

Environmental Noise Assessment

Blue Oaks Retail Center

Roseville, California

BAC Job # 2022-159

Prepared For:

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Introduction

The Blue Oaks Retail Center (project) is located north of Blue Oaks Boulevard and east of Woodcreek Oaks Boulevard in Roseville, California. The project consists of 6 lots containing retail/commercial development, including two drive-through restaurants. The project area with aerial imagery is shown in Figure 1. The project site plan is presented as Figure 2.

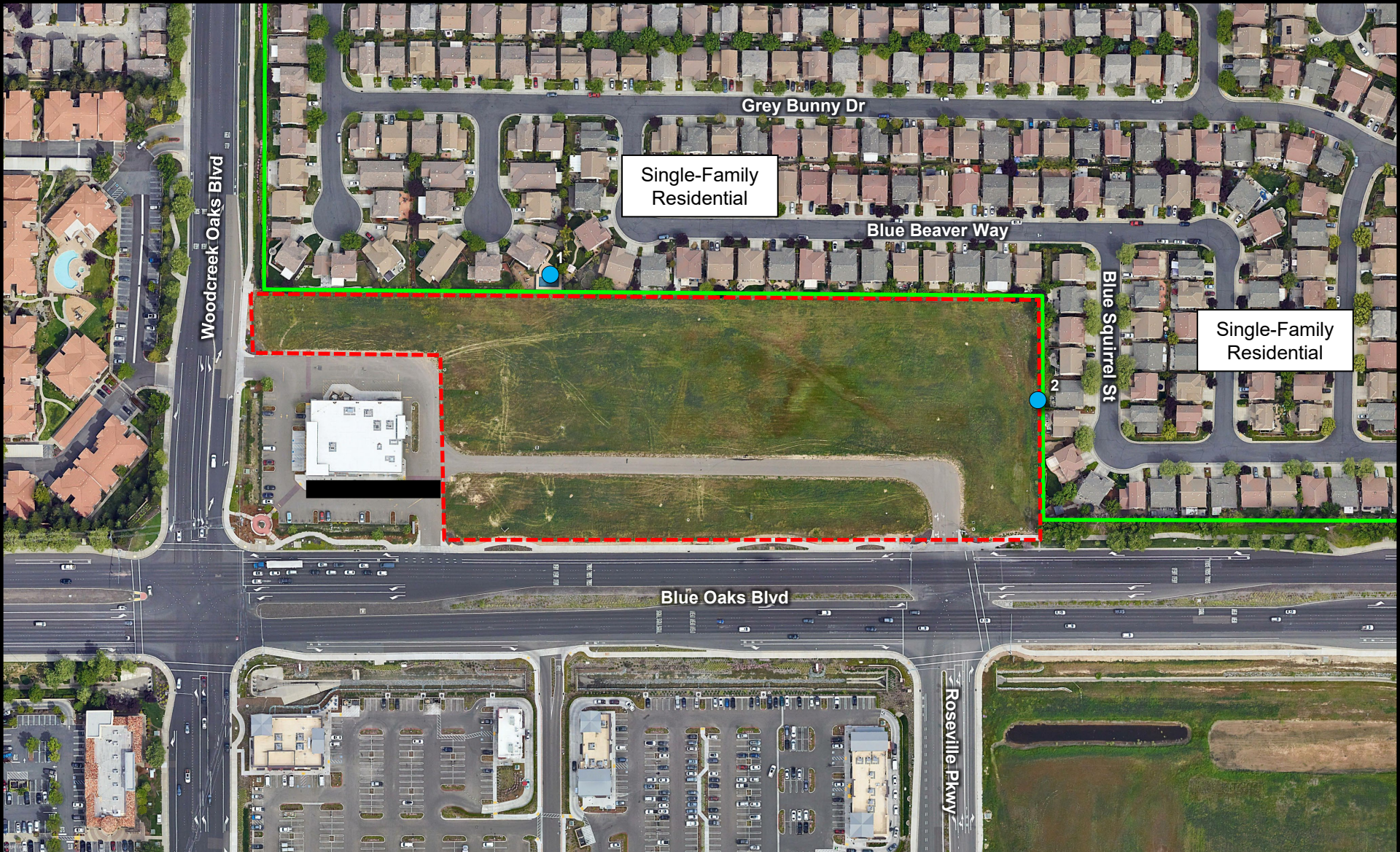
Due to the proximity of the project to existing adjacent noise-sensitive uses (single-family residential), Bollard Acoustical Consultants, Inc. (BAC) was retained to prepare an assessment of potential noise impacts associated with the project. Specifically, the purposes of this assessment are to quantify noise levels associated with project on-site operations, to assess the state of compliance of those noise levels with applicable City of Roseville noise criteria, and if necessary, to recommend measures to reduce those noise levels to acceptable limits at the nearest existing noise-sensitive uses.

Noise Fundamentals and Terminology

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 thus are called sound. 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 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. Appendix A contains definitions of Acoustical Terminology. Figure 3 shows common noise levels associated with various sources.

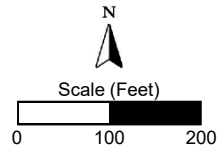
The perceived loudness of sounds is dependent upon many factors, including sound pressure level and frequency content. However, within the usual range of environmental noise levels, perception of loudness is relatively predictable, and can be approximated by weighing the frequency response of a sound level meter by means of the standardized A-weighting 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 section are in terms of A-weighted levels in decibels.

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 (L_{eq}) over a given time period (usually one hour). The L_{eq} is the foundation of the Day-Night Average Level noise descriptor, DNL or L_{dn} , and shows very good correlation with community response to noise.



Legend

- Project Boundary (Approximate)
- Existing 6' Masonry Walls (Noise Barriers)
- Long-Term Noise Measurement Locations

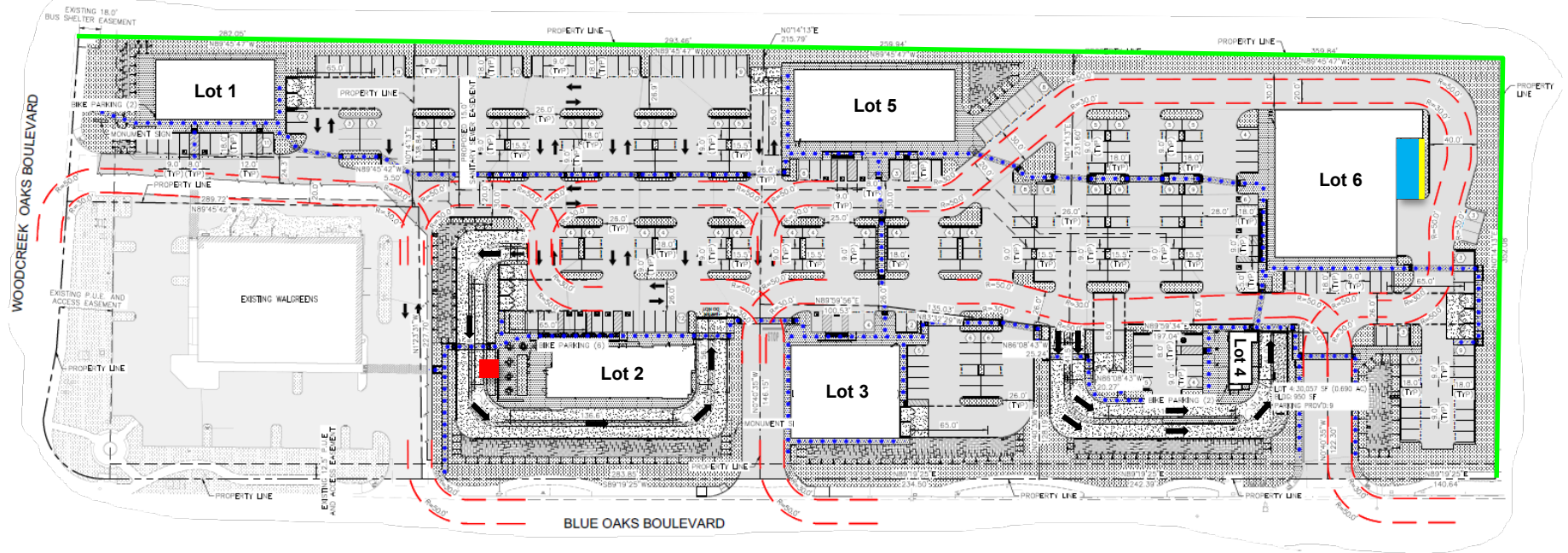


Blue Oaks Retail Center
Roseville, California

Project Area

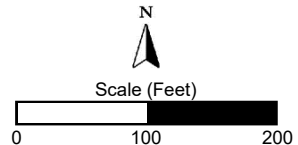
Figure 1





Legend

- Existing 6' Masonry Walls (Noise Barriers)
- Required Loading Dock Screen Wall
- Loading Dock
- Drive-Through Lane Speaker (Assumed Location)

