APPENDIX H
NOISE CALCULATIONS

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NOISE CALCULATIONS

Conversion between noise descriptors

Typical highway noise projects use the peak hour L_{eq} descriptor to define noise impacts. As seen in the TNM output files, this descriptor is depicted as LAeq1h. However, in order to assess potential noise impacts in accordance with the local noise standards, a comparison between peak hour L_{eq} and L_{dn} is required. Because 24-hour noise data are often not available, the following is a methodology recommended by the California Department of Transportation (Caltrans) in their Technical Noise Supplement (Caltrans, 1998) to convert between these descriptors.

As defined in Chapter 11, L_{dn} is defined as an energy-averaged 24-hour L_{eq} with a night-time penalty of 10 dBA assessed to noise levels between the hours of 10:00 p.m. and 7:00 a.m. If traffic volumes, speeds, and mixes were to remain constant throughout the entire 24 hours, and if there were no night time penalty, there would be no peak hour and each hourly L_{eq} would equal the 24-hour L_{eq}. Hourly traffic volumes would then be 100%/24, or 4.17% of the average daily traffic volume (ADT). Peak hour corrections would not be necessary in this case. This condition would be considered the **reference condition** for the calculation below.

To convert peak hour L_{eq} to L_{dn}, at least two corrections must be made to the above reference condition. First, a correction for peak hour traffic volumes expressed as a percentage of the ADT is made. Secondly, a correction for the nighttime penalty of 10 dBA is made. For this, the fraction of the ADT that occurs during the day and the fraction that occurs at night are required.

The formula to convert peak hour L_{eq} to L_{dn} is:

$$L_{dn} = L_{eq}(h)_{pk} + 10 \log_{10} (4.17/P) + 10 \log_{10} (D + 10N)$$

The formula to convert L_{dn} to peak hour L_{eq} is:

$$L_{eq}(h)_{pk} = L_{dn} - 10 \log_{10} (4.17/P) - 10 \log_{10} (D + 10N), \text{ where}$$

$L_{eq}(h)_{pk}$ =Peak hour L_{eq}
P = Peak hour volume % of ADT
D = Daytime fraction of ADT
N = Nighttime fraction of ADT
D + N = 1

For example, if we assume the following typical traffic conditions: (1) peak hour L_{eq} at receiver is 65.0 dBA, (2) peak hour traffic volume is 10 percent of ADT, (3) 85 percent of traffic occurs at daytime, (4) 15 percent of traffic occurs at nighttime, and 5) heavy truck percentage and traffic speeds do not vary significantly, the L_{dn} is approximately equal to the peak hour L_{eq}.

$$L_{dn} = 65.0 + 10 \log10 (4.17/10) + 10 \log10 (0.85 + 1.5)$$
$$= 65.0 + (-3.8) + 3.70$$
$$= 64.9 \text{ dBA}$$

The rule of thumb is that L_{dn} is within $\pm$ 2 dBA of the peak hour L_{eq} under normal traffic conditions. The figure below shows the difference between the peak hour L_{eq} and L_{dn} graphically based on percent of ADT and daytime/nighttime traffic distribution (Caltrans, 1998).

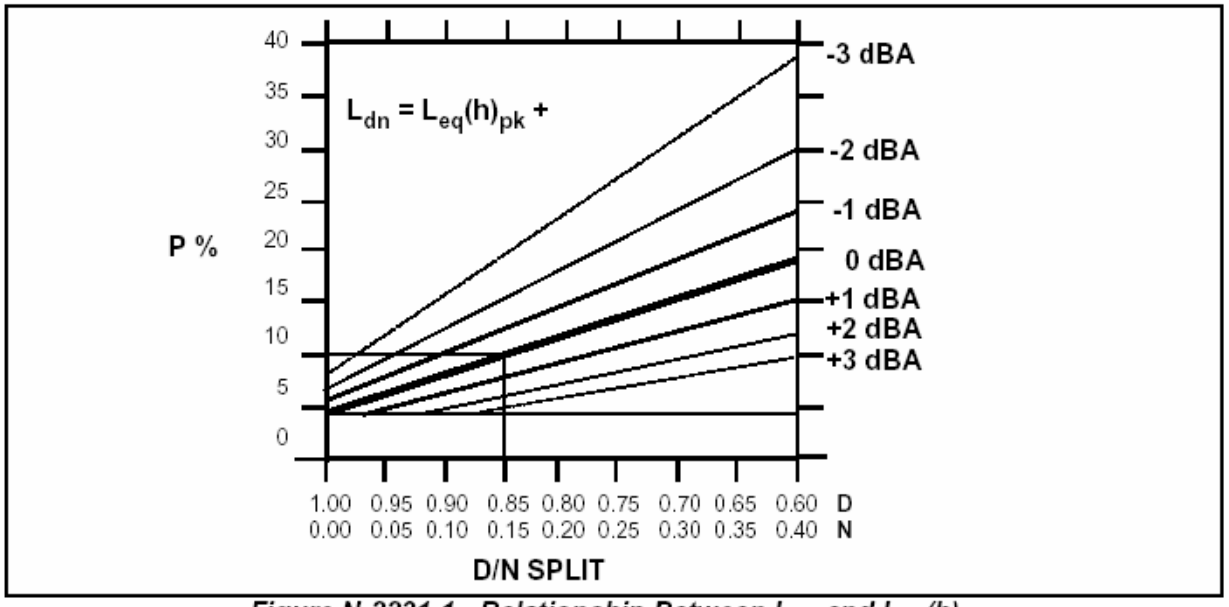

Figure N-2231.1 - Relationship Between L_{dn} and $L_{eq}(h)_{pk}$

Therefore, the calculated peak hour L_{eq} from traffic noise will be considered equivalent to the calculated L_{dn}.

Interior Noise Calculation

The following text is taken from the FHWA Highway Traffic Noise Analysis and Abatement Policy and Guidance (U.S. DOT, 1995) regarding interior noise calculations.

> *In most situations, if the exterior area can be protected, the interior will also be protected. The selection of the exterior area where "frequent human use occurs" is very important. This requires a site visit to determine whether people are using the entire exterior area or only a small portion, like a patio or porch. Some States choose the right-of-way line (a point farthest away from a house) to be on the conservative side when doing the noise impact analysis. Interior use applies mostly to hospitals and schools.*
>
> *Interior noise level predictions may be computed by subtracting from the predicted exterior levels the noise reduction factors for the building in question. If field measurements of these noise reduction factors are obtained or the factors are calculated from detailed acoustical analyses, the measured or calculated reduction factors should be used. In the absence of such calculations or field measurements, the noise reduction factors may be obtained from the following table:*

Table 7: Building Noise Reduction Factors Noise Reduction Due to Exterior of the		
Building Type	Window Condition	Structure
All	Open	10 dB
Light Frame	Ordinary Sash (closed)	20 dB
	Storm Windows	25 dB
Masonry	Single Glazed	25 dB
Masonry	Double Glazed	35 dB

NOTE: The windows shall be considered open unless there is firm knowledge that the windows are in fact kept closed almost every day of the year.

Traffic Noise Model Raw Data

The following tables are the raw output data for the FHWA Traffic Noise Model (TNM) version 2.5. These output tables are included without any corrections by URS to maintain the integrity of the model results. Therefore, the following text provides a description of the model results.

As discussed in Chapter 11, the project area with roadway alignments was imported into TNM from the electronic CAD files. Based on traffic data provided by DKS Associates, data (average vehicle speed, peak hour traffic volume, traffic mix) for each roadway segment were input into the model for both 2005 (existing) and 2025 (future) conditions under four scenarios: (1) existing/future no project with PFE Road, (2) existing/future plus project with PFE Road, (3) existing/future no project without PFE Road, and (4) existing/future plus project without PFE Road.

The model included the following receiver locations: all noise measurement locations (ST1 through ST5, LT1 through LT2), existing onsite and offsite sensitive receptors (NP1 through NP9), and representative future receptor locations (R01 through R20). Two elevations were modeled, to depict both "first floor" outdoor property line (at 5 feet) and "second floor" receptors (at 13 feet). The second floor receptors are identified in the output files with an "a" in the identification column. The calculated second floor noise level shown in the output files is at the exterior façade; therefore, the interior levels included in Tables 11-6 through 11-9 were calculated by subtracting a noise reduction factor of 20 dB (defined in U.S. DOT, 1995) for the specific type of building.

TNM automatically calculates for a "no barrier" and "with barrier" condition for each receptor, regardless of whether a barrier is included in the model. For this model, the "with barrier" condition assumes the use of a masonry wall 6 feet above the proposed pad elevation of residential properties, as proposed by the Applicant where needed for noise reduction (shown on Figure 11-4). Therefore, the barrier may not provide protection for all receiver locations. These receiver locations will result in noise reduction value of zero. Other noise attenuation techniques were not explored by this noise calculation exercise (i.e., higher noise walls, setbacks, or grading). The Applicant will conduct further studies to determine feasible mitigation where the noise calculations show impacts for affected parcels.

