ATTACHMENT I

ENVIRONMENTAL NOISE ASSESSMENT

Environmental Noise Assessment

City of Roseville Soccer Complex

City of Roseville, California

June 17, 2022

Project #220310

Prepared for:

Montrose Environmental Solutions
1801 7th Street, Suite 100
Sacramento, CA 95811

Prepared by:

Saxelby Acoustics LLC

Luke Saxelby, INCE Bd. Cert.
Principal Consultant
Board Certified, Institute of Noise Control Engineering (INCE)

(916) 760-8821
www.SaxNoise.com | Luke@SaxNoise.com
915 Highland Pointe Drive, Suite 250
Roseville, CA 95678

Table of Contents

List Of Figures

List Of Tables

INTRODUCTION

The City of Roseville Soccer Complex project consists of the development of a ten-field-soccer complex. The project will include 964 off-street parking stalls, a playground area, and picnic areas. The project would be located within the West Roseville Specific Plan area along the east side of Westbrook Boulevard, south of Blue Oaks Boulevard and north of Pleasant Grove Boulevard. The Pleasant Grove Wastewater Treatment Plant borders the project site to the east. The project site is currently vacant.

The City of Roseville has requested that an acoustical analysis be prepared to analyze potential noise impacts associated with the proposed project. Therefore, this analysis will predict the noise generation associated with these uses and will seek to achieve compliance with the applicable City of Roseville General Plan Noise Element goals and policies.

Figure 1 shows the project site plan. **Figure 2** shows an aerial photo of the project site and noise measurement locations.

ENVIRONMENTAL SETTING

BACKGROUND INFORMATION ON NOISE

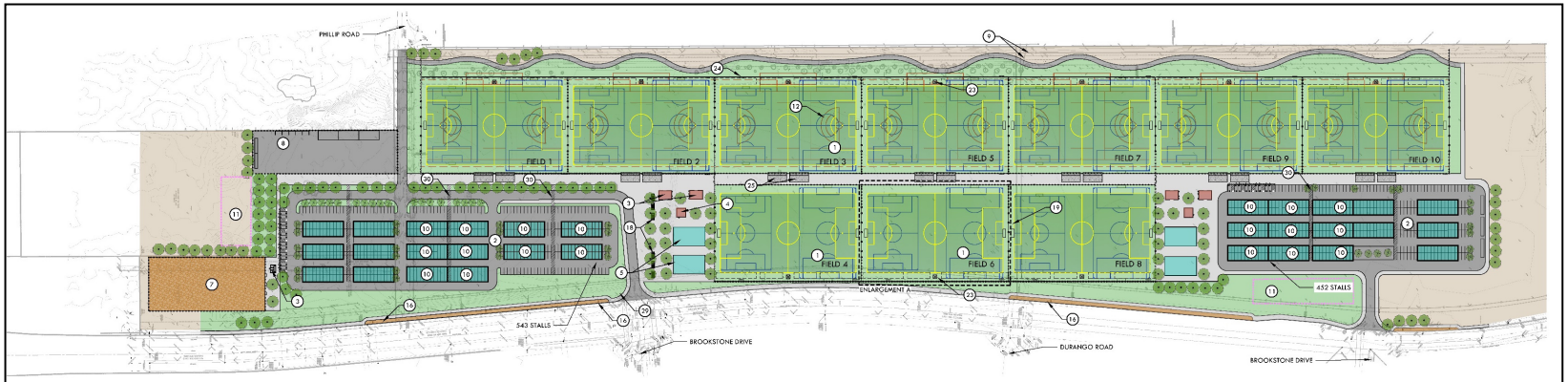
Fundamentals of Acoustics

Acoustics is the science of sound. Sound may be thought of as mechanical energy of a vibrating object transmitted by pressure waves through a medium to human (or animal) ears. If the pressure variations occur frequently enough (at least 20 times per second), then they can be heard and are called sound. The number of pressure variations per second is called the frequency of sound, and is expressed as cycles per second or Hertz (Hz).

Noise is a subjective reaction to different types of sounds. Noise is typically defined as (airborne) sound that is loud, unpleasant, unexpected or undesired, and may therefore be classified as a more specific group of sounds. Perceptions of sound and noise are highly subjective from person to person.

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 this 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, and changes in levels (dB) correspond closely to human perception of relative loudness.

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 A-weighted sound levels. There is a strong correlation between A-weighted sound levels (expressed as dBA) and the way the human ear perceives sound. For this reason, the A-weighted sound level has become the standard tool of environmental noise assessment. All noise levels reported in this section are in terms of A-weighted levels, but are expressed as dB, unless otherwise noted.



LEGEND

1. FIELDS:
   70 YARDS x 120 YARDS
   22.5' X 15' BUFFER
2. PARKING LOT (95 STALLS/FIELD):
   - NORTH LOT 543 PARKING STALLS
   - SOUTH LOT 452 PARKING STALLS
3. RESTROOM
4. CONCESSIONS BUILDING
5. SOLAR PICNIC SHADE STRUCTURE (50' X84')
6. TEMPORARY NETTING
7. ALL ACCESSIBLE PLAY AREA (1 ACRE)
8. PARK STORAGE/MAINTENANCE EQUIPMENT
9. EXISTING OVERHEAD POWER LINE
10. SOLAR SHADE STRUCTURES - PARKING
    108' X 40' = 24 PARKING STALLS
11. BIOREMEDIATION = 31,000 SQUARE FEET
12. LACROSSE FIELD STRIPING (FOR REFERENCE)
13. U10 YOUTH SOCCER STRIPING (45 YDS X 65 YDS)
14. U12 YOUTH SOCCER STRIPING (50 YDS X 80 YDS)
15. MAINTENANCE ROAD/ PERIMETER WALKWAY
16. PLANTING BED
17. BUS DROP OFF
18. FOOD TRUCK PARKING
19. 16' TALL CHAIN LINK FENCE
20. 8' TALL CHAIN LINK FENCE
21. 42" TALL CHAIN LINK FENCE
22. 6' TALL ORNAMENTAL FENCE
23. 10'X10' POP-UP TENT WITH SCORER'S TABLE
24. SPORTS LIGHTING
25. SOLAR SHADE STRUCTURES - PROMENADE
26. SOCCER GOAL
27. PLAYER'S AREA
28. WARM-UP AREA
29. PARK ENTRY SIGN
30. PEDESTRIAN CROSSING

ADD ALTERNATE 1:

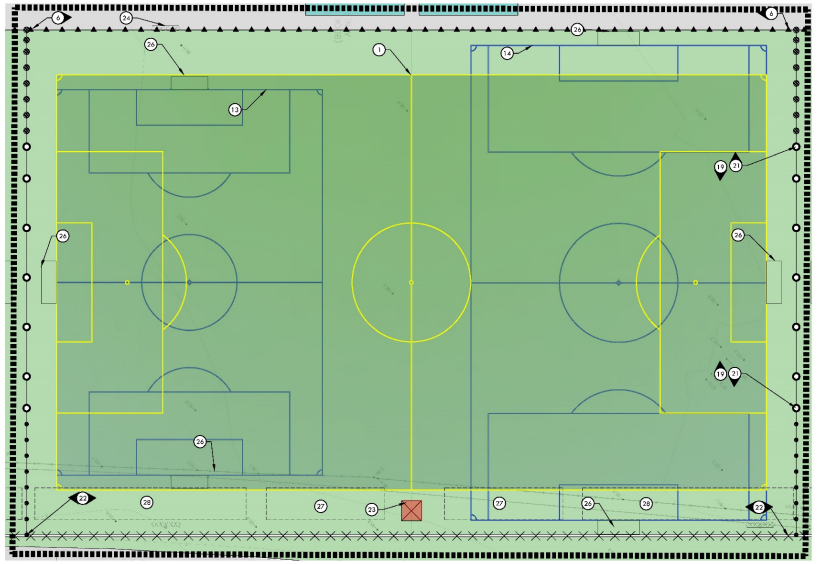
FIELDS 2 & 9
4 CANTILEVER SOLAR SHADE STRUCTURES
SOUTH PLAZA AREA
91 PARKING STALLS- NORTH
3 SOLAR SHADE STRUCTURES - NORTH PARKING
102 PARKING STALLS- SOUTH
2 SOLAR SHADE STRUCTURES - SOUTH PARKING

FUTURE PHASE:

FIELDS 1 &10
4 CANTILEVER SOLAR SHADE STRUCTURES
PERIMETER WALKWAY
92 PARKING STALLS - NORTH
3 SOLAR SHADE STRUCTURES - NORTH PARKING
104 PARKING STALLS - SOUTH
3 SOLAR SHADE STRUCTURES - SOUTH PARKING

NORTH

JANUARY 17, 2022



ENLARGEMENT A SCALE: 1"=20'

CITY OF ROSEVILLE CALIFORNIA

City of Roseville Soccer Complex
MASTER PLAN - CONCEPT
City of Roseville
Westbrook Boulevard

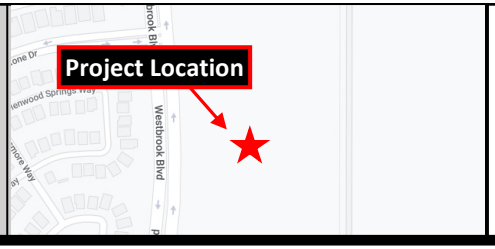
VERDE DESIGN
LANDSCAPE ARCHITECTURE
CIVIL ENGINEERING
SPORT PLANNING & DESIGN
1843 Iron Point Rd, Suite 140
Folsom, CA 95630
tel: 408.985.7200
fax: 408.985.7260
www.verdedesigninc.com

