APPENDIX G

Noise Modeling Results

Appendix G

Project-Generated Construction Source Noise Prediction Model

Phase 4b Clearing and Grubbing/Stripping

EDAW | AECOM

Location	Distance to Nearest Receiver in feet	Combined Predicted Noise Level (L_{eq} dBA)
	100	74.6
	200	66.7
	300	62.0
	400	58.7
	500	56.2
	600	54.1
	700	52.3
	800	50.8
	900	49.5
	1000	48.3
	1100	47.2
	1200	46.2

Assumptions:	Reference Emission Noise Levels (L_{max}) at 50 feet[1]	Usage Factor[1]
Dozer	85	0.4
Front End Loader	80	0.4
Water Truck	75	0.4

Ground Type	Soft
Source Height	5
Receiver Height	8
Ground Factor	0.63

Predicted Noise Level [2]	L_{eq} dBA at 50 feet[2]
Dozer	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.

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

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.

Appendix G

Project-Generated Construction Source Noise Prediction Model

Phase 4b Levee Degrading

EDAW | AECOM

Location	Distance to Nearest Receiver in feet	Combined Predicted Noise Level (L_{eq} dBA)
	100	76.7
	200	68.8
	300	64.2
	400	60.9
	500	58.3
	600	56.2
	700	54.5
	800	53.0
	900	51.6
	1000	50.4
	1100	49.3
	1200	48.3

Assumptions:	Reference Emission Noise Levels (L_{max}) at 50 feet[1]	Usage Factor[1]
Scraper	85	0.4
Front End Loader	80	0.4
Dozer	85	0.4

Ground Type	Soft
Source Height	5
Receiver Height	8
Ground Factor	0.63

Predicted Noise Level [2]	L_{eq} dBA at 50 feet[2]
Scraper	81.0
Front End Loader	76.0
Dozer	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.

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

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.

Appendix G

Project-Generated Construction Source Noise Prediction Model

Phase 4b Demolish Canal and Tree Removal

EDAW | AECOM

Location	Distance to Nearest Receiver in feet	Combined Predicted Noise Level (L_{eq} dBA)
	100	76.3
	200	68.4
	300	63.8
	400	60.5
	500	57.9
	600	55.8
	700	54.1
	800	52.5
	900	51.2
	1000	50.0
	1100	48.9
	1200	47.9

Assumptions:	Reference Emission Noise Levels (L_{max}) at 50 feet[1]	Usage Factor[1]
Excavator	85	0.4
Front End Loader	80	0.4
Dump Truck	84	0.4

Ground Type	Soft
Source Height	5
Receiver Height	8
Ground Factor	0.63

Predicted Noise Level [2]	L_{eq} dBA at 50 feet[2]
Excavator	81.0
Front End Loader	76.0
Dump Truck	80.0

Combined Predicted Noise Level (L_{eq} dBA at 50 feet)
84.3

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.

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

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.

Appendix G

Project-Generated Construction Source Noise Prediction Model

Phase 4b Cutoff Wall Construction

EDAW | AECOM

Location	Distance to Nearest Receiver in feet	Combined Predicted Noise Level (L_{eq} dBA)
	100	76.1
	200	68.2
	300	63.6
	400	60.3
	500	57.7
	600	55.7
	700	53.9
	800	52.4
	900	51.0
	1000	49.8
	1100	48.7
	1200	47.7

Assumptions:	Reference Emission Noise Levels (L_{max}) at 50 feet[1]	Usage Factor[1]
Generator	82	0.5
Excavator	85	0.4
Soil Mix Drill Rig	80	0.5

Ground Type	Soft
Source Height	5
Receiver Height	8
Ground Factor	0.63

Predicted Noise Level [2]	L_{eq} dBA at 50 feet[2]
Generator	79.0
Excavator	81.0
Soil Mix Drill Rig	77.0

Combined Predicted Noise Level (L_{eq} dBA at 50 feet)
84.1

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.

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

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.