TNM also automatically includes a noise level criterion of 66 dBA, which it then uses to compare the calculated noise reduction to the goal and provide a calculated minus goal value. Because noise impacts for this project are being evaluated based on the Placer County Noise Element criterion of 60 dBA L_{dn}, these columns are of no value and should be disregarded.

To ensure the reader understands these output files, the following bulleted list provides an explanation of each column in these output files:

Column Name (from left to right)	**Description**
Receiver Name	Corresponds to receivers identified on Figure 11-3 and throughout text. Receivers without an "a" are first floor receivers at a height of 5 feet above ground. Receivers with an "a" are second floor receivers at a height of 13 feet above ground.
No.	Receiver number (in consecutive order), automatically given in TNM.
#DUs	Number of dwelling units. Receivers often represent multiple dwelling units so that the overall number of houses can be analyzed. For the purposed of this analysis, all receivers represented 1 dwelling unit. Therefore, this column can be disregarded.
LAeq1h Calculated, No Barrier	Calculated peak hour L_{eq} at that receptor based on traffic data without the barrier.
Crit'n, Increase over existing calculated, Crit'n Subl'l Inc, Type Impact	FHWA criteria for noise sensitive land uses, automatically included in TNM. Because noise impacts for this project are being evaluated based on the Placer County Noise Element criterion of 60 dBA L_{dn}, these columns should be disregarded.
LAeq1h Calculated, With Barrier	Calculated peak hour L_{eq} at that receptor based on traffic data with the barrier.
Calculated Noise Reduction	Noise reduction afforded by noise barrier at each receiver.
Goal, Calculated minus Goal	FHWA criteria for noise sensitive land uses, automatically included in TNM. Because noise impacts for this project are being evaluated based on the Placer County Noise Element criterion of 60 dBA L_{dn}, these columns should be disregarded.

TNM Output Files
Existing (2005), No Project, with PFE Road

URS SD 21 December 2007
TH/MS TNM 2.5
Calculated with TNM 2.5
RESULTS: SOUND LEVELS
PROJECT/CONTRACT: Riolo Vineyards
RUN: 2005 Existing
BARRIER DESIGN: INPUT HEIGHTS
ATMOSPHERICS: 68 deg F, 50% RH

Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.

Receiver Name	No.	#DUs	Existing LAeq1h	No Barrier LAeq1h Calculated	Crit'n	Increase over existing Calculated	Crit'n Sub'l Inc	Type Impact	With Barrier Calculated LAeq1h	Noise Reduction Calculated	Goal	Calculated minus Goal
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
R01	1	1	0.0	43.7	66	43.7	10	----	41.7	2.0	8	-6.0
R02	2	1	0.0	42.0	66	42.0	10	----	41.8	0.2	8	-7.8
R03	3	1	0.0	43.2	66	43.2	10	----	43.2	0.0	8	-8.0
R04	4	1	0.0	57.7	66	57.7	10	----	57.7	0.0	8	-8.0
R05	5	1	0.0	54.4	66	54.4	10	----	54.3	0.1	8	-7.9
R06	6	1	0.0	53.5	66	53.5	10	----	52.5	1.0	8	-7.0
R07	7	1	0.0	51.5	66	51.5	10	----	48.7	2.8	8	-5.2
R08	8	1	0.0	50.3	66	50.3	10	----	46.7	3.6	8	-4.4
R09	9	1	0.0	41.5	66	41.5	10	----	40.2	1.3	8	-6.7
R10	10	1	0.0	49.1	66	49.1	10	----	44.6	4.5	8	-3.5
R11	11	1	0.0	44.7	66	44.7	10	----	43.5	1.2	8	-6.8
R12	12	1	0.0	58.0	66	58.0	10	----	58.0	0.0	8	-8.0
R13	13	1	0.0	58.2	66	58.2	10	----	48.8	9.4	8	1.4
R14	14	1	0.0	46.0	66	46.0	10	----	45.1	0.9	8	-7.1
R15	15	1	0.0	58.8	66	58.8	10	----	58.7	0.1	8	-7.9
R16	16	1	0.0	48.0	66	48.0	10	----	47.0	1.0	8	-7.0
R17	17	1	0.0	49.8	66	49.8	10	----	45.0	4.8	8	-3.2
R18	18	1	0.0	64.1	66	64.1	10	----	55.7	8.4	8	0.4
R19	19	1	0.0	63.5	66	63.5	10	----	54.1	9.4	8	1.4
R20	20	1	0.0	45.5	66	45.5	10	----	44.2	1.3	8	-6.7
LT1	22	1	0.0	46.0	66	46.0	10	----	46.0	0.0	8	-8.0
LT2	23	1	0.0	50.7	66	50.7	10	----	50.7	0.0	8	-8.0
NP7/ST1	24	1	0.0	65.4	66	65.4	10	----	65.4	0.0	8	-8.0
NP9/ST2	26	1	0.0	51.8	66	51.8	10	----	51.8	0.0	8	-8.0

NP1/ST3	27	1	0.0	55.8	66	55.8	10	----	55.8	0.0	8	-8.0
NP5/ST4	28	1	0.0	53.8	66	53.8	10	----	53.8	0.0	8	-8.0
NP2	29	1	0.0	51.0	66	51.0	10	----	51.0	0.0	8	-8.0
NP3	30	1	0.0	43.4	66	43.4	10	----	43.4	0.0	8	-8.0
NP4	31	1	0.0	41.8	66	41.8	10	----	41.8	0.0	8	-8.0
NP6	32	1	0.0	59.3	66	59.3	10	----	59.2	0.1	8	-7.9
NP8 Roseville Public Cemetery	36	1	0.0	56.4	66	56.4	10	----	56.4	0.0	8	-8.0
R01a	37	1	0.0	46.4	66	46.4	10	----	46.4	0.0	8	-8.0
R02a	38	1	0.0	44.7	66	44.7	10	----	44.8	-0.1	8	-8.1
R03a	39	1	0.0	46.8	66	46.8	10	----	46.8	0.0	8	-8.0
R04a	40	1	0.0	58.8	66	58.8	10	----	58.8	0.0	8	-8.0
R05a	41	1	0.0	56.8	66	56.8	10	----	56.8	0.0	8	-8.0
R06a	42	1	0.0	57.0	66	57.0	10	----	56.9	0.1	8	-7.9
R07a	43	1	0.0	55.7	66	55.7	10	----	53.3	2.4	8	-5.6
R08a	44	1	0.0	57.9	66	57.9	10	----	51.4	6.5	8	-1.5
R09a	45	1	0.0	43.7	66	43.7	10	----	43.5	0.2	8	-7.8
R10a	46	1	0.0	51.3	66	51.3	10	----	51.1	0.2	8	-7.8
R11a	47	1	0.0	47.4	66	47.4	10	----	45.9	1.5	8	-6.5
R12a	48	1	0.0	58.4	66	58.4	10	----	58.5	-0.1	8	-8.1
R13a	49	1	0.0	59.0	66	59.0	10	----	59.0	0.0	8	-8.0
R14a	50	1	0.0	49.4	66	49.4	10	----	47.7	1.7	8	-6.3
R15a	51	1	0.0	59.8	66	59.8	10	----	59.8	0.0	8	-8.0
R16a	52	1	0.0	51.1	66	51.1	10	----	50.4	0.7	8	-7.3
R17a	53	1	0.0	52.7	66	52.7	10	----	52.2	0.5	8	-7.5
R18a	54	1	0.0	62.5	66	62.5	10	----	62.5	0.0	8	-8.0
R19a	55	1	0.0	61.2	66	61.2	10	----	60.0	1.2	8	-6.8
R20a	56	1	0.0	47.3	66	47.3	10	----	46.4	0.9	8	-7.1
LT1a	57	1	0.0	50.6	66	50.6	10	----	50.5	0.1	8	-7.9
LT2a	58	1	0.0	54.8	66	54.8	10	----	54.8	0.0	8	-8.0
NP7/ST1a	59	1	0.0	67.0	66	67.0	10	Snd Lvl	67.0	0.0	8	-8.0
NP9/ST2a	60	1	0.0	55.1	66	55.1	10	----	55.1	0.0	8	-8.0
NP1/ST3a	61	1	0.0	58.5	66	58.5	10	----	58.5	0.0	8	-8.0
NP5/ST4a	62	1	0.0	56.7	66	56.7	10	----	56.6	0.1	8	-7.9
NP2a	63	1	0.0	54.3	66	54.3	10	----	54.3	0.0	8	-8.0
NP3a	64	1	0.0	46.2	66	46.2	10	----	46.1	0.1	8	-7.9
NP4a	65	1	0.0	44.0	66	44.0	10	----	43.9	0.1	8	-7.9
NP6a	66	1	0.0	61.9	66	61.9	10	----	61.9	0.0	8	-8.0
NP8 Roseville Public Cemeterya	67	1	0.0	60.1	66	60.1	10	----	60.1	0.0	8	-8.0
Elementary School 1st Floor	70	1	0.0	52.7	66	52.7	10	----	52.7	0.0	8	-8.0
Elementary School 2nd Floor	71	1	0.0	56.8	66	56.8	10	----	56.7	0.1	8	-7.9

Dwelling Units	**# DUs**	**Noise Reduction**

		Min	Avg	Max
		dB	dB	dB
All Selected	64	-0.1	1.1	9.4
All Impacted	1	0.0	0.0	0.0
All that meet NR Goal	3	8.4	9.1	9.4

TNM Output Files
Existing (2005), Plus Project, with PFE Road

URS SD 21 December 2007
TH/MS TNM 2.5
Calculated with TNM 2.5
RESULTS: SOUND LEVELS
PROJECT/CONTRACT: Riolo Vineyards
RUN: 2005 Existing+Project
BARRIER DESIGN: INPUT HEIGHTS
ATMOSPHERICS: 68 deg F, 50% RH

Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.

