Appendix A Air Quality, Greenhouse Gas Emissions Analysis, and Health Risk Assessment

CalEEMod Inputs - Nicholas Elementary School Project, Construction

Name:	Nicholas Elementary School Project, Construction
Land Use Scale:	Project/site
Land Use Subtypes:	Educational Elementary School
Project Location:	6601 Steiner Drive
County:	Sacramento
Land Use Setting:	Suburban
TAZ:	732
Operational Year:	2025
Electric Utility:	Sacramento Municipal Utility District (SMUD)
Gas Utility:	Pacific Gas & Electric (PG&E)
Air Basin:	Sacramento Valley
Air District:	Sacramento Metropolitant AQMD

Proiect Site Acreage	10.00
Disturbed Site Acreage	9.00

Project Components				
Demolition	**Building Square Feet (SQFT)**	***Tons***		
Building Demolition	46,849	2,155		
Asphalt Demolition	91,514	1,356		
New Construction	**Building Square Feet (SQFT)**	**Building Footprint (BSF)**	**Acres**	**Stories/Levels**
New Classrooms	52,184	52,184	1.20	1
Other Land Uses	**SQFT**	**Building Footprint**	**Acres**	**Number of Stalls**
Parking Lot	56,972	NA	1.31	97
Total Non-Parking Asphalt	31,409	NA	0.72	
Total Non-Asphalt Hardscape	89,920	NA	2.06	

CalEEMod Land Use Inputs

Land Use Type	Land Use Subtype	Size Metric	Size	Lot Acreage	Building Square Feet	Landscape Area Square Feet	Special Landscape Area Square Feet
Educational	Elementary School	1000 sqft	52.18	1.20	52,184	158,637	0
Parking	Parking Lot	1000 sqft	56.97	1.31	0	0	0
Parking	Other Asphalt Surfaces	1000 sqft	31.41	0.72	0	0	0
Parking	Other Non-Asphalt Surfaces	1000 sqft	89.92	2.06	0	0	0
				5.29	**52,184**	**158,637**	**0**

Demolition

Component	Amount to be Demolished (Tons)	Haul Truck Capacity (Tons)[1]	Haul Distance (miles)[1]	Total Trip Ends	Duration (days)	Trip Ends/Day
Building Demolition Debris Haul	2,155	20	20	216	31	7
Asphalt Demolition Debris Haul	1,356	20	20	136	31	4
Total	3,511			352		11

Notes:
[1] CalEEMod default used.

Architectural Coating[1]

	Non-Residential
Interior Painted (%):	100%
Exterior Painted (%):	100%

	< 50 flat / ≤ 100 nonflat
SMAQMD Rule 442 CalEEMod Default	**grams/liter**
Interior Paint VOC content:	75
Exterior Paint VOC content:	75

Notes:
[1] CalEEMod default used.

Structures	Land Use Square Feet	CalEEMod Factor[1]	Total Paintable Surface Area	Paintable Interior Area[2]	Paintable Exterior Area[2]
Educational	52,184	2.0	104,368	78,276	26,092
				78,276	**26,092**
Parking[3]					
All Paved Surfaces	178,301	6%		-	10,698
			Totals	**78,276**	**36,790**

Notes:
[1] CalEEMod assumes the total surface for painting equals 2.0 times the floor square footage for non-residential use.
[2] CalEEMod methodology calculates the paintable interior and exterior areas by multiplying the total paintable surface area by 75 and 25 percent, respectively.
[3] Architectural coatings for the parking lot is based on CalEEMod default.

CalEEMod Construction Measures/Required Basic Construction Emission Control Practices (BMPs)

C-10-A	Water Exposed Surfaces	Frequency per day:	2	
		PM10:	61	% Reduction
		PM2.5:	61	% Reduction
C-11	Limit Vehicle Speeds on Unpaved Roads	Miles per hour speed limit:	25	
		PM10:	44	% Reduction
		PM2.5:	44	% Reduction
C-12	Sweep Paved Roads	PM10:	9	% Reduction
		PM2.5:	9	% Reduction

Demo Haul Trip Calculation

Source: CalEEMod User's Guide Version 2022.1, Appendix C

Conversion factors

0.046	ton/SF
1.2641662	tons/cy
20	tons
15.82070459	CY
0.791035229	CY/ton

Building	BSF Demo	Tons/SF	Tons[1]	Haul Truck (CY)	Haul Truck (Ton)[2]	Round Trips	Total Trip Ends
Combined Building Demo	46,849	0.046	2,155	16	20	108	216

Notes:

[1] Tonnage of building demolition debris to be hauled offsite provided by Applicant.

[2] CalEEMod default haul truck capacity used.

Pavement Volume to Weight Conversion

Component	Total SF of Area[1]	Assumed Thickness (foot)[2]	Debris Volume (cu. ft)	Weight of Crushed Asphalt (lbs/cf)[3]	AC Mass (lbs)	AC Mass (tons)
Asphalt Demo	91,514	0.333	30,505	89	2,711,526	1,355.76

[1] Based on information provided by applicant.

[2] Pavements and Surface Materials. Nonpoint Education for Municipal Officials, Technical Paper Number 8. University of Connecticut Cooperative Extension System, 1999.

[3] https://www.calrecycle.ca.gov/swfacilities/cdi/Tools/Calculations

Construction Activities and Schedule Assumptions: Nicholas Elementary School Project

*based on overall construction duration provided by the Applicant

Default Construction Schedule

Construction Activities	Phase Type	Start Date	End Date	CalEEMod Duration (Workday)
Demolition	Demolition	8/1/2023	8/29/2023	20
Site Preparation	Site Preparation	8/30/2023	9/13/2023	10
Grading	Grading	9/14/2023	10/12/2023	20
Building Construction	Building Construction	10/13/2023	8/30/2024	230
Paving	Paving	8/31/2024	9/28/2024	20
Architectural Coating	Architectural Coating	9/29/2024	10/27/2024	20

Normalization Calculations

CalEEMod Default Duration		Construction Duration	
8/1/2023	10/27/2024	8/1/2023	6/27/2025
total calendar days	453	total calendar days	696
years of construction	1.24	years of construction	2
months of construction	14.89	months of construction	23

Normalization Factor: 1.54

New Construction Schedule (CalEEMod)

Construction Activities	Start Date	End Date	CalEEMod Duration (Workday)
Demolition	8/1/2023	9/12/2023	31
Site Preparation	9/13/2023	10/3/2023	15
Grading	10/4/2023	11/15/2023	31
Building Construction	11/16/2023	3/24/2025	353
Asphalt Paving	3/25/2025	5/6/2025	31
Architectural Coating	5/7/2025	6/18/2025	31

CalEEMod Construction Off-Road Equipment Inputs

**Used CalEEMod default equipment.*

General Construction Hours: Mon-Fri and 8:00 AM to 7:00 PM (with 1 hr break)

Water Truck Vendor Trip Calculation

Amount of Water (gal/acre/day)[1]	Water Truck Capacity (gallons)[2]
10,000	4,000

Notes:

[1] *Based on data provided in Guidance for Application for Dust Control Permit Maricopa County Air Quality Department. 2005, June. Guidance for Application of Dust Control Permit. https://www.epa.gov/sites/default/files/2019-04/documents/mr_guidanceforapplicationfordustcontrolpermit.pdf)*

[2] *Based on standard water truck capacity: McLellan Industries. 2022, January (access). Water Trucks. https://www.mclellanindustries.com/trucks/water-trucks/*

[3] *Assumes that dozers, tractors/loaders/backhoes, and graders can disturb 0.50 acres per day and scrapers can disturb 1 acre per day.*

[4] *Water truck trip distances are assumed to be 4356 feet per acre of disturbance, which assumes a water spray of 10 feet in width*

Construction Equipment Details					
CalEEMod Equipment	**# of Equipment**	**hr/day**	**hp**	**load factor**	**total trips/Day**
Demolition					
Concrete/Industrial Saws	1	8	33	0.73	
Rubber Tired Dozers	2	8	367	0.4	
Excavators	3	8	36	0.38	
Worker Trips/Day					15
Vendor Trips					0
Hauling Trips					11
Water Trucks		Acres Disturbed:	1		6
Site Preparation					
Tractors/Loaders/Backhoes	4	8	84	0.37	
Rubber Tired Dozers	3	8	367	0.4	
Worker Trips/Day					18
Vendor Trips					0
Hauling Trips					0
Water Trucks		Acres Disturbed:	3.50		18
Grading					
Graders	1	8	148	0.41	
Rubber Tired Dozers	1	8	367	0.4	
Tractors/Loaders/Backhoes	3	8	84	0.37	
Excavators	1	8	36	0.38	
Worker Trips					15
Vendor Trips					0
Hauling Trips					0
Water Trucks		Acres Disturbed:	2.50		14

Building Construction						
	Concrete/Industrial Saws	1	7	367	0.29	
	Forklifts	3	8	82	0.2	
	Generator Sets	1	8	14	0.74	
	Tractors/Loaders/Backhoes	3	7	84	0.37	
	Welders	1	8	46	0.45	
	Worker Trips					22
	Vendor Trips					9
	Hauling Trips					0
Asphalt Paving						
	Pavers	2	8	81	0.42	
	Paving Equipment	2	8	89	0.36	
	Rollers	2	8	36	0.38	
	Worker Trips					15
	Vendor Trips					0
	Hauling Trips					0
Architectural Coating						
	Air Compressors	1	6	37	0.48	
	Worker Trips					4
	Vendor Trips					0
	Hauling Trips					0

Construction Trips Worksheet

Phase Name	Worker Trips	Vendor Trips	Onsite Truck Trips (Water Trucks)	Haul Truck Trips	Start Date	End Date	Workdays
	One-Way Trips per Day						
Demolition	15	0	6	11	8/1/2023	9/12/2023	31
Site Preparation	18	18	18	0	9/13/2023	10/3/2023	15
Grading	15	14	14	0	10/4/2023	11/15/2023	31
Building Construction	22	9	0	0	11/16/2023	3/24/2025	353
Asphalt Paving	15	0	0	0	3/25/2025	5/6/2025	31
Architectural Coating	4	0	0	0	5/7/2025	6/18/2025	31

Minor Project Health Effects Tool

Latitude	38.507882	**<-- Step 1: Input latitude (Please chose a value between 38.0 and 39.7)**
Longitude	-121.443833	**<-- Step 2: Input longitude (Please chose a value between -122.5 and -120.0)**

PM2.5 Health Endpoint	Age Range[1]	Incidences Across the Reduced Sacramento 4-km Modeling Domain Resulting from Project Emissions (per year)[2,5] (Mean)	Incidences Across the 5-Air-District Region Resulting from Project Emissions (per year)[2] (Mean)	Percent of Background Health Incidences Across the 5-Air-District Region[3]	Total Number of Health Incidences Across the 5-Air-District Region (per year)[4]
Respiratory					
Emergency Room Visits, Asthma	0 - 99	1.1	1.0	0.0056%	18419
Hospital Admissions, Asthma	0 - 64	0.073	0.068	0.0037%	1846
Hospital Admissions, All Respiratory	65 - 99	0.34	0.30	0.0016%	19644
Cardiovascular					
Hospital Admissions, All Cardiovascular (less Myocardial Infarctions)	65 - 99	0.19	0.17	0.00072%	24037
Acute Myocardial Infarction, Nonfatal	18 - 24	0.000095	0.000087	0.0023%	4
Acute Myocardial Infarction, Nonfatal	25 - 44	0.0084	0.0079	0.0026%	308
Acute Myocardial Infarction, Nonfatal	45 - 54	0.021	0.019	0.0026%	741
Acute Myocardial Infarction, Nonfatal	55 - 64	0.034	0.032	0.0026%	1239
Acute Myocardial Infarction, Nonfatal	65 - 99	0.12	0.11	0.0022%	5052
Mortality					
Mortality, All Cause	30 - 99	2.3	2.1	0.0046%	44766

Ozone Health Endpoint	Age Range[1]	Incidences Across the Reduced Sacramento 4-km Modeling Domain Resulting from Project Emissions (per year)[2,5] (Mean)	Incidences Across the 5-Air-District Region Resulting from Project Emissions (per year)[2] (Mean)	Percent of Background Health Incidences Across the 5-Air-District Region[3]	Total Number of Health Incidences Across the 5-Air-District Region (per year)[4]
Respiratory					
Hospital Admissions, All Respiratory	65 - 99	0.083	0.068	0.00035%	19644
Emergency Room Visits, Asthma	0 - 17	0.44	0.38	0.0065%	5859
Emergency Room Visits, Asthma	18 - 99	0.69	0.60	0.0047%	12560
Mortality					
Mortality, Non-Accidental	0 - 99	0.052	0.044	0.00015%	30386

1. Affected age ranges are shown. Other age ranges are available, but the endpoints and age ranges shown here are the ones used by the USEPA in their health assessments. The age ranges are consistent with the epidemiological study that is the basis of the health function.

2. Health effects are shown in terms of incidences of each health endpoint and how it compares to the base (2035 base year health effect incidences, or "background health incidence") values. Health effects are shown for the Reduced Sacramento 4-km Modeling Domain and the 5-Air-District Region.

3. The percent of background health incidence uses the mean incidence. The background health incidence is an estimate of the average number of people that are affected by the health endpoint in a given population over a given period of time. In this case, the background incidence rates cover the 5-Air-District Region (estimated 2035 population of 3,271,451 persons). Health incidence rates and other health data are typically collected by the government as well as the World Health Organization. The background incidence rates used here are obtained from BenMAP.

4. The total number of health incidences across the 5-Air-District Region is calculated based on the modeling data. The information is presented to assist in providing overall health context.

5. The technical specifications and map for the Reduced Sacramento 4-km Modeling Domain are included in Appendix A, Table A-1 and Appendix B, Figure B-2 of the *Guidance to Address the Friant Ranch Ruling for CEQA Projects in the Sac Metro Air District.*

Sac Metro Air District Minor Project Health Effects Tool, version 2, published June 2020

Nicholas Elementary School Rebuild Project Custom Report

Table of Contents

1. Basic Project Information

1.1. Basic Project Information

Data Field	Value
Project Name	Nicholas Elementary School Rebuild Project
Lead Agency	—
Land Use Scale	Project/site
Analysis Level for Defaults	County
Windspeed (m/s)	3.00
Precipitation (days)	36.6
Location	38.50807315894761, -121.44424948205754
County	Sacramento
City	Unincorporated
Air District	Sacramento Metropolitan AQMD
Air Basin	Sacramento Valley
TAZ	732
EDFZ	13
Electric Utility	Sacramento Municipal Utility District
Gas Utility	Pacific Gas & Electric

1.2. Land Use Types

Land Use Subtype	Size	Unit	Lot Acreage	Building Area (sq ft)	Landscape Area (sq ft)	Special Landscape Area (sq ft)	Population	Description
Elementary School	52.0	1000sqft	1.20	52,184	158,637	0.00	—	—
Parking Lot	97.0	Space	1.31	0.00	0.00	0.00	—	—
Other Asphalt Surfaces	0.72	Acre	0.72	0.00	0.00	0.00	—	—

Other Non-Asphalt Surfaces	2.06	Acre	2.06	0.00	0.00	0.00	—	—

1.3. User-Selected Emission Reduction Measures by Emissions Sector

No measures selected

2. Emissions Summary

2.1. Construction Emissions Compared Against Thresholds

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Un/Mit.	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	4.84	13.5	40.5	37.0	0.05	1.81	76.7	78.5	1.66	10.9	12.5	—	5,729	5,729	0.25	0.17	2.54	5,762
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	4.82	4.03	40.5	36.7	0.05	1.81	76.7	78.5	1.66	10.9	12.5	—	5,705	5,705	0.25	0.09	0.05	5,737
Average Daily (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	1.12	1.43	8.45	10.3	0.02	0.36	7.47	7.78	0.33	0.99	1.27	—	2,064	2,064	0.09	0.05	0.52	2,080
Annual (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	0.20	0.26	1.54	1.88	< 0.005	0.07	1.36	1.42	0.06	0.18	0.23	—	342	342	0.01	0.01	0.09	344

2.2. Construction Emissions by Year, Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Year	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e

Daily - Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2023	4.84	4.04	40.5	37.0	0.05	1.81	76.7	78.5	1.66	10.9	12.5	—	5,729	5,729	0.25	0.17	2.54	5,762
2024	1.57	1.31	11.8	14.7	0.03	0.50	0.29	0.79	0.46	0.07	0.53	—	2,904	2,904	0.13	0.06	1.68	2,928
2025	1.02	13.5	7.50	10.9	0.01	0.35	0.15	0.50	0.32	0.04	0.36	—	1,682	1,682	0.06	0.02	0.65	1,689
Daily - Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2023	4.82	4.03	40.5	36.7	0.05	1.81	76.7	78.5	1.66	10.9	12.5	—	5,705	5,705	0.25	0.09	0.05	5,737
2024	1.56	1.30	11.8	14.3	0.03	0.50	0.29	0.79	0.46	0.07	0.53	—	2,875	2,875	0.12	0.06	0.04	2,897
2025	1.47	1.22	11.0	14.2	0.03	0.44	0.29	0.72	0.40	0.07	0.47	—	2,866	2,866	0.12	0.06	0.04	2,888
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2023	0.86	0.72	7.01	6.68	0.01	0.31	7.47	7.78	0.28	0.99	1.27	—	1,149	1,149	0.05	0.03	0.22	1,159
2024	1.12	0.93	8.45	10.3	0.02	0.36	0.20	0.56	0.33	0.05	0.38	—	2,064	2,064	0.09	0.05	0.52	2,080
2025	0.34	1.43	2.50	3.33	0.01	0.10	0.06	0.16	0.09	0.01	0.11	—	623	623	0.03	0.01	0.14	628
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2023	0.16	0.13	1.28	1.22	< 0.005	0.06	1.36	1.42	0.05	0.18	0.23	—	190	190	0.01	< 0.005	0.04	192
2024	0.20	0.17	1.54	1.88	< 0.005	0.07	0.04	0.10	0.06	0.01	0.07	—	342	342	0.01	0.01	0.09	344
2025	0.06	0.26	0.46	0.61	< 0.005	0.02	0.01	0.03	0.02	< 0.005	0.02	—	103	103	< 0.005	< 0.005	0.02	104

3. Construction Emissions Details

3.1. Demolition (2023) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	3.39	2.84	27.3	23.5	0.03	1.20	—	1.20	1.10	—	1.10	—	3,425	3,425	0.14	0.03	—	3,437
Demolition	—	—	—	—	—	—	2.49	2.49	—	0.38	0.38	—	—	—	—	—	—	—
Onsite truck	0.01	< 0.005	0.14	0.06	< 0.005	< 0.005	6.56	6.56	< 0.005	0.66	0.66	—	29.0	29.0	0.01	< 0.005	0.04	30.6
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.29	0.24	2.32	1.99	< 0.005	0.10	—	0.10	0.09	—	0.09	—	291	291	0.01	< 0.005	—	292
Demolition	—	—	—	—	—	—	0.21	0.21	—	0.03	0.03	—	—	—	—	—	—	—
Onsite truck	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	0.56	0.56	< 0.005	0.06	0.06	—	2.46	2.46	< 0.005	< 0.005	< 0.005	2.59
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.05	0.04	0.42	0.36	< 0.005	0.02	—	0.02	0.02	—	0.02	—	48.2	48.2	< 0.005	< 0.005	—	48.3
Demolition	—	—	—	—	—	—	0.04	0.04	—	0.01	0.01	—	—	—	—	—	—	—
Onsite truck	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.10	0.10	< 0.005	0.01	0.01	—	0.41	0.41	< 0.005	< 0.005	< 0.005	0.43
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.08	0.07	0.05	1.05	0.00	0.00	0.15	0.15	0.00	0.04	0.04	—	177	177	0.01	0.01	0.77	180
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

Hauling	0.11	0.03	1.64	0.59	0.01	0.01	0.21	0.22	0.01	0.06	0.07	—	848	848	0.08	0.13	1.73	892
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.01	0.07	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	13.7	13.7	< 0.005	< 0.005	0.03	13.9
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.01	< 0.005	0.15	0.05	< 0.005	< 0.005	0.02	0.02	< 0.005	< 0.005	0.01	—	72.0	72.0	0.01	0.01	0.06	75.6
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.01	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	2.26	2.26	< 0.005	< 0.005	< 0.005	2.30
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	< 0.005	< 0.005	0.03	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	11.9	11.9	< 0.005	< 0.005	0.01	12.5

3.3. Site Preparation (2023) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	4.70	3.95	39.7	35.5	0.05	1.81	—	1.81	1.66	—	1.66	—	5,295	5,295	0.21	0.04	—	5,314
Dust From Material Movement	—	—	—	—	—	—	7.67	7.67	—	3.94	3.94	—	—	—	—	—	—	—
Onsite truck	0.04	0.02	0.65	0.28	< 0.005	< 0.005	68.9	68.9	< 0.005	6.89	6.89	—	227	227	0.03	0.04	0.41	239
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Road Equipment	4.70	3.95	39.7	35.5	0.05	1.81	—	1.81	1.66	—	1.66	—	5,295	5,295	0.21	0.04	—	5,314
Dust From Material Movement	—	—	—	—	—	—	7.67	7.67	—	3.94	3.94	—	—	—	—	—	—	—
Onsite truck	0.04	0.01	0.69	0.29	< 0.005	< 0.005	68.9	68.9	< 0.005	6.89	6.89	—	226	226	0.03	0.04	0.01	238
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.19	0.16	1.63	1.46	< 0.005	0.07	—	0.07	0.07	—	0.07	—	218	218	0.01	< 0.005	—	218
Dust From Material Movement	—	—	—	—	—	—	0.32	0.32	—	0.16	0.16	—	—	—	—	—	—	—
Onsite truck	< 0.005	< 0.005	0.03	0.01	< 0.005	< 0.005	2.83	2.83	< 0.005	0.28	0.28	—	9.32	9.32	< 0.005	< 0.005	0.01	9.79
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.04	0.03	0.30	0.27	< 0.005	0.01	—	0.01	0.01	—	0.01	—	36.0	36.0	< 0.005	< 0.005	—	36.2
Dust From Material Movement	—	—	—	—	—	—	0.06	0.06	—	0.03	0.03	—	—	—	—	—	—	—
Onsite truck	< 0.005	< 0.005	0.01	< 0.005	< 0.005	< 0.005	0.52	0.52	< 0.005	0.05	0.05	—	1.54	1.54	< 0.005	< 0.005	< 0.005	1.62
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.09	0.08	0.06	1.22	0.00	0.00	0.18	0.18	0.00	0.04	0.04	—	206	206	0.01	0.01	0.90	210
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.08	0.07	0.08	0.90	0.00	0.00	0.18	0.18	0.00	0.04	0.04	—	183	183	< 0.005	0.01	0.02	185
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.04	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	7.72	7.72	< 0.005	< 0.005	0.02	7.83
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.01	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	1.28	1.28	< 0.005	< 0.005	< 0.005	1.30
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.5. Grading (2023) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	2.43	2.04	20.0	19.7	0.03	0.94	—	0.94	0.87	—	0.87	—	2,958	2,958	0.12	0.02	—	2,968

Dust From Material Movement	—	—	—	—	—	—	2.76	2.76	—	1.34	1.34	—	—	—	—	—	—	—
Onsite truck	0.03	0.01	0.45	0.20	< 0.005	< 0.005	38.3	38.3	< 0.005	3.83	3.83	—	133	133	0.02	0.02	0.01	139
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.21	0.17	1.70	1.67	< 0.005	0.08	—	0.08	0.07	—	0.07	—	251	251	0.01	< 0.005	—	252
Dust From Material Movement	—	—	—	—	—	—	0.23	0.23	—	0.11	0.11	—	—	—	—	—	—	—
Onsite truck	< 0.005	< 0.005	0.04	0.02	< 0.005	< 0.005	3.25	3.25	< 0.005	0.33	0.33	—	11.3	11.3	< 0.005	< 0.005	0.01	11.9
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.04	0.03	0.31	0.31	< 0.005	0.01	—	0.01	0.01	—	0.01	—	41.6	41.6	< 0.005	< 0.005	—	41.7
Dust From Material Movement	—	—	—	—	—	—	0.04	0.04	—	0.02	0.02	—	—	—	—	—	—	—
Onsite truck	< 0.005	< 0.005	0.01	< 0.005	< 0.005	< 0.005	0.59	0.59	< 0.005	0.06	0.06	—	1.87	1.87	< 0.005	< 0.005	< 0.005	1.96
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.06	0.06	0.07	0.72	0.00	0.00	0.14	0.14	0.00	0.03	0.03	—	146	146	< 0.005	0.01	0.02	148
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	< 0.005	< 0.005	0.06	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	12.8	12.8	< 0.005	< 0.005	0.03	13.0
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.01	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	2.11	2.11	< 0.005	< 0.005	< 0.005	2.14
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.7. Building Construction (2023) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.50	1.26	11.8	13.2	0.02	0.55	—	0.55	0.51	—	0.51	—	2,397	2,397	0.10	0.02	—	2,406
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.14	0.11	1.06	1.19	< 0.005	0.05	—	0.05	0.05	—	0.05	—	216	216	0.01	< 0.005	—	217
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Road Equipment	0.02	0.02	0.19	0.22	< 0.005	0.01	—	0.01	0.01	—	0.01	—	35.7	35.7	< 0.005	< 0.005	—	35.9
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.10	0.09	0.10	1.13	0.00	0.00	0.22	0.22	0.00	0.05	0.05	—	229	229	0.01	0.01	0.03	232
Vendor	0.03	0.01	0.55	0.19	< 0.005	< 0.005	0.06	0.07	< 0.005	0.02	0.02	—	256	256	0.02	0.04	0.02	268
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.01	0.10	0.00	0.00	0.02	0.02	0.00	< 0.005	< 0.005	—	21.2	21.2	< 0.005	< 0.005	0.04	21.5
Vendor	< 0.005	< 0.005	0.05	0.02	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	23.1	23.1	< 0.005	< 0.005	0.03	24.2
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.02	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	3.51	3.51	< 0.005	< 0.005	0.01	3.56
Vendor	< 0.005	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	3.82	3.82	< 0.005	< 0.005	< 0.005	4.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.9. Building Construction (2024) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.44	1.20	11.2	13.1	0.02	0.50	—	0.50	0.46	—	0.46	—	2,398	2,398	0.10	0.02	—	2,406
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.44	1.20	11.2	13.1	0.02	0.50	—	0.50	0.46	—	0.46	—	2,398	2,398	0.10	0.02	—	2,406
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.03	0.86	8.04	9.39	0.02	0.36	—	0.36	0.33	—	0.33	—	1,717	1,717	0.07	0.01	—	1,723
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.19	0.16	1.47	1.71	< 0.005	0.07	—	0.07	0.06	—	0.06	—	284	284	0.01	< 0.005	—	285
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.10	0.10	0.07	1.42	0.00	0.00	0.22	0.22	0.00	0.05	0.05	—	254	254	0.01	0.01	1.04	258
Vendor	0.03	0.01	0.48	0.17	< 0.005	< 0.005	0.06	0.07	< 0.005	0.02	0.02	—	252	252	0.02	0.04	0.65	264
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.10	0.09	0.10	1.05	0.00	0.00	0.22	0.22	0.00	0.05	0.05	—	225	225	0.01	0.01	0.03	228
Vendor	0.03	0.01	0.51	0.18	< 0.005	< 0.005	0.06	0.07	< 0.005	0.02	0.02	—	252	252	0.02	0.04	0.02	263
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.07	0.06	0.06	0.77	0.00	0.00	0.15	0.15	0.00	0.04	0.04	—	166	166	< 0.005	0.01	0.32	168
Vendor	0.02	0.01	0.36	0.12	< 0.005	< 0.005	0.05	0.05	< 0.005	0.01	0.01	—	181	181	0.01	0.03	0.20	189
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.01	0.14	0.00	0.00	0.03	0.03	0.00	0.01	0.01	—	27.4	27.4	< 0.005	< 0.005	0.05	27.8
Vendor	< 0.005	< 0.005	0.07	0.02	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	29.9	29.9	< 0.005	< 0.005	0.03	31.3
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.11. Building Construction (2025) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.35	1.13	10.4	13.0	0.02	0.43	—	0.43	0.40	—	0.40	—	2,398	2,398	0.10	0.02	—	2,406
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.22	0.18	1.70	2.12	< 0.005	0.07	—	0.07	0.06	—	0.06	—	389	389	0.02	< 0.005	—	391
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.04	0.03	0.31	0.39	< 0.005	0.01	—	0.01	0.01	—	0.01	—	64.5	64.5	< 0.005	< 0.005	—	64.7
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.09	0.08	0.08	0.97	0.00	0.00	0.22	0.22	0.00	0.05	0.05	—	221	221	0.01	0.01	0.02	224
Vendor	0.03	0.01	0.48	0.17	< 0.005	< 0.005	0.06	0.07	< 0.005	0.02	0.02	—	247	247	0.02	0.04	0.02	259
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.01	0.16	0.00	0.00	0.04	0.04	0.00	0.01	0.01	—	36.8	36.8	< 0.005	< 0.005	0.07	37.3
Vendor	< 0.005	< 0.005	0.08	0.03	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	40.2	40.2	< 0.005	0.01	0.05	42.1
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.03	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	6.10	6.10	< 0.005	< 0.005	0.01	6.18
Vendor	< 0.005	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	6.65	6.65	< 0.005	< 0.005	0.01	6.96
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.13. Paving (2025) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.95	0.80	7.45	9.98	0.01	0.35	—	0.35	0.32	—	0.32	—	1,511	1,511	0.06	0.01	—	1,517
Paving	—	0.17	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.95	0.80	7.45	9.98	0.01	0.35	—	0.35	0.32	—	0.32	—	1,511	1,511	0.06	0.01	—	1,517
Paving	—	0.17	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.08	0.07	0.63	0.85	< 0.005	0.03	—	0.03	0.03	—	0.03	—	128	128	0.01	< 0.005	—	129
Paving	—	0.01	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.01	0.12	0.15	< 0.005	0.01	—	0.01	< 0.005	—	< 0.005	—	21.3	21.3	< 0.005	< 0.005	—	21.3
Paving	—	< 0.005	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.07	0.06	0.04	0.90	0.00	0.00	0.15	0.15	0.00	0.04	0.04	—	170	170	< 0.005	0.01	0.65	173
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.06	0.06	0.06	0.67	0.00	0.00	0.15	0.15	0.00	0.04	0.04	—	151	151	< 0.005	0.01	0.02	153
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	< 0.005	< 0.005	0.06	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	13.2	13.2	< 0.005	< 0.005	0.02	13.4
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.01	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	2.18	2.18	< 0.005	< 0.005	< 0.005	2.21
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.15. Architectural Coating (2025) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.15	0.13	0.88	1.14	< 0.005	0.03	—	0.03	0.03	—	0.03	—	134	134	0.01	< 0.005	—	134
Architectural Coatings	—	13.3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.01	0.07	0.10	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	11.3	11.3	< 0.005	< 0.005	—	11.4
Architectural Coatings	—	1.13	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	< 0.005	0.01	0.02	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	1.88	1.88	< 0.005	< 0.005	—	1.88
Architectural Coatings	—	0.21	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.02	0.02	0.01	0.26	0.00	0.00	0.04	0.04	0.00	0.01	0.01	—	49.8	49.8	< 0.005	< 0.005	0.19	50.5

Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.02	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	3.85	3.85	< 0.005	< 0.005	0.01	3.90
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.64	0.64	< 0.005	< 0.005	< 0.005	0.65
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

5. Activity Data

5.1. Construction Schedule

Phase Name	Phase Type	Start Date	End Date	Days Per Week	Work Days per Phase	Phase Description
Demolition	Demolition	8/1/2023	9/12/2023	5.00	31.0	—
Site Preparation	Site Preparation	9/13/2023	10/3/2023	5.00	15.0	—
Grading	Grading	10/4/2023	11/15/2023	5.00	31.0	—
Building Construction	Building Construction	11/16/2023	3/24/2025	5.00	353	—
Paving	Paving	3/25/2025	5/6/2025	5.00	31.0	—
Architectural Coating	Architectural Coating	5/7/2025	6/18/2025	5.00	31.0	—

5.2. Off-Road Equipment

5.2.1. Unmitigated

Phase Name	Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor
Demolition	Concrete/Industrial Saws	Diesel	Average	1.00	8.00	33.0	0.73
Demolition	Rubber Tired Dozers	Diesel	Average	2.00	8.00	367	0.40
Site Preparation	Rubber Tired Dozers	Diesel	Average	3.00	8.00	367	0.40
Site Preparation	Tractors/Loaders/Backhoes	Diesel	Average	4.00	8.00	84.0	0.37
Grading	Graders	Diesel	Average	1.00	8.00	148	0.41
Grading	Rubber Tired Dozers	Diesel	Average	1.00	8.00	367	0.40
Grading	Tractors/Loaders/Backhoes	Diesel	Average	3.00	8.00	84.0	0.37
Building Construction	Cranes	Diesel	Average	1.00	7.00	367	0.29
Building Construction	Forklifts	Diesel	Average	3.00	8.00	82.0	0.20
Building Construction	Generator Sets	Diesel	Average	1.00	8.00	14.0	0.74
Building Construction	Tractors/Loaders/Backhoes	Diesel	Average	3.00	7.00	84.0	0.37
Building Construction	Welders	Diesel	Average	1.00	8.00	46.0	0.45
Paving	Pavers	Diesel	Average	2.00	8.00	81.0	0.42
Paving	Paving Equipment	Diesel	Average	2.00	8.00	89.0	0.36
Paving	Rollers	Diesel	Average	2.00	8.00	36.0	0.38
Architectural Coating	Air Compressors	Diesel	Average	1.00	6.00	37.0	0.48
Demolition	Excavators	Diesel	Average	3.00	8.00	36.0	0.38
Grading	Excavators	Diesel	Average	1.00	8.00	36.0	0.38

5.3. Construction Vehicles

5.3.1. Unmitigated

Phase Name	Trip Type	One-Way Trips per Day	Miles per Trip	Vehicle Mix
Demolition	—	—	—	—
Demolition	Worker	15.0	14.3	LDA,LDT1,LDT2
Demolition	Vendor	0.00	8.80	HHDT,MHDT
Demolition	Hauling	11.0	20.0	HHDT
Demolition	Onsite truck	6.00	0.82	HHDT
Site Preparation	—	—	—	—
Site Preparation	Worker	17.5	14.3	LDA,LDT1,LDT2
Site Preparation	Vendor	0.00	8.80	HHDT,MHDT
Site Preparation	Hauling	0.00	20.0	HHDT
Site Preparation	Onsite truck	18.0	2.89	HHDT
Grading	—	—	—	—
Grading	Worker	14.0	14.3	LDA,LDT1,LDT2
Grading	Vendor	0.00	8.80	HHDT,MHDT
Grading	Hauling	0.00	20.0	HHDT
Grading	Onsite truck	14.0	2.06	HHDT
Building Construction	—	—	—	—
Building Construction	Worker	21.9	14.3	LDA,LDT1,LDT2
Building Construction	Vendor	8.55	8.80	HHDT,MHDT
Building Construction	Hauling	0.00	20.0	HHDT
Building Construction	Onsite truck	—	—	HHDT
Paving	—	—	—	—
Paving	Worker	15.0	14.3	LDA,LDT1,LDT2
Paving	Vendor	0.00	8.80	HHDT,MHDT
Paving	Hauling	0.00	20.0	HHDT
Paving	Onsite truck	—	—	HHDT
Architectural Coating	—	—	—	—

Architectural Coating	Worker	4.38	14.3	LDA,LDT1,LDT2
Architectural Coating	Vendor	0.00	8.80	HHDT,MHDT
Architectural Coating	Hauling	0.00	20.0	HHDT
Architectural Coating	Onsite truck	—	—	HHDT

5.4. Vehicles

5.4.1. Construction Vehicle Control Strategies

Non-applicable. No control strategies activated by user.

5.5. Architectural Coatings

Phase Name	Residential Interior Area Coated (sq ft)	Residential Exterior Area Coated (sq ft)	Non-Residential Interior Area Coated (sq ft)	Non-Residential Exterior Area Coated (sq ft)	Parking Area Coated (sq ft)
Architectural Coating	0.00	0.00	78,276	26,092	10,698

5.6. Dust Mitigation

5.6.1. Construction Earthmoving Activities

Phase Name	Material Imported (Ton of Debris)	Material Exported (Ton of Debris)	Acres Graded (acres)	Material Demolished (Ton of Debris)	Acres Paved (acres)
Demolition	0.00	0.00	0.00	3,511	—
Site Preparation	0.00	0.00	15.0	0.00	—
Grading	0.00	0.00	20.0	0.00	—
Paving	0.00	0.00	0.00	0.00	4.09

5.6.2. Construction Earthmoving Control Strategies

Control Strategies Applied	Frequency (per day)	PM10 Reduction	PM2.5 Reduction
Water Exposed Area	2	61%	61%

5.7. Construction Paving

Land Use	Area Paved (acres)	% Asphalt
Elementary School	0.00	0%
Parking Lot	1.31	100%
Other Asphalt Surfaces	0.72	100%
Other Non-Asphalt Surfaces	2.06	0%

5.8. Construction Electricity Consumption and Emissions Factors

kWh per Year and Emission Factor (lb/MWh)

Year	kWh per Year	CO2	CH4	N2O
2023	0.00	375	0.01	< 0.005
2024	0.00	375	0.01	< 0.005
2025	0.00	375	0.01	< 0.005

8. User Changes to Default Data

Screen	Justification
Land Use	Updated to match PD
Construction: Trips and VMT	Matching the PD
Construction: Architectural Coatings	Adjusted to match PD
Construction: Construction Phases	Adjusted schedule to match August 2023 to June 2025.

Nicholas Elementary School Rebuild Project Custom Report

With Mitigation Measure AQ-2

Table of Contents

1. Basic Project Information

1.1. Basic Project Information

Data Field	Value
Project Name	Nicholas Elementary School Rebuild Project
Construction Start Date	8/1/2023
Lead Agency	—
Land Use Scale	Project/site
Analysis Level for Defaults	County
Windspeed (m/s)	3.00
Precipitation (days)	36.6
Location	38.50807315894761, -121.44424948205754
County	Sacramento
City	Unincorporated
Air District	Sacramento Metropolitan AQMD
Air Basin	Sacramento Valley
TAZ	732
EDFZ	13
Electric Utility	Sacramento Municipal Utility District
Gas Utility	Pacific Gas & Electric
App Version	2022.1.1.7

1.2. Land Use Types

Land Use Subtype	Size	Unit	Lot Acreage	Building Area (sq ft)	Landscape Area (sq ft)	Special Landscape Area (sq ft)	Population	Description
Elementary School	52.0	1000sqft	1.20	52,184	158,637	0.00	—	—

Parking Lot	97.0	Space	1.31	0.00	0.00	0.00	—	—
Other Asphalt Surfaces	0.72	Acre	0.72	0.00	0.00	0.00	—	—
Other Non-Asphalt Surfaces	2.06	Acre	2.06	0.00	0.00	0.00	—	—

1.3. User-Selected Emission Reduction Measures by Emissions Sector

Sector	#	Measure Title
Construction	C-5	Use Advanced Engine Tiers

2. Emissions Summary

2.3. Construction Emissions by Year, Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Year	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily - Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2023	0.84	0.74	15.5	29.8	0.05	0.22	76.7	76.8	0.21	10.9	11.0	—	5,729	5,729	0.25	0.17	2.54	5,762
2024	0.77	0.69	9.81	16.6	0.03	0.12	0.29	0.41	0.12	0.07	0.19	—	2,904	2,904	0.13	0.06	1.68	2,928
2025	0.58	13.5	6.83	11.5	0.01	0.10	0.15	0.26	0.10	0.04	0.13	—	1,682	1,682	0.06	0.02	0.65	1,689
Daily - Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2023	0.79	0.73	15.5	29.5	0.05	0.13	76.7	76.8	0.12	10.9	11.0	—	5,705	5,705	0.25	0.09	0.05	5,737
2024	0.76	0.67	9.87	16.2	0.03	0.12	0.29	0.41	0.12	0.07	0.19	—	2,875	2,875	0.12	0.06	0.04	2,897
2025	0.74	0.69	9.77	16.1	0.03	0.12	0.29	0.40	0.11	0.07	0.18	—	2,866	2,866	0.12	0.06	0.04	2,888
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

2023	0.22	0.20	3.58	5.95	0.01	0.04	7.47	7.51	0.04	0.99	1.03	—	1,149	1,149	0.05	0.03	0.22	1,159
2024	0.55	0.48	7.05	11.6	0.02	0.09	0.20	0.29	0.08	0.05	0.13	—	2,064	2,064	0.09	0.05	0.52	2,080
2025	0.18	1.31	2.24	3.69	0.01	0.03	0.06	0.09	0.03	0.01	0.04	—	623	623	0.03	0.01	0.14	628
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2023	0.04	0.04	0.65	1.09	< 0.005	0.01	1.36	1.37	0.01	0.18	0.19	—	190	190	0.01	< 0.005	0.04	192
2024	0.10	0.09	1.29	2.12	< 0.005	0.02	0.04	0.05	0.02	0.01	0.02	—	342	342	0.01	0.01	0.09	344
2025	0.03	0.24	0.41	0.67	< 0.005	0.01	0.01	0.02	0.01	< 0.005	0.01	—	103	103	< 0.005	< 0.005	0.02	104

3. Construction Emissions Details

3.2. Demolition (2023) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.64	0.59	11.6	18.3	0.03	0.20	—	0.20	0.19	—	0.19	—	3,425	3,425	0.14	0.03	—	3,437
Demolition	—	—	—	—	—	—	2.49	2.49	—	0.38	0.38	—	—	—	—	—	—	—
Onsite truck	0.01	< 0.005	0.14	0.06	< 0.005	< 0.005	6.56	6.56	< 0.005	0.66	0.66	—	29.0	29.0	0.01	< 0.005	0.04	30.6
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.05	0.05	0.99	1.56	< 0.005	0.02	—	0.02	0.02	—	0.02	—	291	291	0.01	< 0.005	—	292

Demolitio	—	—	—	—	—	—	0.21	0.21	—	0.03	0.03	—	—	—	—	—	—	—
Onsite truck	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	0.56	0.56	< 0.005	0.06	0.06	—	2.46	2.46	< 0.005	< 0.005	< 0.005	2.59
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.01	0.18	0.28	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	48.2	48.2	< 0.005	< 0.005	—	48.3
Demolitio n	—	—	—	—	—	—	0.04	0.04	—	0.01	0.01	—	—	—	—	—	—	—
Onsite truck	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.10	0.10	< 0.005	0.01	0.01	—	0.41	0.41	< 0.005	< 0.005	< 0.005	0.43
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.08	0.07	0.05	1.05	0.00	0.00	0.15	0.15	0.00	0.04	0.04	—	177	177	0.01	0.01	0.77	180
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.11	0.03	1.64	0.59	0.01	0.01	0.21	0.22	0.01	0.06	0.07	—	848	848	0.08	0.13	1.73	892
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.01	0.07	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	13.7	13.7	< 0.005	< 0.005	0.03	13.9
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.01	< 0.005	0.15	0.05	< 0.005	< 0.005	0.02	0.02	< 0.005	< 0.005	0.01	—	72.0	72.0	0.01	0.01	0.06	75.6
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.01	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	2.26	2.26	< 0.005	< 0.005	< 0.005	2.30
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	< 0.005	< 0.005	0.03	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	11.9	11.9	< 0.005	< 0.005	0.01	12.5

3.4. Site Preparation (2023) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.64	0.64	14.7	28.3	0.05	0.10	—	0.10	0.10	—	0.10	—	5,295	5,295	0.21	0.04	—	5,314
Dust From Material Movement	—	—	—	—	—	—	7.67	7.67	—	3.94	3.94	—	—	—	—	—	—	—
Onsite truck	0.04	0.02	0.65	0.28	< 0.005	< 0.005	68.9	68.9	< 0.005	6.89	6.89	—	227	227	0.03	0.04	0.41	239
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.64	0.64	14.7	28.3	0.05	0.10	—	0.10	0.10	—	0.10	—	5,295	5,295	0.21	0.04	—	5,314
Dust From Material Movement	—	—	—	—	—	—	7.67	7.67	—	3.94	3.94	—	—	—	—	—	—	—
Onsite truck	0.04	0.01	0.69	0.29	< 0.005	< 0.005	68.9	68.9	< 0.005	6.89	6.89	—	226	226	0.03	0.04	0.01	238
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.03	0.03	0.61	1.16	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	218	218	0.01	< 0.005	—	218
Dust From Material Movement	—	—	—	—	—	—	0.32	0.32	—	0.16	0.16	—	—	—	—	—	—	—

Onsite truck	< 0.005	< 0.005	0.03	0.01	< 0.005	< 0.005	2.83	2.83	< 0.005	0.28	0.28	—	9.32	9.32	< 0.005	< 0.005	0.01	9.79
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	< 0.005	0.11	0.21	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	36.0	36.0	< 0.005	< 0.005	—	36.2
Dust From Material Movement	—	—	—	—	—	—	0.06	0.06	—	0.03	0.03	—	—	—	—	—	—	—
Onsite truck	< 0.005	< 0.005	0.01	< 0.005	< 0.005	< 0.005	0.52	0.52	< 0.005	0.05	0.05	—	1.54	1.54	< 0.005	< 0.005	< 0.005	1.62
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.09	0.08	0.06	1.22	0.00	0.00	0.18	0.18	0.00	0.04	0.04	—	206	206	0.01	0.01	0.90	210
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.08	0.07	0.08	0.90	0.00	0.00	0.18	0.18	0.00	0.04	0.04	—	183	183	< 0.005	0.01	0.02	185
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.04	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	7.72	7.72	< 0.005	< 0.005	0.02	7.83
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.01	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	1.28	1.28	< 0.005	< 0.005	< 0.005	1.30
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.6. Grading (2023) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.50	0.48	10.0	17.8	0.03	0.09	—	0.09	0.08	—	0.08	—	2,958	2,958	0.12	0.02	—	2,968
Dust From Material Movement	—	—	—	—	—	—	2.76	2.76	—	1.34	1.34	—	—	—	—	—	—	—
Onsite truck	0.03	0.01	0.45	0.20	< 0.005	< 0.005	38.3	38.3	< 0.005	3.83	3.83	—	133	133	0.02	0.02	0.01	139
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.04	0.04	0.85	1.51	< 0.005	0.01	—	0.01	0.01	—	0.01	—	251	251	0.01	< 0.005	—	252
Dust From Material Movement	—	—	—	—	—	—	0.23	0.23	—	0.11	0.11	—	—	—	—	—	—	—
Onsite truck	< 0.005	< 0.005	0.04	0.02	< 0.005	< 0.005	3.25	3.25	< 0.005	0.33	0.33	—	11.3	11.3	< 0.005	< 0.005	0.01	11.9
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.01	0.16	0.28	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	41.6	41.6	< 0.005	< 0.005	—	41.7

Dust From Material Movement	—	—	—	—	—	—	0.04	0.04	—	0.02	0.02	—	—	—	—	—	—	—
Onsite truck	< 0.005	< 0.005	0.01	< 0.005	< 0.005	< 0.005	0.59	0.59	< 0.005	0.06	0.06	—	1.87	1.87	< 0.005	< 0.005	< 0.005	1.96
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.06	0.06	0.07	0.72	0.00	0.00	0.14	0.14	0.00	0.03	0.03	—	146	146	< 0.005	0.01	0.02	148
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	< 0.005	< 0.005	0.06	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	12.8	12.8	< 0.005	< 0.005	0.03	13.0
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.01	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	2.11	2.11	< 0.005	< 0.005	< 0.005	2.14
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.8. Building Construction (2023) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.66	0.59	9.30	15.0	0.02	0.13	—	0.13	0.12	—	0.12	—	2,397	2,397	0.10	0.02	—	2,406
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.06	0.05	0.84	1.35	< 0.005	0.01	—	0.01	0.01	—	0.01	—	216	216	0.01	< 0.005	—	217
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.01	0.15	0.25	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	35.7	35.7	< 0.005	< 0.005	—	35.9
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.10	0.09	0.10	1.13	0.00	0.00	0.22	0.22	0.00	0.05	0.05	—	229	229	0.01	0.01	0.03	232
Vendor	0.03	0.01	0.55	0.19	< 0.005	< 0.005	0.06	0.07	< 0.005	0.02	0.02	—	256	256	0.02	0.04	0.02	268
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Worker	0.01	0.01	0.01	0.10	0.00	0.00	0.02	0.02	0.00	< 0.005	< 0.005	—	21.2	21.2	< 0.005	< 0.005	0.04	21.5
Vendor	< 0.005	< 0.005	0.05	0.02	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	23.1	23.1	< 0.005	< 0.005	0.03	24.2
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.02	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	3.51	3.51	< 0.005	< 0.005	0.01	3.56
Vendor	< 0.005	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	3.82	3.82	< 0.005	< 0.005	< 0.005	4.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.10. Building Construction (2024) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.64	0.58	9.26	15.0	0.02	0.12	—	0.12	0.11	—	0.11	—	2,398	2,398	0.10	0.02	—	2,406
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.64	0.58	9.26	15.0	0.02	0.12	—	0.12	0.11	—	0.11	—	2,398	2,398	0.10	0.02	—	2,406
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.46	0.41	6.63	10.7	0.02	0.09	—	0.09	0.08	—	0.08	—	1,717	1,717	0.07	0.01	—	1,723

Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.08	0.08	1.21	1.96	< 0.005	0.02	—	0.02	0.01	—	0.01	—	284	284	0.01	< 0.005	—	285
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.10	0.10	0.07	1.42	0.00	0.00	0.22	0.22	0.00	0.05	0.05	—	254	254	0.01	0.01	1.04	258
Vendor	0.03	0.01	0.48	0.17	< 0.005	< 0.005	0.06	0.07	< 0.005	0.02	0.02	—	252	252	0.02	0.04	0.65	264
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.10	0.09	0.10	1.05	0.00	0.00	0.22	0.22	0.00	0.05	0.05	—	225	225	0.01	0.01	0.03	228
Vendor	0.03	0.01	0.51	0.18	< 0.005	< 0.005	0.06	0.07	< 0.005	0.02	0.02	—	252	252	0.02	0.04	0.02	263
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.07	0.06	0.06	0.77	0.00	0.00	0.15	0.15	0.00	0.04	0.04	—	166	166	< 0.005	0.01	0.32	168
Vendor	0.02	0.01	0.36	0.12	< 0.005	< 0.005	0.05	0.05	< 0.005	0.01	0.01	—	181	181	0.01	0.03	0.20	189
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.01	0.14	0.00	0.00	0.03	0.03	0.00	0.01	0.01	—	27.4	27.4	< 0.005	< 0.005	0.05	27.8
Vendor	< 0.005	< 0.005	0.07	0.02	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	29.9	29.9	< 0.005	< 0.005	0.03	31.3
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.12. Building Construction (2025) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.62	0.56	9.21	15.0	0.02	0.11	—	0.11	0.11	—	0.11	—	2,398	2,398	0.10	0.02	—	2,406
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.10	0.09	1.50	2.43	< 0.005	0.02	—	0.02	0.02	—	0.02	—	389	389	0.02	< 0.005	—	391
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.02	0.02	0.27	0.44	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	64.5	64.5	< 0.005	< 0.005	—	64.7
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Worker	0.09	0.08	0.08	0.97	0.00	0.00	0.22	0.22	0.00	0.05	0.05	—	221	221	0.01	0.01	0.02	224
Vendor	0.03	0.01	0.48	0.17	< 0.005	< 0.005	0.06	0.07	< 0.005	0.02	0.02	—	247	247	0.02	0.04	0.02	259
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.01	0.16	0.00	0.00	0.04	0.04	0.00	0.01	0.01	—	36.8	36.8	< 0.005	< 0.005	0.07	37.3
Vendor	< 0.005	< 0.005	0.08	0.03	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	40.2	40.2	< 0.005	0.01	0.05	42.1
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.03	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	6.10	6.10	< 0.005	< 0.005	0.01	6.18
Vendor	< 0.005	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	6.65	6.65	< 0.005	< 0.005	0.01	6.96
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.14. Paving (2025) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.51	0.46	6.78	10.6	0.01	0.10	—	0.10	0.10	—	0.10	—	1,511	1,511	0.06	0.01	—	1,517
Paving	—	0.17	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.51	0.46	6.78	10.6	0.01	0.10	—	0.10	0.10	—	0.10	—	1,511	1,511	0.06	0.01	—	1,517

Paving	—	0.17	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.04	0.04	0.58	0.90	< 0.005	0.01	—	0.01	0.01	—	0.01	—	128	128	0.01	< 0.005	—	129
Paving	—	0.01	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.01	0.11	0.16	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	21.3	21.3	< 0.005	< 0.005	—	21.3
Paving	—	< 0.005	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.07	0.06	0.04	0.90	0.00	0.00	0.15	0.15	0.00	0.04	0.04	—	170	170	< 0.005	0.01	0.65	173
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.06	0.06	0.06	0.67	0.00	0.00	0.15	0.15	0.00	0.04	0.04	—	151	151	< 0.005	0.01	0.02	153
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	< 0.005	< 0.005	0.06	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	13.2	13.2	< 0.005	< 0.005	0.02	13.4

Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.01	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	2.18	2.18	< 0.005	< 0.005	< 0.005	2.21
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.16. Architectural Coating (2025) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.15	0.13	0.88	1.14	< 0.005	0.03	—	0.03	0.03	—	0.03	—	134	134	0.01	< 0.005	—	134
Architectural Coatings	—	13.3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.01	0.07	0.10	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	11.3	11.3	< 0.005	< 0.005	—	11.4
Architectural Coatings	—	1.13	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	< 0.005	0.01	0.02	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	1.88	1.88	< 0.005	< 0.005	—	1.88
Architectural Coatings	—	0.21	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.02	0.02	0.01	0.26	0.00	0.00	0.04	0.04	0.00	0.01	0.01	—	49.8	49.8	< 0.005	< 0.005	0.19	50.5
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.02	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	3.85	3.85	< 0.005	< 0.005	0.01	3.90
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.64	0.64	< 0.005	< 0.005	< 0.005	0.65
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

5. Activity Data

5.1. Construction Schedule

Phase Name	Phase Type	Start Date	End Date	Days Per Week	Work Days per Phase	Phase Description
Demolition	Demolition	8/1/2023	9/12/2023	5.00	31.0	—
Site Preparation	Site Preparation	9/13/2023	10/3/2023	5.00	15.0	—
Grading	Grading	10/4/2023	11/15/2023	5.00	31.0	—
Building Construction	Building Construction	11/16/2023	3/24/2025	5.00	353	—
Paving	Paving	3/25/2025	5/6/2025	5.00	31.0	—
Architectural Coating	Architectural Coating	5/7/2025	6/18/2025	5.00	31.0	—

5.2. Off-Road Equipment

5.2.2. Mitigated

Phase Name	Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor
Demolition	Concrete/Industrial Saws	Diesel	Average	1.00	8.00	33.0	0.73
Demolition	Rubber Tired Dozers	Diesel	Tier 4 Interim	2.00	8.00	367	0.40
Site Preparation	Rubber Tired Dozers	Diesel	Tier 4 Interim	3.00	8.00	367	0.40
Site Preparation	Tractors/Loaders/Backhoes	Diesel	Tier 4 Interim	4.00	8.00	84.0	0.37
Grading	Graders	Diesel	Tier 4 Interim	1.00	8.00	148	0.41
Grading	Rubber Tired Dozers	Diesel	Tier 4 Interim	1.00	8.00	367	0.40
Grading	Tractors/Loaders/Backhoes	Diesel	Tier 4 Interim	3.00	8.00	84.0	0.37
Building Construction	Cranes	Diesel	Tier 4 Interim	1.00	7.00	367	0.29
Building Construction	Forklifts	Diesel	Tier 4 Interim	3.00	8.00	82.0	0.20
Building Construction	Generator Sets	Diesel	Average	1.00	8.00	14.0	0.74

Building Construction	Tractors/Loaders/Backh	Diesel	Tier 4 Interim	3.00	7.00	84.0	0.37
Building Construction	Welders	Diesel	Average	1.00	8.00	46.0	0.45
Paving	Pavers	Diesel	Tier 4 Interim	2.00	8.00	81.0	0.42
Paving	Paving Equipment	Diesel	Tier 4 Interim	2.00	8.00	89.0	0.36
Paving	Rollers	Diesel	Average	2.00	8.00	36.0	0.38
Architectural Coating	Air Compressors	Diesel	Average	1.00	6.00	37.0	0.48
Demolition	Excavators	Diesel	Tier 4 Interim	3.00	8.00	36.0	0.38
Grading	Excavators	Diesel	Average	1.00	8.00	36.0	0.38

5.3. Construction Vehicles

5.3.2. Mitigated

Phase Name	Trip Type	One-Way Trips per Day	Miles per Trip	Vehicle Mix
Demolition	—	—	—	—
Demolition	Worker	15.0	14.3	LDA,LDT1,LDT2
Demolition	Vendor	0.00	8.80	HHDT,MHDT
Demolition	Hauling	11.0	20.0	HHDT
Demolition	Onsite truck	6.00	0.82	HHDT
Site Preparation	—	—	—	—
Site Preparation	Worker	17.5	14.3	LDA,LDT1,LDT2
Site Preparation	Vendor	0.00	8.80	HHDT,MHDT
Site Preparation	Hauling	0.00	20.0	HHDT
Site Preparation	Onsite truck	18.0	2.89	HHDT
Grading	—	—	—	—
Grading	Worker	14.0	14.3	LDA,LDT1,LDT2
Grading	Vendor	0.00	8.80	HHDT,MHDT
Grading	Hauling	0.00	20.0	HHDT

Grading	Onsite truck	14.0	2.06	HHDT
Building Construction	—	—	—	—
Building Construction	Worker	21.9	14.3	LDA,LDT1,LDT2
Building Construction	Vendor	8.55	8.80	HHDT,MHDT
Building Construction	Hauling	0.00	20.0	HHDT
Building Construction	Onsite truck	—	—	HHDT
Paving	—	—	—	—
Paving	Worker	15.0	14.3	LDA,LDT1,LDT2
Paving	Vendor	0.00	8.80	HHDT,MHDT
Paving	Hauling	0.00	20.0	HHDT
Paving	Onsite truck	—	—	HHDT
Architectural Coating	—	—	—	—
Architectural Coating	Worker	4.38	14.3	LDA,LDT1,LDT2
Architectural Coating	Vendor	0.00	8.80	HHDT,MHDT
Architectural Coating	Hauling	0.00	20.0	HHDT
Architectural Coating	Onsite truck	—	—	HHDT

5.4. Vehicles

5.4.1. Construction Vehicle Control Strategies

Non-applicable. No control strategies activated by user.

5.5. Architectural Coatings

Phase Name	Residential Interior Area Coated (sq ft)	Residential Exterior Area Coated (sq ft)	Non-Residential Interior Area Coated (sq ft)	Non-Residential Exterior Area Coated (sq ft)	Parking Area Coated (sq ft)
Architectural Coating	0.00	0.00	78,276	26,092	10,698

5.6. Dust Mitigation

5.6.1. Construction Earthmoving Activities

Phase Name	Material Imported (Ton of Debris)	Material Exported (Ton of Debris)	Acres Graded (acres)	Material Demolished (Ton of Debris)	Acres Paved (acres)
Demolition	0.00	0.00	0.00	3,511	—
Site Preparation	0.00	0.00	15.0	0.00	—
Grading	0.00	0.00	20.0	0.00	—
Paving	0.00	0.00	0.00	0.00	4.09

5.6.2. Construction Earthmoving Control Strategies

Control Strategies Applied	Frequency (per day)	PM10 Reduction	PM2.5 Reduction
Water Exposed Area	2	61%	61%

5.7. Construction Paving

Land Use	Area Paved (acres)	% Asphalt
Elementary School	0.00	0%
Parking Lot	1.31	100%
Other Asphalt Surfaces	0.72	100%
Other Non-Asphalt Surfaces	2.06	0%

5.8. Construction Electricity Consumption and Emissions Factors

kWh per Year and Emission Factor (lb/MWh)

Year	kWh per Year	CO2	CH4	N2O
2023	0.00	375	0.01	< 0.005
2024	0.00	375	0.01	< 0.005
2025	0.00	375	0.01	< 0.005

1. Construction Health Risk Assessment

1.1 INTRODUCTION

The Sacramento City Unified School District (District), the project applicant, is proposing the redevelopment and modernization of the existing Nicholas Elementary School campus (proposed project or project). The approximately 10.1-acre project site is bound by residential uses that face Sitton Way to the north, residential uses and the Allegheny Wesleyan Methodist Church along Steiner Drive to the west, residential uses facing Frawley Way to the south, and residential uses and a facility owned by California American Water along Vernace Way to the east of the project site. Nicholas Elementary School is in an urban area surrounded by residential, commercial, and institutional uses. The project is a school redevelopment project that would result in demolition of existing school buildings and construction of new school buildings. The proposed project would involve building and asphalt demolition, site preparation, grading, building construction, architectural coating, and paving activities. The following provides the background methodology used for the construction health risk assessment for the proposed project.

Project construction is estimated to start approximately August 2023 and construction activities would end approximately June 2025. The nearest sensitive receptors to the project site include the single-family residences surrounding the project site, as well as the Sacramento Accelerated Academy and Calvary Christian schools to the north. Guidance from the California Environmental Protection Agency (Cal/EPA), Office of Environmental Health Hazard Assessment (OEHHA), and California Air Pollution Control Officers Association (CAPCOA) recommend the completion of health risk assessments (HRA) to determine the impacts of hazardous air emissions upon sensitive receptors in the vicinity of the project. As a result, a site-specific construction health risk assessment (HRA) has been prepared for the proposed project. This HRA considers the health impact to sensitive receptors (nearby residents and off-site students) from exposure to construction diesel equipment exhaust (diesel particulate matter or DPM).

1.2 METHODOLOGY AND SIGNIFICANCE THRESHOLDS

For this HRA, the Sacramento Metropolitan Air Quality Management District (Sac Metro AQMD) significance thresholds provided below were deemed to be appropriate for analyzing project impacts:

- Excess cancer risk of more than 10 in a million
- Non-cancer hazard index (chronic or acute) greater than 1.0

The methodology used in this HRA is consistent with the following OEHHA guidance document:

- OEHHA. 2015. *Air Toxics Hot Spots Program Guidance Manual for the Preparation of Health Risk Assessments.* February, 2015.

Potential exposure to DPM from project construction was evaluated for off-site sensitive receptors in close proximity to the site. Pollutant concentrations were estimated using an air dispersion model, and excess lifetime cancer risks and chronic non-cancer hazard indexes were calculated. These risks were then compared to the significance thresholds utilized for this HRA.

It should be noted that these health impacts are based on conservative (i.e., health protective) assumptions. The United States Environmental Protection Agency (USEPA, 2005) and the Office of Environmental Health Hazard Assessment (OEHHA, 2015) note that conservative assumptions used in a risk assessment are intended to ensure that the estimated risks do not underestimate the actual risks. Therefore, the estimated risks may not necessarily represent actual risks experienced by populations at or near a site. The use of conservative assumptions tends to produce upper-bound estimates of exposure and thus risk.

For residential-based receptors, the following conservative assumptions were used:

- It was assumed that maximum-exposed off-site residential receptors (both children and adults) stood outdoors and are subject to DPM at their residence for 8 hours per day, and approximately 260 construction days per year. In reality, California residents typically will spend on average 2 hours per day outdoors at their residences (USEPA, 2011). This would result in lower exposures to construction related DPM emissions and lower estimated risk values.

- The calculated risk for infants from third trimester to age 2 is multiplied by a factor of 10 to account for early life exposure and uncertainty in child versus adult exposure impacts (OEHHA, 2015).

For school-based receptors (students), the following conservative assumptions were used:

- It was assumed that maximum-exposed off-site student receptors (both children and adults) stood outdoors and are subject to DPM at their school for 8 hours per day, and approximately 180 school days per year. In reality, students are expected to be inside for most of a given day where air ventilation systems would filter particulates originating from outside. This would result in lower exposures to construction related DPM emissions and lower estimated risk values.

- The calculated risk for children from age 2 to age 16 is multiplied by a factor of 3 to account for early life exposure and uncertainty in child versus adult exposure impacts (OEHHA, 2015).

1.3 CONSTRUCTION EMISSIONS

Construction emissions were calculated as average daily emissions in pounds per day, using the proposed construction schedule and the latest version of California Emissions Estimation Model, known as CalEEMod Version 2022.1 (CAPCOA, 2022). DPM emissions were based on the CalEEMod construction runs, using maximum daily exhaust PM_{10} construction emissions presented in pounds (lbs) per day.

The daily emission rates from construction equipment used during the proposed project were determined by multiplying the daily pounds per day of each construction activity by the total workdays for that activity, adding all total pounds of emissions across the total project construction duration, then dividing that total emission estimate by the total construction workdays. The off-site hauling emission rates were adjusted to evaluate

localized emissions from the 0.8-mile haul route within 1,000 feet of the project site. The CalEEMod construction emissions output and emission rate calculations are provided in Attachment A of this HRA.

1.4 DISPERSION MODELING

Air quality modeling was performed using the AERMOD atmospheric dispersion model to assess the impact of emitted compounds on sensitive receptors near the project. The model is a steady state Gaussian plume model and is an approved model by Sacramento Metropolitan AQMD for estimating ground level impacts from point and fugitive sources in simple and complex terrain. The on-site construction emissions for the project were modeled as poly-area sources. The off-site mobile sources were modeled as adjacent line volume sources. The model requires additional input parameters, including chemical emission data and local meteorology. Inputs for the construction emission rates are those described in Section 1.3. Meteorological data obtained from the Sacramento Metropolitan AQMD for the nearest representative meteorological station (Sacramento Executive Airport) with the five latest available years (2014 to 2018) of record were used to represent local weather conditions and prevailing winds. The prevailing wind direction at the Sacramento Executive Airport meteorological station is to the southwest, and the wind rose is provided in Attachment B.

The modeling analysis also considered the spatial distribution and elevation of each emitting source in relation to the sensitive receptors. To accommodate the model's Cartesian grid format, direction-dependent calculations were obtained by identifying the Universal Transverse Mercator (UTM) coordinates for each source location. In addition, digital elevation model (DEM) data for the area were obtained and included in the model runs to account for complex terrain. An emission release height of 4.15 meters was used as representative of the stack exhaust height for off-road construction equipment and diesel truck traffic, and an initial vertical dispersion parameter of 1.93 m was used, per California Air Resources Board (CARB) guidance (2000).

To determine contaminant impacts during construction hours, the model's Hour-By-Day-of-Week (HRDOW) scalar option was invoked to predict ground-level concentrations for construction emissions generated between the hours of 7:00 AM and 4:00 PM with a 1-hour lunch break.

A unit emission rate of 1 gram per second was used for all modeling runs. The unit emission rates were proportioned over the poly-area sources for on-site construction emissions and divided between the volume sources for off-site hauling emissions. The maximum modeled concentrations from the output files were then multiplied by the emission rates calculated in Attachment A to obtain the maximum flagpole-level concentrations at the off-site maximum exposed receptors (MERs). The Residential, School, and Worker MER locations correspond with the maximum AERMOD predicted DPM concentrations at nearby off-site resident, student, and worker locations from the on-site emission source because the calculated on-site emission rates are approximately 2 orders of magnitude higher than the calculated off-site emission rates (see Attachment A). Therefore, the maximum concentrations associated with the on-site emission sources produce the highest overall ground-level MER concentrations and, consequently, highest calculated health risks.

The air dispersion model output for the emission sources is presented in Attachment B. The model output DPM concentrations from the construction emission sources are provided in Attachment C.

1.5 RISK CHARACTERIZATION

1.5.1 Carcinogenic Chemical Risk

Carcinogenic compounds are not considered to have threshold levels (i.e., dose levels below which there are no risks). Therefore, any exposure will have some associated risk. The Sac Metro AQMD has established a maximum incremental cancer risk of 10 in a million (1×10^{-5} or 10×10^{-6}) for CEQA projects and the OEHHA also sets a typical risk management level as 10 in a million (OEHHA, 2015).

Health risks associated with exposure to carcinogenic compounds can be defined in terms of the probability of developing cancer as a result of exposure to a chemical at a given concentration. The cancer risk probability is determined by multiplying the chemical's annual concentration by its cancer potency factor (CPF), a measure of the carcinogenic potential of a chemical when a dose is received through the inhalation pathway. It is an upper-limit estimate of the probability of contracting cancer as a result of continuous exposure to an ambient concentration of one microgram per cubic meter ($\mu g/m^3$), averaged over a lifetime of 70 years.

Recent guidance from OEHHA recommends a refinement to the standard point estimate approach with the use of age-specific breathing rates and age sensitivity factors (ASFs) to assess risk for susceptible subpopulations such as children. For the inhalation pathway, the procedure requires the incorporation of several discrete variates to effectively quantify dose for each age group. Once determined, contaminant dose is multiplied by the cancer potency factor in units of inverse dose expressed in milligrams per kilogram per day $(mg/kg/day)^{-1}$ to derive the cancer risk estimate. Therefore, the following dose algorithm was used to accommodate the unique exposures associated with each receptor type.

$$\text{Dose}_{\text{AIR,per age group}} = \left(C_{air} \times EF \times \left[\frac{BR}{BW}\right] \times A \times CF\right)$$

Where:

Dose_{AIR}	=	dose by inhalation (mg/kg-day), per age group
C_{air}	=	concentration of contaminant in air ($\mu g/m^3$)
EF	=	exposure frequency (number of days/365 days)
BR/BW	=	daily breathing rate normalized to body weight (L/kg-day)
A	=	inhalation absorption factor (default = 1)
CF	=	conversion factor ($1x10^{-6}$, µg to mg, L to m^3)

The inhalation absorption factor (A) is a unitless factor that is only used if the cancer potency factor included a correction for absorption across the lung. The default value of 1 was used for this assessment. For residential receptors, the exposure frequency (EF) of 0.96 is used to represent 350 days per year to allow for a two-week period away from home each year (OEHHA, 2015). For students, the EF of 0.49 is used to represent 180 days per year accounting for the average annual days school would be in-session. For workers, the EF of 0.71 is used to represent 260 days per year accounting for the average annual days a full-time employee could be at work. The 95th percentile daily breathing rates (BR/BW), exposure duration (ED), age sensitivity factors (ASFs), and fraction of time at home (FAH) for the various age groups are provided herein:

Age Groups	BR/BW (L/kg-day)	ED	ASF	FAH
Residential MER				
Third trimester	361	0.25	10	0.85
0-2 age group	1,090	1.63	10	0.85
School MERs				
2-9 age group	861	1.88	3	N/A
2-16 age group	745	1.88	3	N/A
Worker MER				
16-30 age group	335	1.88	1	N/A

For construction analysis, the exposure duration spans the length of construction (e.g., 492 workdays or 1.88 years). In addition, the construction duration was considered in the risk calculations to account for the number of days the MERs are exposed to construction emissions. As the length of construction is longer than 0.25 year, the third trimester and 0-2 age bins apply to the construction analysis for the off-site residential MER. Because two schools of differing age ranges were identified near the project site, Calvary Christian Preschool and Sacramento Accelerated Academy High School, the 2-9 age bin was utilized for the Calvary Christian school MER while the 2-16 age bin was utilized for the Sacramento Accelerated Academy school MER.

To calculate the overall cancer risk, the risk for each appropriate age group is calculated per the following equation:

$$\text{Cancer Risk}_{\text{AIR}} = \text{Dose}_{\text{AIR}} \times \text{CPF} \times \text{ASF} \times \text{FAH} \times \frac{\text{ED}}{AT}$$

Where:

Dose_{AIR}	=	dose by inhalation (mg/kg-day), per age group
CPF	=	cancer potency factor, chemical-specific $(\text{mg/kg-day})^{-1}$
ASF	=	age sensitivity factor, per age group
FAH	=	fraction of time at home, per age group (for residential receptors only)
ED	=	exposure duration (years)
AT	=	averaging time period over which exposure duration is averaged (70 years)

The CPFs used in the assessment were obtained from OEHHA guidance. The excess lifetime cancer risks during project construction to the MERs were calculated based on the factors provided above. The cancer risks for each age group are summed, as applicable, to estimate the total cancer risk for each toxic chemical species. The final step converts the cancer risk in scientific notation to a whole number that expresses the cancer risk in "chances per million" by multiplying the cancer risk by a factor of $1x10^6$ (i.e., 1 million).

The calculated results are provided in Attachment C.

1.5.2 Non-Carcinogenic Hazards

An evaluation was also conducted of the potential non-cancer effects of chronic chemical exposures. Adverse health effects are evaluated by comparing the annual receptor level concentration of each chemical compound

with the appropriate reference exposure limit (REL). Available RELs promulgated by OEHHA were considered in the assessment.

The hazard index approach was used to quantify non-carcinogenic impacts. The hazard index assumes that chronic sub-threshold exposures adversely affect a specific organ or organ system (toxicological endpoint). Target organs presented in regulatory guidance were used for each discrete chemical exposure. To calculate the hazard index, each chemical concentration or dose is divided by the appropriate toxicity value. This ratio is summed for compounds affecting the same toxicological endpoint. A health hazard is presumed to exist where the total equals or exceeds one.

The chronic hazard analysis for DPM is provided in Attachment C. The calculations contain the relevant exposure concentrations and corresponding reference dose values used in the evaluation of non-carcinogenic exposures.

1.6 CONSTRUCTION HRA RESULTS

The calculated results are provided in Attachment C and the results are summarized in Table 1.

TABLE 1. CONSTRUCTION RISK SUMMARY - UNMITIGATED

Receptor	Cancer Risk (per million)	Chronic Hazards
Residential MER	28.1	0.025
School MER – Sacramento Accelerated Academy	0.2	0.001
School MER – Calvary Christian	0.2	0.001
Worker MER	0.2	0.005
Maximally Impacted MER	28.1	0.025
Sac Metro AQMD Threshold	10	1.0
Exceeds Threshold?	Yes	No

Note: MER = Maximum Exposed Receptor. Cancer risk calculated using 2015 OEHHA HRA guidance.

Cancer risk during project construction for the Residential, School, and Worker MERs were calculated to be 28.1, 0.2, and 0.2 in a million, respectively. Chronic hazards during project construction for the Residential, School, and Worker MERs were calculated to be 0.025, 0.001, and 0.005, respectively. As illustrated in Table 1, the Residential MER cancer risk would exceed the 10 in a million-significance threshold. No other MER impacts would exceed Sac Metro AQMD thresholds. Therefore, mitigation would be required to reduce the Residential MER cancer risk impact to less than significant levels. As such, MM AQ-1 is included to ensure that off-road equipment used during project construction which is greater than 50 horsepower meets Tier 4 Interim emissions standards. Mitigated results for the Residential MER are contained in Table 2.

TABLE 2. CONSTRUCTION RISK SUMMARY - MITIGATED

Receptor	Cancer Risk (per million)	Chronic Hazards

TABLE 2. CONSTRUCTION RISK SUMMARY - MITIGATED

Residential MER	5.8	0.005
Sac Metro AQMD Threshold	10	1.0
Exceeds Threshold?	No	No

Note: MER = Maximum Exposed Receptor. Cancer risk calculated using 2015 OEHHA HRA guidance. Modeling incorporates use of off-road construction equipment that meets the United States Environmental Protection Agency (US EPA) Tier 4 Interim emissions standards for off-road diesel-powered construction equipment with more than 50 horsepower.

Cancer risk during mitigated project construction for the Residential MER was calculated to be 5.8 in a million and chronic hazard was calculated to be 0.005. As illustrated in Table 2, neither of these risks would exceed the Sac Metro AQMD significance thresholds. In accordance with the latest 2015 OEHHA guidance, the calculated total cancer risk conservatively assumes that the risk for the Residential MER consists of a pregnant woman in the third trimester that subsequently gives birth to an infant during the approximately 1.88-year cumulative construction period; therefore, calculated risk values for the entire construction duration were multiplied by a factor of 10 for the Residential MER. Similarly, student receptors were assumed to be first exposed at age 3 for Calvary Christian school and age 14 at Sacramento Accelerated Academy; therefore, calculated risk values for the full construction duration for students were multiplied by a factor of 3. In addition, it was conservatively assumed that all residents and students were outdoors 8 hours a day and exposed to all the daily construction emissions.

For non-carcinogenic effects, the chronic hazard index identified for each toxicological endpoint totaled less than one for all the off-site sensitive receptors. Therefore, chronic non-carcinogenic hazards are less than significant. Because cancer risks and chronic non-carcinogenic hazards for the MERs would not exceed Sac Metro AQMD significance threshold, construction activities associated with the proposed project would be **less than significant after mitigation**.

2. References

California Air Pollution Control Officers Association (CAPCOA). 2022. California Emissions Estimator Model (CalEEMod). Version 2022.1.0. Prepared by: ICF in collaboration with Sacramento Metropolitan Air Quality Management District.

California Air Resources Board (CARB). 2000. *Risk Reduction Plan to Reduce Particulate Matter Emissions from Diesel-Fueled Engines and Vehicles.*

Office of Environmental Health Hazard Assessment (OEHHA). 2015. *Air Toxics Hot Spots Program Guidance Manual for the Preparation of Health Risk Assessments.* Dated February 2015.

Sacramento Metropolitan Air Quality Management District (Sac Metro AQMD). 2020, April. Chapter 5, TAC Emissions. https://www.airquality.org/LandUseTransportation/Documents/Ch5TAC4-2020.pdf.

_____. 2023, March 29 (accessed). 2014-2018. Meteorological Data Set for Sacramento Executive Airport Meteorological Station. https://www.airquality.org/residents/ceqa-land-use-planning/ceqa-guidance-tools.

United States Environmental Protection Agency (USEPA). 2011. *Exposure Factors Handbook 2011 Edition (Final).* EPA/600/R-09/052F, 2011.

_____. 2005. *Guideline on Air Quality Models* (Revised). EPA-450/2-78-027R.

Attachment A. Emission Rate Calculations

Onsite Construction PM10 Exhaust Emissions - Unmitigated

Year	Construction Activity	Days of Activity	Average Daily Emissions (lbs/day)	Total Average Daily Emissions (lbs/day)	Total Construction Days	Average Daily Emissions (lbs/hr)	Emission Rate (g/s)
2023	Demolition	31	1.21				
2023	Site Preparation	15	1.82				
2023	Grading	31	0.95				
2023	Building Construction	32	0.55	279.63	492	7.10E-02	8.95E-03
2024	Building Construction	262	0.50				
2025	Building Construction	59	0.43				
2025	Paving	31	0.35				
2025	Architectural Coating	31	0.03				

Offsite Construction PM10 Exhaust Emissions - Unmitigated

Year	Construction Activity	Days of Activity	Average Daily Emissions (lbs/day)	Total Annual Emissions (lbs/year)	Total Construction Days	Average Daily Emissions (lbs/hr)	Hauling Emissions w/in 1,000 ft (lbs/day) [3]	Emission Rate (g/s)
2023	Demolition	31	0.01					
2023	Site Preparation	15	0.00					
2023	Grading	31	0.00					
2023	Building Construction	32	0.01	2.08	492	5.27E-04	2.11E-05	2.66E-06
2024	Building Construction	262	0.01					
2025	Building Construction	59	0.01					
2025	Paving	31	0.00					
2025	Architectural Coating	31	0.00					

Note: Emissions evenly distributed over all modeled volume sources.

Hauling Length (miles) [3]	20.00	miles
Haul Length within 1,000 ft of Site (mile) [4]	0.80	miles
Hours per work day (7:00 AM to 4:00 PM, 1-hour of breaks) [5]	8.00	hours

[1] DPM emissions taken as PM_{10} exhaust emissions from CalEEMod average daily emissions.

[2] Construction durations determined for each year to adjust receptor exposures to the exposure durations for each construction year (see App C - Risk Calculations).

[3] Based on CalEEMod default 20 mile hauling distance.

[4] Emissions from CalEEMod offsite average daily emissions, which is based on proportioned haul truck trip distances , are adjusted to evaluate emissions from the 0.59-mile route within 1,000 of the project site.

[5] Work hours applied in By Hour/Day (HRDOW) variable emissions module in air dispersion model (see App C - Air Dispersion Model Output Files).

3.1. Demolition (2023)

Construction On-Site

Category	lbs/day	PM10E
Off-Road Equipment		1.200
Demolition		0.000
Onsite truck		0.005
Total		1.205

Construction Off-Site

Category	lbs/day	PM10E
Worker		0.000
Vendor		0.000
Hauling		0.010
Total		0.010

3.3. Site Preparation (2023)

Construction On-Site

Category	lbs/day	PM10E
Off-Road Equipment		1.810
Dust From Material Movement		0.000
Onsite truck		0.005
Total		1.815

Construction Off-Site

Category	lbs/day	PM10E
Worker		0.000
Vendor		0.000
Hauling		0.000
Total		0.000

3.5. Grading (2023)

Construction On-Site

Category	lbs/day	PM10E
Off-Road Equipment		0.940
Dust from Material Movement		0.000
Onsite Truck		0.005
Total		0.945

Construction Off-Site

Category	lbs/day	PM10E
Worker		0.000
Vendor		0.000
Hauling		0.000
Total		0.000

3.7. Building Construction (2023)

Construction On-Site

		PM10E
Category	lbs/day	
Off-Road Equipment		0.550
Onsite truck		0.000
Total		0.550

Construction Off-Site

		PM10E
Category	lbs/day	
Worker		0.000
Vendor		0.005
Hauling		0.000
Total		0.005

3.9. Building Construction (2024)

Construction On-Site

		PM10E
Category	lbs/day	
Off-Road Equipment		0.500
Onsite truck		0.000
Total		0.500

Construction Off-Site

		PM10E
Category	lbs/day	
Worker		0.000
Vendor		0.005
Hauling		0.000
Total		0.005

3.11. Building Construction (2025)

Construction On-Site

		PM10E
Category	lbs/day	
Off-Road Equipment		0.430
Onsite truck		0.000
Total		0.430

Construction Off-Site

		PM10E
Category	lbs/day	
Worker		0.000
Vendor		0.005
Hauling		0.000
Total		0.005

3.13. Paving (2025)

Construction On-Site

Category	lbs/day	PM10E
Off-Road Equipment		0.350
Paving		0.000
Onsite truck		0.000
Total		0.350

Construction Off-Site

Category	lbs/day	PM10E
Worker		0.000
Vendor		0.000
Hauling		0.000
Total		0.000

3.15. Architectural Coating (2025)

Construction On-Site

Category	lbs/day	PM10E
Off-Road Equipment		0.030
Architectural Coatings		0.000
Onsite truck		0.000
Total		0.030

Construction Off-Site

Category	lbs/day	PM10E
Worker		0.000
Vendor		0.000
Hauling		0.000
Total		0.000

Onsite Construction PM10 Exhaust Emissions - Mitigated

Year	Construction Activity	Days of Activity	Average Daily Emissions (lbs/day)	Total Average Daily Emissions (lbs/day)	Total Construction Days	Average Daily Emissions (lbs/hr)	Emission Rate (g/s)
2023	Demolition	31	0.22				
2023	Site Preparation	15	0.11				
2023	Grading	31	0.10				
2023	Building Construction	32	0.13	57.31	492	1.46E-02	1.83E-03
2024	Building Construction	262	0.12				
2025	Building Construction	59	0.11				
2025	Paving	31	0.10				
2025	Architectural Coating	31	0.03				

Offsite Construction PM10 Exhaust Emissions - Mitigated

Year	Construction Activity	Days of Activity	Average Daily Emissions (lbs/day)	Total Annual Emissions (lbs/year)	Total Construction Days	Average Daily Emissions (lbs/hr)	Hauling Emissions w/in 1,000 ft (lbs/day) [3]	Emission Rate (g/s)
2023	Demolition	31	0.01					
2023	Site Preparation	15	0.00					
2023	Grading	31	0.00					
2023	Building Construction	32	0.01	2.08	492	5.27E-04	2.11E-05	2.66E-06
2024	Building Construction	262	0.01					
2025	Building Construction	59	0.01					
2025	Paving	31	0.00					
2025	Architectural Coating	31	0.00					

Note: Emissions evenly distributed over all modeled volume sources.

Hauling Length (miles) [3]	20.00	miles
Haul Length within 1,000 ft of Site (mile) [4]	0.80	miles
Hours per work day (7:00 AM to 4:00 PM, 1-hour of breaks) [5]	8.00	hours

[1] DPM emissions taken as PM_{10} exhaust emissions from CalEEMod average daily emissions.

[2] Construction durations determined for each year to adjust receptor exposures to the exposure durations for each construction year (see App C - Risk Calculations).

[3] Based on CalEEMod default 20 mile hauling distance.

[4] Emissions from CalEEMod offsite average daily emissions, which is based on proportioned haul truck trip distances , are adjusted to evaluate emissions from the 0.59-mile route within 1,000 of the project site.

[5] Work hours applied in By Hour/Day (HRDOW) variable emissions module in air dispersion model (see App C - Air Dispersion Model Output Files).

3.1. Demolition (2023)

Construction On-Site

Category	lbs/day	PM10E
Off-Road Equipment		0.210
Demolition		0.000
Onsite truck		0.005
Total		0.215

Construction Off-Site

Category	lbs/day	PM10E
Worker		0.000
Vendor		0.000
Hauling		0.010
Total		0.010

3.3. Site Preparation (2023)

Construction On-Site

Category	lbs/day	PM10E
Off-Road Equipment		0.100
Dust From Material Movement		0.000
Onsite truck		0.005
Total		0.105

Construction Off-Site

Category	lbs/day	PM10E
Worker		0.000
Vendor		0.000
Hauling		0.000
Total		0.000

3.5. Grading (2023)

Construction On-Site

Category	lbs/day	PM10E
Off-Road Equipment		0.090
Dust from Material Movement		0.000
Onsite Truck		0.005
Total		0.095

Construction Off-Site

Category	lbs/day	PM10E
Worker		0.000
Vendor		0.000
Hauling		0.000
Total		0.000

3.7. Building Construction (2023)

Construction On-Site

		PM10E
Category	lbs/day	
Off-Road Equipment		0.130
Onsite truck		0.000
Total		0.130

Construction Off-Site

		PM10E
Category	lbs/day	
Worker		0.000
Vendor		0.005
Hauling		0.000
Total		0.005

3.9. Building Construction (2024)

Construction On-Site

		PM10E
Category	lbs/day	
Off-Road Equipment		0.120
Onsite truck		0.000
Total		0.120

Construction Off-Site

		PM10E
Category	lbs/day	
Worker		0.000
Vendor		0.005
Hauling		0.000
Total		0.005

3.11. Building Construction (2025)

Construction On-Site

		PM10E
Category	lbs/day	
Off-Road Equipment		0.110
Onsite truck		0.000
Total		0.110

Construction Off-Site

		PM10E
Category	lbs/day	
Worker		0.000
Vendor		0.005
Hauling		0.000
Total		0.005

3.13. Paving (2025)

Construction On-Site

Category	lbs/day	PM10E
Off-Road Equipment		0.100
Paving		0.000
Onsite truck		0.000
Total		0.100

Construction Off-Site

Category	lbs/day	PM10E
Worker		0.000
Vendor		0.000
Hauling		0.000
Total		0.000

3.15. Architectural Coating (2025)

Construction On-Site

Category	lbs/day	PM10E
Off-Road Equipment		0.030
Architectural Coatings		0.000
Onsite truck		0.000
Total		0.030

Construction Off-Site

Category	lbs/day	PM10E
Worker		0.000
Vendor		0.000
Hauling		0.000
Total		0.000

Attachment B. Air Dispersion Model Output

Control Pathway

AERMOD

Dispersion Options

Titles

Nicholas Elementary School Reconstruction Project
Construction HRA

Dispersion Options

☐ Regulatory Default ☒ Non-Default Options

☒ Flat & Elevated Terrain
☐ No Stack-Tip Downwash (NOSTD)
☐ Run in Screening Mode
☐ Conversion of NOx to NO2 (OLM or PVMRM)
☐ No Checks for Non-Sequential Met Data
☒ Fast All Sources (FASTALL)
☐ Fast Area Sources (FASTAREA)
☐ Optimized Area Source Plume Depletion
☐ Gas Deposition

BETA Options:

☐ Capped and Horizontal Stack Releases
☐ Adjusted Friction Velocity (u*) in AERMET (ADJ_U*)
☐ Low Wind Options

☐ SCIM (Sampled Chronological Input Model)
☐ Ignore Urban Night / Daytime Transition (NOURBTRAN)

Dispersion Coefficient

Urban

Population:
Name (Optional):
Roughness Length:

Output Type

☒ Concentration
☐ Total Deposition (Dry & Wet)
☐ Dry Deposition
☐ Wet Deposition

Plume Depletion

☐ Dry Removal
☐ Wet Removal

Output Warnings

☐ No Output Warnings
☐ Non-fatal Warnings for Non-sequential Met Data

Pollutant / Averaging Time / Terrain Options

Pollutant Type

PM2.5

Averaging Time Options

Hours ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 6 ☐ 8 ☐ 12 ☐ 24

☐ Month ☐ Period ☒ Annual

Exponential Decay

☐ Yes ☒ No

Terrain Height Options

☐ Flat ☒ Elevated

SO: Meters
RE: Meters
TG: Meters

Flagpole Receptors

☐ Yes ☒ No

Default Height = 0.00 m

Control Pathway

Optional Files

Re-Start File	Init File	Multi-Year Analyses	Event Input File	Error Listing File
☐	☐	☐	☐	■

Detailed Error Listing File

Filename: SCUS-04.err

Source Pathway - Source Inputs

Polygon Area Sources

Source Type: AREA POLY

Source: ONSITE (Project Site)

Base Elevation (Optional)	Release Height [m]	Emission Rate [g/ (s-m^2)]	Initial Vertical Dim. [m]	Number of Vertices (or sides)	X Coordinate for Vertices [m]	Y Coordinate for Vertices [m]
7.62	4.15	0.00002	1.93	10	635831.20	4263392.26
		0.00002			635832.45	4263247.05
		0.00002			635804.64	4263246.53
		0.00002			635804.81	4263234.44
		0.00002			635719.14	4263232.02
		0.00002			635684.62	4263197.03
		0.00002			635601.73	4263278.63
		0.00002			635567.54	4263317.36
		0.00002			635543.84	4263364.62
		0.00002			635537.67	4263387.36

Source Pathway - Source Inputs

AERMOD

Line Volume Sources

Source Type: LINE VOLUME

Source: 47TH (47th Ave)

Length of Side [m]	Emission Rate [g/ s]	Building Height [m]	X Coordinate for Points [m]	Y Coordinate for points [m]	Base Elevation [m]	Release Height [m]
20.00	1.00000		635325.17	4263594.48	7.32	4.15
			636055.91	4263609.46	7.62	4.15
			636055.35	4263609.17	7.62	4.15

Source Type: LINE VOLUME

Source: STEINER (Steiner Drive)

Length of Side [m]	Emission Rate [g/ s]	Building Height [m]	X Coordinate for Points [m]	Y Coordinate for points [m]	Base Elevation [m]	Release Height [m]
10.00	1.00000		635676.88	4263194.27	7.62	4.15
			635581.60	4263290.93	7.32	4.15
			635561.46	4263315.52	7.18	4.15
			635539.11	4263362.22	7.36	4.15
			635531.96	4263383.77	7.44	4.15
			635526.77	4263414.77	7.33	4.15
			635524.77	4263444.56	7.60	4.15
			635522.91	4263520.42	7.62	4.15
			635522.49	4263587.10	7.62	4.15

Source Pathway - Source Inputs

Volume Sources Generated from Line Sources

Line Source ID	Volume Source ID	X Coordinate [m]	Y Coordinate [m]	Base Elevation [m]	Release Height [m[	Emission Rate [g/s]	Length of Side [m]	Building Height [m]	Initial Lateral Dimencion [m]	Initial Vertical Dimencion [m]
47TH	L0000001	635335.17	4263594.68	7.32	4.15	0.02703	20.00		9.30	3.86
	L0000002	635355.17	4263595.09	7.32	4.15	0.02703	20.00		9.30	3.86
	L0000003	635375.16	4263595.50	7.32	4.15	0.02703	20.00		9.30	3.86
	L0000004	635395.16	4263595.91	7.32	4.15	0.02703	20.00		9.30	3.86
	L0000005	635415.15	4263596.32	7.32	4.15	0.02703	20.00		9.30	3.86
	L0000006	635435.15	4263596.73	7.32	4.15	0.02703	20.00		9.30	3.86
	L0000007	635455.14	4263597.14	7.33	4.15	0.02703	20.00		9.30	3.86
	L0000008	635475.14	4263597.55	7.53	4.15	0.02703	20.00		9.30	3.86
	L0000009	635495.14	4263597.96	7.62	4.15	0.02703	20.00		9.30	3.86
	L0000010	635515.13	4263598.37	7.62	4.15	0.02703	20.00		9.30	3.86
	L0000011	635535.13	4263598.78	7.62	4.15	0.02703	20.00		9.30	3.86
	L0000012	635555.12	4263599.19	7.62	4.15	0.02703	20.00		9.30	3.86
	L0000013	635575.12	4263599.60	7.62	4.15	0.02703	20.00		9.30	3.86
	L0000014	635595.12	4263600.01	7.62	4.15	0.02703	20.00		9.30	3.86
	L0000015	635615.11	4263600.42	7.62	4.15	0.02703	20.00		9.30	3.86
	L0000016	635635.11	4263600.83	7.62	4.15	0.02703	20.00		9.30	3.86
	L0000017	635655.10	4263601.24	7.62	4.15	0.02703	20.00		9.30	3.86
	L0000018	635675.10	4263601.65	7.62	4.15	0.02703	20.00		9.30	3.86
	L0000019	635695.09	4263602.06	7.62	4.15	0.02703	20.00		9.30	3.86
	L0000020	635715.09	4263602.47	7.62	4.15	0.02703	20.00		9.30	3.86
	L0000021	635735.09	4263602.88	7.62	4.15	0.02703	20.00		9.30	3.86
	L0000022	635755.08	4263603.29	7.62	4.15	0.02703	20.00		9.30	3.86
	L0000023	635775.08	4263603.70	7.62	4.15	0.02703	20.00		9.30	3.86
	L0000024	635795.07	4263604.11	7.62	4.15	0.02703	20.00		9.30	3.86

Source Pathway - Source Inputs

AERMOD

Line Source ID	Volume Source ID	X Coordinate [m]	Y Coordinate [m]	Base Elevation [m]	Release Height [m[	Emission Rate [g/s]	Length of Side [m]	Building Height [m]	Initial Lateral Dimencion [m]	Initial Vertical Dimencion [m]
47TH	L0000025	635815.07	4263604.52	7.62	4.15	0.02703	20.00		9.30	3.86
	L0000026	635835.06	4263604.93	7.62	4.15	0.02703	20.00		9.30	3.86
	L0000027	635855.06	4263605.34	7.62	4.15	0.02703	20.00		9.30	3.86
	L0000028	635875.06	4263605.75	7.62	4.15	0.02703	20.00		9.30	3.86
	L0000029	635895.05	4263606.16	7.62	4.15	0.02703	20.00		9.30	3.86
	L0000030	635915.05	4263606.57	7.62	4.15	0.02703	20.00		9.30	3.86
	L0000031	635935.04	4263606.98	7.62	4.15	0.02703	20.00		9.30	3.86
	L0000032	635955.04	4263607.39	7.62	4.15	0.02703	20.00		9.30	3.86
	L0000033	635975.04	4263607.80	7.62	4.15	0.02703	20.00		9.30	3.86
	L0000034	635995.03	4263608.21	7.62	4.15	0.02703	20.00		9.30	3.86
	L0000035	636015.03	4263608.62	7.62	4.15	0.02703	20.00		9.30	3.86
	L0000036	636035.02	4263609.03	7.62	4.15	0.02703	20.00		9.30	3.86
	L0000037	636055.02	4263609.44	7.62	4.15	0.02703	20.00		9.30	3.86

Line Source ID	Volume Source ID	X Coordinate [m]	Y Coordinate [m]	Base Elevation [m]	Release Height [m[	Emission Rate [g/s]	Length of Side [m]	Building Height [m]	Initial Lateral Dimencion [m]	Initial Vertical Dimencion [m]
STEINER	L0000483	635673.37	4263197.83	7.62	4.15	0.02222	10.00		4.65	3.86
	L0000484	635666.35	4263204.95	7.62	4.15	0.02222	10.00		4.65	3.86
	L0000485	635659.33	4263212.07	7.60	4.15	0.02222	10.00		4.65	3.86
	L0000486	635652.31	4263219.19	7.60	4.15	0.02222	10.00		4.65	3.86
	L0000487	635645.29	4263226.32	7.62	4.15	0.02222	10.00		4.65	3.86
	L0000488	635638.27	4263233.44	7.62	4.15	0.02222	10.00		4.65	3.86
	L0000489	635631.25	4263240.56	7.59	4.15	0.02222	10.00		4.65	3.86
	L0000490	635624.23	4263247.68	7.52	4.15	0.02222	10.00		4.65	3.86
	L0000491	635617.21	4263254.80	7.45	4.15	0.02222	10.00		4.65	3.86
	L0000492	635610.19	4263261.93	7.38	4.15	0.02222	10.00		4.65	3.86

Source Pathway - Source Inputs

AERMOD

Line Source ID	Volume Source ID	X Coordinate [m]	Y Coordinate [m]	Base Elevation [m]	Release Height [m[	Emission Rate [g/s]	Length of Side [m]	Building Height [m]	Initial Lateral Dimencion [m]	Initial Vertical Dimencion [m]
STEINER	L0000493	635603.17	4263269.05	7.32	4.15	0.02222	10.00		4.65	3.86
	L0000494	635596.15	4263276.17	7.32	4.15	0.02222	10.00		4.65	3.86
	L0000495	635589.13	4263283.29	7.32	4.15	0.02222	10.00		4.65	3.86
	L0000496	635582.11	4263290.42	7.32	4.15	0.02222	10.00		4.65	3.86
	L0000497	635575.72	4263298.11	7.32	4.15	0.02222	10.00		4.65	3.86
	L0000498	635569.39	4263305.84	7.27	4.15	0.02222	10.00		4.65	3.86
	L0000499	635563.05	4263313.58	7.21	4.15	0.02222	10.00		4.65	3.86
	L0000500	635558.23	4263322.28	7.19	4.15	0.02222	10.00		4.65	3.86
	L0000501	635553.91	4263331.30	7.22	4.15	0.02222	10.00		4.65	3.86
	L0000502	635549.59	4263340.32	7.28	4.15	0.02222	10.00		4.65	3.86
	L0000503	635545.28	4263349.34	7.32	4.15	0.02222	10.00		4.65	3.86
	L0000504	635540.96	4263358.36	7.33	4.15	0.02222	10.00		4.65	3.86
	L0000505	635537.31	4263367.65	7.37	4.15	0.02222	10.00		4.65	3.86
	L0000506	635534.16	4263377.14	7.41	4.15	0.02222	10.00		4.65	3.86
	L0000507	635531.46	4263386.74	7.39	4.15	0.02222	10.00		4.65	3.86
	L0000508	635529.81	4263396.60	7.36	4.15	0.02222	10.00		4.65	3.86
	L0000509	635528.16	4263406.47	7.33	4.15	0.02222	10.00		4.65	3.86
	L0000510	635526.66	4263416.35	7.43	4.15	0.02222	10.00		4.65	3.86
	L0000511	635526.00	4263426.32	7.53	4.15	0.02222	10.00		4.65	3.86
	L0000512	635525.33	4263436.30	7.62	4.15	0.02222	10.00		4.65	3.86
	L0000513	635524.73	4263446.28	7.62	4.15	0.02222	10.00		4.65	3.86
	L0000514	635524.49	4263456.28	7.62	4.15	0.02222	10.00		4.65	3.86
	L0000515	635524.24	4263466.28	7.62	4.15	0.02222	10.00		4.65	3.86
	L0000516	635524.00	4263476.27	7.62	4.15	0.02222	10.00		4.65	3.86
	L0000517	635523.75	4263486.27	7.62	4.15	0.02222	10.00		4.65	3.86

Source Pathway - Source Inputs

AERMOD

Line Source ID	Volume Source ID	X Coordinate [m]	Y Coordinate [m]	Base Elevation [m]	Release Height [m[	Emission Rate [g/s]	Length of Side [m]	Building Height [m]	Initial Lateral Dimencion [m]	Initial Vertical Dimencion [m]
STEINER	L0000518	635523.51	4263496.27	7.62	4.15	0.02222	10.00		4.65	3.86
	L0000519	635523.26	4263506.27	7.62	4.15	0.02222	10.00		4.65	3.86
	L0000520	635523.02	4263516.26	7.62	4.15	0.02222	10.00		4.65	3.86
	L0000521	635522.88	4263526.26	7.62	4.15	0.02222	10.00		4.65	3.86
	L0000522	635522.81	4263536.26	7.62	4.15	0.02222	10.00		4.65	3.86
	L0000523	635522.75	4263546.26	7.62	4.15	0.02222	10.00		4.65	3.86
	L0000524	635522.69	4263556.26	7.62	4.15	0.02222	10.00		4.65	3.86
	L0000525	635522.62	4263566.26	7.62	4.15	0.02222	10.00		4.65	3.86
	L0000526	635522.56	4263576.26	7.62	4.15	0.02222	10.00		4.65	3.86
	L0000527	635522.50	4263586.26	7.62	4.15	0.02222	10.00		4.65	3.86

Receptor Pathway

Receptor Networks

Note: Terrain Elavations and Flagpole Heights for Network Grids are in Page RE2 - 1 (If applicable)
Generated Discrete Receptors for Multi-Tier (Risk) Grid and Receptor Locations for Fenceline Grid are in Page RE3 - 1 (If applicable)

