

# **APPENDIX F**

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Noise Data

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Existing Traffic Noise Prediction

**Traffic Noise Prediction Model, (FHWA RD-77-108)**  
**Model Input Sheet**



**Project Name :** 60517490 - Hidden Falls Regional Park  
**Project Number :** 60517490  
**Modeling Condition :** Existing (Weekday)  
**Ground Type :** Hard  
**Metric (L<sub>eq</sub>, L<sub>dn</sub>, CNEL) :** CNEL  
**K Factor :** NA  
**Traffic Desc. (Peak or ADT) :** ADT

Segment	Roadway	Segment		Traffic Vol.	Speed (Mph)	Distance to CL	% Autos	%MT	% HT	Day %	Eve %	Night %	Offset (dB)
		From	To										
1	Bell Rd	Lone Star Rd	Cramer Rd	789	25	50	98	1	1	87	0	13	
2	Bell Rd	Joeger Rd	Cramer Rd	1800	25	50	98	1	1	87	0	13	
3	Cramer Rd	Bell Rd	SR 49	603	25	50	98	1	1	87	0	13	
4	Lone Star Rd	Bell Rd	SR 49	1435	25	50	98	1	1	87	0	13	
5	Auburn Valley Road	Fairway Court	Curtola Ranch Road	319	25	50	98	1	1	87	0	13	

**Traffic Noise Prediction Model, (FHWA RD-77-108)**  
**Predicted Noise Levels**



**Project Name :** 60517490 - Hidden Falls Regional Park  
**Project Number :** 60517490  
**Modeling Condition :** Existing (Weekday)  
**Metric (Leq, Ldn, CNEL) :** CNEL

Segment	Roadway	Segment		Noise Levels, dB CNEL				Distance to Traffic Noise Contours, Feet				
		From	To	Auto	MT	HT	Total	70 dB	65 dB	60 dB	55 dB	50 dB
1	Bell Rd	Lone Star Rd	Cramer Rd	48.5	40.2	47.9	51.6	1	2	7	23	72
2	Bell Rd	Joeger Rd	Cramer Rd	52.1	43.8	51.4	55.1	2	5	16	52	163
3	Cramer Rd	Bell Rd	SR 49	47.4	39.1	46.7	50.4	1	2	5	17	55
4	Lone Star Rd	Bell Rd	SR 49	51.1	42.8	50.5	54.2	1	4	13	41	130
5	Auburn Valley Road	Fairway Court	Curtola Ranch Roa	44.6	36.3	43.9	47.6	0	1	3	9	29

**Traffic Noise Prediction Model, (FHWA RD-77-108)**  
**Model Input Sheet**



**Project Name :** 60517490 - Hidden Falls Regional Park  
**Project Number :** 60517490  
**Modeling Condition :** Existing (Weekend)  
**Ground Type :** Hard  
**Metric (L<sub>eq</sub>, L<sub>dn</sub>, CNEL) :** CNEL  
**K Factor :** NA  
**Traffic Desc. (Peak or ADT) :** ADT

Segment	Roadway	Segment		Traffic Vol.	Speed (Mph)	Distance to CL	% Autos	%MT	% HT	Day %	Eve %	Night %	Offset (dB)
		From	To										
1	Bell Rd	Lone Star Rd	Cramer Rd	698	25	50	98	1	1	87	0	13	
2	Bell Rd	Joeger Rd	Cramer Rd	1709	25	50	98	1	1	87	0	13	
3	Cramer Rd	Bell Rd	SR 49	592	25	50	98	1	1	87	0	13	
4	Lone Star Rd	Bell Rd	SR 49	1322	25	50	98	1	1	87	0	13	
5	Auburn Valley Road	Fairway Court	Curtola Ranch Road	431	25	50	98	1	1	87	0	13	

**Traffic Noise Prediction Model, (FHWA RD-77-108)**  
**Predicted Noise Levels**



**Project Name :** 60517490 - Hidden Falls Regional Park  
**Project Number :** 60517490  
**Modeling Condition :** Existing (Weekend)  
**Metric (Leq, Ldn, CNEL) :** CNEL