Appendix G

Project-Generated Construction Source Noise Prediction Model

Phase 4b Borrow Site Excavation

EDAW | AECOM

Location	Distance to Nearest Receiver in feet	Combined Predicted Noise Level (L_{eq} dBA)
	100	76.3
	200	68.4
	300	63.8
	400	60.5
	500	57.9
	600	55.8
	700	54.1
	800	52.5
	900	51.2
	1000	50.0
	1100	48.9
	1200	47.9

Assumptions:	Reference Emission Noise Levels (L_{max}) at 50 feet[1]	Usage Factor[1]
Excavator	85	0.4
Front End Loader	80	0.4
Dump Truck	84	0.4

Ground Type	Soft
Source Height	5
Receiver Height	8
Ground Factor	0.63

Predicted Noise Level [2]	L_{eq} dBA at 50 feet[2]
Excavator	81.0
Front End Loader	76.0
Dump Truck	80.0

Combined Predicted Noise Level (L_{eq} dBA at 50 feet)
84.3

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.

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

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.

Appendix G

Project-Generated Construction Source Noise Prediction Model

Phase 4b Levee Raising

EDAW | AECOM

Location	Distance to Nearest Receiver in feet	Combined Predicted Noise Level (L_{eq} dBA)
	100	75.7
	200	67.8
	300	63.1
	400	59.8
	500	57.3
	600	55.2
	700	53.4
	800	51.9
	900	50.5
	1000	49.3
	1100	48.3
	1200	47.3

Assumptions:	Reference Emission Noise Levels (L_{max}) at 50 feet[1]	Usage Factor[1]
Front End Loader	80	0.4
Roller	85	0.2
Dozer	85	0.4

Ground Type	Soft
Source Height	5
Receiver Height	8
Ground Factor	0.63

Predicted Noise Level [2]	L_{eq} dBA at 50 feet[2]
Front End Loader	76.0
Roller	78.0
Dozer	81.0

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.

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

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.

Appendix G

Project-Generated Construction Source Noise Prediction Model

Phase 4b Surface Drainage Outlets

EDAW | AECOM

Location	Distance to Nearest Receiver in feet	Combined Predicted Noise Level (L_{eq} dBA)
	100	75.7
	200	67.8
	300	63.1
	400	59.8
	500	57.3
	600	55.2
	700	53.4
	800	51.9
	900	50.6
	1000	49.3
	1100	48.3
	1200	47.3

Assumptions:	Reference Emission Noise Levels (L_{max}) at 50 feet[1]	Usage Factor[1]
Backhoe	80	0.4
Paver	85	0.5
Concrete Pump Truck	82	0.2

Ground Type	Soft
Source Height	5
Receiver Height	8
Ground Factor	0.63

Predicted Noise Level [2]	L_{eq} dBA at 50 feet[2]
Backhoe	76.0
Paver	82.0
Concrete Pump Truck	75.0

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.

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

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.

Appendix G

Project-Generated Construction Source Noise Prediction Model

Phase 4b Construct Relief Wells and Drainage Canals

EDAW | AECOM

Location	Distance to Nearest Receiver in feet	Combined Predicted Noise Level (L_{eq} dBA)
Threshold*	100	73.7
	200	65.8
	300	61.1
	400	57.8
	500	55.3
	600	53.2
	700	51.4
	800	49.9
	900	48.6
	1000	47.4
	1100	46.3
	1200	45.3

Assumptions:	Reference Emission Noise Levels (L_{max}) at 50 feet[1]	Usage Factor[1]
Drill Rig Truck	84	0.2
Roller	85	0.2
Concrete Pump Truck	82	0.2

Ground Type	Soft
Source Height	5
Receiver Height	8
Ground Factor	0.63

Predicted Noise Level [2]	L_{eq} dBA at 50 feet[2]
Drill Rig Truck	77.0
Roller	78.0
Concrete Pump Truck	75.0

Combined Predicted Noise Level (L_{eq} dBA at 50 feet)
81.6

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.

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

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.

Appendix G

Project-Generated Construction Source Noise Prediction Model

Phase 4b Site Restoration and Demobilization

EDAW | AECOM

Location	Distance to Nearest Receiver in feet	Combined Predicted Noise Level (L_{eq} dBA)
	100	75.9
	200	68.0
	300	63.3
	400	60.0
	500	57.5
	600	55.4
	700	53.6
	800	52.1
	900	50.8
	1000	49.6
	1100	48.5
	1200	47.5

Assumptions:	Reference Emission Noise Levels (L_{max}) at 50 feet[1]	Usage Factor[1]
Dump Truck	84	0.4
Flat Bed Truck	84	0.4
Hydroseed Truck	80	0.4

Ground Type	Soft
Source Height	5
Receiver Height	8
Ground Factor	0.63

Predicted Noise Level [2]	L_{eq} dBA at 50 feet[2]
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.