Discrete Receptors

Discrete Cartesian Receptors

Record Number	X-Coordinate [m]	Y-Coordinate [m]	Group Name (Optional)	Terrain Elevations	Flagpole Heights [m] (Optional)
1	635549.76	4263409.57		7.41	
2	635566.26	4263411.30		7.56	
3	635584.25	4263409.82		7.62	
4	635602.97	4263410.31		7.62	
5	635622.19	4263414.01		7.62	
6	635639.19	4263413.76		7.62	
7	635655.95	4263411.79		7.62	
8	635674.67	4263413.76		7.62	
9	635693.15	4263411.54		7.62	
10	635709.66	4263412.03		7.62	
11	635727.65	4263412.03		7.62	
12	635744.40	4263411.79		7.62	
13	635546.76	4263455.71		7.62	
14	635566.24	4263453.83		7.62	
15	635585.09	4263453.62		7.62	
16	635601.85	4263454.46		7.62	
17	635619.02	4263456.34		7.62	
18	635636.82	4263454.46		7.62	
19	635655.04	4263453.83		7.62	
20	635672.22	4263456.55		7.62	
21	635547.39	4263485.24		7.62	
22	635500.69	4263481.26		7.62	
23	635500.90	4263461.58		7.61	
24	635499.85	4263444.82		7.52	
25	635501.32	4263426.39		7.44	
26	635503.41	4263406.70		7.33	
27	635500.71	4263499.35		7.62	
28	635498.40	4263517.86		7.62	
29	635563.91	4263485.82		7.62	
30	635764.54	4263413.31		7.62	

31	635785.99	4263422.01	7.62
32	635800.78	4263435.63	7.62
33	635819.04	4263421.72	7.62
34	635768.02	4263464.91	7.62
35	635745.98	4263479.99	7.62
36	635742.79	4263459.12	7.62
37	635723.66	4263460.86	7.62
38	635725.69	4263482.60	7.62
39	635708.29	4263484.92	7.62
40	635707.71	4263458.25	7.62
41	635689.16	4263457.67	7.62
42	635689.45	4263491.88	7.62
43	635673.21	4263486.95	7.62
44	635655.53	4263484.34	7.62
45	635636.11	4263487.82	7.62
46	635619.29	4263487.24	7.62
47	635602.48	4263484.34	7.62
48	635585.08	4263483.47	7.62
49	635501.00	4263538.50	7.62
50	635501.42	4263553.79	7.62
51	635497.02	4263572.44	7.62
52	635549.18	4263563.22	7.62
53	635564.26	4263560.08	7.62
54	635544.36	4263532.43	7.62
55	635566.36	4263532.43	7.62
56	635583.32	4263530.75	7.62
57	635582.69	4263561.96	7.62
58	635599.87	4263563.85	7.62
59	635600.71	4263530.54	7.62
60	635616.84	4263563.01	7.62
61	635619.14	4263533.89	7.62
62	635636.95	4263562.38	7.62
63	635636.95	4263532.43	7.62
64	635652.66	4263562.59	7.62
65	635653.29	4263529.70	7.62
66	635670.88	4263563.43	7.62
67	635671.93	4263538.08	7.62
68	635688.79	4263561.86	7.62

69	635689.53	4263535.74	7.62
70	635710.23	4263535.49	7.62
71	635710.23	4263561.86	7.62
72	635774.41	4263572.00	7.62
73	635790.75	4263571.37	7.62
74	635809.40	4263566.76	7.62
75	635808.77	4263554.40	7.62
76	635796.20	4263547.90	7.62
77	635753.46	4263529.47	7.62
78	635773.36	4263520.04	7.62
79	635790.96	4263510.40	7.62
80	635803.11	4263494.90	7.62
81	635815.18	4263483.21	7.62
82	635833.45	4263478.28	7.62
83	635850.27	4263466.68	7.62
84	635869.41	4263467.26	7.62
85	635843.89	4263499.74	7.62
86	635856.36	4263495.97	7.62
87	635865.93	4263495.68	7.62
88	635888.26	4263569.63	7.62
89	635904.90	4263569.10	7.62
90	635924.81	4263568.27	7.62
91	635940.52	4263570.78	7.62
92	635958.12	4263570.15	7.62
93	635974.05	4263571.20	7.62
94	635993.12	4263571.20	7.62
95	636011.34	4263571.20	7.62
96	636027.48	4263572.25	7.62
97	636046.97	4263572.25	7.62
98	636062.97	4263572.83	7.62
99	635897.08	4263528.17	7.62
100	635921.73	4263540.35	7.62
101	635937.39	4263540.06	7.62
102	635955.37	4263539.77	7.62
103	635973.93	4263540.64	7.62
104	635990.75	4263542.09	7.62
105	636009.32	4263542.38	7.62
106	636027.30	4263542.09	7.62

107	636042.96	4263542.96	7.62
108	636062.39	4263543.25	7.62
109	636079.21	4263542.38	7.62
110	636096.61	4263543.83	7.62
111	636078.12	4263575.22	7.62
112	636097.56	4263574.93	7.62
113	635893.72	4263505.40	7.62
114	635894.77	4263487.28	7.62
115	635894.41	4263465.90	7.62
116	635866.96	4263418.34	7.62
117	635890.63	4263419.82	7.62
118	635905.67	4263422.29	7.62
119	635865.03	4263366.30	7.62
120	635889.79	4263367.02	7.62
121	635914.20	4263362.20	7.62
122	635894.25	4263316.06	7.62
123	635867.88	4263322.30	7.62
124	635925.96	4263421.19	7.62
125	635935.20	4263351.31	7.62
126	635909.65	4263307.36	7.62
127	635921.59	4263295.07	7.62
128	635906.57	4263277.66	7.62
129	635864.93	4263305.99	7.62
130	635867.32	4263285.85	7.62
131	635867.32	4263268.44	7.62
132	635869.37	4263250.69	7.62
133	635903.84	4263258.20	7.62
134	635902.14	4263238.75	7.62
135	635901.79	4263221.00	7.62
136	635870.05	4263230.55	7.62
137	635871.41	4263211.78	7.62
138	635906.57	4263199.49	7.62
139	635871.76	4263192.66	7.62
140	635870.73	4263176.62	7.62
141	635826.01	4263217.58	7.62
142	635802.12	4263217.24	7.62
143	635784.37	4263215.53	7.62
144	635765.25	4263216.22	7.62

145	635745.79	4263215.53	7.62
146	635728.04	4263212.12	7.62
147	635706.88	4263197.78	7.62
148	635736.58	4263168.08	7.62
149	635769.35	4263173.55	7.62
150	635788.12	4263171.16	7.62
151	635804.85	4263171.16	7.62
152	635825.67	4263171.50	7.62
153	635694.20	4263141.43	7.38
154	635679.31	4263154.64	7.52
155	635667.78	4263167.01	7.62
156	635655.20	4263181.27	7.53
157	635638.64	4263196.36	7.38
158	635629.62	4263208.10	7.43
159	635613.90	4263222.36	7.41
160	635635.49	4263157.16	7.33
161	635621.02	4263168.06	7.32
162	635609.07	4263185.04	7.32
163	635596.28	4263197.20	7.24
164	635551.46	4263214.76	7.06
165	635539.46	4263302.58	7.01
166	635520.57	4263286.71	7.01
167	635507.92	4263270.67	6.83
168	635514.51	4263314.87	7.01
169	635496.51	4263316.12	6.85
170	635533.76	4263320.22	7.06
171	635477.95	4263357.79	6.89
172	635499.16	4263358.32	7.23
173	635516.98	4263362.06	7.47
174	635575.47	4263638.68	7.62
175	635575.47	4263658.68	7.62
176	635575.47	4263678.68	7.62
177	635575.47	4263698.68	7.62
178	635575.47	4263718.68	7.62
179	635575.47	4263738.68	7.62
180	635575.47	4263758.68	7.62
181	635595.47	4263638.68	7.62
182	635595.47	4263658.68	7.62

183	635595.47	4263678.68	7.62
184	635595.47	4263698.68	7.62
185	635595.47	4263718.68	7.62
186	635595.47	4263738.68	7.62
187	635595.47	4263758.68	7.62
188	635615.47	4263638.68	7.62
189	635615.47	4263658.68	7.62
190	635615.47	4263678.68	7.62
191	635615.47	4263698.68	7.62
192	635615.47	4263718.68	7.62
193	635615.47	4263738.68	7.62
194	635615.47	4263758.68	7.62
195	635635.47	4263638.68	7.62
196	635635.47	4263658.68	7.62
197	635635.47	4263678.68	7.62
198	635635.47	4263698.68	7.62
199	635635.47	4263718.68	7.62
200	635635.47	4263738.68	7.62
201	635635.47	4263758.68	7.62
202	635655.47	4263638.68	7.62
203	635655.47	4263658.68	7.62
204	635655.47	4263678.68	7.62
205	635655.47	4263698.68	7.62
206	635655.47	4263718.68	7.62
207	635655.47	4263738.68	7.62
208	635655.47	4263758.68	7.62
209	635675.47	4263638.68	7.62
210	635675.47	4263658.68	7.62
211	635675.47	4263678.68	7.62
212	635675.47	4263698.68	7.62
213	635675.47	4263718.68	7.62
214	635675.47	4263738.68	7.62
215	635675.47	4263758.68	7.62
216	635675.47	4263778.68	7.62
217	635695.47	4263638.68	7.62
218	635695.47	4263658.68	7.62
219	635695.47	4263678.68	7.62
220	635695.47	4263698.68	7.62

221	635695.47	4263718.68	7.62
222	635695.47	4263738.68	7.62
223	635695.47	4263758.68	7.62
224	635695.47	4263778.68	7.62
225	635715.47	4263638.68	7.62
226	635715.47	4263658.68	7.62
227	635715.47	4263678.68	7.62
228	635715.47	4263698.68	7.62
229	635715.47	4263718.68	7.62
230	635715.47	4263738.68	7.62
231	635715.47	4263758.68	7.62
232	635715.47	4263778.68	7.62
233	635735.47	4263638.68	7.62
234	635735.47	4263658.68	7.62
235	635735.47	4263678.68	7.62
236	635735.47	4263698.68	7.62
237	635735.47	4263718.68	7.62
238	635735.47	4263738.68	7.62
239	635735.47	4263758.68	7.62
240	635735.47	4263778.68	7.62
241	635755.47	4263638.68	7.62
242	635755.47	4263658.68	7.62
243	635755.47	4263678.68	7.62
244	635755.47	4263698.68	7.62
245	635755.47	4263718.68	7.62
246	635755.47	4263738.68	7.62
247	635755.47	4263758.68	7.62
248	635755.47	4263778.68	7.62
249	635775.47	4263638.68	7.62
250	635775.47	4263658.68	7.62
251	635775.47	4263678.68	7.62
252	635775.47	4263698.68	7.62
253	635775.47	4263718.68	7.62
254	635775.47	4263738.68	7.62
255	635775.47	4263758.68	7.62
256	635775.47	4263778.68	7.62
257	635795.47	4263638.68	7.62
258	635795.47	4263658.68	7.62

259	635795.47	4263678.68	7.62
260	635795.47	4263698.68	7.62
261	635795.47	4263718.68	7.62
262	635795.47	4263738.68	7.62
263	635795.47	4263758.68	7.62
264	635795.47	4263778.68	7.62
265	635815.47	4263638.68	7.62
266	635815.47	4263658.68	7.62
267	635815.47	4263678.68	7.62
268	635815.47	4263698.68	7.62
269	635815.47	4263718.68	7.62
270	635815.47	4263738.68	7.62
271	635815.47	4263758.68	7.62
272	635815.47	4263778.68	7.62
273	635835.47	4263638.68	7.62
274	635835.47	4263658.68	7.62
275	635835.47	4263678.68	7.62
276	635835.47	4263698.68	7.62
277	635835.47	4263718.68	7.62
278	635835.47	4263738.68	7.62
279	635835.47	4263758.68	7.62
280	635835.47	4263778.68	7.62
281	635855.47	4263638.68	7.62
282	635855.47	4263658.68	7.62
283	635855.47	4263678.68	7.62
284	635855.47	4263698.68	7.62
285	635855.47	4263718.68	7.62
286	635855.47	4263738.68	7.62
287	635855.47	4263758.68	7.62
288	635855.47	4263778.68	7.62
289	635875.47	4263638.68	7.62
290	635875.47	4263658.68	7.62
291	635875.47	4263678.68	7.62
292	635875.47	4263698.68	7.62
293	635875.47	4263718.68	7.62
294	635875.47	4263738.68	7.62
295	635875.47	4263758.68	7.62
296	635875.47	4263778.68	7.62

297	635925.86	4263452.88	7.62
298	635925.86	4263472.88	7.62
299	635925.86	4263492.88	7.62
300	635945.86	4263472.88	7.62
301	635945.86	4263492.88	7.62
302	635965.86	4263472.88	7.62
303	635965.86	4263492.88	7.62
304	635985.86	4263472.88	7.62
305	635985.86	4263492.88	7.62
306	635985.86	4263512.88	7.62
307	636005.86	4263472.88	7.62
308	636005.86	4263492.88	7.62
309	636005.86	4263512.88	7.62
310	636025.86	4263472.88	7.62
311	636025.86	4263492.88	7.62
312	636025.86	4263512.88	7.62
313	636045.86	4263472.88	7.62
314	636045.86	4263492.88	7.62
315	636045.86	4263512.88	7.62
316	636065.86	4263472.88	7.62
317	636065.86	4263492.88	7.62
318	636065.86	4263512.88	7.62
319	636085.86	4263472.88	7.62
320	636085.86	4263492.88	7.62
321	636085.86	4263512.88	7.62
322	636105.86	4263472.88	7.62
323	636105.86	4263492.88	7.62
324	636105.86	4263512.88	7.62
325	635940.73	4263420.83	7.62
326	635961.63	4263421.64	7.62
327	635974.89	4263422.84	7.62
328	635997.79	4263424.05	7.62
329	636010.65	4263422.44	7.62
330	636032.35	4263424.45	7.62
331	636050.03	4263424.85	7.62
332	636063.29	4263426.46	7.62
333	636086.60	4263425.25	7.62
334	635959.21	4263363.77	7.62

335	635973.28	4263369.80	7.62
336	635995.78	4263367.39	7.62
337	636012.66	4263368.59	7.62
338	636031.55	4263368.99	7.62
339	636048.02	4263370.20	7.62
340	636067.71	4263371.81	7.62
341	636082.98	4263372.61	7.62
342	635965.24	4263312.74	7.62
343	635988.15	4263324.39	7.62
344	636006.63	4263328.01	7.62
345	636026.32	4263325.19	7.62
346	636051.24	4263325.19	7.62
347	635975.69	4263301.48	7.62
348	635995.38	4263288.62	7.62
349	635953.95	4263261.49	7.62
350	635946.98	4263240.58	7.62
351	635969.05	4263244.36	7.62
352	635949.30	4263225.48	7.62
353	635978.34	4263231.00	7.62
354	635959.75	4263209.80	7.62
355	635987.34	4263217.06	7.62
356	635969.63	4263192.38	7.62
357	635986.76	4263181.93	7.62
358	636003.60	4263202.55	7.62
359	636003.31	4263278.33	7.62
360	636016.08	4263261.49	7.62
361	636027.70	4263246.39	7.62
362	636038.73	4263291.10	7.62
363	635929.41	4263184.04	7.62
364	635915.34	4263164.35	7.61
365	635907.30	4263146.26	7.43
366	635958.74	4263144.65	7.41
367	635950.30	4263124.96	7.32
368	635994.51	4263163.14	7.60
369	635902.88	4263104.06	7.31
370	635901.68	4263129.38	7.32
371	635870.73	4263101.65	7.28
372	635866.31	4263123.75	7.32

373	635867.11	4263141.04	7.38
374	635871.13	4263155.91	7.53
375	635820.09	4263147.47	7.44
376	635820.49	4263128.17	7.32
377	635825.12	4263110.19	7.32
378	635802.25	4263096.76	7.23
379	635793.65	4263114.38	7.32
380	635778.75	4263124.66	7.32
381	635767.21	4263139.14	7.36
382	635754.83	4263153.41	7.50
383	635706.93	4263123.14	7.32
384	635721.62	4263110.16	7.32
385	635701.12	4263092.39	7.19
386	635686.43	4263103.33	7.30
387	635675.50	4263116.99	7.32
388	635661.49	4263131.00	7.31
389	635648.17	4263143.30	7.36
390	635458.51	4263353.51	6.49
391	635466.85	4263312.35	6.53
392	635470.75	4263292.32	6.57
393	635472.42	4263271.74	6.59
394	635475.75	4263249.48	6.62
395	635502.46	4263248.37	6.75
396	635503.01	4263232.24	6.85
397	635504.13	4263213.88	6.91
398	635502.46	4263194.41	6.89
399	635554.75	4263171.04	7.01
400	635572.55	4263160.47	7.01
401	635588.13	4263148.79	7.08
402	635603.15	4263131.55	7.01
403	635637.64	4263098.72	7.04
404	635662.67	4263078.14	7.04
405	635332.31	4263659.61	7.47
406	635332.31	4263679.61	7.62
407	635352.31	4263659.61	7.37
408	635352.31	4263679.61	7.46
409	635372.31	4263659.61	7.32
410	635372.31	4263679.61	7.35

411	635905.45	4263730.56	7.62
412	635905.45	4263750.56	7.62
413	635905.45	4263770.56	7.62
414	635905.45	4263790.56	7.62
415	635905.45	4263810.56	7.62
416	635925.45	4263730.56	7.62
417	635925.45	4263750.56	7.62
418	635925.45	4263770.56	7.62
419	635925.45	4263790.56	7.62
420	635925.45	4263810.56	7.62
421	635945.45	4263730.56	7.62
422	635945.45	4263750.56	7.62
423	635945.45	4263770.56	7.62
424	635945.45	4263790.56	7.62
425	635945.45	4263810.56	7.62
426	635965.45	4263730.56	7.62
427	635965.45	4263750.56	7.62
428	635965.45	4263770.56	7.62
429	635965.45	4263790.56	7.62
430	635965.45	4263810.56	7.62
431	635985.45	4263730.56	7.62
432	635985.45	4263750.56	7.62
433	635985.45	4263770.56	7.62
434	635985.45	4263790.56	7.62
435	635985.45	4263810.56	7.62
436	636005.45	4263730.56	7.62
437	636005.45	4263750.56	7.62
438	636005.45	4263770.56	7.62
439	636005.45	4263790.56	7.62
440	636005.45	4263810.56	7.62
441	635584.68	4263252.74	7.32
442	635578.92	4263247.15	7.32
443	635556.74	4263245.97	7.14
444	635561.82	4263240.04	7.19
445	635567.58	4263234.28	7.25

Plant Boundary Receptors

Meteorology Pathway

AERMOD

Met Input Data

Surface Met Data

Filename: ..\Met Stations\Sac Executive Airport\14-18.SFC
Format Type: Default AERMET format

Profile Met Data

Filename: ..\Met Stations\Sac Executive Airport\14-18.PFL
Format Type: Default AERMET format

Wind Speed

☐ Wind Speeds are Vector Mean (Not Scalar Means)

Wind Direction

Rotation Adjustment [deg]:

Potential Temperature Profile

Base Elevation above MSL (for Primary Met Tower): 7.30 [m]

Meteorological Station Data

Stations	Station No.	Year	X Coordinate [m]	Y Coordinate [m]	Station Name
Surface		2014			SACRAMENTO/EXECUTIVE ARPT
Upper Air		2014			OAKLAND/WSO AP

Data Period

Data Period to Process

Start Date: 1/1/2014 Start Hour: 1 End Date: 12/25/2018 End Hour: 24

Wind Speed Categories

Stability Category	Wind Speed [m/s]	Stability Category	Wind Speed [m/s]
A	1.54	D	8.23
B	3.09	E	10.8
C	5.14	F	No Upper Bound

Sensitive Receptor Summary

Nicholas Elementary School Reconstruction Project
Construction HRA

PM2.5 - Concentration - Source Group: OFFSITE

Averaging Period	Rank	Peak	Units	Receptor ID	X (m)	Y (m)	ZELEV (m)	ZFLAG (m)	ZHILL (m)	Peak Date, Start Hour
ANNUAL		26.86988	ug/m^3	Res_001	635549.76	4263409.57	7.41	0.00	7.41	
ANNUAL		19.31597	ug/m^3	Res_002	635566.26	4263411.29	7.56	0.00	7.56	
ANNUAL		14.45224	ug/m^3	Res_003	635584.25	4263409.82	7.62	0.00	7.62	
ANNUAL		11.13293	ug/m^3	Res_004	635602.97	4263410.31	7.62	0.00	7.62	
ANNUAL		8.77739	ug/m^3	Res_005	635622.19	4263414.01	7.62	0.00	7.62	
ANNUAL		7.38258	ug/m^3	Res_006	635639.19	4263413.76	7.62	0.00	7.62	
ANNUAL		6.36857	ug/m^3	Res_007	635655.95	4263411.79	7.62	0.00	7.62	
ANNUAL		5.44039	ug/m^3	Res_008	635674.67	4263413.76	7.62	0.00	7.62	
ANNUAL		4.75687	ug/m^3	Res_009	635693.15	4263411.54	7.62	0.00	7.62	
ANNUAL		4.23734	ug/m^3	Res_010	635709.66	4263412.03	7.62	0.00	7.62	
ANNUAL		3.76557	ug/m^3	Res_011	635727.65	4263412.03	7.62	0.00	7.62	
ANNUAL		3.39327	ug/m^3	Res_012	635744.40	4263411.79	7.62	0.00	7.62	
ANNUAL		26.45295	ug/m^3	Res_013	635546.76	4263455.71	7.62	0.00	7.62	
ANNUAL		17.70466	ug/m^3	Res_014	635566.24	4263453.83	7.62	0.00	7.62	
ANNUAL		12.93198	ug/m^3	Res_015	635585.09	4263453.62	7.62	0.00	7.62	
ANNUAL		10.24178	ug/m^3	Res_016	635601.85	4263454.46	7.62	0.00	7.62	
ANNUAL		8.36260	ug/m^3	Res_017	635619.02	4263456.34	7.62	0.00	7.62	
ANNUAL		7.02839	ug/m^3	Res_018	635636.82	4263454.46	7.62	0.00	7.62	
ANNUAL		6.03115	ug/m^3	Res_019	635655.04	4263453.83	7.62	0.00	7.62	
ANNUAL		5.31975	ug/m^3	Res_020	635672.22	4263456.55	7.62	0.00	7.62	

Sensitive Receptor Summary

Nicholas Elementary School Reconstruction Project
Construction HRA

PM2.5 - Concentration - Source Group: OFFSITE

Averaging Period	Rank	Peak	Units	Receptor ID	X (m)	Y (m)	ZELEV (m)	ZFLAG (m)	ZHILL (m)	Peak Date, Start Hour
ANNUAL		25.63205	ug/m^3	Res_021	635547.39	4263485.24	7.62	0.00	7.62	
ANNUAL		13.01311	ug/m^3	Res_022	635500.69	4263481.26	7.62	0.00	7.62	
ANNUAL		12.43781	ug/m^3	Res_023	635500.90	4263461.58	7.61	0.00	7.61	
ANNUAL		11.33278	ug/m^3	Res_024	635499.85	4263444.82	7.52	0.00	7.52	
ANNUAL		10.90925	ug/m^3	Res_025	635501.32	4263426.39	7.44	0.00	7.44	
ANNUAL		10.31738	ug/m^3	Res_026	635503.41	4263406.70	7.33	0.00	7.33	
ANNUAL		13.57074	ug/m^3	Res_027	635500.71	4263499.34	7.62	0.00	7.62	
ANNUAL		13.27707	ug/m^3	Res_028	635498.40	4263517.86	7.62	0.00	7.62	
ANNUAL		18.05698	ug/m^3	Res_029	635563.91	4263485.82	7.62	0.00	7.62	
ANNUAL		3.02069	ug/m^3	Res_030	635764.54	4263413.31	7.62	0.00	7.62	
ANNUAL		2.73823	ug/m^3	Res_031	635785.99	4263422.01	7.62	0.00	7.62	
ANNUAL		2.65164	ug/m^3	Res_032	635800.78	4263435.63	7.62	0.00	7.62	
ANNUAL		2.35303	ug/m^3	Res_033	635819.04	4263421.72	7.62	0.00	7.62	
ANNUAL		3.31666	ug/m^3	Res_034	635768.02	4263464.91	7.62	0.00	7.62	
ANNUAL		3.80347	ug/m^3	Res_035	635745.98	4263479.99	7.62	0.00	7.62	
ANNUAL		3.62742	ug/m^3	Res_036	635742.79	4263459.12	7.62	0.00	7.62	
ANNUAL		3.98104	ug/m^3	Res_037	635723.66	4263460.86	7.62	0.00	7.62	
ANNUAL		4.16071	ug/m^3	Res_038	635725.69	4263482.60	7.62	0.00	7.62	
ANNUAL		4.51927	ug/m^3	Res_039	635708.29	4263484.92	7.62	0.00	7.62	
ANNUAL		4.30250	ug/m^3	Res_040	635707.71	4263458.25	7.62	0.00	7.62	

Sensitive Receptor Summary

Nicholas Elementary School Reconstruction Project
Construction HRA

PM2.5 - Concentration - Source Group: OFFSITE

Averaging Period	Rank	Peak	Units	Receptor ID	X (m)	Y (m)	ZELEV (m)	ZFLAG (m)	ZHILL (m)	Peak Date, Start Hour
ANNUAL		4.77718	ug/m^3	Res_041	635689.16	4263457.67	7.62	0.00	7.62	
ANNUAL		5.03979	ug/m^3	Res_042	635689.45	4263491.88	7.62	0.00	7.62	
ANNUAL		5.43765	ug/m^3	Res_043	635673.21	4263486.95	7.62	0.00	7.62	
ANNUAL		6.06223	ug/m^3	Res_044	635655.53	4263484.34	7.62	0.00	7.62	
ANNUAL		7.05344	ug/m^3	Res_045	635636.11	4263487.82	7.62	0.00	7.62	
ANNUAL		8.22943	ug/m^3	Res_046	635619.29	4263487.24	7.62	0.00	7.62	
ANNUAL		9.92916	ug/m^3	Res_047	635602.48	4263484.34	7.62	0.00	7.62	
ANNUAL		12.59831	ug/m^3	Res_048	635585.08	4263483.47	7.62	0.00	7.62	
ANNUAL		15.10302	ug/m^3	Res_049	635501.00	4263538.50	7.62	0.00	7.62	
ANNUAL		16.08735	ug/m^3	Res_050	635501.42	4263553.79	7.62	0.00	7.62	
ANNUAL		16.19791	ug/m^3	Res_051	635497.02	4263572.44	7.62	0.00	7.62	
ANNUAL		23.92723	ug/m^3	Res_052	635549.18	4263563.22	7.62	0.00	7.62	
ANNUAL		18.16151	ug/m^3	Res_053	635564.26	4263560.08	7.62	0.00	7.62	
ANNUAL		27.11342	ug/m^3	Res_054	635544.36	4263532.43	7.62	0.00	7.62	
ANNUAL		17.10979	ug/m^3	Res_055	635566.36	4263532.43	7.62	0.00	7.62	
ANNUAL		13.07410	ug/m^3	Res_056	635583.32	4263530.75	7.62	0.00	7.62	
ANNUAL		14.33944	ug/m^3	Res_057	635582.69	4263561.96	7.62	0.00	7.62	
ANNUAL		12.35049	ug/m^3	Res_058	635599.87	4263563.85	7.62	0.00	7.62	
ANNUAL		10.56327	ug/m^3	Res_059	635600.71	4263530.54	7.62	0.00	7.62	
ANNUAL		10.89759	ug/m^3	Res_060	635616.84	4263563.01	7.62	0.00	7.62	

Sensitive Receptor Summary

Nicholas Elementary School Reconstruction Project
Construction HRA

PM2.5 - Concentration - Source Group: OFFSITE

Averaging Period	Rank	Peak	Units	Receptor ID	X (m)	Y (m)	ZELEV (m)	ZFLAG (m)	ZHILL (m)	Peak Date, Start Hour
ANNUAL		8.99333	ug/m^3	Res_061	635619.14	4263533.89	7.62	0.00	7.62	
ANNUAL		9.72900	ug/m^3	Res_062	635636.95	4263562.38	7.62	0.00	7.62	
ANNUAL		7.86312	ug/m^3	Res_063	635636.95	4263532.43	7.62	0.00	7.62	
ANNUAL		9.12467	ug/m^3	Res_064	635652.66	4263562.59	7.62	0.00	7.62	
ANNUAL		7.04591	ug/m^3	Res_065	635653.29	4263529.70	7.62	0.00	7.62	
ANNUAL		8.65303	ug/m^3	Res_066	635670.88	4263563.43	7.62	0.00	7.62	
ANNUAL		6.80614	ug/m^3	Res_067	635671.93	4263538.08	7.62	0.00	7.62	
ANNUAL		8.07658	ug/m^3	Res_068	635688.79	4263561.86	7.62	0.00	7.62	
ANNUAL		6.26059	ug/m^3	Res_069	635689.53	4263535.74	7.62	0.00	7.62	
ANNUAL		5.84735	ug/m^3	Res_070	635710.23	4263535.49	7.62	0.00	7.62	
ANNUAL		7.67622	ug/m^3	Res_071	635710.23	4263561.86	7.62	0.00	7.62	
ANNUAL		7.95993	ug/m^3	Res_072	635774.41	4263572.00	7.62	0.00	7.62	
ANNUAL		7.71501	ug/m^3	Res_073	635790.75	4263571.37	7.62	0.00	7.62	
ANNUAL		7.01797	ug/m^3	Res_074	635809.40	4263566.76	7.62	0.00	7.62	
ANNUAL		5.89148	ug/m^3	Res_075	635808.77	4263554.40	7.62	0.00	7.62	
ANNUAL		5.52351	ug/m^3	Res_076	635796.20	4263547.90	7.62	0.00	7.62	
ANNUAL		4.96309	ug/m^3	Res_077	635753.46	4263529.47	7.62	0.00	7.62	
ANNUAL		4.38152	ug/m^3	Res_078	635773.36	4263520.04	7.62	0.00	7.62	
ANNUAL		3.90588	ug/m^3	Res_079	635790.96	4263510.40	7.62	0.00	7.62	
ANNUAL		3.41338	ug/m^3	Res_080	635803.11	4263494.90	7.62	0.00	7.62	

Sensitive Receptor Summary

Nicholas Elementary School Reconstruction Project
Construction HRA

PM2.5 - Concentration - Source Group: OFFSITE

Averaging Period	Rank	Peak	Units	Receptor ID	X (m)	Y (m)	ZELEV (m)	ZFLAG (m)	ZHILL (m)	Peak Date, Start Hour
ANNUAL		3.08337	ug/m^3	Res_081	635815.18	4263483.21	7.62	0.00	7.62	
ANNUAL		2.85324	ug/m^3	Res_082	635833.45	4263478.28	7.62	0.00	7.62	
ANNUAL		2.55572	ug/m^3	Res_083	635850.27	4263466.68	7.62	0.00	7.62	
ANNUAL		2.44041	ug/m^3	Res_084	635869.41	4263467.26	7.62	0.00	7.62	
ANNUAL		3.20435	ug/m^3	Res_085	635843.89	4263499.74	7.62	0.00	7.62	
ANNUAL		3.03508	ug/m^3	Res_086	635856.36	4263495.97	7.62	0.00	7.62	
ANNUAL		2.96957	ug/m^3	Res_087	635865.93	4263495.68	7.62	0.00	7.62	
ANNUAL		6.74123	ug/m^3	Res_088	635888.26	4263569.63	7.62	0.00	7.62	
ANNUAL		6.57488	ug/m^3	Res_089	635904.90	4263569.10	7.62	0.00	7.62	
ANNUAL		6.35542	ug/m^3	Res_090	635924.81	4263568.27	7.62	0.00	7.62	
ANNUAL		6.52886	ug/m^3	Res_091	635940.52	4263570.78	7.62	0.00	7.62	
ANNUAL		6.33866	ug/m^3	Res_092	635958.12	4263570.15	7.62	0.00	7.62	
ANNUAL		6.33627	ug/m^3	Res_093	635974.05	4263571.20	7.62	0.00	7.62	
ANNUAL		6.17805	ug/m^3	Res_094	635993.12	4263571.20	7.62	0.00	7.62	
ANNUAL		5.99357	ug/m^3	Res_095	636011.34	4263571.20	7.62	0.00	7.62	
ANNUAL		5.88840	ug/m^3	Res_096	636027.48	4263572.25	7.62	0.00	7.62	
ANNUAL		5.46824	ug/m^3	Res_097	636046.97	4263572.25	7.62	0.00	7.62	
ANNUAL		4.81803	ug/m^3	Res_098	636062.97	4263572.83	7.62	0.00	7.62	
ANNUAL		3.79132	ug/m^3	Res_099	635897.08	4263528.17	7.62	0.00	7.62	
ANNUAL		4.23684	ug/m^3	Res_100	635921.73	4263540.35	7.62	0.00	7.62	

Sensitive Receptor Summary

Nicholas Elementary School Reconstruction Project
Construction HRA

PM2.5 - Concentration - Source Group: OFFSITE

Averaging Period	Rank	Peak	Units	Receptor ID	X (m)	Y (m)	ZELEV (m)	ZFLAG (m)	ZHILL (m)	Peak Date, Start Hour
ANNUAL		4.13919	ug/m^3	Res_101	635937.39	4263540.06	7.62	0.00	7.62	
ANNUAL		4.02878	ug/m^3	Res_102	635955.37	4263539.77	7.62	0.00	7.62	
ANNUAL		3.97110	ug/m^3	Res_103	635973.93	4263540.64	7.62	0.00	7.62	
ANNUAL		3.94456	ug/m^3	Res_104	635990.75	4263542.09	7.62	0.00	7.62	
ANNUAL		3.82604	ug/m^3	Res_105	636009.32	4263542.38	7.62	0.00	7.62	
ANNUAL		3.64905	ug/m^3	Res_106	636027.30	4263542.09	7.62	0.00	7.62	
ANNUAL		3.49212	ug/m^3	Res_107	636042.96	4263542.96	7.62	0.00	7.62	
ANNUAL		3.12852	ug/m^3	Res_108	636062.39	4263543.25	7.62	0.00	7.62	
ANNUAL		2.65166	ug/m^3	Res_109	636079.21	4263542.38	7.62	0.00	7.62	
ANNUAL		2.16777	ug/m^3	Res_110	636096.61	4263543.83	7.62	0.00	7.62	
ANNUAL		3.90816	ug/m^3	Res_111	636078.12	4263575.22	7.62	0.00	7.62	
ANNUAL		2.59428	ug/m^3	Res_112	636097.56	4263574.93	7.62	0.00	7.62	
ANNUAL		3.05130	ug/m^3	Res_113	635893.71	4263505.40	7.62	0.00	7.62	
ANNUAL		2.63411	ug/m^3	Res_114	635894.77	4263487.28	7.62	0.00	7.62	
ANNUAL		2.28188	ug/m^3	Res_115	635894.41	4263465.90	7.62	0.00	7.62	
ANNUAL		1.93886	ug/m^3	Res_116	635866.96	4263418.34	7.62	0.00	7.62	
ANNUAL		1.81165	ug/m^3	Res_117	635890.63	4263419.82	7.62	0.00	7.62	
ANNUAL		1.75658	ug/m^3	Res_118	635905.67	4263422.29	7.62	0.00	7.62	
ANNUAL		1.62872	ug/m^3	Res_119	635865.03	4263366.30	7.62	0.00	7.62	
ANNUAL		1.48474	ug/m^3	Res_120	635889.79	4263367.01	7.62	0.00	7.62	

Sensitive Receptor Summary

Nicholas Elementary School Reconstruction Project
Construction HRA

PM2.5 - Concentration - Source Group: OFFSITE

Averaging Period	Rank	Peak	Units	Receptor ID	X (m)	Y (m)	ZELEV (m)	ZFLAG (m)	ZHILL (m)	Peak Date, Start Hour
ANNUAL		1.34819	ug/m^3	Res_121	635914.20	4263362.20	7.62	0.00	7.62	
ANNUAL		1.25597	ug/m^3	Res_122	635894.25	4263316.06	7.62	0.00	7.62	
ANNUAL		1.42282	ug/m^3	Res_123	635867.88	4263322.29	7.62	0.00	7.62	
ANNUAL		1.65880	ug/m^3	Res_124	635925.96	4263421.19	7.62	0.00	7.62	
ANNUAL		1.22119	ug/m^3	Res_125	635935.20	4263351.31	7.62	0.00	7.62	
ANNUAL		1.16141	ug/m^3	Res_126	635909.65	4263307.36	7.62	0.00	7.62	
ANNUAL		1.08173	ug/m^3	Res_127	635921.59	4263295.07	7.62	0.00	7.62	
ANNUAL		1.09399	ug/m^3	Res_128	635906.57	4263277.66	7.62	0.00	7.62	
ANNUAL		1.38541	ug/m^3	Res_129	635864.93	4263305.99	7.62	0.00	7.62	
ANNUAL		1.30867	ug/m^3	Res_130	635867.32	4263285.85	7.62	0.00	7.62	
ANNUAL		1.26264	ug/m^3	Res_131	635867.32	4263268.44	7.62	0.00	7.62	
ANNUAL		1.21011	ug/m^3	Res_132	635869.37	4263250.69	7.62	0.00	7.62	
ANNUAL		1.06163	ug/m^3	Res_133	635903.84	4263258.20	7.62	0.00	7.62	
ANNUAL		1.03072	ug/m^3	Res_134	635902.14	4263238.75	7.62	0.00	7.62	
ANNUAL		1.00136	ug/m^3	Res_135	635901.79	4263221.00	7.62	0.00	7.62	
ANNUAL		1.16657	ug/m^3	Res_136	635870.05	4263230.55	7.62	0.00	7.62	
ANNUAL		1.12617	ug/m^3	Res_137	635871.41	4263211.78	7.62	0.00	7.62	
ANNUAL		0.94964	ug/m^3	Res_138	635906.57	4263199.49	7.62	0.00	7.62	
ANNUAL		1.09367	ug/m^3	Res_139	635871.76	4263192.66	7.62	0.00	7.62	
ANNUAL		1.07531	ug/m^3	Res_140	635870.73	4263176.62	7.62	0.00	7.62	

Sensitive Receptor Summary

Nicholas Elementary School Reconstruction Project
Construction HRA

PM2.5 - Concentration - Source Group: OFFSITE

Averaging Period	Rank	Peak	Units	Receptor ID	X (m)	Y (m)	ZELEV (m)	ZFLAG (m)	ZHILL (m)	Peak Date, Start Hour
ANNUAL		1.46600	ug/m^3	Res_141	635826.01	4263217.58	7.62	0.00	7.62	
ANNUAL		1.74622	ug/m^3	Res_142	635802.12	4263217.24	7.62	0.00	7.62	
ANNUAL		2.03781	ug/m^3	Res_143	635784.37	4263215.53	7.62	0.00	7.62	
ANNUAL		2.49984	ug/m^3	Res_144	635765.25	4263216.22	7.62	0.00	7.62	
ANNUAL		3.22907	ug/m^3	Res_145	635745.79	4263215.53	7.62	0.00	7.62	
ANNUAL		4.30932	ug/m^3	Res_146	635728.04	4263212.12	7.62	0.00	7.62	
ANNUAL		6.49356	ug/m^3	Res_147	635706.88	4263197.78	7.62	0.00	7.62	
ANNUAL		3.34300	ug/m^3	Res_148	635736.58	4263168.08	7.62	0.00	7.62	
ANNUAL		2.23120	ug/m^3	Res_149	635769.35	4263173.55	7.62	0.00	7.62	
ANNUAL		1.84813	ug/m^3	Res_150	635788.12	4263171.16	7.62	0.00	7.62	
ANNUAL		1.60595	ug/m^3	Res_151	635804.85	4263171.16	7.62	0.00	7.62	
ANNUAL		1.38232	ug/m^3	Res_152	635825.67	4263171.50	7.62	0.00	7.62	
ANNUAL		4.66851	ug/m^3	Res_153	635694.20	4263141.43	7.38	0.00	7.38	
ANNUAL		6.19009	ug/m^3	Res_154	635679.31	4263154.64	7.52	0.00	7.52	
ANNUAL		7.80849	ug/m^3	Res_155	635667.78	4263167.01	7.62	0.00	7.62	
ANNUAL		9.28281	ug/m^3	Res_156	635655.20	4263181.27	7.53	0.00	7.53	
ANNUAL		9.80747	ug/m^3	Res_157	635638.64	4263196.36	7.38	0.00	7.38	
ANNUAL		10.80996	ug/m^3	Res_158	635629.62	4263208.10	7.43	0.00	7.43	
ANNUAL		10.86426	ug/m^3	Res_159	635613.90	4263222.36	7.41	0.00	7.41	
ANNUAL		4.58561	ug/m^3	Res_160	635635.49	4263157.16	7.33	0.00	7.33	

Sensitive Receptor Summary

Nicholas Elementary School Reconstruction Project
Construction HRA

PM2.5 - Concentration - Source Group: OFFSITE

Averaging Period	Rank	Peak	Units	Receptor ID	X (m)	Y (m)	ZELEV (m)	ZFLAG (m)	ZHILL (m)	Peak Date, Start Hour
ANNUAL		4.57908	ug/m^3	Res_161	635621.02	4263168.06	7.32	0.00	7.32	
ANNUAL		5.08028	ug/m^3	Res_162	635609.07	4263185.04	7.32	0.00	7.32	
ANNUAL		5.10199	ug/m^3	Res_163	635596.28	4263197.20	7.24	0.00	7.24	
ANNUAL		3.32980	ug/m^3	Res_164	635551.46	4263214.76	7.06	0.00	7.06	
ANNUAL		8.90824	ug/m^3	Res_165	635539.46	4263302.58	7.01	0.00	7.01	
ANNUAL		4.51253	ug/m^3	Res_166	635520.57	4263286.71	7.01	0.00	7.01	
ANNUAL		3.02990	ug/m^3	Res_167	635507.92	4263270.67	6.83	0.00	6.83	
ANNUAL		5.46617	ug/m^3	Res_168	635514.51	4263314.87	7.01	0.00	7.01	
ANNUAL		3.77419	ug/m^3	Res_169	635496.51	4263316.12	6.85	0.00	6.85	
ANNUAL		10.10312	ug/m^3	Res_170	635533.76	4263320.22	7.06	0.00	7.06	
ANNUAL		3.74228	ug/m^3	Res_171	635477.95	4263357.79	6.89	0.00	6.89	
ANNUAL		5.94571	ug/m^3	Res_172	635499.16	4263358.32	7.23	0.00	7.23	
ANNUAL		10.71819	ug/m^3	Res_173	635516.98	4263362.06	7.47	0.00	7.47	
ANNUAL		14.56064	ug/m^3	Res_174	635575.47	4263638.68	7.62	0.00	7.62	
ANNUAL		10.94657	ug/m^3	Res_175	635575.47	4263658.68	7.62	0.00	7.62	
ANNUAL		8.44698	ug/m^3	Res_176	635575.47	4263678.68	7.62	0.00	7.62	
ANNUAL		6.70311	ug/m^3	Res_177	635575.47	4263698.68	7.62	0.00	7.62	
ANNUAL		5.45245	ug/m^3	Res_178	635575.47	4263718.68	7.62	0.00	7.62	
ANNUAL		4.52767	ug/m^3	Res_179	635575.47	4263738.68	7.62	0.00	7.62	
ANNUAL		3.82396	ug/m^3	Res_180	635575.47	4263758.68	7.62	0.00	7.62	

Sensitive Receptor Summary

Nicholas Elementary School Reconstruction Project
Construction HRA

PM2.5 - Concentration - Source Group: OFFSITE

Averaging Period	Rank	Peak	Units	Receptor ID	X (m)	Y (m)	ZELEV (m)	ZFLAG (m)	ZHILL (m)	Peak Date, Start Hour
ANNUAL		13.68885	ug/m^3	Res_181	635595.47	4263638.68	7.62	0.00	7.62	
ANNUAL		10.48263	ug/m^3	Res_182	635595.47	4263658.68	7.62	0.00	7.62	
ANNUAL		8.23257	ug/m^3	Res_183	635595.47	4263678.68	7.62	0.00	7.62	
ANNUAL		6.62418	ug/m^3	Res_184	635595.47	4263698.68	7.62	0.00	7.62	
ANNUAL		5.44308	ug/m^3	Res_185	635595.47	4263718.68	7.62	0.00	7.62	
ANNUAL		4.55310	ug/m^3	Res_186	635595.47	4263738.68	7.62	0.00	7.62	
ANNUAL		3.86616	ug/m^3	Res_187	635595.47	4263758.68	7.62	0.00	7.62	
ANNUAL		12.98333	ug/m^3	Res_188	635615.47	4263638.68	7.62	0.00	7.62	
ANNUAL		10.00909	ug/m^3	Res_189	635615.47	4263658.68	7.62	0.00	7.62	
ANNUAL		7.94554	ug/m^3	Res_190	635615.47	4263678.68	7.62	0.00	7.62	
ANNUAL		6.46645	ug/m^3	Res_191	635615.47	4263698.68	7.62	0.00	7.62	
ANNUAL		5.36744	ug/m^3	Res_192	635615.47	4263718.68	7.62	0.00	7.62	
ANNUAL		4.52714	ug/m^3	Res_193	635615.47	4263738.68	7.62	0.00	7.62	
ANNUAL		3.86908	ug/m^3	Res_194	635615.47	4263758.68	7.62	0.00	7.62	
ANNUAL		12.45119	ug/m^3	Res_195	635635.47	4263638.68	7.62	0.00	7.62	
ANNUAL		9.60150	ug/m^3	Res_196	635635.47	4263658.68	7.62	0.00	7.62	
ANNUAL		7.65459	ug/m^3	Res_197	635635.47	4263678.68	7.62	0.00	7.62	
ANNUAL		6.27441	ug/m^3	Res_198	635635.47	4263698.68	7.62	0.00	7.62	
ANNUAL		5.24978	ug/m^3	Res_199	635635.47	4263718.68	7.62	0.00	7.62	
ANNUAL		4.46152	ug/m^3	Res_200	635635.47	4263738.68	7.62	0.00	7.62	

Sensitive Receptor Summary

Nicholas Elementary School Reconstruction Project
Construction HRA

PM2.5 - Concentration - Source Group: OFFSITE

Averaging Period	Rank	Peak	Units	Receptor ID	X (m)	Y (m)	ZELEV (m)	ZFLAG (m)	ZHILL (m)	Peak Date, Start Hour
ANNUAL		3.83848	ug/m^3	Res_201	635635.47	4263758.68	7.62	0.00	7.62	
ANNUAL		12.05706	ug/m^3	Res_202	635655.47	4263638.68	7.62	0.00	7.62	
ANNUAL		9.27139	ug/m^3	Res_203	635655.47	4263658.68	7.62	0.00	7.62	
ANNUAL		7.39338	ug/m^3	Res_204	635655.47	4263678.68	7.62	0.00	7.62	
ANNUAL		6.07968	ug/m^3	Res_205	635655.47	4263698.68	7.62	0.00	7.62	
ANNUAL		5.11329	ug/m^3	Res_206	635655.47	4263718.68	7.62	0.00	7.62	
ANNUAL		4.37130	ug/m^3	Res_207	635655.47	4263738.68	7.62	0.00	7.62	
ANNUAL		3.78284	ug/m^3	Res_208	635655.47	4263758.68	7.62	0.00	7.62	
ANNUAL		11.76546	ug/m^3	Res_209	635675.47	4263638.68	7.62	0.00	7.62	
ANNUAL		9.00977	ug/m^3	Res_210	635675.47	4263658.68	7.62	0.00	7.62	
ANNUAL		7.17083	ug/m^3	Res_211	635675.47	4263678.68	7.62	0.00	7.62	
ANNUAL		5.89942	ug/m^3	Res_212	635675.47	4263698.68	7.62	0.00	7.62	
ANNUAL		4.97445	ug/m^3	Res_213	635675.47	4263718.68	7.62	0.00	7.62	
ANNUAL		4.26945	ug/m^3	Res_214	635675.47	4263738.68	7.62	0.00	7.62	
ANNUAL		3.71153	ug/m^3	Res_215	635675.47	4263758.68	7.62	0.00	7.62	
ANNUAL		3.25797	ug/m^3	Res_216	635675.47	4263778.68	7.62	0.00	7.62	
ANNUAL		11.54882	ug/m^3	Res_217	635695.47	4263638.68	7.62	0.00	7.62	
ANNUAL		8.80374	ug/m^3	Res_218	635695.47	4263658.68	7.62	0.00	7.62	
ANNUAL		6.98515	ug/m^3	Res_219	635695.47	4263678.68	7.62	0.00	7.62	
ANNUAL		5.73989	ug/m^3	Res_220	635695.47	4263698.68	7.62	0.00	7.62	

Sensitive Receptor Summary

Nicholas Elementary School Reconstruction Project
Construction HRA

PM2.5 - Concentration - Source Group: OFFSITE

Averaging Period	Rank	Peak	Units	Receptor ID	X (m)	Y (m)	ZELEV (m)	ZFLAG (m)	ZHILL (m)	Peak Date, Start Hour
ANNUAL		4.84286	ug/m^3	Res_221	635695.47	4263718.68	7.62	0.00	7.62	
ANNUAL		4.16534	ug/m^3	Res_222	635695.47	4263738.68	7.62	0.00	7.62	
ANNUAL		3.63230	ug/m^3	Res_223	635695.47	4263758.68	7.62	0.00	7.62	
ANNUAL		3.19984	ug/m^3	Res_224	635695.47	4263778.68	7.62	0.00	7.62	
ANNUAL		11.38713	ug/m^3	Res_225	635715.47	4263638.68	7.62	0.00	7.62	
ANNUAL		8.64126	ug/m^3	Res_226	635715.47	4263658.68	7.62	0.00	7.62	
ANNUAL		6.83128	ug/m^3	Res_227	635715.47	4263678.68	7.62	0.00	7.62	
ANNUAL		5.60134	ug/m^3	Res_228	635715.47	4263698.68	7.62	0.00	7.62	
ANNUAL		4.72278	ug/m^3	Res_229	635715.47	4263718.68	7.62	0.00	7.62	
ANNUAL		4.06474	ug/m^3	Res_230	635715.47	4263738.68	7.62	0.00	7.62	
ANNUAL		3.55080	ug/m^3	Res_231	635715.47	4263758.68	7.62	0.00	7.62	
ANNUAL		3.13584	ug/m^3	Res_232	635715.47	4263778.68	7.62	0.00	7.62	
ANNUAL		11.26600	ug/m^3	Res_233	635735.47	4263638.68	7.62	0.00	7.62	
ANNUAL		8.51245	ug/m^3	Res_234	635735.47	4263658.68	7.62	0.00	7.62	
ANNUAL		6.70370	ug/m^3	Res_235	635735.47	4263678.68	7.62	0.00	7.62	
ANNUAL		5.48181	ug/m^3	Res_236	635735.47	4263698.68	7.62	0.00	7.62	
ANNUAL		4.61509	ug/m^3	Res_237	635735.47	4263718.68	7.62	0.00	7.62	
ANNUAL		3.97056	ug/m^3	Res_238	635735.47	4263738.68	7.62	0.00	7.62	
ANNUAL		3.47072	ug/m^3	Res_239	635735.47	4263758.68	7.62	0.00	7.62	
ANNUAL		3.06958	ug/m^3	Res_240	635735.47	4263778.68	7.62	0.00	7.62	