Receiver Name	No.	#DUs	Existing LAeq1h	No Barrier LAeq1h Calculated	Crit'n	Increase over existing Calculated	Crit'n Sub'l Inc	Type Impact	With Barrier Calculated LAeq1h	Noise Reduction Calculated	Goal	Calculated minus Goal
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
R01	1	1	0.0	44.6	66	44.6	10	----	42.7	1.9	8	-6.1
R02	2	1	0.0	43.1	66	43.1	10	----	42.9	0.2	8	-7.8
R03	3	1	0.0	44.6	66	44.6	10	----	44.6	0.0	8	-8.0
R04	4	1	0.0	59.4	66	59.4	10	----	59.4	0.0	8	-8.0
R05	5	1	0.0	56.1	66	56.1	10	----	56.0	0.1	8	-7.9
R06	6	1	0.0	55.8	66	55.8	10	----	55.7	0.1	8	-7.9
R07	7	1	0.0	53.4	66	53.4	10	----	50.8	2.6	8	-5.4
R08	8	1	0.0	55.5	66	55.5	10	----	49.7	5.8	8	-2.2
R09	9	1	0.0	43.1	66	43.1	10	----	41.7	1.4	8	-6.6
R10	10	1	0.0	50.7	66	50.7	10	----	46.1	4.6	8	-3.4
R11	11	1	0.0	46.2	66	46.2	10	----	45.0	1.2	8	-6.8
R12	12	1	0.0	59.6	66	59.6	10	----	59.6	0.0	8	-8.0
R13	13	1	0.0	59.8	66	59.8	10	----	50.3	9.5	8	1.5
R14	14	1	0.0	47.4	66	47.4	10	----	46.5	0.9	8	-7.1
R15	15	1	0.0	60.3	66	60.3	10	----	60.3	0.0	8	-8.0
R16	16	1	0.0	49.0	66	49.0	10	----	48.1	0.9	8	-7.1
R17	17	1	0.0	50.6	66	50.6	10	----	46.3	4.3	8	-3.7
R18	18	1	0.0	64.2	66	64.2	10	----	55.8	8.4	8	0.4
R19	19	1	0.0	63.6	66	63.6	10	----	54.2	9.4	8	1.4
R20	20	1	0.0	45.8	66	45.8	10	----	44.6	1.2	8	-6.8
LT1	22	1	0.0	47.6	66	47.6	10	----	47.5	0.1	8	-7.9
LT2	23	1	0.0	50.9	66	50.9	10	----	50.8	0.1	8	-7.9
NP7/ST1	24	1	0.0	65.6	66	65.6	10	----	65.6	0.0	8	-8.0
NP9/ST2	26	1	0.0	52.3	66	52.3	10	----	52.3	0.0	8	-8.0

NP1/ST3	27	1	0.0	57.4	66	57.4	10	----	57.4	0.0	8	-8.0
NP5/ST4	28	1	0.0	55.4	66	55.4	10	----	55.3	0.1	8	-7.9
NP2	29	1	0.0	52.6	66	52.6	10	----	52.6	0.0	8	-8.0
NP3	30	1	0.0	44.9	66	44.9	10	----	44.9	0.0	8	-8.0
NP4	31	1	0.0	43.1	66	43.1	10	----	43.1	0.0	8	-8.0
NP6	32	1	0.0	59.8	66	59.8	10	----	59.8	0.0	8	-8.0
NP8 Roseville Public Cemetery	36	1	0.0	57.0	66	57.0	10	----	57.0	0.0	8	-8.0
R01a	37	1	0.0	47.4	66	47.4	10	----	47.3	0.1	8	-7.9
R02a	38	1	0.0	45.9	66	45.9	10	----	46.0	-0.1	8	-8.1
R03a	39	1	0.0	48.3	66	48.3	10	----	48.3	0.0	8	-8.0
R04a	40	1	0.0	60.4	66	60.4	10	----	60.4	0.0	8	-8.0
R05a	41	1	0.0	58.5	66	58.5	10	----	58.5	0.0	8	-8.0
R06a	42	1	0.0	58.9	66	58.9	10	----	58.8	0.1	8	-7.9
R07a	43	1	0.0	57.6	66	57.6	10	----	55.6	2.0	8	-6.0
R08a	44	1	0.0	60.0	66	60.0	10	----	57.0	3.0	8	-5.0
R09a	45	1	0.0	45.3	66	45.3	10	----	45.1	0.2	8	-7.8
R10a	46	1	0.0	52.9	66	52.9	10	----	52.7	0.2	8	-7.8
R11a	47	1	0.0	49.0	66	49.0	10	----	47.4	1.6	8	-6.4
R12a	48	1	0.0	60.0	66	60.0	10	----	60.1	-0.1	8	-8.1
R13a	49	1	0.0	60.6	66	60.6	10	----	60.6	0.0	8	-8.0
R14a	50	1	0.0	50.9	66	50.9	10	----	49.2	1.7	8	-6.3
R15a	51	1	0.0	61.4	66	61.4	10	----	61.4	0.0	8	-8.0
R16a	52	1	0.0	52.2	66	52.2	10	----	51.6	0.6	8	-7.4
R17a	53	1	0.0	53.7	66	53.7	10	----	53.3	0.4	8	-7.6
R18a	54	1	0.0	62.6	66	62.6	10	----	62.6	0.0	8	-8.0
R19a	55	1	0.0	61.3	66	61.3	10	----	60.1	1.2	8	-6.8
R20a	56	1	0.0	47.7	66	47.7	10	----	46.8	0.9	8	-7.1
LT1a	57	1	0.0	52.1	66	52.1	10	----	52.1	0.0	8	-8.0
LT2a	58	1	0.0	54.9	66	54.9	10	----	54.9	0.0	8	-8.0
NP7/ST1a	59	1	0.0	67.1	66	67.1	10	Snd Lvl	67.1	0.0	8	-8.0
NP9/ST2a	60	1	0.0	55.6	66	55.6	10	----	55.6	0.0	8	-8.0
NP1/ST3a	61	1	0.0	60.0	66	60.0	10	----	60.0	0.0	8	-8.0
NP5/ST4a	62	1	0.0	58.2	66	58.2	10	----	58.2	0.0	8	-8.0
NP2a	63	1	0.0	55.9	66	55.9	10	----	55.9	0.0	8	-8.0
NP3a	64	1	0.0	47.7	66	47.7	10	----	47.7	0.0	8	-8.0
NP4a	65	1	0.0	45.3	66	45.3	10	----	45.3	0.0	8	-8.0
NP6a	66	1	0.0	62.5	66	62.5	10	----	62.5	0.0	8	-8.0
NP8 Roseville Public Cemeterya	67	1	0.0	60.7	66	60.7	10	----	60.7	0.0	8	-8.0
Elementary School 1st Floor	69	1	0.0	54.3	66	54.3	10	----	54.2	0.1	8	-7.9
Elementary School 2nd Floor	70	1	0.0	58.4	66	58.4	10	----	58.4	0.0	8	-8.0
Dwelling Units		**# DUs**	**Noise Reduction**									

			Min	Avg	Max
			dB	dB	dB
All Selected		64	-0.1	1.0	9.5
All Impacted		1	0.0	0.0	0.0
All that meet NR Goal		3	8.4	9.1	9.5

TNM Output Files
Existing (2005), No Project, without PFE Road

URS SD 21 December 2007
TH/MS TNM 2.5
Calculated with TNM 2.5
RESULTS: SOUND LEVELS
PROJECT/CONTRACT: Riolo Vineyards
RUN: 2005 No Build/No PFE
BARRIER DESIGN: INPUT HEIGHTS
ATMOSPHERICS: 68 deg F, 50% RH

Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.