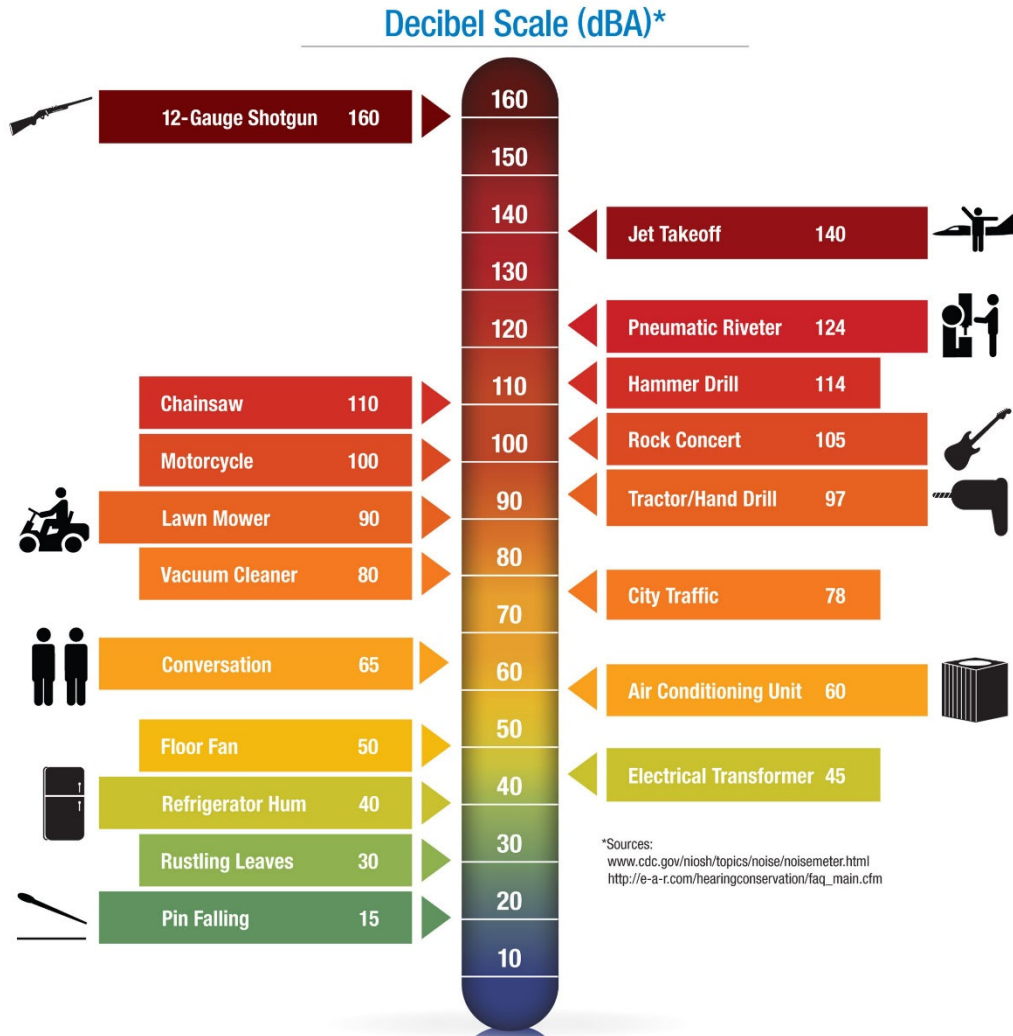


Blue Oaks Retail Center
Roseville, California
Project Site Plan

Figure 2



Figure 3
Typical A-Weighted Sound Levels of Common Noise Sources



The Day-Night Average Level (DNL or L_{dn}) is based upon the average noise level over a 24-hour day, with a +10-decibel weighting 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 DNL represents a 24-hour average, it tends to disguise short-term variations in the noise environment. DNL-based noise standards are commonly used to assess noise impacts associated with traffic, railroad, and aircraft noise sources.

Existing Ambient Noise Environment within Project Vicinity

The existing ambient noise environment in the immediate project vicinity is defined primarily by traffic on Blue Oaks Boulevard and Woodcreek Oaks Boulevard, and by adjacent commercial activities. To generally quantify the existing ambient noise level environment within the project vicinity, BAC conducted long-term (72-hour) noise level measurements at two (2) locations November 11-13, 2022. The noise survey locations are shown in Figure 1. Photographs of the noise level survey locations are provided in Appendix B.

Larson Davis Laboratories (LDL) Model 820 precision integrating sound level meters were used for the ambient noise level survey. The meters were calibrated immediately before and after use with an LDL Model CAL200 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). The results of the long-term ambient noise level survey are shown numerically and graphically in Appendices C and D (respectively) and are summarized below in Table 1.

Table 1
Summary of Long-Term Ambient Noise Measurement Results – November 11-13, 2022¹

Site Description ²	Date	DNL (dB)	Average Measured Hourly Noise Levels (dB) ³			
			Daytime ⁴		Nighttime ⁵	
			Leq	L _{max}	Leq	L _{max}
Site 1: Backyard of residence at 125 Bright Eyes Ct	11/11/22	59	53 (47-57)	67 (60-82)	52 (47-58)	65 (57-82)
	11/12/22	54	49 (45-54)	67 (57-79)	48 (43-51)	62 (58-67)
	11/13/22	54	50 (44-53)	65 (53-77)	47 (39-52)	58 (51-68)
Site 2: Project property adjacent to residence at 1593 Blue Squirrel St	11/11/22	62	59 (55-63)	74 (66-85)	55 (49-60)	70 (63-81)
	11/12/22	60	57 (55-58)	70 (66-75)	53 (46-57)	67 (63-75)
	11/13/22	60	58 (52-65)	73 (64-90)	51 (45-55)	67 (62-76)

¹ Detailed summaries of the noise monitoring results are provided in Appendices C and D.
² Long-term ambient noise monitoring locations are identified on Figure 1.
³ Data presented in terms of: Average (Low-High).
⁴ Daytime: 7:00 a.m. to 10:00 p.m.
⁵ Nighttime: 10:00 p.m. to 7:00 a.m.

Source: Bollard Acoustical Consultants, Inc. 2022.

Ambient noise measurement site 1 was placed in the backyard of the residence located at 125 Bright Eyes Ct. However, because permission was not granted for placement of a noise meter in a residence backyard to the east of the project site, ambient noise measurement site 2 was located on the project site adjacent to the residence at 1593 Blue Squirrel St. As indicated in Table 1, average measured hourly noise levels were generally consistent at each site throughout the monitoring period.

Criteria for Acceptable Noise Exposure

Roseville General Plan and Municipal Code

The Roseville General Plan 2035 and Municipal Code establish identical noise level standards for non-transportation noise sources, such as those proposed by project on-site operations. The City's noise level limits are reproduced below in Table 2.

Table 2
Performance Standards for Non-Transportation Sources
(As Measured at the Property Line of Noise-Sensitive Uses)

Noise Level Descriptor (dBA)	Noise Level (dBA)	
	Daytime (7:00 a.m. to 10:00 p.m.)	Nighttime (10:00 p.m. to 7:00 a.m.)
Hourly average, L_{eq}	50	45
Maximum, L_{max}	70	65
<p>-For municipal power plants consisting primarily of broadband, steady state noise sources, the hourly (L_{eq}) noise standard may be increased up to 10 dBA, but not exceed 55 dBA L_{eq}.</p> <p>-Each of the noise level standards specified above shall be reduced by 5 dB for pure tone noises, noise 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).</p> <p>-No standards have been included for interior noise levels. Standard construction practices should, with exterior noise levels identified, result in acceptable interior noise levels.</p>		

Source: Roseville General Plan 2035 (Table IX-3) and Roseville Municipal Code (Section 9.24.100).