City of Roseville Soccer Complex

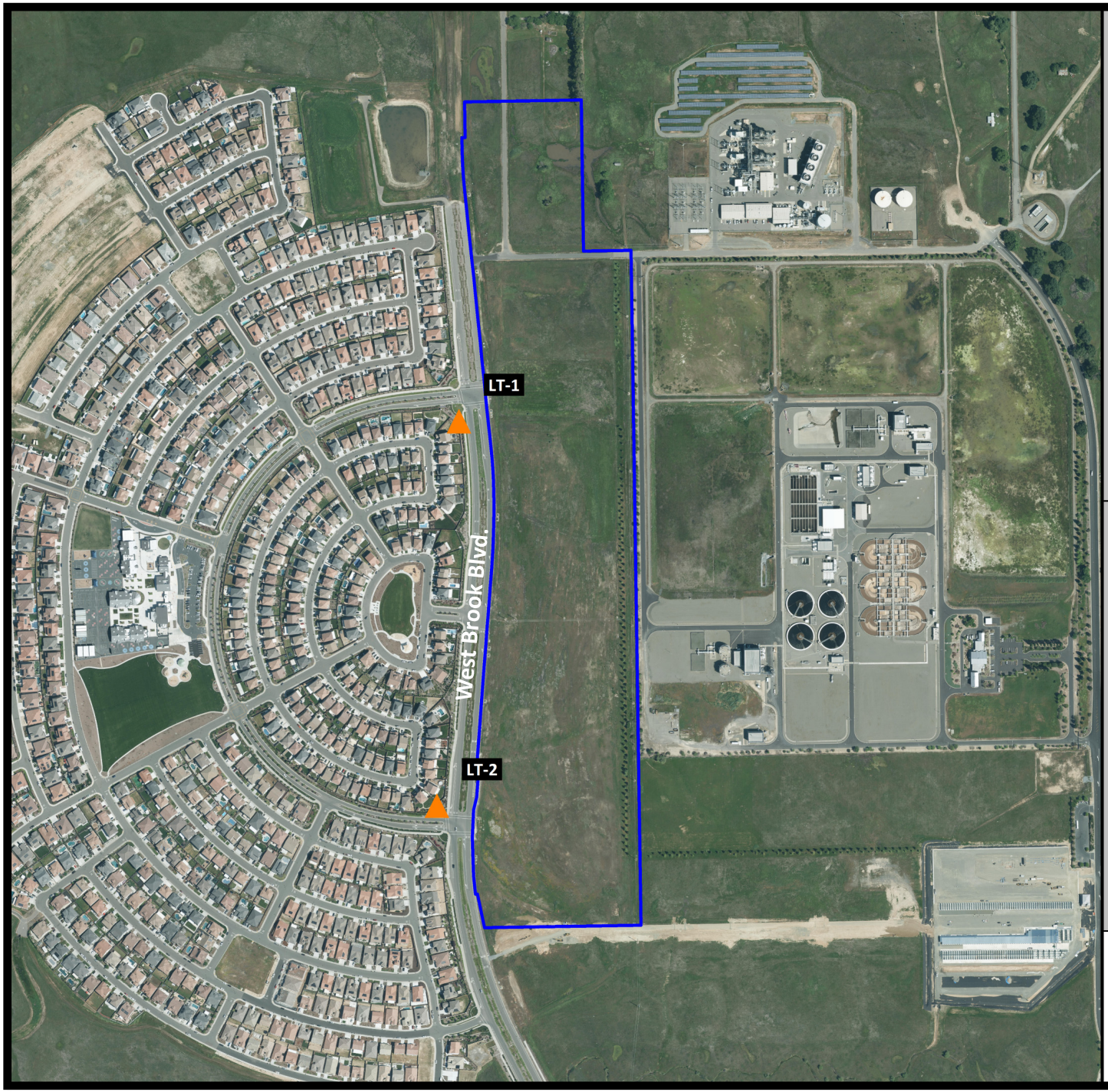
City of Roseville, California

Figure 1

Project Site Plan



SAXELBY ACOUSTICS
Acoustics · Noise · Vibration



City of Roseville Soccer Complex

City of Roseville, California

Figure 2

Noise Measurement Sites

Legend

- Project Site
- Noise Measurement Site - Long Term

0 ft 500 ft 1000 ft

Projection: UTM Zone 10 / WGS84 / meters
Rev. Date: 04/22/2022

SAXELBY ACOUSTICS
Acoustics · Noise · Vibration

The decibel scale is logarithmic, not linear. In other words, two sound levels 10-dB apart differ in acoustic energy by a factor of 10. When the standard logarithmic decibel is A-weighted, an increase of 10-dBA is generally perceived as a doubling in loudness. For example, a 70-dBA sound is half as loud as an 80-dBA sound, and twice as loud as a 60 dBA sound.

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 environment. A common statistical tool is the average, or equivalent, sound level (L_{eq}), 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 L_{eq} is the foundation of the composite noise descriptor, L_{dn}, and shows very good correlation with community response to noise.

The day/night average level (L_{dn}) 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 L_{dn} represents a 24-hour average, it tends to disguise short-term variations in the noise environment.

Table 1 lists several examples of the noise levels associated with common situations. **Appendix A** provides a summary of acoustical terms used in this report.

TABLE 1: TYPICAL NOISE LEVELS

Common Outdoor Activities	Noise Level (dBA)	Common Indoor Activities
	--110--	Rock Band
Jet Fly-over at 300 m (1,000 ft.)	--100--	
Gas Lawn Mower at 1 m (3 ft.)	--90--	
Diesel Truck at 15 m (50 ft.), at 80 km/hr. (50 mph)	--80--	Food Blender at 1 m (3 ft.) Garbage Disposal at 1 m (3 ft.)
Noisy Urban Area, Daytime Gas Lawn Mower, 30 m (100 ft.)	--70--	Vacuum Cleaner at 3 m (10 ft.)
Commercial Area Heavy Traffic at 90 m (300 ft.)	--60--	Normal Speech at 1 m (3 ft.)
Quiet Urban Daytime	--50--	Large Business Office Dishwasher in Next Room
Quiet Urban Nighttime	--40--	Theater, Large Conference Room (Background)
Quiet Suburban Nighttime	--30--	Library
Quiet Rural Nighttime	--20--	Bedroom at Night, Concert Hall (Background)
	--10--	Broadcast/Recording Studio
Lowest Threshold of Human Hearing	--0--	Lowest Threshold of Human Hearing
Source: Caltrans, Technical Noise Supplement, Traffic Noise Analysis Protocol. September, 2013.		

Effects of Noise on People

The effects of noise on people can be placed in three categories:

- Subjective effects of annoyance, nuisance, and dissatisfaction
- Interference with activities such as speech, sleep, and learning
- Physiological effects such as hearing loss or sudden startling

Environmental noise typically produces effects in the first two categories. Workers in industrial plants can experience noise in the last category. There is no completely satisfactory way to measure the subjective effects of noise or the corresponding reactions of annoyance and dissatisfaction. A wide variation in individual thresholds of annoyance exists and different tolerances to noise tend to develop based on an individual's past experiences with noise.

Thus, an important way of predicting a human reaction to a new noise environment is the way it compares to the existing environment to which one has adapted: the so-called ambient noise level. In general, the more a new noise exceeds the previously existing ambient noise level, the less acceptable the new noise will be judged by those hearing it.

With regard to increases in A-weighted noise level, the following relationships occur:

- Except in carefully controlled laboratory experiments, a change of 1-dBA cannot be perceived;
- Outside of the laboratory, a 3-dBA change is considered a just-perceivable difference;
- A change in level of at least 5-dBA is required before any noticeable change in human response would be expected; and
- A 10-dBA change is subjectively heard as approximately a doubling in loudness, and can cause an adverse response.

Stationary point sources of noise – including stationary mobile sources such as idling vehicles – attenuate (lessen) at a rate of approximately 6-dB per doubling of distance from the source, depending on environmental conditions (i.e. atmospheric conditions and either vegetative or manufactured noise barriers, etc.). Widely distributed noises, such as a large industrial facility spread over many acres, or a street with moving vehicles, would typically attenuate at a lower rate.

EXISTING AMBIENT NOISE LEVELS

To quantify the existing ambient noise environment in the project vicinity, Saxelby Acoustics conducted a continuous (24-hr.) noise level measurement at two locations near sensitive receptors adjacent to the project site over four days. Noise measurement locations are shown on **Figure 2**. A summary of the noise level measurement survey results is provided in **Table 2**. **Appendix B** contains the complete results of the noise monitoring.

The sound level meters were programmed to record the maximum, median, and average noise levels at each site during the survey. The maximum value, denoted L_{max}, represents the highest noise level measured. The average value, denoted L_{eq}, represents the energy average of all of the noise received by the sound level meter microphone during the monitoring period. The median value, denoted L_{50}, represents the sound level exceeded 50 percent of the time during the monitoring period.

Larson Davis Laboratories (LDL) model 820 precision integrating sound level meters were used for the ambient noise level measurement survey. The meters were calibrated before and after use with a CAL 200 acoustical calibrator to ensure the accuracy of the measurements. The equipment used meets all pertinent specifications of the American National Standards Institute for Type 1 sound level meters (ANSI S1.4).

TABLE 2: SUMMARY OF EXISTING BACKGROUND NOISE MEASUREMENT DATA

Location	Date	L_{dn}	Daytime L_{eq}	Daytime L_{50}	Daytime L_{max}	Nighttime L_{eq}	Nighttime L_{50}	Nighttime L_{max}
LT-1: 75 ft. to CL of Westbrook Blvd.	4/23/2022	62	62	53	83	52	46	68
	4/24/2022	61	62	51	84	51	43	69
	4/25/2022	62	61	53	83	53	46	72
	4/26/2022	62	62	53	85	53	45	72
LT-2: 115 ft. to CL of Westbrook Blvd.	4/23/2022	57	57	50	80	48	44	69
	4/24/2022	60	61	50	82	48	44	65
	4/25/2022	60	58	53	78	52	44	71
	4/26/2022	60	58	53	78	52	44	71

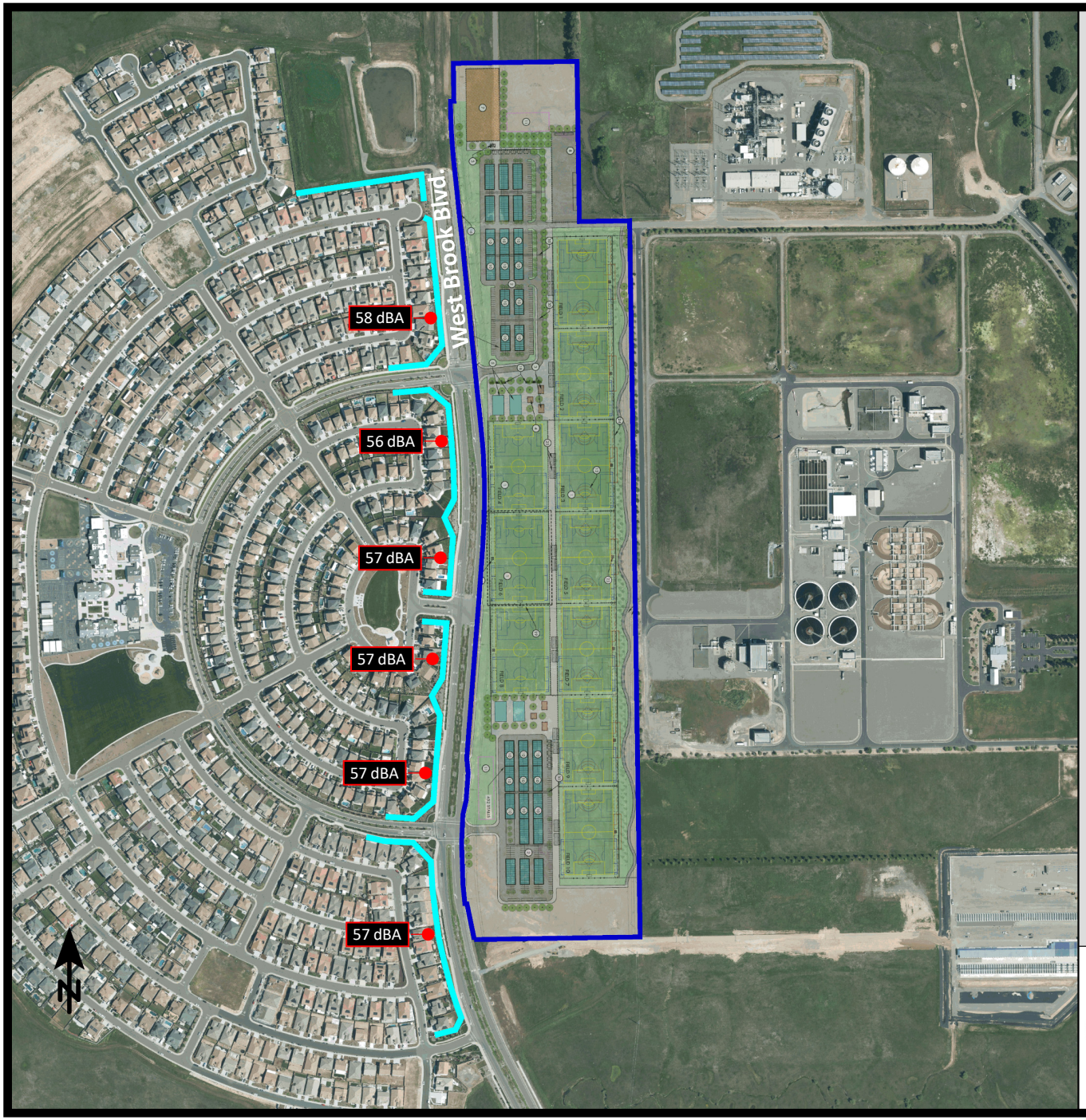
Notes:

