.4	54.9	63.3
15	Fiddyment	S. of Baseline		65.5	56.9	58.3	66.7
16	Fiddyment	Baseline	Pleasant Grove	66.7	58.1	59.6	68.0
17	Fiddyment	Pleasant Grove	Blue Oaks	63.0	54.4	55.9	64.3
18	Fiddyment	Blue Oaks	Hayden	60.2	51.6	53.1	61.5
19	Fiddyment	N. of Hayden		60.2	51.6	53.1	61.5
20	Baseline	W. of Watt		66.4	57.8	59.3	67.7
21	Baseline	Watt	Fiddyment	66.4	59.8	61.3	69.6
22	Baseline	Fiddyment	Junction	67.8	59.2	60.7	69.0
23	Baseline	Junction	Woodcreek	65.5	56.9	58.4	66.8
24	Baseline	Woodcreek	Foothills	66.3	57.7	59.2	67.5
25	Baseline	Foothills	Washington	62.0	53.4	54.9	63.3
26	Junction	Baseline	Woodcreek	64.8	56.2	57.7	66.0
27	Junction	Woodcreek	Foothills	63.9	55.3	56.8	65.2
28	Junction	Foothills	Washington	65.5	57.0	58.5	66.9
29	Pleasant Grove	Westpark	Fiddyment				
30	Pleasant Grove	Fiddyment	Woodcreek	65.5	56.9	58.4	66.8
31	Pleasant Grove	Woodcreek	Foothills	68.2	59.6	61.0	69.4
32	Pleasant Grove	Foothills	Washington	68.5	59.8	61.3	69.7
33	Pleasant Grove	Washington	Roseville Parkway	68.0	59.4	60.9	69.3
34	Pleasant Grove	Roseville Parkway	S.R. 65	69.3	60.7	62.2	70.5
35	Blue Oaks	Westpark	Hayden				
36	Blue Oaks	Hayden	Fiddyment				
37	Blue Oaks	E. of Fiddyment		62.2	53.6	55.1	63.5
38	Blue Oaks	W. of Woodcreek		65.1	56.5	58.0	66.4
39	Blue Oaks	Woodcreek	Foothills	67.3	58.7	60.2	68.5
40	Blue Oaks	Foothills	S.R. 65	68.9	60.3	61.8	70.2
41	Blue Oaks	S.R. 65	Sunset	67.2	58.6	60.1	68.4
42	Westpark	Baseline	Pleasant Grove				
43	Westpark	Pleasant Grove	Blue Oaks				
44	Hayden	N. of Blue Oaks					
45	Hayden	S. of Blue Oaks					

Appendix B-3
FHWA-RD-77-108 Highway Traffic Noise Prediction Model
Noise Contour Output

Project # : 2002-068 West Roseville SP
Description: Cumulative No Project
Ldn/CNEL: Ldn
Hard/Soft: Soft

Segment	Roadway Name	Segment Description From	To	-- Distances to Traffic Noise Contours -- 75	70	65	60	55
1	S.R. 65	South Pleasant Grove		169	365	786	1693	3647
2	S.R. 65	Pleasant Grove	Blue Oaks	168	362	781	1683	3625
3	S.R. 65	Blue Oaks	Sunset	179	385	829	1785	3846
4	Roseville Parkway	S. of Pleasant Grove		47	100	216	466	1004
5	Roseville Parkway	Pleasant Grove	Washington	30	65	141	303	653
6	Roseville Parkway	Washington	Foothills	35	75	162	349	752
7	Sunset	East SR 65		30	64	138	298	642
8	Foothills	Baseline	Junction	43	94	202	435	937
9	Foothills	Junction	Pleasant Grove	43	93	200	431	929
10	Foothills	Pleasant Grove	Blue Oaks	35	75	162	349	752
11	Woodcreek	Baseline	Junction	16	35	76	163	351
12	Woodcreek	Junction	Pleasant Grove	33	71	153	330	711
13	Woodcreek	Pleasant Grove	Blue Oaks	25	54	116	250	538
14	Woodcreek	N. of Blue Oaks		17	36	77	166	357
15	Fiddyment	S. of Baseline		28	60	130	280	603
16	Fiddyment	Baseline	Pleasant Grove	34	73	158	340	733
17	Fiddyment	Pleasant Grove	Blue Oaks	19	42	90	193	415
18	Fiddyment	Blue Oaks	Hayden	13	27	58	125	270
19	Fiddyment	N. of Hayden		13	27	58	125	270
20	Baseline	W. of Watt		33	70	151	325	700
21	Baseline	Watt	Fiddyment	44	95	204	439	946
22	Baseline	Fiddyment	Junction	40	86	186	401	863
23	Baseline	Junction	Woodcreek	28	61	132	284	611
24	Baseline	Woodcreek	Foothills	32	68	147	317	684
25	Baseline	Foothills	Washington	16	36	77	165	355
26	Junction	Baseline	Woodcreek	25	54	117	252	544
27	Junction	Woodcreek	Foothills	22	48	103	221	477
28	Junction	Foothills	Washington	29	62	134	288	620
29	Pleasant Grove	Westpark	Fiddyment	0	0	0	0	0
30	Pleasant Grove	Fiddyment	Woodcreek	28	61	131	283	609
31	Pleasant Grove	Woodcreek	Foothills	42	91	196	423	912
32	Pleasant Grove	Foothills	Washington	44	95	206	443	955
33	Pleasant Grove	Washington	Roseville Parkway	42	90	193	416	896
34	Pleasant Grove	Roseville Parkway	S.R. 65	50	108	234	503	1084
35	Blue Oaks	Westpark	Hayden	0	0	0	0	0
36	Blue Oaks	Hayden	Fiddyment	0	0	0	0	0
37	Blue Oaks	E. of Fiddyment		17	37	79	171	368
38	Blue Oaks	W. of Woodcreek		27	57	124	266	574
39	Blue Oaks	Woodcreek	Foothills	37	80	172	371	798
40	Blue Oaks	Foothills	S.R. 65	48	102	221	475	1024
41	Blue Oaks	S.R. 65	Sunset	36	78	169	364	784
42	Westpark	Baseline	Pleasant Grove	0	0	0	0	0
43	Westpark	Pleasant Grove	Blue Oaks	0	0	0	0	0
44	Hayden	N. of Blue Oaks		0	0	0	0	0
45	Hayden	S. of Blue Oaks		0	0	0	0	0

Appendix B-1
FHWA-RD-77-108 Highway Traffic Noise Prediction Model
Data Input Sheet

Project #: 2002-068 West Roseville SP
Description: Cumulative Conditions + Project No MOU Area
Ldn/CNEL: Ldn
Hard/Soft: Soft

