ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

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Subject: Downtown Reno Festival Grounds Acoustical Study

PURPOSE

This acoustical study evaluates the potential noise associated with the Downtown Reno Festival Grounds Project (Project) in the City of Reno, Nevada. It includes an assessment of existing baseline noise conditions in the Project Area and employs the SoundPLAN 3D noise model to predict future noise levels generated by events at the Project Site.

PROJECT DESCRIPTION

The Project Site is located south of West 3rd Street, between Ralston Street and North Arlington Street, in the City of Reno. Existing rail tracks utilized by Amtrak trains are situated between the site and West 3rd Street, running through a partially open, below-grade rail passage. Currently, the Site is developed as a parking lot and is surrounded primarily by hotels/ resorts and residential land uses. The Project is proposing the development of a festival grounds capable of accommodating up to 15,000 attendees. Planned facilities include a 64,800-square-foot seating area, a 17,982-square-foot entry plaza, a 52,936-square-foot staging area, a tent area, a stage, and multiple retail and concession locations. The festival grounds are proposed to operate from 6:00 a.m. to 11:00 p.m. Sunday through Thursday and from 6:00 a.m. to 12:00 a.m. Friday and Saturday.

NOISE ANALYSIS

Fundamentals of Sound and Environmental Noise

Addition of Decibels

The decibel (dB) scale is logarithmic, not linear; therefore, sound levels cannot be added or subtracted through ordinary arithmetic. Two sound levels 10 dB apart differ in acoustic energy by a factor of 10. When the standard logarithmic decibel is A-weighted (dBA), an increase of 10 dBA is generally perceived as a doubling in loudness. For example, a 10 dBA increase from 70 dBA to 80 dBA is perceived to be twice as loud and a 10 dBA decrease from 70 dBA to 60 dBA is perceived as half as loud. When two identical sources are each producing sound of the same loudness, the resulting sound level at a given distance would be 3 dB higher than one source under the same conditions (Federal Transit Administration [FTA] 2018). For example, a 65-dB source of sound, such as a truck, when joined by another 65-dB source results in a sound amplitude of 68 dB, not 130 dB (i.e., doubling the source strength increases the sound pressure by 3 dB). Under the dB scale, three sources of equal loudness together would produce an increase of 5 dB.

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Sound Propagation and Attenuation

Noise can be generated by a number of sources, including mobile sources such as automobiles, trucks and airplanes, and stationary sources such as construction sites, machinery, and industrial operations. Sound spreads (propagates) uniformly outward in a spherical pattern, and the sound level decreases (attenuates) at a rate of at least 6 dB (dBA) for each doubling of distance from a stationary or point source (Federal Highway Administration [FHWA] 2017). Sound from a line source, such as a highway, propagates outward in a cylindrical pattern, often referred to as cylindrical spreading. Sound levels attenuate at a rate of approximately 3 dBA for each doubling of distance from a line source, such as a roadway, depending on ground surface characteristics (FHWA 2017). No excess attenuation is assumed for hard surfaces like a parking lot or a body of water. Soft surfaces, such as soft dirt or grass, can absorb sound, so an excess ground-attenuation value of 1.5 dBA per doubling of distance is normally assumed.

Noise levels may also be reduced by intervening structures; generally, a single row of detached buildings between the receptor and the noise source reduces the noise level by about 5 dBA (FHWA 2006), while a solid wall or berm generally reduces noise levels by 10 to 20 dBA (FHWA 2011). However, noise barriers or enclosures specifically designed to reduce site-specific construction noise can provide a sound reduction of 35 dBA or greater (Western Electro-Acoustic Laboratory, Inc. 2021). To achieve the most potent noise-reducing effect, a noise enclosure/barrier must physically fit in the available space, must completely break the "line of sight" between the noise source and the receptors, must be free of degrading holes or gaps, and must not be flanked by nearby reflective surfaces. Noise barriers must be sizable enough to cover the entire noise source and extend length-wise and vertically as far as feasibly possible to be most effective. The limiting factor for a noise barrier is not the component of noise transmitted through the material, but rather the amount of noise flanking around and over the barrier. In general, barriers contribute to decreasing noise levels only when the structure breaks the line of sight between the source and the receiver.

The manner in which older structures in California were constructed generally provides a reduction of exterior-to-interior noise levels of about 20 to 25 dBA with closed windows (California Department of Transportation [Caltrans] 2002). The exterior-to-interior reduction of newer structures is generally 30 dBA or more (Harris Miller, Miller & Hanson Inc. 2006).

Noise Descriptors

The decibel scale alone does not adequately characterize how humans perceive noise. The dominant frequencies of a sound have a substantial effect on the human response to that sound. Several rating scales have been developed to analyze the adverse effect of community noise on people. Because environmental noise fluctuates over time, these scales consider that the effect of noise on people is largely dependent on the total acoustical energy content of the noise, as well as the time of day when the noise occurs. The L_{eq} is a measure of ambient noise, while the L_{dn} (Day-Night Average Level) and CNEL (Community Noise Equivalent Level) are measures of community noise. Each is applicable to this analysis and defined as follows:

- **Equivalent Noise Level (L_{eq})** is the average acoustic energy content of noise for a stated period of time. Thus, the L_{eq} of a time-varying noise and that of a steady noise are the same if they deliver

the same acoustic energy to the ear during exposure. For evaluating community impacts, this rating scale does not vary, regardless of whether the noise occurs during the day or the night.

- **Day-Night Average (L_{dn})** is a 24-hour average sound level that accounts for increased noise senstivitiry during the nighttime hours. It applies a 10-dB penalty between the hours of 10:00 p.m. to 7:00 a.m. to account for noise sensitivity in the nighttime.

- **Community Noise Equivalent Level (CNEL)** is a 24-hour average sound level that accounts for increased noise sensitivity during evening and nighttime hours. It applies a 5-dB penalty to noise during the evening hours from 7:00 p.m. to 10:00 p.m. and a 10-dB penalty to noise during the nighttime hours from 10:00 p.m. to 7:00 a.m., reflecting the greater disturbance caused by noise during these periods.

- **Maximum Noise Level (L_{max})** is the highest sound level measured during a given period of time. It represents the loudest noise event within that period, often associated with transient or short-duration events such as a passing vehicle or a door slamming.

- **Minimum Noise Level (L_{min})** is the lowest sound level measured during a given period of time. It reflects the quietest moments and is often influenced by background noise levels or periods of low activity.

Human Response to Noise

The human response to environmental noise is subjective and varies considerably from individual to individual. Noise in the community has often been cited as a health problem, not in terms of actual physiological damage, such as hearing impairment, but in terms of inhibiting general well-being and contributing to undue stress and annoyance. The health effects of noise in the community arise from interference with human activities, including sleep, speech, recreation, and tasks that demand concentration or coordination. Hearing loss can occur at the highest noise intensity levels.

Noise environments and consequences of human activities are usually well represented by median noise levels during the day or night or over a 24-hour period. Environmental noise levels are generally considered low when the CNEL is below 60 dBA, moderate in the 60- to 70-dBA range, and high above 70 dBA. Examples of low daytime levels are isolated, natural settings with noise levels as low as 20 dBA and quiet, suburban, residential streets with noise levels around 40 dBA. Noise levels above 45 dBA at night can disrupt sleep. Examples of moderate-level noise environments are urban residential or semi-commercial areas (typically 55 to 60 dBA) and commercial locations (typically 60 dBA). People may consider louder environments adverse, but most will accept the higher levels associated with noisier urban residential or residential-commercial areas (60 to 75 dBA), or dense urban or industrial areas (65 to 80 dBA). Regarding increases in dBA noise levels, the following relationships should be noted in understanding this analysis:

- Except in carefully controlled laboratory experiments, a change of 1 dBA cannot be perceived by humans.

- 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 community response would be expected.
- A 10-dBA change is subjectively heard as an approximate doubling in loudness and would almost certainly cause an adverse change in community response.

Existing Ambient Noise Environment

In order to quantify existing ambient noise levels in the Project Area, ECORP Consulting, Inc. conducted five short-term noise measurements (15-minutes) during the daytime and five short-term noise measurements during the nighttime of November 21st, 2024. The 15-minute daytime measurements were taken between 9:45 a.m. and 11:20 a.m. and the 15-minute nighttime measurements were taken between 9:00 p.m. and 10:35 p.m. Additionally, ECORP conducted a 24-hour noise measurement starting on November 21st, 2024, through November 22nd, 2024. These noise measurements are representative of typical existing ambient noise levels at surrounding receptors in the Project Area during the daytime and nighttime (see Attachment A for a visual representation of the measurement locations). Ambient noise levels at each monitoring location are summarized in Table 1.

Table 1. Existing Ambient Noise Measurements

15-Minute Noise Measurements, dBA					
Location Number	**Location**	**L_{eq}**	**L_{min}**	**L_{max}**	**Time**
ST 1 – Daytime	On Second Street, behind J Resort Casino.	60.6	51.6	73.8	9:46 a.m. – 10:01 a.m.
ST 1 – Nighttime	On Second Street, behind J Resort Casino	59.2	49.6	77.3	9:03 p.m. – 9:18 p.m.
ST 2 – Daytime	Next to Wyndham Hotel near the corner of Commercial Row and Arlington Avenue	63.7	54.7	79.9	10:07 a.m. – 10:22 a.m.
ST 2 – Nighttime	Next to Wyndham Hotel near the corner of Commercial Row and Arlington Avenue	62.6	52.3	78.9	9:23 p.m. – 9:38 p.m.
ST 3 – Daytime	Next to MOD Apartments near the corner of Stevenson Street and West Second Street	61.2	53.1	70.9	10:28 a.m. – 10:43 a.m.
ST 3 – Nighttime	Next to MOD Apartments near the corner of Stevenson Street and West Second Street	56.7	43.4	69.3	9:42 p.m. – 9:57 p.m.
ST 4 – Daytime	In front of 222 Ralston Street residence	61.1	52.0	81.5	10:47 a.m. – 11:02 a.m.
ST 4 – Nighttime	In front of 222 Ralston Street residence	56.2	47.0	72.8	9:59 p.m. – 10:14 p.m.
ST 5 – Daytime	Next to 529 2nd Street residence	55.6	49.3	76.0	11:04 a.m. – 11:19 a.m.
ST 5 – Nighttime	Next to 529 2nd Street residence	56.0	43.7	73.8	10:18 p.m. – 10:33 p.m.

24-Hour Noise Measurements, dBA						
Location Number	**Location**	**CNEL**	**L_{eq}**	**L_{min}**	**L_{max}**	**Time**
LT – 1	Next to 124 Ralston Street.	64.7	65.5	42.7	102.7	8:23 a.m. – 8:23 a.m.

Source: The short-term noise measurements were taken by ECORP with a Larson Davis Sound Advisor 831C sound level meter and the long-term measurement was taken with a Larson Davis Sound Expert 821 sound level meter. Both meters satisfy the American National Standards Institute for general environmental noise measurement instrumentation and were calibrated according to manufacturer specifications with a Larson Davis CAL200 Class I Calibrator. See Attachment A for noise measurement outputs.

As shown in Table 1, the ambient recorded noise levels range from 55.6 to 63.7 dBA L_{eq} during the short-term daytime noise measurements and range from 56.0 to 62.6 dBA L_{eq} during the short-term nighttime noise measurements. As previously described, L_{eq} is the average acoustic energy content of noise for a stated period of time. The ambient recorded noise level during the span of the 24-hour noise measurement was 64.7 dBA CNEL. CNEL is a 24-hour average sound level that accounts for increased noise sensitivity

during evening and nighttime hours. It applies a 5-dB penalty to noise during the evening hours from 7:00 p.m. to 10:00 p.m. and a 10-dB penalty to noise during the nighttime hours from 10:00 p.m. to 7:00 a.m., reflecting the greater disturbance caused by noise during these periods. The ambient noise survey concluded that the Project Area is primary influenced by transportation noise (e.g., cars, trucks, buses, motorcycles, and rail) from the surrounding roadways such as Ralston Street, West 2nd Street, and Arlington Avenue, and the rail line north of the Project Site.