- *All values shown in dBA*
- *Daytime hours: 7:00 a.m. to 10:00 p.m.*
- *Nighttime Hours: 10:00 p.m. to 7:00 a.m.*
- *Source: Saxelby Acoustics 2022*

AMBIENT NOISE LEVELS AT SENSITIVE RECEPTORS

To accurately assess the effect of the proposed project on surrounding sensitive uses, Saxelby Acoustics determined the existing ambient noise levels in the backyard areas of the nearby residences which are shielded by existing concrete masonry sound walls located along Westbrook Boulevard. Using the data collected during the long-term noise level survey, Saxelby Acoustics modeled noise levels emanating from Westbrook Blvd at the existing noise-sensitive receptor backyards. It should be noted that Westbrook Boulevard was noted as the primary daytime noise source. However, contributions to ambient noise from the Roseville Energy Park or the Pleasant Grove Waste Water Treatment Plan (WWTP) are also included in the collected ambient noise readings.

Inputs to the model included sound power levels for Westbrook Boulevard, existing sound walls, buildings, terrain type, and locations of sensitive receptors. These predictions are made in accordance with International Organization for Standardization (ISO) standard 9613-2:1996 (Acoustics – Attenuation of sound during propagation outdoors). ISO 9613 is the most commonly used method for calculating exterior noise propagation. The results of this analysis are shown graphically on **Figure 3** in terms of the average (L_{eq}) daytime (7:00 a.m. to 10:00 p.m.) noise levels.



City of Roseville Soccer Complex

City of Roseville, California

Figure 3

Existing Daytime (7 a.m. to 10 p.m.) Average Ambient Noise Levels (dBA L^{eq})

Signs and symbols

- Project Boundary
- Existing wall

1 : 7350

0 37.5 75 150 225 300 m

SAXELBY ACOUSTICS
Acoustics · Noise · Vibration

EVALUATION OF OPERATIONAL NOISE AT RESIDENTIAL RECEPTORS

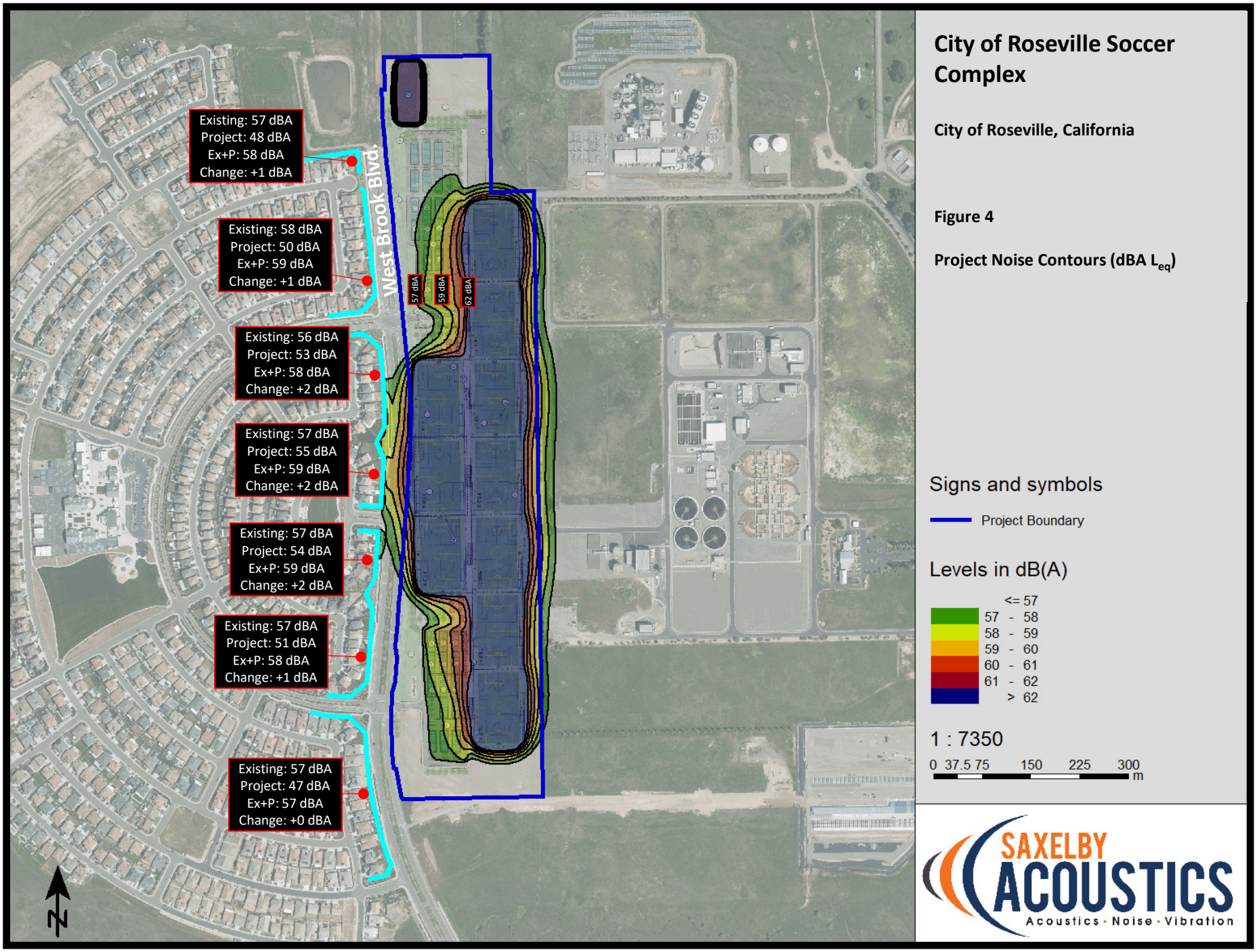
The primary noise sources associated with a soccer field are loud conversation amongst players and coaches on the field, referee whistles, and crowd noise. Secondary noise sources associated with the project include a playground at the north of the project site. This analysis considers each of these noise sources along with vehicle circulation on the project site. The following is a list of assumptions used for the noise modeling. The data used is based upon Saxelby Acoustics data from similar facilities and predicted project trip generation volumes from the traffic engineer (Fehr & Peers).

On-Site Circulation: The proposed soccer complex is predicted to generate up to 480 peak hour trips during a typical weekday and up to 1,074 peak hour trips during tournaments (Fehr & Peers). Parking lot movements are predicted to generate a sound exposure level (SEL) of 71 dBA SEL at 50 feet for cars. Nighttime traffic outside of the AM or PM peak hour is not expected to occur. Saxelby Acoustics data.

Soccer Field: Based upon measurements taken at various facilities, soccer games varied in noise level from 52 to 55 dBA L_{eq} at 200 feet as measured from the center of the field to sidelines opposite of spectators. It was assumed that half of the fields would operate at 52 dBA L_{eq} at 200 feet and half would operate at 55 dBA L_{eq} at 200 feet. Maximum (L_{max}) noise levels for a typical soccer game were found to be 73 dBA at 200 feet.

Playground Area: Recreational activity in center of playground area at 55 dBA L_{eq} and 75 dBA L_{max} at 100 feet. Daytime use only. Saxelby Acoustics data.

Saxelby Acoustics used the SoundPLAN noise prediction model. Inputs to the model included sound power levels for the proposed soccer fields, parking lots, and playground, existing and proposed buildings, existing sound walls, terrain type, and locations of sensitive receptors. These predictions are made in accordance with International Organization for Standardization (ISO) standard 9613-2:1996 (Acoustics – Attenuation of sound during propagation outdoors). ISO 9613 is the most commonly used method for calculating exterior noise propagation. The results of this analysis are shown graphically on **Figure 4**.



City of Roseville Soccer Complex

City of Roseville, California

Figure 4

Project Noise Contours (dBA L_{eq})

Signs and symbols

Project Boundary

Levels in dB(A)

<= 57
57 - 58
58 - 59
59 - 60
60 - 61
61 - 62
> 62

1 : 7350

0 37.5 75 150 225 300 m

SAXELBY ACOUSTICS
Acoustics · Noise · Vibration

CONSTRUCTION NOISE ENVIRONMENT

During the construction of the proposed project noise from construction activities would temporarily add to the noise environment in the project vicinity. As shown in **Table 3**, activities involved in construction would generate maximum noise levels ranging from 76 to 90 dB at a distance of 50 feet.

TABLE 3: CONSTRUCTION EQUIPMENT NOISE

Type of Equipment	Maximum Level, dBA at 50 feet
Auger Drill Rig	84
Backhoe	78
Compactor	83
Compressor (air)	78
Concrete Saw	90
Dozer	82
Dump Truck	76
Excavator	81
Generator	81
Jackhammer	89
Pneumatic Tools	85

Source: Roadway Construction Noise Model User's Guide. Federal Highway Administration. FHWA-HEP-05-054. January 2006.

CONSTRUCTION VIBRATION ENVIRONMENT

The primary vibration-generating activities associated with the proposed project would occur during construction when activities such as grading, utilities placement, and parking lot construction occur. **Table 4** shows the typical vibration levels produced by construction equipment.

TABLE 4: VIBRATION LEVELS FOR VARIOUS CONSTRUCTION EQUIPMENT

Type of Equipment	Peak Particle Velocity at 25 feet (inches/second)	Peak Particle Velocity at 50 feet (inches/second)	Peak Particle Velocity at 100 feet (inches/second)
Large Bulldozer	0.089	0.031	0.011
Loaded Trucks	0.076	0.027	0.010
Small Bulldozer	0.003	0.001	0.000
Auger/drill Rigs	0.089	0.031	0.011
Jackhammer	0.035	0.012	0.004
Vibratory Hammer	0.070	0.025	0.009
Vibratory Compactor/roller	0.210 (Less than 0.20 at 26 feet)	0.074	0.026

Source: Transit Noise and Vibration Impact Assessment Guidelines. Federal Transit Administration. May 2006.