Segment	Roadway	Segment		Noise Levels, dB CNEL				Distance to Traffic Noise Contours, Feet				
		From	To	Auto	MT	HT	Total	70 dB	65 dB	60 dB	55 dB	50 dB
1	Bell Rd	Lone Star Rd	Cramer Rd	48.0	39.7	47.3	51.0	1	2	6	20	63
2	Bell Rd	Joeger Rd	Cramer Rd	51.9	43.6	51.2	54.9	2	5	15	49	155
3	Cramer Rd	Bell Rd	SR 49	47.3	39.0	46.6	50.3	1	2	5	17	54
4	Lone Star Rd	Bell Rd	SR 49	50.8	42.5	50.1	53.8	1	4	12	38	120
5	Auburn Valley Road	Fairway Court	Curtola Ranch Roa	45.9	37.6	45.2	48.9	0	1	4	12	39

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Long-Term 24 Hour Continuous Noise Monitoring

**Long-Term 24 Hour Continuous Noise Monitoring**  
LT-01-Ldn



**Project:** Hidden Falls Regional Park  
**Date:** **Wednesday, May 22, 2019** to **Thursday, May 23, 2019**  
**Site:** By Residence at 6525 Curtola Ranch Rd

Hour	Leq	Lmax	L50	L90		Averages			
						Leq	Lmax	L50	L90
18:00	44.4	73.2	39.4	35.6					
19:00	41.8	69.1	36.2	33.4	Daytime (7 a.m. - 10 p.m.)	48.5	73.1	40.0	35.5
20:00	40.9	66.9	36.1	33.1	Nighttime (10 p.m. - 7 a.m.)	42.0	50.7	33.2	31.7
21:00	35.2	68.8	35.0	32.5					
22:00	34.5	49.9	32.8	31.7					
23:00	34.1	48.9	33.2	32.1					
0:00	32.6	53.4	32.4	31.3					
1:00	33.3	55.0	31.6	30.6					
2:00	31.7	48.2	32.4	31.3	Daytime (7 a.m. - 10 p.m.)	53.3	84.3	43.4	39.1
3:00	31.6	35.6	31.6	31.1	Nighttime (10 p.m. - 7 a.m.)	50.2	63.8	41.9	36.7
4:00	37.5	43.6	31.3	30.3					
5:00	43.3	63.8	31.6	30.5					
6:00	50.2	57.8	41.9	36.7					
7:00	47.5	76.7	43.4	39.1					
8:00	52.9	73.5	40.7	36.3					
9:00	49.8	79.8	42.9	37.5					
10:00	48.8	77.2	40.2	36.3					
11:00	46.9	75.4	42.3	36.8					
12:00	49.1	63.5	43.3	37.3					
13:00	44.9	78.3	42.0	37.2					
14:00	43.9	66.2	40.0	36.0					
15:00	48.6	69.2	38.4	34.4					
16:00	53.3	73.9	38.0	33.6					
17:00	50.7	84.3	42.2	33.7					
						<b>Uppermost-Level</b>			
						<b>Leq</b>	<b>Lmax</b>	<b>L50</b>	<b>L90</b>
						<b>Percentage of Energy</b>			
						Daytime	88%		
						Nighttime	12%		
						<b>Calculated L<sub>dn</sub>, dBA</b>			
						50.2			



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Noise Prediction Parking Lot Noise Prediction

**Project-Generated Parking Lot Noise Prediction Model**  
**Hidden Falls Regional Park**



**Ref SEL: 71**

**Metric: Leq**

<b>Description</b>	<b># of Stalls</b>	<b>Trip Multiplier</b>	<b>Trips /Period</b>	<b>Lp @ 50'</b>	<b>Distance to Rec.</b>	<b>Shielding Offset</b>	<b>Lp at Rec.</b>
Mears Place	26	4	104	55.6	315		39.6
Curtola Phase 1/2	18	4	72	54.0	450		34.9
Curtola Phase 4	115	4	460	62.0	350		45.1
Twilight	42	4	168	57.7	1300		29.4

**Combined Noise Level: 46.6 dBA Leq**

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## Project-Generated Construction Source Noise Prediction

Appendix X2  
**Project-Generated Construction Source Noise Prediction Model**  
 Hidden Falls Regional Park