Noise Standards Applicable to the Project

The primary noise sources associated with the project have been identified as delivery truck activities, drive-through lane operations, parking lot movements, and rooftop mechanical equipment (HVAC).

According to the provided project description (dated June 29, 2022), the project proposes a total of 6 lots within the development. These lots are identified as Lots 1-6 in Figure 2. It is our understanding that Lots 1, 3, 5 and 6 are dedicated for future retail/commercial tenants, and that Lots 2 and 4 will contain businesses with drive-through lanes (Chick-fil-A and Dutch Bros. Coffee, respectively). The expected hours of operation for the Chick-fil-A business (Lot 2) will be 7:00 a.m. to 10:00 p.m. (i.e., daytime hours only). The Dutch Bros. Coffee business (Lot 4) is proposing 24-hour operations. The hours of operations for the remaining retail/commercial tenants of the development (Lots 1, 3, 5 and 6) are not known at this time. For the purposes of this analysis, it is assumed that all delivery truck activities within the development (i.e., loading dock operations and on-site truck circulation) will be restricted to daytime hours only (7:00 a.m. to 10:00 p.m.).

Finally, the footnote in Table 2 states that each of the noise level limits shall be reduced by 5 dB for noises consisting of speech or music, which would be applicable to drive-through lane menu speaker posts at Lots 2 and 4. Based on the information above, the City of Roseville noise level standards applied to the project are provided in Table 3.

Table 3
Noise Level Standards Applied to the Project

Noise Source	Applicable Noise Level Standard (dB)			
	Daytime (7:00 a.m. to 10:00 p.m.)		Nighttime (10:00 p.m. to 7:00 a.m.)	
	L _{eq}	L _{max}	L _{eq}	L _{max}
Delivery Truck Activities	55	75	--	--
Drive-Through Menu Speaker ¹	50	70	40	60
Drive-Through Vehicle Passbys	55	75	45	65
Rooftop HVAC Equipment ²	55	--	45	--

¹ Pursuant to footnote in Table 2 of this report, noise level standards shall be reduced by 5 dB for pure tone noise such as noise consisting primarily of speech or music. This downward adjustment would be applicable to drive-through lane speakers.

² Because mechanical equipment operation typically generates sustained, steady-state noise levels, impacts of rooftop mechanical equipment were appropriately assessed relative to the City's hourly average (L_{eq}) noise level standards.

Source: Roseville General Plan 2035 (Table IX-3) and Roseville Municipal Code (Section 9.24.100).

The City's noise level standards are to be applied at the property lines of noise-sensitive uses. As a result, the noise level limits shown in Table 3 were applied at the property lines of the nearest residential uses to the north and east of the project. Satisfaction with the City's noise level standards at the closest residential uses would ensure compliance with the noise level criteria at residential uses located farther away.

Evaluation of Project-Generated Noise Levels

As mentioned previously, the primary noise sources associated with the project have been identified as delivery truck activities, drive-through lane operations, and rooftop mechanical equipment (HVAC). Predicted noise levels resulting from each of these sources at the nearest residential uses are evaluated in the following sections.

Predicted project-generated noise levels at the nearest existing residential uses include consideration of the screening that would be provided by existing 6' masonry walls. The locations of the existing 6' noise barriers are illustrated in Figures 1 and 2. Photographs of the existing noise barriers are provided in Appendix B. It is estimated that the existing 6' sound walls would provide approximately 6 dB of project-generated noise level reduction at the nearest existing residential uses.

Delivery Truck and Unloading Activity Noise

Given the size of the proposed commercial buildings and based on the proposed site design as indicated in Figure 2, deliveries to the various uses will likely be conducted at the front or side of buildings using medium-duty trucks and/or side-step vans. An exception to this is Lot 6, where a future loading dock is located on the east side of the building to accommodate larger trucks (shown in Figure 2). It is the understanding of BAC that the City of Roseville Planning Division is

requiring the project to construct a screen wall adjacent to the loading dock to reduce the impacts of truck deliveries (also shown in Figure 2).

Medium-Duty Trucks/Van Deliveries to Businesses at Lots 1-5

Deliveries by medium-duty trucks/vans to the various commercial uses within the project site would be fairly brief as well as intermittent. In addition, the noise generation of those vans is considerably lower than heavy trucks and would be partially screened by intervening commercial buildings and completely screened by the existing property line masonry noise barriers. As a result, noise generated by medium-duty trucks/vans at the businesses at Lots 1-5 is not anticipated to exceed the Table 3 standards or result in adverse noise impacts during daytime hours (7:00 a.m. to 10:00 p.m.). Given the sensitivity of the existing residential uses which border the project site to the north and east, such deliveries should be restricted during nighttime hours (10:00 p.m. to 7:00 a.m.). With the nighttime restriction on deliveries, adverse noise impacts associated with medium-duty trucks/van deliveries to the project site are not anticipated.

Heavy Truck Deliveries to Business at Lot 6

The specific use for the proposed business at Lot 6 has not been determined at the time of writing this report. However, grocery and retail store buildings of this size (13,150 sf.) typically generate light semi-trailer truck activity once initial store stocking has been completed. As a result, semi-truck activity associated with Lot 6 will likely consist of 1-2 semi-trailer truck deliveries a week for a retail store, and approximately 1 per day for a small grocery store use. In either case, there would not be more than 1 heavy truck delivery at Lot 6 during any given hour.

Heavy-truck trailer unloading will occur directly from the inside of the trailer while docked in the recessed bay, and sealed rubber gaskets will be provided at the truck docks to reduce noise from those inside loading and unloading activities. The required screen-wall would further reduce the noise generated by heavy truck unloading.

Based on BAC file data for commercial loading dock operations, the worst-case hourly average noise exposure associated with heavy truck deliveries is predicted to range from 45 to 50 dB L_{eq} at the nearest residential use located east of the loading dock. The predicted range includes the noise reduction that would be provided by the existing 6' masonry property line noise barrier as well as the required screen-wall at the east edge of the loading dock. This range of levels would comply with the City of Roseville daytime hourly average (L_{eq}) noise level standard but could exceed the City's nighttime hourly average (L_{eq}) noise level limit. As a result, all heavy truck deliveries should be limited to daytime hours (7:00 a.m. to 10:00 p.m.). In addition, trucks should not be permitted to idle while parked in the loading dock, and any refrigerated trucks should be supplied with external power so the truck engine can be shut off during unloading. With inclusion of these noise control measures, adverse noise impacts associated with periodic daytime heavy truck deliveries to the Lot 6 store are not anticipated.

Because the heavy trucks will be travelling very slowly as they approach the loading dock and while on-site, maximum (L_{max}) noise levels associated with such passbys are anticipated to be satisfactory relative to the City's daytime maximum (L_{max}) noise standard. It is further expected

that maximum (L_{max}) noise levels associated with heavy truck passbys will be below or within the range of measured existing maximum (L_{max}) daytime noise levels at the nearest residential uses, including consideration of shielding provided by the existing 6' property line sound walls. Although brief periods of elevated noise exposure would be generated during the airbrake release and backing of the heavy truck into the loading dock, that noise would be shielded by both the existing property line noise barrier and loading dock screen-wall. Given the infrequent arrival of heavy trucks to the loading dock, and the limitation of those trucks to daytime hours (7:00 a.m. to 10:00 p.m.), impacts associated with maximum (L_{max}) noise levels associated with heavy truck deliveries at Lot 6 are not anticipated.

Drive-Through Operations

As mentioned previously, Lots 2 and 4 of the development will contain businesses with drive-through lanes (Chick-fil-A and Dutch Bros. Coffee, respectively). It is the understanding of BAC that the Chick-fil-A at Lot 2 will have a drive-through menu speaker. However, the project description states that the Dutch Bros. Coffee at Lot 2 will not be equipped with a drive-through lane menu speaker (only person-to-person ordering). The assumed location of the Chick-fil-A drive-through menu speaker, which is based on the experience of BAC in previous drive-through projects, is illustrated in Figure 2.

To quantify the noise emissions of project drive-through speaker usage and vehicle passages, noise level measurement data from similar drive-thru facilities collected by BAC in the greater Sacramento region in recent years were utilized. That data is presented below in Table 4.