REGULATORY CONTEXT

FEDERAL

There are no federal regulations related to noise that apply to the Proposed Project.

STATE

There are no state regulations related to noise that apply to the Proposed Project.

LOCAL

City of Roseville General Plan

The City of Roseville General Plan Noise Element Table 1X-3 (**Table 3**) establishes an acceptable exterior noise level of 50 dBA L_{eq} for daytime (7:00 a.m. to 10:00 p.m.) for stationary noise sources.

TABLE 3: CITY OF ROSEVILLE NOISE ELEMENT TABLE 1X-3

TABLE IX-3

PERFORMANCE STANDARDS
FOR NON-TRANSPORTATION NOISE SOURCES
OR PROJECTS AFFECTED BY NON-TRANSPORTATION NOISE SOURCES
(As Measured at the Property Line of Noise-Sensitive Uses)

Noise Level Descriptor	Daytime (7 a.m. to 10 p.m.)	Nighttime (10 p.m. to 7 a.m.)
Hourly L_{eq}, dB	50	45
Maximum level, dB	70	65

[1] For municipal power plants consisting primarily of broadband, steady state noise sources, the hourly (Leq) noise standard may be increased up to 10 dB(A), but not exceed 55 dB(A) Hourly Leq dB.

Each of the noise levels specified above should be lowered by five dB for simple tone noises, noises consisting primarily of speech or music, or for recurring impulsive noises. Such noises are generally considered by residents to be particularly annoying and are a primary source of noise complaints. These noise level standards do not apply to residential units established in conjunction with industrial or commercial uses (e.g., caretaker dwellings).

No standards have been included for interior noise levels. Standard construction practices should, with exterior noise levels identified, result in acceptable interior noise levels.

SOURCE: CITY OF ROSEVILLE GENERAL PLAN NOISE ELEMENT 2035.

City of Roseville Noise Ordinance

The City of Roseville Municipal Code outlines the following sound limits for sensitive receptors:

9.24.100 SOUND LIMITS FOR SENSITIVE RECEPTORS.

It is unlawful for any person at any location to create any sound, or to allow the creation of any sound, on property owned, leased, occupied or otherwise controlled by such person, which causes the exterior sound level when measured at the property line of any affected sensitive receptor to exceed the ambient sound level by three dBA or exceed the sound level standards as set forth in Table 1, by three dBA, whichever is greater.

Table 1
SOUND LEVEL STANDARDS
(for non-transportation or fixed sound sources)

Sound Level Descriptor	*Daytime (7:00 a.m. to 10:00 p.m.)*	*Nighttime (10:00 p.m. to 7:00 a.m.)*
Hourly l_{eq}, dB	*50*	*45*
Maximum level, dB	*70*	*65*

A. Each of the sound level standards specified in Table 1 shall be reduced by five dB for simple tone noises, consisting of speech and music. However, in no case shall the sound level standard be lower than the ambient sound level plus three dB.

B. If the intruding sound source is continuous and cannot reasonably be discontinued or stopped for a time period whereby the ambient sound level can be measured, the sound level measured while the source is in operation shall be compared directly to the sound level standards of Table 1. (Ord. 3638 § 1, 2001.)

9.24.130 SOUND LIMITS FOR EVENTS ON PUBLIC PROPERTY.

Notwithstanding the provisions of Section 9.24.100, sound sources associated with outside activities on public property (e.g. athletic events, sporting events, fairs, and entertainment events) between the hours of 8:00 a.m. and 10:30 p.m., Sunday through Thursday, and between the hours of 8:00 a.m. and 11:00 p.m. on Fridays, Saturdays, and city-recognized holidays, shall not exceed 80 dBA, Lmax at the property line of the property on which the event is being held. (Ord. 3638 § 1, 2001.)

9.24.030 EXEMPTIONS.

Sound or noise emanating from the following sources and activities are exempt from the provisions of this title:

A. Sound sources typically associated with residential uses (e.g., children at play, air conditioning and similar equipment, but not including barking dogs);

B. Sound sources associated with property maintenance (e.g., lawn mowers, edgers, blowers, pool pumps, power tools, etc.) provided such activities take place between the hours of 8:00 a.m. and 9:00 p.m.;

C. Safety, warning and alarm devices, including house and car alarms, and other warning devices that are designed to protect the health, safety and welfare, provided such devices are not negligently maintained or operated;

D. The normal operation of public and private schools typically consisting of classes and other school-sponsored activities;

E. Maintenance (e.g., lawn mowers, edgers, aerators, blowers, etc.) of golf courses, provided such activities take place between the hours of 5:00 a.m. and 9:00 p.m. May through September, and 6:00 a.m. and 9:00 p.m. October through April;

F. Emergencies involving the execution of the duties of duly authorized governmental personnel and others providing emergency response to the general public, including, but not limited to, sworn peace officers, emergency personnel, utility personnel, and the operation of emergency response vehicles and equipment;

G. Private construction (e.g., construction, alteration or repair activities) between the hours of 7:00 a.m. and 7:00 p.m. Monday through Friday, and between the hours of 8:00 a.m. and 8:00 p.m. Saturday and Sunday; provided, however, that all construction equipment shall be fitted with factory installed muffling devices and that all construction equipment shall be maintained in good working order. (Ord. 3638 § 1, 2001.)

CRITERIA FOR ACCEPTABLE VIBRATION

Vibration is like noise in that it involves a source, a transmission path, and a receiver. While vibration is related to noise, it differs in that in that noise is generally considered to be pressure waves transmitted through air, whereas vibration usually consists of the excitation of a structure or surface. As with noise, vibration consists of an amplitude and frequency. A person's perception to the vibration will depend on their individual sensitivity to vibration, as well as the amplitude and frequency of the source and the response of the system which is vibrating.

Vibration can be measured in terms of acceleration, velocity, or displacement. A common practice is to monitor vibration measures in terms of peak particle velocities in inches per second. Standards pertaining to perception as well as damage to structures have been developed for vibration levels defined in terms of peak particle velocities.

Human and structural response to different vibration levels is influenced by a number of factors, including ground type, distance between source and receptor, duration, and the number of perceived vibration events. **Table 8**, which was developed by Caltrans, shows the vibration levels which would normally be required to result in damage to structures. The vibration levels are presented in terms of peak particle velocity in inches per second.

Table 8 indicates that the threshold for architectural damage to structures is 0.20 in/sec p.p.v. A threshold of 0.2 in/sec p.p.v. is considered to be a reasonable threshold for short-term construction projects.

TABLE 5: EFFECTS OF VIBRATION ON PEOPLE AND BUILDINGS

Peak Particle Velocity		Human Reaction	Effect on Buildings
mm/second	in/second		
0.15-0.30	0.006-0.019	Threshold of perception; possibility of intrusion	Vibrations unlikely to cause damage of any type
2.0	0.08	Vibrations readily perceptible	Recommended upper level of the vibration to which ruins and ancient monuments should be subjected
2.5	0.10	Level at which continuous vibrations begin to annoy people	Virtually no risk of "architectural" damage to normal buildings
5.0	0.20	Vibrations annoying to people in buildings (this agrees with the levels established for people standing on bridges and subjected to relative short periods of vibrations)	Threshold at which there is a risk of "architectural" damage to normal dwelling - houses with plastered walls and ceilings. Special types of finish such as lining of walls, flexible ceiling treatment, etc., would minimize "architectural" damage
10-15	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" dam age and possibly minor structural damage

Source: Transportation Related Earthborne Vibrations. Caltrans. TAV-02-01-R9601. February 20, 2002.

IMPACTS AND MITIGATION MEASURES

THRESHOLDS OF SIGNIFICANCE

Appendix G of the CEQA Guidelines states that a project would normally be considered to result in significant noise impacts if noise levels conflict with adopted environmental standards or plans or if noise generated by the project would substantially increase existing noise levels at sensitive receivers on a permanent or temporary basis. Significance criteria for noise impacts are drawn from CEQA Guidelines Appendix G (Items XI [a-f]).

Would the project:

a. Generate a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?

b. Generate excessive groundborne vibration or groundborne noise levels?

c. For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?

TEMPORARY CONSTRUCTION NOISE INCREASES

Per the City of Roseville Municipal Code, construction activities are exempt assuming that they occur between the hours of 7:00 a.m. and 7:00 p.m. Monday through Friday, and between the hours of 8:00 a.m. and 8:00 p.m. Saturday and Sunday; provided, however, that all construction equipment shall be fitted with factory installed muffling devices and that all construction equipment shall be maintained in good working order.

CONSTRUCTION VIBRATION CRITERIA

A threshold of 0.2 in/sec p.p.v. is considered to be a reasonable threshold for short-term construction projects.

NOISE LEVEL INCREASE CRITERIA FOR LONG-TERM PROJECT-RELATED NOISE LEVEL INCREASES

Per the City of Roseville Municipal Code noise ordinance, an increase in ambient noise levels exceeding 3 dBA would be considered significant.

PROJECT-SPECIFIC IMPACTS AND MITIGATION MEASURES

Impact 1: ***Would the project generate a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?***

Traffic Noise Increases at Off-Site Receptors

Based upon the transportation analysis prepared for the project (Fehr & Peers, June 2022) the proposed project is predicted to result in a reduction of 382 daily vehicle trips as compared to the planned vehicle trips assumed for the underlying land use assumed in the West Roseville Specific Plan. Therefore, potential impacts resulting from increased traffic noise would be considered ***less-than-significant***.

Operational Noise at Sensitive Receptors

PROJECT NOISE EXPOSURE

As shown in **Figure 3**, the ambient noise levels at sensitive receptors adjacent to the project site were found to range from 56 to 58 dBA L_{eq} during daytime hours due primarily to existing traffic noise, the Roseville Energy Park, and the Pleasant Grove WWTP. This already exceeds the City of Roseville 50 dBA L_{eq} daytime noise standard, shown in **Table 3**. Therefore, this analysis examines whether the project would cause a significant increase in ambient noise levels. **Figure 4** shows that project noise levels at the nearest backyards along Westbrook Boulevard range from 47 to 55 dBA L_{eq}, causing ambient noise increases ranging from 0- to 2-dBA L_{eq}. This is less than the 3 dBA standard established in the City of Roseville Municipal Code noise ordinance Section 9.24.100.

It should also be noted that the maximum property line noise level at the soccer complex is predicted to be 62 dBA L_{eq}. Maximum (Lmax) noise levels from typical soccer activity was measured by Saxelby Acoustics to be 18 dBA higher than average (L_{eq}) values. Therefore, the property line maximum noise level is predicted to be 80 dBA L_{max}. This complies with the City of Roseville Municipal Code noise ordinance requirement that sound sources associated with outside activities on public property not exceed 80 dBA L_{max} at the property line on which the event is being held, as outlined in Section 9.24.130.