Segment	Roadway Name	Segment Description From	To	ADT	Day %	Eve %	Night %	% Med. Trucks	% Heavy Trucks	Speed	Distance	Offset
1	S.R. 65	South Pleasant Grove		76300	82		18	2.5	10.9	65	100	
2	S.R. 65	Pleasant Grove	Blue Oaks	75900	82		18	2.5	10.9	65	100	
3	S.R. 65	Blue Oaks	Sunset	82500	82		18	2.5	10.9	65	100	
4	Roseville Parkway	S. of Pleasant Grove		52100	85		15	2	1	45	100	
5	Roseville Parkway	Pleasant Grove	Washington	28500	85		15	2	1	45	100	
6	Roseville Parkway	Washington	Foothills	29400	85		15	2	1	45	100	
7	Sunset	East SR 65		28900	85		15	2	1	45	100	
8	Foothills	Baseline	Junction	49300	85		15	2	1	45	100	
9	Foothills	Junction	Pleasant Grove	47300	85		15	2	1	45	100	
10	Foothills	Pleasant Grove	Blue Oaks	35500	85		15	2	1	45	100	
11	Woodcreek	Baseline	Junction	13200	85		15	2	1	45	100	
12	Woodcreek	Junction	Pleasant Grove	38000	85		15	2	1	45	100	
13	Woodcreek	Pleasant Grove	Blue Oaks	21200	85		15	2	1	45	100	
14	Woodcreek	N. of Blue Oaks		12700	85		15	2	1	45	100	
15	Fiddyment	S. of Baseline		30600	85		15	2	1	45	100	
16	Fiddyment	Baseline	Pleasant Grove	34200	85		15	2	1	45	100	
17	Fiddyment	Pleasant Grove	Blue Oaks	26200	85		15	2	1	45	100	
18	Fiddyment	Blue Oaks	Hayden	17700	85		15	2	1	45	100	
19	Fiddyment	N. of Hayden		16700	85		15	2	1	45	100	
20	Baseline	W. of Watt		32500	85		15	2	1	45	100	
21	Baseline	Watt	Fiddyment	49700	85		15	2	1	45	100	
22	Baseline	Fiddyment	Junction	47300	85		15	2	1	45	100	
23	Baseline	Junction	Woodcreek	28500	85		15	2	1	45	100	
24	Baseline	Woodcreek	Foothills	31600	85		15	2	1	45	100	
25	Baseline	Foothills	Washington	13100	85		15	2	1	45	100	
26	Junction	Baseline	Woodcreek	24000	85		15	2	1	45	100	
27	Junction	Woodcreek	Foothills	14400	85		15	2	1	45	100	
28	Junction	Foothills	Washington	25600	85		15	2	1	45	100	
29	Pleasant Grove	Westpark	Fiddyment	12100	85		15	2	1	45	100	
30	Pleasant Grove	Fiddyment	Woodcreek	26800	85		15	2	1	45	100	
31	Pleasant Grove	Woodcreek	Foothills	47200	85		15	2	1	45	100	
32	Pleasant Grove	Foothills	Washington	57600	85		15	2	1	45	100	
33	Pleasant Grove	Washington	Roseville Parkway	48600	85		15	2	1	45	100	
34	Pleasant Grove	Roseville Parkway	S.R. 65	60600	85		15	2	1	45	100	
35	Blue Oaks	Westpark	Hayden	11300	85		15	2	1	45	100	
36	Blue Oaks	Hayden	Fiddyment	19100	85		15	2	1	45	100	
37	Blue Oaks	E. of Fiddyment		23600	85		15	2	1	45	100	
38	Blue Oaks	W. of Woodcreek		34800	85		15	2	1	45	100	
39	Blue Oaks	Woodcreek	Foothills	52700	85		15	2	1	45	100	
40	Blue Oaks	Foothills	S.R. 65	55400	85		15	2	1	45	100	
41	Blue Oaks	S.R. 65	Sunset	26200	85		15	2	1	45	100	
42	Westpark	Baseline	Pleasant Grove	NA	85			2	1	45	100	
43	Westpark	Pleasant Grove	Blue Oaks	9700	85		15	2	1	45	100	
44	Hayden	N. of Blue Oaks		7100	85		15	2	1	45	100	
45	Hayden	S. of Blue Oaks		7200	85		15	2	1	45	100	

Appendix B-2
FHWA-RD-77-108 Highway Traffic Noise Prediction Model
Predicted Levels

Project # : 2002-068 West Roseville SP
Description: Cumulative Conditions + Project No MOU Area
Ldn/CNEL: Ldn
Hard/Soft: Soft

Segment	Roadway Name	Segment Description From	To	Autos	Medium Trucks	Heavy Trucks	Total
1	S.R. 65	South Pleasant Grove		74.9	65.6	75.5	78.4
2	S.R. 65	Pleasant Grove	Blue Oaks	74.9	65.6	75.5	78.4
3	S.R. 65	Blue Oaks	Sunset	75.2	66.0	75.8	78.8
4	Roseville Parkway	S. of Pleasant Grove		68.6	60.0	61.5	69.9
5	Roseville Parkway	Pleasant Grove	Washington	66.0	57.4	58.9	67.3
6	Roseville Parkway	Washington	Foothills	66.2	57.6	59.0	67.4
7	Sunset	East SR 65		66.1	57.5	59.0	67.3
8	Foothills	Baseline	Junction	68.4	59.8	61.3	69.7
9	Foothills	Junction	Pleasant Grove	68.2	59.6	61.1	69.5
10	Foothills	Pleasant Grove	Blue Oaks	67.0	58.4	59.9	68.2
11	Woodcreek	Baseline	Junction	62.7	54.1	55.6	63.9
12	Woodcreek	Junction	Pleasant Grove	67.3	58.7	60.2	68.5
13	Woodcreek	Pleasant Grove	Blue Oaks	64.7	56.1	57.6	66.0
14	Woodcreek	N. of Blue Oaks		62.5	53.9	55.4	63.8
15	Fiddyment	S. of Baseline		66.3	57.7	59.2	67.6
16	Fiddyment	Baseline	Pleasant Grove	66.8	58.2	59.7	68.1
17	Fiddyment	Pleasant Grove	Blue Oaks	65.7	57.1	58.5	66.9
18	Fiddyment	Blue Oaks	Hayden	64.0	55.4	56.8	65.2
19	Fiddyment	N. of Hayden		63.7	55.1	56.6	65.0
20	Baseline	W. of Watt		66.6	58.0	59.5	67.8
21	Baseline	Watt	Fiddyment	68.4	59.8	61.3	69.7
22	Baseline	Fiddyment	Junction	68.2	59.6	61.1	69.5
23	Baseline	Junction	Woodcreek	66.0	57.4	58.9	67.3
24	Baseline	Woodcreek	Foothills	66.5	57.9	59.4	67.7
25	Baseline	Foothills	Washington	62.7	54.0	55.5	63.9
26	Junction	Baseline	Woodcreek	65.3	56.7	58.2	66.5
27	Junction	Woodcreek	Foothills	63.1	54.5	55.9	64.3
28	Junction	Foothills	Washington	65.6	57.0	58.4	66.8
29	Pleasant Grove	Westpark	Fiddyment	62.3	53.7	55.2	63.6
30	Pleasant Grove	Fiddyment	Woodcreek	65.8	57.2	58.6	67.0
31	Pleasant Grove	Woodcreek	Foothills	68.2	59.6	61.1	69.5
32	Pleasant Grove	Foothills	Washington	69.1	60.5	62.0	70.3
33	Pleasant Grove	Washington	Roseville Parkway	68.3	59.7	61.2	69.6
34	Pleasant Grove	Roseville Parkway	S.R. 65	69.3	60.7	62.2	70.5
35	Blue Oaks	Westpark	Hayden	62.0	53.4	54.9	63.3
36	Blue Oaks	Hayden	Fiddyment	64.3	55.7	57.2	65.5
37	Blue Oaks	E. of Fiddyment		65.2	56.6	58.1	66.5
38	Blue Oaks	W. of Woodcreek		66.9	58.3	59.8	68.1
39	Blue Oaks	Woodcreek	Foothills	68.7	60.1	61.6	69.9
40	Blue Oaks	Foothills	S.R. 65	68.9	60.3	61.8	70.2
41	Blue Oaks	S.R. 65	Sunset	66.7	57.1	58.5	68.9
42	Westpark	Baseline	Pleasant Grove				
43	Westpark	Pleasant Grove	Blue Oaks	61.3	52.7	54.2	62.6
44	Hayden	N. of Blue Oaks		60.0	51.4	52.9	61.2
45	Hayden	S. of Blue Oaks		60.1	51.4	52.9	61.3

