

Ordinance No. 14-23

**AN ORDINANCE OF THE VILLAGE OF EAST DUNDEE, ILLINOIS,
ESTABLISHING NOISE REGULATIONS FOR BUSINESSES**

WHEREAS, the Village of East Dundee (the "*Village*") is a duly organized and validly existing home-rule municipality created in accordance with the Constitution of the State of Illinois of 1970 and the laws of the State; and,

WHEREAS, the Village pursuant to its home rule authority and Section 11-5-2 of the Illinois Municipal Code (65 ILCS 5/11-5-2) may prevent and suppress noises, disturbances and disorderly assemblies and pursuant to Section 11-60-2 of the Illinois Municipal Code (65 ILCS 5/11-60-2) may define, prevent and abate nuisance; and,

WHEREAS, The Village desires to establish noise regulations to control the noise from businesses that can disturb the residents in homes near those businesses.

NOW, THEREFORE, BE IT ORDAINED by the President and Board of Trustees of the Village of East Dundee, Kane and Cook Counties, Illinois, as follows:

Section 1: That the East Dundee Municipal Code, as amended, be and is hereby amended by amending section 93.11, Noise, of Chapter 93, Nuisances, of Title IX, General Regulations by adding subsection (E) to read as follows:

"(E) Noise from businesses

- (1) Noise Measurement- Sound level measurements for this subsection shall be made with a properly calibrated sound level meter Type 2 or better using the A-weighted network in accordance and conforming with the noise measurement standards, promulgated by the American National Standards Institute and Testing Procedures (ANSI) for measurement of sound levels on an averaged A-weighted sound pressure level which is exceeded ten percent of the time in any measurement period designated as dBA.
- (2) Noise Limitation- No person shall cause, allow or permit the emission of sound from a business property to any residential property in the village that exceeds 75 dBA, when measured at any point within such receiving residential property, provided however, that no measurement of sound level shall be made less than twenty five feet (25') from the property line of such commercial property noise source. Subsection (B)(3)(a) and (b) shall not apply to businesses regulated by this subsection (E).
- (3) Penalty for Violation- The first violation of this subsection in a 12 month period shall be punishable by a fine of not less than \$450.00 or more than \$750.00. A subsequent violation by the same person which occurs within 12 months of a previous conviction shall be punishable by a fine of not less than \$100.00 more than the prior minimum fine but not more than \$750.00."

Section 2: This Ordinance shall be in full force and effect upon its passage, approval, and publication as provided by law.

Adopted this 18 day of August, 2014.

AYES: Trustees Gorman, Lynam, Skillicorn and Selep

NAYS: Ø

ABSENT: Trustees Ruffulo and Wood

Approved this 18 day of August, 2014.

L. Mica
Village President

Attest:
[Signature]
Village Clerk

Published in pamphlet form:

August 20, 2014



MEMO

To: The Village President and Board of Trustees
From: Heather Maieritsch, Deputy Village Administrator/ Village Clerk
Date: August 8, 2014
Re: Downtown Noise Ordinance

The Village of East Dundee has received a continual increase in residential complaints about the level of the noise from outdoor music venues over the past year. In order to ensure our businesses are good neighbors and to prevent continued and future problems with sound levels I would recommend that the board consider the following plan. The Village should purchase a sound monitoring device to be installed at the outdoor music venue, adopt an ordinance setting the maximum allowable decibel reading in the event the venues with the sound monitoring devices choose to disregard the monitoring device lights, purchase a decibel meter for code enforcement, and the implement a fine for sound violations.

History and Communication with Businesses

The Village of East Dundee hired a sound engineer to make recommendations on ways the bars and Village can reduce the level of noise to surrounding residential area. The study suggested some design changes which has been discussed with specific businesses. At this time Bandito's has made design changes that should help reduce the amount of sound emitted from the site. We have also spoken with Diamond Jim's but they have not agreed to design buffer changes at this time. The study also recommended a few sound monitoring devices.