Therefore, operational noise from the project would be considered ***less-than-significant.***

Construction Noise

During the construction phases of the project, noise from construction activities would add to the noise environment in the immediate project vicinity. As indicated in **Table 4**, activities involved in construction would generate maximum noise levels ranging from 76 to 90 dBA L_{max} at a distance of 50 feet. Most of the project construction would occur at distances of 200 feet or greater from the nearest residences. Additionally, construction noise would be shielded by existing masonry sound walls located along Westbrook Boulevard. At 200 feet, maximum noise levels from the loudest pieces of equipment would be approximately 73 dBA L_{max} in the nearest residential backyards. Existing maximum noise levels are estimated to be approximately 76-78 dBA L_{max} in the nearest residential backyards. Therefore, project construction is not predicted to increase existing noise levels at the nearest noise sensitive receptors.

Construction noise associated with parking lot paving would be similar to noise that would be associated with public works projects, such as a roadway widening or street paving projects. Construction activities would be temporary in nature and are anticipated to occur during normal daytime working hours.

Noise would also be generated during the construction phase by increased truck traffic on area roadways. A project-generated noise source would be truck traffic associated with transport of heavy materials and equipment to and from the construction site. This noise increase would be of short duration and would occur primarily during daytime hours.

The City of Roseville exempts construction noise from the Noise Ordinance provisions if construction activity is limited to daytime hours. These exemptions are typical of City and County noise ordinances and reflect the recognition that construction-related noise is temporary in character, is generally acceptable when limited to daylight hours, and is part of what residents of urban areas expect as part of a typical urban noise environment (along with sirens, etc.)

This is a **less-than-significant** impact, and no mitigation is required.

Impact 2: ***Would the project generate excessive groundborne vibration or groundborne noise levels?***

Construction vibration impacts include human annoyance and building structural damage. Human annoyance occurs when construction vibration rises significantly above the threshold of perception. Building damage can take the form of cosmetic or structural.

The **Table 4** data indicate that construction vibration levels anticipated for the project are less than the 0.2 in/sec threshold at distances of 26 feet. Sensitive receptors which could be impacted by construction related vibrations, especially vibratory compactors/rollers, are located approximately 26 feet, or further, from typical construction activities. At these distances construction vibrations are not predicted to exceed acceptable levels. Additionally, construction activities would be temporary in nature and would likely occur during normal daytime working hours.

This is a **less-than-significant** impact and no mitigation is required.

Impact 3: ***For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?***

There are no projects within 2 miles of the project site. Therefore, this impact is not applicable to the proposed project.

REFERENCES

American National Standards Institute. (1998). *[Standard] ANSI S1.43-1997 (R2007): Specifications for integrating-averaging sound level meters*. New York: Acoustical Society of America.

American Standard Testing Methods, *Standard Guide for Measurement of Outdoor A-Weighted Sound Levels, American Standard Testing Methods (ASTM) E1014-08*, 2008.

ASTM E1014-12. *Standard Guide for Measurement of Outdoor A-Weighted Sound Levels*. ASTM International. West Conshohocken, PA. 2012.

ASTM E1780-12. *Standard Guide for Measuring Outdoor Sound Received from a Nearby Fixed Source.* ASTM International. West Conshohocken, PA. 2012.

Barry, T M. (1978). *FHWA highway traffic noise prediction model* (FHWA-RD-77-108). Washington, DC: U.S. Department of transportation, Federal highway administration, Office of research, Office of environmental policy.

California Department of Transportation (Caltrans), *Technical Noise Supplement, Traffic Noise Analysis Protocol*, September 2013.

Egan, M. D. (1988). Architectural acoustics. United States of America: McGraw-Hill Book Company.

Federal Highway Administration. *FHWA Roadway Construction Noise Model User's Guide.* FHWA-HEP-05-054 DOT-VNTSC-FHWA-05-01. January 2006.

Hanson, Carl E. (Carl Elmer). (2006). *Transit noise and vibration impact assessment*. Washington, DC: U.S. Department of Transportation, Federal Transit Administration, Office of Planning and Environment.

International Electrotechnical Commission. Technical committee 29: Electroacoustics. International Organization of Legal Metrology. (2013). *Electroacoustics: Sound level meters*.

International Organization for Standardization. (1996). *Acoustic - ISO 9613-2: Attenuation of sound during propagation outdoors. Part 2: General methods of calculation*. Ginevra: I.S.O.

Miller, L. N., Bolt, Beranek, & and Newman, Inc. (1981). *Noise control for buildings and manufacturing plants*. Cambridge, MA: Bolt, Beranek and Newman, Inc.

SoundPLAN. SoundPLAN GmbH. Backnang, Germany. http://www.soundplan.eu/english/

Appendix A: Acoustical Terminology

Acoustics	The science of sound.
Ambient Noise	The distinctive acoustical characteristics of a given space 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.
ASTC	Apparent Sound Transmission Class. Similar to STC but includes sound from flanking paths and correct for room reverberation. A larger number means more attenuation. The scale, like the decibel scale for sound, is logarithmic.
Attenuation	The reduction of an acoustic signal.
A-Weighting	A frequency-response adjustment of a sound level meter that conditions the output signal to approximate human response.
Decibel or dB	Fundamental unit of sound, A Bell is defined as the logarithm of the ratio of the sound pressure squared over the reference pressure squared. A Decibel is one-tenth of a Bell.
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 +5 dBA and nighttime hours weighted by +10 dBA.
DNL	See definition of Ldn.
IIC	Impact Insulation Class. An integer-number rating of how well a building floor attenuates impact sounds, such as footsteps. A larger number means more attenuation. The scale, like the decibel scale for sound, is logarithmic.
Frequency	The measure of the rapidity of alterations of a periodic signal, expressed in cycles per second or hertz (Hz).
Ldn	Day/Night Average Sound Level. Similar to CNEL but with no evening weighting.
Leq	Equivalent or energy-averaged sound level.
Lmax	The highest root-mean-square (RMS) sound level measured over a given period of time.
L(n)	The sound level exceeded a described percentile over a measurement period. For instance, an hourly L50 is the sound level exceeded 50% of the time during the one-hour period.
Loudness	A subjective term for the sensation of the magnitude of sound.
NIC	Noise Isolation Class. A rating of the noise reduction between two spaces. Similar to STC but includes sound from flanking paths and no correction for room reverberation.
NNIC	Normalized Noise Isolation Class. Similar to NIC but includes a correction for room reverberation.
Noise	Unwanted sound.
NRC	Noise Reduction Coefficient. NRC is a single-number rating of the sound-absorption of a material equal to the arithmetic mean of the sound-absorption coefficients in the 250, 500, 1000, and 2,000 Hz octave frequency bands rounded to the nearest multiple of 0.05. It is a representation of the amount of sound energy absorbed upon striking a particular surface. An NRC of 0 indicates perfect reflection; an NRC of 1 indicates perfect absorption.
RT60	The time it takes reverberant sound to decay by 60 dB once the source has been removed.
Sabin	The unit of sound absorption. One square foot of material absorbing 100% of incident sound has an absorption of 1 Sabin.
SEL	Sound Exposure Level. SEL is a rating, in decibels, of a discrete event, such as an aircraft flyover or train pass by, that compresses the total sound energy into a one-second event.
SPC	Speech Privacy Class. SPC is a method of rating speech privacy in buildings. It is designed to measure the degree of speech privacy provided by a closed room, indicating the degree to which conversations occurring within are kept private from listeners outside the room.
STC	Sound Transmission Class. STC is an integer rating of how well a building partition attenuates airborne sound. It is widely used to rate interior partitions, ceilings/floors, doors, windows and exterior wall configurations. The STC rating is typically used to rate the sound transmission of a specific building element when tested in laboratory conditions where flanking paths around the assembly don't exist. A larger number means more attenuation. The scale, like the decibel scale for sound, is logarithmic.
Threshold of Hearing	The lowest sound that can be perceived by the human auditory system, generally considered to be 0 dB for persons with perfect hearing.
Threshold of Pain	Approximately 120 dB above the threshold of hearing.
Impulsive	Sound of short duration, usually less than one second, with an abrupt onset and rapid decay.
Simple Tone	Any sound which can be judged as audible as a single pitch or set of single pitches.

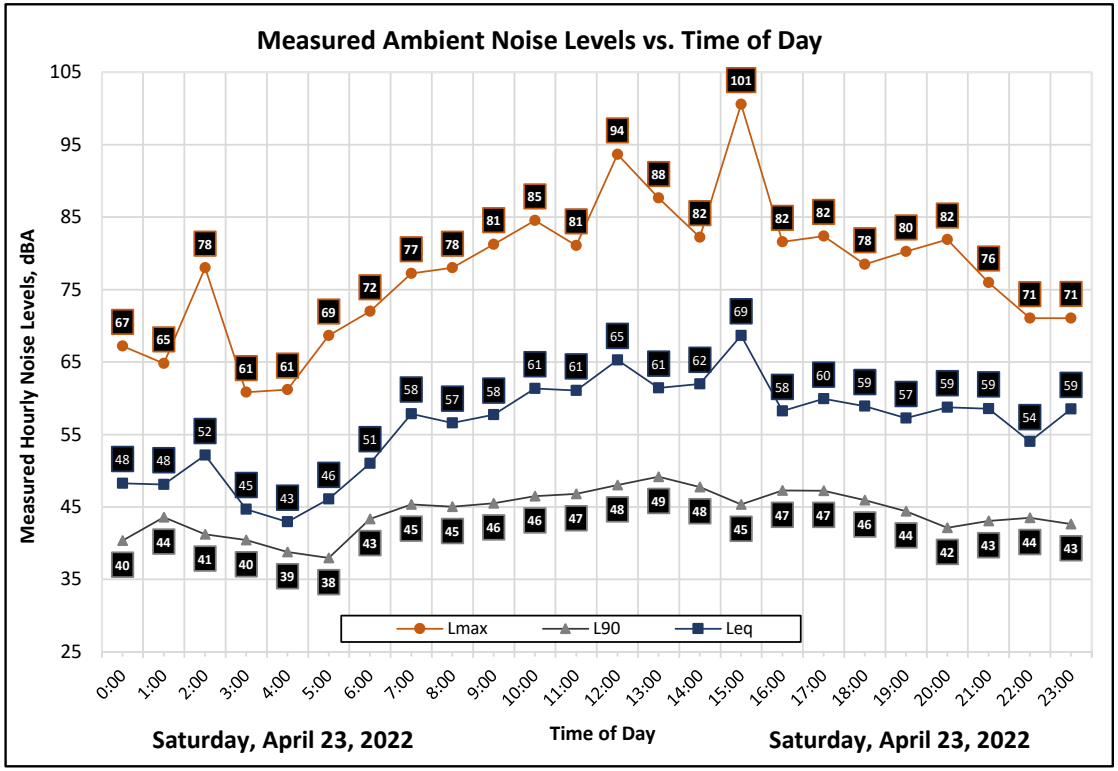
Appendix B: Continuous Ambient Noise Measurement Results

Appendix B1a: Continuous Noise Monitoring Results

Site: LT-1
Project: Westbrook Regional Soccer Complex
Meter: LDL 820-3
Location: Northern Project Boundary
Calibrator: CAL200
Coordinates: 38.7895485°, -121.3872283°