Methodology

As previously described, the Project proposes the construction of a festival grounds, which would include a 64,800 square foot seating area, a 17,982 square foot entry plaza, a 52,936 square foot staging area, a tent area, a stage, and retail/concessions at multiple locations. To evaluate noise levels resulting from the Project, the SoundPLAN 3D noise model was used to simulate noise propagation within the Project Area. The SoundPLAN 3D noise model predicts noise levels based on the location, noise level, and frequency spectra of the noise sources as well as the geometry and reflective properties of the local terrain, buildings and barriers. SoundPLAN allows computer simulations of noise situations and creates noise contour maps using reference noise levels, topography, point and area noise sources, and intervening structures.

This analysis identifies key sources of noise associated with events, such as crowd noise, speaker noise, and subwoofer noise, that would occur at the proposed festival grounds. The seating area and the two retail/concession areas (crowd noise) were modeled as large area sources five feet above the existing topography using sound power reference levels found in the SoundPLAN library for large events. The area sources represent the dispersed nature of noise activities that would occur in these locations. Thirteen-point sources, with a starting height of 35 feet, were modeled on each side of the stage to approximate the line array configuration of the main speakers. Additionally, a total of 15-point sources, with a height of six feet, were placed on the edge of the stage to represent the six-front lip-fill speakers and nine subwoofers. The subwoofers were assigned a cardioid directivity pattern to account for phase cancellation, which is typically achieved through a double-stacked configuration of 18 subwoofers; however, for modeling purposes in SoundPLAN, each subwoofer was represented as a single source with pre-assigned cardioid characteristics.

All speakers and subwoofers were assigned a sound power level of 120 dBA to achieve a target sound pressure level of approximately 90 to 95 dBA L_{eq} at the mixing console, which was modeled at a distance of approximately 100 feet from the center of the stage. These levels are typically desired sound pressure levels at the mixing console for live concert events. Six receptors (SoundPLAN receivers) were modeled to identify noise-sensitive land uses in the immediate vicinity of the Project Site and estimate exterior noise levels anticipated during a future amplified festival.

Projected Future Noise Levels

Table 2 shows the predicted Project noise levels modeled as a result of events occurring on the Project Site. A noise contour graphic (see Figure 1, Attachment A) has been prepared to provide a visual depiction of the predicted noise levels in the Project Area.

Table 2. Modeled Project Noise Levels		
Receiver	**Location**	**Modeled Project Noise Levels (dBA L_{eq})**
1	J Resort	77.8
2	Wyndham Hotel	70.4
3	MOD Apartments	70.2
4	Residence at 222 Ralston Street	77.8
5	Residence at 529 2nd Street	71.5
6	Residence at 518 2nd Street	72.7

Source: SoundPLAN v 9.0. Refer to Attachment B for Model Data Outputs.

As shown in Table 2, noise levels resulting from events at the Project Site are projected to range from 70.2 to 77.8 dBA L_{eq} at the noise receptors in the immediate vicinity of the Project Site. It is noted that the modeling outputs represent a worst-case scenario, assuming all sources are operating simultaneously at their maximum noise output.

FIGURE 1

Acoustical Study Summary

Table 3 provides a comparison of the existing ambient noise levels and the projected noise levels in the Project Area resulting from the Proposed Project. The table highlights the expected increase in noise levels (shown in the last column) compared to daytime and nighttime baseline conditions. The data indicates that the Project is expected to generate a temporary increase in noise levels within the immediate Project Area. Projected noise levels are anticipated to result in a temporary increase of 6.7 dBA to 21.6 dBA above ambient conditions, depending on the proximity of the receiver locations to the Project.

Table 3. Project-related Noise Increase Over Ambient Noise Measurements

15-Minute Noise Measurements, dBA L_{eq}				
Location/Receiver	**Location**	**Ambient Noise**	**Project Noise Levels**	**Increase Over Ambient**
Receiver 1 – Daytime	J Resort Casino.	60.6	77.8	17.2
Receiver 1 – Nighttime	J Resort Casino.	59.2	77.8	18.6
Receiver 2 – Daytime	Wyndham Hotel	63.7	70.4	6.7
Receiver 2 – Nighttime	Wyndham Hotel	62.6	70.4	7.8
Receiver 3 – Daytime	MOD Apartments	61.2	70.2	9
Receiver 3 – Nighttime	MOD Apartments	56.7	70.2	13.5
Receiver 4 – Daytime	Residence at 222 Ralston Street	61.1	77.8	16.7
Receiver 4 – Nighttime	Residence at 222 Ralston Street	56.2	77.8	21.6
Receiver 5 – Daytime	Residence at 529 2nd Street	55.6	71.5	15.9
Receiver 5 – Nighttime	Residence at 518 2nd Street	56.0	71.5	15.5

REFERENCES

Caltrans (California Department of Transportation). 2002. California Airport Land Use Planning Handbook.

FHWA (Federal Highway Administration). 2017. Construction Noise Handbook. https://www.fhwa.dot.gov/Environment/noise/construction_noise/handbook/handbook02.cfm.

_____. 2011. Effective Noise Control During Nighttime Construction. Available online at: http://ops.fhwa.dot.gov/wz/workshops/accessible/schexnayder_paper.htm.

_____. 2006. Roadway Construction Noise Model.

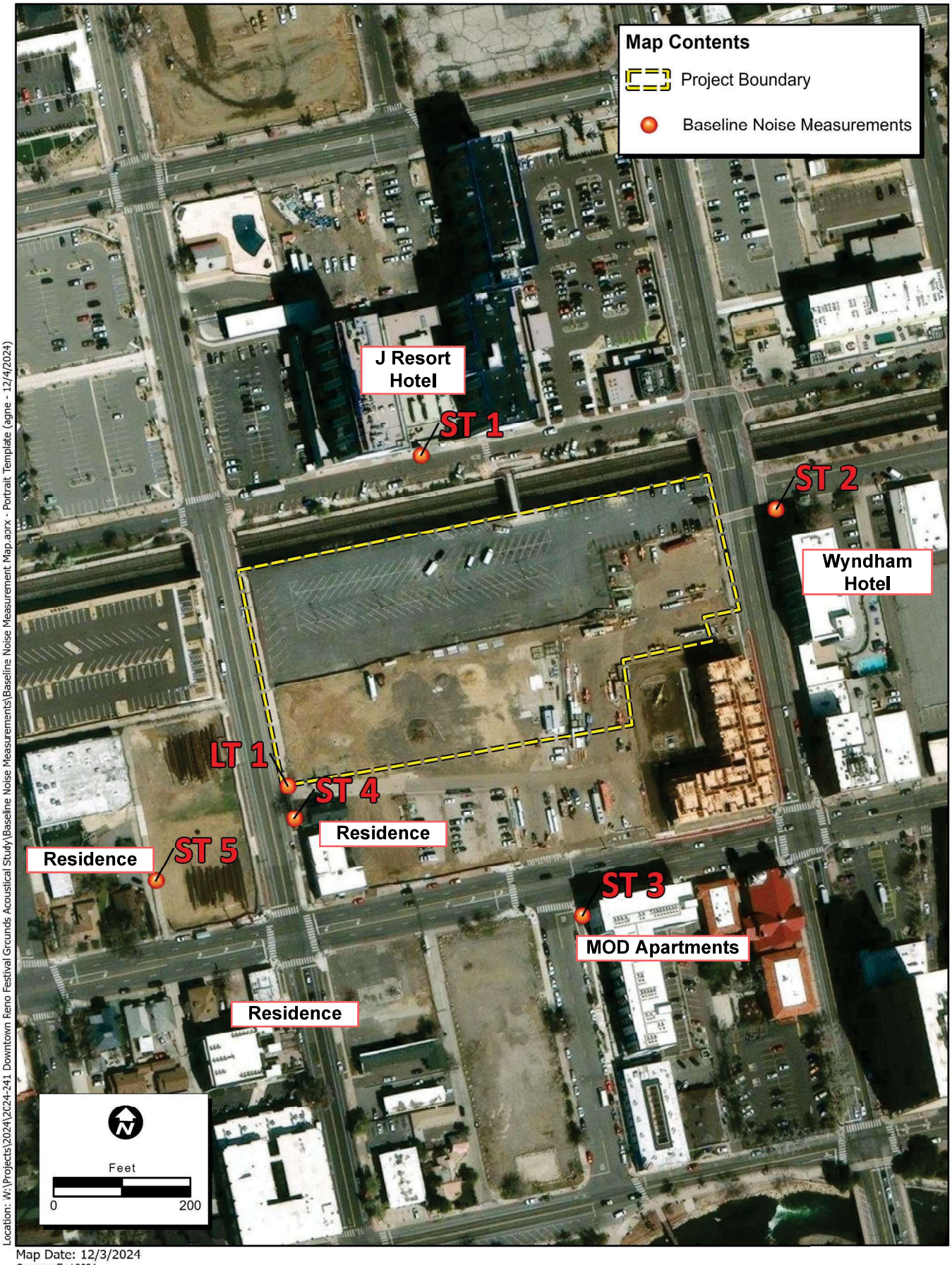
FTA (Federal Transit Administration). 2018. Transit Noise and Vibration Impact Assessment.

Harris Miller, Miller & Hanson Inc. 2006. Transit Noise and Vibration Impact Assessment, Final Report.

Western Electro-Acoustic Laboratory, Inc. 2021. Sound Transmission Sound Test Laboratory Report No. TL 21-227.

ATTACHMENT A

Existing Ambient Noise Measurements – Project Vicinity



Location: W:\Projects\2024\2024-241 Downtown Reno Festival Grounds Acoustical Study\Baseline Noise Measurements\Baseline Noise Measurement Map.aprx - Portrait Template (agne - 12/4/2024)

Map Date: 12/3/2024

Sources: Esri 2024

Baseline Noise Measurement Map

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Downtown Reno Festival Grounds Project 2024-241

Site Number: ST 1 – Morning			
Recorded By: Marco Caipo			
Job Number: 2024-241			
Date: 11/21/2024			
Time: 9:46 a.m. – 10:01 a.m.			
Location: On Second Street, behind J Resort Casino			
Source of Peak Noise: Traffic, pedestrian activity, train horns.			
Noise Data			
Leq (dB)	**Lmin (dB)**	**Lmax (dB)**	**Peak (dB)**
60.6	51.6	73.8	101.5

Equipment						
Category	**Type**	**Vendor**	**Model**	**Serial No.**	**Cert. Date**	**Note**
Sound	Sound Level Meter	**Larson Davis**	**831C**	**12022**	**11/16/2022**	
	Microphone	**Larson Davis**	**377B02**	**338899**	**10/27/2022**	
	Preamp	**Larson Davis**	**PRM831**	**077250**	**10/27/2022**	
	Calibrator	**Larson Davis**	**CAL200**	**21985**	**10/27/2022**	

Weather Data			
Est.	**Duration:** 15 mins		**Sky:** Cloudy
	Note: dBA Offset = 0.40		**Sensor Height (ft):** 4
	Wind Ave Speed (mph)	**Temperature (degrees Fahrenheit)**	**Barometer Pressure (hPa)**
	5-8	45	1,018

Photo of Measurement Location

Measurement Report

Report Summary

Meter's File Name	831_Data.002.s	Computer's File Name	831C_12022-20241121 094654-831_Data.002.ldbin
Meter	831C 12022	Firmware	04.7.1R0
User		Location	
Job Description			
Note			

Start Time	2024-11-21 09:46:54	Duration	0:15:00.0		
End Time	2024-11-21 10:01:54	Run Time	0:15:00.0	Pause Time	0:00:00.0
Pre-Calibration	2024-11-21 09:41:27	Post-Calibration	None	Calibration Deviation	---