Location	Distance to Nearest Receiver in feet	Combined Predicted Noise Level (L <sub>eq</sub> dBA)	Assumptions:	Reference Emission Noise Levels (L <sub>max</sub> ) at 50 feet <sup>1</sup>	Usage Factor <sup>1</sup>
Threshold*	741	55.0	<b>Dump Truck</b>	84	0.4
	50	84.3	<b>Front End Loader</b>	80	0.4
	60	82.3	<b>Grader</b>	85	0.4
	150	72.3			
	200	69.2			
	250	66.8			
	300	64.8			
	350	63.1	<b>Ground Type</b>	Soft	
	400	61.7	<b>Ground Factor</b>	0.50	
	450	60.4			
	500	59.3			
	550	58.2			
	600	57.3			
			<b>Predicted Noise Level <sup>2</sup></b>	<b>L<sub>eq</sub> dBA at 50 feet<sup>2</sup></b>	
			<b>Dump Truck</b>	80.0	
			<b>Front End Loader</b>	76.0	
			<b>Grader</b>	81.0	
			<b>Combined Predicted Noise Level (L<sub>eq</sub> dBA at 50 feet)</b>		
			84.3		

Sources:

<sup>1</sup> Obtained from the FHWA Roadway Construction Noise Model, January 2006.

<sup>2</sup> Based on the following from the Federal Transit Noise and Vibration Impact Assessment, 2006.

$$L_{eq}(\text{equip}) = E.L. + 10 \cdot \log(\text{U.F.}) - 20 \cdot \log(D/50) - 10 \cdot G \cdot \log(D/50)$$

Where: E.L. = Emission Level;

U.F. = Usage Factor;

G = Constant that accounts for topography and ground effects; and

D = Distance from source to receiver.

\*Project specific threshold

Day/Night Energy

Site(s)	Roadway(s)	Date		% Day/Night Split		Day/Night Split	
		From	To	Day	Night	Day	Night
LT-01	By Residence at 6525 Curtola Ranch Rd	Wednesday, May 22, 2019	Thursday, May 23, 2019	88%	12%	88	12

Measurement Summary

Measurement Site	Address	Date		Start Time	Duration	Ldn	Daytime					Nighttime			
		From	To				Leq	Lmax	L10	L50	L90	Leq	Lmax	L50	L90
LT-01	By Residence at 6525 Curtola Ranch Rd	Wednesday, May 22, 2019	Thursday, May 23, 2019	18:00	24 Hour	50.2	48.5	73.1	73.1	40.0	35.5	42.0	50.7	33.2	31.7
ST-01	Front Yard, 5345 Bell Road, just south of 5355 Bell Road	Wednesday, May 22, 2019		16:50	0:15	NA	40.0	53.5	46.7	38.3	36.5	NA	NA	NA	NA
ST-02	Garden Bar Road, West of Coon Creek	Thursday, May 23, 2019		11:48	0:10	NA	51.5	74.3	63.5	36.6	33.6	NA	NA	NA	NA

**Appendix F**  
**Project-Generated Parking Lot Noise Prediction Model**  
**Hidden Falls Regional Park**



**Ref SEL: 71**

**Metric: Leq**

<b>Description</b>	<b># of Stalls</b>	<b>Trip Multiplier</b>	<b>Trips /Period</b>	<b>Lp @ 50'</b>	<b>Distance to Rec.</b>	<b>Shielding</b>	
						<b>Offset</b>	<b>Lp at Rec.</b>
Mears Place	26	2	52	52.6	315		36.6
Curtola Phase 1/2	18	2	36	51.0	450		31.9
Curtola Phase 4	115	2	230	59.0	350		42.1
Twilight	42	2	84	54.6	1300		26.3

**Combined Noise Level: 43.6 dBA Leq**

**Appendix B**  
**Traffic Noise Prediction Model, (FHWA RD-77-108)**  
**Model Input Sheet**



**Project Name :** Hidden Falls Regional Park  
**Project Number :**  
**Modeling Condition :** Project Traffic  
**Ground Type :** Soft  
**Metric (L<sub>eq</sub>, L<sub>dn</sub>, CNEL) :** Leq

**K Factor :**  
**Traffic Desc. (Peak or ADT) :** Peak

Segment	Roadway	From	Segment To	Traffic Vol.	Speed (Mph)	Distance to CL	% Autos	%MT	% HT	Day %	Eve %	Night %	Offset (dB)
1	Twilight Access Road	Bell Road	Parking Lot	63	25	40	100			100		0	