Date	Time	Measured Level, dBA			
		L_{eq}	L_{max}	L_{50}	L_{90}
Saturday, April 23, 2022	0:00	48	67	45	40
Saturday, April 23, 2022	1:00	48	65	46	44
Saturday, April 23, 2022	2:00	52	78	43	41
Saturday, April 23, 2022	3:00	45	61	44	40
Saturday, April 23, 2022	4:00	43	61	41	39
Saturday, April 23, 2022	5:00	46	69	41	38
Saturday, April 23, 2022	6:00	51	72	47	43
Saturday, April 23, 2022	7:00	58	77	51	45
Saturday, April 23, 2022	8:00	57	78	51	45
Saturday, April 23, 2022	9:00	58	81	52	46
Saturday, April 23, 2022	10:00	61	85	53	46
Saturday, April 23, 2022	11:00	61	81	53	47
Saturday, April 23, 2022	12:00	65	94	54	48
Saturday, April 23, 2022	13:00	61	88	55	49
Saturday, April 23, 2022	14:00	62	82	56	48
Saturday, April 23, 2022	15:00	69	101	52	45
Saturday, April 23, 2022	16:00	58	82	53	47
Saturday, April 23, 2022	17:00	60	82	53	47
Saturday, April 23, 2022	18:00	59	78	52	46
Saturday, April 23, 2022	19:00	57	80	52	44
Saturday, April 23, 2022	20:00	59	82	51	42
Saturday, April 23, 2022	21:00	59	76	51	43
Saturday, April 23, 2022	22:00	54	71	48	44
Saturday, April 23, 2022	23:00	59	71	49	43

Statistics	Leq	Lmax	L50	L90
Day Average	62	83	53	46
Night Average	52	68	45	41
Day Low	57	76	51	42
Day High	69	101	56	49
Night Low	43	61	41	38
Night High	59	78	49	44
Ldn	62	Day %		95
CNEL	62	Night %		5

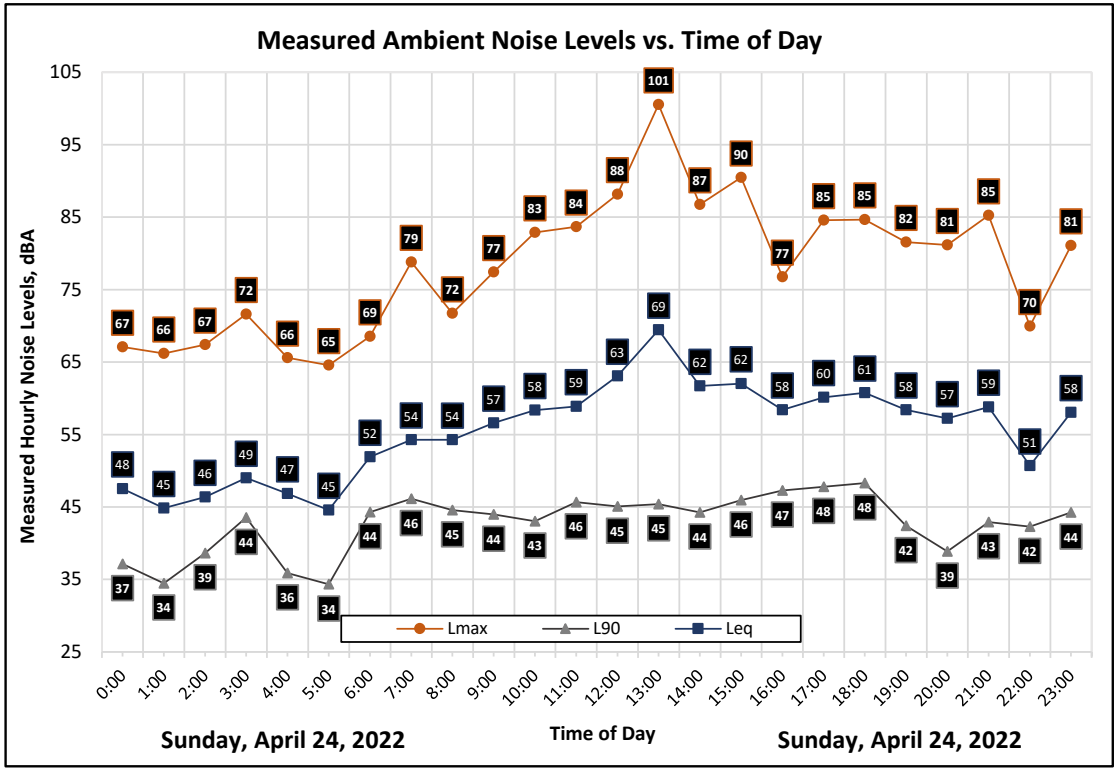


Appendix B1b: Continuous Noise Monitoring Results

Site: LT-1
Project: Westbrook Regional Soccer Complex
Meter: LDL 820-3
Location: Northern Project Boundary
Calibrator: CAL200
Coordinates: 38.7895485°, -121.3872283°

Date	Time	Measured Level, dBA			
		L_{eq}	L_{max}	L_{50}	L_{90}
Sunday, April 24, 2022	0:00	48	67	42	37
Sunday, April 24, 2022	1:00	45	66	38	34
Sunday, April 24, 2022	2:00	46	67	41	39
Sunday, April 24, 2022	3:00	49	72	46	44
Sunday, April 24, 2022	4:00	47	66	43	36
Sunday, April 24, 2022	5:00	45	65	37	34
Sunday, April 24, 2022	6:00	52	69	49	44
Sunday, April 24, 2022	7:00	54	79	49	46
Sunday, April 24, 2022	8:00	54	72	51	45
Sunday, April 24, 2022	9:00	57	77	50	44
Sunday, April 24, 2022	10:00	58	83	51	43
Sunday, April 24, 2022	11:00	59	84	52	46
Sunday, April 24, 2022	12:00	63	88	53	45
Sunday, April 24, 2022	13:00	69	101	52	45
Sunday, April 24, 2022	14:00	62	87	51	44
Sunday, April 24, 2022	15:00	62	90	52	46
Sunday, April 24, 2022	16:00	58	77	53	47
Sunday, April 24, 2022	17:00	60	85	54	48
Sunday, April 24, 2022	18:00	61	85	54	48
Sunday, April 24, 2022	19:00	58	82	51	42
Sunday, April 24, 2022	20:00	57	81	47	39
Sunday, April 24, 2022	21:00	59	85	48	43
Sunday, April 24, 2022	22:00	51	70	45	42
Sunday, April 24, 2022	23:00	58	81	48	44

Statistics	Leq	Lmax	L50	L90
Day Average	62	84	51	45
Night Average	51	69	43	39
Day Low	54	72	47	39
Day High	69	101	54	48
Night Low	45	65	37	34
Night High	58	81	49	44
Ldn	61	Day %		95
CNEL	62	Night %		5

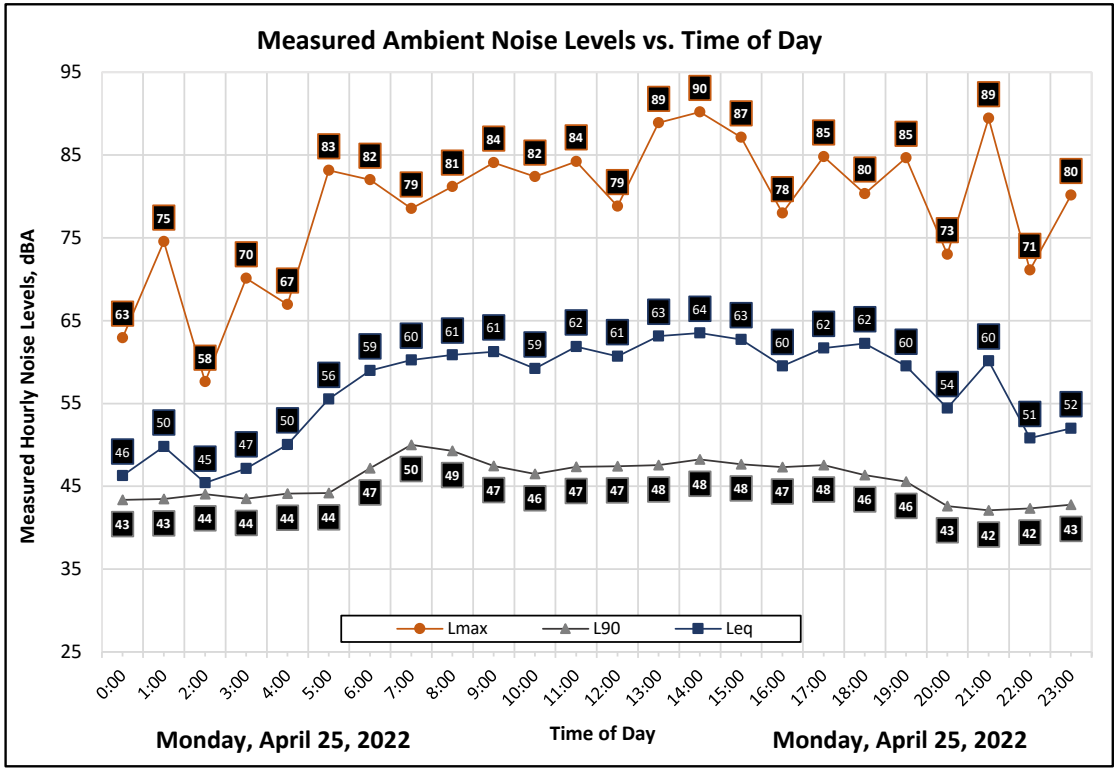


Appendix B1c: Continuous Noise Monitoring Results

Site: LT-1
Project: Westbrook Regional Soccer Complex
Meter: LDL 820-3
Location: Northern Project Boundary
Calibrator: CAL200
Coordinates: 38.7895485°, -121.3872283°

Date	Time	Measured Level, dBA			
		L_{eq}	L_{max}	L_{50}	L_{90}
Monday, April 25, 2022	0:00	46	63	45	43
Monday, April 25, 2022	1:00	50	75	45	43
Monday, April 25, 2022	2:00	45	58	45	44
Monday, April 25, 2022	3:00	47	70	45	44
Monday, April 25, 2022	4:00	50	67	46	44
Monday, April 25, 2022	5:00	56	83	46	44
Monday, April 25, 2022	6:00	59	82	52	47
Monday, April 25, 2022	7:00	60	79	55	50
Monday, April 25, 2022	8:00	61	81	56	49
Monday, April 25, 2022	9:00	61	84	53	47
Monday, April 25, 2022	10:00	59	82	52	46
Monday, April 25, 2022	11:00	62	84	53	47
Monday, April 25, 2022	12:00	61	79	54	47
Monday, April 25, 2022	13:00	63	89	54	48
Monday, April 25, 2022	14:00	64	90	56	48
Monday, April 25, 2022	15:00	63	87	54	48
Monday, April 25, 2022	16:00	60	78	53	47
Monday, April 25, 2022	17:00	62	85	54	48
Monday, April 25, 2022	18:00	62	80	54	46
Monday, April 25, 2022	19:00	60	85	51	46
Monday, April 25, 2022	20:00	54	73	48	43
Monday, April 25, 2022	21:00	60	89	45	42
Monday, April 25, 2022	22:00	51	71	44	42
Monday, April 25, 2022	23:00	52	80	44	43