Sound Monitoring Device

The best system that would fit the current needs of the Village is called NetSLARM. NetSLARM measures sound levels and stores data for up to a three week period. The NetSLARM box has three light levels: green, yellow (warning that noise is getting loud) and red (noise it to loud). The noise warning levels can be set to our specific levels. The device also measures the leq noise level, which is the average of the decibel level over a specified period of time (which we determine and set). This increases accuracy by removing spikes in noise due to motorcycles, screaming or other sound boom noises.

This device also has the added capability of notifying bars owners or designated Village individuals by email when specific sound limits that were previously agreed upon and set are exceeded. The cost of the entire system is \$3,500. The NetSLARM is \$3,000 and the ODM is \$500 (necessary for outdoor monitoring) for a total of \$3,500 plus installation that can be done in house. Another benefit of this device is that it can be portable and moved to a different location or removed entirely. *Please see attached information for more detail on this specific device.*

Noise Ordinance

The adoption and implementation of a new noise ordinance establishing a maximum decibel level will help ensure venues with outdoor music are still able to have outdoor music but while taking into account and being mindful of surrounding residential areas. The noise ordinance will help the Village address the current noise issues.

(E) *Noise from businesses in the B-1 and B-2 zoning districts*

- (1) Noise Measurement- Sound level measurements for this subsection shall be made with a properly calibrated sound level meter Type 2 or better using the A-weighted network in accordance and conforming with the noise measurement standards, promulgated by the American National Standards Institute and Testing Procedures (ANSI) for measurement of sound levels on an averaged A-weighted sound pressure level which is exceeded ten percent of the time in any measurement period designated as dBA.
- (2) Noise Limitation- No person shall cause, allow or permit the emission of sound from a business property operating in the B-1 Downtown Business District or B-2 Community Business District to any residential property in the village that exceeds 70 dBA, except on Friday and Saturday between 10:30 pm and 7:00 am the next day that exceeds 65 dBA, when measured at any point within such receiving residential property, provided however, that no measurement of sound level shall be made less than twenty five feet (25') from the property line of such commercial property noise source. Subsection (B)(3)(a) and (b) shall not apply to businesses regulated by this subsection (E).

Purchase of a decibel reader

The Village should purchase a decibel reader for sound measurement and enforcement of the noise ordinance. Based on other communities the Village should purchase a Type 2 A-weighted network in accordance and conforming with the noise measurement standards, promulgated by the American National Standards Institute and Testing Procedures (ANSI) for measurement of sound levels on an averaged A-weighted sound pressure level which is exceeded ten percent of the time in any measurement period designated as dBA.

My recommendation would be to go with the Extech 407732 Type 2 35 Decibel to 130 Decibel Digital Sound Level Meter. This meter has a +/- 1.5 dB reading and includes a wind screen, calibration device, and tools to calibrate the device. The cost of this device is \$430. *See attached for device specifications.*

Penalty for Violation of Noise Ordinance

- (1) Penalty for Violation- The first violation of this subsection in a 12 month period shall be punishable by a fine of not less than \$450.00 or more than \$750.00. A subsequent violation by the same person which occurs within 12 months of a previous conviction shall be punishable by a fine of not less than \$100.00 more than the prior minimum fine but not more than \$750.00.”