Appendix B-3
FHWA-RD-77-108 Highway Traffic Noise Prediction Model
Noise Contour Output

Project # : 2002-068 West Roseville SP
Description: Cumulative Conditions + Project No MOU Area
Ldn/CNEL: Ldn
Hard/Soft: Soft

Segment	Roadway Name	Segment Description From	To	-- Distances to Traffic Noise Contours -- 75	70	65	60	55
1	S.R. 65	South Pleasant Grove		170	366	788	1697	3657
2	S.R. 65	Pleasant Grove	Blue Oaks	169	364	785	1691	3644
3	S.R. 65	Blue Oaks	Sunset	179	385	830	1788	3852
4	Roseville Parkway	S. of Pleasant Grove		46	98	212	457	984
5	Roseville Parkway	Pleasant Grove	Washington	31	66	142	305	658
6	Roseville Parkway	Washington	Foothills	31	67	145	312	672
7	Sunset	East SR 65		31	66	143	308	664
8	Foothills	Baseline	Junction	44	95	204	440	948
9	Foothills	Junction	Pleasant Grove	43	92	199	428	922
10	Foothills	Pleasant Grove	Blue Oaks	35	76	164	354	762
11	Woodcreek	Baseline	Junction	18	39	85	183	394
12	Woodcreek	Junction	Pleasant Grove	37	80	172	370	797
13	Woodcreek	Pleasant Grove	Blue Oaks	25	54	116	251	540
14	Woodcreek	N. of Blue Oaks		18	38	83	178	384
15	Fiddyment	S. of Baseline		32	69	149	320	690
16	Fiddyment	Baseline	Pleasant Grove	34	74	160	345	743
17	Fiddyment	Pleasant Grove	Blue Oaks	29	62	134	289	622
18	Fiddyment	Blue Oaks	Hayden	22	48	103	222	479
19	Fiddyment	N. of Hayden		21	46	99	214	461
20	Baseline	W. of Watt		33	72	155	333	718
21	Baseline	Watt	Fiddyment	44	96	205	442	953
22	Baseline	Fiddyment	Junction	43	92	199	428	922
23	Baseline	Junction	Woodcreek	31	66	142	305	658
24	Baseline	Woodcreek	Foothills	33	70	152	327	705
25	Baseline	Foothills	Washington	18	39	84	182	392
26	Junction	Baseline	Woodcreek	27	59	126	272	587
27	Junction	Woodcreek	Foothills	19	42	90	194	417
28	Junction	Foothills	Washington	28	61	132	284	613
29	Pleasant Grove	Westpark	Fiddyment	17	37	80	173	372
30	Pleasant Grove	Fiddyment	Woodcreek	29	63	136	293	632
31	Pleasant Grove	Woodcreek	Foothills	43	92	198	428	921
32	Pleasant Grove	Foothills	Washington	49	105	227	488	1052
33	Pleasant Grove	Washington	Roseville Parkway	44	94	202	435	938
34	Pleasant Grove	Roseville Parkway	S.R. 65	50	109	234	504	1087
35	Blue Oaks	Westpark	Hayden	16	36	77	165	355
36	Blue Oaks	Hayden	Fiddyment	23	50	109	234	504
37	Blue Oaks	E. of Fiddyment		27	58	125	269	580
38	Blue Oaks	W. of Woodcreek		35	75	162	349	752
39	Blue Oaks	Woodcreek	Foothills	46	99	214	460	991
40	Blue Oaks	Foothills	S.R. 65	48	102	221	476	1025
41	Blue Oaks	S.R. 65	Sunset	29	62	134	289	622
42	Westpark	Baseline	Pleasant Grove	0	0	0	0	0
43	Westpark	Pleasant Grove	Blue Oaks	15	32	69	149	321
44	Hayden	N. of Blue Oaks		12	26	56	121	261
45	Hayden	S. of Blue Oaks		12	26	57	122	263

Appendix B-1
FHWA-RD-77-108 Highway Traffic Noise Prediction Model
Data Input Sheet

Project #: 2002-068 West Roseville SP
Description: Cumulative Conditions + Project Full MOU Area
Ldn/CNEL: Ldn
Hard/Soft: Soft