Receiver Name	No.	#DUs	Existing LAeq1h	No Barrier LAeq1h Calculated	Crit'n	Increase over existing Calculated	Crit'n Sub'l Inc	Type Impact	With Barrier Calculated LAeq1h	Noise Reduction Calculated	Goal	Calculated minus Goal
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
R01	1	1	0.0	44.1	66	44.1	10	----	42.2	1.9	8	-6.1
R02	2	1	0.0	42.4	66	42.4	10	----	42.2	0.2	8	-7.8
R03	3	1	0.0	43.7	66	43.7	10	----	43.7	0.0	8	-8.0
R04	4	1	0.0	58.3	66	58.3	10	----	58.2	0.1	8	-7.9
R05	5	1	0.0	54.9	66	54.9	10	----	54.8	0.1	8	-7.9
R06	6	1	0.0	53.9	66	53.9	10	----	52.9	1.0	8	-7.0
R07	7	1	0.0	51.9	66	51.9	10	----	48.9	3.0	8	-5.0
R08	8	1	0.0	50.5	66	50.5	10	----	47.2	3.3	8	-4.7
R09	9	1	0.0	41.9	66	41.9	10	----	40.8	1.1	8	-6.9
R10	10	1	0.0	49.5	66	49.5	10	----	45.1	4.4	8	-3.6
R11	11	1	0.0	45.1	66	45.1	10	----	43.7	1.4	8	-6.6
R12	12	1	0.0	58.3	66	58.3	10	----	58.3	0.0	8	-8.0
R13	13	1	0.0	58.5	66	58.5	10	----	49.3	9.2	8	1.2
R14	14	1	0.0	46.5	66	46.5	10	----	45.3	1.2	8	-6.8
R15	15	1	0.0	59.3	66	59.3	10	----	59.3	0.0	8	-8.0
R16	16	1	0.0	48.4	66	48.4	10	----	47.3	1.1	8	-6.9
R17	17	1	0.0	50.2	66	50.2	10	----	45.4	4.8	8	-3.2
R18	18	1	0.0	64.4	66	64.4	10	----	56.1	8.3	8	0.3
R19	19	1	0.0	63.8	66	63.8	10	----	54.4	9.4	8	1.4
R20	20	1	0.0	45.8	66	45.8	10	----	44.5	1.3	8	-6.7
LT1	22	1	0.0	46.6	66	46.6	10	----	46.6	0.0	8	-8.0
LT2	23	1	0.0	51.1	66	51.1	10	----	51.0	0.1	8	-7.9
NP7/ST1	24	1	0.0	65.8	66	65.8	10	----	65.8	0.0	8	-8.0
NP9/ST2	26	1	0.0	52.1	66	52.1	10	----	52.1	0.0	8	-8.0

NP1/ST3	27	1	0.0	55.9	66	55.9	10	----	55.9	0.0	8	-8.0
NP5/ST4	28	1	0.0	53.9	66	53.9	10	----	53.9	0.0	8	-8.0
NP2	29	1	0.0	51.1	66	51.1	10	----	51.1	0.0	8	-8.0
NP3	30	1	0.0	43.9	66	43.9	10	----	43.8	0.1	8	-7.9
NP4	31	1	0.0	42.2	66	42.2	10	----	42.2	0.0	8	-8.0
NP6	32	1	0.0	59.4	66	59.4	10	----	59.4	0.0	8	-8.0
NP8 Roseville Public Cemetery	36	1	0.0	56.7	66	56.7	10	----	56.7	0.0	8	-8.0
R01a	37	1	0.0	46.9	66	46.9	10	----	46.8	0.1	8	-7.9
R02a	38	1	0.0	45.3	66	45.3	10	----	45.3	0.0	8	-8.0
R03a	39	1	0.0	47.5	66	47.5	10	----	47.5	0.0	8	-8.0
R04a	40	1	0.0	59.1	66	59.1	10	----	59.1	0.0	8	-8.0
R05a	41	1	0.0	57.2	66	57.2	10	----	57.1	0.1	8	-7.9
R06a	42	1	0.0	57.3	66	57.3	10	----	57.2	0.1	8	-7.9
R07a	43	1	0.0	56.1	66	56.1	10	----	53.8	2.3	8	-5.7
R08a	44	1	0.0	58.2	66	58.2	10	----	51.7	6.5	8	-1.5
R09a	45	1	0.0	44.1	66	44.1	10	----	43.9	0.2	8	-7.8
R10a	46	1	0.0	51.8	66	51.8	10	----	51.5	0.3	8	-7.7
R11a	47	1	0.0	47.8	66	47.8	10	----	46.3	1.5	8	-6.5
R12a	48	1	0.0	58.7	66	58.7	10	----	58.8	-0.1	8	-8.1
R13a	49	1	0.0	59.4	66	59.4	10	----	59.3	0.1	8	-7.9
R14a	50	1	0.0	49.8	66	49.8	10	----	48.1	1.7	8	-6.3
R15a	51	1	0.0	60.1	66	60.1	10	----	60.1	0.0	8	-8.0
R16a	52	1	0.0	51.6	66	51.6	10	----	50.9	0.7	8	-7.3
R17a	53	1	0.0	53.2	66	53.2	10	----	52.7	0.5	8	-7.5
R18a	54	1	0.0	62.9	66	62.9	10	----	62.8	0.1	8	-7.9
R19a	55	1	0.0	61.5	66	61.5	10	----	60.3	1.2	8	-6.8
R20a	56	1	0.0	47.6	66	47.6	10	----	46.7	0.9	8	-7.1
LT1a	57	1	0.0	51.4	66	51.4	10	----	51.4	0.0	8	-8.0
LT2a	58	1	0.0	55.1	66	55.1	10	----	55.1	0.0	8	-8.0
NP7/ST1a	59	1	0.0	67.4	66	67.4	10	Snd Lvl	67.4	0.0	8	-8.0
NP9/ST2a	60	1	0.0	55.4	66	55.4	10	----	55.4	0.0	8	-8.0
NP1/ST3a	61	1	0.0	58.9	66	58.9	10	----	58.9	0.0	8	-8.0
NP5/ST4a	62	1	0.0	57.1	66	57.1	10	----	57.1	0.0	8	-8.0
NP2a	63	1	0.0	54.5	66	54.5	10	----	54.5	0.0	8	-8.0
NP3a	64	1	0.0	46.6	66	46.6	10	----	46.6	0.0	8	-8.0
NP4a	65	1	0.0	44.4	66	44.4	10	----	44.3	0.1	8	-7.9
NP6a	66	1	0.0	62.0	66	62.0	10	----	62.0	0.0	8	-8.0
NP8 Roseville Public Cemeterya	67	1	0.0	60.4	66	60.4	10	----	60.4	0.0	8	-8.0
Elementary School 1st Floor	70	1	0.0	53.3	66	53.3	10	----	53.2	0.1	8	-7.9
Elementary School 2nd Floor	71	1	0.0	57.3	66	57.3	10	----	57.3	0.0	8	-8.0

Dwelling Units	**# DUs**	**Noise Reduction**

		Min	Avg	Max
		dB	dB	dB
All Selected	64	-0.1	1.1	9.4
All Impacted	1	0.0	0.0	0.0
All that meet NR Goal	3	8.3	9.0	9.4

TNM Output Files
Existing (2005), Plus Project, without PFE Road

URS SD 21 December 2007
TH/MS TNM 2.5
Calculated with TNM 2.5
RESULTS: SOUND LEVELS
PROJECT/CONTRACT: Riolo Vineyards
RUN: 2005 Existing+Project No PFE
BARRIER DESIGN: INPUT HEIGHTS
ATMOSPHERICS: 68 deg F, 50% RH

Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.

Receiver Name	No.	#DUs	Existing LAeq1h	No Barrier LAeq1h Calculated	Crit'n	Increase over existing Calculated	Crit'n Sub'l Inc	Type Impact	With Barrier Calculated LAeq1h	Noise Reduction Calculated	Goal	Calculated minus Goal
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
R01	1	1	0.0	44.5	66	44.5	10	----	42.5	2.0	8	-6.0
R02	2	1	0.0	42.6	66	42.6	10	----	42.5	0.1	8	-7.9
R03	3	1	0.0	43.7	66	43.7	10	----	43.7	0.0	8	-8.0
R04	4	1	0.0	58.1	66	58.1	10	----	58.1	0.0	8	-8.0
R05	5	1	0.0	54.8	66	54.8	10	----	54.7	0.1	8	-7.9
R06	6	1	0.0	53.9	66	53.9	10	----	52.9	1.0	8	-7.0
R07	7	1	0.0	51.8	66	51.8	10	----	49.1	2.7	8	-5.3
R08	8	1	0.0	50.6	66	50.6	10	----	47.1	3.5	8	-4.5
R09	9	1	0.0	41.9	66	41.9	10	----	40.6	1.3	8	-6.7
R10	10	1	0.0	49.5	66	49.5	10	----	45.0	4.5	8	-3.5
R11	11	1	0.0	45.1	66	45.1	10	----	43.8	1.3	8	-6.7
R12	12	1	0.0	58.4	66	58.4	10	----	58.4	0.0	8	-8.0
R13	13	1	0.0	58.6	66	58.6	10	----	49.2	9.4	8	1.4
R14	14	1	0.0	46.4	66	46.4	10	----	45.4	1.0	8	-7.0
R15	15	1	0.0	59.2	66	59.2	10	----	59.1	0.1	8	-7.9
R16	16	1	0.0	48.4	66	48.4	10	----	47.3	1.1	8	-6.9
R17	17	1	0.0	50.2	66	50.2	10	----	45.4	4.8	8	-3.2
R18	18	1	0.0	64.5	66	64.5	10	----	56.1	8.4	8	0.4
R19	19	1	0.0	63.9	66	63.9	10	----	54.5	9.4	8	1.4
R20	20	1	0.0	45.9	66	45.9	10	----	44.6	1.3	8	-6.7
LT1	22	1	0.0	46.4	66	46.4	10	----	46.4	0.0	8	-8.0
LT2	23	1	0.0	51.1	66	51.1	10	----	51.1	0.0	8	-8.0
NP7/ST1	24	1	0.0	65.9	66	65.9	10	----	65.9	0.0	8	-8.0
NP9/ST2	26	1	0.0	52.7	66	52.7	10	----	52.7	0.0	8	-8.0