Type 2 Sound Level Meter Kits

Choice of NIST Certified Kit

407732-NISTL sound level meter with single point calibration to 94dB,
combined with a NIST-certified 407722 94dB/114dB, 1kHz professional calibrator

407732-KIT Features:

- Complete with 407732 Sound Meter, microphone wind screen, calibration screw driver, 9V battery, plus 407722 Sound Calibrator with 9V battery. Supplied in an attractive hard carrying case that provides protection and organization for your meter and accessories

Model 407732

- High accuracy meets ANSI, and IEC Type 2 standards
- High and Low measuring ranges (35 to 130dB)
- Data Hold and Max Hold functions
- Backlit display to view in dimly lit area

Model 407722

- Calibrates and verifies sound level meter operation
- Durable double molded housing
- 1kHz sine wave at 94dB/114dB is generated to an accuracy of 4% (frequency) and ± 0.5 dB
- Total Harmonic Distortion (THD) $< 2\%$ at 94dB

407732-KIT-NIST Features:

- Complete with 407732-KIT plus NIST Certificate of Calibration of 407722 and Limited NIST calibration of 407732-NISTL (single calibration to 94dB)



Ordering Information:

407732-KITType 2 Sound Level Meter Kit
407732-KIT-NISTType 2 Sound Level Meter Kit

Individual items:

407732Type 2 Sound Level Meter
407732-NISTL407732 with NISTL Certificate
140001Hard Carrying Case

407732 Specifications:

Display	2000 count LCD
Range	Low: 35 to 100dB High: 65 to 130dB
Basic Accuracy	± 1.5 dB
Weighting (A & C)	Yes
Response Time (Fast/Slow)	Yes
Condenser Microphone	0.5" (12.7mm)
Dimensions	8.2 x 2.1 x 1.25" (210 x 55 x 32mm)
Weight	8.1oz (230g)



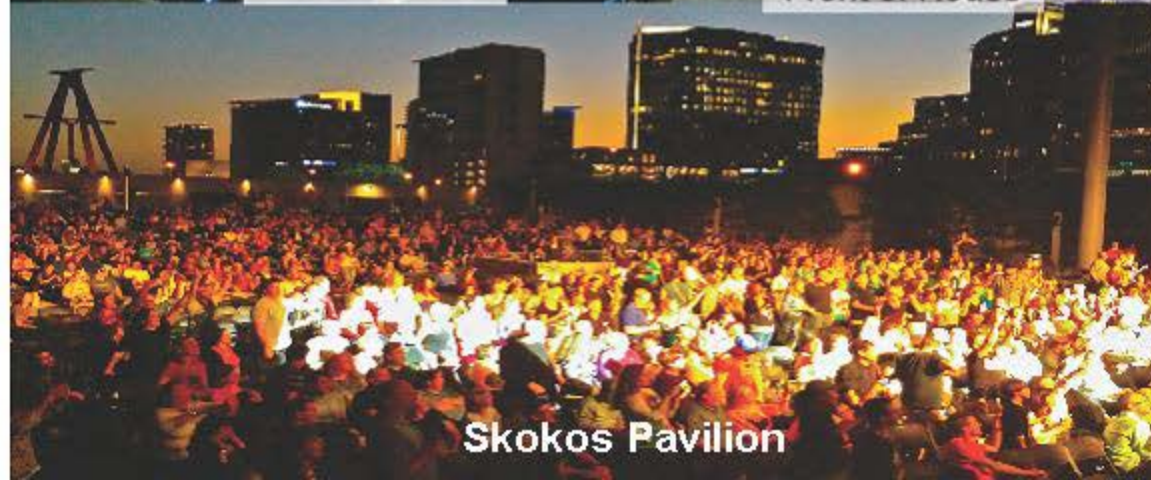


SLARMsolution™

ATT Performing Arts Center-Dallas

RESTORING HARMONY

- Problem: Noise Intrusion to adjacent Opera House
- Solution: 2 NetSLARM™s and ODM assemblies
- Real Time(RT)Monitoring of Front of House and Perimeter SPL
- RT Text Alerts of any exceedences/ local monitoring/WebSLARM™



SLARMsolution™

Ocean Speedway- Santa Cruz Fairgrounds

A “FAIR” Resolution

- Problem: Sprint Car races disturbing the neighbors miles away
 - Solution: NetSLARM™ Realtime (RT) monitoring -
 - Levels 95-105 dBA@110 feet
- Mufflers required. Prerace dBA monitoring with the NetSLARM™
 - Result: “Fair” resolution - Legal actions tabled
 - Added Benefit: Other Fairground Event noise reduced





ACO Pacific, Inc.