Segment	Roadway Name	Segment Description From	To	ADT	Day %	Eve %	Night %	% Med. Trucks	% Heavy Trucks	Speed	Distance	Offset
1	S.R. 65	South Pleasant Grove		77000	82		18	2.5	10.9	65	100	
2	S.R. 65	Pleasant Grove	Blue Oaks	76200	82		18	2.5	10.9	65	100	
3	S.R. 65	Blue Oaks	Sunset	82700	82		18	2.5	10.9	65	100	
4	Roseville Parkway	S. of Pleasant Grove		52800	85		15	2	1	45	100	
5	Roseville Parkway	Pleasant Grove	Washington	28600	85		15	2	1	45	100	
6	Roseville Parkway	Washington	Foothills	30400	85		15	2	1	45	100	
7	Sunset	East SR 65		30000	85		15	2	1	45	100	
8	Foothills	Baseline	Junction	47700	85		15	2	1	45	100	
9	Foothills	Junction	Pleasant Grove	46000	85		15	2	1	45	100	
10	Foothills	Pleasant Grove	Blue Oaks	36300	85		15	2	1	45	100	
11	Woodcreek	Baseline	Junction	9600	85		15	2	1	45	100	
12	Woodcreek	Junction	Pleasant Grove	30800	85		15	2	1	45	100	
13	Woodcreek	Pleasant Grove	Blue Oaks	20500	85		15	2	1	45	100	
14	Woodcreek	N. of Blue Oaks		13900	85		15	2	1	45	100	
15	Fiddyment	S. of Baseline		33000	85		15	2	1	45	100	
16	Fiddyment	Baseline	Pleasant Grove	37600	85		15	2	1	45	100	
17	Fiddyment	Pleasant Grove	Blue Oaks	29500	85		15	2	1	45	100	
18	Fiddyment	Blue Oaks	Hayden	19400	85		15	2	1	45	100	
19	Fiddyment	N. of Hayden		19700	85		15	2	1	45	100	
20	Baseline	W. of Watt		38500	85		15	2	1	45	100	
21	Baseline	Watt	Fiddyment	43500	85		15	2	1	45	100	
22	Baseline	Fiddyment	Junction	45400	85		15	2	1	45	100	
23	Baseline	Junction	Woodcreek	29800	85		15	2	1	45	100	
24	Baseline	Woodcreek	Foothills	34100	85		15	2	1	45	100	
25	Baseline	Foothills	Washington	13300	85		15	2	1	45	100	
26	Junction	Baseline	Woodcreek	25500	85		15	2	1	45	100	
27	Junction	Woodcreek	Foothills	18400	85		15	2	1	45	100	
28	Junction	Foothills	Washington	28100	85		15	2	1	45	100	
29	Pleasant Grove	Westpark	Fiddyment	20100	85		15	2	1	45	100	
30	Pleasant Grove	Fiddyment	Woodcreek	34800	85		15	2	1	45	100	
31	Pleasant Grove	Woodcreek	Foothills	51200	85		15	2	1	45	100	
32	Pleasant Grove	Foothills	Washington	60400	85		15	2	1	45	100	
33	Pleasant Grove	Washington	Roseville Parkway	50200	85		15	2	1	45	100	
34	Pleasant Grove	Roseville Parkway	S.R. 65	61200	85		15	2	1	45	100	
35	Blue Oaks	Westpark	Hayden	21900	85		15	2	1	45	100	
36	Blue Oaks	Hayden	Fiddyment	27000	85		15	2	1	45	100	
37	Blue Oaks	E. of Fiddyment		27600	85		15	2	1	45	100	
38	Blue Oaks	W. of Woodcreek		41000	85		15	2	1	45	100	
39	Blue Oaks	Woodcreek	Foothills	55600	85		15	2	1	45	100	
40	Blue Oaks	Foothills	S.R. 65	57000	85		15	2	1	45	100	
41	Blue Oaks	S.R. 65	Sunset	26200	85		15	2	1	45	100	
42	Westpark	Baseline	Pleasant Grove	24700	85		15	2	1	45	100	
43	Westpark	Pleasant Grove	Blue Oaks	25500	85		15	2	1	45	100	
44	Hayden	N. of Blue Oaks		6800	85		15	2	1	45	100	
45	Hayden	S. of Blue Oaks		8000	85		15	2	1	45	100	

Appendix B-2
FHWA-RD-77-108 Highway Traffic Noise Prediction Model
Predicted Levels

Project # : 2002-068 West Roseville SP
Description: Cumulative Conditions + Project Full MOU Area
Ldn/CNEL: Ldn
Hard/Soft: Soft

Segment	Roadway Name	Segment Description From	To	Autos	Medium Trucks	Heavy Trucks	Total
1	S.R. 65	South Pleasant Grove		74.9	65.7	75.5	78.5
2	S.R. 65	Pleasant Grove	Blue Oaks	74.9	65.6	75.5	78.4
3	S.R. 65	Blue Oaks	Sunset	75.2	66.0	75.8	78.6
4	Roseville Parkway	S. of Pleasant Grove		68.7	60.1	61.6	70.0
5	Roseville Parkway	Pleasant Grove	Washington	66.0	57.4	58.9	67.3
6	Roseville Parkway	Washington	Foothills	66.3	57.7	59.2	67.6
7	Sunset	East SR 65		66.3	57.6	59.1	67.5
8	Foothills	Baseline	Junction	66.3	59.7	61.1	69.5
9	Foothills	Junction	Pleasant Grove	66.1	59.5	61.0	69.4
10	Foothills	Pleasant Grove	Blue Oaks	67.1	58.5	60.0	68.3
11	Woodcreek	Baseline	Junction	61.3	52.7	54.2	62.5
12	Woodcreek	Junction	Pleasant Grove	66.4	57.8	59.2	67.6
13	Woodcreek	Pleasant Grove	Blue Oaks	64.6	56.0	57.5	65.8
14	Woodcreek	N. of Blue Oaks		62.9	54.3	55.8	64.2
15	Fiddyment	S. of Baseline		66.7	58.1	59.5	67.9
16	Fiddyment	Baseline	Pleasant Grove	67.2	58.6	60.1	68.5
17	Fiddyment	Pleasant Grove	Blue Oaks	66.2	57.6	59.1	67.4
18	Fiddyment	Blue Oaks	Hayden	64.4	55.8	57.2	65.6
19	Fiddyment	N. of Hayden		64.4	55.8	57.3	65.7
20	Baseline	W. of Watt		67.1	58.5	60.0	68.3
21	Baseline	Watt	Fiddyment	67.9	59.3	60.7	69.1
22	Baseline	Fiddyment	Junction	68.1	59.4	60.9	69.3
23	Baseline	Junction	Woodcreek	66.2	57.6	59.1	67.4
24	Baseline	Woodcreek	Foothills	66.8	58.2	59.7	68.1
25	Baseline	Foothills	Washington	62.7	54.1	55.6	64.0
26	Junction	Baseline	Woodcreek	65.5	56.9	58.4	66.8
27	Junction	Woodcreek	Foothills	64.1	55.5	57.0	65.4
28	Junction	Foothills	Washington	66.0	57.4	58.8	67.2
29	Pleasant Grove	Westpark	Fiddyment	64.5	55.9	57.4	65.8
30	Pleasant Grove	Fiddyment	Woodcreek	66.9	58.3	59.8	68.1
31	Pleasant Grove	Woodcreek	Foothills	68.6	60.0	61.5	69.8
32	Pleasant Grove	Foothills	Washington	69.3	60.7	62.2	70.5
33	Pleasant Grove	Washington	Roseville Parkway	68.5	59.9	61.4	69.7
34	Pleasant Grove	Roseville Parkway	S.R. 65	69.3	60.7	62.2	70.6
35	Blue Oaks	Westpark	Hayden	64.9	56.3	57.8	66.1
36	Blue Oaks	Hayden	Fiddyment	65.8	57.2	58.7	67.0
37	Blue Oaks	E. of Fiddyment		65.9	57.3	58.8	67.1
38	Blue Oaks	W. of Woodcreek		67.8	59.0	60.5	68.9
39	Blue Oaks	Woodcreek	Foothills	68.9	60.3	61.8	70.2
40	Blue Oaks	Foothills	S.R. 65	69.0	60.4	61.9	70.3
41	Blue Oaks	S.R. 65	Sunset	65.7	57.1	58.5	66.9
42	Westpark	Baseline	Pleasant Grove	65.4	56.8	58.3	66.7
43	Westpark	Pleasant Grove	Blue Oaks	65.5	56.9	58.4	66.8
44	Hayden	N. of Blue Oaks		59.8	51.2	52.7	61.0
45	Hayden	S. of Blue Oaks		60.5	51.9	53.4	61.8