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

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.

Appendix F

Phase 4b Levee Improvement Project
Levee Work
Summary of Predicted Action Noise Levels

		Distance to Noise Contours in feet	
Action	**Leq**	**50 dBA Contour**	**45 dBA Contour**
Phase 4b Clearing and Grubbing/Stripping	74.6	1698.8	3021.0
Phase 4b Levee Degrading	76.7	2172.6	3863.4
Phase 4b Demolish Canal and Tree Removal	76.3	2073.9	3687.9
Phase 4b Cutoff Wall Construction	76.1	2029.8	3609.5
Phase 4b Borrow Site Excavation	76.3	2073.9	3687.9
Phase 4b Levee Raising	75.7	1923.8	3421.1
Phase 4b Surface Drainage Outlets	75.7	1924.2	3421.7
Phase 4b Construct Relief Wells and Drainage Canals	73.7	1529.4	2719.6
Phase 4b Site Restoration and Demobilization	75.9	1970.2	3503.6

Appendix G
Haul Truck Trips
Sarcamento East Levee Reach A: 16-19A

Assumptions:

Mean SEL Reference Level at 50 feet	84.0
Assumed Haul Truck Speed (mph)	35.0
Number of Hours for Hauling per Day	10.0
Haul Truck Size in Cubic Yards	14.0
Amount of Haul Material	1,058,400
Number of Haul Days	140.0
Amount of Daily Haul Material	7,560.0
Amount of Hourly Haul Material	756.0
Number of Trips per Hour-one way	108.0
Leq for Haul Trips at 50 feet	66.4

Appendix G
Haul Truck Trips
Sacramento East Levee Reach A: 19B-20

Assumptions:

Mean SEL Reference Level at 50 feet	84.0
Assumed Haul Truck Speed (mph)	35.0
Number of Hours for Hauling per Day	10.0
Haul Truck Size in Cubic Yards	12.0
Amount of Haul Material	194,400.0
Number of Haul Days	45.0
Amount of Daily Haul Material	4,320.0
Amount of Hourly Haul Material	432.0
Number of Trips per Hour-one way	72.0
Leq for Haul Trips at 50 feet	64.6

Appendix G
Haul Truck Trips
American River North Levee Reach I: 1-4

Assumptions:

Mean SEL Reference Level at 50 feet	84.0
Assumed Haul Truck Speed (mph)	35.0
Number of Hours for Hauling per Day	10.0
Haul Truck Size in Cubic Yards	12.0
Amount of Haul Material	167,000.0
Number of Haul Days	140.0
Amount of Daily Haul Material	1,192.9
Amount of Hourly Haul Material	119.3
Number of Trips per Hour-one way	19.9
Leq for Haul Trips at 50 feet	59.1

Appendix G
Haul Truck Trips
West Levee of NEMDC Reaches F-G

Assumptions:

Mean SEL Reference Level at 50 feet	84.0
Assumed Haul Truck Speed (mph)	35.0
Number of Hours for Hauling per Day	10.0
Haul Truck Size in Cubic Yards	14.0
Amount of Haul Material	965,000.0
Number of Haul Days	140.0
Amount of Daily Haul Material	6,892.9
Amount of Hourly Haul Material	689.3
Number of Trips per Hour-one way	98.5
Leq for Haul Trips at 50 feet	66.0

Appendix G
Haul Truck Trips
West Levee of PGCC Reach E

Assumptions:

Mean SEL Reference Level at 50 feet	84.0
Assumed Haul Truck Speed (mph)	35.0
Number of Hours for Hauling per Day	10.0
Haul Truck Size in Cubic Yards	14.0
Amount of Haul Material	345,500.0
Number of Haul Days	140.0
Amount of Daily Haul Material	2,467.9
Amount of Hourly Haul Material	246.8
Number of Trips per Hour-one way	35.3
Leq for Haul Trips at 50 feet	61.5