Results

Overall Metrics

LA_{eq}	60.6 dB		
LAE	90.1 dB	SEA	--- dB
EA	114.8 µPa²h	LAFTM5	65.4 dB
LZ_{peak}	103.2 dB	2024-11-21 09:54:13	
LAS_{max}	78.3 dB	2024-11-21 09:48:32	
LAS_{min}	51.6 dB	2024-11-21 10:01:49	
LA_{eq}	60.6 dB		
LC_{eq}	72.3 dB	LC_{eq} - LA_{eq}	11.7 dB
LAI_{eq}	62.8 dB	LAI_{eq} - LA_{eq}	2.2 dB

Exceedances

	Count	Duration
LAS > 65.0 dB	10	0:00:56.5
LAS > 85.0 dB	0	0:00:00.0
LZpk > 135.0 dB	0	0:00:00.0
LZpk > 137.0 dB	0	0:00:00.0
LZpk > 140.0 dB	0	0:00:00.0

Community Noise

L_{DN}	L_{Day}	L_{Night}
60.6 dB	60.6 dB	0.0 dB

L_{DEN}	L_{Day}	L_{Eve}	L_{Night}
60.6 dB	60.6 dB	--- dB	--- dB

Any Data

	A		C		Z	
	Level	Time Stamp	Level	Time Stamp	Level	Time Stamp
L_{eq}	60.6 dB		72.3 dB		81.6 dB	
$LS_{(max)}$	78.3 dB	2024-11-21 09:48:32	88.8 dB	2024-11-21 09:48:25	94.3 dB	2024-11-21 09:54:13
$LF_{(max)}$	80.6 dB	2024-11-21 09:48:32	92.5 dB	2024-11-21 09:48:24	99.1 dB	2024-11-21 09:55:49
$LI_{(max)}$	81.8 dB	2024-11-21 09:48:32	93.6 dB	2024-11-21 09:48:24	101.2 dB	2024-11-21 09:55:49
$LS_{(min)}$	51.6 dB	2024-11-21 10:01:49	65.2 dB	2024-11-21 09:47:22	70.9 dB	2024-11-21 09:47:34
$LF_{(min)}$	51.1 dB	2024-11-21 10:01:48	63.6 dB	2024-11-21 09:47:22	68.8 dB	2024-11-21 09:47:22
$LI_{(min)}$	51.4 dB	2024-11-21 10:01:48	65.8 dB	2024-11-21 09:47:22	72.3 dB	2024-11-21 09:47:32
$L_{Peak(max)}$	90.4 dB	2024-11-21 09:57:32	97.7 dB	2024-11-21 09:48:24	103.2 dB	2024-11-21 09:54:13

Overloads

Count	Duration	OBA Count	OBA Duration
0	0:00:00.0	0	0:00:00.0

Statistics

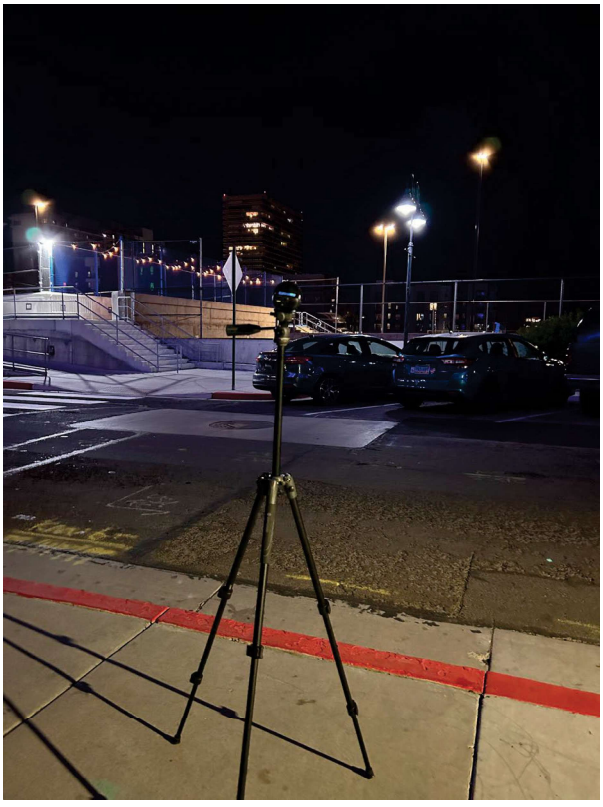
LAS 5.0	64.9 dB
LAS 10.0	61.6 dB
LAS 33.3	55.0 dB
LAS 50.0	54.2 dB
LAS 66.6	53.6 dB
LAS 90.0	52.9 dB

Site Number: ST 1 – Night			
Recorded By: Marco Caipo			
Job Number: 2024-241			
Date: 11/21/2024			
Time: 9:03 p.m. – 9:18 p.m.			
Location: On Second Street, behind J Resort Casino			
Source of Peak Noise: Sirens, pedestrians conversating next to the meter.			
Noise Data			
Leq (dB)	**Lmin (dB)**	**Lmax (dB)**	**Peak (dB)**
59.2	49.6	77.3	117.5

Equipment						
Category	**Type**	**Vendor**	**Model**	**Serial No.**	**Cert. Date**	**Note**
Sound	Sound Level Meter	**Larson Davis**	**831C**	**12022**	**11/16/2022**	
	Microphone	**Larson Davis**	**377B02**	**338899**	**10/27/2022**	
	Preamp	**Larson Davis**	**PRM831**	**077250**	**10/27/2022**	
	Calibrator	**Larson Davis**	**CAL200**	**21985**	**10/27/2022**	

Weather Data			
Est.	**Duration:** 15 mins		**Sky:** Cloudy
	Note: dBA Offset = -0.12		**Sensor Height (ft):** 4
	Wind Ave Speed (mph)	**Temperature (degrees Fahrenheit)**	**Barometer Pressure (hPa)**
	5-7	48	1,016

Photo of Measurement Location



Measurement Report

Report Summary

Meter's File Name	831_Data.007.s	Computer's File Name	831C_12022-20241121 210312-831_Data.007.ldbin
Meter	831C 12022	Firmware	04.7.1R0
User		Location	
Job Description			
Note			

Start Time	2024-11-21 21:03:12	Duration	0:15:00.0		
End Time	2024-11-21 21:18:12	Run Time	0:15:00.0	Pause Time	0:00:00.0
Pre-Calibration	2024-11-21 21:02:03	Post-Calibration	None	Calibration Deviation	---

Results

Overall Metrics

LA_{eq}	59.2 dB		
LAE	88.7 dB	SEA	--- dB
EA	83.2 µPa²h	LAFTM5	66.6 dB
LZ_{peak}	117.5 dB	2024-11-21 21:06:54	
LAS_{max}	77.3 dB	2024-11-21 21:06:54	
LAS_{min}	49.6 dB	2024-11-21 21:18:12	
LA_{eq}	59.2 dB		
LC_{eq}	70.3 dB	LC_{eq} - LA_{eq}	11.1 dB
LAI_{eq}	64.9 dB	LAI_{eq} - LA_{eq}	5.7 dB

Exceedances

	Count	Duration
LAS > 65.0 dB	11	0:01:07.6
LAS > 85.0 dB	0	0:00:00.0
LZpk > 135.0 dB	0	0:00:00.0
LZpk > 137.0 dB	0	0:00:00.0
LZpk > 140.0 dB	0	0:00:00.0

Community Noise

L_{DN}	L_{Day}	L_{Night}
59.2 dB	59.2 dB	0.0 dB

L_{DEN}	L_{Day}	L_{Eve}	L_{Night}
--- dB	--- dB	59.2 dB	--- dB

Any Data

	A		C		Z	
	Level	Time Stamp	Level	Time Stamp	Level	Time Stamp
L_{eq}	59.2 dB		70.3 dB		73.1 dB	
$LS_{(max)}$	77.3 dB	2024-11-21 21:06:54	94.4 dB	2024-11-21 21:06:54	96.9 dB	2024-11-21 21:06:54
$LF_{(max)}$	85.1 dB	2024-11-21 21:06:54	102.5 dB	2024-11-21 21:06:54	104.7 dB	2024-11-21 21:06:54
$LI_{(max)}$	89.0 dB	2024-11-21 21:06:54	106.5 dB	2024-11-21 21:06:54	108.7 dB	2024-11-21 21:06:54
$LS_{(min)}$	49.6 dB	2024-11-21 21:18:12	63.3 dB	2024-11-21 21:18:11	65.7 dB	2024-11-21 21:15:07
$LF_{(min)}$	49.0 dB	2024-11-21 21:18:12	61.5 dB	2024-11-21 21:18:11	64.0 dB	2024-11-21 21:16:19
$LI_{(min)}$	49.6 dB	2024-11-21 21:18:12	64.0 dB	2024-11-21 21:15:13	66.5 dB	2024-11-21 21:12:33
$L_{Peak(max)}$	107.2 dB	2024-11-21 21:06:54	114.6 dB	2024-11-21 21:06:54	117.5 dB	2024-11-21 21:06:54

Overloads

Count	Duration	OBA Count	OBA Duration
0	0:00:00.0	2	0:00:03.10

Statistics

LAS 5.0	66.0 dB
LAS 10.0	62.3 dB
LAS 33.3	53.9 dB
LAS 50.0	52.3 dB
LAS 66.6	51.6 dB
LAS 90.0	50.9 dB

Site Number: ST 2 – Morning			
Recorded By: Marco Caipo			
Job Number: 2024-241			
Date: 11/21/2024			
Time: 10:07 a.m. – 10:22 a.m.			
Location: On the corner of Commercial Row and Arlington Avenue			
Source of Peak Noise: Traffic, pedestrian activity, train horns.			
Noise Data			
Leq (dB)	**Lmin (dB)**	**Lmax (dB)**	**Peak (dB)**
63.7	54.7	79.9	106.0

Equipment						
Category	**Type**	**Vendor**	**Model**	**Serial No.**	**Cert. Date**	**Note**
Sound	Sound Level Meter	**Larson Davis**	**831C**	**12022**	**11/16/2022**	
	Microphone	**Larson Davis**	**377B02**	**338899**	**10/27/2022**	
	Preamp	**Larson Davis**	**PRM831**	**077250**	**10/27/2022**	
	Calibrator	**Larson Davis**	**CAL200**	**21985**	**10/27/2022**	

Weather Data			
Est.	**Duration:** 15 mins		**Sky:** Cloudy
	Note: dBA Offset = 0.40		**Sensor Height (ft):** 4
	Wind Ave Speed (mph)	**Temperature (degrees Fahrenheit)**	**Barometer Pressure (hPa)**
	5-8	45	1,018

Photo of Measurement Location

Measurement Report

Report Summary

Meter's File Name	831_Data.003.s	Computer's File Name	831C_12022-20241121 100757-831_Data.003.ldbin
Meter	831C 12022	Firmware	04.7.1R0
User		Location	
Job Description			
Note			

Start Time	2024-11-21 10:07:57	Duration	0:15:00.0		
End Time	2024-11-21 10:22:57	Run Time	0:15:00.0	Pause Time	0:00:00.0
Pre-Calibration	2024-11-21 09:41:27	Post-Calibration	None	Calibration Deviation	---

Results

Overall Metrics

LA_{eq}	63.7 dB		
LAE	93.2 dB	SEA	--- dB
EA	234.4 µPa²h	LAFTM5	70.1 dB

LZ_{peak}	106.0 dB	2024-11-21 10:13:05
LAS_{max}	79.9 dB	2024-11-21 10:15:42
LAS_{min}	54.7 dB	2024-11-21 10:20:56

LA_{eq}	63.7 dB		
LC_{eq}	73.8 dB	LC_{eq} - LA_{eq}	10.1 dB
LAI_{eq}	67.4 dB	LAI_{eq} - LA_{eq}	3.7 dB

Exceedances

	Count	Duration
LAS > 65.0 dB	27	0:03:08.1
LAS > 85.0 dB	0	0:00:00.0
LZpk > 135.0 dB	0	0:00:00.0
LZpk > 137.0 dB	0	0:00:00.0
LZpk > 140.0 dB	0	0:00:00.0