**Appendix B**  
**Traffic Noise Prediction Model, (FHWA RD-77-108)**  
**Predicted Noise Levels**



**Project Name :** Hidden Falls Regional Park  
**Project Number :**  
**Modeling Condition :** Project Traffic  
**Metric (Leq, Ldn, CNEL) :** Leq

Segment	Roadway	Segment		Noise Levels, dB Leq				Distance to Traffic Noise Contours, Feet				
		From	To	Auto	MT	HT	Total	70 dB	65 dB	60 dB	55 dB	50 dB
1	Twilight Access Road	Bell Road	Parking Lot	48.3	0.0	0.0	48.3	1	3	7	14	31

**Appendix X2**  
**Project-Generated Construction Source Vibration Prediction Model**  
**Hidden Falls Regional Park**



Location	Distance to Nearest Receiver in feet	Predicted Vibration Level (PPV)		Predicted Vibration Level (VdB)		Equipment	Reference Distance	PPV at	Approximate
		Pile Driver	Trucks	Pile Driver	Trucks			25 feet (in/sec) <sup>1</sup>	Lv (VdB) at 25 feet <sup>2</sup>
CA Threshold (0.08 PPV)	60	0.408	0.020			Pile Driver	25	1.518	112
CA Threshold (80VdB)	60			100	74	Trucks	25	0.076	86

Notes:

<sup>1</sup> Where PPV is the peak particle velocity

<sup>2</sup> Where Lv is the RMS velocity expressed in vibration decibels (VdB), assuming a crest factor of 4.

Source: Caltrans 2002, FTA 2006

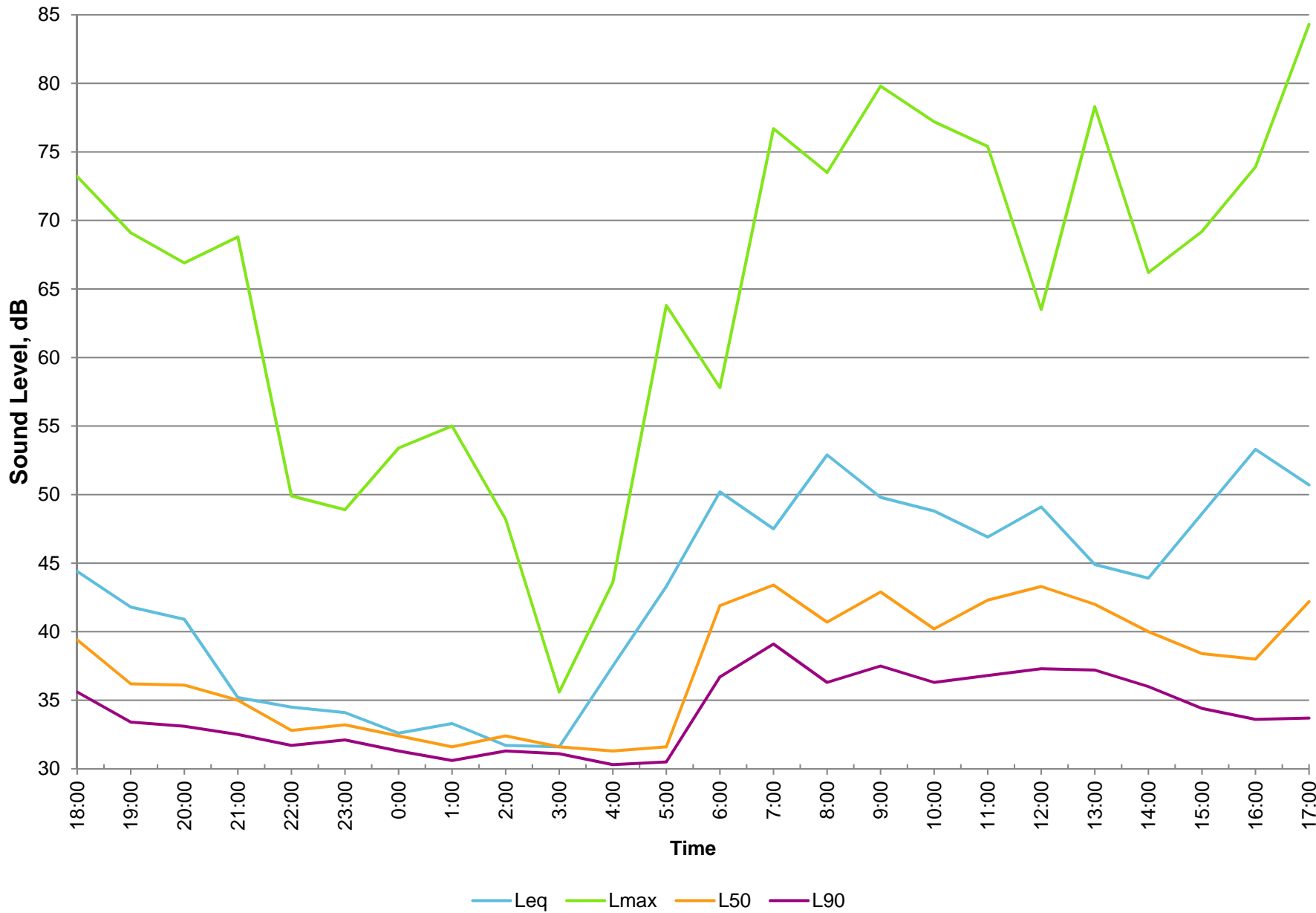
**Long-Term 24 Hour Continuous Noise Monitoring**  
LT-01-Ldn