Sensitive Receptor Summary

Nicholas Elementary School Reconstruction Project
Construction HRA

PM2.5 - Concentration - Source Group: OFFSITE

Averaging Period	Rank	Peak	Units	Receptor ID	X (m)	Y (m)	ZELEV (m)	ZFLAG (m)	ZHILL (m)	Peak Date, Start Hour
ANNUAL		11.17517	ug/m^3	Res_241	635755.47	4263638.68	7.62	0.00	7.62	
ANNUAL		8.40960	ug/m^3	Res_242	635755.47	4263658.68	7.62	0.00	7.62	
ANNUAL		6.59728	ug/m^3	Res_243	635755.47	4263678.68	7.62	0.00	7.62	
ANNUAL		5.37857	ug/m^3	Res_244	635755.47	4263698.68	7.62	0.00	7.62	
ANNUAL		4.51901	ug/m^3	Res_245	635755.47	4263718.68	7.62	0.00	7.62	
ANNUAL		3.88371	ug/m^3	Res_246	635755.47	4263738.68	7.62	0.00	7.62	
ANNUAL		3.39401	ug/m^3	Res_247	635755.47	4263758.68	7.62	0.00	7.62	
ANNUAL		3.00348	ug/m^3	Res_248	635755.47	4263778.68	7.62	0.00	7.62	
ANNUAL		11.10715	ug/m^3	Res_249	635775.47	4263638.68	7.62	0.00	7.62	
ANNUAL		8.32675	ug/m^3	Res_250	635775.47	4263658.68	7.62	0.00	7.62	
ANNUAL		6.50769	ug/m^3	Res_251	635775.47	4263678.68	7.62	0.00	7.62	
ANNUAL		5.28884	ug/m^3	Res_252	635775.47	4263698.68	7.62	0.00	7.62	
ANNUAL		4.43314	ug/m^3	Res_253	635775.47	4263718.68	7.62	0.00	7.62	
ANNUAL		3.80390	ug/m^3	Res_254	635775.47	4263738.68	7.62	0.00	7.62	
ANNUAL		3.32151	ug/m^3	Res_255	635775.47	4263758.68	7.62	0.00	7.62	
ANNUAL		2.93893	ug/m^3	Res_256	635775.47	4263778.68	7.62	0.00	7.62	
ANNUAL		11.05645	ug/m^3	Res_257	635795.47	4263638.68	7.62	0.00	7.62	
ANNUAL		8.25927	ug/m^3	Res_258	635795.47	4263658.68	7.62	0.00	7.62	
ANNUAL		6.43131	ug/m^3	Res_259	635795.47	4263678.68	7.62	0.00	7.62	
ANNUAL		5.21001	ug/m^3	Res_260	635795.47	4263698.68	7.62	0.00	7.62	

Sensitive Receptor Summary

Nicholas Elementary School Reconstruction Project
Construction HRA

PM2.5 - Concentration - Source Group: OFFSITE

Averaging Period	Rank	Peak	Units	Receptor ID	X (m)	Y (m)	ZELEV (m)	ZFLAG (m)	ZHILL (m)	Peak Date, Start Hour
ANNUAL		4.35580	ug/m^3	Res_261	635795.47	4263718.68	7.62	0.00	7.62	
ANNUAL		3.73031	ug/m^3	Res_262	635795.47	4263738.68	7.62	0.00	7.62	
ANNUAL		3.25312	ug/m^3	Res_263	635795.47	4263758.68	7.62	0.00	7.62	
ANNUAL		2.87649	ug/m^3	Res_264	635795.47	4263778.68	7.62	0.00	7.62	
ANNUAL		11.01909	ug/m^3	Res_265	635815.47	4263638.68	7.62	0.00	7.62	
ANNUAL		8.20365	ug/m^3	Res_266	635815.47	4263658.68	7.62	0.00	7.62	
ANNUAL		6.36515	ug/m^3	Res_267	635815.47	4263678.68	7.62	0.00	7.62	
ANNUAL		5.13972	ug/m^3	Res_268	635815.47	4263698.68	7.62	0.00	7.62	
ANNUAL		4.28524	ug/m^3	Res_269	635815.47	4263718.68	7.62	0.00	7.62	
ANNUAL		3.66184	ug/m^3	Res_270	635815.47	4263738.68	7.62	0.00	7.62	
ANNUAL		3.18827	ug/m^3	Res_271	635815.47	4263758.68	7.62	0.00	7.62	
ANNUAL		2.81605	ug/m^3	Res_272	635815.47	4263778.68	7.62	0.00	7.62	
ANNUAL		10.99192	ug/m^3	Res_273	635835.47	4263638.68	7.62	0.00	7.62	
ANNUAL		8.15697	ug/m^3	Res_274	635835.47	4263658.68	7.62	0.00	7.62	
ANNUAL		6.30670	ug/m^3	Res_275	635835.47	4263678.68	7.62	0.00	7.62	
ANNUAL		5.07582	ug/m^3	Res_276	635835.47	4263698.68	7.62	0.00	7.62	
ANNUAL		4.21976	ug/m^3	Res_277	635835.47	4263718.68	7.62	0.00	7.62	
ANNUAL		3.59727	ug/m^3	Res_278	635835.47	4263738.68	7.62	0.00	7.62	
ANNUAL		3.12609	ug/m^3	Res_279	635835.47	4263758.68	7.62	0.00	7.62	
ANNUAL		2.75705	ug/m^3	Res_280	635835.47	4263778.68	7.62	0.00	7.62	

Sensitive Receptor Summary

Nicholas Elementary School Reconstruction Project
Construction HRA

PM2.5 - Concentration - Source Group: OFFSITE

Averaging Period	Rank	Peak	Units	Receptor ID	X (m)	Y (m)	ZELEV (m)	ZFLAG (m)	ZHILL (m)	Peak Date, Start Hour
ANNUAL		10.97228	ug/m^3	Res_281	635855.47	4263638.68	7.62	0.00	7.62	
ANNUAL		8.11674	ug/m^3	Res_282	635855.47	4263658.68	7.62	0.00	7.62	
ANNUAL		6.25362	ug/m^3	Res_283	635855.47	4263678.68	7.62	0.00	7.62	
ANNUAL		5.01623	ug/m^3	Res_284	635855.47	4263698.68	7.62	0.00	7.62	
ANNUAL		4.15762	ug/m^3	Res_285	635855.47	4263718.68	7.62	0.00	7.62	
ANNUAL		3.53516	ug/m^3	Res_286	635855.47	4263738.68	7.62	0.00	7.62	
ANNUAL		3.06540	ug/m^3	Res_287	635855.47	4263758.68	7.62	0.00	7.62	
ANNUAL		2.69861	ug/m^3	Res_288	635855.47	4263778.68	7.62	0.00	7.62	
ANNUAL		10.95756	ug/m^3	Res_289	635875.47	4263638.68	7.62	0.00	7.62	
ANNUAL		8.08045	ug/m^3	Res_290	635875.47	4263658.68	7.62	0.00	7.62	
ANNUAL		6.20357	ug/m^3	Res_291	635875.47	4263678.68	7.62	0.00	7.62	
ANNUAL		4.95873	ug/m^3	Res_292	635875.47	4263698.68	7.62	0.00	7.62	
ANNUAL		4.09693	ug/m^3	Res_293	635875.47	4263718.68	7.62	0.00	7.62	
ANNUAL		3.47381	ug/m^3	Res_294	635875.47	4263738.68	7.62	0.00	7.62	
ANNUAL		3.00470	ug/m^3	Res_295	635875.47	4263758.68	7.62	0.00	7.62	
ANNUAL		2.63950	ug/m^3	Res_296	635875.47	4263778.68	7.62	0.00	7.62	
ANNUAL		1.96665	ug/m^3	Res_297	635925.85	4263452.88	7.62	0.00	7.62	
ANNUAL		2.23611	ug/m^3	Res_298	635925.85	4263472.88	7.62	0.00	7.62	
ANNUAL		2.59815	ug/m^3	Res_299	635925.85	4263492.88	7.62	0.00	7.62	
ANNUAL		2.15126	ug/m^3	Res_300	635945.85	4263472.88	7.62	0.00	7.62	

Sensitive Receptor Summary

Nicholas Elementary School Reconstruction Project
Construction HRA

PM2.5 - Concentration - Source Group: OFFSITE

Averaging Period	Rank	Peak	Units	Receptor ID	X (m)	Y (m)	ZELEV (m)	ZFLAG (m)	ZHILL (m)	Peak Date, Start Hour
ANNUAL		2.50928	ug/m^3	Res_301	635945.85	4263492.88	7.62	0.00	7.62	
ANNUAL		2.07118	ug/m^3	Res_302	635965.85	4263472.88	7.62	0.00	7.62	
ANNUAL		2.42302	ug/m^3	Res_303	635965.85	4263492.88	7.62	0.00	7.62	
ANNUAL		1.99236	ug/m^3	Res_304	635985.85	4263472.88	7.62	0.00	7.62	
ANNUAL		2.33642	ug/m^3	Res_305	635985.85	4263492.88	7.62	0.00	7.62	
ANNUAL		2.81941	ug/m^3	Res_306	635985.85	4263512.88	7.62	0.00	7.62	
ANNUAL		1.90971	ug/m^3	Res_307	636005.85	4263472.88	7.62	0.00	7.62	
ANNUAL		2.24354	ug/m^3	Res_308	636005.85	4263492.88	7.62	0.00	7.62	
ANNUAL		2.71301	ug/m^3	Res_309	636005.85	4263512.88	7.62	0.00	7.62	
ANNUAL		1.81864	ug/m^3	Res_310	636025.85	4263472.88	7.62	0.00	7.62	
ANNUAL		2.13638	ug/m^3	Res_311	636025.85	4263492.88	7.62	0.00	7.62	
ANNUAL		2.58415	ug/m^3	Res_312	636025.85	4263512.88	7.62	0.00	7.62	
ANNUAL		1.71324	ug/m^3	Res_313	636045.85	4263472.88	7.62	0.00	7.62	
ANNUAL		2.00555	ug/m^3	Res_314	636045.85	4263492.88	7.62	0.00	7.62	
ANNUAL		2.41611	ug/m^3	Res_315	636045.85	4263512.88	7.62	0.00	7.62	
ANNUAL		1.58726	ug/m^3	Res_316	636065.85	4263472.88	7.62	0.00	7.62	
ANNUAL		1.84107	ug/m^3	Res_317	636065.85	4263492.88	7.62	0.00	7.62	
ANNUAL		2.19006	ug/m^3	Res_318	636065.85	4263512.88	7.62	0.00	7.62	
ANNUAL		1.43967	ug/m^3	Res_319	636085.85	4263472.88	7.62	0.00	7.62	
ANNUAL		1.64182	ug/m^3	Res_320	636085.85	4263492.88	7.62	0.00	7.62	

Sensitive Receptor Summary

Nicholas Elementary School Reconstruction Project
Construction HRA

PM2.5 - Concentration - Source Group: OFFSITE

Averaging Period	Rank	Peak	Units	Receptor ID	X (m)	Y (m)	ZELEV (m)	ZFLAG (m)	ZHILL (m)	Peak Date, Start Hour
ANNUAL		1.90528	ug/m^3	Res_321	636085.85	4263512.88	7.62	0.00	7.62	
ANNUAL		1.27541	ug/m^3	Res_322	636105.85	4263472.88	7.62	0.00	7.62	
ANNUAL		1.42014	ug/m^3	Res_323	636105.85	4263492.88	7.62	0.00	7.62	
ANNUAL		1.59264	ug/m^3	Res_324	636105.85	4263512.88	7.62	0.00	7.62	
ANNUAL		1.59838	ug/m^3	Res_325	635940.73	4263420.83	7.62	0.00	7.62	
ANNUAL		1.53035	ug/m^3	Res_326	635961.63	4263421.64	7.62	0.00	7.62	
ANNUAL		1.49519	ug/m^3	Res_327	635974.89	4263422.84	7.62	0.00	7.62	
ANNUAL		1.42997	ug/m^3	Res_328	635997.79	4263424.05	7.62	0.00	7.62	
ANNUAL		1.37630	ug/m^3	Res_329	636010.65	4263422.44	7.62	0.00	7.62	
ANNUAL		1.31830	ug/m^3	Res_330	636032.35	4263424.45	7.62	0.00	7.62	
ANNUAL		1.25738	ug/m^3	Res_331	636050.03	4263424.85	7.62	0.00	7.62	
ANNUAL		1.21597	ug/m^3	Res_332	636063.29	4263426.46	7.62	0.00	7.62	
ANNUAL		1.10956	ug/m^3	Res_333	636086.60	4263425.25	7.62	0.00	7.62	
ANNUAL		1.19694	ug/m^3	Res_334	635959.21	4263363.77	7.62	0.00	7.62	
ANNUAL		1.18274	ug/m^3	Res_335	635973.28	4263369.80	7.62	0.00	7.62	
ANNUAL		1.11063	ug/m^3	Res_336	635995.78	4263367.39	7.62	0.00	7.62	
ANNUAL		1.07218	ug/m^3	Res_337	636012.66	4263368.59	7.62	0.00	7.62	
ANNUAL		1.02598	ug/m^3	Res_338	636031.55	4263368.99	7.62	0.00	7.62	
ANNUAL		0.98854	ug/m^3	Res_339	636048.02	4263370.20	7.62	0.00	7.62	
ANNUAL		0.94228	ug/m^3	Res_340	636067.71	4263371.81	7.62	0.00	7.62	

Sensitive Receptor Summary

Nicholas Elementary School Reconstruction Project
Construction HRA

PM2.5 - Concentration - Source Group: OFFSITE

Averaging Period	Rank	Peak	Units	Receptor ID	X (m)	Y (m)	ZELEV (m)	ZFLAG (m)	ZHILL (m)	Peak Date, Start Hour
ANNUAL		0.90270	ug/m^3	Res_341	636082.98	4263372.61	7.62	0.00	7.62	
ANNUAL		0.99826	ug/m^3	Res_342	635965.24	4263312.74	7.62	0.00	7.62	
ANNUAL		0.97507	ug/m^3	Res_343	635988.15	4263324.39	7.62	0.00	7.62	
ANNUAL		0.94309	ug/m^3	Res_344	636006.63	4263328.00	7.62	0.00	7.62	
ANNUAL		0.89191	ug/m^3	Res_345	636026.32	4263325.19	7.62	0.00	7.62	
ANNUAL		0.83926	ug/m^3	Res_346	636051.24	4263325.19	7.62	0.00	7.62	
ANNUAL		0.94165	ug/m^3	Res_347	635975.69	4263301.48	7.62	0.00	7.62	
ANNUAL		0.86618	ug/m^3	Res_348	635995.38	4263288.62	7.62	0.00	7.62	
ANNUAL		0.90688	ug/m^3	Res_349	635953.95	4263261.49	7.62	0.00	7.62	
ANNUAL		0.88696	ug/m^3	Res_350	635946.98	4263240.58	7.62	0.00	7.62	
ANNUAL		0.83801	ug/m^3	Res_351	635969.05	4263244.36	7.62	0.00	7.62	
ANNUAL		0.85577	ug/m^3	Res_352	635949.30	4263225.48	7.62	0.00	7.62	
ANNUAL		0.79508	ug/m^3	Res_353	635978.34	4263231.00	7.62	0.00	7.62	
ANNUAL		0.80585	ug/m^3	Res_354	635959.75	4263209.80	7.62	0.00	7.62	
ANNUAL		0.75525	ug/m^3	Res_355	635987.34	4263217.06	7.62	0.00	7.62	
ANNUAL		0.75927	ug/m^3	Res_356	635969.63	4263192.38	7.62	0.00	7.62	
ANNUAL		0.71043	ug/m^3	Res_357	635986.76	4263181.93	7.62	0.00	7.62	
ANNUAL		0.70410	ug/m^3	Res_358	636003.60	4263202.55	7.62	0.00	7.62	
ANNUAL		0.82766	ug/m^3	Res_359	636003.31	4263278.33	7.62	0.00	7.62	
ANNUAL		0.77054	ug/m^3	Res_360	636016.08	4263261.49	7.62	0.00	7.62	

Sensitive Receptor Summary

Nicholas Elementary School Reconstruction Project
Construction HRA

PM2.5 - Concentration - Source Group: OFFSITE

Averaging Period	Rank	Peak	Units	Receptor ID	X (m)	Y (m)	ZELEV (m)	ZFLAG (m)	ZHILL (m)	Peak Date, Start Hour
ANNUAL		0.72394	ug/m^3	Res_361	636027.70	4263246.39	7.62	0.00	7.62	
ANNUAL		0.78510	ug/m^3	Res_362	636038.73	4263291.10	7.62	0.00	7.62	
ANNUAL		0.85196	ug/m^3	Res_363	635929.41	4263184.04	7.62	0.00	7.62	
ANNUAL		0.87158	ug/m^3	Res_364	635915.34	4263164.34	7.61	0.00	7.61	
ANNUAL		0.87737	ug/m^3	Res_365	635907.30	4263146.26	7.43	0.00	7.43	
ANNUAL		0.72858	ug/m^3	Res_366	635958.74	4263144.65	7.41	0.00	7.41	
ANNUAL		0.72803	ug/m^3	Res_367	635950.30	4263124.96	7.32	0.00	7.32	
ANNUAL		0.67437	ug/m^3	Res_368	635994.51	4263163.14	7.60	0.00	7.60	
ANNUAL		0.84232	ug/m^3	Res_369	635902.88	4263104.06	7.31	0.00	7.31	
ANNUAL		0.87723	ug/m^3	Res_370	635901.68	4263129.38	7.32	0.00	7.32	
ANNUAL		0.96813	ug/m^3	Res_371	635870.73	4263101.65	7.28	0.00	7.28	
ANNUAL		1.02309	ug/m^3	Res_372	635866.31	4263123.75	7.32	0.00	7.32	
ANNUAL		1.04419	ug/m^3	Res_373	635867.11	4263141.04	7.38	0.00	7.38	
ANNUAL		1.04425	ug/m^3	Res_374	635871.13	4263155.91	7.53	0.00	7.53	
ANNUAL		1.38845	ug/m^3	Res_375	635820.09	4263147.46	7.44	0.00	7.44	
ANNUAL		1.34214	ug/m^3	Res_376	635820.49	4263128.17	7.32	0.00	7.32	
ANNUAL		1.26025	ug/m^3	Res_377	635825.12	4263110.19	7.32	0.00	7.32	
ANNUAL		1.41675	ug/m^3	Res_378	635802.25	4263096.76	7.23	0.00	7.23	
ANNUAL		1.57610	ug/m^3	Res_379	635793.65	4263114.38	7.32	0.00	7.32	
ANNUAL		1.82445	ug/m^3	Res_380	635778.75	4263124.66	7.32	0.00	7.32	

Sensitive Receptor Summary

Nicholas Elementary School Reconstruction Project
Construction HRA

PM2.5 - Concentration - Source Group: OFFSITE

Averaging Period	Rank	Peak	Units	Receptor ID	X (m)	Y (m)	ZELEV (m)	ZFLAG (m)	ZHILL (m)	Peak Date, Start Hour
ANNUAL		2.11383	ug/m^3	Res_381	635767.21	4263139.14	7.36	0.00	7.36	
ANNUAL		2.51561	ug/m^3	Res_382	635754.83	4263153.41	7.50	0.00	7.50	
ANNUAL		3.42632	ug/m^3	Res_383	635706.93	4263123.14	7.32	0.00	7.32	
ANNUAL		2.75377	ug/m^3	Res_384	635721.62	4263110.16	7.32	0.00	7.32	
ANNUAL		2.51675	ug/m^3	Res_385	635701.12	4263092.39	7.19	0.00	7.19	
ANNUAL		2.85739	ug/m^3	Res_386	635686.43	4263103.33	7.30	0.00	7.30	
ANNUAL		3.33848	ug/m^3	Res_387	635675.50	4263116.99	7.32	0.00	7.32	
ANNUAL		3.84999	ug/m^3	Res_388	635661.49	4263131.00	7.31	0.00	7.31	
ANNUAL		4.20922	ug/m^3	Res_389	635648.17	4263143.30	7.36	0.00	7.36	
ANNUAL		2.63742	ug/m^3	Res_390	635458.51	4263353.51	6.49	0.00	6.49	
ANNUAL		2.26837	ug/m^3	Res_391	635466.85	4263312.35	6.53	0.00	6.53	
ANNUAL		2.08440	ug/m^3	Res_392	635470.75	4263292.32	6.57	0.00	6.57	
ANNUAL		1.84785	ug/m^3	Res_393	635472.42	4263271.74	6.59	0.00	6.59	
ANNUAL		1.65106	ug/m^3	Res_394	635475.75	4263249.48	6.62	0.00	6.62	
ANNUAL		2.28942	ug/m^3	Res_395	635502.46	4263248.37	6.75	0.00	6.75	
ANNUAL		2.01997	ug/m^3	Res_396	635503.01	4263232.24	6.85	0.00	6.85	
ANNUAL		1.76998	ug/m^3	Res_397	635504.13	4263213.88	6.91	0.00	6.91	
ANNUAL		1.50099	ug/m^3	Res_398	635502.46	4263194.41	6.89	0.00	6.89	
ANNUAL		2.18375	ug/m^3	Res_399	635554.75	4263171.04	7.01	0.00	7.01	
ANNUAL		2.39332	ug/m^3	Res_400	635572.55	4263160.47	7.01	0.00	7.01	

Sensitive Receptor Summary

Nicholas Elementary School Reconstruction Project
Construction HRA

PM2.5 - Concentration - Source Group: OFFSITE

Averaging Period	Rank	Peak	Units	Receptor ID	X (m)	Y (m)	ZELEV (m)	ZFLAG (m)	ZHILL (m)	Peak Date, Start Hour
ANNUAL		2.49682	ug/m^3	Res_401	635588.13	4263148.79	7.08	0.00	7.08	
ANNUAL		2.40132	ug/m^3	Res_402	635603.15	4263131.55	7.01	0.00	7.01	
ANNUAL		2.22218	ug/m^3	Res_403	635637.64	4263098.72	7.04	0.00	7.04	
ANNUAL		2.04773	ug/m^3	Res_404	635662.67	4263078.14	7.04	0.00	7.04	
ANNUAL		3.45799	ug/m^3	CC_001	635332.31	4263659.61	7.47	0.00	7.47	
ANNUAL		2.78040	ug/m^3	CC_002	635332.31	4263679.61	7.62	0.00	7.62	
ANNUAL		4.57915	ug/m^3	CC_003	635352.31	4263659.61	7.37	0.00	7.37	
ANNUAL		3.51848	ug/m^3	CC_004	635352.31	4263679.61	7.46	0.00	7.46	
ANNUAL		5.58441	ug/m^3	CC_005	635372.31	4263659.61	7.32	0.00	7.32	
ANNUAL		4.24296	ug/m^3	CC_006	635372.31	4263679.61	7.35	0.00	7.35	
ANNUAL		3.60946	ug/m^3	SAA_001	635905.45	4263730.56	7.62	0.00	7.62	
ANNUAL		3.08466	ug/m^3	SAA_002	635905.45	4263750.56	7.62	0.00	7.62	
ANNUAL		2.68317	ug/m^3	SAA_003	635905.45	4263770.56	7.62	0.00	7.62	
ANNUAL		2.36697	ug/m^3	SAA_004	635905.45	4263790.56	7.62	0.00	7.62	
ANNUAL		2.11192	ug/m^3	SAA_005	635905.45	4263810.56	7.62	0.00	7.62	
ANNUAL		3.53939	ug/m^3	SAA_006	635925.45	4263730.56	7.62	0.00	7.62	
ANNUAL		3.01414	ug/m^3	SAA_007	635925.45	4263750.56	7.62	0.00	7.62	
ANNUAL		2.61388	ug/m^3	SAA_008	635925.45	4263770.56	7.62	0.00	7.62	
ANNUAL		2.30017	ug/m^3	SAA_009	635925.45	4263790.56	7.62	0.00	7.62	
ANNUAL		2.04842	ug/m^3	SAA_010	635925.45	4263810.56	7.62	0.00	7.62	

Sensitive Receptor Summary

Nicholas Elementary School Reconstruction Project
Construction HRA

PM2.5 - Concentration - Source Group: OFFSITE

Averaging Period	Rank	Peak	Units	Receptor ID	X (m)	Y (m)	ZELEV (m)	ZFLAG (m)	ZHILL (m)	Peak Date, Start Hour
ANNUAL		3.45862	ug/m^3	SAA_011	635945.45	4263730.56	7.62	0.00	7.62	
ANNUAL		2.93402	ug/m^3	SAA_012	635945.45	4263750.56	7.62	0.00	7.62	
ANNUAL		2.53646	ug/m^3	SAA_013	635945.45	4263770.56	7.62	0.00	7.62	
ANNUAL		2.22663	ug/m^3	SAA_014	635945.45	4263790.56	7.62	0.00	7.62	
ANNUAL		1.97940	ug/m^3	SAA_015	635945.45	4263810.56	7.62	0.00	7.62	
ANNUAL		3.36085	ug/m^3	SAA_016	635965.45	4263730.56	7.62	0.00	7.62	
ANNUAL		2.84000	ug/m^3	SAA_017	635965.45	4263750.56	7.62	0.00	7.62	
ANNUAL		2.44797	ug/m^3	SAA_018	635965.45	4263770.56	7.62	0.00	7.62	
ANNUAL		2.14450	ug/m^3	SAA_019	635965.45	4263790.56	7.62	0.00	7.62	
ANNUAL		1.90384	ug/m^3	SAA_020	635965.45	4263810.56	7.62	0.00	7.62	
ANNUAL		3.23849	ug/m^3	SAA_021	635985.45	4263730.56	7.62	0.00	7.62	
ANNUAL		2.72730	ug/m^3	SAA_022	635985.45	4263750.56	7.62	0.00	7.62	
ANNUAL		2.34574	ug/m^3	SAA_023	635985.45	4263770.56	7.62	0.00	7.62	
ANNUAL		2.05249	ug/m^3	SAA_024	635985.45	4263790.56	7.62	0.00	7.62	
ANNUAL		1.82145	ug/m^3	SAA_025	635985.45	4263810.56	7.62	0.00	7.62	
ANNUAL		3.08324	ug/m^3	SAA_026	636005.45	4263730.56	7.62	0.00	7.62	
ANNUAL		2.59197	ug/m^3	SAA_027	636005.45	4263750.56	7.62	0.00	7.62	
ANNUAL		2.22843	ug/m^3	SAA_028	636005.45	4263770.56	7.62	0.00	7.62	
ANNUAL		1.95068	ug/m^3	SAA_029	636005.45	4263790.56	7.62	0.00	7.62	
ANNUAL		1.73265	ug/m^3	SAA_030	636005.45	4263810.56	7.62	0.00	7.62	

Sensitive Receptor Summary

Nicholas Elementary School Reconstruction Project
Construction HRA

PM2.5 - Concentration - Source Group: OFFSITE

Averaging Period	Rank	Peak	Units	Receptor ID	X (m)	Y (m)	ZELEV (m)	ZFLAG (m)	ZHILL (m)	Peak Date, Start Hour
ANNUAL		11.24291	ug/m^3	WKR_001	635584.68	4263252.74	7.32	0.00	7.32	
ANNUAL		8.80480	ug/m^3	WKR_002	635578.92	4263247.15	7.32	0.00	7.32	
ANNUAL		5.48372	ug/m^3	WKR_003	635556.74	4263245.97	7.14	0.00	7.14	
ANNUAL		5.53267	ug/m^3	WKR_004	635561.82	4263240.04	7.19	0.00	7.19	
ANNUAL		5.64239	ug/m^3	WKR_005	635567.58	4263234.28	7.25	0.00	7.25	

Sensitive Receptor Summary

Nicholas Elementary School Reconstruction Project
Construction HRA

PM2.5 - Concentration - Source Group: ONSITE

Averaging Period	Rank	Peak	Units	Receptor ID	X (m)	Y (m)	ZELEV (m)	ZFLAG (m)	ZHILL (m)	Peak Date, Start Hour
ANNUAL		5.44192	ug/m^3	Res_001	635549.76	4263409.57	7.41	0.00	7.41	
ANNUAL		7.26656	ug/m^3	Res_002	635566.26	4263411.29	7.56	0.00	7.56	
ANNUAL		9.13692	ug/m^3	Res_003	635584.25	4263409.82	7.62	0.00	7.62	
ANNUAL		10.31568	ug/m^3	Res_004	635602.97	4263410.31	7.62	0.00	7.62	
ANNUAL		10.56221	ug/m^3	Res_005	635622.19	4263414.01	7.62	0.00	7.62	
ANNUAL		11.40494	ug/m^3	Res_006	635639.19	4263413.76	7.62	0.00	7.62	
ANNUAL		12.51472	ug/m^3	Res_007	635655.95	4263411.79	7.62	0.00	7.62	
ANNUAL		12.57406	ug/m^3	Res_008	635674.67	4263413.76	7.62	0.00	7.62	
ANNUAL		13.45658	ug/m^3	Res_009	635693.15	4263411.54	7.62	0.00	7.62	
ANNUAL		13.57685	ug/m^3	Res_010	635709.66	4263412.03	7.62	0.00	7.62	
ANNUAL		13.71746	ug/m^3	Res_011	635727.65	4263412.03	7.62	0.00	7.62	
ANNUAL		13.77952	ug/m^3	Res_012	635744.40	4263411.79	7.62	0.00	7.62	
ANNUAL		2.81580	ug/m^3	Res_013	635546.76	4263455.71	7.62	0.00	7.62	
ANNUAL		3.57546	ug/m^3	Res_014	635566.24	4263453.83	7.62	0.00	7.62	
ANNUAL		4.32518	ug/m^3	Res_015	635585.09	4263453.62	7.62	0.00	7.62	
ANNUAL		4.87947	ug/m^3	Res_016	635601.85	4263454.46	7.62	0.00	7.62	
ANNUAL		5.26385	ug/m^3	Res_017	635619.02	4263456.34	7.62	0.00	7.62	
ANNUAL		5.83083	ug/m^3	Res_018	635636.82	4263454.46	7.62	0.00	7.62	
ANNUAL		6.22533	ug/m^3	Res_019	635655.04	4263453.83	7.62	0.00	7.62	
ANNUAL		6.26976	ug/m^3	Res_020	635672.22	4263456.55	7.62	0.00	7.62	

Sensitive Receptor Summary

Nicholas Elementary School Reconstruction Project
Construction HRA

PM2.5 - Concentration - Source Group: ONSITE

Averaging Period	Rank	Peak	Units	Receptor ID	X (m)	Y (m)	ZELEV (m)	ZFLAG (m)	ZHILL (m)	Peak Date, Start Hour
ANNUAL		2.14964	ug/m^3	Res_021	635547.39	4263485.24	7.62	0.00	7.62	
ANNUAL		1.40961	ug/m^3	Res_022	635500.69	4263481.26	7.62	0.00	7.62	
ANNUAL		1.52375	ug/m^3	Res_023	635500.90	4263461.58	7.61	0.00	7.61	
ANNUAL		1.57398	ug/m^3	Res_024	635499.85	4263444.82	7.52	0.00	7.52	
ANNUAL		1.63700	ug/m^3	Res_025	635501.32	4263426.39	7.44	0.00	7.44	
ANNUAL		1.67318	ug/m^3	Res_026	635503.41	4263406.70	7.33	0.00	7.33	
ANNUAL		1.30792	ug/m^3	Res_027	635500.71	4263499.34	7.62	0.00	7.62	
ANNUAL		1.18765	ug/m^3	Res_028	635498.40	4263517.86	7.62	0.00	7.62	
ANNUAL		2.45079	ug/m^3	Res_029	635563.91	4263485.82	7.62	0.00	7.62	
ANNUAL		13.25406	ug/m^3	Res_030	635764.54	4263413.31	7.62	0.00	7.62	
ANNUAL		11.02915	ug/m^3	Res_031	635785.99	4263422.01	7.62	0.00	7.62	
ANNUAL		8.43458	ug/m^3	Res_032	635800.78	4263435.63	7.62	0.00	7.62	
ANNUAL		9.58835	ug/m^3	Res_033	635819.04	4263421.72	7.62	0.00	7.62	
ANNUAL		5.99772	ug/m^3	Res_034	635768.02	4263464.91	7.62	0.00	7.62	
ANNUAL		5.13555	ug/m^3	Res_035	635745.98	4263479.99	7.62	0.00	7.62	
ANNUAL		6.57762	ug/m^3	Res_036	635742.79	4263459.12	7.62	0.00	7.62	
ANNUAL		6.39504	ug/m^3	Res_037	635723.66	4263460.86	7.62	0.00	7.62	
ANNUAL		5.02481	ug/m^3	Res_038	635725.69	4263482.60	7.62	0.00	7.62	
ANNUAL		4.86561	ug/m^3	Res_039	635708.29	4263484.92	7.62	0.00	7.62	
ANNUAL		6.50734	ug/m^3	Res_040	635707.71	4263458.25	7.62	0.00	7.62	

Sensitive Receptor Summary

Nicholas Elementary School Reconstruction Project
Construction HRA

PM2.5 - Concentration - Source Group: ONSITE

Averaging Period	Rank	Peak	Units	Receptor ID	X (m)	Y (m)	ZELEV (m)	ZFLAG (m)	ZHILL (m)	Peak Date, Start Hour
ANNUAL		6.38398	ug/m^3	Res_041	635689.16	4263457.67	7.62	0.00	7.62	
ANNUAL		4.43767	ug/m^3	Res_042	635689.45	4263491.88	7.62	0.00	7.62	
ANNUAL		4.50758	ug/m^3	Res_043	635673.21	4263486.95	7.62	0.00	7.62	
ANNUAL		4.40226	ug/m^3	Res_044	635655.53	4263484.34	7.62	0.00	7.62	
ANNUAL		3.93264	ug/m^3	Res_045	635636.11	4263487.82	7.62	0.00	7.62	
ANNUAL		3.62798	ug/m^3	Res_046	635619.29	4263487.24	7.62	0.00	7.62	
ANNUAL		3.36458	ug/m^3	Res_047	635602.48	4263484.34	7.62	0.00	7.62	
ANNUAL		2.98109	ug/m^3	Res_048	635585.08	4263483.47	7.62	0.00	7.62	
ANNUAL		1.11329	ug/m^3	Res_049	635501.00	4263538.50	7.62	0.00	7.62	
ANNUAL		1.04895	ug/m^3	Res_050	635501.42	4263553.79	7.62	0.00	7.62	
ANNUAL		0.94954	ug/m^3	Res_051	635497.02	4263572.44	7.62	0.00	7.62	
ANNUAL		1.31083	ug/m^3	Res_052	635549.18	4263563.22	7.62	0.00	7.62	
ANNUAL		1.44399	ug/m^3	Res_053	635564.26	4263560.08	7.62	0.00	7.62	
ANNUAL		1.51802	ug/m^3	Res_054	635544.36	4263532.43	7.62	0.00	7.62	
ANNUAL		1.73714	ug/m^3	Res_055	635566.36	4263532.43	7.62	0.00	7.62	
ANNUAL		1.95242	ug/m^3	Res_056	635583.32	4263530.75	7.62	0.00	7.62	
ANNUAL		1.57291	ug/m^3	Res_057	635582.69	4263561.96	7.62	0.00	7.62	
ANNUAL		1.69616	ug/m^3	Res_058	635599.90	4263563.83	7.62	0.00	7.62	
ANNUAL		2.17348	ug/m^3	Res_059	635600.71	4263530.54	7.62	0.00	7.62	
ANNUAL		1.85055	ug/m^3	Res_060	635616.84	4263563.01	7.62	0.00	7.62	

Sensitive Receptor Summary

Nicholas Elementary School Reconstruction Project
Construction HRA

PM2.5 - Concentration - Source Group: ONSITE

Averaging Period	Rank	Peak	Units	Receptor ID	X (m)	Y (m)	ZELEV (m)	ZFLAG (m)	ZHILL (m)	Peak Date, Start Hour
ANNUAL		2.34461	ug/m^3	Res_061	635619.14	4263533.89	7.62	0.00	7.62	
ANNUAL		2.02827	ug/m^3	Res_062	635636.95	4263562.38	7.62	0.00	7.62	
ANNUAL		2.58851	ug/m^3	Res_063	635636.95	4263532.43	7.62	0.00	7.62	
ANNUAL		2.14644	ug/m^3	Res_064	635652.66	4263562.59	7.62	0.00	7.62	
ANNUAL		2.83392	ug/m^3	Res_065	635653.29	4263529.70	7.62	0.00	7.62	
ANNUAL		2.25248	ug/m^3	Res_066	635670.88	4263563.43	7.62	0.00	7.62	
ANNUAL		2.79477	ug/m^3	Res_067	635671.93	4263538.08	7.62	0.00	7.62	
ANNUAL		2.37497	ug/m^3	Res_068	635688.79	4263561.86	7.62	0.00	7.62	
ANNUAL		2.96706	ug/m^3	Res_069	635689.53	4263535.74	7.62	0.00	7.62	
ANNUAL		3.05324	ug/m^3	Res_070	635710.23	4263535.49	7.62	0.00	7.62	
ANNUAL		2.44581	ug/m^3	Res_071	635710.23	4263561.86	7.62	0.00	7.62	
ANNUAL		2.23766	ug/m^3	Res_072	635774.41	4263572.00	7.62	0.00	7.62	
ANNUAL		2.20836	ug/m^3	Res_073	635790.75	4263571.37	7.62	0.00	7.62	
ANNUAL		2.22317	ug/m^3	Res_074	635809.40	4263566.76	7.62	0.00	7.62	
ANNUAL		2.42957	ug/m^3	Res_075	635808.77	4263554.40	7.62	0.00	7.62	
ANNUAL		2.60034	ug/m^3	Res_076	635796.20	4263547.90	7.62	0.00	7.62	
ANNUAL		3.19151	ug/m^3	Res_077	635753.46	4263529.47	7.62	0.00	7.62	
ANNUAL		3.37136	ug/m^3	Res_078	635773.36	4263520.04	7.62	0.00	7.62	
ANNUAL		3.55873	ug/m^3	Res_079	635790.96	4263510.40	7.62	0.00	7.62	
ANNUAL		4.01288	ug/m^3	Res_080	635803.11	4263494.90	7.62	0.00	7.62	

Sensitive Receptor Summary

Nicholas Elementary School Reconstruction Project
Construction HRA

PM2.5 - Concentration - Source Group: ONSITE

Averaging Period	Rank	Peak	Units	Receptor ID	X (m)	Y (m)	ZELEV (m)	ZFLAG (m)	ZHILL (m)	Peak Date, Start Hour
ANNUAL		4.40458	ug/m^3	Res_081	635815.18	4263483.21	7.62	0.00	7.62	
ANNUAL		4.39331	ug/m^3	Res_082	635833.45	4263478.28	7.62	0.00	7.62	
ANNUAL		4.49172	ug/m^3	Res_083	635850.27	4263466.68	7.62	0.00	7.62	
ANNUAL		3.77660	ug/m^3	Res_084	635869.41	4263467.26	7.62	0.00	7.62	
ANNUAL		3.44133	ug/m^3	Res_085	635843.89	4263499.74	7.62	0.00	7.62	
ANNUAL		3.34575	ug/m^3	Res_086	635856.36	4263495.97	7.62	0.00	7.62	
ANNUAL		3.16528	ug/m^3	Res_087	635865.93	4263495.68	7.62	0.00	7.62	
ANNUAL		1.77237	ug/m^3	Res_088	635888.26	4263569.63	7.62	0.00	7.62	
ANNUAL		1.64461	ug/m^3	Res_089	635904.90	4263569.10	7.62	0.00	7.62	
ANNUAL		1.47879	ug/m^3	Res_090	635924.81	4263568.27	7.62	0.00	7.62	
ANNUAL		1.33007	ug/m^3	Res_091	635940.52	4263570.78	7.62	0.00	7.62	
ANNUAL		1.18537	ug/m^3	Res_092	635958.12	4263570.15	7.62	0.00	7.62	
ANNUAL		1.05708	ug/m^3	Res_093	635974.05	4263571.20	7.62	0.00	7.62	
ANNUAL		0.91934	ug/m^3	Res_094	635993.12	4263571.20	7.62	0.00	7.62	
ANNUAL		0.80179	ug/m^3	Res_095	636011.34	4263571.20	7.62	0.00	7.62	
ANNUAL		0.70915	ug/m^3	Res_096	636027.48	4263572.25	7.62	0.00	7.62	
ANNUAL		0.61201	ug/m^3	Res_097	636046.97	4263572.25	7.62	0.00	7.62	
ANNUAL		0.54317	ug/m^3	Res_098	636062.97	4263572.83	7.62	0.00	7.62	
ANNUAL		2.10925	ug/m^3	Res_099	635897.08	4263528.17	7.62	0.00	7.62	
ANNUAL		1.68136	ug/m^3	Res_100	635921.73	4263540.35	7.62	0.00	7.62	

Sensitive Receptor Summary

Nicholas Elementary School Reconstruction Project
Construction HRA

PM2.5 - Concentration - Source Group: ONSITE

Averaging Period	Rank	Peak	Units	Receptor ID	X (m)	Y (m)	ZELEV (m)	ZFLAG (m)	ZHILL (m)	Peak Date, Start Hour
ANNUAL		1.49700	ug/m^3	Res_101	635937.39	4263540.06	7.62	0.00	7.62	
ANNUAL		1.29793	ug/m^3	Res_102	635955.37	4263539.77	7.62	0.00	7.62	
ANNUAL		1.11098	ug/m^3	Res_103	635973.93	4263540.64	7.62	0.00	7.62	
ANNUAL		0.96301	ug/m^3	Res_104	635990.75	4263542.09	7.62	0.00	7.62	
ANNUAL		0.82352	ug/m^3	Res_105	636009.32	4263542.38	7.62	0.00	7.62	
ANNUAL		0.70866	ug/m^3	Res_106	636027.30	4263542.09	7.62	0.00	7.62	
ANNUAL		0.62340	ug/m^3	Res_107	636042.96	4263542.96	7.62	0.00	7.62	
ANNUAL		0.53377	ug/m^3	Res_108	636062.39	4263543.25	7.62	0.00	7.62	
ANNUAL		0.46826	ug/m^3	Res_109	636079.21	4263542.38	7.62	0.00	7.62	
ANNUAL		0.41197	ug/m^3	Res_110	636096.61	4263543.83	7.62	0.00	7.62	
ANNUAL		0.48677	ug/m^3	Res_111	636078.12	4263575.22	7.62	0.00	7.62	
ANNUAL		0.42349	ug/m^3	Res_112	636097.56	4263574.93	7.62	0.00	7.62	
ANNUAL		2.43090	ug/m^3	Res_113	635893.71	4263505.40	7.62	0.00	7.62	
ANNUAL		2.63010	ug/m^3	Res_114	635894.77	4263487.28	7.62	0.00	7.62	
ANNUAL		2.89272	ug/m^3	Res_115	635894.41	4263465.90	7.62	0.00	7.62	
ANNUAL		5.19290	ug/m^3	Res_116	635866.96	4263418.34	7.62	0.00	7.62	
ANNUAL		3.39134	ug/m^3	Res_117	635890.63	4263419.82	7.62	0.00	7.62	
ANNUAL		2.69456	ug/m^3	Res_118	635905.67	4263422.29	7.62	0.00	7.62	
ANNUAL		6.16031	ug/m^3	Res_119	635865.03	4263366.30	7.62	0.00	7.62	
ANNUAL		3.46428	ug/m^3	Res_120	635889.79	4263367.01	7.62	0.00	7.62	

Sensitive Receptor Summary

Nicholas Elementary School Reconstruction Project
Construction HRA

PM2.5 - Concentration - Source Group: ONSITE

Averaging Period	Rank	Peak	Units	Receptor ID	X (m)	Y (m)	ZELEV (m)	ZFLAG (m)	ZHILL (m)	Peak Date, Start Hour
ANNUAL		2.20424	ug/m^3	Res_121	635914.20	4263362.20	7.62	0.00	7.62	
ANNUAL		3.13059	ug/m^3	Res_122	635894.25	4263316.06	7.62	0.00	7.62	
ANNUAL		5.80257	ug/m^3	Res_123	635867.88	4263322.29	7.62	0.00	7.62	
ANNUAL		1.97805	ug/m^3	Res_124	635925.96	4263421.19	7.62	0.00	7.62	
ANNUAL		1.57210	ug/m^3	Res_125	635935.20	4263351.31	7.62	0.00	7.62	
ANNUAL		2.30017	ug/m^3	Res_126	635909.65	4263307.36	7.62	0.00	7.62	
ANNUAL		1.88141	ug/m^3	Res_127	635921.59	4263295.07	7.62	0.00	7.62	
ANNUAL		2.40399	ug/m^3	Res_128	635906.57	4263277.66	7.62	0.00	7.62	
ANNUAL		6.15017	ug/m^3	Res_129	635864.93	4263305.99	7.62	0.00	7.62	
ANNUAL		5.45036	ug/m^3	Res_130	635867.32	4263285.85	7.62	0.00	7.62	
ANNUAL		5.15676	ug/m^3	Res_131	635867.32	4263268.44	7.62	0.00	7.62	
ANNUAL		4.71022	ug/m^3	Res_132	635869.37	4263250.69	7.62	0.00	7.62	
ANNUAL		2.51534	ug/m^3	Res_133	635903.84	4263258.20	7.62	0.00	7.62	
ANNUAL		2.56705	ug/m^3	Res_134	635902.14	4263238.75	7.62	0.00	7.62	
ANNUAL		2.51299	ug/m^3	Res_135	635901.79	4263221.00	7.62	0.00	7.62	
ANNUAL		4.34863	ug/m^3	Res_136	635870.05	4263230.55	7.62	0.00	7.62	
ANNUAL		3.84442	ug/m^3	Res_137	635871.41	4263211.78	7.62	0.00	7.62	
ANNUAL		2.26432	ug/m^3	Res_138	635906.57	4263199.49	7.62	0.00	7.62	
ANNUAL		3.38754	ug/m^3	Res_139	635871.76	4263192.66	7.62	0.00	7.62	
ANNUAL		3.07548	ug/m^3	Res_140	635870.73	4263176.62	7.62	0.00	7.62	

Sensitive Receptor Summary

Nicholas Elementary School Reconstruction Project
Construction HRA

PM2.5 - Concentration - Source Group: ONSITE

Averaging Period	Rank	Peak	Units	Receptor ID	X (m)	Y (m)	ZELEV (m)	ZFLAG (m)	ZHILL (m)	Peak Date, Start Hour
ANNUAL		7.23502	ug/m^3	Res_141	635826.01	4263217.58	7.62	0.00	7.62	
ANNUAL		8.57579	ug/m^3	Res_142	635802.12	4263217.24	7.62	0.00	7.62	
ANNUAL		8.66225	ug/m^3	Res_143	635784.37	4263215.53	7.62	0.00	7.62	
ANNUAL		9.07560	ug/m^3	Res_144	635765.25	4263216.22	7.62	0.00	7.62	
ANNUAL		9.36998	ug/m^3	Res_145	635745.79	4263215.53	7.62	0.00	7.62	
ANNUAL		9.45696	ug/m^3	Res_146	635728.04	4263212.12	7.62	0.00	7.62	
ANNUAL		8.35745	ug/m^3	Res_147	635706.88	4263197.78	7.62	0.00	7.62	
ANNUAL		4.69582	ug/m^3	Res_148	635736.58	4263168.08	7.62	0.00	7.62	
ANNUAL		4.78602	ug/m^3	Res_149	635769.35	4263173.55	7.62	0.00	7.62	
ANNUAL		4.49225	ug/m^3	Res_150	635788.12	4263171.16	7.62	0.00	7.62	
ANNUAL		4.31820	ug/m^3	Res_151	635804.85	4263171.16	7.62	0.00	7.62	
ANNUAL		4.02937	ug/m^3	Res_152	635825.67	4263171.50	7.62	0.00	7.62	
ANNUAL		2.85842	ug/m^3	Res_153	635694.20	4263141.43	7.38	0.00	7.38	
ANNUAL		3.05445	ug/m^3	Res_154	635679.31	4263154.64	7.52	0.00	7.52	
ANNUAL		3.22914	ug/m^3	Res_155	635667.78	4263167.01	7.62	0.00	7.62	
ANNUAL		3.37814	ug/m^3	Res_156	635655.20	4263181.27	7.53	0.00	7.53	
ANNUAL		3.27201	ug/m^3	Res_157	635638.64	4263196.36	7.38	0.00	7.38	
ANNUAL		3.40261	ug/m^3	Res_158	635629.62	4263208.10	7.43	0.00	7.43	
ANNUAL		3.22767	ug/m^3	Res_159	635613.90	4263222.36	7.41	0.00	7.41	
ANNUAL		1.80419	ug/m^3	Res_160	635635.49	4263157.16	7.33	0.00	7.33	

