

APPENDIX G

Noise Modeling

Appendix G
Project-Generated Construction Source Noise Prediction Model

Pinole-Hercules WPCP EIR - WPCP Expansion



Location	Distance to Nearest Receiver in feet	Combined Predicted Noise Level (L _{eq} dBA)	Assumptions:	Reference Emission	
				Noise Levels (L _{max}) at 50 feet ¹	Usage Factor ¹
Threshold*	1,647	55.0	Excavator	85	0.4
Nearest Residence	500	65.4	Backhoe	80	0.4
			Grader	85	0.4
			Drill Rig Truck	84	0.2
			Ground Type	Hard	
			Source Height	8	
			Receiver Height	5	
			Ground Factor	0.00	
			Predicted Noise Level ²	L_{eq} dBA at 50 feet²	
			Excavator	81.0	
			Backhoe	76.0	
			Grader	81.0	
			Drill Rig Truck	77.0	
			Combined Predicted Noise Level (L_{eq} dBA at 50 feet)		
			85.4		

Sources:

¹ Obtained from the FHWA Roadway Construction Noise Model, January 2006.

² 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

Appendix G
Project-Generated Construction Source Noise Prediction Model
 Pinole-Hercules WPCP EIR - Force Main Installation



Location	Distance to Nearest Receiver in feet	Combined Predicted Noise Level (L _{eq} dBA)	Assumptions:	Reference Emission	
				Noise Levels (L _{max}) at 50 feet ¹	Usage Factor ¹
Threshold*	5,537	45.0	Jackhammer	85	0.2
Residence on Railroad Ave	50	85.9	Excavator	85	0.4
Residences on Woodfield Drive	60	84.3	Backhoe	80	0.4
			Paver	85	0.5

Ground Type	Hard
Source Height	8
Receiver Height	5
Ground Factor	0.00

Predicted Noise Level ²	L _{eq} dBA at 50 feet ²
Jackhammer	78.0
Excavator	81.0
Backhoe	76.0
Paver	82.0

Combined Predicted Noise Level (L _{eq} dBA at 50 feet)
85.9

Sources:

¹ Obtained from the FHWA Roadway Construction Noise Model, January 2006.

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

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

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

Appendix G
Project-Generated Construction Source Noise Prediction Model

Pinole-Hercules WPCP EIR - HDD



Location	Distance to Nearest Receiver in feet	Combined Predicted Noise Level (L _{eq} dBA)	Assumptions:	Reference Emission	Usage
				Noise Levels (L _{max}) at 50 feet ¹	Factor ¹
Threshold*	5,424	45.0	Drill Rig Truck	84	0.2
Residence on Railroad Ave	50	85.7	Vibrating Hopper	85	0.5
Residence on Forest Circle	485	66.0	Auger Drill Rig	85	0.2
			Flat Bed Truck	84	0.4
			Ground Type	Hard	
			Source Height	8	
			Receiver Height	5	
			Ground Factor	0.00	
			Predicted Noise Level ²	L_{eq} dBA at 50 feet²	
			Drill Rig Truck	77.0	
			Vibrating Hopper	82.0	
			Auger Drill Rig	78.0	
			Flat Bed Truck	80.0	
			Combined Predicted Noise Level (L_{eq} dBA at 50 feet)		
			85.7		

Sources:

¹ Obtained from the FHWA Roadway Construction Noise Model, January 2006.

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

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

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

Appendix G
Project-Generated Construction Source Noise Prediction Model

Pinole-Hercules WPCP EIR - Corporation Yard



Location	Distance to Nearest Receiver in feet	Combined Predicted Noise Level (L _{eq} dBA)	Assumptions:	Reference Emission	Usage
				Noise Levels (L _{max}) at 50 feet ¹	Factor ¹
Threshold*	5,797	45.0	Dozer	85	0.4
Residence on Dohrman Lane	250	72.3	Tractor	84	0.4
			Backhoe	80	0.4
			Paver	85	0.5
			Ground Type	Hard	
			Source Height	8	
			Receiver Height	5	
			Ground Factor	0.00	
			Predicted Noise Level ²	L_{eq} dBA at 50 feet²	
			Dozer	81.0	
			Tractor	80.0	
			Backhoe	76.0	
			Paver	82.0	
			Combined Predicted Noise Level (L_{eq} dBA at 50 feet)		
			86.3		

Sources:

¹ Obtained from the FHWA Roadway Construction Noise Model, January 2006.

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

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

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