Table 4
Reference Drive-Through Noise Levels

Noise Source	Measured Noise Levels (dB)	
	Average (L_{eq})	Maximum (L_{max})
Speaker ¹	63 dB at 10 feet	67 dB at 10 feet
Vehicles ²	60 dB at 5 feet	70 dB at 5 feet
¹ Speaker noise level data obtained from measurements conducted at a drive-through restaurant located at 2845 Bell Road in Auburn, California in 2018. ² Vehicle noise level data obtained from previous BAC drive-through noise studies.		

The Chick-fil-A drive-through lane and speaker maintain a separation of approximately 180 and 240 feet (respectively) from the property line of the nearest residential use (north). The Dutch Bros. Coffee drive-through lane maintains a separation of approximately 240 feet from the property line of the nearest residential use (north). When projected to distances of 180 and 240 feet, hourly average and maximum noise levels associated with continuous Chick-fil-A drive-through lane usage would range from 24 to 29 dB L_{eq} and 33 to 34 dB L_{max} , including consideration of shielding provided by the existing 6' property line masonry sound wall. When projected to a distance of 240 feet, hourly average and maximum noise levels associated with continuous Dutch Bros. Coffee drive-through lane usage would be 20 dB L_{eq} and 30 dB L_{max} , including consideration of shielding provided by the existing 6' property line masonry sound wall.

The predicted average (L_{eq}) and maximum (L_{max}) noise levels presented above would satisfy the City's noise standards (Table 3) and be well below measured existing ambient noise levels at the nearest residences, including consideration of shielding provided by the existing 6' property line sound walls. As a result, no adverse noise impacts are predicted for the proposed drive-through usage at the nearest residences during either daytime or nighttime hours.

Rooftop Mechanical Equipment (HVAC)

The heating, ventilating, and air conditioning (HVAC) requirements for the buildings of the development will most likely be met using packaged rooftop mounted systems. These units would be completely shielded from view of neighboring residential uses by the rooftop parapets.

Reference noise level data for packaged rooftop HVAC units indicate that a 12.5-ton packaged unit can be expected to generate an A-weighted sound power level of approximately 85 dB. Because mechanical equipment operation typically generates sustained, steady-state noise levels, impacts of rooftop mechanical equipment were appropriately assessed relative to the City's hourly average (L_{eq}) noise level standards.

The nearest building rooftop equipment locations maintain a separation of approximately 30 feet from the property lines of the nearest residential use. When projected to a distance of 30 feet, the resulting HVAC level computes to 44 dB L_{eq} , including shielding provided by the building parapets and existing 6' property line noise barrier. Because the predicted worst-case HVAC equipment noise level of 44 dB L_{eq} would satisfy City's daytime and nighttime hourly average (L_{eq}) noise standards provided in Table 3 and generate noise levels below or within the range of measured existing ambient noise levels in the project vicinity (shown in Table 1), noise impacts are not identified for this aspect of the project.

It should be noted that, excluding Lots 2 and 4, the future tenants of the development are unknown at this time. In the event that a grocery store proposes to occupy the lots proposed nearest to the residential property lines (Lots 1, 5 and 6), additional mechanical equipment would be required for food cold storage. Because the noise generation of such equipment would vary by manufacturer and location, it is not possible to predict noise generation of such equipment at this time. At such a time as a building does require additional mechanical equipment for food cold storage, the mechanical equipment plans should be reviewed by a qualified acoustical consultant to ensure that adequate sound control measures are included to achieve compliance with City's noise standards at the nearest residences.

Combined Noise from All Sources

Given the different locations from which project-related noise would be generated (loading dock, building rooftops & drive-through lanes), the noise generated at one location would not appreciably combine with noise generated at other locations. For example, noise generated by the drive-through operations would be so low as to be inaudible at the residences located behind the buildings on Lots 5 and 6, so the only sound which would be appreciably audible at those residences would be infrequent truck deliveries. As a result, the cumulative effect of all project noise sources is not predicted to be appreciably different from the noise generation of the

individual noise sources. Therefore, noise generated by combined sources is expected to satisfy the City's noise criteria and not result in adverse noise impacts provided all truck deliveries are limited to daytime hours (7:00 a.m. to 10:00 p.m.).

Conclusions & Recommendations

Truck deliveries, drive-through activities, and rooftop mechanical equipment (HVAC) operations associated with the proposed project would generate noise levels which are expected to satisfy the City's daytime noise standards at the existing residential uses located immediately north and east of the project site. As a result, no restrictions on daytime operations or additional noise mitigation measures would be warranted for the proposed operations of the Blue Oaks Retail Center during daytime hours. During nighttime hours, however, noise generated by truck deliveries could both exceed City noise standards and substantially exceed measured existing ambient noise levels at nearby residential uses. As a result, the following specific recommendations are provided:

1. All truck deliveries to the development, including heavy trucks and medium-duty trucks/side-step vans, shall be limited to daytime hours only (7:00 a.m. to 10:00 p.m.).
2. At such a time as the loading dock is constructed at the Lot 6 building, the screen-wall required by the City of Roseville adjacent to the loading dock should be constructed to a height sufficient to intercept line of sight between unloading activities and the nearest residences to the north and east.
3. All roof-top mechanical equipment shall be located as far as practical from the existing residences to the north and east, and completely screened from view of those residences by the rooftop parapet.
4. In the event that a grocery store proposes to occupy the lots proposed nearest to the residential property lines (Lots 1, 5 and 6), thereby requiring additional mechanical equipment that would be required for food cold storage, the mechanical equipment plans should be reviewed by a qualified acoustical consultant to ensure that adequate sound control measures are included to achieve compliance with City of Roseville noise standards at the nearest residences.

These conclusions are based on the site plan shown on Figure 2, BAC measurement data and the operations assumptions contained herein. Deviations from the above-mentioned resources and/or assumptions could cause actual noise levels to differ from those predicted in this assessment.

This concludes BAC's environmental noise assessment of on-site operations at the Blue Oaks Retail Center located in Roseville, California. Please contact BAC at (530) 537-2328 or darioq@bacnoise.com with any questions regarding this assessment.

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.
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 a factor of three and nighttime hours weighted by a factor of 10 prior to averaging.
Frequency	The measure of the rapidity of alterations of a periodic signal, expressed in cycles per second or hertz.
IIC	Impact Insulation Class (IIC): A single-number representation of a floor/ceiling partition's impact generated noise insulation performance. The field-measured version of this number is the FIIC.
L_{dn}	Day/Night Average Sound Level. Similar to CNEL but with no evening weighting.
Leq	Equivalent or energy-averaged sound level.
L_{max}	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.
Masking	The amount (or the process) by which the threshold of audibility is for one sound is raised by the presence of another (masking) sound.
Noise	Unwanted sound.
Peak Noise	The level corresponding to the highest (not RMS) sound pressure measured over a given period of time. This term is often confused with the "Maximum" level, which is the highest RMS level.
RT₆₀	The time it takes reverberant sound to decay by 60 dB once the source has been removed.
STC	Sound Transmission Class (STC): A single-number representation of a partition's noise insulation performance. This number is based on laboratory-measured, 16-band (1/3-octave) transmission loss (TL) data of the subject partition. The field-measured version of this number is the FSTC.





A



B



C



D

Legend

- A: Site 1: Backyard of residence at 125 Bright Eyes Ct, facing south towards 6' sound wall and project site
- B: Site 1: Measured height of existing property line sound wall (6+ feet)
- C: Site 2: On project site adjacent to backyard of residence at 1593 Blue Squirrel St, facing south towards Blue Oaks Blvd
- D: Site 2: Facing north along existing 6' property line sound wall

Blue Oaks Retail Center
Roseville, California

Noise Survey Photographs

Appendix C-1
Long-Term Ambient Noise Monitoring Results - Site 1
Blue Oaks Retail Center - Roseville, California
Friday, November 11, 2022

Hour	Leq	Lmax	L50	L90
12:00 AM	51	63	49	46
1:00 AM	50	63	48	44
2:00 AM	47	57	45	42
3:00 AM	48	62	46	42
4:00 AM	49	60	47	43
5:00 AM	51	61	50	47
6:00 AM	58	82	55	52
7:00 AM	56	69	55	52
8:00 AM	50	60	50	47
9:00 AM	57	72	47	44
10:00 AM	48	65	45	42
11:00 AM	48	64	47	44
12:00 PM	50	64	49	46
1:00 PM	51	69	49	46
2:00 PM	48	63	47	43
3:00 PM	49	73	47	43
4:00 PM	47	65	45	41
5:00 PM	49	61	48	45
6:00 PM	57	82	52	48
7:00 PM	55	73	54	50
8:00 PM	54	64	53	50
9:00 PM	54	67	53	51
10:00 PM	54	69	53	50
11:00 PM	52	63	52	48