Sensitive Receptor Summary

Nicholas Elementary School Reconstruction Project
Construction HRA

PM2.5 - Concentration - Source Group: ONSITE

Averaging Period	Rank	Peak	Units	Receptor ID	X (m)	Y (m)	ZELEV (m)	ZFLAG (m)	ZHILL (m)	Peak Date, Start Hour
ANNUAL		1.69450	ug/m^3	Res_161	635621.02	4263168.06	7.32	0.00	7.32	
ANNUAL		1.74870	ug/m^3	Res_162	635609.07	4263185.04	7.32	0.00	7.32	
ANNUAL		1.65827	ug/m^3	Res_163	635596.28	4263197.20	7.24	0.00	7.24	
ANNUAL		0.98548	ug/m^3	Res_164	635551.46	4263214.76	7.06	0.00	7.06	
ANNUAL		1.85532	ug/m^3	Res_165	635539.46	4263302.58	7.01	0.00	7.01	
ANNUAL		1.08574	ug/m^3	Res_166	635520.57	4263286.71	7.01	0.00	7.01	
ANNUAL		0.78244	ug/m^3	Res_167	635507.92	4263270.67	6.83	0.00	6.83	
ANNUAL		1.20045	ug/m^3	Res_168	635514.51	4263314.87	7.01	0.00	7.01	
ANNUAL		0.88717	ug/m^3	Res_169	635496.51	4263316.12	6.85	0.00	6.85	
ANNUAL		1.94467	ug/m^3	Res_170	635533.76	4263320.22	7.06	0.00	7.06	
ANNUAL		0.86382	ug/m^3	Res_171	635477.95	4263357.79	6.89	0.00	6.89	
ANNUAL		1.22402	ug/m^3	Res_172	635499.16	4263358.32	7.23	0.00	7.23	
ANNUAL		1.83957	ug/m^3	Res_173	635516.98	4263362.06	7.47	0.00	7.47	
ANNUAL		0.98965	ug/m^3	Res_174	635575.47	4263638.68	7.62	0.00	7.62	
ANNUAL		0.89556	ug/m^3	Res_175	635575.47	4263658.68	7.62	0.00	7.62	
ANNUAL		0.81310	ug/m^3	Res_176	635575.47	4263678.68	7.62	0.00	7.62	
ANNUAL		0.74052	ug/m^3	Res_177	635575.47	4263698.68	7.62	0.00	7.62	
ANNUAL		0.67634	ug/m^3	Res_178	635575.47	4263718.68	7.62	0.00	7.62	
ANNUAL		0.61940	ug/m^3	Res_179	635575.47	4263738.68	7.62	0.00	7.62	
ANNUAL		0.56869	ug/m^3	Res_180	635575.47	4263758.68	7.62	0.00	7.62	

Sensitive Receptor Summary

Nicholas Elementary School Reconstruction Project
Construction HRA

PM2.5 - Concentration - Source Group: ONSITE

Averaging Period	Rank	Peak	Units	Receptor ID	X (m)	Y (m)	ZELEV (m)	ZFLAG (m)	ZHILL (m)	Peak Date, Start Hour
ANNUAL		1.05654	ug/m^3	Res_181	635595.47	4263638.68	7.62	0.00	7.62	
ANNUAL		0.94850	ug/m^3	Res_182	635595.47	4263658.68	7.62	0.00	7.62	
ANNUAL		0.85499	ug/m^3	Res_183	635595.47	4263678.68	7.62	0.00	7.62	
ANNUAL		0.77362	ug/m^3	Res_184	635595.47	4263698.68	7.62	0.00	7.62	
ANNUAL		0.70249	ug/m^3	Res_185	635595.47	4263718.68	7.62	0.00	7.62	
ANNUAL		0.63999	ug/m^3	Res_186	635595.47	4263738.68	7.62	0.00	7.62	
ANNUAL		0.58488	ug/m^3	Res_187	635595.47	4263758.68	7.62	0.00	7.62	
ANNUAL		1.12334	ug/m^3	Res_188	635615.47	4263638.68	7.62	0.00	7.62	
ANNUAL		1.00083	ug/m^3	Res_189	635615.47	4263658.68	7.62	0.00	7.62	
ANNUAL		0.89606	ug/m^3	Res_190	635615.47	4263678.68	7.62	0.00	7.62	
ANNUAL		0.80584	ug/m^3	Res_191	635615.47	4263698.68	7.62	0.00	7.62	
ANNUAL		0.72779	ug/m^3	Res_192	635615.47	4263718.68	7.62	0.00	7.62	
ANNUAL		0.65985	ug/m^3	Res_193	635615.47	4263738.68	7.62	0.00	7.62	
ANNUAL		0.60050	ug/m^3	Res_194	635615.47	4263758.68	7.62	0.00	7.62	
ANNUAL		1.18818	ug/m^3	Res_195	635635.47	4263638.68	7.62	0.00	7.62	
ANNUAL		1.05146	ug/m^3	Res_196	635635.47	4263658.68	7.62	0.00	7.62	
ANNUAL		0.93570	ug/m^3	Res_197	635635.47	4263678.68	7.62	0.00	7.62	
ANNUAL		0.83699	ug/m^3	Res_198	635635.47	4263698.68	7.62	0.00	7.62	
ANNUAL		0.75233	ug/m^3	Res_199	635635.47	4263718.68	7.62	0.00	7.62	
ANNUAL		0.67926	ug/m^3	Res_200	635635.47	4263738.68	7.62	0.00	7.62	

Sensitive Receptor Summary

Nicholas Elementary School Reconstruction Project
Construction HRA

PM2.5 - Concentration - Source Group: ONSITE

Averaging Period	Rank	Peak	Units	Receptor ID	X (m)	Y (m)	ZELEV (m)	ZFLAG (m)	ZHILL (m)	Peak Date, Start Hour
ANNUAL		0.61591	ug/m^3	Res_201	635635.47	4263758.68	7.62	0.00	7.62	
ANNUAL		1.24880	ug/m^3	Res_202	635655.47	4263638.68	7.62	0.00	7.62	
ANNUAL		1.09909	ug/m^3	Res_203	635655.47	4263658.68	7.62	0.00	7.62	
ANNUAL		0.97327	ug/m^3	Res_204	635655.47	4263678.68	7.62	0.00	7.62	
ANNUAL		0.86685	ug/m^3	Res_205	635655.47	4263698.68	7.62	0.00	7.62	
ANNUAL		0.77615	ug/m^3	Res_206	635655.47	4263718.68	7.62	0.00	7.62	
ANNUAL		0.69838	ug/m^3	Res_207	635655.47	4263738.68	7.62	0.00	7.62	
ANNUAL		0.63138	ug/m^3	Res_208	635655.47	4263758.68	7.62	0.00	7.62	
ANNUAL		1.30288	ug/m^3	Res_209	635675.47	4263638.68	7.62	0.00	7.62	
ANNUAL		1.14236	ug/m^3	Res_210	635675.47	4263658.68	7.62	0.00	7.62	
ANNUAL		1.00814	ug/m^3	Res_211	635675.47	4263678.68	7.62	0.00	7.62	
ANNUAL		0.89510	ug/m^3	Res_212	635675.47	4263698.68	7.62	0.00	7.62	
ANNUAL		0.79918	ug/m^3	Res_213	635675.47	4263718.68	7.62	0.00	7.62	
ANNUAL		0.71733	ug/m^3	Res_214	635675.47	4263738.68	7.62	0.00	7.62	
ANNUAL		0.64708	ug/m^3	Res_215	635675.47	4263758.68	7.62	0.00	7.62	
ANNUAL		0.58643	ug/m^3	Res_216	635675.47	4263778.68	7.62	0.00	7.62	
ANNUAL		1.34820	ug/m^3	Res_217	635695.47	4263638.68	7.62	0.00	7.62	
ANNUAL		1.17996	ug/m^3	Res_218	635695.47	4263658.68	7.62	0.00	7.62	
ANNUAL		1.03946	ug/m^3	Res_219	635695.47	4263678.68	7.62	0.00	7.62	
ANNUAL		0.92131	ug/m^3	Res_220	635695.47	4263698.68	7.62	0.00	7.62	

Sensitive Receptor Summary

Nicholas Elementary School Reconstruction Project
Construction HRA

PM2.5 - Concentration - Source Group: ONSITE

Averaging Period	Rank	Peak	Units	Receptor ID	X (m)	Y (m)	ZELEV (m)	ZFLAG (m)	ZHILL (m)	Peak Date, Start Hour
ANNUAL		0.82122	ug/m^3	Res_221	635695.47	4263718.68	7.62	0.00	7.62	
ANNUAL		0.73601	ug/m^3	Res_222	635695.47	4263738.68	7.62	0.00	7.62	
ANNUAL		0.66302	ug/m^3	Res_223	635695.47	4263758.68	7.62	0.00	7.62	
ANNUAL		0.60013	ug/m^3	Res_224	635695.47	4263778.68	7.62	0.00	7.62	
ANNUAL		1.38328	ug/m^3	Res_225	635715.47	4263638.68	7.62	0.00	7.62	
ANNUAL		1.21080	ug/m^3	Res_226	635715.47	4263658.68	7.62	0.00	7.62	
ANNUAL		1.06649	ug/m^3	Res_227	635715.47	4263678.68	7.62	0.00	7.62	
ANNUAL		0.94495	ug/m^3	Res_228	635715.47	4263698.68	7.62	0.00	7.62	
ANNUAL		0.84193	ug/m^3	Res_229	635715.47	4263718.68	7.62	0.00	7.62	
ANNUAL		0.75416	ug/m^3	Res_230	635715.47	4263738.68	7.62	0.00	7.62	
ANNUAL		0.67900	ug/m^3	Res_231	635715.47	4263758.68	7.62	0.00	7.62	
ANNUAL		0.61422	ug/m^3	Res_232	635715.47	4263778.68	7.62	0.00	7.62	
ANNUAL		1.40739	ug/m^3	Res_233	635735.47	4263638.68	7.62	0.00	7.62	
ANNUAL		1.23411	ug/m^3	Res_234	635735.47	4263658.68	7.62	0.00	7.62	
ANNUAL		1.08848	ug/m^3	Res_235	635735.47	4263678.68	7.62	0.00	7.62	
ANNUAL		0.96538	ug/m^3	Res_236	635735.47	4263698.68	7.62	0.00	7.62	
ANNUAL		0.86070	ug/m^3	Res_237	635735.47	4263718.68	7.62	0.00	7.62	
ANNUAL		0.77134	ug/m^3	Res_238	635735.47	4263738.68	7.62	0.00	7.62	
ANNUAL		0.69461	ug/m^3	Res_239	635735.47	4263758.68	7.62	0.00	7.62	
ANNUAL		0.62832	ug/m^3	Res_240	635735.47	4263778.68	7.62	0.00	7.62	

Sensitive Receptor Summary

Nicholas Elementary School Reconstruction Project
Construction HRA

PM2.5 - Concentration - Source Group: ONSITE

Averaging Period	Rank	Peak	Units	Receptor ID	X (m)	Y (m)	ZELEV (m)	ZFLAG (m)	ZHILL (m)	Peak Date, Start Hour
ANNUAL		1.42049	ug/m^3	Res_241	635755.47	4263638.68	7.62	0.00	7.62	
ANNUAL		1.24954	ug/m^3	Res_242	635755.47	4263658.68	7.62	0.00	7.62	
ANNUAL		1.10494	ug/m^3	Res_243	635755.47	4263678.68	7.62	0.00	7.62	
ANNUAL		0.98203	ug/m^3	Res_244	635755.47	4263698.68	7.62	0.00	7.62	
ANNUAL		0.87699	ug/m^3	Res_245	635755.47	4263718.68	7.62	0.00	7.62	
ANNUAL		0.78693	ug/m^3	Res_246	635755.47	4263738.68	7.62	0.00	7.62	
ANNUAL		0.70926	ug/m^3	Res_247	635755.47	4263758.68	7.62	0.00	7.62	
ANNUAL		0.64195	ug/m^3	Res_248	635755.47	4263778.68	7.62	0.00	7.62	
ANNUAL		1.42316	ug/m^3	Res_249	635775.47	4263638.68	7.62	0.00	7.62	
ANNUAL		1.25693	ug/m^3	Res_250	635775.47	4263658.68	7.62	0.00	7.62	
ANNUAL		1.11535	ug/m^3	Res_251	635775.47	4263678.68	7.62	0.00	7.62	
ANNUAL		0.99415	ug/m^3	Res_252	635775.47	4263698.68	7.62	0.00	7.62	
ANNUAL		0.88997	ug/m^3	Res_253	635775.47	4263718.68	7.62	0.00	7.62	
ANNUAL		0.80009	ug/m^3	Res_254	635775.47	4263738.68	7.62	0.00	7.62	
ANNUAL		0.72220	ug/m^3	Res_255	635775.47	4263758.68	7.62	0.00	7.62	
ANNUAL		0.65441	ug/m^3	Res_256	635775.47	4263778.68	7.62	0.00	7.62	
ANNUAL		1.41583	ug/m^3	Res_257	635795.47	4263638.68	7.62	0.00	7.62	
ANNUAL		1.25613	ug/m^3	Res_258	635795.47	4263658.68	7.62	0.00	7.62	
ANNUAL		1.11909	ug/m^3	Res_259	635795.47	4263678.68	7.62	0.00	7.62	
ANNUAL		1.00098	ug/m^3	Res_260	635795.47	4263698.68	7.62	0.00	7.62	

Sensitive Receptor Summary

Nicholas Elementary School Reconstruction Project
Construction HRA

PM2.5 - Concentration - Source Group: ONSITE

Averaging Period	Rank	Peak	Units	Receptor ID	X (m)	Y (m)	ZELEV (m)	ZFLAG (m)	ZHILL (m)	Peak Date, Start Hour
ANNUAL		0.89875	ug/m^3	Res_261	635795.47	4263718.68	7.62	0.00	7.62	
ANNUAL		0.81000	ug/m^3	Res_262	635795.47	4263738.68	7.62	0.00	7.62	
ANNUAL		0.73264	ug/m^3	Res_263	635795.47	4263758.68	7.62	0.00	7.62	
ANNUAL		0.66499	ug/m^3	Res_264	635795.47	4263778.68	7.62	0.00	7.62	
ANNUAL		1.39870	ug/m^3	Res_265	635815.47	4263638.68	7.62	0.00	7.62	
ANNUAL		1.24678	ug/m^3	Res_266	635815.47	4263658.68	7.62	0.00	7.62	
ANNUAL		1.11556	ug/m^3	Res_267	635815.47	4263678.68	7.62	0.00	7.62	
ANNUAL		1.00169	ug/m^3	Res_268	635815.47	4263698.68	7.62	0.00	7.62	
ANNUAL		0.90250	ug/m^3	Res_269	635815.47	4263718.68	7.62	0.00	7.62	
ANNUAL		0.81576	ug/m^3	Res_270	635815.47	4263738.68	7.62	0.00	7.62	
ANNUAL		0.73973	ug/m^3	Res_271	635815.47	4263758.68	7.62	0.00	7.62	
ANNUAL		0.67290	ug/m^3	Res_272	635815.47	4263778.68	7.62	0.00	7.62	
ANNUAL		1.37170	ug/m^3	Res_273	635835.47	4263638.68	7.62	0.00	7.62	
ANNUAL		1.22857	ug/m^3	Res_274	635835.47	4263658.68	7.62	0.00	7.62	
ANNUAL		1.10426	ug/m^3	Res_275	635835.47	4263678.68	7.62	0.00	7.62	
ANNUAL		0.99569	ug/m^3	Res_276	635835.47	4263698.68	7.62	0.00	7.62	
ANNUAL		0.90046	ug/m^3	Res_277	635835.47	4263718.68	7.62	0.00	7.62	
ANNUAL		0.81668	ug/m^3	Res_278	635835.47	4263738.68	7.62	0.00	7.62	
ANNUAL		0.74277	ug/m^3	Res_279	635835.47	4263758.68	7.62	0.00	7.62	
ANNUAL		0.67744	ug/m^3	Res_280	635835.47	4263778.68	7.62	0.00	7.62	

Sensitive Receptor Summary

Nicholas Elementary School Reconstruction Project
Construction HRA

PM2.5 - Concentration - Source Group: ONSITE

Averaging Period	Rank	Peak	Units	Receptor ID	X (m)	Y (m)	ZELEV (m)	ZFLAG (m)	ZHILL (m)	Peak Date, Start Hour
ANNUAL		1.33399	ug/m^3	Res_281	635855.47	4263638.68	7.62	0.00	7.62	
ANNUAL		1.20091	ug/m^3	Res_282	635855.47	4263658.68	7.62	0.00	7.62	
ANNUAL		1.08457	ug/m^3	Res_283	635855.47	4263678.68	7.62	0.00	7.62	
ANNUAL		0.98235	ug/m^3	Res_284	635855.47	4263698.68	7.62	0.00	7.62	
ANNUAL		0.89209	ug/m^3	Res_285	635855.47	4263718.68	7.62	0.00	7.62	
ANNUAL		0.81215	ug/m^3	Res_286	635855.47	4263738.68	7.62	0.00	7.62	
ANNUAL		0.74117	ug/m^3	Res_287	635855.47	4263758.68	7.62	0.00	7.62	
ANNUAL		0.67804	ug/m^3	Res_288	635855.47	4263778.68	7.62	0.00	7.62	
ANNUAL		1.28484	ug/m^3	Res_289	635875.47	4263638.68	7.62	0.00	7.62	
ANNUAL		1.16331	ug/m^3	Res_290	635875.47	4263658.68	7.62	0.00	7.62	
ANNUAL		1.05626	ug/m^3	Res_291	635875.47	4263678.68	7.62	0.00	7.62	
ANNUAL		0.96142	ug/m^3	Res_292	635875.47	4263698.68	7.62	0.00	7.62	
ANNUAL		0.87707	ug/m^3	Res_293	635875.47	4263718.68	7.62	0.00	7.62	
ANNUAL		0.80183	ug/m^3	Res_294	635875.47	4263738.68	7.62	0.00	7.62	
ANNUAL		0.73455	ug/m^3	Res_295	635875.47	4263758.68	7.62	0.00	7.62	
ANNUAL		0.67430	ug/m^3	Res_296	635875.47	4263778.68	7.62	0.00	7.62	
ANNUAL		2.00481	ug/m^3	Res_297	635925.85	4263452.88	7.62	0.00	7.62	
ANNUAL		1.96383	ug/m^3	Res_298	635925.85	4263472.88	7.62	0.00	7.62	
ANNUAL		1.88719	ug/m^3	Res_299	635925.85	4263492.88	7.62	0.00	7.62	
ANNUAL		1.55462	ug/m^3	Res_300	635945.85	4263472.88	7.62	0.00	7.62	

Sensitive Receptor Summary

Nicholas Elementary School Reconstruction Project
Construction HRA

PM2.5 - Concentration - Source Group: ONSITE

Averaging Period	Rank	Peak	Units	Receptor ID	X (m)	Y (m)	ZELEV (m)	ZFLAG (m)	ZHILL (m)	Peak Date, Start Hour
ANNUAL		1.53213	ug/m^3	Res_301	635945.85	4263492.88	7.62	0.00	7.62	
ANNUAL		1.23839	ug/m^3	Res_302	635965.85	4263472.88	7.62	0.00	7.62	
ANNUAL		1.24226	ug/m^3	Res_303	635965.85	4263492.88	7.62	0.00	7.62	
ANNUAL		0.99665	ug/m^3	Res_304	635985.85	4263472.88	7.62	0.00	7.62	
ANNUAL		1.01211	ug/m^3	Res_305	635985.85	4263492.88	7.62	0.00	7.62	
ANNUAL		1.01675	ug/m^3	Res_306	635985.85	4263512.88	7.62	0.00	7.62	
ANNUAL		0.81145	ug/m^3	Res_307	636005.85	4263472.88	7.62	0.00	7.62	
ANNUAL		0.83081	ug/m^3	Res_308	636005.85	4263492.88	7.62	0.00	7.62	
ANNUAL		0.84347	ug/m^3	Res_309	636005.85	4263512.88	7.62	0.00	7.62	
ANNUAL		0.66875	ug/m^3	Res_310	636025.85	4263472.88	7.62	0.00	7.62	
ANNUAL		0.68810	ug/m^3	Res_311	636025.85	4263492.88	7.62	0.00	7.62	
ANNUAL		0.70365	ug/m^3	Res_312	636025.85	4263512.88	7.62	0.00	7.62	
ANNUAL		0.55812	ug/m^3	Res_313	636045.85	4263472.88	7.62	0.00	7.62	
ANNUAL		0.57561	ug/m^3	Res_314	636045.85	4263492.88	7.62	0.00	7.62	
ANNUAL		0.59124	ug/m^3	Res_315	636045.85	4263512.88	7.62	0.00	7.62	
ANNUAL		0.47163	ug/m^3	Res_316	636065.85	4263472.88	7.62	0.00	7.62	
ANNUAL		0.48651	ug/m^3	Res_317	636065.85	4263492.88	7.62	0.00	7.62	
ANNUAL		0.50092	ug/m^3	Res_318	636065.85	4263512.88	7.62	0.00	7.62	
ANNUAL		0.40330	ug/m^3	Res_319	636085.85	4263472.88	7.62	0.00	7.62	
ANNUAL		0.41556	ug/m^3	Res_320	636085.85	4263492.88	7.62	0.00	7.62	

Sensitive Receptor Summary

Nicholas Elementary School Reconstruction Project
Construction HRA

PM2.5 - Concentration - Source Group: ONSITE

Averaging Period	Rank	Peak	Units	Receptor ID	X (m)	Y (m)	ZELEV (m)	ZFLAG (m)	ZHILL (m)	Peak Date, Start Hour
ANNUAL		0.42802	ug/m^3	Res_321	636085.85	4263512.88	7.62	0.00	7.62	
ANNUAL		0.34863	ug/m^3	Res_322	636105.85	4263472.88	7.62	0.00	7.62	
ANNUAL		0.35855	ug/m^3	Res_323	636105.85	4263492.88	7.62	0.00	7.62	
ANNUAL		0.36909	ug/m^3	Res_324	636105.85	4263512.88	7.62	0.00	7.62	
ANNUAL		1.60523	ug/m^3	Res_325	635940.73	4263420.83	7.62	0.00	7.62	
ANNUAL		1.22525	ug/m^3	Res_326	635961.63	4263421.64	7.62	0.00	7.62	
ANNUAL		1.04694	ug/m^3	Res_327	635974.89	4263422.84	7.62	0.00	7.62	
ANNUAL		0.81414	ug/m^3	Res_328	635997.79	4263424.05	7.62	0.00	7.62	
ANNUAL		0.71202	ug/m^3	Res_329	636010.65	4263422.44	7.62	0.00	7.62	
ANNUAL		0.58214	ug/m^3	Res_330	636032.35	4263424.45	7.62	0.00	7.62	
ANNUAL		0.50003	ug/m^3	Res_331	636050.03	4263424.85	7.62	0.00	7.62	
ANNUAL		0.45015	ug/m^3	Res_332	636063.29	4263426.46	7.62	0.00	7.62	
ANNUAL		0.37775	ug/m^3	Res_333	636086.60	4263425.25	7.62	0.00	7.62	
ANNUAL		1.15547	ug/m^3	Res_334	635959.21	4263363.77	7.62	0.00	7.62	
ANNUAL		0.98345	ug/m^3	Res_335	635973.28	4263369.80	7.62	0.00	7.62	
ANNUAL		0.77029	ug/m^3	Res_336	635995.78	4263367.39	7.62	0.00	7.62	
ANNUAL		0.65541	ug/m^3	Res_337	636012.66	4263368.59	7.62	0.00	7.62	
ANNUAL		0.55553	ug/m^3	Res_338	636031.55	4263368.99	7.62	0.00	7.62	
ANNUAL		0.48669	ug/m^3	Res_339	636048.02	4263370.20	7.62	0.00	7.62	
ANNUAL		0.42044	ug/m^3	Res_340	636067.71	4263371.81	7.62	0.00	7.62	

Sensitive Receptor Summary

Nicholas Elementary School Reconstruction Project
Construction HRA

PM2.5 - Concentration - Source Group: ONSITE

Averaging Period	Rank	Peak	Units	Receptor ID	X (m)	Y (m)	ZELEV (m)	ZFLAG (m)	ZHILL (m)	Peak Date, Start Hour
ANNUAL		0.37827	ug/m^3	Res_341	636082.98	4263372.61	7.62	0.00	7.62	
ANNUAL		1.05965	ug/m^3	Res_342	635965.24	4263312.74	7.62	0.00	7.62	
ANNUAL		0.82687	ug/m^3	Res_343	635988.15	4263324.39	7.62	0.00	7.62	
ANNUAL		0.69300	ug/m^3	Res_344	636006.63	4263328.00	7.62	0.00	7.62	
ANNUAL		0.58639	ug/m^3	Res_345	636026.32	4263325.19	7.62	0.00	7.62	
ANNUAL		0.48340	ug/m^3	Res_346	636051.24	4263325.19	7.62	0.00	7.62	
ANNUAL		0.95484	ug/m^3	Res_347	635975.69	4263301.48	7.62	0.00	7.62	
ANNUAL		0.79808	ug/m^3	Res_348	635995.38	4263288.62	7.62	0.00	7.62	
ANNUAL		1.26494	ug/m^3	Res_349	635953.95	4263261.49	7.62	0.00	7.62	
ANNUAL		1.39804	ug/m^3	Res_350	635946.98	4263240.58	7.62	0.00	7.62	
ANNUAL		1.09237	ug/m^3	Res_351	635969.05	4263244.36	7.62	0.00	7.62	
ANNUAL		1.37496	ug/m^3	Res_352	635949.30	4263225.48	7.62	0.00	7.62	
ANNUAL		1.00761	ug/m^3	Res_353	635978.34	4263231.00	7.62	0.00	7.62	
ANNUAL		1.23481	ug/m^3	Res_354	635959.75	4263209.80	7.62	0.00	7.62	
ANNUAL		0.93519	ug/m^3	Res_355	635987.34	4263217.06	7.62	0.00	7.62	
ANNUAL		1.11992	ug/m^3	Res_356	635969.63	4263192.38	7.62	0.00	7.62	
ANNUAL		0.95490	ug/m^3	Res_357	635986.76	4263181.93	7.62	0.00	7.62	
ANNUAL		0.81673	ug/m^3	Res_358	636003.60	4263202.55	7.62	0.00	7.62	
ANNUAL		0.75221	ug/m^3	Res_359	636003.31	4263278.33	7.62	0.00	7.62	
ANNUAL		0.68861	ug/m^3	Res_360	636016.08	4263261.49	7.62	0.00	7.62	

Sensitive Receptor Summary

Nicholas Elementary School Reconstruction Project
Construction HRA

PM2.5 - Concentration - Source Group: ONSITE

Averaging Period	Rank	Peak	Units	Receptor ID	X (m)	Y (m)	ZELEV (m)	ZFLAG (m)	ZHILL (m)	Peak Date, Start Hour
ANNUAL		0.63815	ug/m^3	Res_361	636027.70	4263246.39	7.62	0.00	7.62	
ANNUAL		0.55165	ug/m^3	Res_362	636038.73	4263291.10	7.62	0.00	7.62	
ANNUAL		1.68561	ug/m^3	Res_363	635929.41	4263184.04	7.62	0.00	7.62	
ANNUAL		1.86433	ug/m^3	Res_364	635915.34	4263164.34	7.61	0.00	7.61	
ANNUAL		1.88448	ug/m^3	Res_365	635907.30	4263146.26	7.43	0.00	7.43	
ANNUAL		1.19457	ug/m^3	Res_366	635958.74	4263144.65	7.41	0.00	7.41	
ANNUAL		1.23591	ug/m^3	Res_367	635950.30	4263124.96	7.32	0.00	7.32	
ANNUAL		0.89164	ug/m^3	Res_368	635994.51	4263163.14	7.60	0.00	7.60	
ANNUAL		1.62141	ug/m^3	Res_369	635902.88	4263104.06	7.31	0.00	7.31	
ANNUAL		1.83416	ug/m^3	Res_370	635901.68	4263129.38	7.32	0.00	7.32	
ANNUAL		1.89298	ug/m^3	Res_371	635870.73	4263101.65	7.28	0.00	7.28	
ANNUAL		2.22066	ug/m^3	Res_372	635866.31	4263123.75	7.32	0.00	7.32	
ANNUAL		2.47989	ug/m^3	Res_373	635867.11	4263141.04	7.38	0.00	7.38	
ANNUAL		2.66610	ug/m^3	Res_374	635871.13	4263155.91	7.53	0.00	7.53	
ANNUAL		3.23365	ug/m^3	Res_375	635820.09	4263147.46	7.44	0.00	7.44	
ANNUAL		2.71736	ug/m^3	Res_376	635820.49	4263128.17	7.32	0.00	7.32	
ANNUAL		2.32150	ug/m^3	Res_377	635825.12	4263110.19	7.32	0.00	7.32	
ANNUAL		2.14972	ug/m^3	Res_378	635802.25	4263096.76	7.23	0.00	7.23	
ANNUAL		2.51083	ug/m^3	Res_379	635793.65	4263114.38	7.32	0.00	7.32	
ANNUAL		2.78567	ug/m^3	Res_380	635778.75	4263124.66	7.32	0.00	7.32	

Sensitive Receptor Summary

Nicholas Elementary School Reconstruction Project
Construction HRA

PM2.5 - Concentration - Source Group: ONSITE

Averaging Period	Rank	Peak	Units	Receptor ID	X (m)	Y (m)	ZELEV (m)	ZFLAG (m)	ZHILL (m)	Peak Date, Start Hour
ANNUAL		3.24049	ug/m^3	Res_381	635767.21	4263139.14	7.36	0.00	7.36	
ANNUAL		3.82569	ug/m^3	Res_382	635754.83	4263153.41	7.50	0.00	7.50	
ANNUAL		2.41583	ug/m^3	Res_383	635706.93	4263123.14	7.32	0.00	7.32	
ANNUAL		2.21945	ug/m^3	Res_384	635721.62	4263110.16	7.32	0.00	7.32	
ANNUAL		1.62983	ug/m^3	Res_385	635701.12	4263092.39	7.19	0.00	7.19	
ANNUAL		1.64820	ug/m^3	Res_386	635686.43	4263103.33	7.30	0.00	7.30	
ANNUAL		1.75018	ug/m^3	Res_387	635675.50	4263116.99	7.32	0.00	7.32	
ANNUAL		1.79429	ug/m^3	Res_388	635661.49	4263131.00	7.31	0.00	7.31	
ANNUAL		1.78870	ug/m^3	Res_389	635648.17	4263143.30	7.36	0.00	7.36	
ANNUAL		0.63388	ug/m^3	Res_390	635458.51	4263353.51	6.49	0.00	6.49	
ANNUAL		0.57024	ug/m^3	Res_391	635466.85	4263312.35	6.53	0.00	6.53	
ANNUAL		0.54227	ug/m^3	Res_392	635470.75	4263292.32	6.57	0.00	6.57	
ANNUAL		0.50281	ug/m^3	Res_393	635472.42	4263271.74	6.59	0.00	6.59	
ANNUAL		0.47310	ug/m^3	Res_394	635475.75	4263249.48	6.62	0.00	6.62	
ANNUAL		0.63698	ug/m^3	Res_395	635502.46	4263248.37	6.75	0.00	6.75	
ANNUAL		0.58898	ug/m^3	Res_396	635503.01	4263232.24	6.85	0.00	6.85	
ANNUAL		0.54340	ug/m^3	Res_397	635504.13	4263213.88	6.91	0.00	6.91	
ANNUAL		0.48638	ug/m^3	Res_398	635502.46	4263194.41	6.89	0.00	6.89	
ANNUAL		0.74466	ug/m^3	Res_399	635554.75	4263171.04	7.01	0.00	7.01	
ANNUAL		0.84828	ug/m^3	Res_400	635572.55	4263160.47	7.01	0.00	7.01	

Sensitive Receptor Summary

Nicholas Elementary School Reconstruction Project
Construction HRA

PM2.5 - Concentration - Source Group: ONSITE

Averaging Period	Rank	Peak	Units	Receptor ID	X (m)	Y (m)	ZELEV (m)	ZFLAG (m)	ZHILL (m)	Peak Date, Start Hour
ANNUAL		0.92696	ug/m^3	Res_401	635588.13	4263148.79	7.08	0.00	7.08	
ANNUAL		0.94988	ug/m^3	Res_402	635603.15	4263131.55	7.01	0.00	7.01	
ANNUAL		1.01359	ug/m^3	Res_403	635637.64	4263098.72	7.04	0.00	7.04	
ANNUAL		1.05285	ug/m^3	Res_404	635662.67	4263078.14	7.04	0.00	7.04	
ANNUAL		0.31351	ug/m^3	CC_001	635332.31	4263659.61	7.47	0.00	7.47	
ANNUAL		0.30980	ug/m^3	CC_002	635332.31	4263679.61	7.62	0.00	7.62	
ANNUAL		0.34804	ug/m^3	CC_003	635352.31	4263659.61	7.37	0.00	7.37	
ANNUAL		0.34233	ug/m^3	CC_004	635352.31	4263679.61	7.46	0.00	7.46	
ANNUAL		0.38687	ug/m^3	CC_005	635372.31	4263659.61	7.32	0.00	7.32	
ANNUAL		0.37835	ug/m^3	CC_006	635372.31	4263679.61	7.35	0.00	7.35	
ANNUAL		0.80153	ug/m^3	SAA_001	635905.45	4263730.56	7.62	0.00	7.62	
ANNUAL		0.73864	ug/m^3	SAA_002	635905.45	4263750.56	7.62	0.00	7.62	
ANNUAL		0.68165	ug/m^3	SAA_003	635905.45	4263770.56	7.62	0.00	7.62	
ANNUAL		0.62997	ug/m^3	SAA_004	635905.45	4263790.56	7.62	0.00	7.62	
ANNUAL		0.58305	ug/m^3	SAA_005	635905.45	4263810.56	7.62	0.00	7.62	
ANNUAL		0.77406	ug/m^3	SAA_006	635925.45	4263730.56	7.62	0.00	7.62	
ANNUAL		0.71698	ug/m^3	SAA_007	635925.45	4263750.56	7.62	0.00	7.62	
ANNUAL		0.66475	ug/m^3	SAA_008	635925.45	4263770.56	7.62	0.00	7.62	
ANNUAL		0.61694	ug/m^3	SAA_009	635925.45	4263790.56	7.62	0.00	7.62	
ANNUAL		0.57320	ug/m^3	SAA_010	635925.45	4263810.56	7.62	0.00	7.62	

Sensitive Receptor Summary

Nicholas Elementary School Reconstruction Project
Construction HRA

PM2.5 - Concentration - Source Group: ONSITE

Averaging Period	Rank	Peak	Units	Receptor ID	X (m)	Y (m)	ZELEV (m)	ZFLAG (m)	ZHILL (m)	Peak Date, Start Hour
ANNUAL		0.74118	ug/m^3	SAA_011	635945.45	4263730.56	7.62	0.00	7.62	
ANNUAL		0.69040	ug/m^3	SAA_012	635945.45	4263750.56	7.62	0.00	7.62	
ANNUAL		0.64337	ug/m^3	SAA_013	635945.45	4263770.56	7.62	0.00	7.62	
ANNUAL		0.59986	ug/m^3	SAA_014	635945.45	4263790.56	7.62	0.00	7.62	
ANNUAL		0.55968	ug/m^3	SAA_015	635945.45	4263810.56	7.62	0.00	7.62	
ANNUAL		0.70373	ug/m^3	SAA_016	635965.45	4263730.56	7.62	0.00	7.62	
ANNUAL		0.65951	ug/m^3	SAA_017	635965.45	4263750.56	7.62	0.00	7.62	
ANNUAL		0.61799	ug/m^3	SAA_018	635965.45	4263770.56	7.62	0.00	7.62	
ANNUAL		0.57911	ug/m^3	SAA_019	635965.45	4263790.56	7.62	0.00	7.62	
ANNUAL		0.54278	ug/m^3	SAA_020	635965.45	4263810.56	7.62	0.00	7.62	
ANNUAL		0.66277	ug/m^3	SAA_021	635985.45	4263730.56	7.62	0.00	7.62	
ANNUAL		0.62516	ug/m^3	SAA_022	635985.45	4263750.56	7.62	0.00	7.62	
ANNUAL		0.58924	ug/m^3	SAA_023	635985.45	4263770.56	7.62	0.00	7.62	
ANNUAL		0.55514	ug/m^3	SAA_024	635985.45	4263790.56	7.62	0.00	7.62	
ANNUAL		0.52287	ug/m^3	SAA_025	635985.45	4263810.56	7.62	0.00	7.62	
ANNUAL		0.61944	ug/m^3	SAA_026	636005.45	4263730.56	7.62	0.00	7.62	
ANNUAL		0.58825	ug/m^3	SAA_027	636005.45	4263750.56	7.62	0.00	7.62	
ANNUAL		0.55788	ug/m^3	SAA_028	636005.45	4263770.56	7.62	0.00	7.62	
ANNUAL		0.52856	ug/m^3	SAA_029	636005.45	4263790.56	7.62	0.00	7.62	
ANNUAL		0.50044	ug/m^3	SAA_030	636005.45	4263810.56	7.62	0.00	7.62	

Sensitive Receptor Summary

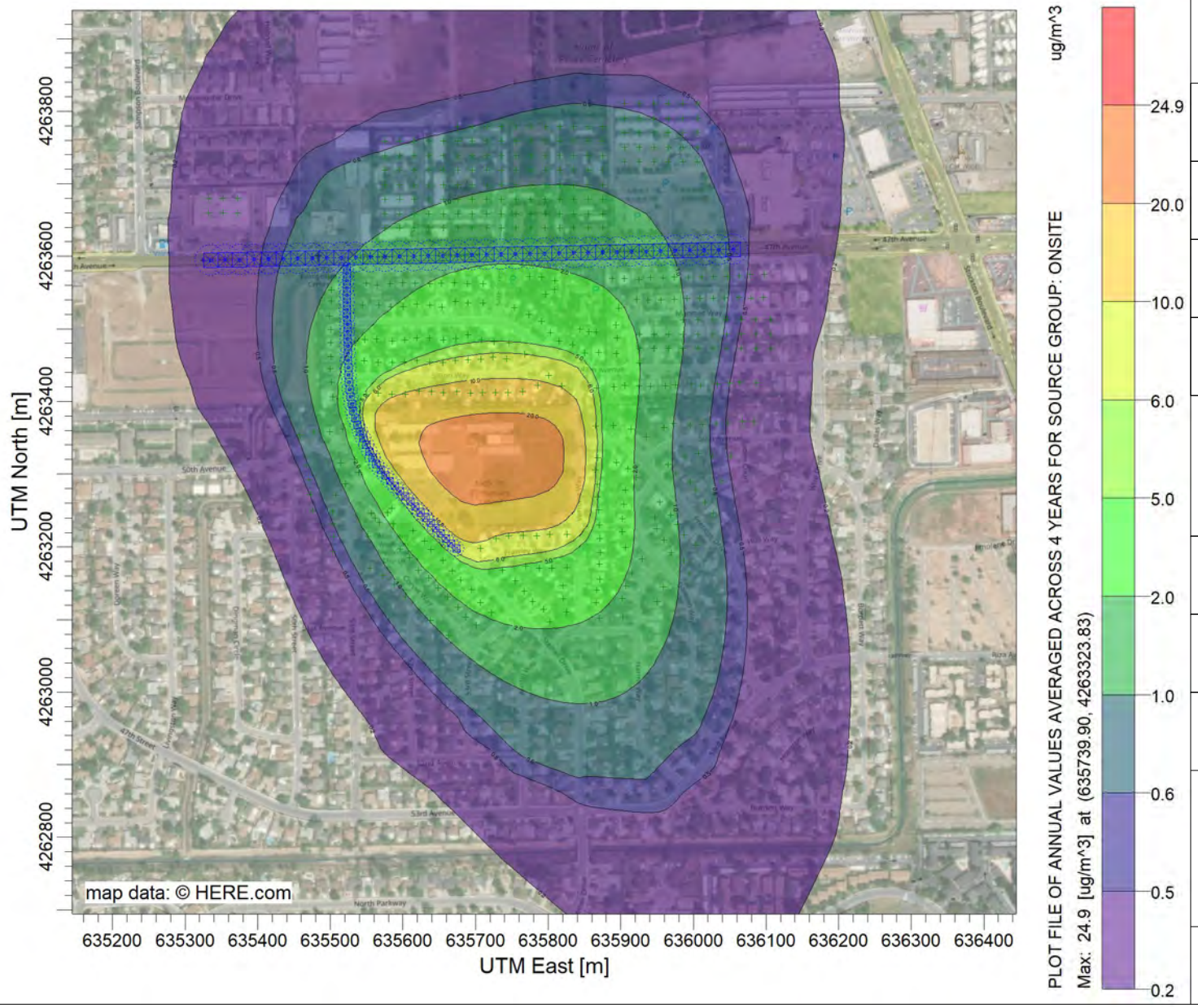
Nicholas Elementary School Reconstruction Project
Construction HRA

PM2.5 - Concentration - Source Group: ONSITE

Averaging Period	Rank	Peak	Units	Receptor ID	X (m)	Y (m)	ZELEV (m)	ZFLAG (m)	ZHILL (m)	Peak Date, Start Hour
ANNUAL		2.86899	ug/m^3	WKR_001	635584.68	4263252.74	7.32	0.00	7.32	
ANNUAL		2.30402	ug/m^3	WKR_002	635578.92	4263247.15	7.32	0.00	7.32	
ANNUAL		1.44977	ug/m^3	WKR_003	635556.74	4263245.97	7.14	0.00	7.14	
ANNUAL		1.49188	ug/m^3	WKR_004	635561.82	4263240.04	7.19	0.00	7.19	
ANNUAL		1.55400	ug/m^3	WKR_005	635567.58	4263234.28	7.25	0.00	7.25	

PROJECT TITLE:

Nicholas Elementary School Reconstruction Project
Construction HRA



COMMENTS:

SOURCES:
3

RECEPTORS:
2059

OUTPUT TYPE:
Concentration

MAX:
24.9 ug/m^3

COMPANY NAME:

MODELER:

DATE:
3/29/2023

SCALE: 1:8,477
0 0.2 km

PROJECT NO.:

AERMOD View - Lakes Environmental Software

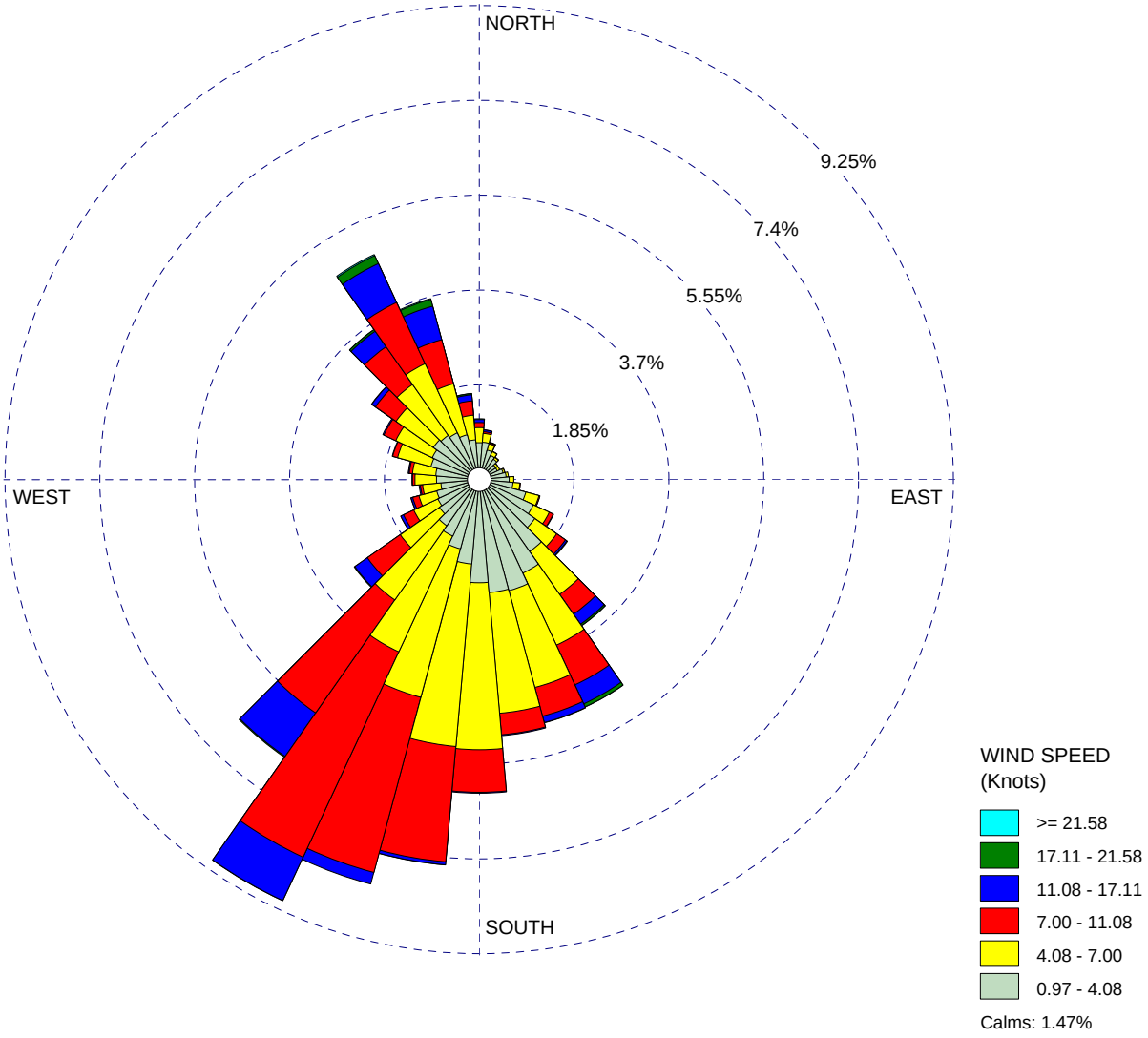
C:\Users\LPark\Documents\SCUS-04\SCUS-04.isc

WIND ROSE PLOT:

Station #23232 - SACRAMENTO/EXECUTIVE ARPT, CA

DISPLAY:

Wind Speed
Direction (blowing from)



COMMENTS:	DATA PERIOD: **Start Date: 1/1/2014 - 00:00** **End Date: 12/25/2018 - 23:59**	COMPANY NAME:	
		MODELER:	
	CALM WINDS: **1.47%**	TOTAL COUNT: **43528 hrs.**	
	AVG. WIND SPEED: **5.55 Knots**	DATE: **3/29/2023**	PROJECT NO.:

WRPLOT View - Lakes Environmental Software

Attachment C. Construction Risk Calculations

Table C1
Residential MER Concentrations for Risk Calculations

Contaminant	Source		Model Output [1] ($\mu g/m^3$)	Emission Rates [2] (g/s)	MEIR Conc. ($\mu g/m^3$)	Total MEIR Conc. Annual Average ($\mu g/m^3$)	Model Output [1] ($\mu g/m^3$)	Emission Rates [2] (g/s)	MEIR Conc. ($\mu g/m^3$)	Total MEIR Conc. Annual Average ($\mu g/m^3$)
(a)	(b)		(c)	(d)	(e)	(f)	(c)	(g)	(h)	(i)
Residential Receptors							**With MM AQ-1, Tier 4 Interim > 50 hp**			
DPM		On-Site Emissions	13.78	8.95E-03	1.23E-01	1.23E-01	13.78	1.83E-03	2.51E-02	2.53E-02
		Truck Route	3.39	2.66E-06	9.02E-06		3.39	2.66E-06	9.02E-06	

Total DPM concentrations used for Cancer Risk and Chronic Hazard calculations

[1] Model Output at the MEIR based on unit emission rates for sources (1 g/s).

[2] Emission Rates from Emission Rate Calculations (Attachment A - Construction Emissions).

Table C2
Residential MER Health Risk Calculations

Source		MEIR Conc. ($\mu g/m^3$) (b)	Weight Fraction (c)	Contaminant (d)	URF $(\mu g/m^3)^{-1}$ (e)	CPF $(mg/kg/day)^{-1}$ (f)	Dose (by age bin) 3rd Trimester (mg/kg-day) (g)	Dose (by age bin) 0 < 2 years (mg/kg-day) (h)	Dose (by age bin) 2 < 9 years (mg/kg-day) (i)	Carcinogenic Risks (by age bin) 3rd Trimester per million (j)	Carcinogenic Risks (by age bin) 0 < 2 years per million (k)	Carcinogenic Risks (by age bin) 2 < 9 years per million (l)	**Total Cancer** per million (m)	**Chronic Hazards** [3] REL ($\mu g/m^3$) (n)	**Chronic Hazards** [3] RESP (o)
Residential Receptors															
	On & Off-Site	1.23E-01	1.0E+00	DPM	3.0E-04	1.1E+00	4.27E-05	1.29E-04		1.36E+00	2.67E+01		28.1	5.0E+00	2.47E-02
												Total	**28.1**		**0.025**
With MM AQ-1, Tier 4 Interim > 50 hp															
	On & Off-Site	2.53E-02	1.0E+00	DPM	3.0E-04	1.1E+00	8.75E-06	2.63E-05		2.79E-01	5.48E+00		5.8	5.0E+00	5.06E-03
												Total	**5.8**		**0.005**

		OEHHA age bin	3rd Trimester	0 < 2 years	2 < 9 years
		exposure year(s)	2023	2023-2025	-
Dose Exposure Factors:		exposure frequency (days/year)	350	350	350
		inhalation rate (L/kg-day) [1]	361	1090	861
		inhalation absorption factor	1	1	1
		conversion factor (mg/µg; m^3/L)	1.0E-06	1.0E-06	1.0E-06
Risk Calculation Factors:		age sensitivity factor	10	10	3
		averaging time (years)	70	70	70
		per million	1.0E+06	1.0E+06	1.0E+06
		fraction of time at home	0.85	0.85	0.72

exposure durations per age bin		exposure durations (year)		
Construction Year	Const Duration [2]	3rd Trimester	0 < 2 years	2 < 9 years
2023	0.42	0.25	0.17	
2024	1.00		1.00	
2025	0.46		0.46	
2026				
2027				
2028				
2029				
2030				
Total	1.88	0.25	1.63	0.00

[1] Inhalation rate taken as the 95th percentile breathing rates (OEHHA, 2015).

[2] Construction durations determined for each year to adjust receptor exposures to the exposure durations for each construction year (see App A - Construction Emissions).

[3] Chronic Hazards for DPM using the chronic reference exposure level (REL) for the Respiratory Toxicological Endpoint.

Table C3
High School MER Concentrations for Risk Calculations

Contaminant	Source		Model Output [1] ($\mu g/m^3$)	Emission Rates [2] (g/s)	Maximum Exposed School Receptor Conc. ($\mu g/m^3$)	Total Maximum Exposed School Receptor Conc. Annual Average ($\mu g/m^3$)
(a)	(b)		(c)	(d)	(e)	(f)
Student Receptors (Sacramento Accelerated Academy; High School) - Unmitigated						
DPM		On-Site Emissions	0.80	6.48E-03	5.19E-03	5.34E-03
		Truck Route	3.61	4.17E-05	1.51E-04	

[1] Model Output at the Maximum Exposed School Receptor based on unit emission rates for sources (1 g/s).

[2] Emission Rates from Emission Rate Calculations (Attachment A - Construction Emissions).

Table C4
High School Health Risk Calculations

Source	MER	Weight	Contaminant			Dose (by age bin)	Exposure Duration[2]	Carcinogenic Risks	**Chronic Hazards [3]**	
	Conc.	Fraction		URF	CPF	High School (ages 14-18)		High School (ages 14-18)	REL	RESP
	($\mu g/m^3$)			$(\mu g/m^3)^{-1}$	$(mg/kg/day)^{-1}$	(mg/kg-day)	(yr)	per million	($\mu g/m^3$)	
(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)
Student Receptors (Sacramento Accelerated Academy; High School) - Unmitigated										
On & Off-Site Emissions	5.34E-03	1.0E+00	DPM	3.0E-04	1.1E+00	1.96E-06	1.88	0.17	5.0E+00	1.07E-03
							Total	**0.17**		**0.001**

		High School (14-18 years of ag
	OEHHA age bin	2 < 16 years
	exposure year(s)	2023-2025
Dose Exposure Factors:	exposure frequency (days/year)	180
	8-hour inhalation rate (L/kg-day) [1]	745
	inhalation absorption factor	1
	conversion factor (mg/µg; m^3/L)	1.0E-06
Risk Calculation Factors:	age sensitivity factor	3
	averaging time (years)	70
	per million	1.0E+06

[1] Inhalation rate taken as the 8-hour 95th percentile breathing rates, Moderate Activity (OEHHA, 2015).