Community Noise

L_{DN}	L_{Day}	L_{Night}
63.7 dB	63.7 dB	0.0 dB

L_{DEN}	L_{Day}	L_{Eve}	L_{Night}
63.7 dB	63.7 dB	--- dB	--- dB

Any Data

	A		C		Z	
	Level	Time Stamp	Level	Time Stamp	Level	Time Stamp
L_{eq}	63.7 dB		73.8 dB		82.1 dB	
$LS_{(max)}$	79.9 dB	2024-11-21 10:15:42	87.4 dB	2024-11-21 10:14:15	95.5 dB	2024-11-21 10:13:05
$LF_{(max)}$	85.6 dB	2024-11-21 10:15:42	90.9 dB	2024-11-21 10:14:15	100.6 dB	2024-11-21 10:13:05
$LI_{(max)}$	88.8 dB	2024-11-21 10:15:42	91.9 dB	2024-11-21 10:14:15	103.4 dB	2024-11-21 10:13:05
$LS_{(min)}$	54.7 dB	2024-11-21 10:20:56	67.2 dB	2024-11-21 10:20:58	69.5 dB	2024-11-21 10:20:58
$LF_{(min)}$	54.1 dB	2024-11-21 10:20:56	65.3 dB	2024-11-21 10:20:56	67.2 dB	2024-11-21 10:20:56
$LI_{(min)}$	54.3 dB	2024-11-21 10:20:56	68.5 dB	2024-11-21 10:20:58	71.0 dB	2024-11-21 10:20:57
$L_{Peak(max)}$	101.2 dB	2024-11-21 10:15:42	101.7 dB	2024-11-21 10:20:05	106.0 dB	2024-11-21 10:13:05

Overloads

Count	Duration	OBA Count	OBA Duration
0	0:00:00.0	0	0:00:00.0

Statistics

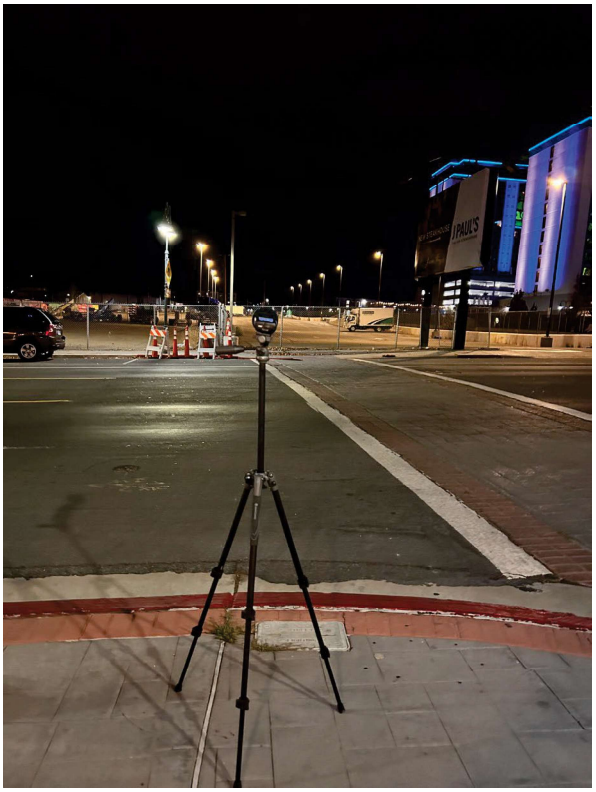
LAS 5.0	69.3 dB
LAS 10.0	67.1 dB
LAS 33.3	61.7 dB
LAS 50.0	59.3 dB
LAS 66.6	57.6 dB
LAS 90.0	56.0 dB

Site Number: ST 2 – Night			
Recorded By: Marco Caipo			
Job Number: 2024-241			
Date: 11/21/2024			
Time: 9:23 p.m. – 9:38 p.m.			
Location: On the corner of Commercial Row and Arlington Avenue			
Source of Peak Noise: Sirens, heavy trucks passing by.			
Noise Data			
Leq (dB)	**Lmin (dB)**	**Lmax (dB)**	**Peak (dB)**
62.6	52.3	78.9	97.6

Equipment						
Category	**Type**	**Vendor**	**Model**	**Serial No.**	**Cert. Date**	**Note**
Sound	Sound Level Meter	**Larson Davis**	**831C**	**12022**	**11/16/2022**	
	Microphone	**Larson Davis**	**377B02**	**338899**	**10/27/2022**	
	Preamp	**Larson Davis**	**PRM831**	**077250**	**10/27/2022**	
	Calibrator	**Larson Davis**	**CAL200**	**21985**	**10/27/2022**	

Weather Data			
Est.	**Duration:** 15 mins		**Sky:** Cloudy
	Note: dBA Offset = -0.12		**Sensor Height (ft):** 4
	Wind Ave Speed (mph)	**Temperature (degrees Fahrenheit)**	**Barometer Pressure (hPa)**
	5-7	48	1,016

Photo of Measurement Location



Measurement Report

Report Summary

Meter's File Name	831_Data.008.s	Computer's File Name	831C_12022-20241121 212302-831_Data.008.ldbin
Meter	831C 12022	Firmware	04.7.1R0
User		Location	
Job Description			
Note			

Start Time	2024-11-21 21:23:02	Duration	0:15:00.0		
End Time	2024-11-21 21:38:02	Run Time	0:15:00.0	Pause Time	0:00:00.0
Pre-Calibration	2024-11-21 21:02:03	Post-Calibration	None	Calibration Deviation	---

Results

Overall Metrics

LA_{eq}	62.6 dB		
LAE	92.1 dB	SEA	--- dB
EA	182.0 µPa²h	LAFTM5	68.4 dB

LZ_{peak}	97.6 dB	2024-11-21 21:37:01
LAS_{max}	78.9 dB	2024-11-21 21:36:54
LAS_{min}	52.3 dB	2024-11-21 21:27:10

LA_{eq}	62.6 dB		
LC_{eq}	69.2 dB	LC_{eq} - LA_{eq}	6.6 dB
LAI_{eq}	65.9 dB	LAI_{eq} - LA_{eq}	3.3 dB

Exceedances

	Count	Duration
LAS > 65.0 dB	22	0:02:17.7
LAS > 85.0 dB	0	0:00:00.0
LZpk > 135.0 dB	0	0:00:00.0
LZpk > 137.0 dB	0	0:00:00.0
LZpk > 140.0 dB	0	0:00:00.0

Community Noise

L_{DN}	L_{Day}	L_{Night}
62.6 dB	62.6 dB	0.0 dB

L_{DEN}	L_{Day}	L_{Eve}	L_{Night}
--- dB	--- dB	62.6 dB	--- dB

Any Data

	A		C		Z	
	Level	Time Stamp	Level	Time Stamp	Level	Time Stamp
L_{eq}	62.6 dB		69.2 dB		70.7 dB	
$LS_{(max)}$	78.9 dB	2024-11-21 21:36:54	82.5 dB	2024-11-21 21:36:54	82.9 dB	2024-11-21 21:36:54
$LF_{(max)}$	81.2 dB	2024-11-21 21:30:48	83.8 dB	2024-11-21 21:36:54	86.5 dB	2024-11-21 21:33:28
$LI_{(max)}$	82.7 dB	2024-11-21 21:36:53	86.0 dB	2024-11-21 21:32:00	88.6 dB	2024-11-21 21:33:28
$LS_{(min)}$	52.3 dB	2024-11-21 21:27:10	63.6 dB	2024-11-21 21:35:37	65.5 dB	2024-11-21 21:35:35
$LF_{(min)}$	51.8 dB	2024-11-21 21:27:05	62.1 dB	2024-11-21 21:35:29	63.8 dB	2024-11-21 21:34:01
$LI_{(min)}$	52.3 dB	2024-11-21 21:27:06	64.3 dB	2024-11-21 21:34:01	66.4 dB	2024-11-21 21:27:18
$L_{Peak(max)}$	96.4 dB	2024-11-21 21:33:28	98.5 dB	2024-11-21 21:37:01	97.6 dB	2024-11-21 21:37:01

Overloads

Count	Duration	OBA Count	OBA Duration
0	0:00:00.0	0	0:00:00.0

Statistics

LAS 5.0	69.0 dB
LAS 10.0	66.6 dB
LAS 33.3	58.2 dB
LAS 50.0	55.6 dB
LAS 66.6	54.2 dB
LAS 90.0	53.1 dB

Site Number: ST 3 – Morning			
Recorded By: Marco Caipo			
Job Number: 2024-241			
Date: 11/21/2024			
Time: 10:28 a.m. – 10:43 a.m.			
Location: On the corner of Stevenson Street and W Second Street			
Source of Peak Noise: Traffic, pedestrian activity, train horns.			
Noise Data			
Leq (dB)	**Lmin (dB)**	**Lmax (dB)**	**Peak (dB)**
61.2	53.1	70.9	100.4

Equipment						
Category	**Type**	**Vendor**	**Model**	**Serial No.**	**Cert. Date**	**Note**
Sound	Sound Level Meter	**Larson Davis**	**831C**	**12022**	**11/16/2022**	
	Microphone	**Larson Davis**	**377B02**	**338899**	**10/27/2022**	
	Preamp	**Larson Davis**	**PRM831**	**077250**	**10/27/2022**	
	Calibrator	**Larson Davis**	**CAL200**	**21985**	**10/27/2022**	

Weather Data			
Est.	**Duration:** 15 mins		**Sky:** Cloudy
	Note: dBA Offset = 0.40		**Sensor Height (ft):** 4
	Wind Ave Speed (mph)	**Temperature (degrees Fahrenheit)**	**Barometer Pressure (hPa)**
	5-8	45	1,018

Photo of Measurement Location

Measurement Report

Report Summary

Meter's File Name	831_Data.004.s	Computer's File Name	831C_12022-20241121 102841-831_Data.004.ldbin
Meter	831C 12022	Firmware	04.7.1R0
User		Location	
Job Description			
Note			

Start Time	2024-11-21 10:28:41	Duration	0:15:00.0		
End Time	2024-11-21 10:43:41	Run Time	0:15:00.0	Pause Time	0:00:00.0
Pre-Calibration	2024-11-21 09:41:27	Post-Calibration	None	Calibration Deviation	---

Results

Overall Metrics

LA_{eq}	61.2 dB		
LAE	90.7 dB	SEA	--- dB
EA	131.8 µPa²h	LAFTM5	64.8 dB
LZ_{peak}	100.4 dB	2024-11-21 10:43:02	
LAS_{max}	70.9 dB	2024-11-21 10:37:40	
LAS_{min}	53.1 dB	2024-11-21 10:39:37	
LA_{eq}	61.2 dB		
LC_{eq}	70.6 dB	LC_{eq} - LA_{eq}	9.4 dB
LAI_{eq}	62.6 dB	LAI_{eq} - LA_{eq}	1.4 dB

Exceedances

	Count	Duration
LAS > 65.0 dB	18	0:01:53.9
LAS > 85.0 dB	0	0:00:00.0
LZpk > 135.0 dB	0	0:00:00.0
LZpk > 137.0 dB	0	0:00:00.0
LZpk > 140.0 dB	0	0:00:00.0