NP1/ST3	27	1	0.0	56.4	66	56.4	10	----	56.4	0.0	8	-8.0
NP5/ST4	28	1	0.0	54.2	66	54.2	10	----	54.2	0.0	8	-8.0
NP2	29	1	0.0	51.5	66	51.5	10	----	51.5	0.0	8	-8.0
NP3	30	1	0.0	43.7	66	43.7	10	----	43.7	0.0	8	-8.0
NP4	31	1	0.0	42.2	66	42.2	10	----	42.1	0.1	8	-7.9
NP6	32	1	0.0	59.6	66	59.6	10	----	59.6	0.0	8	-8.0
NP8 Roseville Public Cemetery	36	1	0.0	57.4	66	57.4	10	----	57.4	0.0	8	-8.0
R01a	37	1	0.0	47.2	66	47.2	10	----	47.1	0.1	8	-7.9
R02a	38	1	0.0	45.4	66	45.4	10	----	45.4	0.0	8	-8.0
R03a	39	1	0.0	47.3	66	47.3	10	----	47.3	0.0	8	-8.0
R04a	40	1	0.0	59.2	66	59.2	10	----	59.2	0.0	8	-8.0
R05a	41	1	0.0	57.3	66	57.3	10	----	57.2	0.1	8	-7.9
R06a	42	1	0.0	57.4	66	57.4	10	----	57.3	0.1	8	-7.9
R07a	43	1	0.0	56.2	66	56.2	10	----	53.7	2.5	8	-5.5
R08a	44	1	0.0	58.3	66	58.3	10	----	51.8	6.5	8	-1.5
R09a	45	1	0.0	44.0	66	44.0	10	----	43.8	0.2	8	-7.8
R10a	46	1	0.0	51.7	66	51.7	10	----	51.5	0.2	8	-7.8
R11a	47	1	0.0	47.8	66	47.8	10	----	46.3	1.5	8	-6.5
R12a	48	1	0.0	58.8	66	58.8	10	----	58.9	-0.1	8	-8.1
R13a	49	1	0.0	59.4	66	59.4	10	----	59.4	0.0	8	-8.0
R14a	50	1	0.0	49.8	66	49.8	10	----	48.1	1.7	8	-6.3
R15a	51	1	0.0	60.2	66	60.2	10	----	60.2	0.0	8	-8.0
R16a	52	1	0.0	51.4	66	51.4	10	----	50.7	0.7	8	-7.3
R17a	53	1	0.0	53.1	66	53.1	10	----	52.6	0.5	8	-7.5
R18a	54	1	0.0	62.9	66	62.9	10	----	62.9	0.0	8	-8.0
R19a	55	1	0.0	61.6	66	61.6	10	----	60.4	1.2	8	-6.8
R20a	56	1	0.0	47.7	66	47.7	10	----	46.7	1.0	8	-7.0
LT1a	57	1	0.0	50.9	66	50.9	10	----	50.9	0.0	8	-8.0
LT2a	58	1	0.0	55.2	66	55.2	10	----	55.2	0.0	8	-8.0
NP7/ST1a	59	1	0.0	67.4	66	67.4	10	Snd Lvl	67.4	0.0	8	-8.0
NP9/ST2a	60	1	0.0	56.1	66	56.1	10	----	56.1	0.0	8	-8.0
NP1/ST3a	61	1	0.0	59.0	66	59.0	10	----	59.0	0.0	8	-8.0
NP5/ST4a	62	1	0.0	57.1	66	57.1	10	----	57.0	0.1	8	-7.9
NP2a	63	1	0.0	54.7	66	54.7	10	----	54.7	0.0	8	-8.0
NP3a	64	1	0.0	46.5	66	46.5	10	----	46.5	0.0	8	-8.0
NP4a	65	1	0.0	44.4	66	44.4	10	----	44.3	0.1	8	-7.9
NP6a	66	1	0.0	62.1	66	62.1	10	----	62.1	0.0	8	-8.0
NP8 Roseville Public Cemeterya	67	1	0.0	61.1	66	61.1	10	----	61.1	0.0	8	-8.0
Elementary School 1st Floor	69	1	0.0	53.1	66	53.1	10	----	53.0	0.1	8	-7.9
Elementary School 2nd Floor	70	1	0.0	57.2	66	57.2	10	----	57.1	0.1	8	-7.9

Dwelling Units	**# DUs**	**Noise Reduction**

		Min	Avg	Max
		dB	dB	dB
All Selected	64	-0.1	1.1	9.4
All Impacted	1	0.0	0.0	0.0
All that meet NR Goal	3	8.4	9.1	9.4

TNM Output Files
Future (2025), No Project, with PFE Road

URS SD 21 December 2007
TH/MS TNM 2.5
Calculated with TNM 2.5
RESULTS: SOUND LEVELS
PROJECT/CONTRACT: Riolo Vineyards
RUN: 2025 Existing No Project
BARRIER DESIGN: INPUT HEIGHTS
ATMOSPHERICS: 68 deg F, 50% RH

Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.

Receiver Name	No.	#DUs	Existing LAeq1h	No Barrier LAeq1h Calculated	Crit'n	Increase over existing Calculated	Crit'n Sub'l Inc	Type Impact	With Barrier Calculated LAeq1h	Noise Reduction Calculated	Goal	Calculated minus Goal
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
R01	1	1	0.0	51.1	66	51.1	10	----	48.9	2.2	8	-5.8
R02	2	1	0.0	48.5	66	48.5	10	----	48.3	0.2	8	-7.8
R03	3	1	0.0	48.3	66	48.3	10	----	48.3	0.0	8	-8.0
R04	4	1	0.0	61.3	66	61.3	10	----	61.3	0.0	8	-8.0
R05	5	1	0.0	58.0	66	58.0	10	----	57.9	0.1	8	-7.9
R06	6	1	0.0	57.3	66	57.3	10	----	56.4	0.9	8	-7.1
R07	7	1	0.0	55.3	66	55.3	10	----	52.6	2.7	8	-5.3
R08	8	1	0.0	54.1	66	54.1	10	----	50.5	3.6	8	-4.4
R09	9	1	0.0	45.4	66	45.4	10	----	44.2	1.2	8	-6.8
R10	10	1	0.0	52.9	66	52.9	10	----	48.4	4.5	8	-3.5
R11	11	1	0.0	48.5	66	48.5	10	----	47.3	1.2	8	-6.8
R12	12	1	0.0	61.8	66	61.8	10	----	61.8	0.0	8	-8.0
R13	13	1	0.0	62.1	66	62.1	10	----	52.6	9.5	8	1.5
R14	14	1	0.0	49.7	66	49.7	10	----	48.8	0.9	8	-7.1
R15	15	1	0.0	62.3	66	62.3	10	----	62.2	0.1	8	-7.9
R16	16	1	0.0	51.5	66	51.5	10	----	50.6	0.9	8	-7.1
R17	17	1	0.0	53.4	66	53.4	10	----	48.7	4.7	8	-3.3
R18	18	1	0.0	67.7	66	67.7	10	Snd Lvl	59.3	8.4	8	0.4
R19	19	1	0.0	67.1	66	67.1	10	Snd Lvl	57.7	9.4	8	1.4
R20	20	1	0.0	49.1	66	49.1	10	----	47.9	1.2	8	-6.8
LT1	22	1	0.0	50.1	66	50.1	10	----	50.1	0.0	8	-8.0
LT2	23	1	0.0	54.3	66	54.3	10	----	54.3	0.0	8	-8.0
NP7/ST1	24	1	0.0	69.0	66	69.0	10	Snd Lvl	69.0	0.0	8	-8.0
NP9/ST2	26	1	0.0	60.5	66	60.5	10	----	60.4	0.1	8	-7.9

