

APPENDIX G

Noise Modeling Results

Appendix G

Project-Generated Construction Source Noise Prediction Model

SAFCA Phase 4a - Clearing and Grubbing/Stripping



Location	Distance to Nearest Receiver in feet	Combined Predicted Noise Level (L _{eq} dBA)	Assumptions:	Reference Emission	Usage Factor ¹
				Noise Levels (L _{max}) at 50 feet ¹	
	100	74.6	Scraper	85	0.4
	200	66.7	Front End Loader	80	0.4
	300	62.0	Water Truck	75	0.4
	400	58.7			
	500	56.2			
	600	54.1			
	700	52.3			
	800	50.8	Ground Type	Soft	
	900	49.5	Source Height	5	
	1000	48.3	Receiver Height	8	
	1100	47.2	Ground Factor	0.63	
	1200	46.2			
			Predicted Noise		
			Level ²	L_{eq} dBA at 50 feet²	
			Scraper	81.0	
			Front End Loader	76.0	
			Water Truck	71.0	
			Combined Predicted Noise Level (L_{eq} dBA at 50 feet)		
					82.5

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.



Appendix G
Project-Generated Construction Source Noise Prediction Model
 SAFCA Phase 4a - Levee Degrading

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
	100	76.7	Dozer	85	0.4
	200	68.8	Front End Loader	80	0.4
	300	64.2	Scraper	85	0.4
	400	60.9			
	500	58.3			
	600	56.2			
	700	54.5			
	800	53.0	Ground Type	Soft	
	900	51.6	Source Height	5	
	1000	50.4	Receiver Height	8	
	1100	49.3	Ground Factor	0.63	
	1200	48.3			
			Predicted Noise Level ²	L_{eq} dBA at 50 feet²	
			Dozer	81.0	
			Front End Loader	76.0	
			Scraper	81.0	
			Combined Predicted Noise Level (L_{eq} dBA at 50 feet)		
			84.7		

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.

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

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.

Appendix G
Project-Generated Construction Source Noise Prediction Model
SAFCA Phase 4a - Pipeline Removal



Location	Distance to Nearest Receiver in feet	Combined Predicted Noise Level (L _{eq} dBA)	Assumptions:	Reference Emission	Usage Factor ¹
				Noise Levels (L _{max}) at 50 feet ¹	
	100	75.6	Excavator	85	0.4
	200	67.7	Dump Truck	84	0.4
	300	63.1			
	400	59.8			
	500	57.2			
	600	55.1			
	700	53.4			
	800	51.8	Ground Type	Soft	
	900	50.5	Source Height	5	
	1000	49.3	Receiver Height	8	
	1100	48.2	Ground Factor	0.63	
	1200	47.2			
			Predicted Noise		
			Level ²	L_{eq} dBA at 50 feet²	
			Excavator	81.0	
			Dump Truck	80.0	
			Combined Predicted Noise Level (L_{eq} dBA at 50 feet)		
					83.6

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.

Appendix G

Project-Generated Construction Source Noise Prediction Model

SAFCA Phase 4a - Cutoff Wall Construction



Location	Distance to Nearest Receiver in feet	Combined Predicted Noise Level (L _{eq} dBA)	Assumptions:	Reference Emission	Usage Factor ¹
				Noise Levels (L _{max}) at 50 feet ¹	
	100	76.0	Generator	82	0.5
	200	68.0	Excavator	85	0.4
	300	63.4	Front End Loader	80	0.4
	400	60.1			
	500	57.6			
	600	55.5			
	700	53.7			
	800	52.2	Ground Type	Soft	
	900	50.8	Source Height	5	
	1000	49.6	Receiver Height	8	
	1100	48.5	Ground Factor	0.63	
	1200	47.6			
			Predicted Noise		
			Level ²	L_{eq} dBA at 50 feet²	
			Generator	79.0	
			Excavator	81.0	
			Front End Loader	76.0	
					Combined Predicted Noise Level (L_{eq} dBA at 50 feet)
					83.9

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.

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

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.

Appendix G

Project-Generated Construction Source Noise Prediction Model

SAFCA Phase 4a - Levee Crown Construction



Location	Distance to Nearest Receiver in feet	Combined Predicted Noise Level (L _{eq} dBA)	Assumptions:	Reference Emission	Usage Factor ¹
				Noise Levels (L _{max}) at 50 feet ¹	
	100	75.1	Scraper	85	0.4
	200	67.2	Roller	85	0.2
	300	62.6	Water Truck	75	0.4
	400	59.3			
	500	56.7			
	600	54.6			
	700	52.9			
	800	51.3	Ground Type	Soft	
	900	50.0	Source Height	5	
	1000	48.8	Receiver Height	8	
	1100	47.7	Ground Factor	0.63	
	1200	46.7			
			Predicted Noise		
			Level²	L_{eq} dBA at 50 feet²	
			Scraper	81.0	
			Roller	78.0	
			Water Truck	71.0	
			Combined Predicted Noise Level (L_{eq} dBA at 50 feet)		
					83.1

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.