Community Noise

L_{DN}	L_{Day}	L_{Night}
61.2 dB	61.2 dB	0.0 dB

L_{DEN}	L_{Day}	L_{Eve}	L_{Night}
61.2 dB	61.2 dB	--- dB	--- dB

Any Data

	A		C		Z	
	Level	Time Stamp	Level	Time Stamp	Level	Time Stamp
L_{eq}	61.2 dB		70.6 dB		75.2 dB	
$LS_{(max)}$	70.9 dB	2024-11-21 10:37:40	78.8 dB	2024-11-21 10:32:30	90.7 dB	2024-11-21 10:31:41
$LF_{(max)}$	74.4 dB	2024-11-21 10:37:40	81.4 dB	2024-11-21 10:40:36	94.5 dB	2024-11-21 10:43:02
$LI_{(max)}$	75.7 dB	2024-11-21 10:37:40	82.1 dB	2024-11-21 10:40:36	97.1 dB	2024-11-21 10:43:02
$LS_{(min)}$	53.1 dB	2024-11-21 10:39:37	63.5 dB	2024-11-21 10:34:58	66.0 dB	2024-11-21 10:34:58
$LF_{(min)}$	52.1 dB	2024-11-21 10:43:25	62.2 dB	2024-11-21 10:34:54	64.0 dB	2024-11-21 10:29:22
$LI_{(min)}$	52.9 dB	2024-11-21 10:39:35	64.2 dB	2024-11-21 10:35:18	66.5 dB	2024-11-21 10:30:39
$L_{Peak(max)}$	86.9 dB	2024-11-21 10:37:40	90.7 dB	2024-11-21 10:32:29	100.4 dB	2024-11-21 10:43:02

Overloads

Count	Duration	OBA Count	OBA Duration
0	0:00:00.0	0	0:00:00.0

Statistics

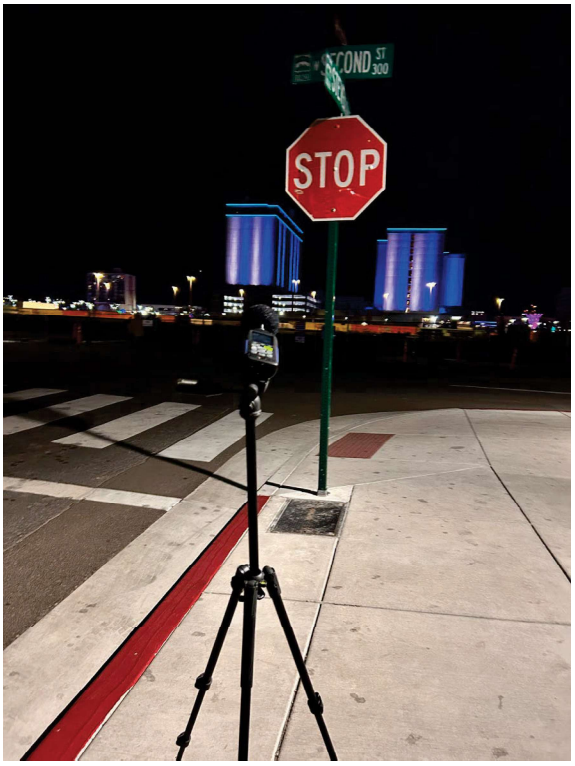
LAS 5.0	66.6 dB
LAS 10.0	64.9 dB
LAS 33.3	60.2 dB
LAS 50.0	58.9 dB
LAS 66.6	57.4 dB
LAS 90.0	55.6 dB

Site Number: ST 3 – Night			
Recorded By: Marco Caipo			
Job Number: 2024-241			
Date: 11/21/2024			
Time: 9:42 p.m. – 9:57 p.m.			
Location: On the corner of Stevenson Street and W Second Street			
Source of Peak Noise: Sirens, heavy trucks passing by.			
Noise Data			
Leq (dB)	**Lmin (dB)**	**Lmax (dB)**	**Peak (dB)**
56.7	43.4	69.3	95.1

Equipment						
Category	**Type**	**Vendor**	**Model**	**Serial No.**	**Cert. Date**	**Note**
Sound	Sound Level Meter	**Larson Davis**	**831C**	**12022**	**11/16/2022**	
	Microphone	**Larson Davis**	**377B02**	**338899**	**10/27/2022**	
	Preamp	**Larson Davis**	**PRM831**	**077250**	**10/27/2022**	
	Calibrator	**Larson Davis**	**CAL200**	**21985**	**10/27/2022**	

Weather Data			
Est.	**Duration:** 15 mins		**Sky:** Cloudy
	Note: dBA Offset = -0.12		**Sensor Height (ft):** 4
	Wind Ave Speed (mph)	**Temperature (degrees Fahrenheit)**	**Barometer Pressure (hPa)**
	5-7	48	1,016

Photo of Measurement Location



Measurement Report

Report Summary

Meter's File Name	831_Data.009.s	Computer's File Name	831C_12022-20241121 214205-831_Data.009.ldbin
Meter	831C 12022	Firmware	04.7.1R0
User		Location	
Job Description			
Note			

Start Time	2024-11-21 21:42:05	Duration	0:15:00.0		
End Time	2024-11-21 21:57:05	Run Time	0:15:00.0	Pause Time	0:00:00.0
Pre-Calibration	2024-11-21 21:02:03	Post-Calibration	None	Calibration Deviation	---

Results

Overall Metrics

LA_{eq}	56.7 dB		
LAE	86.2 dB	SEA	--- dB
EA	46.8 µPa²h	LAFTM5	60.6 dB

LZ_{peak}	95.1 dB	2024-11-21 21:48:17
LAS_{max}	69.3 dB	2024-11-21 21:47:06
LAS_{min}	43.4 dB	2024-11-21 21:56:53

LA_{eq}	56.7 dB		
LC_{eq}	66.5 dB	LC_{eq} - LA_{eq}	9.8 dB
LAI_{eq}	58.1 dB	LAI_{eq} - LA_{eq}	1.4 dB

Exceedances

	Count	Duration
LAS > 65.0 dB	10	0:00:34.4
LAS > 85.0 dB	0	0:00:00.0
LZpk > 135.0 dB	0	0:00:00.0
LZpk > 137.0 dB	0	0:00:00.0
LZpk > 140.0 dB	0	0:00:00.0

Community Noise

L_{DN}	L_{Day}	L_{Night}
56.7 dB	56.7 dB	0.0 dB

L_{DEN}	L_{Day}	L_{Eve}	L_{Night}
--- dB	--- dB	56.7 dB	--- dB

Any Data

	A		C		Z	
	Level	Time Stamp	Level	Time Stamp	Level	Time Stamp
L_{eq}	56.7 dB		66.5 dB		68.7 dB	
$LS_{(max)}$	69.3 dB	2024-11-21 21:47:06	86.1 dB	2024-11-21 21:48:18	86.6 dB	2024-11-21 21:48:18
$LF_{(max)}$	70.5 dB	2024-11-21 21:50:30	89.0 dB	2024-11-21 21:48:17	89.5 dB	2024-11-21 21:48:17
$LI_{(max)}$	73.1 dB	2024-11-21 21:50:29	89.7 dB	2024-11-21 21:48:17	90.1 dB	2024-11-21 21:48:17
$LS_{(min)}$	43.4 dB	2024-11-21 21:56:53	57.4 dB	2024-11-21 21:56:54	60.4 dB	2024-11-21 21:51:45
$LF_{(min)}$	42.8 dB	2024-11-21 21:56:54	55.7 dB	2024-11-21 21:55:07	58.6 dB	2024-11-21 21:42:52
$LI_{(min)}$	43.4 dB	2024-11-21 21:56:48	58.6 dB	2024-11-21 21:56:43	60.8 dB	2024-11-21 21:49:09
$L_{Peak(max)}$	86.1 dB	2024-11-21 21:50:29	95.0 dB	2024-11-21 21:48:17	95.1 dB	2024-11-21 21:48:17

Overloads

Count	Duration	OBA Count	OBA Duration
0	0:00:00.0	0	0:00:00.0

Statistics

LAS 5.0	63.4 dB
LAS 10.0	61.3 dB
LAS 33.3	53.5 dB
LAS 50.0	50.7 dB
LAS 66.6	49.0 dB
LAS 90.0	46.5 dB

Site Number: ST 4 – Morning			
Recorded By: Marco Caipo			
Job Number: 2024-241			
Date: 11/21/2024			
Time: 10:47 a.m. – 11:02 a.m.			
Location: In front of 222 Ralston Street (residence).			
Source of Peak Noise: Train horns and traffic.			
Noise Data			
Leq (dB)	**Lmin (dB)**	**Lmax (dB)**	**Peak (dB)**
61.1	52.0	81.5	106.3

Equipment						
Category	**Type**	**Vendor**	**Model**	**Serial No.**	**Cert. Date**	**Note**
Sound	Sound Level Meter	**Larson Davis**	**831C**	**12022**	**11/16/2022**	
	Microphone	**Larson Davis**	**377B02**	**338899**	**10/27/2022**	
	Preamp	**Larson Davis**	**PRM831**	**077250**	**10/27/2022**	
	Calibrator	**Larson Davis**	**CAL200**	**21985**	**10/27/2022**	

Weather Data			
Est.	**Duration:** 15 mins		**Sky:** Cloudy
	Note: dBA Offset = 0.40		**Sensor Height (ft):** 4
	Wind Ave Speed (mph)	**Temperature (degrees Fahrenheit)**	**Barometer Pressure (hPa)**
	5-8	45	1,018

Photo of Measurement Location

Measurement Report

Report Summary

Meter's File Name	831_Data.005.s	Computer's File Name	831C_12022-20241121 104723-831_Data.005.ldbin
Meter	831C 12022	Firmware	04.7.1R0
User		Location	
Job Description			
Note			

Start Time	2024-11-21 10:47:23	Duration	0:15:00.0		
End Time	2024-11-21 11:02:23	Run Time	0:15:00.0	Pause Time	0:00:00.0
Pre-Calibration	2024-11-21 09:41:27	Post-Calibration	None	Calibration Deviation	---

Results

Overall Metrics

LA_{eq}	61.1 dB		
LAE	90.6 dB	SEA	--- dB
EA	128.8 µPa²h	LAFTM5	65.9 dB
LZ_{peak}	106.3 dB	2024-11-21 10:57:21	
LAS_{max}	81.5 dB	2024-11-21 10:54:55	
LAS_{min}	52.0 dB	2024-11-21 10:52:31	
LA_{eq}	61.1 dB		
LC_{eq}	69.6 dB	LC_{eq} - LA_{eq}	8.5 dB
LAI_{eq}	63.1 dB	LAI_{eq} - LA_{eq}	2.0 dB

Exceedances

	Count	Duration
LAS > 65.0 dB	14	0:01:11.3
LAS > 85.0 dB	0	0:00:00.0
LZpk > 135.0 dB	0	0:00:00.0
LZpk > 137.0 dB	0	0:00:00.0
LZpk > 140.0 dB	0	0:00:00.0

Community Noise

L_{DN}	L_{Day}	L_{Night}
61.1 dB	61.1 dB	0.0 dB

L_{DEN}	L_{Day}	L_{Eve}	L_{Night}
61.1 dB	61.1 dB	--- dB	--- dB

Any Data

	A		C		Z	
	Level	Time Stamp	Level	Time Stamp	Level	Time Stamp
L_{eq}	61.1 dB		69.6 dB		78.2 dB	
$LS_{(max)}$	81.5 dB	2024-11-21 10:54:55	85.2 dB	2024-11-21 10:54:55	97.2 dB	2024-11-21 10:57:21
$LF_{(max)}$	84.4 dB	2024-11-21 10:54:55	87.1 dB	2024-11-21 10:54:55	102.9 dB	2024-11-21 10:57:21
$LI_{(max)}$	85.2 dB	2024-11-21 10:54:55	87.7 dB	2024-11-21 10:54:55	105.0 dB	2024-11-21 10:57:21
$LS_{(min)}$	52.0 dB	2024-11-21 10:52:31	62.8 dB	2024-11-21 10:58:41	65.2 dB	2024-11-21 10:58:41
$LF_{(min)}$	51.4 dB	2024-11-21 10:52:31	61.3 dB	2024-11-21 10:54:14	63.4 dB	2024-11-21 10:58:41
$LI_{(min)}$	51.9 dB	2024-11-21 10:50:41	63.1 dB	2024-11-21 10:58:41	65.8 dB	2024-11-21 10:58:39
$L_{Peak(max)}$	96.5 dB	2024-11-21 10:54:55	98.8 dB	2024-11-21 10:54:55	106.3 dB	2024-11-21 10:57:21