Statistics	Leq	Lmax	L50	L90
Day Average	61	83	53	47
Night Average	53	72	46	44
Day Low	54	73	45	42
Day High	64	90	56	50
Night Low	45	58	44	42
Night High	59	83	52	47
Ldn	62	Day %		92
CNEL	62	Night %		8

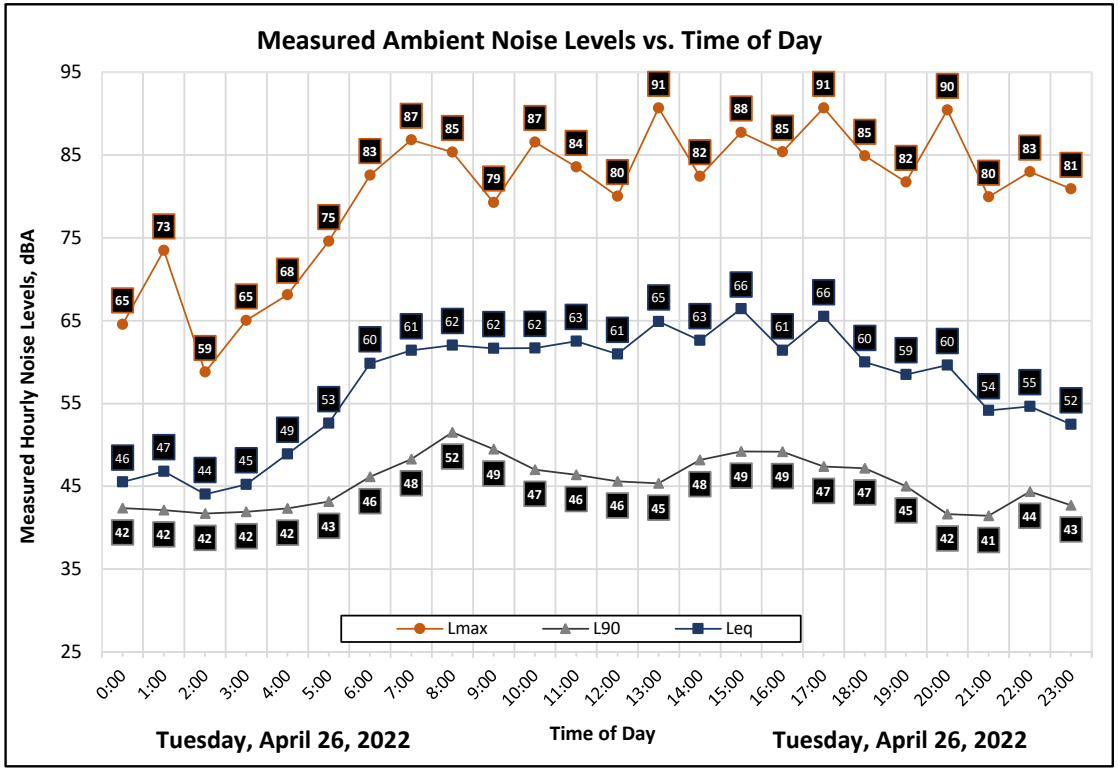


Appendix B1d: Continuous Noise Monitoring Results

Site: LT-1
Project: Westbrook Regional Soccer Complex
Meter: LDL 820-3
Location: Northern Project Boundary
Calibrator: CAL200
Coordinates: 38.7895485°, -121.3872283°

Date	Time	Measured Level, dBA			
		L_{eq}	L_{max}	L_{50}	L_{90}
Tuesday, April 26, 2022	0:00	46	65	44	42
Tuesday, April 26, 2022	1:00	47	73	44	42
Tuesday, April 26, 2022	2:00	44	59	43	42
Tuesday, April 26, 2022	3:00	45	65	43	42
Tuesday, April 26, 2022	4:00	49	68	44	42
Tuesday, April 26, 2022	5:00	53	75	46	43
Tuesday, April 26, 2022	6:00	60	83	50	46
Tuesday, April 26, 2022	7:00	61	87	55	48
Tuesday, April 26, 2022	8:00	62	85	57	52
Tuesday, April 26, 2022	9:00	62	79	55	49
Tuesday, April 26, 2022	10:00	62	87	52	47
Tuesday, April 26, 2022	11:00	63	84	52	46
Tuesday, April 26, 2022	12:00	61	80	52	46
Tuesday, April 26, 2022	13:00	65	91	52	45
Tuesday, April 26, 2022	14:00	63	82	55	48
Tuesday, April 26, 2022	15:00	66	88	57	49
Tuesday, April 26, 2022	16:00	61	85	55	49
Tuesday, April 26, 2022	17:00	66	91	54	47
Tuesday, April 26, 2022	18:00	60	85	53	47
Tuesday, April 26, 2022	19:00	59	82	52	45
Tuesday, April 26, 2022	20:00	60	90	48	42
Tuesday, April 26, 2022	21:00	54	80	46	41
Tuesday, April 26, 2022	22:00	55	83	47	44
Tuesday, April 26, 2022	23:00	52	81	45	43

Statistics	Leq	Lmax	L50	L90
Day Average	62	85	53	47
Night Average	53	72	45	43
Day Low	54	79	46	41
Day High	66	91	57	52
Night Low	44	59	43	42
Night High	60	83	50	46
Ldn	62	Day %		94
CNEL	63	Night %		6

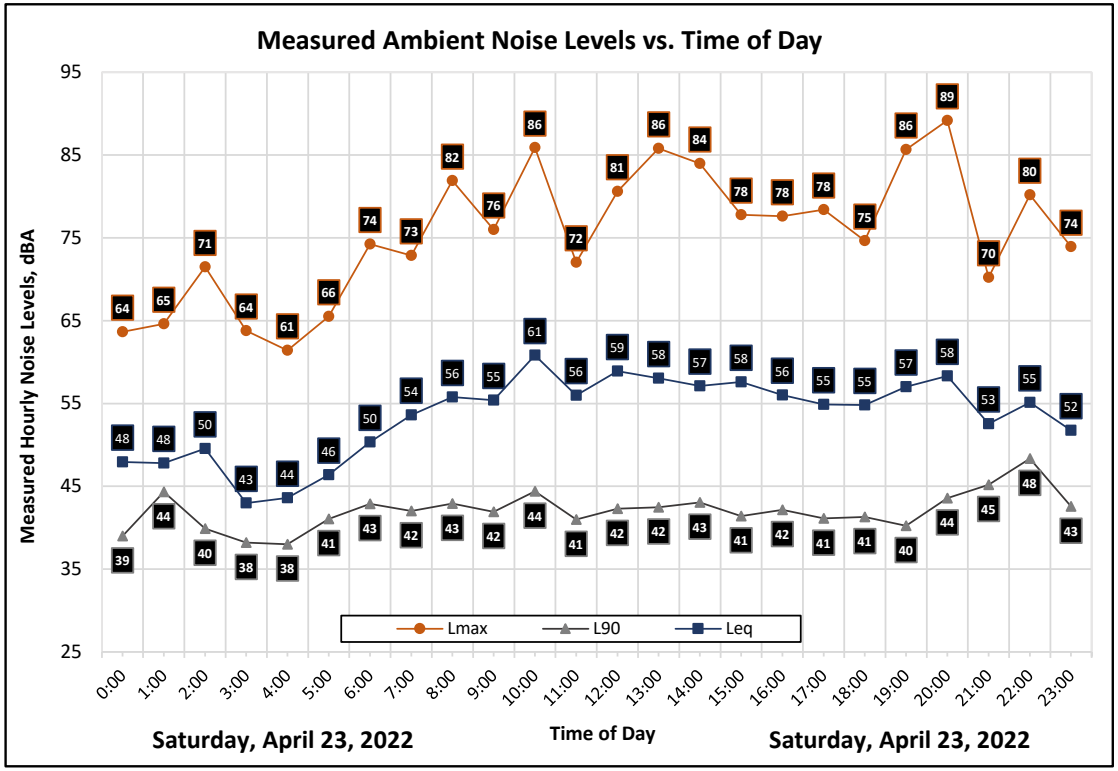


Appendix B2a: Continuous Noise Monitoring Results

Site: LT-2
Project: Westbrook Regional Soccer Complex
Location: South West of the Project Boundary
Coordinates: 38.784781°, -121.387688°
Meter: LDL 820-5
Calibrator: CAL200

Date	Time	Measured Level, dBA			
		L_{eq}	L_{max}	L_{50}	L_{90}
Saturday, April 23, 2022	0:00	48	64	45	39
Saturday, April 23, 2022	1:00	48	65	46	44
Saturday, April 23, 2022	2:00	50	71	42	40
Saturday, April 23, 2022	3:00	43	64	40	38
Saturday, April 23, 2022	4:00	44	61	40	38
Saturday, April 23, 2022	5:00	46	66	43	41
Saturday, April 23, 2022	6:00	50	74	46	43
Saturday, April 23, 2022	7:00	54	73	48	42
Saturday, April 23, 2022	8:00	56	82	50	43
Saturday, April 23, 2022	9:00	55	76	50	42
Saturday, April 23, 2022	10:00	61	86	52	44
Saturday, April 23, 2022	11:00	56	72	50	41
Saturday, April 23, 2022	12:00	59	81	51	42
Saturday, April 23, 2022	13:00	58	86	50	42
Saturday, April 23, 2022	14:00	57	84	51	43
Saturday, April 23, 2022	15:00	58	78	50	41
Saturday, April 23, 2022	16:00	56	78	50	42
Saturday, April 23, 2022	17:00	55	78	50	41
Saturday, April 23, 2022	18:00	55	75	50	41
Saturday, April 23, 2022	19:00	57	86	49	40
Saturday, April 23, 2022	20:00	58	89	49	44
Saturday, April 23, 2022	21:00	53	70	48	45
Saturday, April 23, 2022	22:00	55	80	51	48
Saturday, April 23, 2022	23:00	52	74	48	43

Statistics	Leq	Lmax	L50	L90
Day Average	57	80	50	42
Night Average	48	69	44	42
Day Low	53	70	48	40
Day High	61	89	52	45
Night Low	43	61	40	38
Night High	52	80	51	48
Ldn	57	Day %		93
CNEL	58	Night %		7