Appendix G

Project-Generated Construction Source Noise Prediction Model

SAFCA Phase 4a - Borrow Site Excavation



Location	Distance to Nearest Receiver in feet	Combined Predicted Noise Level (L _{eq} dBA)	Assumptions:	Reference Emission	Usage Factor ¹
				Noise Levels (L _{max}) at 50 feet ¹	
	100	75.9	Excavator	85	0.4
	200	67.9	Dump Truck	84	0.4
	300	63.3	Water Truck	75	0.4
	400	60.0			
	500	57.5			
	600	55.4			
	700	53.6			
	800	52.1	Ground Type	Soft	
	900	50.7	Source Height	5	
	1000	49.5	Receiver Height	8	
	1100	48.4	Ground Factor	0.63	
	1200	47.4			
			Predicted Noise		
			Level ²	L_{eq} dBA at 50 feet²	
			Excavator	81.0	
			Dump Truck	80.0	
			Water Truck	71.0	
			Combined Predicted Noise Level (L_{eq} dBA at 50 feet)		
					83.8

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.

Appendix G

Project-Generated Construction Source Noise Prediction Model

SAFCA Phase 4a - Demobilization and Clean Up



Location	Distance to Nearest Receiver in feet	Combined Predicted Noise Level (L _{eq}) dBA)	Assumptions:	Reference Emission	Usage Factor ¹
				Noise Levels (L _{max}) at 50 feet ¹	
Threshold*	100	75.9	Dump Truck	84	0.4
	200	68.0	Flat Bed Truck	84	0.4
	300	63.3	Hydroseed Truck	80	0.4
	400	60.0			
	500	57.5			
	600	55.4			
	700	53.6			
	800	52.1	Ground Type	Soft	
	900	50.8	Source Height	5	
	1000	49.6	Receiver Height	8	
	1100	48.5	Ground Factor	0.63	
	1200	47.5			
			Predicted Noise		
			Level ²	L_{eq} dBA at 50 feet²	
			Dump Truck	80.0	
			Flat Bed Truck	80.0	
			Hydroseed Truck	76.0	
				Combined Predicted Noise Level (L_{eq} dBA at 50 feet)	
					83.8

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.

Appendix G

SAFCA Levee Improvement Project
Canal Work
Summary of Predicted Action Noise Levels



Action	Leq	Distance to Noise Contours in feet	
		50 dBA Contour	45 dBA Contour
SAFCA Phase 4a - Clearing and Grubbing/Stripping	74.6	1698.8	3021.0
SAFCA Phase 4a - Levee Degrading	76.7	2172.6	3863.4
SAFCA Phase 4a - Pipeline Removal	75.6	1912.2	3400.4
SAFCA Phase 4a - Cutoff Wall Construction	76.0	1989.7	3538.2
SAFCA Phase 4a - Levee Crown Construction	75.1	1805.7	3211.0
SAFCA Phase 4a - Borrow Site Excavation	75.9	1964.8	3493.9
SAFCA Phase 4a - Demobilization and Clean Up	75.9	1970.2	3503.6

Appendix G
Haul Truck Trips
Fisherman's Lake Borrow Site



Assumptions:

Mean SEL Reference Level	84.0
Assumed Haul Truck Speed (mph)	25.0
Number of Hours for Hauling per Day	10.0
Haul Truck Size in Cubic Yards	14.0
Amount of Haul Material	4,009,000.0
Number of Haul Days	100.0
Amount of Daily Haul Material	40,090.0
Amount of Hourly Haul Material	4,009.0
Number of Trips per Hour-one way	572.7
Leq for Haul Trips at 50 feet	71.5

Appendix G
Haul Truck Trips
Krumenacher and Twin Rivers USD Borrow Site



Assumptions:

Mean SEL Reference Level	84.0
Assumed Haul Truck Speed (mph)	25.0
Number of Hours for Hauling per Day	10.0
Haul Truck Size in Cubic Yards	14.0
Amount of Haul Material	350,000.0
Number of Haul Days	140.0
Amount of Daily Haul Material	2,500.0
Amount of Hourly Haul Material	250.0
Number of Trips per Hour-one way	35.7
Leq for Haul Trips at 50 feet	59.4
Trips per Day	178.6