Appendix B-3
FHWA-RD-77-108 Highway Traffic Noise Prediction Model
Noise Contour Output

Project # : 2002-068 West Roseville SP
Description: Cumulative Conditions + Project Full MOU Area
Ldn/CNEL: Ldn
Hard/Soft: Soft

Segment	Roadway Name	Segment Description From	To	-- Distances to Traffic Noise Contours -- 75	70	65	60	55
1	S.R. 65	South Pleasant Grove		171	368	793	1708	3679
2	S.R. 65	Pleasant Grove	Blue Oaks	170	365	787	1696	3654
3	S.R. 65	Blue Oaks	Sunset	179	386	831	1791	3859
4	Roseville Parkway	S. of Pleasant Grove		46	99	214	461	993
5	Roseville Parkway	Pleasant Grove	Washington	31	66	142	306	660
6	Roseville Parkway	Washington	Foothills	32	69	148	319	687
7	Sunset	East SR 65		32	68	147	316	681
8	Foothills	Baseline	Junction	43	93	200	431	928
9	Foothills	Junction	Pleasant Grove	42	91	195	420	905
10	Foothills	Pleasant Grove	Blue Oaks	36	77	167	359	773
11	Woodcreek	Baseline	Junction	15	32	69	148	319
12	Woodcreek	Junction	Pleasant Grove	32	69	149	322	693
13	Woodcreek	Pleasant Grove	Blue Oaks	25	53	114	245	528
14	Woodcreek	N. of Blue Oaks		19	41	88	189	408
15	Fiddyment	S. of Baseline		34	73	156	337	726
16	Fiddyment	Baseline	Pleasant Grove	37	79	171	367	791
17	Fiddyment	Pleasant Grove	Blue Oaks	31	67	145	313	673
18	Fiddyment	Blue Oaks	Hayden	24	51	110	236	509
19	Fiddyment	N. of Hayden		24	51	111	239	514
20	Baseline	W. of Watt		36	78	167	360	776
21	Baseline	Watt	Fiddyment	40	87	188	405	872
22	Baseline	Fiddyment	Junction	42	90	193	417	897
23	Baseline	Junction	Woodcreek	31	67	145	313	675
24	Baseline	Woodcreek	Foothills	34	74	160	344	742
25	Baseline	Foothills	Washington	18	40	85	184	396
26	Junction	Baseline	Woodcreek	28	61	132	284	611
27	Junction	Woodcreek	Foothills	23	49	106	228	491
28	Junction	Foothills	Washington	30	65	140	303	652
29	Pleasant Grove	Westpark	Fiddyment	24	52	112	242	521
30	Pleasant Grove	Fiddyment	Woodcreek	35	75	162	349	752
31	Pleasant Grove	Woodcreek	Foothills	45	97	209	451	972
32	Pleasant Grove	Foothills	Washington	50	109	234	504	1086
33	Pleasant Grove	Washington	Roseville Parkway	45	96	207	445	960
34	Pleasant Grove	Roseville Parkway	S.R. 65	51	110	238	508	1095
35	Blue Oaks	Westpark	Hayden	26	56	119	256	552
36	Blue Oaks	Hayden	Fiddyment	29	63	137	295	635
37	Blue Oaks	E. of Fiddyment		30	64	139	299	644
38	Blue Oaks	W. of Woodcreek		39	84	181	389	838
39	Blue Oaks	Woodcreek	Foothills	48	103	221	477	1027
40	Blue Oaks	Foothills	S.R. 65	48	104	225	485	1044
41	Blue Oaks	S.R. 65	Sunset	29	62	134	289	622
42	Westpark	Baseline	Pleasant Grove	28	60	129	278	598
43	Westpark	Pleasant Grove	Blue Oaks	28	61	132	284	611
44	Hayden	N. of Blue Oaks		12	25	55	117	253
45	Hayden	S. of Blue Oaks		13	28	61	131	282

NOISE CONTROL MANUAL

Prepared by

BOLLARD & BRENNAN, INC.

INTRODUCTION

This noise control manual was prepared by Bollard & Brennan to assist planning staff and project applicants in determining appropriate methods for reducing noise associated with transportation and non-transportation noise sources. When noise associated with a new project or an existing facility has been identified as a potential concern, there are six basic steps that should be conducted to determine the potential noise impacts and appropriate acoustical treatments. The six steps are outlined as follows:

1. Noise and or vibration measurements or prediction of the source;

2. Selection of a noise criterion goal;

3. Design of the noise control treatments;

4. Construction and installation of the treatments;

5. Measurements and documentation of the results;

6. Frequently, reworking or modifying the treatments to achieve the target goal.

However, due to costs and the limited availability of people who are qualified to conduct the analysis discussed above, the noise control manual can be used to provide a fundamental analysis of noise control techniques to be applied to various noise sources.

EXTERIOR NOISE CONTROL TECHNIQUES

Any noise problem may be considered as being composed of three basic elements: the noise source, a transmission path, and a receiver. The emphasis of noise control in land use planning is usually placed upon acoustical treatment of the transmission path and the receiving structures. The appropriate acoustical treatment for a given project should consider the nature of the noise source and the sensitivity of the receiver. Noise control techniques should be selected to provide an acceptable noise environment for the receiving property while remaining consistent with local aesthetic standards and practical structural and economic limits.

Use of Setbacks

Noise exposure may be reduced by increasing the distance between the noise source and receiving use. Setbacks can take the form of open space, frontage roads, recreational areas, etc. The available noise attenuation from this technique is limited by the characteristics of the noise source, but is generally 3 to 6 dB per doubling of distance from the source.

Use of Barriers

Shielding by barriers can be obtained by placing walls, berms or other structures, such as buildings, between the noise source and the receiver. The effectiveness of a barrier depends upon blocking line of sight between the source and receiver, and is improved with increases in distance the sound must travel to pass over the barrier as compared to a straight line from source to receiver. The difference between the distance over a barrier and a straight line between source and receiver is called the "path length difference", and is the basis for calculating barrier noise reduction.