	Statistical Summary					
	Daytime (7 a.m. - 10 p.m.)			Nighttime (10 p.m. - 7 a.m.)		
	High	Low	Average	High	Low	Average
Leq (Average)	57	47	53	58	47	52
Lmax (Maximum)	82	60	67	82	57	65
L50 (Median)	55	45	49	55	45	49
L90 (Background)	52	41	46	52	42	46

Computed DNL, dB	59
% Daytime Energy	65%
% Nighttime Energy	35%

GPS Coordinates	38°47'48.11"N
	121°19'36.70"W

Appendix C-2
Long-Term Ambient Noise Monitoring Results - Site 1
Blue Oaks Retail Center - Roseville, California
Saturday, November 12, 2022

Hour	Leq	Lmax	L50	L90
12:00 AM	51	62	50	47
1:00 AM	51	62	49	45
2:00 AM	46	58	45	42
3:00 AM	46	62	44	41
4:00 AM	45	62	44	41
5:00 AM	48	67	46	43
6:00 AM	48	63	47	44
7:00 AM	47	57	46	43
8:00 AM	48	68	45	43
9:00 AM	48	66	46	43
10:00 AM	48	64	47	44
11:00 AM	49	63	48	45
12:00 PM	51	71	49	45
1:00 PM	50	67	48	46
2:00 PM	49	70	46	42
3:00 PM	48	66	46	42
4:00 PM	46	59	45	41
5:00 PM	54	79	48	43
6:00 PM	49	61	49	45
7:00 PM	50	65	49	44
8:00 PM	50	79	44	40
9:00 PM	45	63	44	40
10:00 PM	45	64	43	40
11:00 PM	43	58	42	40

	Statistical Summary					
	Daytime (7 a.m. - 10 p.m.)			Nighttime (10 p.m. - 7 a.m.)		
	High	Low	Average	High	Low	Average
Leq (Average)	54	45	49	51	43	48
Lmax (Maximum)	79	57	67	67	58	62
L50 (Median)	49	44	47	50	42	46
L90 (Background)	46	40	43	47	40	42

Computed DNL, dB	54
% Daytime Energy	70%
% Nighttime Energy	30%

GPS Coordinates	38°47'48.11"N
	121°19'36.70"W

Appendix C-3
Long-Term Ambient Noise Monitoring Results - Site 1
Blue Oaks Retail Center - Roseville, California
Sunday, November 13, 2022

Hour	Leq	Lmax	L50	L90
12:00 AM	41	55	39	36
1:00 AM	40	52	39	36
2:00 AM	39	53	38	36
3:00 AM	41	60	40	37
4:00 AM	41	51	39	36
5:00 AM	44	53	42	39
6:00 AM	47	68	44	42
7:00 AM	46	66	45	43
8:00 AM	50	77	45	43
9:00 AM	46	58	46	44
10:00 AM	48	70	46	44
11:00 AM	49	58	48	46
12:00 PM	47	61	47	44
1:00 PM	47	72	45	44
2:00 PM	46	63	44	42
3:00 PM	44	53	44	41
4:00 PM	46	65	45	41
5:00 PM	48	64	47	44
6:00 PM	53	74	51	47
7:00 PM	53	63	52	47
8:00 PM	53	68	52	48
9:00 PM	53	66	52	49
10:00 PM	52	65	51	48
11:00 PM	51	65	49	45

	Statistical Summary					
	Daytime (7 a.m. - 10 p.m.)			Nighttime (10 p.m. - 7 a.m.)		
	High	Low	Average	High	Low	Average
Leq (Average)	53	44	50	52	39	47
Lmax (Maximum)	77	53	65	68	51	58
L50 (Median)	52	44	47	51	38	42
L90 (Background)	49	41	44	48	36	39

Computed DNL, dB	54
% Daytime Energy	76%
% Nighttime Energy	24%

GPS Coordinates	38°47'48.11"N
	121°19'36.70"W

Appendix C-4
Long-Term Ambient Noise Monitoring Results - Site 2
Blue Oaks Retail Center - Roseville, California
Friday, November 11, 2022

Hour	Leq	Lmax	L50	L90
12:00 AM	51	67	46	40
1:00 AM	50	69	42	36
2:00 AM	49	64	45	35
3:00 AM	49	70	41	36
4:00 AM	51	63	45	36
5:00 AM	55	73	51	42
6:00 AM	60	81	58	52
7:00 AM	61	71	59	52
8:00 AM	58	68	57	50
9:00 AM	57	69	55	48
10:00 AM	55	72	53	47
11:00 AM	57	78	55	46
12:00 PM	56	66	55	46
1:00 PM	58	74	56	48
2:00 PM	58	73	56	49
3:00 PM	58	78	57	50
4:00 PM	57	78	56	48
5:00 PM	61	85	59	51
6:00 PM	63	83	61	54
7:00 PM	62	77	61	54
8:00 PM	59	69	58	50
9:00 PM	60	69	59	53
10:00 PM	58	72	56	48
11:00 PM	55	73	53	45

	Statistical Summary					
	Daytime (7 a.m. - 10 p.m.)			Nighttime (10 p.m. - 7 a.m.)		
	High	Low	Average	High	Low	Average
Leq (Average)	63	55	59	60	49	55
Lmax (Maximum)	85	66	74	81	63	70
L50 (Median)	61	53	57	58	41	49
L90 (Background)	54	46	50	52	35	41

Computed DNL, dB	62
% Daytime Energy	81%
% Nighttime Energy	19%

GPS Coordinates	38°47'46.22"N
	121°19'27.51"W

Appendix C-5
Long-Term Ambient Noise Monitoring Results - Site 2
Blue Oaks Retail Center - Roseville, California
Saturday, November 12, 2022

Hour	Leq	Lmax	L50	L90
12:00 AM	53	68	48	40
1:00 AM	51	65	45	38
2:00 AM	47	63	41	35
3:00 AM	46	65	41	33
4:00 AM	47	64	38	34
5:00 AM	51	64	47	40
6:00 AM	54	66	51	44
7:00 AM	55	67	53	47
8:00 AM	56	66	54	46
9:00 AM	58	73	56	48
10:00 AM	58	68	56	48
11:00 AM	58	66	57	48
12:00 PM	58	69	56	47
1:00 PM	57	68	56	47
2:00 PM	56	68	54	45
3:00 PM	57	71	56	47
4:00 PM	56	72	55	46
5:00 PM	57	72	56	46
6:00 PM	58	68	57	48
7:00 PM	57	69	55	46
8:00 PM	58	74	55	47
9:00 PM	57	75	54	48
10:00 PM	57	75	55	48
11:00 PM	55	73	52	46

	Statistical Summary					
	Daytime (7 a.m. - 10 p.m.)			Nighttime (10 p.m. - 7 a.m.)		
	High	Low	Average	High	Low	Average
Leq (Average)	58	55	57	57	46	53
Lmax (Maximum)	75	66	70	75	63	67
L50 (Median)	57	53	55	55	38	46
L90 (Background)	48	45	47	48	33	40

Computed DNL, dB	60
% Daytime Energy	82%
% Nighttime Energy	18%

GPS Coordinates	38°47'46.22"N
	121°19'27.51"W

Appendix C-6
Long-Term Ambient Noise Monitoring Results - Site 2
Blue Oaks Retail Center - Roseville, California
Sunday, November 13, 2022