[2] Construction durations determined for each year to adjust receptor exposures to the exposure durations for each construction year (see App A - Construction Emissions).

[3] Chronic Hazards for DPM using the chronic reference exposure level (REL) for the Respiratory Toxicological Endpoint.

Table C5
Preschool MER Concentrations for Risk Calculations

Contaminant	Source		Model Output [1] ($\mu g/m^3$)	Emission Rates [2] (g/s)	Maximum Exposed School Receptor Conc. ($\mu g/m^3$)	Total Maximum Exposed School Receptor Conc. Annual Average ($\mu g/m^3$)
(a)	(b)		(c)	(d)	(e)	(f)
Student Receptors (Calvary Christian; Preschool) - Unmitigated						
DPM		On-Site Emissions	0.39	6.48E-03	2.51E-03	2.74E-03
		Truck Route	5.58	4.17E-05	2.33E-04	

[1] Model Output at the Maximum Exposed School Receptor based on unit emission rates for sources (1 g/s).

[2] Emission Rates from Emission Rate Calculations (Attachment A - Construction Emissions).

Table C6
Preschool Health Risk Calculations

Source	MER	Weight	Contaminant			Dose (by age bin)	Exposure Duration[2]	Carcinogenic Risks	**Chronic Hazards [3]**	
	Conc.	Fraction		URF	CPF	Preschool (ages 3-5)		Preschool (ages 3-5)	REL	RESP
	($\mu g/m^3$)			$(\mu g/m^3)^{-1}$	$(mg/kg/day)^{-1}$	(mg/kg-day)	(yr)	per million	($\mu g/m^3$)	
(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)
Student Receptors (Calvary Christian; Preschool) - Unmitigated										
On & Off-Site Emissions	5.34E-03	1.0E+00	DPM	3.0E-04	1.1E+00	2.27E-06	1.88	0.19	5.0E+00	1.07E-03
								0.19		**0.001**

	OEHHA age bin	Preschool (3-5 years of age)
	exposure year(s)	2 < 9 years 2023-2025
Dose Exposure Factors:	exposure frequency (days/year)	180
	8-hour inhalation rate (L/kg-day) [1]	861
	inhalation absorption factor	1
	conversion factor (mg/µg; m^3/L)	1.0E-06
Risk Calculation Factors:	age sensitivity factor	3
	averaging time (years)	70
	per million	1.0E+06

[1] Inhalation rate taken as the 8-hour 95th percentile breathing rates, Moderate Activity (OEHHA, 2015).

[2] Construction durations determined for each year to adjust receptor exposures to the exposure durations for each construction year (see App A - Construction Emissions).

[3] Chronic Hazards for DPM using the chronic reference exposure level (REL) for the Respiratory Toxicological Endpoint.

Table C7
Worker MER Concentrations for Risk Calculations

Contaminant	Source		Model Output [1] ($\mu g/m^3$)	Emission Rates [2] (g/s)	MEIR Conc. ($\mu g/m^3$)	Total MEIR Conc. Annual Average ($\mu g/m^3$)
(a)	(b)		(c)	(d)	(e)	(f)
Worker Receptors - Unmitigated						
DPM		On-Site Emissions	2.87	8.95E-03	2.57E-02	2.57E-02
		Truck Route	11.24	2.66E-06	2.99E-05	

[1] Model Output at the MEIR based on unit emission rates for sources (1 g/s).

[2] Emission Rates from Emission Rate Calculations (Attachment A - Construction Emissions).

Table C8
Worker MER Health Risk Calculations

Source	MEIR Conc. ($\mu g/m^3$)	Weight Fraction	Contaminant	URF $(\mu g/m^3)^{-1}$	CPF $(mg/kg/day)^{-1}$	Dose (by age bin)				Carcinogenic Risks (by age bin)				**Total Cancer**	**Chronic Hazards [3]**	
						3rd Trimester	0 < 2 years	2 < 16 years	16 < 30 years	3rd Trimester	0 < 2 years	2 < 9 years	16 < 30 years		REL $(\mu g/m^3)$	RESP
(a)	(b)	(c)	(d)	(e)	(f)	(mg/kg-day) (g)	(mg/kg-day) (h)	(mg/kg-day) (i)	(mg/kg-day) (j)	per million (k)	per million (l)	per million (m)	per million (n)	per million (o)	(p)	(q)
Worker Receptors - Unmitigated																
On & Off-Site	2.57E-02	1.0E+00	DPM	3.0E-04	1.1E+00				6.14E-06				1.73E-01	0.2	5.0E+00	5.14E-03
												Total		**0.2**		**0.005**

		OEHHA age bin	3rd Trimester	0 < 2 years	2 < 16 years	16 < 30 years
		exposure year(s)	-	-	-	2023-2025
Dose Exposure Factors:		exposure frequency (days/year)	-	-	-	260
		inhalation rate (L/kg-day) [1]	-	-	-	335
		inhalation absorption factor	-	-	-	1
		conversion factor (mg/µg; m^3/L)	-	-	-	1.0E-06
Risk Calculation Factors:		age sensitivity factor	-	-	-	1
		averaging time (years)	-	-	-	70
		per million	-	-	-	1.0E+06
		fraction of time at home	-	-	-	-

exposure durations per age bin		exposure durations (year)			
Construction Year	Const Duration [2]	3rd Trimester	0 < 2 years	2 < 16 years	16 < 30 years
2023	0.42				0.42
2024	1.00				1.00
2025	0.46				0.46
2026					
2027					
2028					
2029					
2030					
Total	1.88	0.00	0.00	0.00	1.88

[1] Inhalation rate taken as the 95th percentile breathing rates (OEHHA, 2015).

[2] Construction durations determined for each year to adjust receptor exposures to the exposure durations for each construction year (see App A - Construction Emissions).

[3] Chronic Hazards for DPM using the chronic reference exposure level (REL) for the Respiratory Toxicological Endpoint.

Appendix B Arborist Survey Report

Arborist Survey Report
for the
Nicholas Elementary School Replacement Project

Sacramento County, California

Prepared For:

PlaceWorks, Inc.

Prepared By:

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS
2525 Warren Drive
Rocklin, California 95677

February 21, 2023

CONTENTS

LIST OF FIGURES

LIST OF APPENDICES

LIST OF ACRONYMS AND ABBREVIATIONS

Term	Description
DBH	Diameter at breast height
Study Area	Nicholas Elementary School
USGS	U.S. Geological Survey
Value	Transplant and Biological Value

1.0 INTRODUCTION

ECORP Consulting, Inc. conducted an arborist survey for the Nicholas Elementary School Replacement Project (Study Area), located in Sacramento County, California. The purpose of this survey was to identify, map, and assess the general condition of all trees within the Study Area according to Chapter 19.12 of the Sacramento County Code for Tree Preservation and Protection (Tree Preservation Code) and the Arborist Report Submittal Guidelines (collectively County Guidelines). However, the County Guidelines do not apply to schools so they were only used to guide the survey. ECORP anticipates all trees within the Study Area will either be removed, pruned, or have some ground-disturbing activity within the Protected Zone of a Protected Tree.

2.0 SITE DESCRIPTION

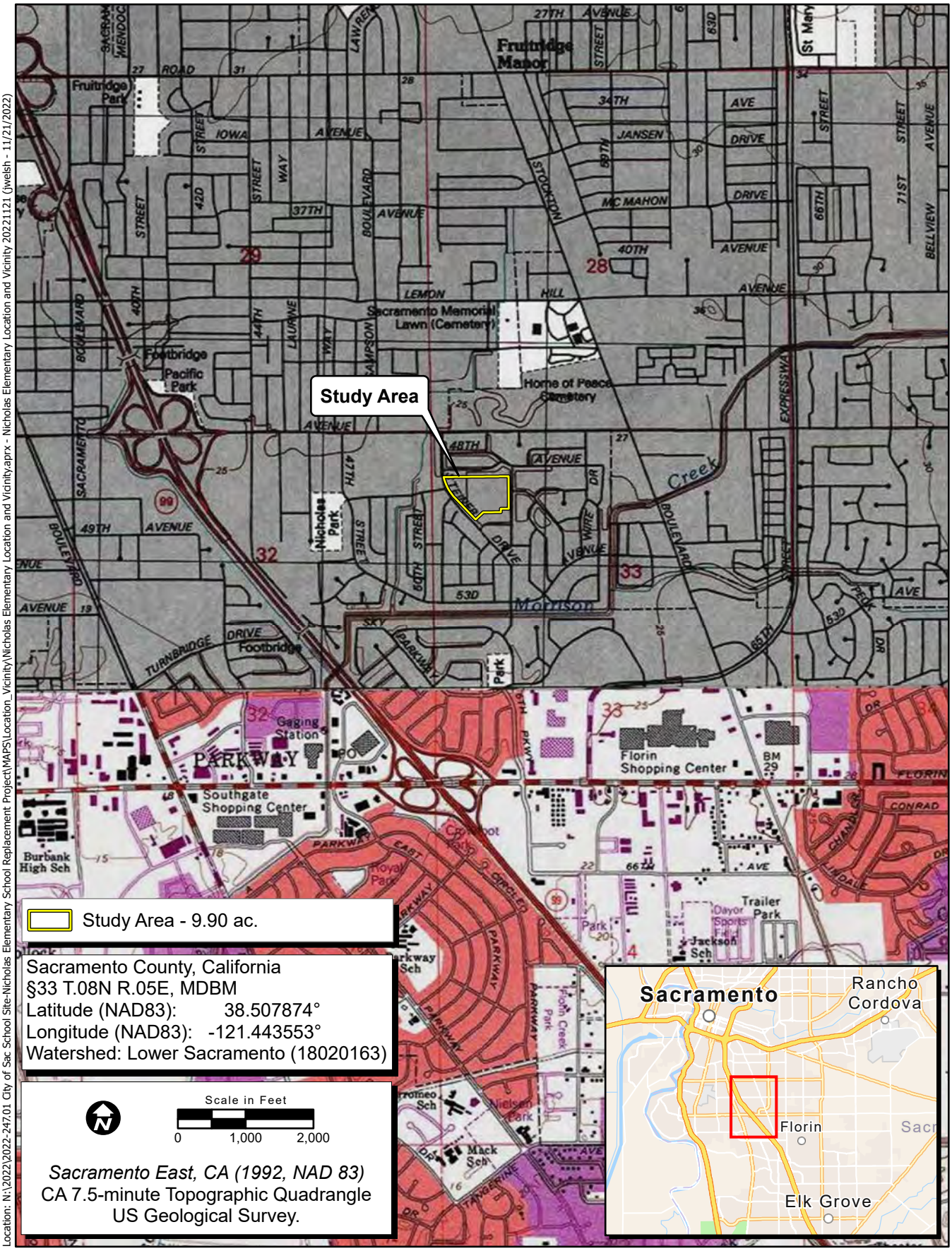
The Study Area is located north of Frawley Way, east of Steiner Drive, south of Sitton Way, and west of Vernace Way in Sacramento County, California (Figure 1). The approximately 9.9-acre Study Area corresponds to a portion of Section 33, Township 8 North, Range 5 East (Mount Diablo Base and Meridian) of the "Sacramento East, California" 7.5-minute quadrangle (U.S. Geological Survey [USGS] 1992). The approximate center of the Study Area is located at 38.507874° North and -121.443553° West within the Lower Sacramento Watershed (Hydrologic Unit Code #18020163; Natural Resources Conservation Service et al. 2019). The Study Area is a school; therefore, the grounds are primarily composed of asphalt, mowed grass, and maintained beds planted with primarily ornamental trees but some native trees as well. The surrounding land use is heavily residential.

3.0 METHODS

ECORP arborist Krissy Walker-Berry (International Society of Arboriculture Certification #WE-11308A), with ECORP biologist Levon Bajakian, conducted the field survey on November 10, 2022 by walking the Study Area during the field survey and recording data using a submeter capable Global Positioning System unit.

ECORP surveyed all trees with trunks or a portion of their dripline radius in the Study Area. ECORP installed no tree tags on trees that were inaccessible or were located on private property and assigned numbers 1 to 37. The following terms are defined in the County Guidelines:

- **Diameter at breast height (DBH):** Measured diameter of the trunk at 54 inches above grade; if other than DBH, then alternate measurement height must be identified. If the tree is multi-trunked, include the diameter of all stems that are 1-inch DBH and larger. Size must be rounded to the nearest inch. *For multi-trunked trees, this report lists total aggregate diameter along with each trunk's diameter.*



Location: N:\2022\2022-247.01 City of Sac School Site-Nicholas Elementary School Replacement Project\MAPS\Location_Vicinity\Nicholas Elementary Location and Vicinity.aprx - Nicholas Elementary Location and Vicinity 20221121 (jwelsh - 11/21/2022)

Map Date: 11/21/2022
Sources: ESRI, USGS

Figure 1. Project Location and Vicinity

- **Dripline:** A circle with the radius being the measurement of the length of the distance from the trunk to the end of the longest limb.

- **Dripline Environment:** A brief written description of the growing condition of the immediate area beneath the defined dripline protection zone (i.e., natural grasses, steep terrain, existing roadway or structure, utility lines, drainage swales, previous grading cuts or fills, fire damage)

- **Health:** A measure of overall vigor and vitality of the tree and rated as good, fair, or poor based on an assessment of crown density, leaf color and size, active callusing, shoot growth rate, extent of crown dieback, cambium layer health, and tree age.

- **Heritage Tree:** This classification is for a California native oak tree growing on any land in Sacramento County, including privately owned land, with a trunk 60 inches or greater in girth (equal to 19 inches DBH or larger) measured 4.5 feet above the ground.

- **Landmark Tree:** An especially prominent or stately tree, or a special variety of a certain tree. It can be any native or nonnative tree that is exceptional for its type that is in good health and structural condition. Size is not a mandatory criterion.

- **Native Tree:** All native oak and specified non-oak native trees (refer to species list) that are 4 inches in diameter (DBH) and larger, or 10-inch aggregate diameter for multi-trunk native oak and Northern California black walnut trees.

- **Overall Tree Condition:** Based on the foregoing tree health and structural assessment, the arborist shall assign a numerical rating of the tree based on the following ratings: 0) dead, 1) severe decline, 2) declining, 3) fair, 4) good, and 5) excellent.

- **Species List:**

    - Valley oak (*Quercus lobata*)
    - Interior live oak (*Quercus wislizeni*)
    - Blue oak (*Quercus douglasii*)
    - Coast live oak (*Quercus agrifolia*), in the Delta area
    - Oracle oak (*Quercus X morehus*)
    - Native oak hybrids
    - California sycamore (*Platanus racemosa*)
    - Northern California black walnut (*Juglans californica* var. *hindsii*)
    - Oregon ash (*Fraxinus latifolia*)
    - Goodding's black willow (*Salix gooddingii*)
    - Box elder (*Acer negundo* var. *californicum*)
    - White alder (*Alnus rhombifolia*)

- California buckeye (*Aesculus californica*)

- **Structure:** A measure of the tree's structural stability and failure potential and rated as good, fair, or poor based on assessment of specific structural features (e.g., decay, conks, codominant trunks, included bark, abnormal lean, one-sided canopy, history of failure, prior construction impact, pruning history).

The surveyors collected data, which included species, tree tag number, DBH, dripline radius, health, structure, dripline environment, and overall tree condition. The survey results are intended for general Project planning purposes only; therefore, these results should not be considered a detailed tree analysis (i.e., results do not include hazard assessment, tree health diagnosis, preservation/removal recommendations, or pruning advisement).

Additionally, the trees proposed for removal were evaluated for their transplant and biological value (Value). This Value is based on the following data:

1. Overall Tree Condition – better health was given a higher Value;

2. Species – invasive species were given a lower Value;

3. Location – trees that would be difficult to transplant were given a lower Value;

4. Size – large, otherwise health trees were given a moderate Value due to increased complications with transplanting and lower chances of survivability.

4.0 RESULTS

ECORP inventoried a total of 73 Protected Trees in the Study Area consisting of 13 Chinese privet *Ligustrum sinense*), 10 Chinese pistache (*Pistacia chinensis*), seven California sycamore, four Chinese hackberry (*Celtis sinensis*), four crepe myrtle (*Lagerstroemia indica*), three incense cedar (*Calocedrus decurrens*), three camphor tree (*Cinnamomum camphora*), three mulberry (*Morus* sp.), three Callery pear (*Pyrus calleryana*), three wild plum (*Prunus americana*), three zelkova (*Zelkova* sp.), two fig (*Ficus carica*), two oleander (*Nerium oleander*), one pineapple guava (*Acca sellowiana*), one Japanese maple (*Acer palmatum*), one Judas tree (*Cercis siliquastrum*), one citrus (*Citrus* sp.), one English walnut (*Juglans regia*), one liquidambar (*Liquidambar styraciflua*), one European olive (*Olea europaea*), one date palm (*Phoenix dactylifera*), one cherry (*Prunus* sp.), one valley oak, one red oak (*Quercus rubra*), one interior live oak, and one Mexican fan palm (*Washingtonia robusta*). A map depicting the locations of the inventoried trees is included as Appendix A. Detailed tree survey data for each tree are included as Appendix B. Representative site photographs are included as Appendix C.

Nine inventoried trees are considered County Trees because they fall under the County Guidelines. These include trees with tag numbers 15, 959, 960, 964, 970, and 984 through 987. The interior live oak with tag

number 964 is a heritage tree. Tree number 15, the valley oak, is unknown whether it is a heritage tree as it is in a residential backyard and the trunk was not visible during the survey.

5.0 IMPACTS AND CONCLUSIONS

Based on the limits of work provided by Kitchell CEM, Inc., 58 of the 73 trees found during the inventory are proposed for removal[1]. The remaining 15 trees have trunks located on private property or are proposed for protection (Tree 964) and will have indirect impacts, which means that there will be impacts at the soil level within the Protected Zone of the tree through some form of ground disturbance.

Of the 58 trees proposed for removal, seven have a high Value, 19 have a moderate Value, and 32 have a low Value. It is recommended that trees with a high Value be transplanted and trees with a moderate Value be transplanted or replaced at a 2:1 ratio or higher.

Tree number 964 will be retained and protected within the Study Area. The recommendations in Section 6.0 apply to this tree.

6.0 TREE PRESERVATION RECOMMENDATIONS

ECORP recommends that all transplanting occur during the dormant season (November to February) and that all transplanted citrus trees be relocated in soils of the same pH as their current location. Generally, citrus thrives in soils with pH levels between 6 and 8.

6.1 Development Recommendations

The following recommendations will help mitigate damage to oak trees caused by land development:

a. Avoid grade cuts greater than 1 foot within the driplines of oak trees, and within 5 feet of their trunks.

b. Avoid fill greater than 1 foot within the driplines of oak trees and any placement of fill within 5 feet of their trunks.

c. Avoid trenching within the driplines of oak trees. If it is absolutely necessary to install underground utilities within the driplines of an oak tree, it is recommended that the trench be either bored or drilled.

d. Avoid installing irrigation systems within the driplines of oak tree(s) as it may be detrimental to the long term survival of the oak tree(s).

[1] This assumes that trees growing through or against the fences along the Study Area limits will be removed.

e. Limit landscaping beneath oak trees be limited to nonplant materials such as boulders, cobbles, wood chips, etc., or plant species tolerant of the natural semi-arid environs of the trees. Drip irrigation should be limited to approximately twice per summer for the understory plants.

6.2 Grading Beneath Tree Driplines

Grading beneath trees to be saved should be given special attention to avoid creating conditions adverse to the tree's health. The natural ground within the driplines of protected trees should remain as undisturbed as possible. Specific recommendations for work within the dripline are as follows:

a. Major roots 2 inches or greater in diameter encountered within the tree's dripline in the course of excavation from beneath trees that are not to be removed should be kept moist and covered with earth as soon as feasible. Roots 1 inch to 2 inches in diameter that are severed should be trimmed, treated with pruning compound, and covered with earth as soon as possible.

b. Support roots that are inside the dripline of the tree should be protected to the extent feasible. Hand-digging is recommended in the vicinity of major trees to prevent root cutting and mangling by heavy equipment.

7.0 REFERENCES

Sacramento County. 2022. Tree Preservation and Protection- Chapter 19.12, Article 19.50 Woodland Conservation. Available online at: https://library.qcode.us/lib/sacramentocounty_ca/pub/county_code/item/title_19-chapter_19_12. Accessed online November 21, 2022.

Natural Resources Conservation Service (NRCS), U.S. Geological Survey (USGS), and U.S. Environmental Protection Agency (USEPA). 2019. Watershed Boundary Dataset for California. Available online: https://datagateway.nrcs.usda.gov.

U.S. Geological Survey (USGS). 1992. "Sacramento East, California" 7.5-minute Quadrangle.

LIST OF APPENDICES

APPENDIX A

Arborist Survey Results

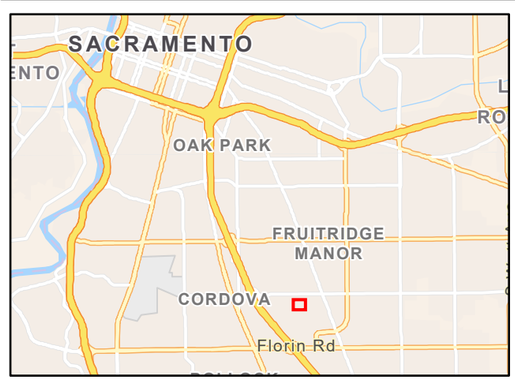
Map Contents

- Study Area - 9.90 ac.
- Tree Protection Zone

Tree Species (Quantity)

- California Sycamore (7)
- Callery Pear (3)
- Camphor Tree (3)
- Cherry (1)
- Chinese Hackberry (4)
- Chinese Pistache (10)
- Chinese Privet (13)
- Citrus (1)
- Crepe Myrtle (4)
- Date Palm (1)
- English Walnut (1)
- European Olive (1)
- Fig (2)
- Incense Cedar (3)
- Interior Live Oak (1)
- Japanese Maple (1)
- Judas Tree (1)
- Liquidambar (1)
- Mexican Fan Palm (1)
- Mulberry (3)
- Oleander (2)
- Pineapple Guava (1)
- Red Oak (1)
- Valley Oak (1)
- Wild Plum (3)
- Zelkova (3)

Sources: Maxar (4/12/2022), ESRI, Sacramento County



Location: N:\2022\2022-247.01 City of Sac School Site-Nicholas Elementary School Replacement Project\MAPS\Biological_Resources\Nicholas Elementary Biological Resources.aprx - Nicholas Elementary Arborist 20221121 (jwelsh - 11/29/2022)

Map Date: 11/29/2022

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Scale in Feet
0 50 100

Appendix A - Arborist Survey Results

2022-247.01 City of Sacramento School Site-Nicholas Elementary School Replacement Project

APPENDIX B

Tree Survey Data (November 10, 2022)

Nicholas Elementary School
Tree Data (November 10, 2022)

Tree Tag #	Common Name	Latin Name	DBH (inches, rounded)	Stem Description	Dripline (feet)	Dripline Environment	Height (feet)	Structure	Health	Overall Tree Condition	Field Notes	Proposed for Removal?	County Tree?	Heritage Tree?	Transplant and Biological Value
1	Chinese Privet	*Ligustrum sinense*	-		20	Asphalt and Dirt	35	Fair	Fair	3-Fair	Unable to see dbh	No	No	No	-
2	Camphor Tree	*Cinnamomum camphora*	14		15	Asphalt and Dirt	35	Fair	Fair	3-Fair		No	No	No	-
3	Wild Plum	*Prunus americana*	30	1,1.5,1.5,2,1,2.5,5,3.5,1,1.5,1.5,2,6	12	Dirt	16	Poor	Poor	2-Declining	Growing through fence, multiple branch cuts	Yes	No	No	Low
4	European Olive	*Olea europaea*	16	2,2,3,5,2,2	8	Dirt	15	Poor	Poor	2-Declining	Growing through fence	Yes	No	No	Low
5	Wild Plum	*Prunus americana*	13	1,2,5,1,2,2	12	Lawn	25	Poor	Poor	2-Declining	Sap oozing from multiple spots on stem	Yes	No	No	Low
6	Date Palm	*Phoenix dactylifera*	36		15	Lawn	25	Fair	Fair	3-Fair	Growing between fences	Yes	No	No	Low
7	Chinese Privet	*Ligustrum sinense*	34	12,8,14	12	Lawn	25	Fair	Poor	2-Declining	Growing against fence	Yes	No	No	Low
8	Mulberry	*Morus* sp.	6	3,3	6	Lawn	12	Poor	Poor	2-Declining	Growing through fence	Yes	No	No	Low
9	Chinese Privet	*Ligustrum sinense*	24	2,1,3,3,4,5,4,2	15	Lawn	25	Poor	Fair	2-Declining	Growing through fence	Yes	No	No	Low
10	Chinese Privet	*Ligustrum sinense*	12	8,4	12	Lawn	25	Fair	Fair	3-Fair		Yes	No	No	Low
11	Chinese Privet	*Ligustrum sinense*	13	3,1,2,2,5	10	Lawn	25	Poor	Fair	2-Declining	Growing through fence	Yes	No	No	Low
12	Cherry	*Prunus* sp.	-		10	Lawn	25	Fair	Good	3-Fair	Unable to see dbh	No	No	No	-
13	Chinese Privet	*Ligustrum sinense*	24	7,4,2,1,3,2,5	8	Duff	20	Poor	Good	3-Fair		Yes	No	No	Low
14	Chinese Privet	*Ligustrum sinense*	16	1,3,6,5,1	6	Lawn	18	Fair	Good	3-Fair	Growing against fence	Yes	No	No	Low
15	Valley Oak	*Quercus lobata*	-		22	Lawn	30	Good	Good	4-Good	Unable to see dbh	No	Yes	Unknown	-
16	Wild Plum	*Prunus americana*	-		7	Lawn	18	Fair	Fair	3-Fair	Unable to see dbh	No	No	No	-
17	Oleander	*Nerium oleander*	-		12	Lawn	18	Fair	Fair	3-Fair	Unable to see dbh	No	No	No	-
18	Incense Cedar	*Calocedrus decurrens*	15		12	Duff	30	Poor	Poor	2-Declining	Topped due to power line	Yes	No	No	Low
19	Incense Cedar	*Calocedrus decurrens*	43	15,28	18	Duff	30	Poor	Poor	1-Severe Decline	Topped due to power line	Yes	No	No	Low
20	Incense Cedar	*Calocedrus decurrens*	21		18	Lawn	30	Poor	Poor	1-Severe Decline	Topped due to power line	Yes	No	No	Low
21	Oleander	*Nerium oleander*	15	3,6,3,2,1	15	Lawn	25	Fair	Good	3-Fair		Yes	No	No	Low
22	Pineapple Guava	*Acca sellowiana*	37	2,1,3,4,5,1,3,5,3,2,4,4	15	Lawn	18	Fair	Good	4-Good	Growing through fence	Yes	No	No	Low
23	Chinese Privet	*Ligustrum sinense*	8	4,4	10	Duff	20	Fair	Fair	3-Fair		Yes	No	No	Low
24	Citrus	*Citrus* sp.	17	7,10	12	Duff	18	Good	Good	4-Good		Yes	No	No	High
25	Zelkova	*Zelkova* sp.	22		30	Lawn	45	Fair	Good	4-Good	Light pole in tree canopy	Yes	No	No	Moderate
26	Zelkova	*Zelkova* sp.	28		32	Lawn	50	Fair	Good	4-Good		Yes	No	No	Moderate
27	Zelkova	*Zelkova* sp.	28		25	Lawn	35	Good	Fair	3-Fair		Yes	No	No	Moderate
28	Japanese Maple	*Acer palmatum*	-		18	Lawn	20	Fair	Fair	2-Declining	Unable to see dbh	No	No	No	-
29	Crepe Myrtle	*Lagerstroemia indica*	-		15	Lawn	20	Fair	Fair	3-Fair	Unable to see dbh	No	No	No	-
30	Mulberry	*Morus* sp.	29	13,16	18	Lawn	20	Fair	Fair	3-Fair	Growing through fence	No	No	No	-
31	Chinese Privet	*Ligustrum sinense*	5		10	Lawn	18	Fair	Good	4-Good		No	No	No	-
32	Chinese Privet	*Ligustrum sinense*	4		7	Lawn	20	Good	Good	4-Good		No	No	No	-
33	Chinese Privet	*Ligustrum sinense*	6	1,2,3	8	Lawn	20	Good	Good	4-Good		No	No	No	-
34	Chinese Privet	*Ligustrum sinense*	24	3,5,3,5,2,2,4	10	Lawn	22	Fair	Good	4-Good		No	No	No	-
35	English Walnut	*Juglans regia*	-		18	Lawn	27	Fair	Fair	3-Fair	Unable to see dbh	No	No	No	-
36	Fig	*Ficus carica*	-		2	-	-	-	-	-	Growing between trailers, unable to assess	Yes	No	No	Low
37	Fig	*Ficus carica*	-		2	-	-	-	-	-	Growing between trailers, unable to assess	Yes	No	No	Low
955	Crepe Myrtle	*Lagerstroemia indica*	4	2.5,1.6	6	Lawn	16	Good	Good	4-Good		Yes	No	No	High

Nicholas Elementary School
Tree Data (November 10, 2022)

Tree Tag #	Common Name	Latin Name	DBH (inches, rounded)	Stem Description	Dripline (feet)	Dripline Environment	Height (feet)	Structure	Health	Overall Tree Condition	Field Notes	Proposed for Removal?	County Tree?	Heritage Tree?	Transplant and Biological Value
956	Crepe Myrtle	*Lagerstroemia indica*	4	2.2,1.3	6	Lawn	13	Good	Good	4-Good		Yes	No	No	High
957	Crepe Myrtle	*Lagerstroemia indica*	3	2,1.3	4	Lawn	11	Good	Fair	4-Good		Yes	No	No	High
958	Liquidambar	*Liquidambar styraciflua*	11		12	Lawn	28	Fair	Poor	2-Declining	Dead top, dead end of limbs	Yes	No	No	Low
959	California Sycamore	*Platanus racemosa*	24		16	Lawn	55	Good	Good	4-Good		Yes	Yes	No	Moderate
960	California Sycamore	*Platanus racemosa*	16		15	Lawn	40	Good	Fair	3-Fair	Some dead ends of limbs	Yes	Yes	No	Moderate
961	Chinese Hackberry	*Celtis sinensis*	22	6.4,16	18	Dirt	35	Poor	Fair	3-Fair	Growing through fence	Yes	No	No	Low
962	Camphor Tree	*Cinnamomum camphora*	10		12	Lawn	25	Fair	Fair	3-Fair		Yes	No	No	Moderate
963	Camphor Tree	*Cinnamomum camphora*	15		15	Lawn	30	Poor	Fair	2-Declining	Trunk rot	Yes	No	No	Low
964	Interior Live Oak	*Quercus wizlizeni*	41		35	Lawn	55	Good	Good	4-Good		No	Yes	Yes	-
965	Mexican Fan Palm	*Washingtonia robusta*	15		7	Lawn	65	Good	Fair	4-Good		Yes	No	No	Low
966	Chinese Hackberry	*Celtis sinensis*	5		12	Lawn	22	Fair	Fair	3-Fair		Yes	No	No	Moderate
967	Callery Pear	*Pyrus calleryana*	10		20	Lawn	28	Fair	Poor	2-Declining		Yes	No	No	Low
968	Callery Pear	*Pyrus calleryana*	7		10	Lawn	25	Fair	Fair	3-Fair		Yes	No	No	Low
969	Callery Pear	*Pyrus calleryana*	9		15	Lawn	28	Fair	Fair	3-Fair	Sucker sprouts, some dead branches	Yes	No	No	Low
970	California Sycamore	*Platanus racemosa*	15		22	Lawn	35	Fair	Poor	2-Declining	Sucker sprouts, thin canopy	Yes	Yes	No	Low
971	Red Oak	*Quercus rubra*	6		12	Dirt	25	Poor	Poor	1-Severe Decline	Trunk splitting	Yes	No	No	Low
972	Chinese Privet	*Ligustrum sinense*	11		18	Dirt	28	Fair	Fair	3-Fair		Yes	No	No	Low
973	Chinese Hackberry	*Celtis sinensis*	10		15	Dirt	20	Fair	Poor	2-Declining		Yes	No	No	Low
974	Chinese Pistache	*Pistacia chinensis*	6		12	Lawn	22	Fair	Fair	3-Fair		Yes	No	No	Moderate
975	Chinese Pistache	*Pistacia chinensis*	5		12	Lawn	22	Good	Fair	3-Fair		Yes	No	No	Moderate
976	Chinese Pistache	*Pistacia chinensis*	9		15	Lawn	25	Good	Good	4-Good		Yes	No	No	High
977	Chinese Pistache	*Pistacia chinensis*	6		12	Dirt	22	Good	Fair	3-Fair		Yes	No	No	Moderate
978	Chinese Pistache	*Pistacia chinensis*	8		16	Dirt	25	Fair	Fair	3-Fair		Yes	No	No	Moderate
979	Chinese Pistache	*Pistacia chinensis*	8		15	Dirt	28	Fair	Fair	3-Fair		Yes	No	No	Moderate
980	Chinese Pistache	*Pistacia chinensis*	11		16	Lawn	30	Good	Fair	3-Fair		Yes	No	No	Moderate
981	Chinese Pistache	*Pistacia chinensis*	11		20	Lawn	30	Fair	Good	3-Fair		Yes	No	No	Moderate
982	Chinese Pistache	*Pistacia chinensis*	9		15	Lawn	28	Fair	Fair	3-Fair		Yes	No	No	Moderate
983	Chinese Pistache	*Pistacia chinensis*	12		22	Lawn	35	Good	Good	4-Good		Yes	No	No	High
984	California Sycamore	*Platanus racemosa*	26		22	Lawn	55	Good	Fair	4-Good		Yes	Yes	No	Moderate
985	California Sycamore	*Platanus racemosa*	25		20	Lawn	47	Fair	Fair	3-Fair		Yes	Yes	No	Moderate
986	California Sycamore	*Platanus racemosa*	17		20	Lawn	50	Fair	Fair	3-Fair		Yes	Yes	No	Moderate
987	California Sycamore	*Platanus racemosa*	30		24	Lawn	60	Good	Good	4-Good		Yes	Yes	No	Moderate
988	Mulberry	*Morus* sp.	32		32	Wood Chips	40	Fair	Fair	3-Fair		Yes	No	No	Moderate
989	Chinese Hackberry	*Celtis sinensis*	16	6,6.5,3.4	12	Dirt	18	Poor	Fair	2-Declining		Yes	No	No	Low
990	Judas Tree	*Cercis siliquastrum*	7	4,2.7	8	Duff	12	Poor	Poor	1-Severe Decline	Nearly dead, heart rot	Yes	No	No	Low

APPENDIX C

Representative Site Photographs

Photo 1. View of trees along northern boundary, looking north-east. Photo taken November 10, 2022.

Photo 2. View of mulberry in playground, looking northwest. Photo taken November 10, 2022.

Photo 3. View of large interior live oak that will be preserved, looking east. Photo taken November 10, 2022.

Photo 4. View of zelkova along the eastern edge of the project, looking east. Photo taken November 10, 2022.

Appendix C Noise Analysis

Fundamentals of Noise

NOISE

Noise is most often defined as unwanted sound; whether it is loud, unpleasant, unexpected, or otherwise undesirable. Although sound can be easily measured, the perception of noise and the physical response to sound complicate the analysis of its impact on people. People judge the relative magnitude of sound sensation in subjective terms such as "noisiness" or "loudness."

Noise Descriptors

The following are brief definitions of terminology used in this chapter:

- **Sound.** A disturbance created by a vibrating object, which, when transmitted by pressure waves through a medium such as air, is capable of being detected by a receiving mechanism, such as the human ear or a microphone.

- **Noise.** Sound that is loud, unpleasant, unexpected, or otherwise undesirable.

- **Decibel (dB).** A unitless measure of sound, expressed on a logarithmic scale and with respect to a defined reference sound pressure. The standard reference pressure is 20 micropascals (20 μPa).

- **Vibration Decibel (VdB).** A unitless measure of vibration, expressed on a logarithmic scale and with respect to a defined reference vibration velocity. In the U.S., the standard reference velocity is 1 micro-inch per second ($1x10^{-6}$ in/sec).

- **A-Weighted Decibel (dBA).** An overall frequency-weighted sound level in decibels that approximates the frequency response of the human ear.

- **Equivalent Continuous Noise Level (L_{eq}); also called the Energy-Equivalent Noise Level.** The value of an equivalent, steady sound level which, in a stated time period (often over an hour) and at a stated location, has the same A-weighted sound energy as the time-varying sound. Thus, the L_{eq} metric is a single numerical value that represents the equivalent amount of variable sound energy received by a receptor over the specified duration.

- **Statistical Sound Level (L_n).** The sound level that is exceeded "n" percent of time during a given sample period. For example, the L_{50} level is the statistical indicator of the time-varying noise signal that is exceeded 50 percent of the time (during each sampling period); that is, half of the sampling time, the changing noise levels are above this value and half of the time they are below it. This is called the "median sound level." The L_{10} level, likewise, is the value that is exceeded 10 percent of the time (i.e., near the maximum) and this is often known as the "intrusive sound level." The L_{90} is the sound level exceeded 90 percent of the time and is often considered the "effective background level" or "residual noise level."

- **Maximum Sound Level (L_{max})**. The highest RMS sound level measured during the measurement period.
- **Root Mean Square Sound Level (RMS).** The square root of the average of the square of the sound pressure over the measurement period.
- **Day-Night Sound Level (L_{dn} or DNL).** The energy-average of the A-weighted sound levels occurring during a 24-hour period, with 10 dB added to the sound levels occurring during the period from 10:00 PM to 7:00 AM.
- **Community Noise Equivalent Level (CNEL).** The energy average of the A-weighted sound levels occurring during a 24-hour period, with 5 dB added from 7:00 PM to 10:00 PM and 10 dB from 10:00 PM to 7:00 AM. NOTE: For general community/environmental noise, CNEL and L_{dn} values rarely differ by more than 1 dB (with the CNEL being only slightly more restrictive – that is, higher than the L_{dn} value). As a matter of practice, L_{dn} and CNEL values are interchangeable and are treated as equivalent in this assessment.
- **Peak Particle Velocity (PPV).** The peak rate of speed at which soil particles move (e.g., inches per second) due to ground vibration.
- **Sensitive Receptor.** Noise- and vibration-sensitive receptors include land uses where quiet environments are necessary for enjoyment and public health and safety. Residences, schools, motels and hotels, libraries, religious institutions, hospitals, and nursing homes are examples.

Characteristics of Sound

When an object vibrates, it radiates part of its energy in the form of a pressure wave. Sound is that pressure wave transmitted through the air. Technically, airborne sound is a rapid fluctuation or oscillation of air pressure above and below atmospheric pressure that creates sound waves.

Sound can be described in terms of amplitude (loudness), frequency (pitch), or duration (time). Loudness or amplitude is measured in dB, frequency or pitch is measured in Hertz [Hz] or cycles per second, and duration or time variations is measured in seconds or minutes.

Amplitude

Unlike linear units such as inches or pounds, decibels are measured on a logarithmic scale. Because of the physical characteristics of noise transmission and perception, the relative loudness of sound does not closely match the actual amounts of sound energy. Table 1 presents the subjective effect of changes in sound pressure levels. Ambient sounds generally range from 30 dBA (very quiet) to 100 dBA (very loud). Changes of 1 to 3 dB are detectable under quiet, controlled conditions, and changes of less than 1 dB are usually not discernible (even under ideal conditions). A 3 dB change in noise levels is considered the minimum change that is detectable with human hearing in outside environments. A change of 5 dB is readily discernible to most people in an exterior environment, and a 10 dB change is perceived as a doubling (or halving) of the sound.

Table 1 Noise Perceptibility

Change in dB	Noise Level
± 3 dB	Barely perceptible increase
± 5 dB	Readily perceptible increase
± 10 dB	Twice or half as loud
± 20 dB	Four times or one-quarter as loud

Source: California Department of Transportation (Caltrans). 2013, September. Technical Noise Supplement ("TeNS").

Frequency

The human ear is not equally sensitive to all frequencies. Sound waves below 16 Hz are not heard at all, but are "felt" more as a vibration. Similarly, though people with extremely sensitive hearing can hear sounds as high as 20,000 Hz, most people cannot hear above 15,000 Hz. In all cases, hearing acuity falls off rapidly above about 10,000 Hz and below about 200 Hz.

When describing sound and its effect on a human population, A-weighted (dBA) sound levels are typically used to approximate the response of the human ear. The A-weighted noise level has been found to correlate well with people's judgments of the "noisiness" of different sounds and has been used for many years as a measure of community and industrial noise. Although the A-weighted scale and the energy-equivalent metric are commonly used to quantify the range of human response to individual events or general community sound levels, the degree of annoyance or other response also depends on several other perceptibility factors, including:

- Ambient (background) sound level
- General nature of the existing conditions (e.g., quiet rural or busy urban)
- Difference between the magnitude of the sound event level and the ambient condition
- Duration of the sound event
- Number of event occurrences and their repetitiveness
- Time of day that the event occurs

Duration

Time variation in noise exposure is typically expressed in terms of a steady-state energy level equal to the energy content of the time varying period (called L_{eq}), or alternately, as a statistical description of the sound level that is exceeded over some fraction of a given observation period. For example, the L_{50} noise level represents the noise level that is exceeded 50 percent of the time; half the time the noise level exceeds this level and half the time the noise level is less than this level. This level is also representative of the level that is exceeded 30 minutes in an hour. Similarly, the L_2, L_8 and L_{25} values represent the noise levels that are exceeded 2, 8, and 25 percent of the time or 1, 5, and 15 minutes per hour, respectively. These "n" values are typically used to demonstrate compliance for stationary noise sources with many cities' noise ordinances. Other values typically noted during a noise survey are the L_{min} and L_{max}. These values represent the minimum and maximum root-mean-square noise levels obtained over the measurement period, respectively.

Because community receptors are more sensitive to unwanted noise intrusion during the evening and at night, state law and many local jurisdictions use an adjusted 24-hour noise descriptor called the Community Noise Equivalent Level (CNEL) or Day-Night Noise Level (L_{dn}). The CNEL descriptor requires that an artificial increment (or "penalty") of 5 dBA be added to the actual noise level for the hours from 7:00 PM to 10:00

PM and 10 dBA for the hours from 10:00 PM to 7:00 AM. The L_{dn} descriptor uses the same methodology except that there is no artificial increment added to the hours between 7:00 PM and 10:00 PM. Both descriptors give roughly the same 24-hour level, with the CNEL being only slightly more restrictive (i.e., higher). The CNEL or L_{dn} metrics are commonly applied to the assessment of roadway and airport-related noise sources.

Sound Propagation

Sound dissipates exponentially with distance from the noise source. This phenomenon is known as "spreading loss." For a single-point source, sound levels decrease by approximately 6 dB for each doubling of distance from the source (conservatively neglecting ground attenuation effects, air absorption factors, and barrier shielding). For example, if a backhoe at 50 feet generates 84 dBA, at 100 feet the noise level would be 79 dBA, and at 200 feet it would be 73 dBA. This drop-off rate is appropriate for noise generated by on-site operations from stationary equipment or activity at a project site. If noise is produced by a line source, such as highway traffic, the sound decreases by 3 dB for each doubling of distance over a reflective ("hard site") surface such as concrete or asphalt. Line source noise in a relatively flat environment with ground-level absorptive vegetation decreases by an additional 1.5 dB for each doubling of distance.

Psychological and Physiological Effects of Noise

Physical damage to human hearing begins at prolonged exposure to noise levels higher than 85 dBA. Exposure to high noise levels affects the entire system, with prolonged noise exposure in excess of 75 dBA increasing body tensions, thereby affecting blood pressure and functions of the heart and the nervous system. Extended periods of noise exposure above 90 dBA results in permanent cell damage, which is the main driver for employee hearing protection regulations in the workplace. For community environments, the ambient or background noise problem is widespread, through generally worse in urban areas than in outlying, less-developed areas. Elevated ambient noise levels can result in noise interference (e.g., speech interruption/masking, sleep disturbance, disturbance of concentration) and cause annoyance. Since most people do not routinely work with decibels or A-weighted sound levels, it is often difficult to appreciate what a given sound pressure level number means. To help relate noise level values to common experience, Table 2 shows typical noise levels from familiar sources.

Table 2 Typical Noise Levels

Common Outdoor Activities	Noise Level (dBA)	Common Indoor Activities
Onset of physical discomfort	120+	
	110	Rock Band (near amplification system)
Jet Flyover at 1,000 feet		
	100	
Gas Lawn Mower at three feet		
	90	
Diesel Truck at 50 feet, at 50 mph		Food Blender at 3 feet
	80	Garbage Disposal at 3 feet
Noisy Urban Area, Daytime		
	70	Vacuum Cleaner at 10 feet
Commercial Area		Normal speech at 3 feet
Heavy Traffic at 300 feet	60	
		Large Business Office
Quiet Urban Daytime	50	Dishwasher Next Room
Quiet Urban Nighttime	40	Theater, Large Conference Room (background)
Quiet Suburban Nighttime		
	30	Library
Quiet Rural Nighttime		Bedroom at Night, Concert Hall (background)
	20	
		Broadcast/Recording Studio
	10	
Lowest Threshold of Human Hearing	0	Lowest Threshold of Human Hearing

Source: California Department of Transportation (Caltrans). 2013, September. Technical Noise Supplement ("TeNS").

Vibration Fundamentals

Vibration is an oscillatory motion through a solid medium in which the motion's amplitude can be described in terms of displacement, velocity, or acceleration. Vibration is normally associated with activities stemming from operations of railroads or vibration-intensive stationary sources, but can also be associated with construction equipment such as jackhammers, pile drivers, and hydraulic hammers. As with noise, vibration can be described by both its amplitude and frequency. Vibration displacement is the distance that a point on a surface moves away from its original static position; velocity is the instantaneous speed that a point on a surface moves; and acceleration is the rate of change of the speed. Each of these descriptors can be used to correlate vibration to human response, building damage, and acceptable equipment vibration levels. During construction, the operation of construction equipment can cause groundborne vibration. During the operational phase of a project, receptors may be subject to levels of vibration that can cause annoyance due to noise generated from vibration of a structure or items within a structure.

Vibration amplitudes are usually described in terms of either the peak particle velocity (PPV) or the root mean square (RMS) velocity. PPV is the maximum instantaneous peak of the vibration signal and RMS is the

square root of the average of the squared amplitude of the signal. PPV is more appropriate for evaluating potential building damage and RMS is typically more suitable for evaluating human response.

As with airborne sound, annoyance with vibrational energy is a subjective measure, depending on the level of activity and the sensitivity of the individual. To sensitive individuals, vibrations approaching the threshold of perception can be annoying. Persons accustomed to elevated ambient vibration levels, such as in an urban environment, may tolerate higher vibration levels. Table 3 displays the human response and the effects on buildings resulting from continuous vibration (in terms of various levels of PPV).

Table 3 Human Reaction to Typical Vibration Levels

Vibration Level, PPV (in/sec)	Human Reaction	Effect on Buildings
0.006–0.019	Threshold of perception, possibility of intrusion	Vibrations unlikely to cause damage of any type
0.08	Vibrations readily perceptible	Recommended upper level of vibration to which ruins and ancient monuments should be subjected
0.10	Level at which continuous vibration begins to annoy people	Virtually no risk of "architectural" (i.e. not structural) damage to normal buildings
0.20	Vibrations annoying to people in buildings	Threshold at which there is a risk to "architectural" damage to normal dwelling – houses with plastered walls and ceilings
0.4–0.6	Vibrations considered unpleasant by people subjected to continuous vibrations and unacceptable to some people walking on bridges	Vibrations at a greater level than normally expected from traffic, but would cause "architectural" damage and possibly minor structural damage

Source: California Department of Transportation (Caltrans). 2020, April. *Transportation and Construction Vibration Guidance Manual.* Prepared by ICF International.

LOCAL REGULATIONS AND STANDARDS

General Plan

Noise Element

Adopted December 15, 1993
Amended November 9, 2011
Amended December 13, 2017
Amended December 13, 2022

County of Sacramento
Office of Planning and Environmental Review

This page blank.

Table of Contents

This page blank.

SACRAMENTO COUNTY GENERAL PLAN
NOISE ELEMENT

SECTION I

INTRODUCTION

Purpose of the Noise Element

The Noise Element of the Sacramento County General Plan provides a basis for comprehensive local policies to control and abate environmental noise and to protect the citizens of Sacramento County from excessive noise exposure. The fundamental goals of the Noise Element are as follows:

- To provide sufficient information concerning the community noise environment so that noise may be effectively considered in the land use planning process.

- To develop strategies for abating excessive noise exposure through cost-effective mitigation measures in combination with appropriate zoning to avoid incompatible land uses.

- To protect those existing regions of the planning area whose noise environments are deemed acceptable and also those locations throughout the community deemed "noise sensitive".

- To protect existing noise-producing commercial and industrial uses in Sacramento County from encroachment by noise-sensitive land uses.

Noise Element Requirements

The noise element requirements contained in California Government Code Section 65302(f) are summarized as follows:

- A noise element shall identify and appraise noise problems in the community. The noise element shall recognize the guidelines established by the Office of Noise Control in the State Department of Health Services and shall analyze and quantify, to the extent practicable, as determined by the legislative body, current and projected noise levels for all major sources of noise within the County.

- Noise contours shall be shown for major noise sources and stated in terms of the day/night average level (Ldn) or other appropriate noise descriptors. The noise contours shall be prepared on the basis of noise monitoring or following generally accepted noise modeling techniques for the various sources identified above.

- The noise contours shall be used as a guide for establishing a pattern of land uses in the land use element that minimizes the exposure of community residents to excessive noise. The noise element shall include policies, implementation measures and possible solutions that address existing and foreseeable noise problems, if any.

Acoustical Terminology

Acoustics The science of sound.

Ambient Noise The distinctive acoustical characteristics of a given area consisting of all noise sources audible at that location. In many cases, the term ambient is used to describe an existing or pre-project condition such as the setting in an environmental noise study.

Attenuation The reduction of noise.

A-Weighting A frequency-response adjustment of a sound level meter that conditions the output signal to approximate human response. All noise level measurements and noise standards associated with this Noise Element are provided in terms of A-weighted sound levels.