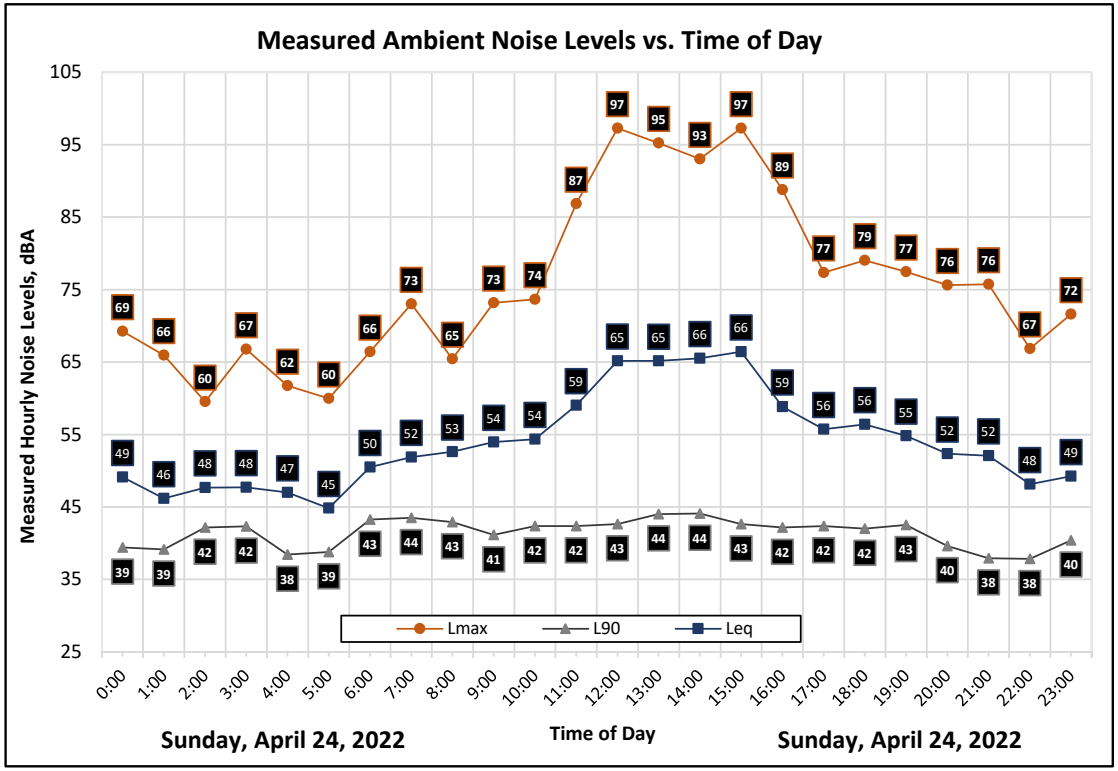


Appendix B2b: Continuous Noise Monitoring Results

Site: LT-2
Project: Westbrook Regional Soccer Complex
Meter: LDL 820-5
Location: South West of the Project Boundary
Calibrator: CAL200
Coordinates: 38.784781°, -121.387688°

Date	Time	Measured Level, dBA			
		L_{eq}	L_{max}	L_{50}	L_{90}
Sunday, April 24, 2022	0:00	49	69	45	39
Sunday, April 24, 2022	1:00	46	66	41	39
Sunday, April 24, 2022	2:00	48	60	45	42
Sunday, April 24, 2022	3:00	48	67	44	42
Sunday, April 24, 2022	4:00	47	62	44	38
Sunday, April 24, 2022	5:00	45	60	42	39
Sunday, April 24, 2022	6:00	50	66	47	43
Sunday, April 24, 2022	7:00	52	73	48	44
Sunday, April 24, 2022	8:00	53	65	49	43
Sunday, April 24, 2022	9:00	54	73	50	41
Sunday, April 24, 2022	10:00	54	74	51	42
Sunday, April 24, 2022	11:00	59	87	51	42
Sunday, April 24, 2022	12:00	65	97	51	43
Sunday, April 24, 2022	13:00	65	95	52	44
Sunday, April 24, 2022	14:00	66	93	51	44
Sunday, April 24, 2022	15:00	66	97	51	43
Sunday, April 24, 2022	16:00	59	89	50	42
Sunday, April 24, 2022	17:00	56	77	50	42
Sunday, April 24, 2022	18:00	56	79	51	42
Sunday, April 24, 2022	19:00	55	77	50	43
Sunday, April 24, 2022	20:00	52	76	48	40
Sunday, April 24, 2022	21:00	52	76	46	38
Sunday, April 24, 2022	22:00	48	67	43	38
Sunday, April 24, 2022	23:00	49	72	42	40

Statistics	Leq	Lmax	L50	L90
Day Average	61	82	50	42
Night Average	48	65	44	40
Day Low	52	65	46	38
Day High	66	97	52	44
Night Low	45	60	41	38
Night High	50	72	47	43
Ldn	60	Day %		97
CNEL	60	Night %		3

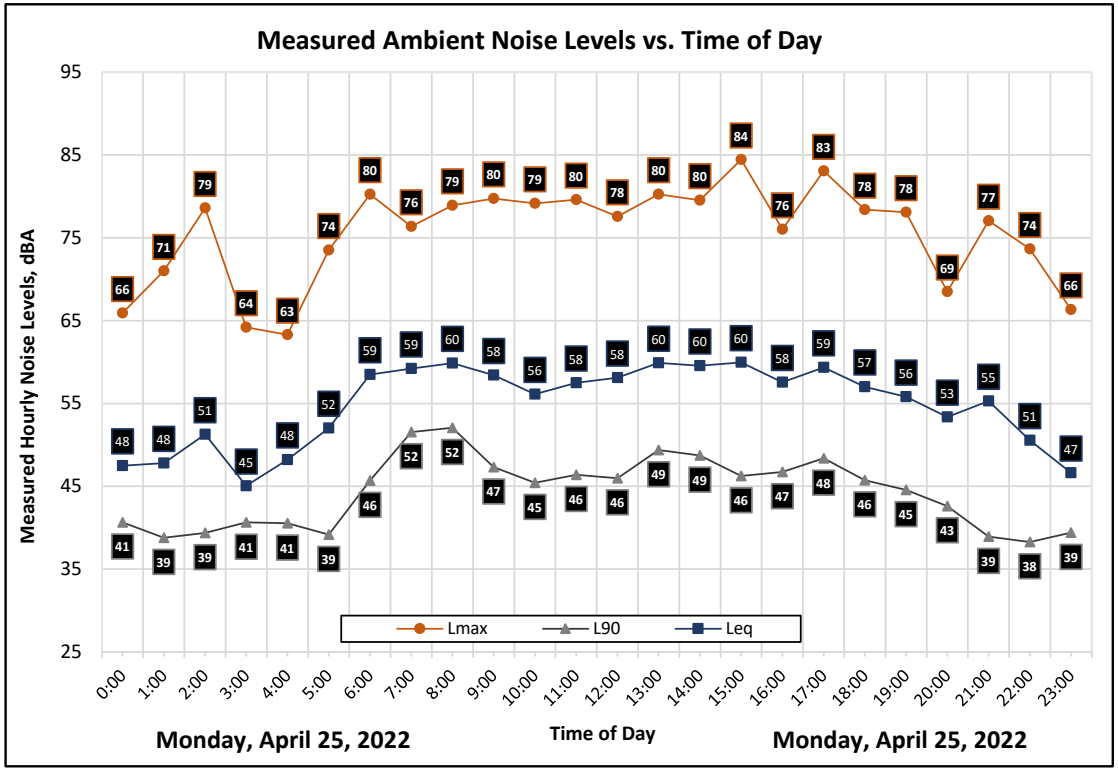


Appendix B2c: Continuous Noise Monitoring Results

Site: LT-2
Project: Westbrook Regional Soccer Complex
Location: South West of the Project Boundary
Coordinates: 38.784781°, -121.387688°
Meter: LDL 820-5
Calibrator: CAL200

Date	Time	Measured Level, dBA			
		L_{eq}	L_{max}	L_{50}	L_{90}
Monday, April 25, 2022	0:00	48	66	42	41
Monday, April 25, 2022	1:00	48	71	41	39
Monday, April 25, 2022	2:00	51	79	41	39
Monday, April 25, 2022	3:00	45	64	42	41
Monday, April 25, 2022	4:00	48	63	43	41
Monday, April 25, 2022	5:00	52	74	46	39
Monday, April 25, 2022	6:00	59	80	52	46
Monday, April 25, 2022	7:00	59	76	56	52
Monday, April 25, 2022	8:00	60	79	58	52
Monday, April 25, 2022	9:00	58	80	53	47
Monday, April 25, 2022	10:00	56	79	52	45
Monday, April 25, 2022	11:00	58	80	53	46
Monday, April 25, 2022	12:00	58	78	53	46
Monday, April 25, 2022	13:00	60	80	56	49
Monday, April 25, 2022	14:00	60	80	55	49
Monday, April 25, 2022	15:00	60	84	54	46
Monday, April 25, 2022	16:00	58	76	54	47
Monday, April 25, 2022	17:00	59	83	55	48
Monday, April 25, 2022	18:00	57	78	53	46
Monday, April 25, 2022	19:00	56	78	51	45
Monday, April 25, 2022	20:00	53	69	50	43
Monday, April 25, 2022	21:00	55	77	47	39
Monday, April 25, 2022	22:00	51	74	43	38
Monday, April 25, 2022	23:00	47	66	42	39

Statistics	Leq	Lmax	L50	L90
Day Average	58	78	53	47
Night Average	52	71	44	40
Day Low	53	69	47	39
Day High	60	84	58	52
Night Low	45	63	41	38
Night High	59	80	52	46
Ldn	60	Day %		89
CNEL	60	Night %		11



Appendix B2d: Continuous Noise Monitoring Results

Site: LT-2
Project: Westbrook Regional Soccer Complex
Meter: LDL 820-5
Location: South West of the Project Boundary
Calibrator: CAL200
Coordinates: 38.784781°, -121.387688°

Date	Time	Measured Level, dBA			
		L_{eq}	L_{max}	L_{50}	L_{90}
Tuesday, April 26, 2022	0:00	43	62	41	38
Tuesday, April 26, 2022	1:00	44	66	40	38
Tuesday, April 26, 2022	2:00	41	56	40	37
Tuesday, April 26, 2022	3:00	44	69	40	38
Tuesday, April 26, 2022	4:00	47	65	42	39
Tuesday, April 26, 2022	5:00	50	69	45	41
Tuesday, April 26, 2022	6:00	57	77	52	46
Tuesday, April 26, 2022	7:00	60	85	56	51
Tuesday, April 26, 2022	8:00	60	79	58	52
Tuesday, April 26, 2022	9:00	59	77	55	49
Tuesday, April 26, 2022	10:00	59	80	53	46
Tuesday, April 26, 2022	11:00	64	79	54	46
Tuesday, April 26, 2022	12:00	64	80	54	46
Tuesday, April 26, 2022	13:00	62	90	52	44
Tuesday, April 26, 2022	14:00	59	80	55	47
Tuesday, April 26, 2022	15:00	60	84	55	47
Tuesday, April 26, 2022	16:00	58	79	54	46
Tuesday, April 26, 2022	17:00	59	81	53	46
Tuesday, April 26, 2022	18:00	58	80	54	47
Tuesday, April 26, 2022	19:00	58	84	54	46
Tuesday, April 26, 2022	20:00	55	79	53	45
Tuesday, April 26, 2022	21:00	53	73	50	40
Tuesday, April 26, 2022	22:00	54	82	42	38
Tuesday, April 26, 2022	23:00	51	79	40	37

Statistics	Leq	Lmax	L50	L90
Day Average	60	81	54	47
Night Average	50	70	42	39
Day Low	53	73	50	40
Day High	64	90	58	52
Night Low	41	56	40	37
Night High	57	82	52	46
Ldn	60	Day %		95
CNEL	60	Night %		5