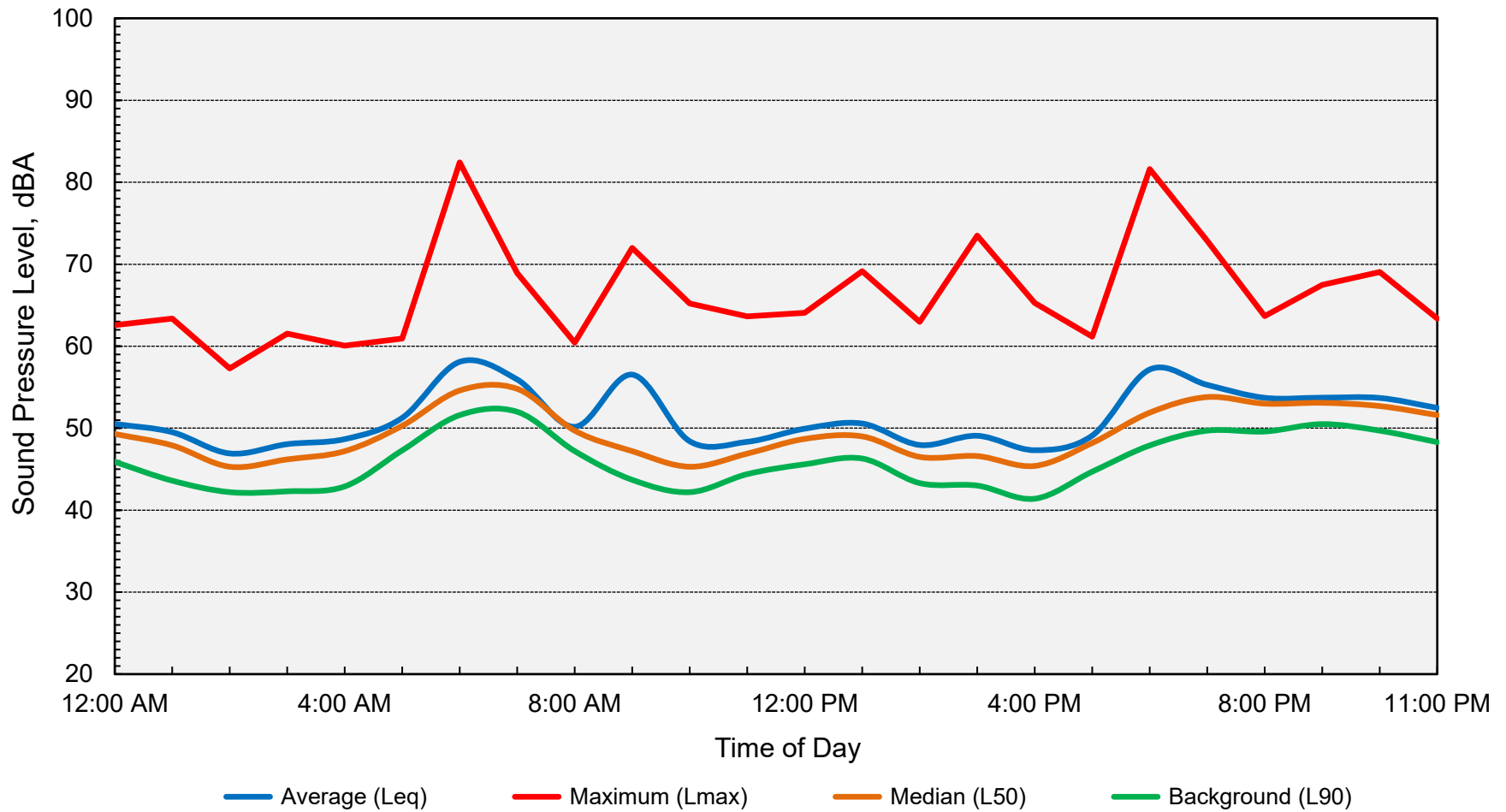
Hour	Leq	Lmax	L50	L90
12:00 AM	52	67	48	41
1:00 AM	50	63	44	38
2:00 AM	48	66	43	37
3:00 AM	45	65	39	36
4:00 AM	47	62	41	36
5:00 AM	50	68	46	39
6:00 AM	53	76	49	44
7:00 AM	54	65	52	47
8:00 AM	52	64	51	45
9:00 AM	54	66	52	48
10:00 AM	55	74	54	49
11:00 AM	56	72	54	49
12:00 PM	54	64	53	47
1:00 PM	54	67	53	47
2:00 PM	56	79	54	47
3:00 PM	56	71	55	48
4:00 PM	59	75	58	50
5:00 PM	65	90	58	52
6:00 PM	62	81	60	54
7:00 PM	59	67	58	52
8:00 PM	59	75	57	51
9:00 PM	57	80	54	47
10:00 PM	55	65	51	45
11:00 PM	53	68	48	41

	Statistical Summary					
	Daytime (7 a.m. - 10 p.m.)			Nighttime (10 p.m. - 7 a.m.)		
	High	Low	Average	High	Low	Average
Leq (Average)	65	52	58	55	45	51
Lmax (Maximum)	90	64	73	76	62	67
L50 (Median)	60	51	55	51	39	45
L90 (Background)	54	45	49	45	36	39

Computed DNL, dB	60
% Daytime Energy	89%
% Nighttime Energy	11%

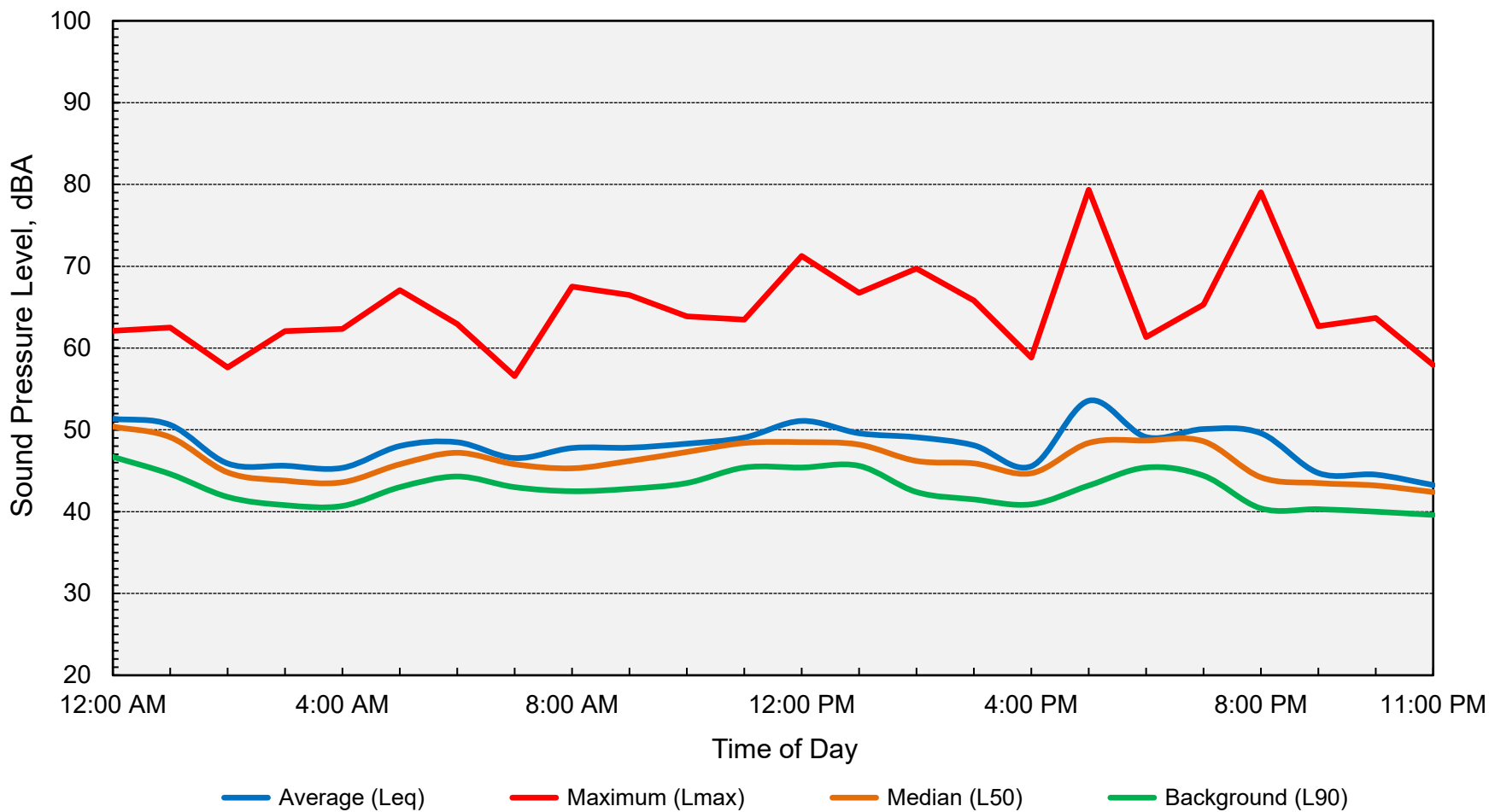
GPS Coordinates	38°47'46.22"N
	121°19'27.51"W