Capacity Enhancing A roadway project which would increase roadway capacity. Examples include new roadway construction projects or widening projects. Projects which only re-stripe or otherwise alter roadway configuration without increasing capacity are not included in this definition

CNEL Community Noise Equivalent Level. Defined as the 24-hour average noise level with noise occurring during evening hours (7 - 10 p.m.) weighted by a factor of three and nighttime hours weighted by a factor of 10 prior to averaging.

Decibel or dB Fundamental unit of sound, defined as ten times the logarithm of the ratio of the sound pressure squared over the reference pressure squared.

Frequency The measure of the rapidity of alterations of a periodic acoustic signal, expressed in cycles per second or Hertz.

Infill Project A project which is consistent with the General Plan Land Use Map designations, zoning, and community plan for the property in which at least 50% of the project site is bounded by similar uses and a project which would not expand the perimeter of the development area.

Ldn Day/Night Average Sound Level. Similar to CNEL but with no evening weighting.

Leq Equivalent or energy-averaged sound level.

L50 Median noise level, or level exceeded 50% of time.

Lmax The highest root-mean-square (RMS) sound level measured over a given period of time.

Loudness A subjective term for the sensation of the magnitude of sound.

Noise Unwanted sound.

Noise Reducing Pavement

Pavement types for which local studies have identified noise-reducing benefits.

Sensitive Outdoor Areas

The primary outdoor activity area associated with any given land use at which noise-sensitivity exists and the location at which the County's exterior noise level standards are applied.

Single-Family Residential Uses: Normally considered to be back yard spaces, or distinct rear patio/deck areas of single-family residential uses. Front yard spaces, elevated balconies front courtyards, front decks, side yards, etc., are not commonly considered to be sensitive outdoor activity areas. Where the location of outdoor activity areas for large lot residential properties cannot be determined, the County's exterior noise level standards shall be applied within 50 feet of the rear of the residence.

Multi-family Residential Uses: Common outdoor recreation areas, such as pools, tot-lots, tennis courts, etc., of multi-family uses are considered to be the sensitive outdoor area. Individual patios and balconies of multi-family developments are not considered to be sensitive outdoor areas.

Residential Component of Mixed-Use Developments: Mixed use developments will commonly consist of residential units on elevated floors above office or commercial uses. As a result, such uses may not include a clearly delineated sensitive outdoor area, in which case satisfaction with the County's interior noise level standards will be considered adequate.

Small Lot Detached Single Family Developments: In higher density detached single family residential developments (RD-10 or greater density), outdoor activity areas may be small patios or courtyards, or the development may not propose outdoor areas. If small lot developments provide a common outdoor recreation area for the residents of the community (much like an apartment complex), the standards of the Noise Element shall be applied at that location. Otherwise, the standards shall be applied at individual patio/courtyard areas of these developments.

Fundamentals of Noise

Noise is often described as unwanted sound. Sound is defined as any pressure variation in air that the human ear can detect. If the pressure variations occur frequently enough (at least 20 times per second) they can be heard and hence are called sound. The number of pressure variations per second is called the frequency of sound, and is expressed as cycles per second, called Hertz (Hz).

Measuring sound directly in terms of pressure would require a very large and awkward range of numbers. To avoid this, the decibel scale was devised. The decibel scale uses the hearing threshold (20 micropascals), as a point of reference, defined as 0 dB. Other sound pressures are then compared to the reference pressure, and the logarithm is taken to keep the numbers in a practical range. The decibel scale allows a million-fold increase in pressure to be expressed as 120 dB. Another useful aspect of the decibel scale is that changes in levels (dB) correspond closely to human perception of relative loudness. Figure 1 shows examples of noise levels for several common noise sources and environments.

The perceived loudness of sounds is dependent upon many factors, including sound pressure level and frequency content. However, within the usual range of environmental noise levels, perception of loudness is relatively predictable, and can be approximated by weighing the frequency response of a sound level meter by means of the standardized A-weighing network. There is a strong correlation between A-weighted sound levels (expressed as dBA) and community response to noise. For this reason, the A-weighted sound level has become the standard tool of environmental noise assessment. All noise levels reported in this document are in terms of A-weighted levels.

Community noise is commonly described in terms of the “ambient” noise level, which is defined as the all-encompassing noise level associated with a given noise environment. A common statistical tool to measure the ambient noise level is the average, or equivalent, sound level (Leq), which corresponds to a steady-state A-weighted sound level containing the same total energy as a time-varying signal over a given time period (usually one hour). The Leq is the foundation of the composite noise descriptor, Ldn, and shows very good correlation with community response to noise.

The Day-Night Average Level (Ldn) is based upon the average noise level over a 24-hour day, with a +10 decibel weighing applied to noise occurring during nighttime (10:00 p.m. to 7:00 a.m.) hours. The nighttime penalty is based upon the assumption that people react to nighttime noise exposures as though they were twice as loud as daytime exposures. Because Ldn represents a 24-hour average, it tends to disguise short-term variations in the noise environment.

TABLE 1

TYPICAL A-WEIGHTED SOUND LEVELS OF COMMON NOISE SOURCES

Loudness Ratio Level	A-Weighted Sound Level (dBA)	
128	130	Threshold of pain
64	120	Jet aircraft take-off at 100 feet
32	110	Riveting machine at operators position
16	100	Cut-off saw at operators position
8	90	Bulldozer at 50 feet
4	80	Diesel locomotive at 300 feet
2	70	Commercial jet aircraft interior during flight
1	60	Normal conversation speech at 5-10 feet
1/2	50	Open office background level
1/4	40	Background level within a residence
1/8	30	soft whisper at 2 feet
1/16	20	Interior of recording studio

Noise in the community has been characterized as a health problem, not in terms of actual physiological damages such as hearing impairment, but in terms of inhibiting general well-being and contributing to undue stress and annoyance. The health effects of noise in the community arise from interference with human activities such as sleep, speech, recreation and tasks demanding concentration or coordination. When community noise interferes with human activities or contributes to stress, public annoyance with the noise source increases, the acceptability of the environment for people decreases. This decrease in acceptability and the threat to public well-being are the bases for land use planning policies preventing exposures to excessive community noise levels.

To control noise from fixed sources which have developed from processes other than zoning or land use planning, many jurisdictions have adopted community noise control ordinances. Such ordinances are intended to abate noise nuisances and to control noise from existing sources. They may also be used as performance standards to judge the creation of a potential nuisance, or potential encroachment of sensitive uses upon noise-producing facilities. Community noise control ordinances are generally designed to resolve noise problems on a short-term basis (usually by means of hourly noise level criteria), rather than on the basis of 24-hour or annual cumulative noise exposures.

In addition to the A-weighted noise level, other factors should be considered in establishing criteria for noise sensitive land uses. For example, sounds with noticeable tonal content such as whistles, horns, droning or high-pitched sounds may be more annoying than the A-weighted sound level alone suggests. Many noise standards apply a penalty, or correction, of 5 dBA to such sounds. The effects of unusual tonal content are generally more of a concern at nighttime, when residents may notice the sound in contrast to low levels of background noise.

Because many rural residential areas experience very low noise levels, residents may express concern about the loss of "peace and quiet" due to the introduction of a sound which was not audible previously. In very quiet environments, the introduction of virtually any change in local activities will cause an increase in noise levels. A change in noise level and the loss of "peace and quiet" is the inevitable result of land use or activity changes in such areas. Audibility of a new noise source and/or increases in noise levels within recognized acceptable limits are not usually considered to be significant noise impacts, but these concerns should be addressed and considered in the planning and environmental review processes.

Background on Criteria for Acceptable Noise Exposure

The State Office of Planning and Research (OPR) Noise Element Guidelines include recommended exterior and interior noise level standards for local jurisdictions to identify and prevent the creation of incompatible land uses due to noise. The OPR guidelines contain a land use compatibility table which describes the compatibility of different land uses with a range of environmental noise levels in terms of Ldn. A noise environment of 60 dB Ldn or less is considered to be normally acceptable for residential uses according to those guidelines.

The U.S. Environmental Protection Agency (EPA) also offers guidelines for community noise exposure in the publication "Information on the Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety". These guidelines consider occupational noise exposure as well as noise exposure in the home. The "Levels Document" recognizes an exterior noise level of 55 dB Ldn as a goal to protect the public from hearing loss, activity interference, sleep disturbance and annoyance. The EPA notes, however, that this level is not a regulatory goal, but is a level defined by a negotiated scientific consensus without concern for economic and technological feasibility or the needs and desires of any particular community. The EPA and other Federal agencies have suggested land use compatibility guidelines which indicate that residential noise exposures of 55 to 65 dB Ldn are acceptable.

The U.S. Environmental Protection Agency has also prepared a Model Community Noise Control Ordinance, using Leq as the means of defining allowable residential noise level limits. The EPA model contains no specific recommendations for local noise level standards, but reports a range of Leq values as adopted by various local jurisdictions. The mean daytime residential noise standard reported by the EPA is 57 dBA (Leq); the mean nighttime residential noise standard is 52 dBA (Leq). Other state laws and regulations regarding noise control are directed towards aircraft, motor vehicles and noise in general.

The California Vehicle Code sets noise emission standards for new vehicles including autos, trucks, motorcycles and off-road vehicles. Performance standards also apply to all vehicles operated on public streets and roadways. Section 216 of the Streets and Highways Code regulates traffic noise received at schools near freeways.

This page blank.

SACRAMENTO COUNTY GENERAL PLAN
NOISE ELEMENT

SECTION II

NOISE ELEMENT GOALS AND POLICIES

GOAL 1 **To protect the existing and future citizens of Sacramento County from the harmful effects of exposure to excessive noise. More specifically, to protect existing noise-sensitive land uses from new uses that would generate noise levels which are incompatible with those uses, and to discourage new noise-sensitive land uses from being developed near sources of high noise levels.**

GOAL 2 **To protect the economic base of Sacramento County by preventing the encroachment of noise-sensitive land uses into areas affected by existing noise-producing uses. More specifically, to recognize that noise is an inherent by-product of many land uses and to prevent new noise-sensitive land uses from being developed in areas affected by existing noise-producing uses.**

GOAL 3 **To provide the County with flexibility in the development of infill properties which may be located in elevated noise environments.**

GOAL 4 **To provide sufficient noise exposure information so that existing and potential future noise impacts may be effectively addressed in the land use planning and project review processes.**

Traffic And Railroad Noise Sources

NO-1. The noise level standards for noise-sensitive areas of ***new*** uses affected by traffic or railroad noise sources in Sacramento County are shown by Table 1. Where the noise level standards of Table 1 are predicted to be exceeded at new uses proposed within Sacramento County which are affected by traffic or railroad noise, appropriate noise mitigation measures shall be included in the project design to reduce projected noise levels to a state of compliance with the Table 1 standards.

Aircraft Noise Sources

NO-2. Proposals for new development within Sacramento County which may be affected by aircraft noise shall be evaluated relative to Table 4: *Land Use Compatibility for Aircraft Noise*, except in the following cases. Development proposals which may be affected by aircraft noise from Sacramento International Airport shall be evaluated relative to the Land Use Compatibility Plan prepared for Sacramento International Airport dated December 12, 2013, adopted herein by reference. Development proposals which may be affected by aircraft noise from Mather Airport shall be evaluated relative to the Land Use Compatibility Plan prepared for Mather airport dated February 2021, adopted herein reference, as well as applicable footnotes in Table 4.

NO-3. New residential development within the 60 CNEL noise contours adopted by the County for land use planning purposes at any airport or Helipad within Sacramento County shall be prohibited unless exceptions set forth in Table 4 below are found to be applicable. This policy is not applicable to Executive Airport.

NO-4. New residential development within adopted Airport Policy Area boundaries, but outside the 60 CNEL, shall be subject to the following conditions:

A. Provide minimum noise insulation to 45 dB CNEL within new residential dwellings, including detached single family dwellings, with windows closed in any habitable room.

B. Notification in the Public Report prepared by the California Department of Real Estate disclosing the fact to prospective buyers that the parcel is located within an Airport Policy Area.

C. An Avigation Easement prepared by the Sacramento County Counsel's Office granted to the County of Sacramento, recorded with the Sacramento County Recorder, and filed with Department of Airports. Such Avigation Easement shall acknowledge the property location within an Airport Planning Policy Area and shall grant the right of flight and unobstructed passage of all aircraft into and out of the subject Airport.

Exceptions: New accessory residential dwellings on parcels zoned Agricultural, Agricultural-Residential, Interim Agricultural, Interim General Agricultural, or Interim Limited Agricultural and between the 60 and 65 CNEL contours, shall be permitted within adopted Airport Policy Area boundaries, but would be subject to the conditions listed above.

Non-Transportation Noise Sources

NO-5. The interior and exterior noise level standards for noise-sensitive areas of new uses affected by existing non-transportation noise sources in Sacramento County are shown by Table 2. Where the noise level standards of Table 2 are predicted to be exceeded at a proposed noise-sensitive area due to existing non-transportation noise sources, appropriate noise mitigation measures shall be included in the project design to reduce projected noise levels to a state of compliance with the Table 2 standards within sensitive areas.

NO-6. Where a project would consist of or include non-transportation noise sources, the noise generation of those sources shall be mitigated so as not exceed the interior and exterior noise level standards of Table 2 at existing noise-sensitive areas in the project vicinity.

NO-7. The "last use there" shall be responsible for noise mitigation. However, if a noise-generating use is proposed adjacent to lands zoned for uses which may have sensitivity to noise, then the noise generating use shall be responsible for mitigating its noise generation to a state of compliance with the Table 2 standards at the property line of the generating use in anticipation of the future neighboring development.

Construction Noise

NO-8. Noise associated with construction activities shall adhere to the County Code requirements. Specifically, Section 6.68.090(e) addresses construction noise within the County.

Transportation Projects

NO-9. For capacity enhancing roadway or rail projects, or the construction of new roadways or railways, a noise analysis shall be prepared in accordance with the Table 3 requirements. If projected post-project traffic noise levels at existing uses exceed the noise standards of Table 1, then feasible methods of reducing noise to levels consistent with the Table 1 standards shall be analyzed as part of the noise analysis. In the case of existing residential uses, sensitive outdoor areas shall be mitigated to 60 dB, when possible, through the application of feasible methods to reduce noise. If 60 dB cannot be achieved after the application of all feasible methods of reducing noise, then noise levels up to 65 dB are allowed.

If pre-project traffic noise levels for existing uses already exceed the noise standards of Table 1 and the increase is significant as defined below, feasible methods of reducing noise to levels consistent with the Table 1 standards should be applied. In no case shall the long-term noise exposure for non-industrial uses be greater than 75 dB; long-term noise exposure above this level has the potential to result in hearing loss.

A significant increase is defined as follows:

Pre-Project Noise Environment (Ldn)	Significant Increase
Less than 60 dB	5+ dB
60 - 65 dB	3+ dB
Greater than 65 dB	1.5+ dB

NO-10. For interim capacity enhancing roadway or rail projects, or the construction of new interim roadways or railways, it may not be practical or feasible to provide mitigation if the ultimate roadway or railway design would render the interim improvements ineffective or obsolete. An example would be a noise barrier constructed for an interim project which would need to be removed to accommodate the ultimate project. The following factors should be considered in determining whether or not noise mitigation will be implemented for interim projects, but in general, noise mitigation for interim projects would not be provided:

a. The severity of the impact
b. The cost and effectiveness of the mitigation.
c. The number of properties which would benefit from the mitigation.
d. The foreseeable duration between interim and ultimate improvements.
e. Aesthetic, safety and engineering considerations.

NO-11. If noise-reducing pavement is to be utilized in conjunction with a roadway improvement project, of if such paving existing adjacent to a proposed new noise-sensitive land use, the acoustical benefits of such pavement shall be included in the noise analysis prepared for the project.

General Noise Policy

NO-12. All noise analyses prepared to determine compliance with the noise level standards contained within this Noise Element shall be prepared in accordance with Table 3.

NO-13. Where noise mitigation measures are required to satisfy the noise level standards of this Noise Element, emphasis shall be placed on the use of setbacks and site design to the extent feasible, prior to consideration of the use of noise barriers.

NO-14. Noise analyses prepared for multi-family residential projects, town homes, mixed-use, condominiums, or other residential projects where floor ceiling assemblies or party-walls shall be common to different owners/occupants, shall be consistent with the State of California Noise Insulation standards.

NO-15. The County shall have the flexibility to consider the application of 5 dB less

restrictive exterior noise standards than those prescribed in Tables 1 and 2 in cases where it is impractical or infeasible to reduce exterior noise levels within infill projects to a state of compliance with the Table 1 or 2 standards. In such cases, the rational for such consideration shall be clearly presented and disclosure statements and noise easements should be included as conditions of project approval. The interior noise level standards of Tables 1 and 2 would still apply. The maximum allowable long-term noise exposure permissible for non-industrial uses is 75 dB.

Exemptions

NO-16. The following sources of noise shall be exempt from the provisions of this Noise Element:

a. Emergency warning devices and equipment operated in conjunction with emergency situations, such as sirens and generators which are activated during power outages. The routine testing of such warning devices and equipment shall also be exempt provided such testing occurs during daytime hours.

b. Activities associated with events for which a permit has been obtained from the County.

Table 1
Noise Standards for New Uses Affected by Traffic and Railroad Noise
Sacramento County Noise Element

New Land Use	Sensitive[1] Outdoor Area - Ldn	Sensitive Interior[2] Area - Ldn	Notes
All Residential	65	45	5
Transient Lodging	65	45	3,5
Hospitals & Nursing Homes	65	45	3, 4, 5
Theaters & Auditoriums	---	35	3
Churches, Meeting Halls	65	40	3
Schools, Libraries, etc.	65	40	3
Office Buildings	65	45	3
Commercial Buildings	---	50	3
Playgrounds, Parks, etc.	70	---	
Industry	65	50	3

Notes:

1. Sensitive areas are defined in acoustic terminology section.
2. Interior noise level standards are applied within noise-sensitive areas of the various land uses, with windows and doors in the closed positions.
3. Where there are no sensitive exterior spaces proposed for these uses, only the interior noise level standard shall apply.
4. Hospitals are often noise-generating uses. The exterior noise level standards for hospitals are applicable only at clearly identified areas designated for outdoor relaxation by either hospital staff or patients.
5. If this use is affected by railroad noise, a maximum (Lmax) noise level standard of 70 dB shall be applied to all sleeping rooms to reduce the potential for sleep disturbance during nighttime train passages.

Table 2
Non-Transportation Noise Standards
Sacramento County Noise Element
Median (L50) / Maximum (Lmax)[1]

Receiving Land Use	Outdoor Area[2] Daytime	Outdoor Area[2] Nighttime	Interior[3] Day & Night	Notes
All Residential	55 / 75	50 / 70	35 / 55	
Transient Lodging	55 / 75	---	35 / 55	4
Hospitals & Nursing Homes	55 / 75	---	35 / 55	5, 6
Theaters & Auditoriums	---	---	30 / 50	6
Churches, Meeting Halls, Schools, Libraries, etc.	55 / 75	---	35 / 60	6
Office Buildings	60 / 75	---	45 / 65	6
Commercial Buildings	---	---	45 / 65	6
Playgrounds, Parks, etc.	65 / 75	---	---	6
Industry	60 / 80	---	50 / 70	6

Notes:

1. The Table 2 standards shall be reduced by 5 dB for sounds consisting primarily of speech or music, and for recurring impulsive sounds. If the existing ambient noise level exceeds the standards of Table 2, then the noise level standards shall be increased at 5 dB increments to encompass the ambient.
2. Sensitive areas are defined acoustic terminology section.
3. Interior noise level standards are applied within noise-sensitive areas of the various land uses, with windows and doors in the closed positions.
4. Outdoor activity areas of transient lodging facilities are not commonly used during nighttime hours.
5. Hospitals are often noise-generating uses. The exterior noise level standards for hospitals are applicable only at clearly identified areas designated for outdoor relaxation by either hospital staff or patients.
6. The outdoor activity areas of these uses (if any), are not typically utilized during nighttime hours.
7. Where median (L50) noise level data is not available for a particular noise source, average (Leq) values may be substituted for the standards of this table provided the noise source in question operates for at least 30 minutes of an hour. If the source in question operates less than 30 minutes per hour, then the maximum noise level standards shown would apply.

Table 3
Requirements for Acoustical Analyses Prepared in Sacramento County

An acoustical analysis prepared pursuant to the Noise Element shall:

1. Be the responsibility of the applicant.
2. Be prepared by qualified persons experienced in the fields of environmental noise assessment and architectural acoustics.
3. Include representative noise level measurements with sufficient sampling periods and locations to adequately describe local conditions.
4. Estimate projected future (20 year) noise levels in terms of the Standards of Tables 1 and 2, and compare those levels to the adopted policies of the Noise Element.
5. Recommend appropriate mitigation to achieve compliance with the adopted policies and standards of the Noise Element.
6. Estimate interior and exterior noise exposure after the prescribed mitigation measures have been implemented.

Table 4

Land Use Compatibility for Airport Noise for all public use airports except for Sacramento International Airport. In the case of Sacramento International Airport, use the Land Use Compatibility Plan prepared for Sacramento International Airport dated December 12, 2013, adopted herein by reference. In the case of Mather Airport, use the Land Use Compatibility Plan prepared for Mather Airport dated February 2021, adopted herein by reference, and applicable footnotes below.

Land Use Designation	60-65 CNEL	65-70 CNEL	70-75 CNEL	75-80 CNEL	80-85 CNEL
RESIDENTIAL[1,7]					
• Single-family detached[2]	No[6]	No	No	No	No
• Two-family dwelling	No[6]	No	No	No	No
• Multi-family dwelling (3+ families)	No[6]	No	No	No	No
• Group Quarters & Rooming Houses	No[6]	No	No	No	No
• Mobile Home Parks or Courts	No[6]	No	No	No	No
• Agricultural/Residential (min. 2ac parcel size)	Yes[6,8]	Yes[6,8]	No	No	No
INDUSTRIAL MANUFACTURING					
• Food and kindred products	Yes	Yes	Yes[3]	Yes[3]	Yes[3]
• Textiles and apparel	Yes	Yes	Yes[3]	Yes[3]	Yes[3]
• Transportation equipment	Yes	Yes	Yes[3]	Yes[3]	Yes[3]
• Lumber and wood products	Yes	Yes	Yes[3]	Yes[3]	Yes[3]
• Furniture and fixtures	Yes	Yes	Yes[3]	Yes[3]	Yes[3]
• Paper and allied products	Yes	Yes	Yes[3]	Yes[3]	Yes[3]
• Printing and publishing	Yes	Yes	Yes[3]	Yes[3]	Yes[3]
• Chemicals and allied products	Yes	Yes	Yes[3]	Yes[3]	Yes[3]
• Asphalt paving and miscellaneous petroleum	Yes	Yes	Yes[3]	Yes[3]	Yes[3]
• Petroleum refining	Yes	Yes	Yes[3]	Yes[3]	Yes[3]
• Rubber and plastics	Yes	Yes	Yes[3]	Yes[3]	Yes[3]
• Stone, glass, clay, and concrete products	Yes	Yes	Yes[3]	Yes[3]	Yes[3]
• Primary and fabricated metals	Yes	Yes	Yes[3]	Yes[3]	Yes[3]
• Electrical and electronic equipment	Yes	Yes	Yes[3]	Yes[3]	Yes[3]
• Leather products	Yes	Yes	Yes[3]	Yes[3]	Yes[3]
• Industrial, commercial, & computer equipment	Yes	Yes	Yes[3]	Yes[3]	Yes[3]
• Photo, optical and medical equipment	Yes	Yes	Yes[3]	Yes[3]	Yes[3]
• Miscellaneous manufacturing	Yes	Yes	Yes[3]	Yes[3]	Yes[3]
TRANSPORTATION, COMMUNICATIONS, & UTILITIES					

Table 4

Land Use Compatibility for Airport Noise for all public use airports except for Sacramento International Airport. In the case of Sacramento International Airport, use the Land Use Compatibility Plan prepared for Sacramento International Airport dated December 12, 2013, adopted herein by reference. In the case of Mather Airport, use the Land Use Compatibility Plan prepared for Mather Airport dated February 2021, adopted herein by reference, and applicable footnotes below.

Land Use Designation	60-65 CNEL	65-70 CNEL	70-75 CNEL	75-80 CNEL	80-85 CNEL
• Streets, roads, and highways	Yes	Yes	Yes	Yes	Yes
• Heavy rail lines: freight and passenger	Yes	Yes	Yes[3]	Yes[3]	Yes[3]
• Light rail lines: passenger	Yes	Yes	Yes[3]	Yes[3]	Yes[3]
• Trucking and rail freight terminals	Yes	Yes	Yes[3]	Yes[3]	Yes[3]
• Warehousing and storage	Yes	Yes	Yes[3]	Yes[3]	Yes[3]
• Passenger terminals and stations	Yes	Yes	Yes[3]	Yes[3]	No
• Water transportation: freight and passenger	Yes	Yes	Yes[3]	Yes[3]	No
• Parking lots	Yes	Yes	Yes[3]	Yes[3]	Yes
• Transportation services	Yes	Yes	Yes[3]	Yes[3]	No
• Radio, television, and telephone	Yes	Yes	Yes[3]	Yes[3]	No
• Cellular radio transmission antenna	Yes	Yes	Yes[3]	Yes[3]	Yes[3]
• Courier service	Yes	Yes	Yes[3]	Yes[3]	No
• Electrical and natural gas generation and switching	Yes	Yes	Yes[3]	Yes[3]	Yes[3],[7]
• Natural gas and petroleum pipelines and storage	Yes	Yes	Yes[3]	Yes[3]	Yes[3]
• Water treatment plants	Yes	Yes	Yes[3]	Yes[3]	Yes[3]
• Sewer treatment plants	Yes	Yes	Yes[3]	Yes[3]	Yes[3]
• Sanitary landfills	Yes	Yes	Yes[3]	Yes[3]	Yes[3]
• Recycling and transfer facilities	Yes	Yes	Yes[3]	Yes[3]	Yes[3]
• Hazardous material facilities	Yes	Yes	Yes[3]	Yes[3]	Yes[3]
WHOLESALE TRADE					
• Paints, varnishes, and supplies	Yes	Yes	Yes[3]	Yes[3]	Yes[3]
• Chemicals and allied products	Yes	Yes	Yes[3]	Yes[3]	Yes[3]
• Petroleum terminals and wholesalers	Yes	Yes	Yes[3]	Yes[3]	Yes[3]
• Miscellaneous wholesale trade	Yes	Yes	Yes[3]	Yes[3]	Yes[3]
RETAIL TRADE					
• Department and variety stores (single)	Yes	Yes	Yes[3]	Yes[3]	No
• Lumber, building materials, and nurseries	Yes	Yes	Yes[3]	No	No

Table 4

Land Use Compatibility for Airport Noise for all public use airports except for Sacramento International Airport. In the case of Sacramento International Airport, use the Land Use Compatibility Plan prepared for Sacramento International Airport dated December 12, 2013, adopted herein by reference. In the case of Mather Airport, use the Land Use Compatibility Plan prepared for Mather Airport dated February 2021, adopted herein by reference, and applicable footnotes below.

Land Use Designation	60-65 CNEL	65-70 CNEL	70-75 CNEL	75-80 CNEL	80-85 CNEL
• Grocery and drug stores	Yes	Yes	Yes[3]	Yes[3]	No
• Paint, glass, wallpaper, and hardware	Yes	Yes	Yes[3]	Yes[3]	No
• Auto, truck, boat, & recreational vehicle dealers	Yes	Yes	Yes[3]	Yes[3]	No
• Mobile home dealers	Yes	Yes	Yes[3]	Yes[3]	No
• Auto and truck service stations	Yes	Yes	Yes[3]	Yes[3]	No
• Fuel dealers	Yes	Yes	Yes[3]	Yes[3]	No
• Apparel and shoes	Yes	Yes	Yes[3]	Yes[3]	No
• Home furnishings	Yes	Yes	Yes[3]	Yes[3]	No
• Eating and drinking	Yes	Yes	Yes[3]	Yes[3]	No
• Miscellaneous retail trade	Yes	Yes	Yes[3]	Yes[3]	No
BUSINESS AND PERSONAL SERVICES					
• Auto, truck, boat, RV, and miscellaneous repair	Yes	Yes	Yes[3]	Yes[3]	No
• Mobile home repair	Yes	Yes	Yes[3]	Yes[3]	No
• Commercial laundries and cleaning	Yes	Yes	Yes[3]	Yes[3]	No
• Coin operated laundries	Yes	Yes	Yes[3]	Yes[3]	No
• Photographers, beauty and barber, shoe repair	Yes	Yes	Yes[3]	Yes[3]	No
• Funeral services	Yes	Yes	Yes[3]	Yes[3]	No
• Business Services	Yes	Yes	Yes[3]	Yes[3]	No
• Computer programming and data processing	Yes	Yes	Yes[3]	Yes[3]	No
• Travel agencies	Yes	Yes	Yes[3]	Yes[3]	No
• Legal and engineering	Yes	Yes	Yes[3]	Yes[3]	No
• Banks, credit unions, and financial	Yes	Yes	Yes[3]	Yes[3]	No
• Hotels, motels, inns, bed and breakfast	Yes	Yes	Yes[3]	Yes[3],[4]	No
• Business parks and industrial clusters	Yes	Yes	Yes[3]	Yes[3]	No
• Office (for rent or lease)	Yes	Yes	Yes[3]	Yes[3]	No
• Business and vocational schools	Yes	Yes	Yes[3]	Yes[3]	No
• Construction businesses	Yes	Yes	Yes[3]	Yes[3]	No
• Miscellaneous personal services	Yes	Yes	Yes[3]	Yes[3]	No

Table 4

Land Use Compatibility for Airport Noise for all public use airports except for Sacramento International Airport. In the case of Sacramento International Airport, use the Land Use Compatibility Plan prepared for Sacramento International Airport dated December 12, 2013, adopted herein by reference. In the case of Mather Airport, use the Land Use Compatibility Plan prepared for Mather Airport dated February 2021, adopted herein by reference, and applicable footnotes below.

Land Use Designation	60-65 CNEL	65-70 CNEL	70-75 CNEL	75-80 CNEL	80-85 CNEL
SHOPPING DISTRICTS					
• Neighborhood shopping centers	Yes	Yes	Yes[3]	Yes[3]	Yes[3]
• Community shopping centers	Yes	Yes	Yes[3]	Yes[3]	Yes[3]
• Regional shopping centers	Yes	Yes	Yes[3]	Yes[3]	Yes[3]
PUBLIC AND QUASI-PUBLIC SERVICES					
• Post offices	Yes	Yes	Yes[3]	Yes[3]	No
• Government offices	Yes	Yes	Yes[3]	Yes[3]	No
• Government social services	Yes	Yes	Yes[3]	Yes[3]	No
• Elementary and Secondary schools	Yes	Yes[3,4]	No	No	No
• College and universities	Yes	Yes[3,4]	No	No	No
• Hospitals	Yes	Yes[3,4]	Yes[3,4]	No	No
• Medical and dental laboratories	Yes	Yes	Yes[3]	Yes[3]	No
• Doctor and dentist offices	Yes	Yes	Yes[3]	Yes[3]	No
• Museum and art galleries	Yes	Yes[3,4]	No	No	No
• Libraries	Yes	Yes[3,4]	No	No	No
• Churches	Yes	Yes[3,4]	No	No	No
• Cemeteries	Yes	Yes	Yes[3]	Yes[3]	No
• Jails and detention centers	Yes	Yes	Yes[3]	No	No
• Child care programs (six or more children)	Yes	Yes[3,4]	No	No	No
• Nursing care facilities	Yes	Yes[3,4]	No	No	No
RECREATION					
• Neighborhood parks	Yes	Yes	Yes[3]	No	No
• Community-wide and regional parks	Yes	Yes	Yes[3]	No	No
• Riding stables	Yes	Yes	Yes[3]	No	No
• Golf courses	Yes	Yes	Yes[3]	No	No

Table 4

Land Use Compatibility for Airport Noise for all public use airports except for Sacramento International Airport. In the case of Sacramento International Airport, use the Land Use Compatibility Plan prepared for Sacramento International Airport dated December 12, 2013, adopted herein by reference. In the case of Mather Airport, use the Land Use Compatibility Plan prepared for Mather Airport dated February 2021, adopted herein by reference, and applicable footnotes below.

Land Use Designation	60-65 CNEL	65-70 CNEL	70-75 CNEL	75-80 CNEL	80-85 CNEL
• Open space and natural areas	Yes	Yes	Yes[3]	Yes[3]	Yes[3]
• Natural water areas	Yes	Yes	Yes[3]	Yes[3]	Yes[3]
• Recreation and amusement centers	Yes	Yes	Yes[3]	Yes[3]	No
• Physical fitness and gyms	Yes	Yes	Yes[3]	Yes[3]	No
• Camps, campgrounds, & recreational vehicle parks	Yes	Yes	No	No	No
• Dance halls, studios, and schools	Yes	Yes	Yes[3]	Yes[3]	No
• Theaters - live performance	Yes	Yes[3,5]	Yes[3,5]	No	No
• Motion picture theater - single or double	Yes	Yes[3]	Yes[3]	No	No
• Motion picture theater complex - three or more	Yes	Yes[3]	Yes[3]	No	No
• Professional sports	Yes	Yes	Yes	No	No
• Stadiums and arenas	Yes	Yes	Yes	No	No
• Auditoriums, concert halls, and amphitheaters	Yes	Yes[3,5]	Yes[3,5]	No	No
• Fairgrounds and expositions	Yes	Yes	Yes	No	No
• Racetracks	Yes	Yes	Yes	No	No
• Theme parks	Yes	Yes	Yes	No	No
AGRICULTURAL AND MINING					
• Row and field crops	Yes	Yes	Yes[3]	Yes[3]	Yes[3]
• Tree crop	Yes	Yes	Yes[3]	Yes[3]	Yes[3]
• Intensive livestock	Yes	Yes	Yes[3]	No	No
• Nursery products	Yes	Yes	Yes[3]	Yes[3]	Yes[3]
• Poultry	Yes	Yes	Yes[3]	No	No
• Pasture and grazing	Yes	Yes	Yes[3]	Yes[3]	Yes[3]
• Agricultural services	Yes	Yes	Yes[3]	Yes[3]	Yes[3]
• Mining and quarrying	Yes	Yes	Yes[3]	Yes[3]	Yes[3]
• Oil and gas extraction	Yes	Yes	Yes[3]	Yes[3]	Yes[3]

Footnotes to Land Use Compatibility Table for Airport Noise:

A. This compatibility table does not apply to Borges-Clarksburg Airport, as no noise contours exist there. Also, it does not apply to Executive Airport, as the noise contours do not extend into the unincorporated area of Sacramento County.

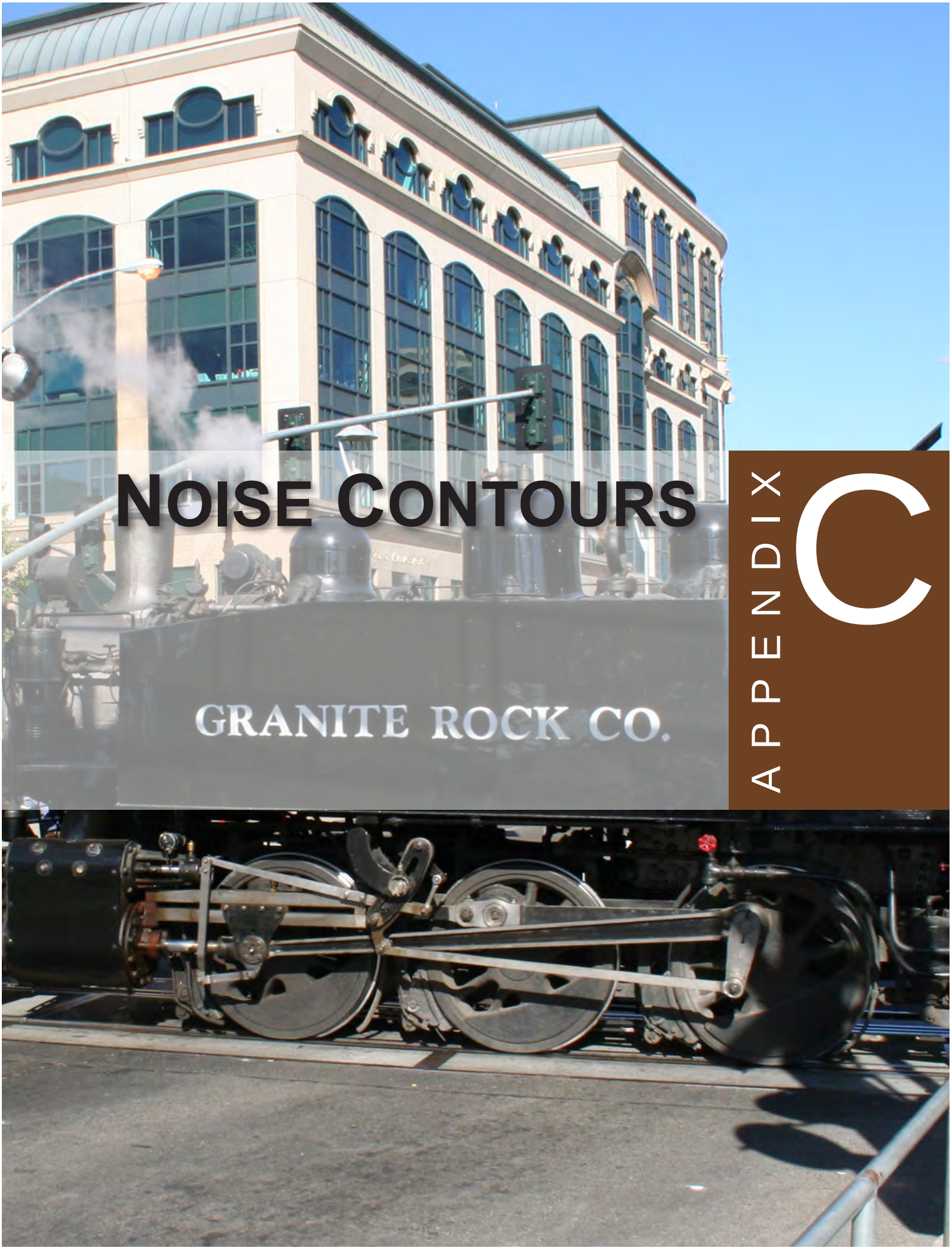
B. These guidelines define only compatible land uses within noise contours. Where proposed land uses fall within the established Safety Areas or may penetrate any of the imaginary height surfaces, additional restrictions do apply, which can be found in the safety and height policy sections of this Plan.

1. Caretaker residences are a compatible use within all CNEL ranges, provided that they are ancillary to the primary use of a property, intended for the purpose of property protection or maintenance, and subject to the condition that all residential units be designed to limit intruding noise such that interior levels do not exceed 45 CNEL, with windows closed, in any habitable room.
2. Single family detached residential units within the 60-65 dB CNEL noise contours of the Mather Airport Policy Area may be considered a compatible use if: (a) approved by the Board of Supervisors upon completion of Sacramento County's master plan process, including demonstration of compliance with LU-119 and LU-120; (b) an evaluation of potential noise and safety impacts pursuant to CEQA has occurred and appropriate noise mitigation measures to reduce interior noise levels to 45 dB have been included in the environmental document and adopted as conditions of approval; and (c) all of the requirements in Footnote 7 below are met. Second residential units are a compatible use within all CNEL ranges, subject to the condition that the proposed second unit be consistent with the provisions of Section 65852.1 and 65852.2 of the California Government Code.
3. Measures to achieve an interior noise level of 50 CNEL must be incorporated into the design and construction of portions where the public is received, office areas, and other areas where people work or congregate.
4. Measures to achieve an interior noise level of 45 CNEL must be incorporated into the design and construction of all noise sensitive areas including, but not limited to, rooms designed for the purpose of sleep, libraries, churches, and areas intended for indoor entertainment events.
5. Only indoor uses permitted.
6. Compatible at Sacramento International Airport and Franklin Field only if the residential use is directly related to agricultural uses, such as dwelling units for the land owner, the owner's immediate family, or for employees may be compatible at Mather Airport if approved by the Board of Supervisors as a component of a master plan and all criteria set forth in Footnote 2 above are satisfied. All residential units shall be designed to limit

intruding noise such that interior noise levels do not exceed 45 CNEL, with windows closed, in any habitable room.

7. New residential uses within 60 CNEL are not compatible, with the exception of accessory residential dwellings on parcels zoned Agricultural, Agricultural-Residential, Interim Agricultural, Interim General Agricultural, or Interim Limited Agricultural, or single family dwelling as set forth in Footnote 2 above. Except as provided in Footnotes 2 and 6 above, new residential development within the Mather Airport Policy Area boundaries but outside the 60 CNEL shall be subject to the following conditions:
   A. Provide minimum noise insulation to provide 45dB within new residential dwellings, including detached single family dwellings, with windows closed, in any habitable room.
   B. Notification in the Public Report prepared by the California Department of Real Estate disclosing the fact to prospective buyers that the parcel is located within the Mather Airport Policy Area.
   C. An Avigation Easement prepared by the Sacramento County Counsel's Office granted to the County of Sacramento and recorded with the Sacramento County Recorder and filed with Department of Airports. Such Avigation Easement shall acknowledge the property location within the Mather Airport Policy Area and shall grant the right of flight and unobstructed passage of all aircraft into and out of Mather Airport.

      New residential development within the Mather Airport Policy Area outside the 65dB CNEL but inside the 60dB CNEL shall be subject to Conditions A through C above and a County-approved noise analysis and mitigation to reduce interior noise impacts to 45 dB with windows closed, in any habitable room.
8. Compatible with McClellan Park and Mather Airfield only up to 70dB CNEL.



NOISE CONTOURS

APPENDIX C

Table 4.8-4 2035 General Plan Noise Levels and Contours

Roadway	From	To	CNEL dBA @ 50'		dBA	Distance to Contour from Centerline (feet)			
			Existing Conditions	2035 General Plan Conditions	Change (2035 GP-Existing)	70 dBA	65 dBA	60 dBA	55 dBA
El Centro Rd	Hankview Rd	Radio Rd	64.9	65.5	0.6	18	56	178	563
El Centro Rd/W El Camino Rd	Radio Rd	I-80	61.4	64.6	3.2	14	45	144	454
W Elkhorn Blvd	E Commerce Way	Natomas Blvd	68.5	70.6	2.1	57	181	571	1805
Del Paso Rd	Power Line Rd	I-5	68.4	69.3	0.9	43	135	428	1354
Del Paso Rd	I-5	Natomas Blvd	73	73	0	99	314	992	3138
Del Paso Rd	Natomas Blvd	Gateway Park Blvd	69.7	72.2	2.5	83	262	830	2624
San Juan Rd	El Centro Rd	Duckhorn Dr	61.1	62.6	1.5	9	28	90	285
Del Paso Rd	Gateway Park Blvd	Northgate Blvd	68.3	71	2.7	63	198	625	1977
Northgate Blvd	Main Ave	North Market Blvd	67	68.3	1.4	34	108	341	1077
Northgate Blvd	North Market Blvd	I-80	69.6	70.7	1.1	59	187	593	1874
Natomas Blvd	W Elkhorn Blvd	Del Paso Rd	68.4	69.8	1.4	48	153	483	1527
Truxel Rd	Arena Blvd	I-80	71.1	72.5	1.4	90	284	897	2836
Truxel Rd	Del Paso Rd	Arena Blvd	67.5	68.2	0.8	33	105	333	1053
North Market Blvd	Truxel Rd	Northgate Blvd	65.8	67.1	1.3	26	81	257	813
Arena Blvd	I-5	Truxel Rd	65.8	66.7	0.9	23	73	232	735
Arena Blvd	El Centro Rd	I-5	67.6	67.6	0	29	91	289	912
E Commerce Way	W Elkhorn Blvd	N Park Dr	61.9	65.8	3.9	19	59	188	594
E Commerce Way	N Park Dr	Del Paso Rd	68	70.5	2.5	56	177	559	1768
E Commerce Way	Del Paso Rd	Arena Blvd	65.1	69.5	4.4	44	140	444	1404
Del Paso Blvd	Globe Ave	El Camino Ave	57.4	60.5	3.1	6	18	57	179
Del Paso Blvd	El Camino Ave	Marysville Blvd	62.6	63.3	0.7	11	34	106	335
Del Paso Blvd	Marysville Blvd	Arcade Blvd	57	59.1	2.1	4	13	40	128
Rio Linda Blvd	Marysville Blvd	Norwood Ave	62.8	64.5	1.7	14	44	140	442
Rio Linda Blvd	Norwood Ave	Arcade Blvd	61.8	62.5	0.7	9	28	89	283
Rio Linda Blvd	Arcade Blvd	Lampasas Ave	63	63.6	0.7	12	37	116	366
Marysville Blvd	Rio Linda Blvd	Bell Ave	57.7	57.8	0.1	3	9	30	95
Marysville Blvd	I-80	Arcade Blvd	63.5	64	0.5	13	40	126	399
Marysville Blvd	Arcade Blvd	Del Paso Blvd	60	60.3	0.3	5	17	54	171
Norwood Ave	Main Ave	I-80	66.6	68	1.4	32	100	317	1003
Norwood Ave	Silver Eagle Rd	El Camino Ave	63.1	63.9	0.8	12	39	123	388

Table 4.8-4 2035 General Plan Noise Levels and Contours

Roadway	From	To	CNEL dBA @ 50'		dBA	Distance to Contour from Centerline (feet)			
			Existing Conditions	2035 General Plan Conditions	Change (2035 GP-Existing)	70 dBA	65 dBA	60 dBA	55 dBA
El Camino Ave	Grove Ave	Del Paso Blvd	63.6	65	1.4	16	50	160	504
El Camino Ave	Del Paso Blvd	I-80 Business	68.5	68.9	0.3	39	122	385	1218
Arden Way	Del Paso Blvd	Royal Oaks Dr	64.1	64.6	0.5	14	46	144	456
Arden Way	Royal Oaks Dr	I-80 Business	65.7	66.6	0.9	23	72	229	723
Grand Ave	Norwood Ave	Rio Linda Blvd	58.2	58.4	0.2	3	11	35	109
Silver Eagle Rd	Northgate Blvd	Norwood Ave	64.7	65.4	0.7	17	55	174	549
Main Ave	Northgate Blvd	Norwood Ave	67.2	69.4	2.1	43	137	432	1366
Main Ave	Norwood Ave	Rio Linda Blvd	64.4	69	4.6	40	126	398	1258
Main Ave	Marysville Blvd	Raley Blvd	52.4	59.6	7.2	5	14	46	144
W Elkhorn Blvd	Natomas Blvd	Rio Linda Blvd	68.2	69.9	1.7	49	156	494	1561
Arcade Blvd	Marysville Blvd	Roseville Rd	68	68.3	0.3	34	107	337	1067
RALEY BL	Ascot Ave	Bell Ave	67.2	70.9	3.7	61	192	608	1923
Bell Ave	Norwood Ave	Winters St	61.2	61.2	0	7	21	66	209
Roseville Rd	Arcade Blvd	Watt Ave	67.3	70.7	3.4	59	188	593	1875
Winters St	Bell Ave	I-80	60.2	61.6	1.4	7	23	72	228
Royal Oaks Dr	Arden Way	SR-160	58.8	59.5	0.7	4	14	45	141
Dry Creek Rd	Marysville Blvd	Grand Ave	54.7	54.7	0	1	5	15	46
Arden Garden Connector	Northgate Blvd	Del Paso Blvd	67.3	68	0.6	31	99	313	991
San Juan Rd	Truxel Rd	Northgate Blvd	66.4	67.6	1.2	28	90	285	900
W El Camino Ave	I-80	I-5	66.1	67.7	1.6	30	94	296	937
W El Camino Ave	I-5	Truxel Rd	67.7	67.7	0	29	93	294	929
W El Camino Ave	Truxel Rd	Northgate Blvd	66	67.3	1.3	27	85	270	855
W El Camino Ave	Northgate Blvd	Grove Ave	61.8	63.8	2	12	38	120	380
Garden Hwy	I-80	Orchard Ln	57.3	57.3	0	3	8	27	84
Garden Hwy	Gateway Oaks Dr	I-5	68.9	69	0.1	39	125	395	1248
Northgate Blvd	I-80	San Juan Rd	68.3	69.2	1	42	133	419	1325
Northgate Blvd	Silver Eagle Rd	Arden Garden Connector	69.3	70.2	0.8	52	164	519	1642
Truxel Rd	W El Camino Ave	Garden Hwy	65	68.5	3.5	36	113	356	1127
Truxel Rd	San Juan Rd	W El Camino Ave	67.6	68.7	1.1	37	117	369	1168
Truxel Rd	I-80	San Juan Rd	69.4	69.6	0.2	45	143	452	1428
I St	5th St	12th St	62.9	63.8	0.9	12	38	120	378
I St	21st St	29th St	55.7	56.8	1.1	2	8	24	76
L St	5th St	15th St	59.9	60.8	0.9	6	19	60	191

Table 4.8-4 2035 General Plan Noise Levels and Contours

Roadway	From	To	CNEL dBA @ 50'		dBA	Distance to Contour from Centerline (feet)			
			Existing Conditions	2035 General Plan Conditions	Change (2035 GP-Existing)	70 dBA	65 dBA	60 dBA	55 dBA
L St	15th St	29th St	59.3	59.3	0	4	14	43	135
P St	16th St	29th St	59.9	59.9	0	5	16	49	156
J St	3rd St	7th St	63.5	63.5	0	11	36	113	358
J St	21st St	29th St	62.2	64.2	2	13	41	131	413
Q St	3rd St	10th St	61.6	61.9	0.3	8	24	77	243
7th St	P St	J St	55.1	58.8	3.7	4	12	38	121
12th St	D St	I St	57.7	57.7	0	3	9	30	93
12th St	N St	P St	49.7	50	0.3	1	2	5	16
15th St	X St	Broadway	58.6	59.3	0.8	4	14	43	136
15th St	J St	P St	60.8	60.8	0	6	19	60	191
16th St	P St	W St	61.9	61.9	0	8	25	78	247
29th St	J St	P St	60.7	63.6	2.9	11	36	115	362
30th St	P St	J St	58.7	61.4	2.7	7	22	68	216
Alhambra Blvd	Stockton Blvd	Broadway	61.7	61.7	0	7	23	74	234
Broadway	3rd St	5th St	59.4	59.5	0.1	4	14	45	141
Broadway	Riverside Blvd	Franklin Blvd	61.7	63.3	1.6	11	34	107	337
Richards Blvd	Bercut Dr	N 7th St	65.7	65.8	0	19	60	188	596
Exposition Blvd	SR-160	I-80 Business	67.1	67.6	0.5	28	90	285	900
Exposition Blvd	I-80 Business	Arden Way	72.2	73.4	1.1	109	344	1088	3442
Arden Way	I-80 Business	Exposition Blvd	71.3	72	0.8	80	253	802	2535
El Camino Ave	I-80 Business	Howe Ave	70.9	71.3	0.4	67	212	671	2121
Marconi Ave	I-80 Business	Bell St	68.8	68.8	0	38	119	375	1186
Auburn Blvd	Howe Ave	Watt Ave	62.7	64.2	1.5	13	41	131	413
Auburn Blvd	Watt Ave	SR-244	68.5	68.9	0.4	39	122	387	1222
Auburn Blvd	El Camino Ave	Arcade Blvd	60.9	63	2.2	10	32	101	319
American River Dr	Howe Ave	Watt Ave	63.8	64.9	1.1	15	49	154	487
Heritage Ln	Arden Way	Exposition Blvd	59.8	61	1.2	6	20	63	200
Howe Ave	US-50	Fair Oaks Blvd	69.3	70.1	0.9	52	163	516	1632
Howe Ave	Fair Oaks Blvd	Hurley Way	69.3	70.5	1.2	56	177	558	1766
Howe Ave	Hurley Way	El Camino Ave	68.7	70	1.3	50	159	503	1589
Howe Ave	El Camino Ave	Auburn Blvd	67.2	70	2.8	50	159	502	1588
Alta Arden Ex	Howe Ave	Fulton Ave	67.3	68.3	1	34	107	339	1073
Fair Oaks Blvd	Howe Ave	Munroe St	69.9	69.9	0	49	154	488	1544
Fair Oaks Blvd	Munroe St	Watt Ave	71.3	71.6	0.4	73	230	728	2301
Fair Oaks Blvd	Watt Ave	Eastern Ave	73	73.6	0.6	115	364	1150	3636