NP1/ST3	27	1	0.0	60.7	66	60.7	10	----	60.7	0.0	8	-8.0
NP5/ST4	28	1	0.0	57.9	66	57.9	10	----	57.9	0.0	8	-8.0
NP2	29	1	0.0	55.5	66	55.5	10	----	55.5	0.0	8	-8.0
NP3	30	1	0.0	47.2	66	47.2	10	----	47.2	0.0	8	-8.0
NP4	31	1	0.0	45.6	66	45.6	10	----	45.6	0.0	8	-8.0
NP6	32	1	0.0	63.1	66	63.1	10	----	63.0	0.1	8	-7.9
NP8 Roseville Public Cemetery	36	1	0.0	65.1	66	65.1	10	----	65.1	0.0	8	-8.0
R01a	37	1	0.0	53.6	66	53.6	10	----	53.5	0.1	8	-7.9
R02a	38	1	0.0	50.9	66	50.9	10	----	50.9	0.0	8	-8.0
R03a	39	1	0.0	51.3	66	51.3	10	----	51.3	0.0	8	-8.0
R04a	40	1	0.0	62.6	66	62.6	10	----	62.6	0.0	8	-8.0
R05a	41	1	0.0	60.6	66	60.6	10	----	60.6	0.0	8	-8.0
R06a	42	1	0.0	60.8	66	60.8	10	----	60.7	0.1	8	-7.9
R07a	43	1	0.0	59.5	66	59.5	10	----	57.0	2.5	8	-5.5
R08a	44	1	0.0	61.7	66	61.7	10	----	55.2	6.5	8	-1.5
R09a	45	1	0.0	47.5	66	47.5	10	----	47.3	0.2	8	-7.8
R10a	46	1	0.0	55.1	66	55.1	10	----	54.9	0.2	8	-7.8
R11a	47	1	0.0	51.1	66	51.1	10	----	49.6	1.5	8	-6.5
R12a	48	1	0.0	62.1	66	62.1	10	----	62.2	-0.1	8	-8.1
R13a	49	1	0.0	62.8	66	62.8	10	----	62.8	0.0	8	-8.0
R14a	50	1	0.0	53.1	66	53.1	10	----	51.4	1.7	8	-6.3
R15a	51	1	0.0	63.6	66	63.6	10	----	63.6	0.0	8	-8.0
R16a	52	1	0.0	54.4	66	54.4	10	----	53.8	0.6	8	-7.4
R17a	53	1	0.0	56.1	66	56.1	10	----	55.7	0.4	8	-7.6
R18a	54	1	0.0	66.1	66	66.1	10	Snd Lvl	66.1	0.0	8	-8.0
R19a	55	1	0.0	64.7	66	64.7	10	----	63.6	1.1	8	-6.9
R20a	56	1	0.0	50.9	66	50.9	10	----	50.0	0.9	8	-7.1
LT1a	57	1	0.0	54.0	66	54.0	10	----	54.0	0.0	8	-8.0
LT2a	58	1	0.0	58.4	66	58.4	10	----	58.3	0.1	8	-7.9
NP7/ST1a	59	1	0.0	70.6	66	70.6	10	Snd Lvl	70.6	0.0	8	-8.0
NP9/ST2a	60	1	0.0	63.8	66	63.8	10	----	63.8	0.0	8	-8.0
NP1/ST3a	61	1	0.0	62.9	66	62.9	10	----	62.9	0.0	8	-8.0
NP5/ST4a	62	1	0.0	60.3	66	60.3	10	----	60.3	0.0	8	-8.0
NP2a	63	1	0.0	58.5	66	58.5	10	----	58.5	0.0	8	-8.0
NP3a	64	1	0.0	49.9	66	49.9	10	----	49.9	0.0	8	-8.0
NP4a	65	1	0.0	47.7	66	47.7	10	----	47.7	0.0	8	-8.0
NP6a	66	1	0.0	65.6	66	65.6	10	----	65.6	0.0	8	-8.0
NP8 Roseville Public Cemeterya	67	1	0.0	68.8	66	68.8	10	Snd Lvl	68.8	0.0	8	-8.0
Elementary School 1st Floor	69	1	0.0	56.3	66	56.3	10	----	56.3	0.0	8	-8.0
Elementary School 2nd Floor	70	1	0.0	60.3	66	60.3	10	----	60.3	0.0	8	-8.0

Dwelling Units	**# DUs**	**Noise Reduction**

			Min	Avg	Max
			dB	dB	dB
All Selected		64	-0.1	1.1	9.5
All Impacted		6	0.0	3.0	9.4
All that meet NR Goal		3	8.4	9.1	9.5

TNM Output Files
Future (2025), Plus Project, with PFE Road

URS SD 21 December 2007
TH/MS TNM 2.5
Calculated with TNM 2.5
RESULTS: SOUND LEVELS
PROJECT/CONTRACT: Riolo Vineyards
RUN: 2025 Future Plus Project
BARRIER DESIGN: INPUT HEIGHTS
ATMOSPHERICS: 68 deg F, 50% RH

Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.

Receiver Name	No.	#DUs	Existing LAeq1h	No Barrier LAeq1h Calculated	Crit'n	Increase over existing Calculated	Crit'n Sub'l Inc	Type Impact	With Barrier Calculated LAeq1h	Noise Reduction Calculated	Goal	Calculated minus Goal
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
R01	1	1	0.0	51.2	66	51.2	10	----	49.1	2.1	8	-5.9
R02	2	1	0.0	48.7	66	48.7	10	----	48.5	0.2	8	-7.8
R03	3	1	0.0	48.9	66	48.9	10	----	48.8	0.1	8	-7.9
R04	4	1	0.0	62.3	66	62.3	10	----	62.3	0.0	8	-8.0
R05	5	1	0.0	59.0	66	59.0	10	----	58.9	0.1	8	-7.9
R06	6	1	0.0	58.3	66	58.3	10	----	57.3	1.0	8	-7.0
R07	7	1	0.0	56.2	66	56.2	10	----	53.5	2.7	8	-5.3
R08	8	1	0.0	55.0	66	55.0	10	----	51.5	3.5	8	-4.5
R09	9	1	0.0	46.2	66	46.2	10	----	45.0	1.2	8	-6.8
R10	10	1	0.0	53.8	66	53.8	10	----	49.3	4.5	8	-3.5
R11	11	1	0.0	49.3	66	49.3	10	----	48.1	1.2	8	-6.8
R12	12	1	0.0	62.8	66	62.8	10	----	62.8	0.0	8	-8.0
R13	13	1	0.0	63.0	66	63.0	10	----	53.5	9.5	8	1.5
R14	14	1	0.0	50.5	66	50.5	10	----	49.6	0.9	8	-7.1
R15	15	1	0.0	63.3	66	63.3	10	----	63.2	0.1	8	-7.9
R16	16	1	0.0	52.1	66	52.1	10	----	51.3	0.8	8	-7.2
R17	17	1	0.0	53.8	66	53.8	10	----	49.4	4.4	8	-3.6
R18	18	1	0.0	67.7	66	67.7	10	Snd Lvl	59.3	8.4	8	0.4
R19	19	1	0.0	67.1	66	67.1	10	Snd Lvl	57.7	9.4	8	1.4
R20	20	1	0.0	49.2	66	49.2	10	----	48.0	1.2	8	-6.8
LT1	22	1	0.0	50.9	66	50.9	10	----	50.9	0.0	8	-8.0
LT2	23	1	0.0	54.3	66	54.3	10	----	54.3	0.0	8	-8.0
NP7/ST1	24	1	0.0	69.0	66	69.0	10	Snd Lvl	69.0	0.0	8	-8.0
NP9/ST2	26	1	0.0	60.4	66	60.4	10	----	60.4	0.0	8	-8.0