Overloads

Count	Duration	OBA Count	OBA Duration
0	0:00:00.0	0	0:00:00.0

Statistics

LAS 5.0	65.5 dB
LAS 10.0	62.9 dB
LAS 33.3	56.3 dB
LAS 50.0	54.9 dB
LAS 66.6	54.2 dB
LAS 90.0	53.2 dB

Site Number: ST 4 – Night			
Recorded By: Marco Caipo			
Job Number: 2024-241			
Date: 11/21/2024			
Time: 9:59 p.m. – 10:14 p.m.			
Location: In front of 222 Ralston Street (residence).			
Source of Peak Noise: Sirens, helicopter flying overhead.			
Noise Data			
Leq (dB)	**Lmin (dB)**	**Lmax (dB)**	**Peak (dB)**
56.2	47.0	72.8	97.2

Equipment						
Category	**Type**	**Vendor**	**Model**	**Serial No.**	**Cert. Date**	**Note**
Sound	Sound Level Meter	**Larson Davis**	**831C**	**12022**	**11/16/2022**	
	Microphone	**Larson Davis**	**377B02**	**338899**	**10/27/2022**	
	Preamp	**Larson Davis**	**PRM831**	**077250**	**10/27/2022**	
	Calibrator	**Larson Davis**	**CAL200**	**21985**	**10/27/2022**	

Weather Data			
Est.	**Duration:** 15 mins		**Sky:** Cloudy
	Note: dBA Offset = -0.12		**Sensor Height (ft):** 4
	Wind Ave Speed (mph)	**Temperature (degrees Fahrenheit)**	**Barometer Pressure (hPa)**
	5-7	48	1,016

Photo of Measurement Location

Measurement Report

Report Summary

Meter's File Name	831_Data.010.s	Computer's File Name	831C_12022-20241121 215947-831_Data.010.ldbin
Meter	831C 12022	Firmware	04.7.1R0
User		Location	
Job Description			
Note			

Start Time	2024-11-21 21:59:47	Duration	0:15:00.0		
End Time	2024-11-21 22:14:47	Run Time	0:15:00.0	Pause Time	0:00:00.0
Pre-Calibration	2024-11-21 21:02:03	Post-Calibration	None	Calibration Deviation	---

Results

Overall Metrics

LA_{eq}	56.2 dB		
LAE	85.7 dB	SEA	--- dB
EA	41.7 µPa²h	LAFTM5	61.4 dB
LZ_{peak}	97.2 dB	2024-11-21 21:59:58	
LAS_{max}	72.8 dB	2024-11-21 22:07:33	
LAS_{min}	47.0 dB	2024-11-21 22:00:14	
LA_{eq}	56.2 dB		
LC_{eq}	65.3 dB	LC_{eq} - LA_{eq}	9.1 dB
LAI_{eq}	57.8 dB	LAI_{eq} - LA_{eq}	1.6 dB

Exceedances

	Count	Duration
LAS > 65.0 dB	10	0:00:36.2
LAS > 85.0 dB	0	0:00:00.0
LZpk > 135.0 dB	0	0:00:00.0
LZpk > 137.0 dB	0	0:00:00.0
LZpk > 140.0 dB	0	0:00:00.0

Community Noise

L_{DN}	L_{Day}	L_{Night}
62.3 dB	51.6 dB	0.0 dB

L_{DEN}	L_{Day}	L_{Eve}	L_{Night}
--- dB	--- dB	51.6 dB	56.3 dB

Any Data

	A		C		Z	
	Level	Time Stamp	Level	Time Stamp	Level	Time Stamp
L_{eq}	56.2 dB		65.3 dB		66.6 dB	
$LS_{(max)}$	72.8 dB	2024-11-21 22:07:33	82.1 dB	2024-11-21 22:10:41	82.3 dB	2024-11-21 22:10:41
$LF_{(max)}$	75.1 dB	2024-11-21 22:04:16	84.0 dB	2024-11-21 22:10:41	84.9 dB	2024-11-21 21:59:58
$LI_{(max)}$	75.8 dB	2024-11-21 22:04:16	84.8 dB	2024-11-21 22:10:41	88.9 dB	2024-11-21 21:59:58
$LS_{(min)}$	47.0 dB	2024-11-21 22:00:14	59.8 dB	2024-11-21 22:12:44	61.7 dB	2024-11-21 22:12:39
$LF_{(min)}$	46.3 dB	2024-11-21 22:00:12	57.8 dB	2024-11-21 22:03:56	60.1 dB	2024-11-21 22:12:41
$LI_{(min)}$	46.7 dB	2024-11-21 22:00:16	60.2 dB	2024-11-21 22:03:56	62.7 dB	2024-11-21 22:12:36
$L_{Peak(max)}$	86.1 dB	2024-11-21 22:07:32	92.9 dB	2024-11-21 22:10:40	97.2 dB	2024-11-21 21:59:58

Overloads

Count	Duration	OBA Count	OBA Duration
0	0:00:00.0	0	0:00:00.0

Statistics

LAS 5.0	62.7 dB
LAS 10.0	56.9 dB
LAS 33.3	50.8 dB
LAS 50.0	49.6 dB
LAS 66.6	48.9 dB
LAS 90.0	48.0 dB

Site Number: ST 5 – Morning			
Recorded By: Marco Caipo			
Job Number: 2024-241			
Date: 11/21/2024			
Time: 11:04 a.m. – 11:19 a.m.			
Location: Next to 529 W 2nd Street (residence)			
Source of Peak Noise: Pedestrians playing music next to microphone.			
Noise Data			
Leq (dB)	**Lmin (dB)**	**Lmax (dB)**	**Peak (dB)**
55.6	49.3	76.0	111.8

Equipment						
Category	**Type**	**Vendor**	**Model**	**Serial No.**	**Cert. Date**	**Note**
Sound	Sound Level Meter	**Larson Davis**	**831C**	**12022**	**11/16/2022**	
	Microphone	**Larson Davis**	**377B02**	**338899**	**10/27/2022**	
	Preamp	**Larson Davis**	**PRM831**	**077250**	**10/27/2022**	
	Calibrator	**Larson Davis**	**CAL200**	**21985**	**10/27/2022**	

Weather Data			
Est.	**Duration:** 15 mins		**Sky:** Cloudy
	Note: dBA Offset = 0.40		**Sensor Height (ft):** 4
	Wind Ave Speed (mph)	**Temperature (degrees Fahrenheit)**	**Barometer Pressure (hPa)**
	5-8	45	1,018

Photo of Measurement Location

Measurement Report

Report Summary

Meter's File Name	831_Data.006.s	Computer's File Name	831C_12022-20241121 110415-831_Data.006.ldbin
Meter	831C 12022	Firmware	04.7.1R0
User		Location	
Job Description			
Note			

Start Time	2024-11-21 11:04:15	Duration	0:15:00.0		
End Time	2024-11-21 11:19:15	Run Time	0:15:00.0	Pause Time	0:00:00.0
Pre-Calibration	2024-11-21 09:41:27	Post-Calibration	None	Calibration Deviation	---

Results

Overall Metrics

LA_{eq}	55.6 dB		
LAE	85.1 dB	SEA	--- dB
EA	36.3 µPa²h	LAFTM5	60.2 dB
LZ_{peak}	111.8 dB	2024-11-21 11:13:18	
LAS_{max}	76.0 dB	2024-11-21 11:17:04	
LAS_{min}	49.3 dB	2024-11-21 11:04:41	
LA_{eq}	55.6 dB		
LC_{eq}	69.1 dB	LC_{eq} - LA_{eq}	13.5 dB
LAI_{eq}	58.8 dB	LAI_{eq} - LA_{eq}	3.2 dB

Exceedances

	Count	Duration
LAS > 65.0 dB	1	0:00:08.3
LAS > 85.0 dB	0	0:00:00.0
LZpk > 135.0 dB	0	0:00:00.0
LZpk > 137.0 dB	0	0:00:00.0
LZpk > 140.0 dB	0	0:00:00.0

Community Noise

L_{DN}	L_{Day}	L_{Night}
55.6 dB	55.6 dB	0.0 dB

L_{DEN}	L_{Day}	L_{Eve}	L_{Night}
55.6 dB	55.6 dB	--- dB	--- dB

Any Data

	A		C		Z	
	Level	Time Stamp	Level	Time Stamp	Level	Time Stamp
L_{eq}	55.6 dB		69.1 dB		85.3 dB	
$LS_{(max)}$	76.0 dB	2024-11-21 11:17:04	84.3 dB	2024-11-21 11:13:44	100.8 dB	2024-11-21 11:13:41
$LF_{(max)}$	79.6 dB	2024-11-21 11:17:04	89.5 dB	2024-11-21 11:13:18	104.8 dB	2024-11-21 11:13:18
$LI_{(max)}$	82.2 dB	2024-11-21 11:17:03	92.2 dB	2024-11-21 11:13:18	108.5 dB	2024-11-21 11:13:18
$LS_{(min)}$	49.3 dB	2024-11-21 11:04:41	60.5 dB	2024-11-21 11:09:17	63.9 dB	2024-11-21 11:04:51
$LF_{(min)}$	48.6 dB	2024-11-21 11:04:46	59.0 dB	2024-11-21 11:04:42	62.2 dB	2024-11-21 11:04:44
$LI_{(min)}$	49.2 dB	2024-11-21 11:04:39	60.9 dB	2024-11-21 11:07:09	64.9 dB	2024-11-21 11:04:50
$L_{Peak(max)}$	90.9 dB	2024-11-21 11:17:03	97.8 dB	2024-11-21 11:13:18	111.8 dB	2024-11-21 11:13:18

Overloads

Count	Duration	OBA Count	OBA Duration
0	0:00:00.0	0	0:00:00.0

Statistics

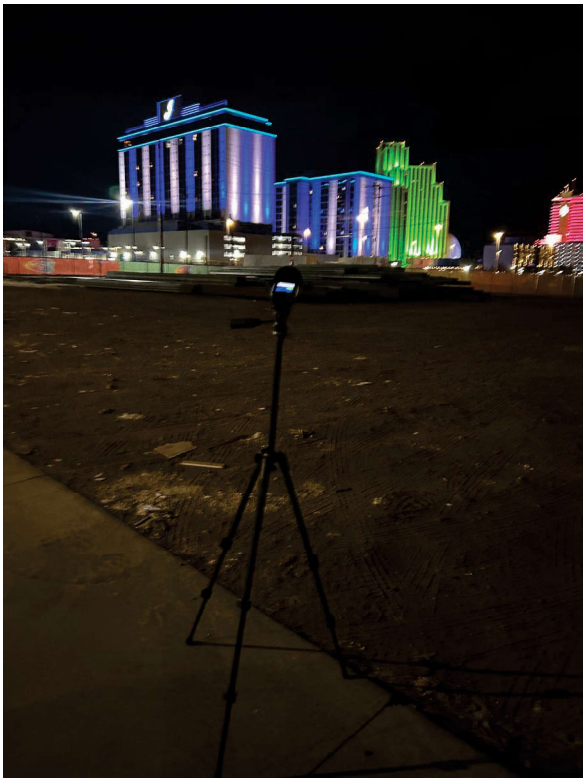
LAS 5.0	56.2 dB
LAS 10.0	55.5 dB
LAS 33.3	53.9 dB
LAS 50.0	53.2 dB
LAS 66.6	52.4 dB
LAS 90.0	50.8 dB

Site Number: ST 5 – Night			
Recorded By: Marco Caipo			
Job Number: 2024-241			
Date: 11/21/2024			
Time: 10:18 p.m. – 10:33 p.m.			
Location: Next to 529 W 2nd Street (residence)			
Source of Peak Noise: Pedestrian activity and sirens on W Second Street.			
Noise Data			
Leq (dB)	**Lmin (dB)**	**Lmax (dB)**	**Peak (dB)**
56.0	43.7	73.8	101.5