Barrier effectiveness depends upon the relative heights of the source, barrier and receiver. In general, barriers are most effective when placed close to either the receiver or the source. An intermediate barrier location yields a smaller path length difference for a given increase in barrier height than does a location closer to either source or receiver.
Due to the many variables which need to be considered for determining the effectiveness of a barrier, a detailed acoustical analysis should be conducted by a qualified acoustical consultant. However, a suitable barrier height can be determined by the project applicant or city staff when a noise reduction of no more than 5 dB is required, provided that the following procedures are followed:

Procedures for Conducting A Simplified Barrier Analysis

1. Design a barrier of sufficient height to interrupt line of sight between the source and receiver. For roadways where trucks are less than 3% of the average daily traffic (ADT), a source height of 2 feet above the roadway crown should be used. For roadways where trucks are greater than 3% of the average daily traffic (ADT), a source height of 8 feet above the roadway crown should be used. In both cases, a receiver height of 5 feet above the grade of the location of the outdoor activity area of concern should be used. For industrial type noise sources, the height of the noise source should be determined.

2. Select an appropriate scale on graph paper to accommodate the distance from the noise source to receiver and the heights of the noise source and receiver.

3. Mark a point representing the effective height of the noise source above the ground.

4. Scale off the distance from the noise source to the receiver and mark a point that is 5 feet above the building pad or outdoor activity area.

5. Using a ruler, draw a straight line between the noise source and receiver. This line represents the line of sight between the noise source and receiver.

6. Determine the location of the proposed barrier between the noise source and receiver, and draw a vertical line that extends from the ground to a height that intercepts line of sight. The height of the line represents the minimum height of a noise barrier necessary to reduce exterior noise by approximately 5 dB.

Site Design, Building Locations, or Building Orientations

Buildings can be placed on a project site to shield other structures or areas, to remove them from noise-impacted areas, and to prevent an increase in noise levels caused by reflections. As an example, carports or garages can be used to form or complement a barrier, or shielding an outdoor activity area. Placement of outdoor activity areas on the opposite side of the building facades from the noise source, or within the shielded portion of a building complex, such as a central courtyard, can also be an effective method of providing a quiet retreat in an otherwise noisy environment.

If patios or balconies of apartment complexes or multi-family dwellings are to be considered as outdoor activity areas, they should be placed on the side of a building opposite the noise source. "Wing walls" can also be added to buildings or patios to help shield noise-sensitive areas. In some cases, it is difficult to shield patio areas, particularly at second or third story locations. Therefore, when a common area or central courtyard is provided as a primary outdoor activity area, the City may decide not to apply the exterior noise level requirements at some or all of the patio or balcony areas.

Use of Vegetation

It is often supposed that trees and other vegetation can provide significant noise attenuation. However, approximately 100 feet of dense foliage (so that no visual path extends through the foliage) is required to achieve even a 5 dB attenuation of noise. Thus the use of vegetation as a noise barrier should not be considered as a practical method of noise control unless large tracts of dense foliage are part of the existing landscape.

Use of Partial Enclosures

Partial enclosures can be used for reducing industrial type noise sources. In practice, a partial enclosure (with a number of openings for stock flow, access, ventilation, etc.) would have an upper limit of about 6 to 12 dB noise reduction. To achieve more than 15 to 20 dB reduction, it is necessary to have essentially a complete enclosure, with adequate control of noise escaping from the various small openings in the side walls or roof of the enclosure.

To be effective, partial enclosures must have the maximum possible enclosure of the radiating sound source, the maximum possible application of sound absorption material on all interior surfaces facing the sound source, and the transmission loss of the wall should be at least 10 dB greater than the expected noise reduction for the enclosure.

Use of Complete Enclosures

Complete enclosures can be used for reducing industrial type noise sources. A complete enclosure is required if noise reduction values above about 15 dB are required. The typical weakness of many machinery enclosures is that the transmission loss of the enclosure walls is not adequate. Therefore,

enclosure walls should be massive in construction. In addition, to achieve a high noise reduction for a complete enclosure, windows, doors, access openings, ventilation openings and passageways for air flow should be acoustically treated. Gasketed doors and windows and acoustically lined ducts are essential to achieve high noise reduction values.

When trying to incorporate enclosures as a means of noise control, companies such as United McGill Corporation or Industrial Acoustics Company specialize in the design of such types of enclosures. The addresses of these companies is as follows:

United McGill Corporation
1747 Charter Way
P.O. Box 6156
Stockton, CA 95206
(209) 466-2351

Industrial Acoustics Company Inc.
1160 Commerce Avenue
Bronx, N.Y. 10462
(718) 931-8000

Use of Mufflers

Mufflers fall into two general classes which include dissipative mufflers and reactive mufflers.

Dissipative mufflers contain baffles and/or side wall linings made of sound abosorptive material. The length of the muffler, the dimensions of the baffles and the air passages, and the characteristics of the absorpbent material determine the effectiveness of the dissipative muffler.

Reactive mufflers contain two or three separate chambers that are connected to each other with pipes, slots, perforated plates or the like. In general, large large volume mufflers work best, and provide the lowest back pressure.

Use of Silencers or Acoustical Louvers

When noise due to opening for air flow or noise due to air handling systems is a concern, the use of silencers or acoutical louvers may be incorporated into the design. Acoustical louvers or silencers allow for adequate air flow required for air distribution systems, fans, cooling towers, and return air systems, while providing adequate noise control. In general, louvers can provide up to 10 dB reduction in noise, and silencers can provide up to 25 dB reduction in overall noise.

When trying to incorporate silencers or acoustical louvers as a means of noise control, companies such as United McGill Corporation, Rink Sound Control, Aerolite, or Industrial Acoustics Company

specialize in the design of such types of noise control technology. The addresses of these companies is as follows:

United McGill Corporation
1747 Charter Way
P.O. Box 6156
Stockton, CA 95206
(209) 466-2351

Industrial Acoustics Company Inc.
1160 Commerce Avenue
Bronx, N.Y. 10462
(718) 931-8000

Rink Sound Control
P.O. Box 5486
Tucson, AZ. 85703
Distributed by:
Tempco Equipment Company
3443 Ramona Avenue
Sacramento, CA 95826
(916) 736-2888

Aerolite Ventilating Louvers
P.O. Box 667
Marietta, Ohio 45750
(614) 373-7676
Distributed by:
D&L Enterprises
San Francisco, CA
(415) 786-3985

INTERIOR NOISE CONTROL TECHNIQUES

The noise level reduction (NLR) of a building facade may be calculated by assuming a generalized A-weighted noise frequency spectrum, determining the composite transmission loss and resulting noise level in the receiving room, then correcting for room absorption and calculating the overall noise level in the room. The ability to do this requires floor plans and facade construction details. Generally, this should be conducted by a qualified acoustical consultant.

However, some standard noise mitigation packages may be included in a project design to determine

NLR values. The following noise mitigation packages are provided for NLR values of 15, 20, 25 and 30 dB.

NLR of 15 dB

Normal construction practices per the latest edition of the Uniform Building Code are sufficient to provide an NLR of 15 dB, even if windows or doors are partially open for ventilation.