NP1/ST3	27	1	0.0	61.4	66	61.4	10	----	61.4	0.0	8	-8.0
NP5/ST4	28	1	0.0	58.8	66	58.8	10	----	58.7	0.1	8	-7.9
NP2	29	1	0.0	56.3	66	56.3	10	----	56.3	0.0	8	-8.0
NP3	30	1	0.0	48.0	66	48.0	10	----	48.0	0.0	8	-8.0
NP4	31	1	0.0	46.3	66	46.3	10	----	46.3	0.0	8	-8.0
NP6	32	1	0.0	63.3	66	63.3	10	----	63.3	0.0	8	-8.0
NP8 Roseville Public Cemetery	36	1	0.0	65.0	66	65.0	10	----	65.0	0.0	8	-8.0
R01a	37	1	0.0	53.7	66	53.7	10	----	53.6	0.1	8	-7.9
R02a	38	1	0.0	51.2	66	51.2	10	----	51.2	0.0	8	-8.0
R03a	39	1	0.0	51.9	66	51.9	10	----	51.9	0.0	8	-8.0
R04a	40	1	0.0	63.6	66	63.6	10	----	63.6	0.0	8	-8.0
R05a	42	1	0.0	61.6	66	61.6	10	----	61.6	0.0	8	-8.0
R06a	43	1	0.0	61.7	66	61.7	10	----	61.7	0.0	8	-8.0
R07a	44	1	0.0	60.5	66	60.5	10	----	58.0	2.5	8	-5.5
R08a	45	1	0.0	62.7	66	62.7	10	----	56.1	6.6	8	-1.4
R09a	46	1	0.0	48.4	66	48.4	10	----	48.2	0.2	8	-7.8
R10a	47	1	0.0	56.0	66	56.0	10	----	55.8	0.2	8	-7.8
R11a	48	1	0.0	52.1	66	52.1	10	----	50.5	1.6	8	-6.4
R12a	49	1	0.0	63.1	66	63.1	10	----	63.2	-0.1	8	-8.1
R13a	50	1	0.0	63.8	66	63.8	10	----	63.7	0.1	8	-7.9
R14a	51	1	0.0	54.0	66	54.0	10	----	52.2	1.8	8	-6.2
R15a	52	1	0.0	64.5	66	64.5	10	----	64.5	0.0	8	-8.0
R16a	53	1	0.0	55.1	66	55.1	10	----	54.5	0.6	8	-7.4
R17a	54	1	0.0	56.7	66	56.7	10	----	56.3	0.4	8	-7.6
R18a	55	1	0.0	66.1	66	66.1	10	Snd Lvl	66.1	0.0	8	-8.0
R19a	56	1	0.0	64.7	66	64.7	10	----	63.5	1.2	8	-6.8
R20a	57	1	0.0	51.1	66	51.1	10	----	50.2	0.9	8	-7.1
LT1a	58	1	0.0	55.0	66	55.0	10	----	55.0	0.0	8	-8.0
LT2a	59	1	0.0	58.4	66	58.4	10	----	58.3	0.1	8	-7.9
NP7/ST1a	60	1	0.0	70.6	66	70.6	10	Snd Lvl	70.6	0.0	8	-8.0
NP9/ST2a	61	1	0.0	63.7	66	63.7	10	----	63.7	0.0	8	-8.0
NP1/ST3a	62	1	0.0	63.6	66	63.6	10	----	63.6	0.0	8	-8.0
NP5/ST4a	63	1	0.0	61.2	66	61.2	10	----	61.2	0.0	8	-8.0
NP2a	64	1	0.0	59.3	66	59.3	10	----	59.3	0.0	8	-8.0
NP3a	65	1	0.0	50.8	66	50.8	10	----	50.8	0.0	8	-8.0
NP4a	66	1	0.0	48.5	66	48.5	10	----	48.4	0.1	8	-7.9
NP6a	67	1	0.0	65.9	66	65.9	10	----	65.9	0.0	8	-8.0
NP8 Roseville Public Cemeterya	68	1	0.0	68.7	66	68.7	10	Snd Lvl	68.7	0.0	8	-8.0
Elementary School 1st Floor	71	1	0.0	57.3	66	57.3	10	----	57.2	0.1	8	-7.9
Elementary School 2nd Floor	73	1	0.0	61.3	66	61.3	10	----	61.3	0.0	8	-8.0

Dwelling Units	**# DUs**	**Noise Reduction**

		Min	Avg	Max
		dB	dB	dB
All Selected	64	-0.1	1.1	9.5
All Impacted	6	0.0	3.0	9.4
All that meet NR Goal	3	8.4	9.1	9.5

TNM Output Files
Future (2025), No Project, without PFE Road

URS SD 21 December 2007
TH/MS TNM 2.5
Calculated with TNM 2.5
RESULTS: SOUND LEVELS
PROJECT/CONTRACT: Riolo Vineyards
RUN: 2025 No Build No PFE
BARRIER DESIGN: INPUT HEIGHTS
ATMOSPHERICS: 68 deg F, 50% RH

Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.

Receiver Name	No.	#DUs	Existing LAeq1h	No Barrier LAeq1h Calculated	Crit'n	Increase over existing Calculated	Crit'n Sub'l Inc	Type Impact	With Barrier Calculated LAeq1h	Noise Reduction Calculated	Goal	Calculated minus Goal
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
R01	1	1	0.0	51.5	66	51.5	10	----	49.4	2.1	8	-5.9
R02	2	1	0.0	49.0	66	49.0	10	----	48.8	0.2	8	-7.8
R03	3	1	0.0	49.0	66	49.0	10	----	49.0	0.0	8	-8.0
R04	4	1	0.0	62.3	66	62.3	10	----	62.3	0.0	8	-8.0
R05	5	1	0.0	59.0	66	59.0	10	----	58.9	0.1	8	-7.9
R06	6	1	0.0	58.3	66	58.3	10	----	57.3	1.0	8	-7.0
R07	7	1	0.0	56.2	66	56.2	10	----	53.5	2.7	8	-5.3
R08	8	1	0.0	55.0	66	55.0	10	----	51.5	3.5	8	-4.5
R09	9	1	0.0	46.2	66	46.2	10	----	45.1	1.1	8	-6.9
R10	10	1	0.0	53.8	66	53.8	10	----	49.3	4.5	8	-3.5
R11	11	1	0.0	49.3	66	49.3	10	----	48.1	1.2	8	-6.8
R12	12	1	0.0	62.8	66	62.8	10	----	62.8	0.0	8	-8.0
R13	13	1	0.0	63.0	66	63.0	10	----	53.5	9.5	8	1.5
R14	14	1	0.0	50.6	66	50.6	10	----	49.7	0.9	8	-7.1
R15	15	1	0.0	63.3	66	63.3	10	----	63.3	0.0	8	-8.0
R16	16	1	0.0	52.2	66	52.2	10	----	51.3	0.9	8	-7.1
R17	17	1	0.0	53.9	66	53.9	10	----	49.5	4.4	8	-3.6
R18	18	1	0.0	67.8	66	67.8	10	Snd Lvl	59.4	8.4	8	0.4
R19	19	1	0.0	67.1	66	67.1	10	Snd Lvl	57.8	9.3	8	1.3
R20	20	1	0.0	49.4	66	49.4	10	----	48.2	1.2	8	-6.8
LT1	22	1	0.0	51.0	66	51.0	10	----	51.0	0.0	8	-8.0
LT2	23	1	0.0	54.4	66	54.4	10	----	54.4	0.0	8	-8.0
NP7/ST1	24	1	0.0	69.1	66	69.1	10	Snd Lvl	69.1	0.0	8	-8.0
NP9/ST2	26	1	0.0	60.8	66	60.8	10	----	60.8	0.0	8	-8.0

NP1/ST3	27	1	0.0	61.4	66	61.4	10	----	61.4	0.0	8	-8.0
NP5/ST4	28	1	0.0	58.8	66	58.8	10	----	58.8	0.0	8	-8.0
NP2	29	1	0.0	56.3	66	56.3	10	----	56.3	0.0	8	-8.0
NP3	30	1	0.0	48.1	66	48.1	10	----	48.0	0.1	8	-7.9
NP4	31	1	0.0	46.4	66	46.4	10	----	46.4	0.0	8	-8.0
NP6	32	1	0.0	63.8	66	63.8	10	----	63.7	0.1	8	-7.9
NP8 Roseville Public Cemetery	36	1	0.0	65.4	66	65.4	10	----	65.4	0.0	8	-8.0
R01a	37	1	0.0	54.0	66	54.0	10	----	53.9	0.1	8	-7.9
R02a	38	1	0.0	51.4	66	51.4	10	----	51.4	0.0	8	-8.0
R03a	39	1	0.0	52.1	66	52.1	10	----	52.1	0.0	8	-8.0
R04a	40	1	0.0	63.6	66	63.6	10	----	63.6	0.0	8	-8.0
R05a	41	1	0.0	61.6	66	61.6	10	----	61.6	0.0	8	-8.0
R06a	42	1	0.0	61.8	66	61.8	10	----	61.7	0.1	8	-7.9
R07a	43	1	0.0	60.5	66	60.5	10	----	58.0	2.5	8	-5.5
R08a	44	1	0.0	62.7	66	62.7	10	----	56.1	6.6	8	-1.4
R09a	45	1	0.0	48.4	66	48.4	10	----	48.2	0.2	8	-7.8
R10a	46	1	0.0	56.0	66	56.0	10	----	55.8	0.2	8	-7.8
R11a	47	1	0.0	52.1	66	52.1	10	----	50.6	1.5	8	-6.5
R12a	48	1	0.0	63.1	66	63.1	10	----	63.2	-0.1	8	-8.1
R13a	49	1	0.0	63.8	66	63.8	10	----	63.7	0.1	8	-7.9
R14a	50	1	0.0	54.0	66	54.0	10	----	52.3	1.7	8	-6.3
R15a	51	1	0.0	64.5	66	64.5	10	----	64.5	0.0	8	-8.0
R16a	52	1	0.0	55.2	66	55.2	10	----	54.6	0.6	8	-7.4
R17a	53	1	0.0	56.8	66	56.8	10	----	56.4	0.4	8	-7.6
R18a	54	1	0.0	66.2	66	66.2	10	Snd Lvl	66.2	0.0	8	-8.0
R19a	55	1	0.0	64.8	66	64.8	10	----	63.6	1.2	8	-6.8
R20a	56	1	0.0	51.2	66	51.2	10	----	50.3	0.9	8	-7.1
LT1a	57	1	0.0	55.0	66	55.0	10	----	55.0	0.0	8	-8.0
LT2a	58	1	0.0	58.4	66	58.4	10	----	58.4	0.0	8	-8.0
NP7/ST1a	59	1	0.0	70.7	66	70.7	10	Snd Lvl	70.7	0.0	8	-8.0
NP9/ST2a	60	1	0.0	64.1	66	64.1	10	----	64.1	0.0	8	-8.0
NP1/ST3a	61	1	0.0	63.7	66	63.7	10	----	63.7	0.0	8	-8.0
NP5/ST4a	62	1	0.0	61.3	66	61.3	10	----	61.3	0.0	8	-8.0
NP2a	63	1	0.0	59.4	66	59.4	10	----	59.4	0.0	8	-8.0
NP3a	64	1	0.0	50.8	66	50.8	10	----	50.8	0.0	8	-8.0
NP4a	65	1	0.0	48.6	66	48.6	10	----	48.5	0.1	8	-7.9
NP6a	66	1	0.0	66.2	66	66.2	10	Snd Lvl	66.2	0.0	8	-8.0
NP8 Roseville Public Cemeterya	67	1	0.0	69.1	66	69.1	10	Snd Lvl	69.1	0.0	8	-8.0
Elementary School 1st Floor	69	1	0.0	57.3	66	57.3	10	----	57.2	0.1	8	-7.9
Elementary School 2nd Floor	70	1	0.0	61.3	66	61.3	10	----	61.3	0.0	8	-8.0

