
APPENDIX I
Noise Calculations

Noise Calculations for McAllister Ranch

Mechanical-Construction		
Construction Equipment 1 (Rock Drill)	95	dBA at 50 feet
Construction Equipment 2 (Excavator/Dozer/Paver/Roller)	85	dBA at 50 feet
<i>Combined Daytime Noise at 50 feet (Ltotal at 50 feet)</i>	95.4	dBA
<i>(Ltotal=10 log(10^{L1}/10+10^{L2}/10))</i>		

Noise Threshold Limits and Distances from Project Sites to those Limits for Construction Equipment by Technique

Noise Threshold	Threshold Level - Leq (dBA)	Distance to Leq Threshold from Middle of Project Site (feet)
Sensitive Receptors	90	93.3
	70	932.5
Source: FTA 2018		

Noise Level at Nearest Sensitive Receptor	Distance (ft)	Noise Level
Residents along Pensinger Road	7500	51.9

Vibration Source Levels for Construction Equipment (FTA 2018)

Equipment	PPV at 25 feet	VBA
Large Bulldozer/Caisson Drilling	0.089	87

Vibration Calculations with Equations for Vibration-Causing Equipment for Project Site

Threshold	Distance to Threshold from Middle of Project Site (feet)	Notes
PPV=PPVref * (25/d) ^{1.5}	14.6	Building damage threshold (sensitive buildings)
	42.8	Human Perception (80 VdB)

Mechanical-Operation		
Equipment 1 (Generator)	86	dBA at 50 feet
Equipment 2 (Pump)	82	dBA at 50 feet
<i>Combined Daytime Noise at 50 feet (Ltotal at 50 feet)</i>	87.5	dBA
<i>(Ltotal=10 log(10^{L1}/10+10^{L2}/10))</i>		

Noise Threshold Limits and Distances from Project Sites to those Limits for Construction Equipment by Technique

Noise Threshold	Threshold Level - Leq (dBA)	Distance to Leq Threshold from Middle of Project Site (feet)
Sensitive Receptors	70	373.0
	55	2097.7
Source: FTA 2018		

Noise Level at Nearest Sensitive Receptor	Distance (ft)	Noise Level
Residents along Panama Lane	1500	57.9