**Project:** Hidden Falls Regional Park  
**Date:** **Wednesday, May 22, 2019** to **Thursday, May 23, 2019**  
**Site:** By Residence at 6525 Curtola Ranch Rd

Hour	Leq	Lmax	L50	L90		Averages			
						Leq	Lmax	L50	L90
18:00	44.4	73.2	39.4	35.6					
19:00	41.8	69.1	36.2	33.4	Daytime (7 a.m. - 10 p.m.)	48.5	73.1	40.0	35.5
20:00	40.9	66.9	36.1	33.1	Nighttime (10 p.m. - 7 a.m.)	42.0	50.7	33.2	31.7
21:00	35.2	68.8	35.0	32.5					
22:00	34.5	49.9	32.8	31.7					
23:00	34.1	48.9	33.2	32.1					
0:00	32.6	53.4	32.4	31.3					
1:00	33.3	55.0	31.6	30.6					
2:00	31.7	48.2	32.4	31.3	Daytime (7 a.m. - 10 p.m.)	53.3	84.3	43.4	39.1
3:00	31.6	35.6	31.6	31.1	Nighttime (10 p.m. - 7 a.m.)	50.2	63.8	41.9	36.7
4:00	37.5	43.6	31.3	30.3					
5:00	43.3	63.8	31.6	30.5					
6:00	50.2	57.8	41.9	36.7					
7:00	47.5	76.7	43.4	39.1					
8:00	52.9	73.5	40.7	36.3					
9:00	49.8	79.8	42.9	37.5					
10:00	48.8	77.2	40.2	36.3					
11:00	46.9	75.4	42.3	36.8					
12:00	49.1	63.5	43.3	37.3					
13:00	44.9	78.3	42.0	37.2					
14:00	43.9	66.2	40.0	36.0					
15:00	48.6	69.2	38.4	34.4					
16:00	53.3	73.9	38.0	33.6					
17:00	50.7	84.3	42.2	33.7					
						<b>Uppermost-Level</b>			
						<b>Leq</b>	<b>Lmax</b>	<b>L50</b>	<b>L90</b>
						<b>Percentage of Energy</b>			
						Daytime	88%		
						Nighttime	12%		
						<b>Calculated L<sub>dn</sub>, dBA</b>			
						50.2			

### LT-01, By Residence at 6525 Curtola Ranch Rd



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# Federal Highway Administration Traffic Noise Prediction

**Project-Generated Parking Lot Noise Prediction Model**  
**Hidden Falls Regional Park**



**Ref SEL: 71**

**Metric: Leq**

<b>Description</b>	<b># of Stalls</b>	<b>Trip Multiplier</b>	<b>Trips /Period</b>	<b>Lp @ 50'</b>	<b>Distance to Rec.</b>	<b>Shielding Offset</b>	<b>Lp at Rec.</b>
Mears Place	26	2	52	52.6	315		36.6
Curtola Phase 1/2	18	2	36	51.0	450		31.9
Curtola Phase 4	115	2	230	59.0	350		42.1
Twilight	42	2	84	54.6	1300		26.3