Dwelling Units	**# DUs**	**Noise Reduction**

			Min	Avg	Max
			dB	dB	dB
All Selected		64	-0.1	1.1	9.5
All Impacted		7	0.0	2.5	9.3
All that meet NR Goal		3	8.4	9.1	9.5

TNM Output Files
Future (2025), Plus Project, without PFE Road

URS SD 21 December 2007
TH/MS TNM 2.5
Calculated with TNM 2.5
RESULTS: SOUND LEVELS
PROJECT/CONTRACT: Riolo Vineyards
RUN: 2025 Build No PFE
BARRIER DESIGN: INPUT HEIGHTS
ATMOSPHERICS: 68 deg F, 50% RH

Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.

Receiver Name	No.	#DUs	Existing LAeq1h	No Barrier LAeq1h Calculated	Crit'n	Increase over existing Calculated	Crit'n Sub'l Inc	Type Impact	With Barrier Calculated LAeq1h	Noise Reduction Calculated	Goal	Calculated minus Goal
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
R01	1	1	0.0	51.3	66	51.3	10	----	49.2	2.1	8	-5.9
R02	2	1	0.0	48.7	66	48.7	10	----	48.5	0.2	8	-7.8
R03	3	1	0.0	48.5	66	48.5	10	----	48.4	0.1	8	-7.9
R04	4	1	0.0	61.3	66	61.3	10	----	61.3	0.0	8	-8.0
R05	5	1	0.0	58.0	66	58.0	10	----	57.9	0.1	8	-7.9
R06	6	1	0.0	57.3	66	57.3	10	----	56.4	0.9	8	-7.1
R07	7	1	0.0	55.3	66	55.3	10	----	52.6	2.7	8	-5.3
R08	8	1	0.0	54.1	66	54.1	10	----	50.6	3.5	8	-4.5
R09	9	1	0.0	45.4	66	45.4	10	----	44.3	1.1	8	-6.9
R10	10	1	0.0	52.9	66	52.9	10	----	48.4	4.5	8	-3.5
R11	11	1	0.0	48.5	66	48.5	10	----	47.3	1.2	8	-6.8
R12	12	1	0.0	61.8	66	61.8	10	----	61.8	0.0	8	-8.0
R13	13	1	0.0	62.1	66	62.1	10	----	52.6	9.5	8	1.5
R14	14	1	0.0	49.8	66	49.8	10	----	48.9	0.9	8	-7.1
R15	15	1	0.0	62.3	66	62.3	10	----	62.3	0.0	8	-8.0
R16	16	1	0.0	51.7	66	51.7	10	----	50.7	1.0	8	-7.0
R17	17	1	0.0	53.5	66	53.5	10	----	48.7	4.8	8	-3.2
R18	18	1	0.0	67.8	66	67.8	10	Snd Lvl	59.4	8.4	8	0.4
R19	19	1	0.0	67.1	66	67.1	10	Snd Lvl	57.8	9.3	8	1.3
R20	20	1	0.0	49.2	66	49.2	10	----	48.0	1.2	8	-6.8
LT1	22	1	0.0	50.2	66	50.2	10	----	50.2	0.0	8	-8.0
LT2	23	1	0.0	54.4	66	54.4	10	----	54.4	0.0	8	-8.0
NP7/ST1	24	1	0.0	69.1	66	69.1	10	Snd Lvl	69.1	0.0	8	-8.0
NP9/ST2	26	1	0.0	60.7	66	60.7	10	----	60.7	0.0	8	-8.0

NP1/ST3	27	1	0.0	60.7	66	60.7	10	----	60.7	0.0	8	-8.0
NP5/ST4	28	1	0.0	58.0	66	58.0	10	----	57.9	0.1	8	-7.9
NP2	29	1	0.0	55.5	66	55.5	10	----	55.5	0.0	8	-8.0
NP3	30	1	0.0	47.2	66	47.2	10	----	47.2	0.0	8	-8.0
NP4	31	1	0.0	45.7	66	45.7	10	----	45.7	0.0	8	-8.0
NP6	32	1	0.0	63.5	66	63.5	10	----	63.5	0.0	8	-8.0
NP8 Roseville Public Cemetery	36	1	0.0	65.3	66	65.3	10	----	65.3	0.0	8	-8.0
R01a	37	1	0.0	54.1	66	54.1	10	----	54.0	0.1	8	-7.9
R02a	38	1	0.0	51.3	66	51.3	10	----	51.3	0.0	8	-8.0
R03a	39	1	0.0	51.7	66	51.7	10	----	51.7	0.0	8	-8.0
R04a	40	1	0.0	62.6	66	62.6	10	----	62.6	0.0	8	-8.0
R05a	41	1	0.0	60.9	66	60.9	10	----	60.9	0.0	8	-8.0
R06a	42	1	0.0	61.1	66	61.1	10	----	61.0	0.1	8	-7.9
R07a	43	1	0.0	59.9	66	59.9	10	----	57.9	2.0	8	-6.0
R08a	44	1	0.0	62.1	66	62.1	10	----	56.1	6.0	8	-2.0
R09a	45	1	0.0	47.8	66	47.8	10	----	47.6	0.2	8	-7.8
R10a	46	1	0.0	55.4	66	55.4	10	----	55.2	0.2	8	-7.8
R11a	47	1	0.0	51.5	66	51.5	10	----	50.1	1.4	8	-6.6
R12a	48	1	0.0	62.3	66	62.3	10	----	62.4	-0.1	8	-8.1
R13a	49	1	0.0	62.9	66	62.9	10	----	62.8	0.1	8	-7.9
R14a	50	1	0.0	53.5	66	53.5	10	----	51.7	1.8	8	-6.2
R15a	51	1	0.0	63.6	66	63.6	10	----	63.6	0.0	8	-8.0
R16a	52	1	0.0	54.7	66	54.7	10	----	54.3	0.4	8	-7.6
R17a	53	1	0.0	56.4	66	56.4	10	----	56.1	0.3	8	-7.7
R18a	54	1	0.0	66.5	66	66.5	10	Snd Lvl	66.4	0.1	8	-7.9
R19a	55	1	0.0	65.0	66	65.0	10	----	64.2	0.8	8	-7.2
R20a	56	1	0.0	51.4	66	51.4	10	----	50.4	1.0	8	-7.0
LT1a	57	1	0.0	54.3	66	54.3	10	----	54.3	0.0	8	-8.0
LT2a	58	1	0.0	58.7	66	58.7	10	----	58.7	0.0	8	-8.0
NP7/ST1a	59	1	0.0	70.7	66	70.7	10	Snd Lvl	70.7	0.0	8	-8.0
NP9/ST2a	60	1	0.0	64.4	66	64.4	10	----	64.4	0.0	8	-8.0
NP1/ST3a	61	1	0.0	63.2	66	63.2	10	----	63.2	0.0	8	-8.0
NP5/ST4a	62	1	0.0	60.5	66	60.5	10	----	60.5	0.0	8	-8.0
NP2a	63	1	0.0	58.6	66	58.6	10	----	58.6	0.0	8	-8.0
NP3a	64	1	0.0	50.2	66	50.2	10	----	50.2	0.0	8	-8.0
NP4a	65	1	0.0	48.1	66	48.1	10	----	48.0	0.1	8	-7.9
NP6a	66	1	0.0	66.2	66	66.2	10	Snd Lvl	66.2	0.0	8	-8.0
NP8 Roseville Public Cemeterya	67	1	0.0	69.3	66	69.3	10	Snd Lvl	69.3	0.0	8	-8.0
Elementary School 1st Floor	69	1	0.0	56.3	66	56.3	10	----	56.3	0.0	8	-8.0
Elementary School 2nd Floor	70	1	0.0	60.7	66	60.7	10	----	60.6	0.1	8	-7.9

Dwelling Units	**# DUs**	**Noise Reduction**

		Min	Avg	Max
		dB	dB	dB
All Selected	64	-0.1	1.0	9.5
All Impacted	7	0.0	2.5	9.3
All that meet NR Goal	3	8.4	9.1	9.5