NLR of 20 dB

Normal construction practices per the latest edition of the Uniform Building Code are sufficient provided that:

1. Air conditioning or mechanical ventilation systems are installed so that windows and doors may remain closed.
2. Windows and sliding glass doors are mounted in low air infiltration rate frames (0.5 cfm or less, per ANSI specifications).
3. Exterior doors are solid core with perimeter weather-stripping and threshold seals.

NLR of 25 dB

Normal construction practices per the latest edition of the Uniform Building Code are sufficient provided that:

1. Air conditioning or mechanical ventilation systems are installed so that windows and doors may remain closed.
2. Windows and sliding glass doors are mounted in low air infiltration rate frames (0.5 cfm or less, per ANSI specifications).
3. Exterior doors are solid core with perimeter weather-stripping and threshold seals.
4. Exterior walls consist of stucco or brick veneer. Wood siding with a $^1/_2$" minimum thickness fiberboard ("soundboard") underlayer may also be used.
5. Glass in both windows and doors should not exceed 20% of the floor area in a room.
6. Windows should have an Sound Transmission Classification (STC) rating of at least 30.
7. Roof or attic vents facing the noise source of concern should be boxed.

NLR of 30 dB

Normal construction practices per the latest edition of the Uniform Building Code are sufficient provided that:

1. Air conditioning or mechanical ventilation systems are installed so that windows and doors may remain closed.

2. Windows and sliding glass doors are mounted in low air infiltration rate frames (0.5 cfm or less, per ANSI specifications).

3. Exterior doors are solid core with perimeter weather-stripping and threshold seals.

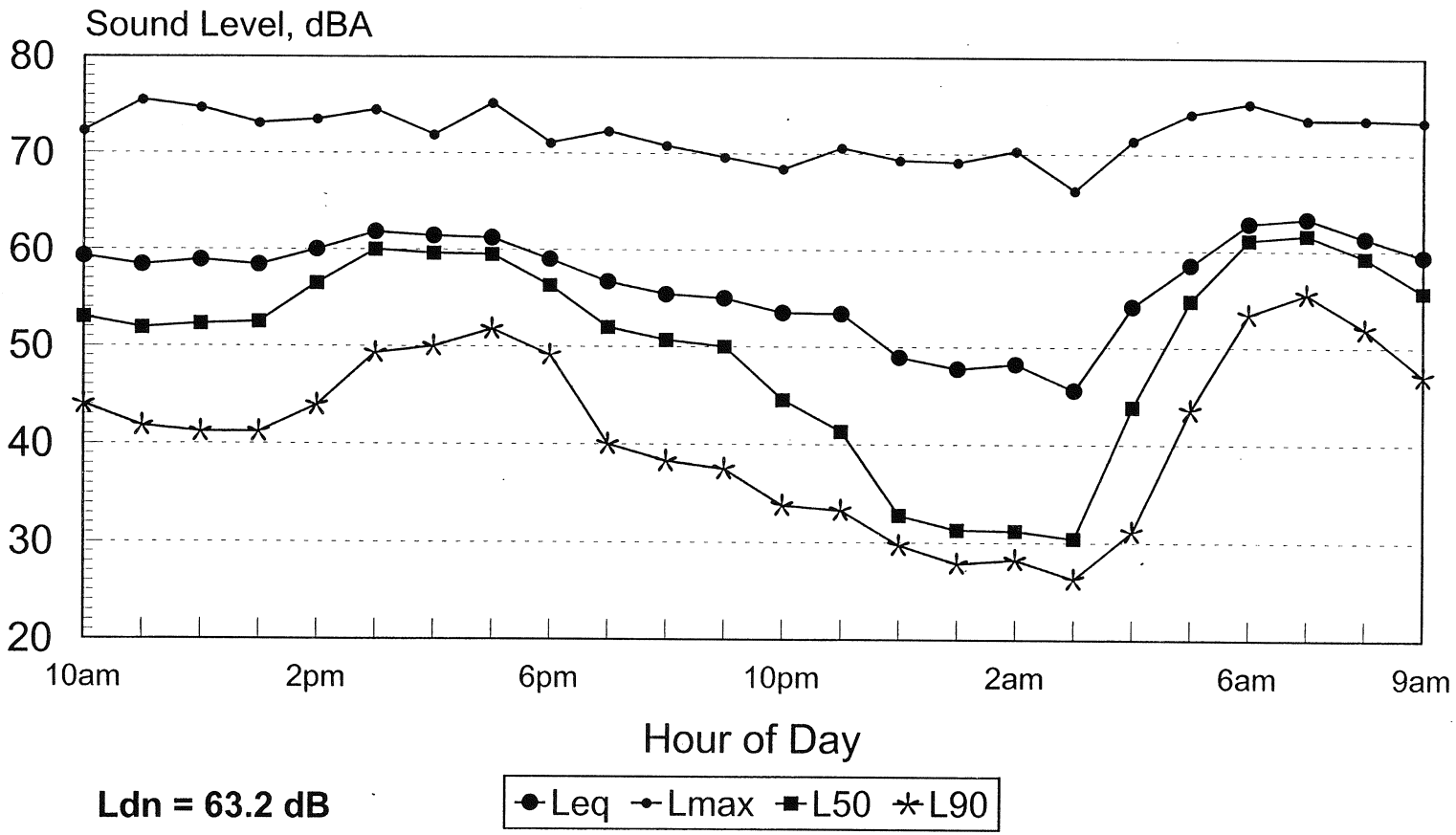
4. Exterior walls consist of stucco or brick veneer.