Equipment						
Category	**Type**	**Vendor**	**Model**	**Serial No.**	**Cert. Date**	**Note**
Sound	Sound Level Meter	**Larson Davis**	**831C**	**12022**	**11/16/2022**	
	Microphone	**Larson Davis**	**377B02**	**338899**	**10/27/2022**	
	Preamp	**Larson Davis**	**PRM831**	**077250**	**10/27/2022**	
	Calibrator	**Larson Davis**	**CAL200**	**21985**	**10/27/2022**	

Weather Data			
Est.	**Duration:** 15 mins		**Sky:** Cloudy
	Note: dBA Offset = -0.12		**Sensor Height (ft):** 4
	Wind Ave Speed (mph)	**Temperature (degrees Fahrenheit)**	**Barometer Pressure (hPa)**
	5-7	48	1,016

Photo of Measurement Location



Measurement Report

Report Summary

Meter's File Name	831_Data.011.s	Computer's File Name	831C_12022-20241121 221801-831_Data.011.ldbin
Meter	831C 12022	Firmware	04.7.1R0
User		Location	
Job Description			
Note			

Start Time	2024-11-21 22:18:01	Duration	0:15:00.0		
End Time	2024-11-21 22:33:01	Run Time	0:15:00.0	Pause Time	0:00:00.0
Pre-Calibration	2024-11-21 21:02:03	Post-Calibration	None	Calibration Deviation	---

Results

Overall Metrics

LA_{eq}	56.0 dB		
LAE	85.5 dB	SEA	--- dB
EA	39.8 µPa²h	LAFTM5	60.2 dB
LZ_{peak}	101.5 dB	2024-11-21 22:18:20	
LAS_{max}	73.8 dB	2024-11-21 22:30:43	
LAS_{min}	43.7 dB	2024-11-21 22:32:20	
LA_{eq}	56.0 dB		
LC_{eq}	65.1 dB	LC_{eq} - LA_{eq}	9.1 dB
LAI_{eq}	58.6 dB	LAI_{eq} - LA_{eq}	2.6 dB

Exceedances

	Count	Duration
LAS > 65.0 dB	1	0:00:24.1
LAS > 85.0 dB	0	0:00:00.0
LZpk > 135.0 dB	0	0:00:00.0
LZpk > 137.0 dB	0	0:00:00.0
LZpk > 140.0 dB	0	0:00:00.0

Community Noise

L_{DN}	L_{Day}	L_{Night}
66.0 dB	--- dB	0.0 dB

L_{DEN}	L_{Day}	L_{Eve}	L_{Night}
66.0 dB	--- dB	--- dB	56.0 dB

Any Data

	A		C		Z	
	Level	Time Stamp	Level	Time Stamp	Level	Time Stamp
L_{eq}	56.0 dB		65.1 dB		67.9 dB	
$LS_{(max)}$	73.8 dB	2024-11-21 22:30:43	81.0 dB	2024-11-21 22:30:45	83.9 dB	2024-11-21 22:18:20
$LF_{(max)}$	76.0 dB	2024-11-21 22:30:43	87.5 dB	2024-11-21 22:18:20	91.6 dB	2024-11-21 22:18:20
$LI_{(max)}$	78.0 dB	2024-11-21 22:30:43	91.2 dB	2024-11-21 22:18:20	95.2 dB	2024-11-21 22:18:20
$LS_{(min)}$	43.7 dB	2024-11-21 22:32:20	56.3 dB	2024-11-21 22:29:25	59.4 dB	2024-11-21 22:27:29
$LF_{(min)}$	42.9 dB	2024-11-21 22:32:16	54.8 dB	2024-11-21 22:29:24	57.4 dB	2024-11-21 22:27:35
$LI_{(min)}$	43.6 dB	2024-11-21 22:32:16	57.2 dB	2024-11-21 22:29:25	60.1 dB	2024-11-21 22:24:37
$L_{Peak(max)}$	93.0 dB	2024-11-21 22:18:20	97.9 dB	2024-11-21 22:18:20	101.5 dB	2024-11-21 22:18:20

Overloads

Count	Duration	OBA Count	OBA Duration
0	0:00:00.0	0	0:00:00.0

Statistics

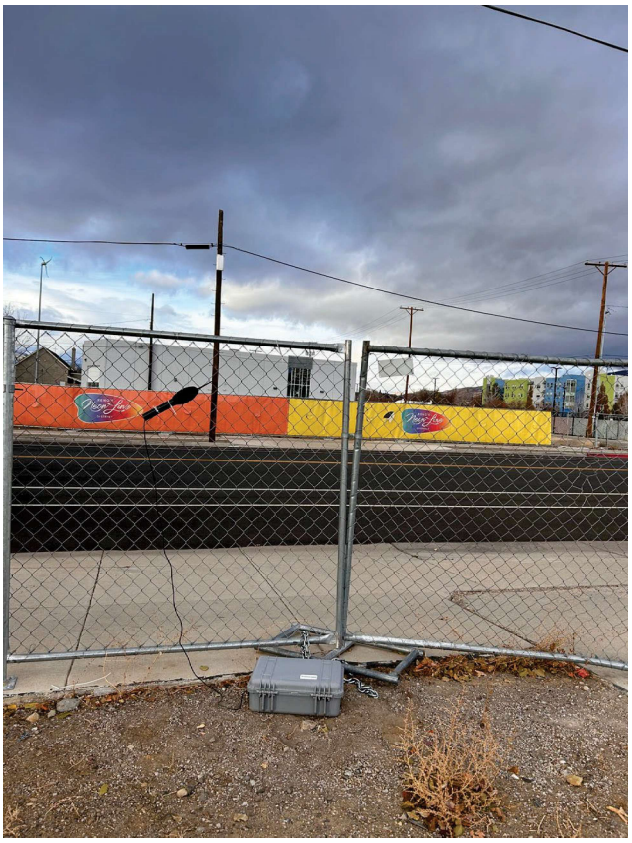
LAS 5.0	59.9 dB
LAS 10.0	53.8 dB
LAS 33.3	48.1 dB
LAS 50.0	46.9 dB
LAS 66.6	45.8 dB
LAS 90.0	44.6 dB

Site Number: LT 1			
Recorded By: Marco Caipo			
Job Number: 2024-241			
Date: 11/21/2024 – 11/22/2024			
Time: 8:23 a.m. – 8:23 a.m.			
Location: Next to 124 Ralston St			
Source of Peak Noise: Traffic, pedestrian activity, train horns. Police sirens were also nearby.			
Noise Data			
CNEL (dB)	**Leq (dB)**	**Lmin (dB)**	**Lmax (dB)**
64.7	65.5	42.7	102.7

Equipment						
Category	**Type**	**Vendor**	**Model**	**Serial No.**	**Cert. Date**	**Note**
Sound	Sound Level Meter	**Larson Davis**	**831C**	**12022**	**11/16/2022**	
	Microphone	**Larson Davis**	**377B02**	**338899**	**10/27/2022**	
	Preamp	**Larson Davis**	**PRM831**	**077250**	**10/27/2022**	
	Calibrator	**Larson Davis**	**CAL200**	**21985**	**10/27/2022**	

Weather Data			
Est.	**Duration:** 15 mins		**Sky:** Cloudy
	Note: dBA Offset = 0.40		**Sensor Height (ft):** 4
	Wind Ave Speed (mph)	**Temperature (degrees Fahrenheit)**	**Barometer Pressure (hPa)**
	5-8	45	1,018

Photo of Measurement Location



LARSON DAVIS
A PCB DIVISION

SoundExpert 821 Summary: 2024-11-22 14:10:09

User:

Location:

Job Description:

Notes:

Meter General Information

	Model	Serial
Meter	SoundExpert 821	40159
Preamp	PRM821	
Microphone	377B02	
Unique File Id	00C:00009CDF:673EEDFF:00000ECF	

Overall Measurement

Start Date & Time	2024-11-21 08:23:27		
Stop Date & Time	2024-11-22 08:23:27		
Run Time	24:00:00		
Pre-Calibration Deviation (Cal Lvl)	0.23 dB(94.0 dB)	2024-11-21 08:28:58	
Pre-Sensitivity	-25.39 dB re 1V/Pa		
Post-Calibration Deviation (Cal Lvl)	---(---)	---	
Post-Sensitivity	---		
L_{AIeq}	65.5 dB		
	A	C	Z
L_{weq}	61.4	70.2	81.4
L_{wpk}	113.3 dB	115.0 dB	120.3 dB
	2024-11-21 08:50:12	2024-11-21 08:50:12	2024-11-22 06:36:23
L_{wSmin}	41.7 dB	55.6 dB	59.0 dB
	2024-11-22 02:34:44	2024-11-22 03:59:41	2024-11-22 03:15:42
L_{wSmax}	99.6 dB	99.9 dB	108.9 dB
	2024-11-21 08:50:13	2024-11-21 08:50:13	2024-11-22 06:36:23
L_{wFmin}	41.1 dB	53.7 dB	56.7 dB
	2024-11-22 03:07:52	2024-11-22 03:07:52	2024-11-22 03:15:54
L_{wFmax}	101.6 dB	101.9 dB	113.0 dB
	2024-11-21 08:50:10	2024-11-21 08:50:10	2024-11-22 04:42:14
L_{wImin}	42.7 dB	57.7 dB	61.3 dB
	2024-11-22 02:34:44	2024-11-22 02:11:57	2024-11-22 02:34:50
L_{wImax}	102.7 dB	103.0 dB	116.7 dB
	2024-11-21 08:50:12	2024-11-21 08:50:12	2024-11-22 06:36:23

w = frequency weighting (A, C or Z)

Community Noise	**LDN**	**LDay (07:00-22:00)**	**LNight (22:00-07:00)**	
	63.8 dB	63.1 dB	54.8 dB	
	LDEN	**LDay (07:00-19:00)**	**LEve (19:00-22:00)**	**LNight (22:00-07:00)**
	64.7 dB	63.1 dB	63.2 dB	54.8 dB
$L_{Ceq} - L_{Aeq}$	8.7 dB			
Overload Count	0			
Overload Duration	00:00:00			
	A	C	Z	
Under Range Peak	50.0 dB	50.0 dB	62.0 dB	
Under Range Limit	24.0 dB	27.0 dB	37.0 dB	
Noise Floor	17.0 dB	18.0 dB	25.0 dB	