Table 4.8-4 2035 General Plan Noise Levels and Contours

Roadway	From	To	CNEL dBA @ 50'		dBA	Distance to Contour from Centerline (feet)			
			Existing Conditions	2035 General Plan Conditions	Change (2035 GP-Existing)	70 dBA	65 dBA	60 dBA	55 dBA
Watt Ave	Fair Oaks Blvd	US-50	74.3	75	0.7	160	504	1595	5045
Elvas Ave/56th St	52nd St	H St	63	65.8	2.8	19	60	191	603
Elvas Ave	J ST	Folsom Blvd	66.4	66.9	0.5	25	78	247	780
H St	Alhambra Blvd	45th St	64.2	64.2	0	13	42	132	419
H St	45th St	Carlson Dr	64.4	65.7	1.3	19	59	188	593
J St	Alhambra Blvd	56th St	64.1	64.3	0.3	14	43	136	430
Folsom Blvd	47th St	65th St	68.3	69.3	1	43	135	428	1354
Folsom Blvd	Howe Ave	Jackson Hwy	69.6	70.5	0.9	57	179	565	1788
Howe Ave	US 50	14th Ave	71.1	72.1	1	82	259	819	2588
Stockton Blvd	Alhambra Blvd	US-50	60.5	63.1	2.6	10	32	101	320
Jackson Hwy	Folsom Blvd	S Watt Ave	66.9	69.3	2.4	43	135	428	1354
Hornet Dr	US-50 WB Ramps	Folsom Blvd	64	65.4	1.4	17	55	174	551
La Rivera Dr	Watt Ave	Folsom Blvd	66.7	66.8	0	24	75	238	751
Carlson Dr	Moddison Ave	H St	59.6	60.4	0.8	5	17	55	172
College Town Dr	Hornet Dr	La Rivera Dr	63.5	65.1	1.6	16	52	164	517
39th St	Folsom Blvd	J St	55.7	57.4	1.7	3	9	27	87
59th St	Folsom Blvd	Broadway	62.4	62.4	0	9	27	87	274
C St	33rd St	McKinley Blvd	61.2	64.3	3.2	14	43	136	429
Sutterville Rd	Riverside Blvd	Freeport Blvd	62.8	62.9	0.1	10	31	97	306
Sutterville Rd	24th St	Franklin Blvd	65.1	65.6	0.5	18	57	180	569
Seamas Ave	I-5	S Land Park Dr	64.3	64.8	0.6	15	48	152	479
Fruitridge Rd	S Land Park Dr	Freeport Blvd	64.3	64.3	0	13	42	133	421
Fruitridge Rd	Freeport Blvd	Franklin Blvd	66.2	66.5	0.3	22	71	223	707
Fruitridge Rd	Franklin Blvd	SR-99	65.8	65.9	0.1	19	61	193	612
Franklin Blvd	Broadway	5th Ave	61.8	65.1	3.3	16	52	163	516
Franklin Blvd	Sutterville Rd	Fruitridge Rd	67.9	68.7	0.8	37	118	373	1180
Freeport Blvd	Sutterville Rd (S)	Fruitridge Rd	68.3	68.7	0.4	37	117	369	1168
Riverside Blvd	Broadway	2nd Ave	59.6	60.2	0.6	5	16	52	165
Riverside Blvd	Sutterville Rd	Seamas Ave	58.5	58.5	0.1	4	11	36	113
Land Park Dr	Broadway	Vallejo Way	60.8	61.1	0.3	6	20	64	204
S Land Park Dr	Sutterville Rd	Seamas Ave	56.9	57	0.1	3	8	25	80
24th St	Sutterville Rd	Fruitridge Rd	62.2	63	0.8	10	32	100	316
Stockton Blvd	US-50	Broadway	66.3	66.9	0.6	25	78	247	782

Table 4.8-4 2035 General Plan Noise Levels and Contours

Roadway	From	To	CNEL dBA @ 50'		dBA	Distance to Contour from Centerline (feet)			
			Existing Conditions	2035 General Plan Conditions	Change (2035 GP-Existing)	70 dBA	65 dBA	60 dBA	55 dBA
Stockton Blvd	Broadway	Fruitridge Rd	67.6	67.9	0.2	31	97	305	966
Broadway	Alhambra Blvd	Stockton Blvd	66.3	67.2	0.9	27	84	265	838
Broadway	Stockton Blvd	65th St	66.1	66.5	0.5	22	71	225	710
65th St	Elvas Ave	14th Ave	68.5	69.4	0.9	43	137	433	1371
Power Inn Rd	14th Ave	Fruitridge Rd	70.8	71.6	0.8	73	229	726	2295
12th Ave	Martin Luther King Jr Blvd	SR-99	62.8	62.9	0.1	10	31	98	311
14th Ave	65th St	Power Inn Rd	64.4	66	1.6	20	63	198	627
Florin Perkins Rd	Folsom Blvd	Fruitridge Rd	66.9	66.9	0	25	78	247	780
Fruitridge Rd	SR-99	44th St	65.4	66.3	0.9	21	67	213	675
Fruitridge Rd	44th St	Stockton Blvd	70.5	70.9	0.4	61	193	610	1929
Fruitridge Rd	Stockton Blvd	65th St	65.6	66.2	0.6	21	66	208	657
Fruitridge Rd	65th St	Florin Perkins Rd	67.6	68.2	0.6	33	104	330	1043
Fruitridge Rd	Florin Perkins Rd	S Watt Ave	67.6	68.5	0.9	35	112	355	1122
Martin Luther King Jr Blvd	Broadway	Fruitridge Rd	60.3	61.1	0.9	7	21	65	206
T St	Stockton Blvd	59th St	53.5	54	0.5	1	4	12	40
33rd St	4th Ave	12th Ave	57.9	58.3	0.4	3	11	34	108
Raley Blvd	Bell Ave	I-80	68.4	70	1.6	50	157	497	1573
S Watt Ave	US-50	Kiefer Blvd	72.1	74.3	2.2	135	426	1347	4260
Florin Rd	Riverside Blvd	Havenside Dr	63.1	63.4	0.3	11	35	110	347
Florin Rd	Havenside Dr	I-5	67.9	68.6	0.7	36	114	361	1142
Riverside Blvd/ Pocket Rd	Florin Rd	Greenhaven dr	63.9	64	0	13	40	125	396
Pocket Rd	Greenhaven dr	Freeport Blvd	66.3	67.1	0.8	26	81	258	815
43rd Ave	Gloria Dr	13th St	58.8	58.8	0	4	12	38	120
S Land Park Dr	Windbridge Dr	Florin Rd	58.2	58.5	0.2	4	11	35	111
Gloria Dr	Florin Rd	43rd Ave	56.6	56.6	0	2	7	23	72
Greenhaven Dr	Gloria Dr	Florin Rd	60.6	60.7	0.1	6	19	59	186
Freeport Blvd	Pocket Rd	South City Limits	66.1	70.2	4	52	164	518	1638
Freeport Blvd	Florin Rd	Pocket Rd	68.2	68.7	0.6	37	118	373	1181
24th St	Fruitridge Rd	Florin Rd	67.2	67.9	0.7	31	98	309	977
24th St	Florin Rd	Meadowview Rd	63.8	65.4	1.5	17	55	173	546
Meadowview Rd	Freeport Blvd	Brookfield Dr	69.8	69.8	0	48	152	479	1516
Florin Rd	Freeport Blvd	Franklin Blvd	69.5	70	0.5	50	157	496	1569

Table 4.8-4 2035 General Plan Noise Levels and Contours

Roadway	From	To	CNEL dBA @ 50'		dBA	Distance to Contour from Centerline (feet)			
			Existing Conditions	2035 General Plan Conditions	Change (2035 GP-Existing)	70 dBA	65 dBA	60 dBA	55 dBA
43rd Ave/Blair Ave	13th St	Freeport Blvd	59.6	59.6	0.1	5	14	46	145
47th Ave	24th St	Franklin Blvd	69.3	70.1	0.8	51	162	512	1618
Franklin Blvd	Fruitridge Rd	47th Ave	67.3	68.1	0.8	33	103	326	1031
Stockon Blvd	Florin Rd	Mack Rd	70	71.2	1.2	66	209	659	2085
65th St	14th Ave	Fruitridge Rd	68	68.7	0.6	37	116	368	1164
65th Ex	Elder Creek Rd	Stockton Blvd	68.2	68.7	0.5	37	117	371	1174
Power Inn Rd	Fruitridge Rd	Florin Rd	69.8	70.4	0.6	55	173	546	1726
S Watt Ave	Kiefer Blvd	Jackson Hwy	70.8	73.9	3.2	124	392	1239	3919
Florin Rd	Franklin Blvd	SR-99	71.9	72.4	0.5	87	276	872	2756
Florin Rd	SR-99	65th St	73.2	73.9	0.7	122	385	1216	3847
Florin Rd	65th St	Stockton Blvd	70.5	71.7	1.2	74	234	741	2343
Florin Rd	Stockton Blvd	Power Inn Rd	69.5	70.3	0.8	53	168	531	1678
Florin Rd	Power Inn Rd	Florin Perkins Rd	69	70.1	1.1	51	162	513	1624
Elder Creek Rd	Stockton Blvd	Florin Perkins Rd	69.5	70.2	0.7	52	164	519	1642
Elder Creek Rd	Florin Perkins Rd	Hedge Ave	65.1	68.9	3.8	39	122	387	1223
Florin Perkins Rd	Fruitridge Rd	Elder Creek Rd	68.8	69.2	0.5	42	132	419	1324
Florin Perkins Rd	Elder Creek Rd	Florin Rd	68.6	68.6	0	36	115	364	1150
Mack Rd	Meadowview Rd	Franklin Blvd	69.6	69.6	0	46	144	457	1444
Mack Rd	Franklin Blvd	Center Pkwy	70.5	70.9	0.4	62	195	618	1953
Mack Rd	Center Pkwy	Stockton Blvd	69.9	70.4	0.5	55	174	551	1744
Center Pkwy	Tangerine Ave	Mack Rd	60.4	60.7	0.3	6	19	59	186
Center Pkwy	Mack Rd	Bruceville Rd	60.9	60.9	0	6	19	61	194
Valley Hi Dr	Franklin Blvd	Center Pkwy	64.1	64.8	0.7	15	48	151	479
Valley Hi Dr	Center Pkwy	Mack Rd	67.2	67.2	0	27	84	265	838
Bruceville Rd	Valley Hi Dr	Consumnes River Blvd	64.7	66.7	2	23	73	232	734
Bruceville Rd	Consumnes River Blvd	Calvine Rd	70.9	70.9	0	61	194	614	1941
Franklin Blvd	Village Wood Dr	Big Horn Blvd	66.9	66.9	0	25	78	247	780
Franklin Blvd	Mack Rd	Turnbridge Dr	69.3	69.7	0.4	47	147	466	1474
Franklin Blvd	47th Ave	Turnbridge Dr	70.1	70.5	0.4	56	176	557	1762
Stockton Blvd	Fruitridge Rd	Florin Rd	69.8	70.2	0.4	52	165	521	1648
65th Ex	Stockton Blvd	Florin Rd	68.5	69	0.5	40	126	398	1258
Power Inn Rd	Florin Rd	Elsie Ave	70.7	71	0.4	64	201	637	2013

Table 4.8-4 2035 General Plan Noise Levels and Contours

Roadway	From	To	CNEL dBA @ 50'		dBA	Distance to Contour from Centerline (feet)			
			Existing Conditions	2035 General Plan Conditions	Change (2035 GP-Existing)	70 dBA	65 dBA	60 dBA	55 dBA
47th Ave	Franklin Blvd	SR-99	71.1	71.7	0.6	74	233	737	2331
47th Ave	SR-99	Stockton Blvd	71.1	71.4	0.3	69	217	686	2169
Franklin Blvd	Mack Rd	Village Wood Dr	69.3	69.5	0.2	44	140	441	1396
Elkhorn Blvd	SR-99	E Commerce Way	69.1	70.1	1	51	163	515	1628
Freeport Blvd	Sutterville Rd (N)	Sutterville Rd (S)	65.4	65.7	0.2	18	58	184	582
Folsom Blvd	US-50	Howe Ave	69.3	70.5	1.2	56	177	559	1768
Cosumnes River Blvd	Franklin Blvd	Center Pkwy	67.9	70.5	2.6	56	179	565	1786
Freeport Blvd	21st St	Sutterville Rd (N)	64.9	65.9	1	19	62	195	615
Freeport Blvd	Broadway	21st St	60.6	62.5	1.9	9	28	89	280
Land Park Dr	Vallejo Way	13th Ave (S)	61.4	61.4	0.1	7	22	69	219
Land Park Dr	13th Ave (S)	Sutterville Rd	59.2	59.4	0.2	4	14	44	139
Riverside Blvd	7th Ave	Sutterville Rd	63.9	65.2	1.3	17	52	166	524
Riverside Blvd	2nd Ave	7th Ave	61.1	61.6	0.5	7	23	72	228
24th St	Donner Way	Sutterville Rd	52.2	54.9	2.7	2	5	15	49
Sutterville Rd	Freeport Blvd	Sutterville Bypass	64.6	64.7	0	15	46	146	462
5th St	Broadway	Vallejo Way	55.4	56.4	1	2	7	22	70
Broadway	5th St	Riverside Blvd	60.6	60.6	0	6	18	57	182
Elder Creek Rd	Florin Perkins Rd	S Watt Ave	65.9	68.4	2.4	34	108	343	1084
Richards Blvd	N 7th St	N 12th St	63	66.5	3.6	23	71	226	714
12th St	Richards Blvd	D St	65.2	66.7	1.5	23	74	235	743
16th St	Richards Blvd	I St	69.6	70.2	0.6	52	165	523	1654
N 7th St	Richards Blvd	B St	60	63.9	3.9	12	39	124	391
Florin Rd	I-5	Freeport Blvd	69.4	69.8	0.4	48	150	475	1503
Cosumnes River Blvd	Center Pkwy	SR-99	66.3	68	1.7	32	100	316	999
Garden Hwy	Orchard Ln	Gateway Oaks Dr	69.4	69.4	0	44	138	437	1383
J St	7th St	10th St	62.9	62.9	0	10	31	98	310
J St	10th St	16th St	63.2	63.3	0	11	34	106	335
P St	16th St	9th St	59.7	59.7	0	5	15	46	146
P St	9th St	2nd St	59.8	59.8	0	5	15	48	152
Franklin Blvd	5th Ave	Sutterville Rd	65.2	67	1.8	25	80	252	797
J St/Fair Oaks Blvd	H St	Howe Ave	61.2	63.9	2.7	12	39	124	392
Folsom Blvd	Jackson Hwy	S Watt Ave	63.9	64.6	0.7	14	45	144	455

Table 4.8-4 2035 General Plan Noise Levels and Contours

Roadway	From	To	CNEL dBA @ 50'		dBA	Distance to Contour from Centerline (feet)			
			Existing Conditions	2035 General Plan Conditions	Change (2035 GP-Existing)	70 dBA	65 dBA	60 dBA	55 dBA
Riverside Blvd/43rd Ave	Florin Rd	Gloria Dr	67.9	68	0.1	31	99	315	995
Freeport Blvd	Fruitridge Rd	Florin Rd	67.9	68.7	0.8	37	117	369	1168
Garden Hwy	I-5	Truxel Rd	72.2	72.8	0.6	95	301	952	3012
Garden Hwy	Truxel Rd	Northgate Blvd	73.4	73.7	0.3	118	375	1184	3745
Norwood Ave	I-80	Silver Eagle Rd	66.2	67	0.8	25	80	252	797
SR-99	W Elkhorn Blvd	I-5/SR-99 Interchange	79.2	81.1	1.9	644	2035	6436	20352
I-5	I-5/SR-99 Interchange	Arena Blvd	83.3	84.3	1	1345	4255	13455	42547
I-5	Arena Blvd	I-5/I-80 Interchange	83.8	85	1.2	1595	5043	15948	50432
I-5	I-5/I-80 Interchange	W El Camino Ave	82.2	83.3	1	1064	3364	10637	33638
I-5	W El Camino Ave	Richards Blvd	84.6	85.2	0.5	1640	5187	16401	51866
I-5	Richards Blvd	J St	84.6	84.8	0.2	1518	4800	15179	48000
I-5	J St	I-5/I-80 Business & US 50 Interchange	84.5	84.4	-0.1	1384	4375	13835	43750
I-5	I-5/I-80 Business & US-50 Interchange	Sutterville Rd	82.5	82.6	0.1	912	2883	9115	28826
I-5	Sutterville Rd	43rd Ave	83.4	83.7	0.3	1173	3709	11730	37094
I-5	43rd Ave	Florin Rd	81.6	82.1	0.4	807	2552	8071	25523
I-5	Florin Rd	City Limits	80.9	81.6	0.7	716	2263	7156	22630
SR-99	SR-99/I-80 Business/US-50 Interchange	Fruitridge Rd	85.3	86.1	0.8	2027	6410	20271	64102
SR-99	Fruitridge Rd	47th Ave	83.9	85.2	1.4	1670	5281	16701	52813
SR-99	47th Ave	Mack Rd	84.4	85.7	1.2	1842	5824	18417	58240
SR-99	Mack Rd	Sheldon Rd	82	83.4	1.5	1103	3487	11026	34867
I-80	Garden Hwy	I-5/I-80 Interchange	81.2	81.6	0.5	731	2312	7310	23117
I-80	I-5/I-80 Interchange	Northgate Blvd	83.5	83.7	0.2	1167	3689	11666	36890
I-80	Northgate Blvd	Watt Ave	83.6	83.8	0.1	1187	3753	11868	37530
US-50/I-80 Business	I-5/US-50 & I-80 Business Interchange	SR-99/US-50/I-80 Business Interchange	86.1	86.6	0.5	2288	7235	22878	72346

Table 4.8-4 2035 General Plan Noise Levels and Contours

Roadway	From	To	CNEL dBA @ 50'		dBA	Distance to Contour from Centerline (feet)			
			Existing Conditions	2035 General Plan Conditions	Change (2035 GP-Existing)	70 dBA	65 dBA	60 dBA	55 dBA
US-50	SR-99/ US-50/I-80 Business Interchange	65th St	85.7	86	0.3	1974	6241	19737	62413
US-50	65th St	S Watt Ave	84.5	84.7	0.2	1464	4628	14637	46285
I-80 Business	SR-99/ US-50/I-80 Business Interchange	J St	82.7	83.4	0.7	1102	3484	11018	34842
I-80 Business	J St	SR-160 Interchange	84.3	84.1	-0.2	1286	4068	12864	40678
I-80 Business	SR-160 Interchange	El Camino Ave	84.1	84.7	0.6	1488	4705	14879	47053
I-80 Business	El Camino Ave	Marconi Ave	83.8	84.5	0.6	1402	4434	14021	44339
I-80 Business	Marconi Ave	Fulton Ave	83.3	83.6	0.3	1156	3656	11560	36557
I-80 Business	Fulton Ave	City Limits	83.5	83.7	0.2	1173	3709	11730	37094
SR-160	Richards Blvd	Business 80 Interchange	77.6	78.7	1.1	372	1175	3716	11750

Note: The yellow highlighted roadways would experience incremental noise increases that exceed standards shown in Table EC-2 in the proposed policies

Source: Modeled by Ascent Environmental 2014

Sacramento County, California County Code

Title 6 HEALTH AND SANITATION

Chapter 6.68 NOISE CONTROL

6.68.010 Findings.

The Sacramento County Board of Supervisors finds:

a. Excessive, unnecessary or offensive noise within the County is detrimental to the public heath, safety, welfare and the peace and quiet of the inhabitants of the County and therefore is declared a public nuisance; and

b. Every person in the County is entitled to live in an environment free from excessive, unnecessary or offensive noise levels; and

c. The establishment of maximum permissible noise levels will further the public health, safety, welfare and peace and quiet of county inhabitants. (SCC 254 § 1, 1976.)

6.68.020 Declaration of Policy.

It is declared to be the policy and purpose of this chapter of the Sacramento County Code to assess complaints of noises alleged to exceed the ambient noise levels. Further, it is declared to be the policy to contain sound levels in the County of Sacramento at their present levels with the ultimate goal of reducing such levels, when and where feasible and without causing undue burdens, to meet the noise standards set forth in this chapter. (SCC 254 § 1, 1976.)

6.68.030 Liberal Construction.

This chapter shall be liberally construed so as to effectuate its purposes. (SCC 254 § 1, 1976.)

6.68.040 Severability.

If any section, subsection, sentence, clause, phrase or portion of this chapter is for any reason held invalid or unconstitutional by any court of competent jurisdiction, such portion shall be deemed as a separate, distinct and independent provision, and such holding shall not affect the validity of the remaining portions thereof. (SCC 254 § 1, 1976.)

6.68.050 Definitions.

The following words, phrases and terms as used in this chapter shall have the following meanings:

a. “Ambient noise level” means the all-encompassing noise level associated with a given environment, being a composite of sounds from all sources, excluding the alleged offensive noise, at the location and approximate time at which a comparison with the alleged offensive noise is to be made.

b. “County” means the unincorporated area of the County of Sacramento.

c. “Cumulative period” means an additive period of time composed of individual time segments which may be continuous or interrupted.

d. “Decibel” or “dB” means a unit which denotes the ratio between two quantities which are proportional to power; the number of decibels corresponding to the ratio of two amounts of power is ten times the logarithm to the base of ten of this ratio.

e. “Emergency work” means the use of any machinery, equipment, vehicle, manpower or other activity in an effort to protect, maintain, provide or restore safe conditions in the community or for citizenry, or work by private or public utilities when restoring utility service.

f. “Hertz” means a unit of measurement of frequency, numerically equal to cycles per second.

g. “Impulsive noise” mans a noise characterized by brief excursions of sound pressures whose peak levels are very much greater than the ambient noise level, such as might be produced by the impact of a pile driver, punch press or a drop hammer, typically with one second or less duration.

h. “Noise level” means the “A” weighted sound pressure level in decibels obtained by using a sound level meter at slow response with a reference pressure of twenty microPascals. The unit of measurement shall be designated as “dBA.”

i. “Person” means a person, firm, association, copartnership, joint venture, corporation, or any entity, public or private in nature.

j. “Residential property” means a parcel of real property which is developed and used either in part or in whole for residential purposes, other than transient uses such as hotels and motels.

k. “Simple tone noise” or “pure tone noise” means a noise characterized by the presence of a predominant frequency or frequencies such as might be produced by whistle or hum.

l. “Sound level meter” means an instrument meeting American National Standard Institute’s Standard S1.4-1971 for Type 2 sound level meters or an instrument and the associated recording and analyzing equipment which will provide equivalent data.

m. “Sound pressure level” means a sound pressure level of a sound, in decibels, as defined in ANSI Standards 51.2-1962 and 51.13-1921; that is, twenty times the logarithm to the base ten of the ratio of the pressure of the sound to a reference pressure, which reference pressure shall be explicitly stated.

n. “Zone” means any of the zones specified in Article 2 of Chapter 1 of the Zoning Code of Sacramento County as such zones are presently identified therein and as they may be subsequently modified or altered. (SCC 254 § 1, 1976.)

6.68.060 Sound Level Measurement Generally.

a. Any noise level measurements made pursuant to the provisions of this chapter shall be performed using a sound level meter as defined in Section 6.68.050.

b. The location selected for measuring exterior noise levels shall be at a point at least one foot inside the property line of the affected residential property. Where feasible, the microphone shall be at a height of three to five feet above ground level and shall be at least four feet from walls or similar reflecting surfaces. In the case of interior noise measurements, the windows shall be in normal seasonal configuration and the measurement shall be made at a point at least four feet from the wall, ceiling or floor nearest the affected occupied area. (SCC 254 § 1, 1976.)

6.68.070 Exterior Noise Standards.

a. The following noise standards, unless otherwise specifically indicated in this chapter, shall apply to all properties within a designated noise area.

Noise Area	County Zoning Districts	Time Period	Exterior Noise Standard
1	RE-1, RD-1, RE-2, RD-2, RE-3, RD-3, RD-4, R-1-A, RD-5, R-2, RD-10, R-2A, RD-20, R-3, R-D-30, RD-40, RM-1, RM-2, A-1-B, AR-1, A-2, AR-2, A-5, AR-5	7 a.m.—10 p.m.	55 dBA
		10 p.m.—7 a.m.	50dBA

b. It is unlawful for any person at any location within the County to create any noise which causes the noise levels on an affected property, when measured in the designated noise area, to exceed for the duration of time set forth following, the specified exterior noise standards in any one hour by:

Cumulative Duration of the Intrusive Sound	Allowance Decibels
1. Cumulative period of 30 minutes per hour	0
2. Cumulative period of 15 minutes per hour	+ 5
3. Cumulative period of 5 minutes per hour	+10
4. Cumulative period of 1 minute per hour	+15
5. Level not to be exceeded for any time per hour	+20

c. Each of the noise limits specified in subdivision (b) of this section shall be reduced by five dBA for impulsive or simple tone noises, or for noises consisting of speech or music.

d. If the ambient noise level exceeds that permitted by any of the first four noise-limit categories specified in subdivision (b), the allowable noise limit shall be increased in five dBA increments in each category to encompass the ambient noise level. If the ambient noise level exceeds the fifth noise level category, the maximum ambient noise level shall be the noise limit for that category. (SCC 490 § 2, 1981; SCC 254 § 1, 1976.)

6.68.080 Interior Noise Standards.

a. In any apartment, condominium, townhouse, duplex or multiple dwelling unit it is unlawful for any person to create any noise from inside his unit that causes the noise level when measured in a neighboring unit during the periods ten p.m. to seven a.m. to exceed:

1. Forty-five dBA for a cumulative period of more than 5 minutes in any hour;

2. Fifty dBA for a cumulative period of more than 1 minute in any hour;

3. Fifty-five dBA for any period of time.

b. If the ambient noise level exceeds that permitted by any of the noise level categories specified in subdivision (a) of this section, the allowable noise limit shall be increased in five-dBA increments in each category to encompass the ambient noise level. (SCC 254 § 1, 1976.)

6.68.090 Exemptions.

The following activities shall be exempted from the provisions of this chapter:

a. School bands, school athletic and school entertainment events;

b. Outdoor gatherings, public dances, shows and sporting and entertainment events, provided said events are conducted pursuant to a license or permit by the County;

c. Activities conducted on parks, public playgrounds and school grounds, provided such parks, playgrounds and school grounds are owned and operated by a public entity or private school;

d. Any mechanical device, apparatus or equipment related to or connected with emergency activities or emergency work;

e. Noise sources associated with construction, repair, remodeling, demolition, paving or grading of any real property, provided said activities do not take place between the hours of eight p.m. and six a.m. on weekdays and Friday commencing at eight p.m. through and including seven a.m. on Saturday; Saturdays commencing at eight p.m. through and including seven a.m. on the next following Sunday and on each Sunday after the hour of eight p.m. Provided, however, when an unforeseen or unavoidable condition occurs during a construction project and the nature of the project necessitates that work in process be continued until a specific phase is completed, the contractor or owner shall be allowed to continue work after eight p.m. and to operate machinery and equipment necessary until completion of the specific work in progress can be brought to conclusion under conditions which will not jeopardize inspection acceptance or create undue financial hardships for the contractor or owner;

f. Noise sources associated with agricultural operations, provided such operations do not take place between the hours of eight p.m. and six a.m.;

g. All mechanical devices, apparatus or equipment which are utilized for the protection or salvage of agricultural crops during periods of adverse weather conditions or when the use of mobile noise sources is necessary for pest control;

h. Noise sources associated with maintenance of residential area property, provided said activities take place between the hours of six a.m. and eight p.m. on any day except Saturday or Sunday, or between the hours of seven a.m. and eight p.m. on Saturday or Sunday;

i. Any activity, to the extent provisions of Chapter 65 of Title 42 of the United States Code, and Articles 3 and 3.5 of Chapter 4 of Division 9 of the Public Utilities Code of the State of California preempt local control of noise regulations and land use regulations related to noise control of airports and their surrounding geographical areas, any noise source associated with the construction, development, manufacture, maintenance, testing or operation of any aircraft engine, or of any weapons system or subsystems which are owned, operated or under the jurisdiction of the United States, or any other activity to the extent regulation thereof has been preempted by state or federal law or regulation;

j. Any noise sources associated with the maintenance and operation of aircraft or airports which are owned or operated by the United States. (SCC 254 § 1, 1976.)

6.68.100 Pre-Existing Industrial or Commercial Facilities—Transition Period.

a. Any industrial or commercial facility in existence prior to July 1, 1976 shall be allowed a one-year period commencing on said date within which to comply with this chapter.

b. During said one-year period, all such facilities shall make reasonable efforts to be in compliance and to reduce noise which exceeds the standards specified in this chapter. Commencing at the end of one year after July 1, 1976, any such facility shall be subject to all applicable requirements of this chapter.

c. If any facility which is not in compliance by the end of said one-year period applies for a variance pursuant to Section 6.68.200, in deciding whether to grant a variance the Hearing Board shall take into account the extent to which the applicant has endeavored to reduce noise during said one-year period to meet the standards specified in this chapter.

d. This section applies only to a commercial or industrial facility already in existence or for which the work of improvement has commenced prior to July 1, 1976.

e. As used in this section “industrial facility” means any building, structure, factory, plant, premises or portion thereof used for manufacturing or industrial purposes, and “commercial facility” means any building, structure, premises or portion thereof used for wholesale or retail commercial purposes. (SCC 254 § 1, 1976.)

6.68.110 Schools, Hospitals and Churches.

It is unlawful for any person to create any noise which causes the noise level at any school, hospital or church, while the same is in use, to exceed the noise standards specified in Section 6.68.070 or to create any noise which unreasonably interferes with the use of such institution or unreasonably disturbs or annoys patients in the hospital. In any disputed case, interfering noise which is ten dBA or more, greater than the ambient noise level at the building, shall be deemed excessive and unlawful. (SCC 254 § 1, 1976.)

6.68.120 Machinery, Equipment, Fans and Air Conditioning.

a. It is unlawful for any person to operate any mechanical equipment, pump, fan, air conditioning apparatus, stationary pumps, stationary cooling towers, stationary compressors, similar mechanical devices, or any combination thereof installed after July 1, 1976 in any manner so as to create any noise which would cause the maximum noise level to exceed:

1. Sixty dBA at any point at least one foot inside the property line of the affected residential property and three to five feet above ground level;

2. Fifty-five dBA in the center of a neighboring patio three to five feet above ground level;

3. Fifty-five dBA outside of the neighboring living area window nearest the equipment location. Measurements shall be taken with the microphone not more than three feet from the window opening but at least three feet from any other surface.

b. Equipment installed five years after July 1, 1976 must comply with a maximum limit of fifty-five dBA at any point at least one foot inside the property line of the affected residential property and three to five feet above ground level.

c. Equipment installed before December 17, 1970 must comply with a limit of sixty-five dBA maximum in sound level at any point at least one foot inside the affected property line and three to five feet above ground level by January 1, 1977. Equipment installed between December 16, 1970 and July 1, 1976 must comply with a limit of sixty-five dBA maximum sound level at any point at least one foot inside the property line of the affected residential property and three to five feet above ground level. (SCC 254 § 1, 1976.)

6.68.130 Off-Road Vehicles.

It is unlawful for any person to operate any motorcycle or recreational off-road vehicle within the County in such a manner that the noise level exceeds the exterior noise standards specified in Section 6.68.070. (SCC 254 § 1, 1976.)

6.68.140 Waste Disposal Vehicles.

It is unlawful for any person authorized to engage in waste disposal service or garbage collection to operate any truck-mounted waste or garbage loading and/or composting equipment or similar mechanical device in any manner so as to create any noise exceeding the following level, when measured at a distance of fifty feet from the equipment in an open area.

a. New equipment purchased or leased on or after a date six months from July 1, 1976 shall not exceed a noise level of eighty dBA.

b. New equipment purchased or leased on or after forty-two months from July 1, 1976 shall not exceed a noise level of seventy-five dBA.

c. Present equipment shall not exceed a noise level of eighty dBA on or after five years from July 1, 1976.

The provisions of this section shall not abridge or conflict with the powers of the state over motor vehicle control. (SCC 254 § 1, 1976.)

6.68.145 Radios, Tape Players on Publicly Owned Property.

Notwithstanding any other provision of this Code and in addition thereto, it is unlawful for any person to permit or cause any noise, sound, music or program to be emitted from any radio, tape player, tape recorder, record player or television outdoors on or in any publicly owned property, park or place when such noise, sound, music or program is audible to a person of normal hearing sensitivity one hundred feet from said radio, tape player, tape recorder, record player or television.

a. As used herein, “a person or normal hearing sensitivity” means a person who has a hearing threshold level of between zero (0) decibels and twenty-five (25) decibels HL averaged over the frequencies 500, 1,000 and 2,000 Hertz.

b. Notwithstanding any other provision of this Code, any person violating this section shall be guilty of an infraction and upon conviction thereof, is punishable by a fine not exceeding fifty dollars for a first violation; a fine not exceeding one hundred dollars for a second violation of this section within one year; a fine not exceeding two hundred fifty dollars for each additional violation of this section within one year. A person who violates the provisions of this section shall be deemed to be guilty of a separate offense for each day, or portion thereof, during which the violation continues or is repeated.

c. Notwithstanding Sections 6.60.010 and 6.68.230 or any other provision of this Code, no citation or notice to appear shall be issued or criminal complaint shall be filed for a violation of this section unless the offending party is first given a verbal or written notification of violation by any peace officer, public officer, park ranger or other person charged with enforcing this section and the offending party given an opportunity to correct said violation.

d. This section shall not apply to broadcasting from any aircraft, vehicle or stationary sound amplifying equipment as defined and regulated in Chapter 5.56 or to the use of radios, tape players, tape recorders, record players or televisions in the course of an assembly or festival for which a license has been issued pursuant to Section 9.36.072 or a parade for which a permit has been issued pursuant to Section 10.32.020 or any other activity, assembly or function for which a permit or license has been duly issued pursuant to any provision of the Code. (SCC 490 § 1, 1981.)

6.68.150 General Noise Regulations.

Notwithstanding any other provisions of this chapter and in addition thereto, it is unlawful for any person to wilfully make or continue or cause to be made or continued any loud, unnecessary or unusual noise which disturbs the peace and quiet of any neighborhood or which causes discomfort or annoyance to any reasonable person of normal sensitiveness residing in the area.

The standards which shall be considered in determining whether a violation of the provisions of this section exists shall include, but not be limited to, the following:

a. The sound level of the objectionable noise;

b. The sound level of the ambient noise;

c. The proximity of the noise to residential sleeping facilities;

d. The nature and zoning of the area within which the noise emanates;

e. The density of the inhabitation of the area within which the noise emanates;

f. The time of day or night the noise occurs;

g. The duration of the noise and its tonal informational or musical content;

h. Whether the noise is continuous, recurrent or intermittent;

i. Whether the noise is produced by a commercial or noncommercial activity. (SCC 254 § 1, 1976.)

6.68.160 Administration.

The administration of this chapter is vested in the Sacramento County Health Officer. The health officer shall be responsible for:

a. Employing individuals trained in acoustical engineering or an equivalent field to assist the health officer in the administration of this chapter;

b. Training field inspectors;

c. Procuring measuring instruments and training inspectors in their calibration and operation;

d. Conducting a public education program in all aspects of noise control;

e. Coordinating the noise control program with other governmental agencies. (SCC 254 § 1, 1976.)

6.68.170 Noise Control Program—Recommendations.

At least every third year following July 1, 1976, the health officer shall evaluate the effectiveness of the noise control program in Sacramento County and shall make recommendations to the Board of Supervisors for its improvement. (SCC 254 § 1, 1976.)

6.68.180 Rules and Standards.

Within one year after July 1, 1976, the health officer, with the advice and assistance of other appropriate governmental agencies, shall investigate and recommend to the Board of Supervisors the following:

a. Rules and procedures to be used in measuring noise;

b. Noise standards for motor vehicle operation within the County. However, nothing within this ordinance shall be deemed to abridge or conflict with the powers of the state over motor vehicle control;

c. Noise standards governing the construction, repair or demolition of a structure, including streets and other thoroughfares;

d. Recommendations, if appropriate, for the establishment of sound level standards for nonresidentially zoned areas within the County. (SCC 254 § 1, 1976.)

6.68.190 Special Condition Permits.

Notwithstanding any provision of this chapter, the County Health Officer may grant special condition permits for a period not exceeding three days when the general purpose and intent of this chapter can be carried out by the granting of the special condition permit. Said special condition permits may be renewed for periods not exceeding three days at the discretion of the health officer. (SCC 254 § 1, 1976.)

6.68.200 Variance Procedure.

a. The owner or operator of a noise source which violates any of the provisions of this chapter may file an application with the health officer for a variance from the provisions thereof. The application shall set forth all actions taken to comply with this chapter, the reasons why immediate compliance cannot be achieved, a proposed method for achieving compliance, and a proposed time schedule for its accomplishment. Said application shall be accompanied by a fee in the amount of seventy-five dollars. A separate application shall be filed for each noise source; provided, however, that several mobile sources under common ownership or several fixed sources on a single property may be combined into one application. Upon receipt of said application and fee, the health officer shall refer the application, with his recommendation thereon, within ten days to the Hearing Board.

b. Upon receipt of an application for a variance, the Hearing Board shall schedule a public hearing, to be conducted within sixty days of receipt of the application. During the public hearing the applicant and the health officer may submit oral and documentary evidence relative to their respective contentions.

c. The Hearing Board may deny the application for a variance or may grant a variance. A variance may be for a limited period and may be subject to any other terms, conditions and requirements as the Hearing Board may deem reasonable to achieve maximum compliance with the provisions of this chapter. Such terms, conditions and requirements may include, but shall not be limited to, limitations on noise levels and operating hours.

d. Each variance shall set forth the approved method of achieving maximum compliance and a time schedule for its accomplishment. In its determinations, the Hearing Board shall consider the magnitude of nuisance caused by the offensive noise, the uses of property within the area of impingement by the noise, the time factors related to study, design, financing and construction of remedial work, the economic factors related to age and useful life of equipment, and the general public interest and welfare.

e. In deciding whether to grant a variance, the Hearing Board shall consider all facts relating to whether strict compliance with the requirement of this chapter will cause practical difficulties, unnecessary hardship or unreasonable expense and any other relevant considerations including, but not limited to, the fact that a commercial or industrial facility as defined in Section 6.68.100 commenced development prior to the existence of a residence affected by noise from such facility.

f. The Hearing Board shall render a decision within thirty days of completion of the hearing. The decision of the Hearing Board shall be transmitted to the applicant and to the health officer. (SCC 254 § 1, 1976.)

6.68.210 Hearing Board.

a. There is created a joint City-County Hearing Board consisting of nine members.

b. Four members of the Hearing Board shall be appointed by the Mayor of the City of Sacramento with the approval of the City Council. One member shall be an acoustical consultant with a background in engineering and with a demonstrated knowledge and experience in the field of acoustics; one member shall have been admitted to the practice of law in the State of California; one member shall be a mechanical contractor holding a current active State of California C-20 or SC-20 license; and one member shall be representative of the general public.

c. Four members shall be appointed by the Board of Supervisors of the County of Sacramento. One member shall be a licensed professional mechanical engineer; one member shall be a physician licensed in the State of California, qualified in the field of physiological effects of noise; one member shall be a general contractor engaged in general building or engineering construction holding a current active State of California A or B license; and one member shall be a representative of the general public.

d. One member shall be appointed by the members of the Board who have been appointed by the City of Sacramento and the County of Sacramento pursuant to subsections (b) and (c) of this section. This member shall be a representative of business and industry.

e. The term of office of each member shall be for three years and until the appointment and qualifications of a successor. The first members of the Hearing Board shall classify themselves by lot so that the term of three members is for one year, three members is for two years, and three members is for three years.

f. Any member may be removed by the appointing authority or authorities. Vacancies occurring during a term, whether by removal, resignation or other cause, shall be filled for the unexpired term by the appointing authority or authorities.

g. The Health Officer of the County of Sacramento, or his appointing representative, shall be a nonvoting ex officio member of the Hearing Board and shall act as secretary of the Board.

h. The Hearing Board shall adopt rules and regulations for its own procedures in carrying out its functions under the provisions of this chapter.

i. Five members of the Hearing Board shall constitute a quorum. If five or more members of the Hearing Board conduct a hearing, concurrence of the majority of those present shall be necessary for decision.

j. Meetings of the Hearing Board shall be held at the call of the secretary and at such times and locations as said board shall determine. All such meetings shall be open to the public. (SCC 360 § 1, 1978; SCC 351 § 1, 1978; SCC 273 § 1, 1976; SCC 254 § 1, 1976.)

6.68.220 Appeals.

a. Within ten (10) days following the decision of the Hearing Board on an application for a variance, the applicant or the Health Officer may appeal the decision to the Board of Supervisors by filing a notice of appeal with the secretary of the Hearing Board.

b. Within ten (10) days following receipt of a notice of appeal, the secretary of the Hearing Board shall forward to the Board of Supervisors copies of the application for variance and all papers and exhibits concerning said application received by the Hearing Board and its decision thereon. Any person may file with the Board of Supervisors written arguments in favor of or against said decision.

c. The Clerk of the Board of Supervisors shall mail to the applicant, Health Officer and other individuals or entities so requesting a notice of the date set for hearing of the appeal. The notice shall be mailed at least ten (10) days prior to the hearing date.

d. Within thirty (30) days following conduct of the hearing before the Board of Supervisors, the Board shall either affirm, modify or reverse the decision of the Hearing Board. In deciding the appeal, the Board of Supervisors shall have the same powers as are conferred on the Hearing Board. The Board of Supervisors may also direct the Hearing Board to conduct further proceedings on said application. Failure of the Board of Supervisors to affirm, modify or reverse a decision of the Hearing Board, or to direct the Hearing Board to conduct further proceedings within a thirty-day period from the date of the hearing, shall constitute an affirmation of the decision of the Hearing Board. (SCC 254 § 1, 1976.)

6.68.230 Violation.

Upon the receipt of a complaint from any person, the Sacramento County Sheriff, the County Health Officer, or their duly authorized representatives may investigate and assess whether the alleged noise levels exceed the noise standards set forth in this chapter. If such officers have reason to believe that any provision(s) of this chapter has been violated, they may cause written notice to be served upon the alleged violator. Such notice shall specify the provision(s) of this chapter alleged to have been violated and the facts alleged to constitute a violation, including dBA readings noted and the time and place of their detection, and may include an order that corrective action be taken within a specified time. If corrective action is not taken within such specified time or any extension thereof approved by the County Health Officer, upon conviction, the violation shall constitute an infraction. Each day such violation is committed or permitted to continue shall constitute a separate offense and shall be punishable as such. (SCC 576 § 6, 1983; SCC 254 § 1, 1976.)

6.68.240 Other Remedies.

a. Provisions of this chapter are to be construed as an added remedy of abatement of the public nuisance declared and not in conflict or derogation of any other action, proceedings or remedies provided by law.

b. Any violation of the provisions of this chapter shall be, and the same is declared to be unlawful and a public nuisance, and the duly constituted authorities of the County shall, upon order of the Board of Supervisors, immediately commence actions or proceedings for the abatement or enjoinment thereof in the manner provided by law and shall take such steps and shall apply to such court or courts as may have jurisdiction to grant such relief as will abate such nuisance. (SCC 254 § 1, 1976.)

Contact:

Sacramento County

CONSTRUCTION NOISE MODELING

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 03/23/2023
Case Description: SCUS-04

**** Receptor #1 ****

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Architectural Coating	Residential	60.0	55.0	50.0

Equipment

Description	Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Compressor (air)	No	40		77.7	50.0	0.0

Results

Equipment	Calculated (dBA) Lmax	Leq	Noise Limits (dBA) Day Lmax	Leq	Evening Lmax	Leq	Night Lmax	Leq	Noise Limit Exceedance (dBA) Day Lmax	Leq	Evening Lmax	Leq	Night Lmax	Leq
Compressor (air)	77.7	73.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	77.7	73.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 03/23/2023
Case Description: SCUS-04

**** Receptor #1 ****

Baselines (dBA)

Description	Land Use	Daytime	Evening	Night
Building Construction	Residential	60.0	55.0	50.0

Equipment

Description	Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Concrete Saw	No	20		89.6	50.0	0.0
Generator	No	50		80.6	50.0	0.0
Tractor	No	40	84.0		50.0	0.0

Results

	Calculated (dBA)		Noise Limits (dBA)				Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Concrete Saw	89.6	82.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Generator	80.6	77.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	84.0	80.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	89.6	85.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 03/23/2023
Case Description: SCUS-04

**** Receptor #1 ****

Baselines (dBA)

Description	Land Use	Daytime	Evening	Night
Demolition	Residential	60.0	55.0	50.0

Equipment

Description	Impact Device	Spec Usage (%)	Actual Lmax (dBA)	Receptor Lmax (dBA)	Estimated Distance (feet)	Shielding (dBA)
Concrete Saw	No	20	89.6	50.0		0.0
Dozer	No	40	81.7	50.0		0.0
Excavator	No	40	80.7	50.0		0.0

Results

	Calculated (dBA)		Noise Limits (dBA)				Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Concrete Saw	89.6	82.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	81.7	77.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator	80.7	76.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	89.6	84.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 03/23/2023
Case Description: SCUS-04

**** Receptor #1 ****

Baselines (dBA)

Description	Land Use	Daytime	Evening	Night
Grading	Residential	60.0	55.0	50.0

Equipment

Description	Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Grader	No	40	85.0		50.0	0.0
Dozer	No	40		81.7	50.0	0.0
Tractor	No	40	84.0		50.0	0.0

Results

	Calculated (dBA)		Noise Limits (dBA)				Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Grader	85.0	81.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	81.7	77.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	84.0	80.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	85.0	84.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 03/23/2023
Case Description: SCUS-04

**** Receptor #1 ****

Baselines (dBA)

Description	Land Use	Daytime	Evening	Night
Paving	Residential	60.0	55.0	50.0

Equipment

Description	Impact Device	Spec Usage (%)	Actual Lmax (dBA)	Receptor Lmax (dBA)	Estimated Distance (feet)	Shielding (dBA)
Paver	No	50	77.2	50.0	0.0	
Pavement Scarafier	No	20	89.5	50.0	0.0	
Roller	No	20	80.0	50.0	0.0	

Results

	Calculated (dBA)		Noise Limits (dBA)				Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Paver	77.2	74.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Pavement Scarafier	89.5	82.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Roller	80.0	73.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	89.5	83.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 03/23/2023
Case Description: SCUS-04

**** Receptor #1 ****

Baselines (dBA)

Description	Land Use	Daytime	Evening	Night
Site Preparation	Residential	60.0	55.0	50.0

Equipment

Description	Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Tractor	No	40	84.0		50.0	0.0
Front End Loader	No	40		79.1	50.0	0.0
Dozer	No	40		81.7	50.0	0.0

Results

	Calculated (dBA)		Noise Limits (dBA)				Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Tractor	84.0	80.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Front End Loader	79.1	75.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	81.7	77.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	84.0	82.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

SCUS-04 - Construction Noise Modeling Attenuation Calculations

Levels in dBA Leq

Phase	RCNM Reference Noise Level	Receptor to North	Receptor to East	Receptor to South	Receptor to West
Distance in feet	*50*	*295*	*465*	*220*	*340*
Demolition	85	69	65	72	68
Site Prep	83	67	63	70	66
Grading	85	69	65	72	68
Distance in feet	*50*	*210*	*125*	*25*	*100*
Building Construction	85	73	77	91	79
Architectural Coating	74	61	66	80	68
Distance in feet	*50*	*145*	*65*	*205*	*80*
Paving	84	74	81	71	79

Attenuation calculated through Inverse Square Law: Lp(R2) = Lp(R1) - 20Log(R2/R1)

SCUS-04 - Vibration Damage Attenuation Calculations

Levels in in/sec PPV

Distance in feet	**Vibration Reference Level at *25 feet***	**Receptor to North** *40*	**Receptor to East** *61*	**Receptor to South** *6*	**Receptor to West** *63*
Vibratory Roller	0.21	0.104	0.055	1.786	0.052
Static Roller	0.05	0.025	0.013	0.425	0.012
Large Bulldozer	0.089	NA	0.023	NA	0.022
Loaded Trucks	0.076	NA	0.020	NA	0.019
Jackhammer	0.035	0.017	0.009	NA	0.009
Small Bulldozer	0.003	NA	0.001	NA	0.001

SCUS-04 - Vibration Annoyance Attenuation Calculations

Levels in VdB

Equipment	Vibration @ 25 ft	Receptor to North	Receptor to East	Receptor to South	Receptor to West
Distance in feet		*60*	*80*	*130*	*80*
Vibratory Roller	94.0	82.6	78.8	72.5	78.8
Large Bulldozer	87.0	75.6	71.8	65.5	71.8
Loaded Trucks	86.0	74.6	70.8	64.5	70.8
Static Roller	82.0	70.6	66.8	60.5	66.8
Jackhammer	79.0	67.6	63.8	57.5	63.8
Small Bulldozer	58.0	46.6	42.8	36.5	42.8

STATIONARY NOISE MODELING

SCUS-04 - Stationary Noise Modeling Attenuation Calculations

Phase	HVAC Reference Level	Receptor to South
Distance in feet	*50*	*35*
HVAC	52.0	55

Phase	Playfield Reference Level	Receptor to North
Distance in feet	*15*	*65*
Soccer Field	53.8	41