5. Glass in both windows and doors should not exceed 20% of the floor area in a room.

6. Windows should have an Sound Transmission Classification (STC) rating of at least 35.

7. Roof or attic vents facing the noise source of concern should be boxed.

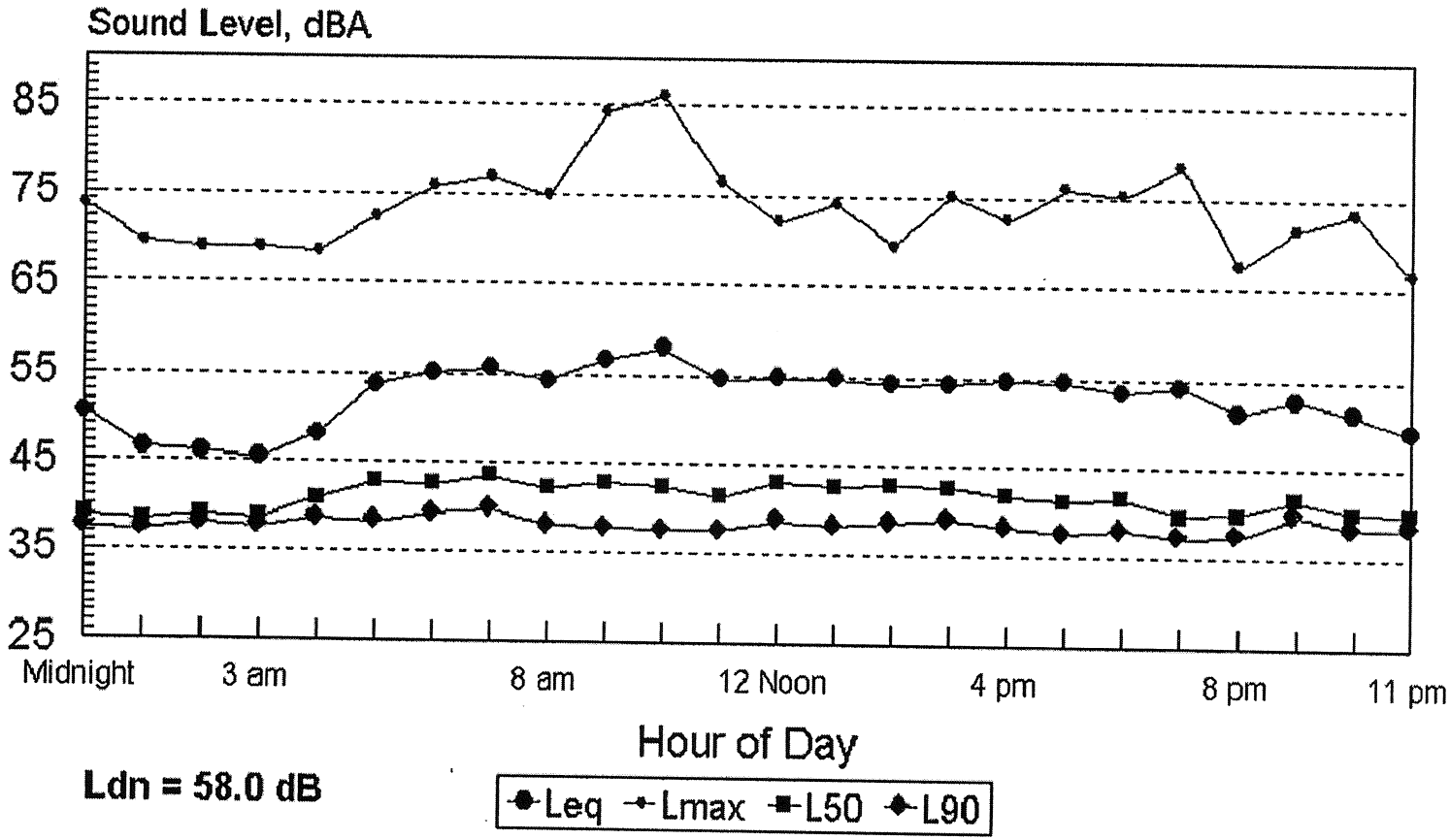
Measured Ambient Noise Levels
West Roseville SP - 6169 Burnt Cedar Way
Thursday March 6, 2003-Friday March 7, 2003



Ldn = 63.2 dB

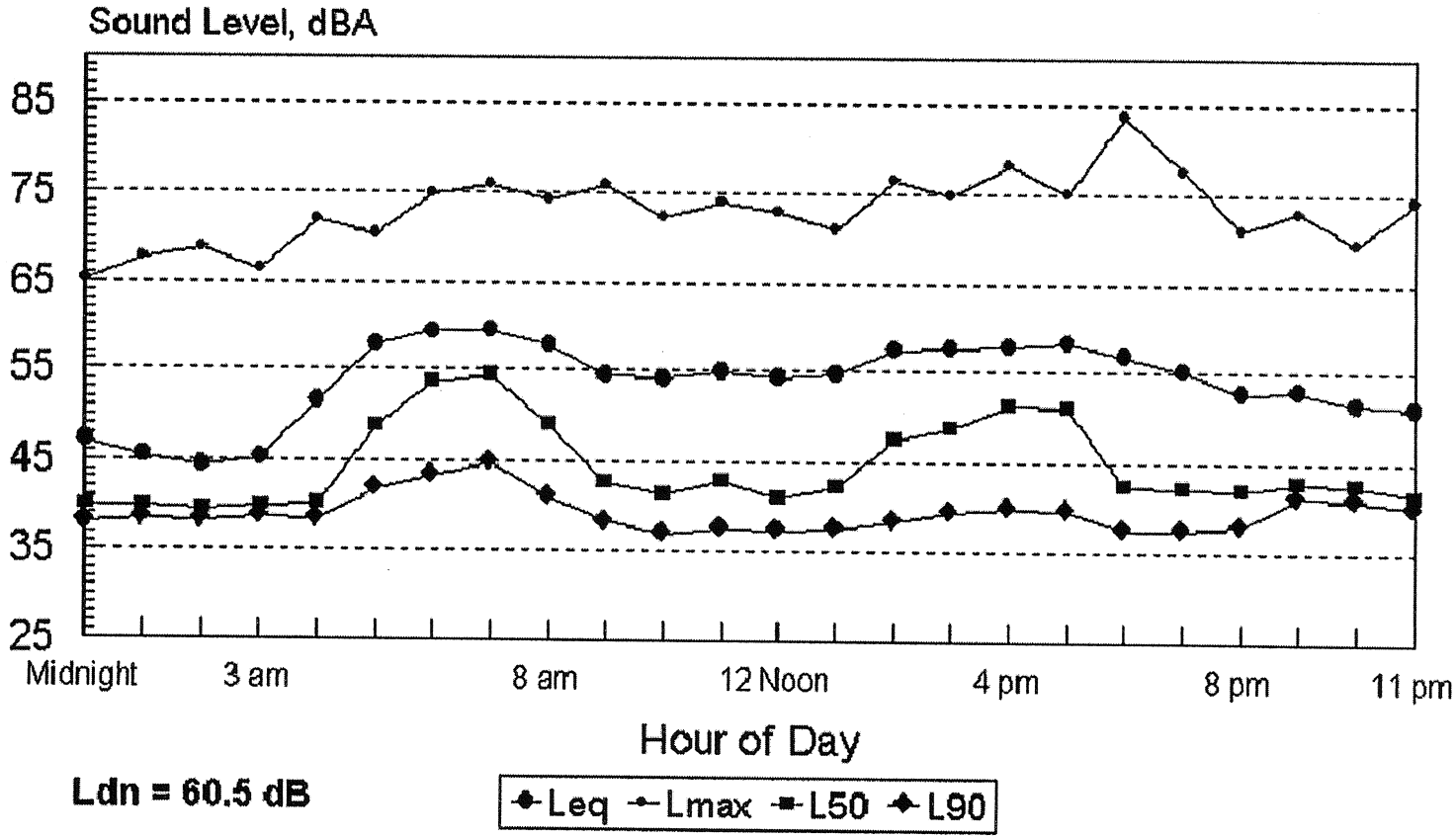
Bollard&Brennan, Inc.

Figure J-2
West Roseville Specific Plan - Noise Measurement Site 5
Measured Noise Levels
Saturday July 29, 2000



Ldn = 58.0 dB

Figure J-3
West Roseville Specific Plan - Noise Measurement Site 5
Measured Noise Levels
Monday July 31, 2000



Ldn = 60.5 dB