Ln Percentiles

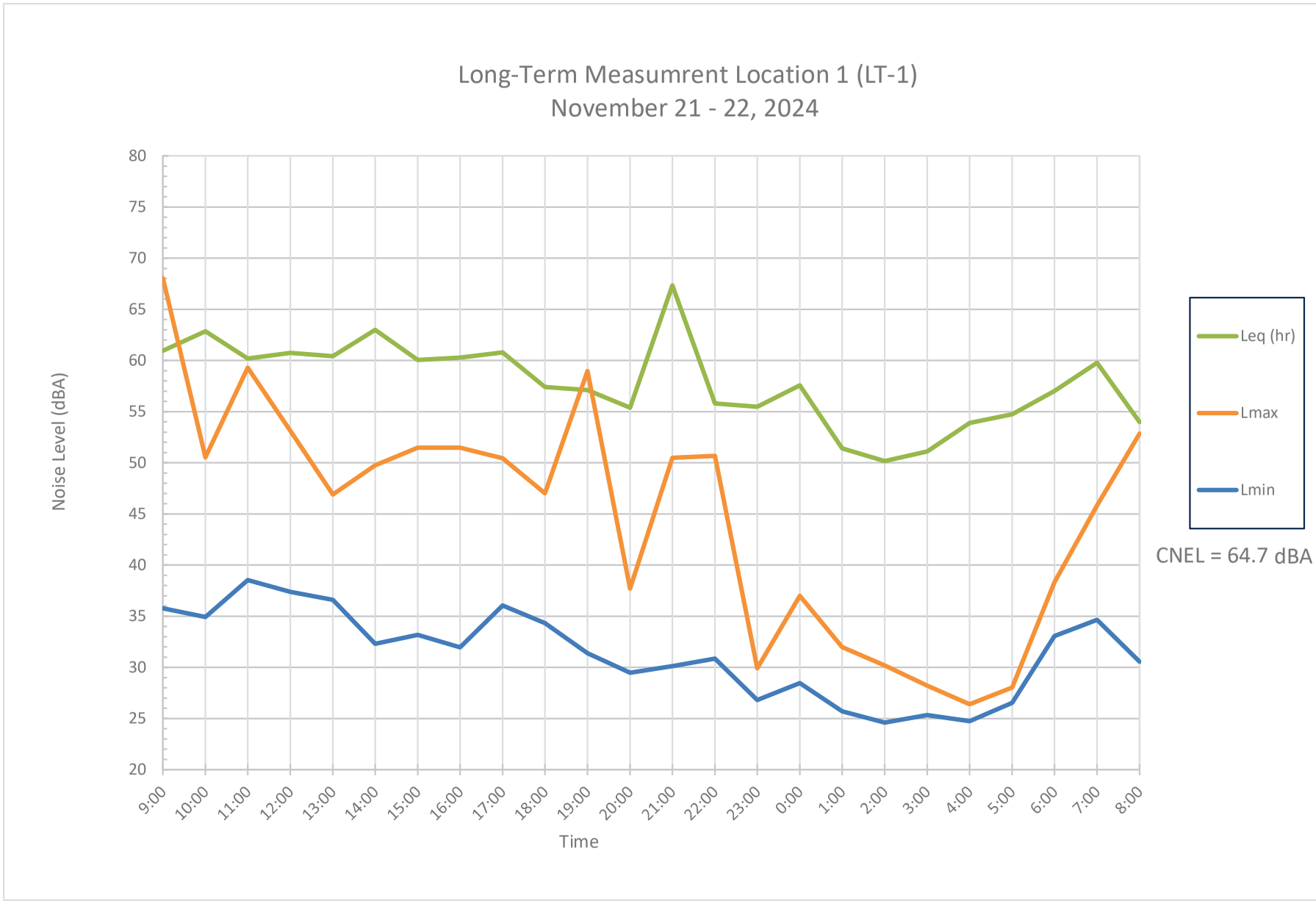
$L_{AS\ 5.0}$	64.6 dB
$L_{AS\ 10.0}$	62.1 dB
$L_{AS\ 33.3}$	55.2 dB
$L_{AS\ 50.0}$	52.8 dB
$L_{AS\ 66.6}$	50.2 dB
$L_{AS\ 90.0}$	44.8 dB

Exceedances

	Count	**Duration**
L_{ZS} **> 85 dB**	1227	7622
L_{ZS} **> 95 dB**	194	717
L_{Zpk} **> 135 dB**	0	0
L_{Zpk} **> 137 dB**	0	0
L_{Zpk} **> 140 dB**	0	0

Sound Exposure

SEL_Z	130.8 dB
E_Z (Pa^2s)	4784.1 Pa^2s
$E_{Z,8\,h}$ (Pa^2s)	1594.7 Pa^2s
$E_{Z,40\,h}$ (Pa^2s)	7973.6 Pa^2s
E_Z (Pa^2h)	1.3 Pa^2h
$E_{Z,8\,h}$ (Pa^2h)	0.4 Pa^2h
$E_{Z,40\,h}$ (Pa^2h)	2.2 Pa^2h


Long-Term Measumrent Location 1 (LT-1)
November 21 - 22, 2024
Noise Level (dBA)
80
75
70
65
60
55
50
45
40
35
30
25
20
9:00
10:00
11:00
12:00
13:00
14:00
15:00
16:00
17:00
18:00
19:00
20:00
21:00
22:00
23:00
0:00
1:00
2:00
3:00
4:00
5:00
6:00
7:00
8:00
Time
Leq (hr)
Lmax
Lmin
CNEL = 64.7 dBA

ATTACHMENT B

SoundPLAN Output Modeling and Site Plan

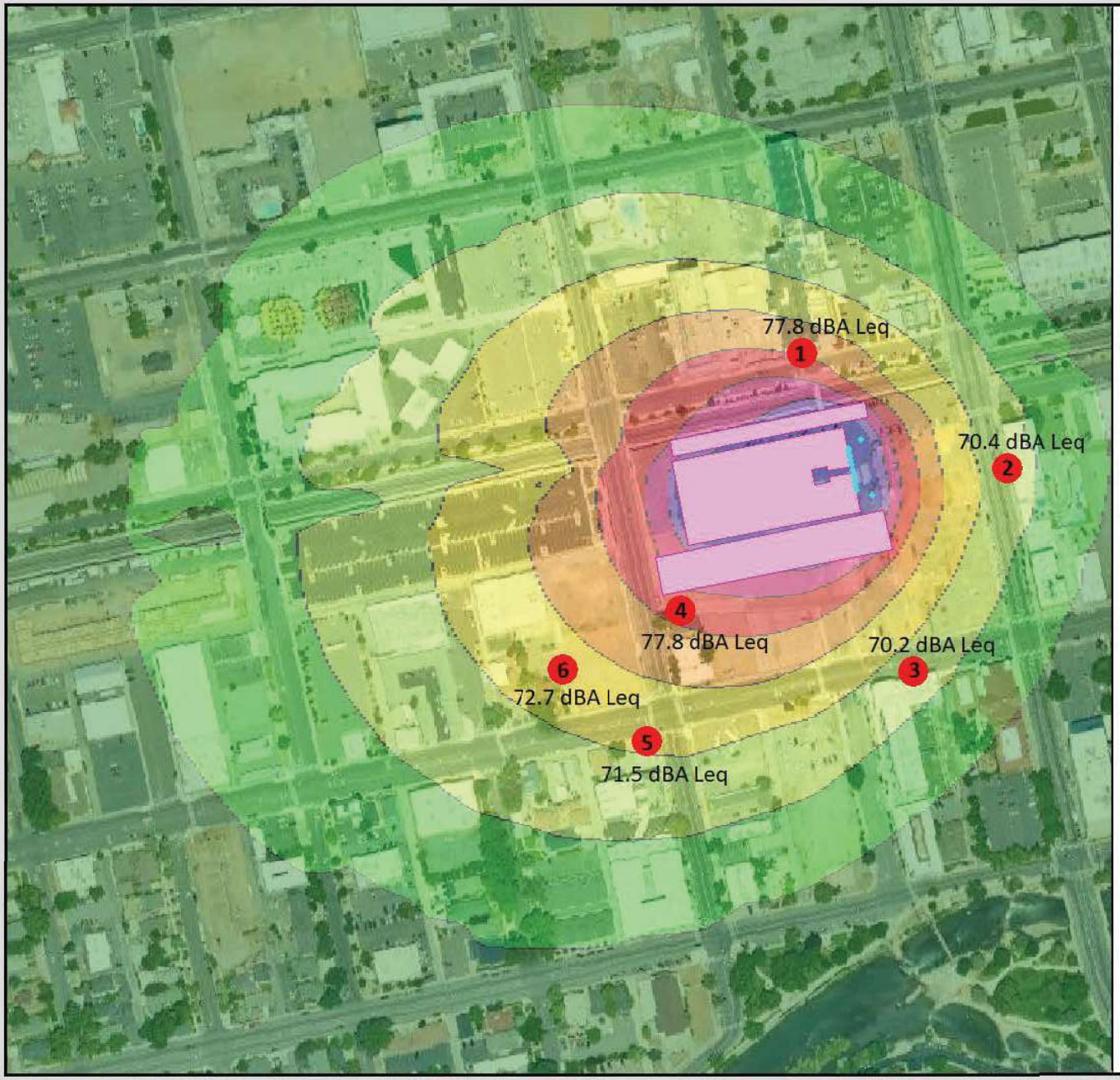


Figure 1: Downtown Reno Festival Grounds Noise Generation

Signs and symbols
- Point Source
- Noise Receptors
- Area Source

Level scale in dB(A) Leq

<= 65
65 - 68
68 - 71
71 - 74
74 - 77
77 - 80
80 - 83
83 - 86
86 - 89
> 89

N

Scale 1:313

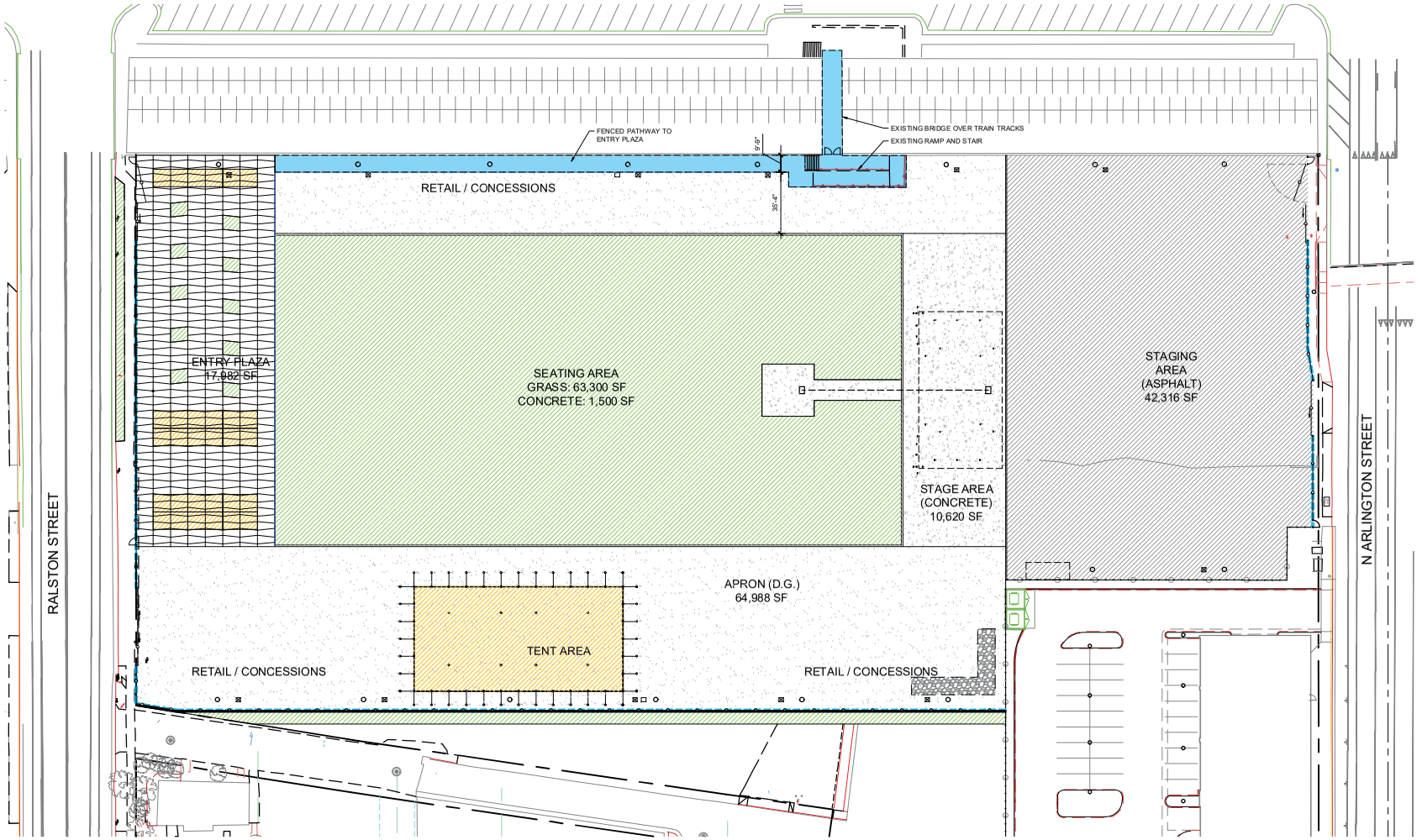
0 50 100 200 300 400 feet

ECORP Consulting, Inc. ENVIRONMENTAL CONSULTANTS

SoundPLAN

Map Date: 12/3/2024
2024-241: Downtown Reno Festival Grounds Project

Project Site Plan



Source: Lewis Roca, 2024