Appendix D-1
Long-Term Ambient Noise Monitoring Results - Site 1
Blue Oaks Retail Center - Roseville, California
Friday, November 11, 2022



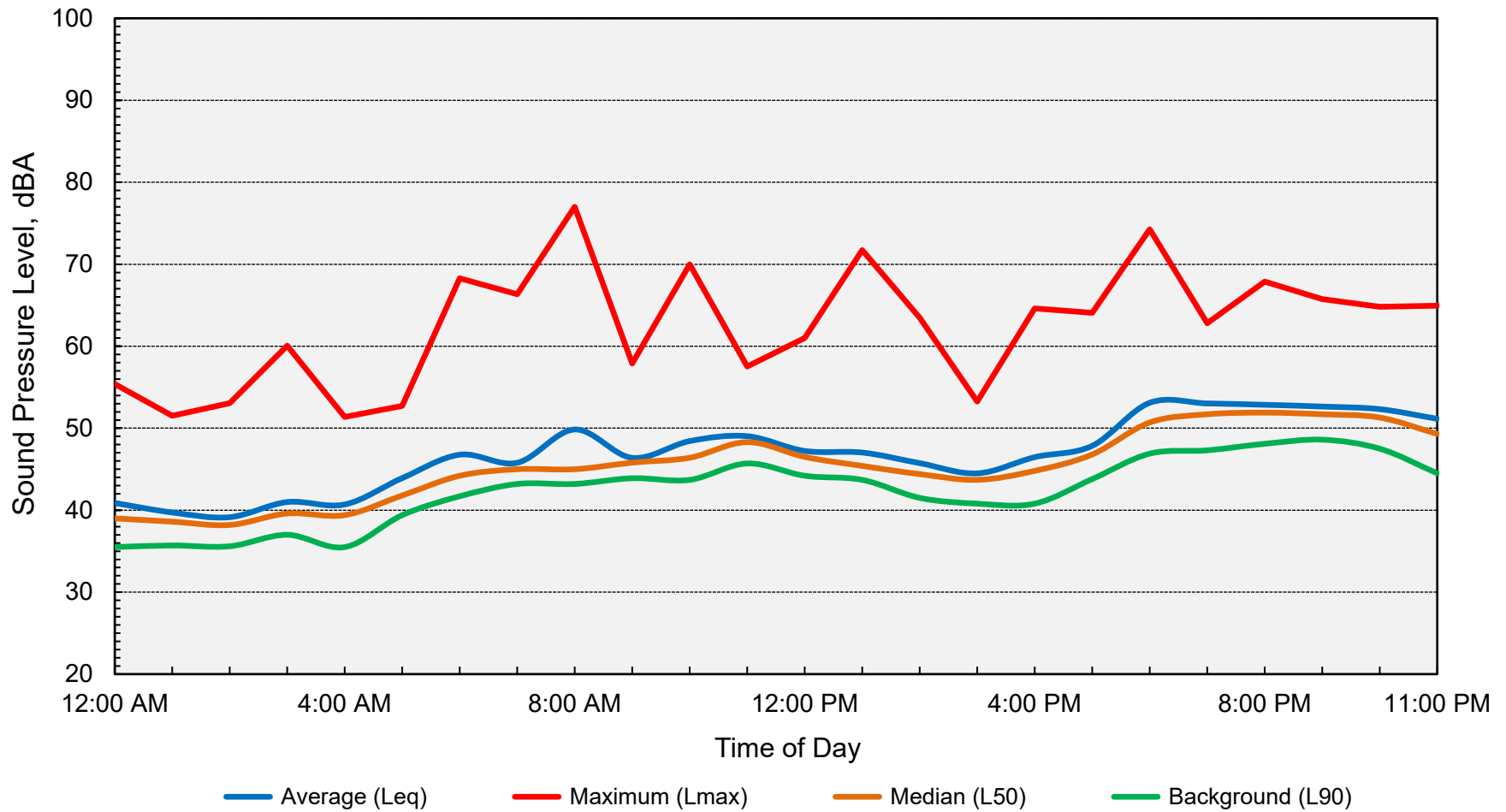
Computed DNL = 59 dB

Appendix D-2
Long-Term Ambient Noise Monitoring Results - Site 1
Blue Oaks Retail Center - Roseville, California
Saturday, November 12, 2022



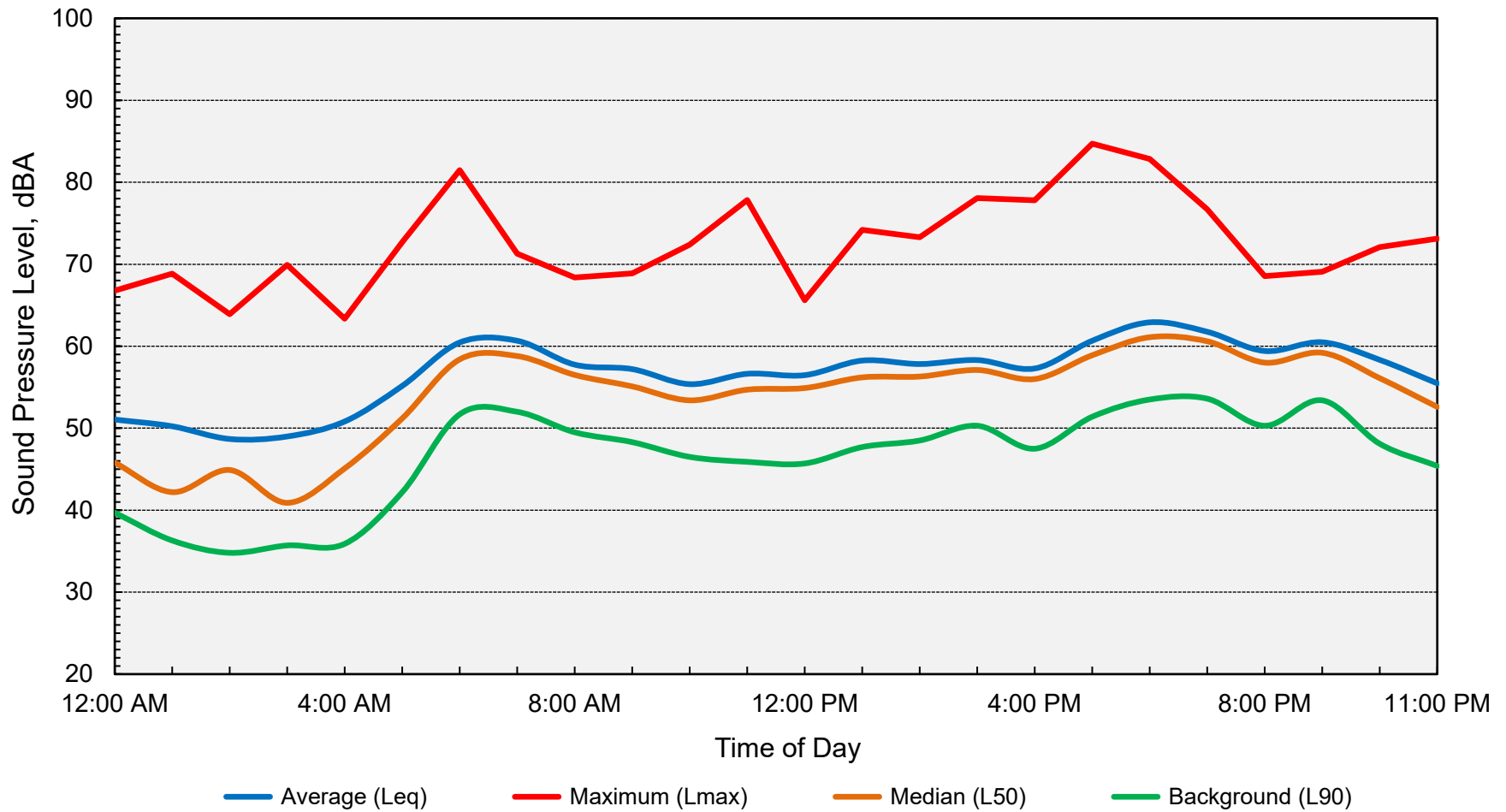
Computed DNL = 54 dB

Appendix D-3
Long-Term Ambient Noise Monitoring Results - Site 1
Blue Oaks Retail Center - Roseville, California
Sunday, November 13, 2022