**Combined Noise Level: 43.6 dBA Leq**

Appendix X2  
**Project-Generated Construction Source Noise Prediction Model**  
 Hidden Falls Regional Park



Location	Distance to Nearest Receiver in feet	Combined Predicted Noise Level (L <sub>eq</sub> dBA)	Assumptions:	Reference Emission Noise Levels (L <sub>max</sub> ) at 50 feet <sup>1</sup>	Usage Factor <sup>1</sup>
Threshold*	741	55.0	<b>Dump Truck</b>	84	0.4
	50	84.3	<b>Front End Loader</b>	80	0.4
	60	82.3	<b>Grader</b>	85	0.4
	150	72.3			
	200	69.2			
	250	66.8			
	300	64.8			
	350	63.1	<b>Ground Type</b>	Soft	
	400	61.7	<b>Ground Factor</b>	0.50	
	450	60.4			
	500	59.3			
	550	58.2			
	600	57.3			
			<b>Predicted Noise Level <sup>2</sup></b>	<b>L<sub>eq</sub> dBA at 50 feet<sup>2</sup></b>	
			<b>Dump Truck</b>	80.0	
			<b>Front End Loader</b>	76.0	
			<b>Grader</b>	81.0	
			<b>Combined Predicted Noise Level (L<sub>eq</sub> dBA at 50 feet)</b>		
			84.3		

Sources:

<sup>1</sup> Obtained from the FHWA Roadway Construction Noise Model, January 2006.

<sup>2</sup> Based on the following from the Federal Transit Noise and Vibration Impact Assessment, 2006.

$$L_{eq}(\text{equip}) = E.L. + 10 \cdot \log(\text{U.F.}) - 20 \cdot \log(D/50) - 10 \cdot G \cdot \log(D/50)$$

Where: E.L. = Emission Level;

U.F. = Usage Factor;

G = Constant that accounts for topography and ground effects; and

D = Distance from source to receiver.

\*Project specific threshold

**Project-Generated Construction Source Vibration Prediction Model**  
**Hidden Falls Regional Park**



Location	Distance to Nearest Receiver in feet	Predicted Vibration Level (PPV)		Predicted Vibration Level (VdB)		Equipment	Reference Distance	PPV at 25 feet (in/sec) <sup>1</sup>	Approximate Lv (VdB) at 25 feet <sup>2</sup>
		Pile Driver	Trucks	Pile Driver	Trucks				
CA Threshold (0.08 PPV)	60	0.408	0.020			Pile Driver	25	1.518	112
CA Threshold (80VdB)	60			100	74	Trucks	25	0.076	86

Notes:

<sup>1</sup> Where PPV is the peak particle velocity

<sup>2</sup> Where Lv is the RMS velocity expressed in vibration decibels (VdB), assuming a crest factor of 4.

Source: Caltrans 2002, FTA 2006



**Traffic Noise Prediction Model, (FHWA RD-77-108)**  
**Model Input Sheet**



**Project Name :** Hidden Falls Regional Park  
**Project Number :**  
**Modeling Condition :** Project Traffic  
**Ground Type :** Soft  
**Metric (L<sub>eq</sub>, L<sub>dn</sub>, CNEL) :** Leq

**K Factor :**  
**Traffic Desc. (Peak or ADT) :** Peak

Segment	Roadway	Segment		Traffic Vol.	Speed (Mph)	Distance to CL	% Autos	%MT	% HT	Day %	Eve %	Night %	Offset (dB)
		From	To										
1	Twilight Access Road	Bell Road	Parking Lot	63	25	40	100			100		0	

**Traffic Noise Prediction Model, (FHWA RD-77-108)**  
 Predicted Noise Levels



**Project Name :** Hidden Falls Regional Park  
**Project Number :**  
**Modeling Condition :** Project Traffic  
**Metric (Leq, Ldn, CNEL) :** Leq

Segment	Roadway	Segment		Auto	Noise Levels, dB Leq			Total	Distance to Traffic Noise Contours, Feet				
		From	To		MT	HT	70 dB		65 dB	60 dB	55 dB	50 dB	
1	Twilight Access Road	Bell Road	Parking Lot	48.3	0.0	0.0	48.3	1	3	7	14	31	