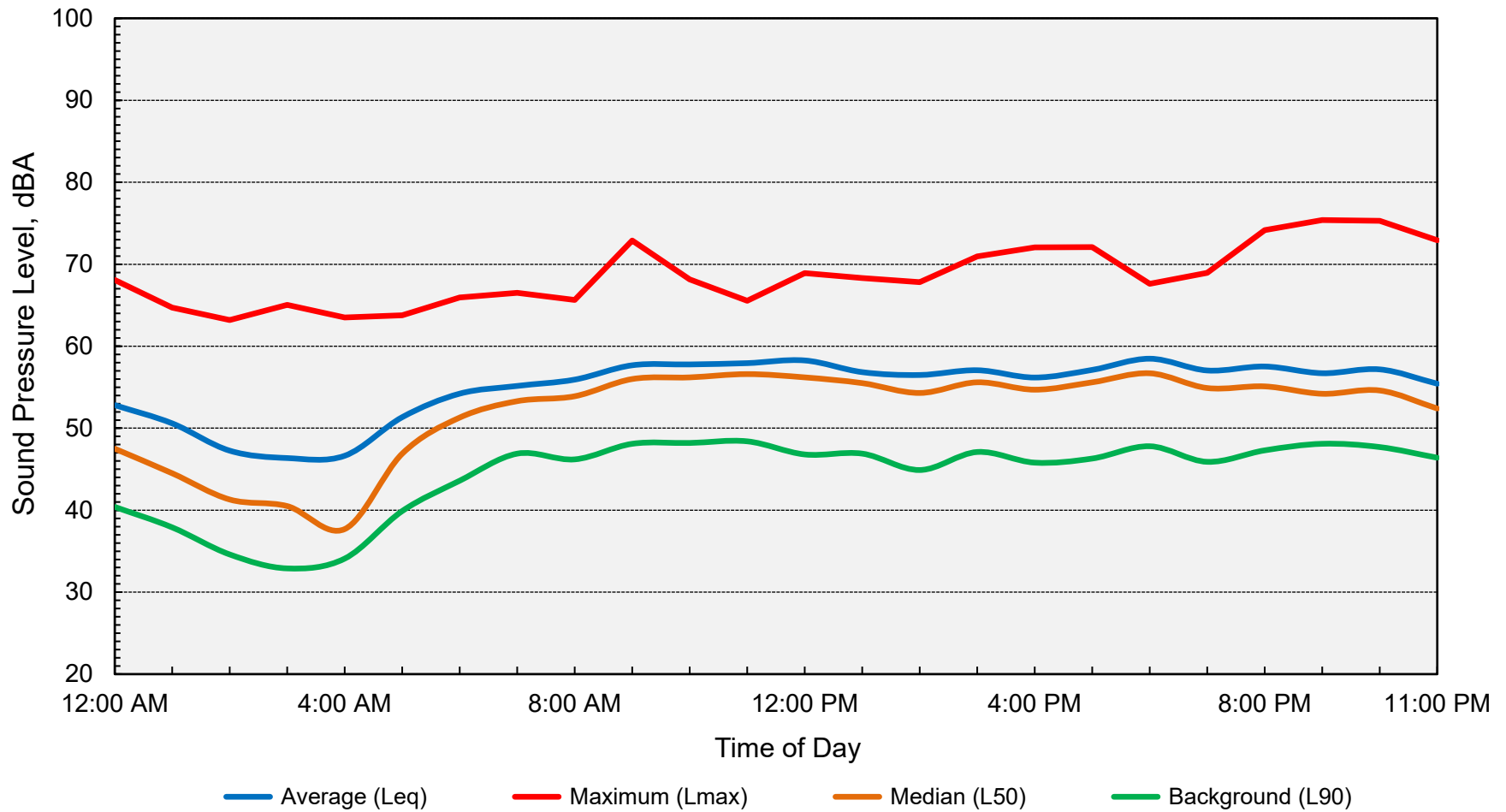
Computed DNL = 54 dB

Appendix D-4
Long-Term Ambient Noise Monitoring Results - Site 2
Blue Oaks Retail Center - Roseville, California
Friday, November 11, 2022



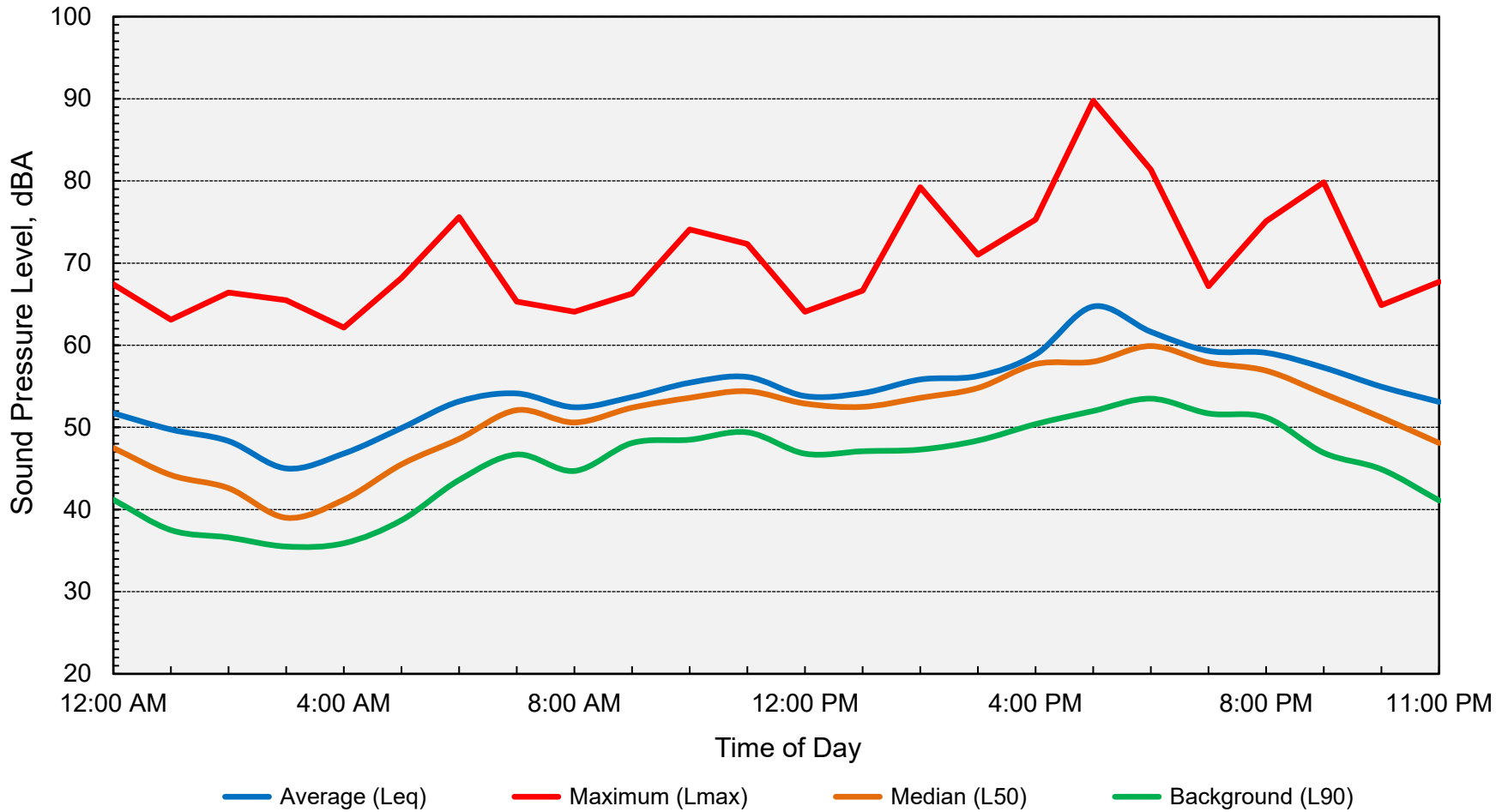
Computed DNL = 62 dB

Appendix D-5
Long-Term Ambient Noise Monitoring Results - Site 2
Blue Oaks Retail Center - Roseville, California
Saturday, November 12, 2022



Computed DNL = 60 dB

Appendix D-6
Long-Term Ambient Noise Monitoring Results - Site 2
Blue Oaks Retail Center - Roseville, California
Sunday, November 13, 2022



Computed DNL = 60 dB