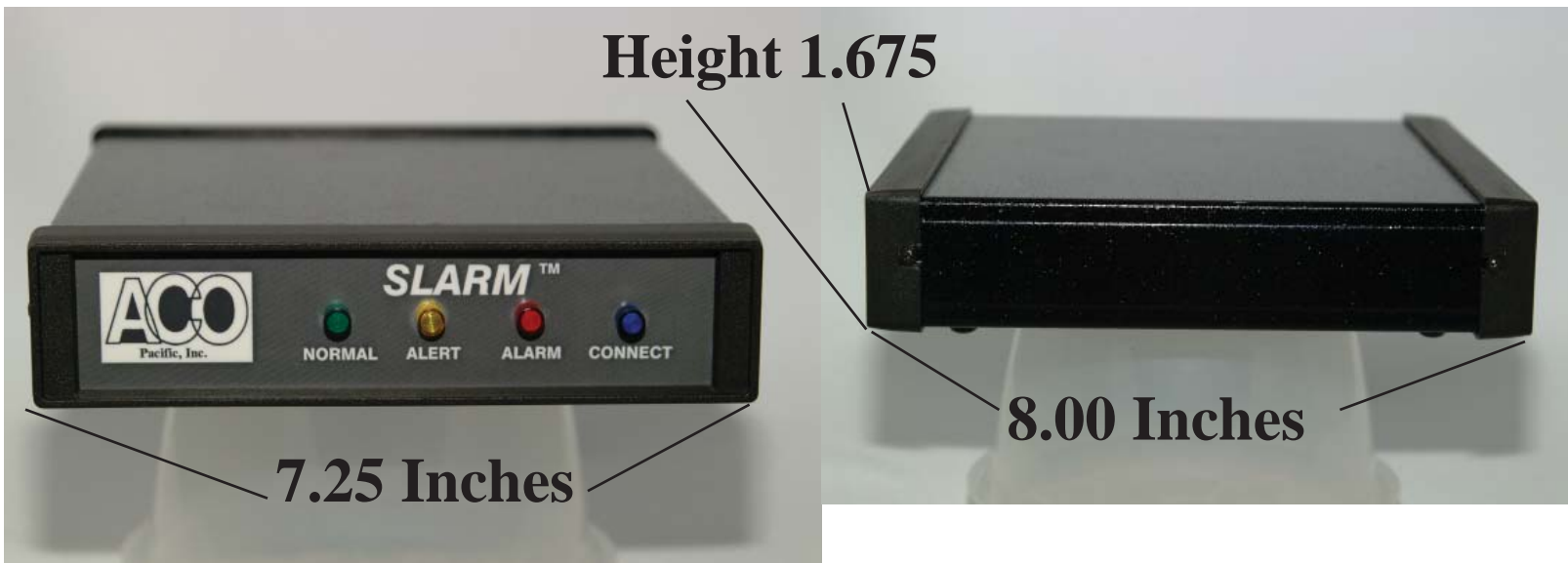
2604 Read Ave. , Belmont, CA, USA 94002

Tel:(650) 595-8588 FAX:(650) 591-2891

e-mail:acopac@acopacific.com

www.acopacific.com

SLARM™
Mechanical Dimension and Connections



Dimensional Concerns for connections:

Depth of RS232 Connector and Cable - allow about 2 inches

Depth of Din Plug and Cable - allow about 1.5 inches

Microphone Connector and Cable - allow about 2 inches

Power Connector - allow about 1.5 inches



ACOustics Begins With ACO™

SLARM™ & NetSLARM™ Community/Environmental Sound Level Alarm Monitor & Logger

Now w/Ethernet & WebSLARM™



The NetSLARM™/SLARM™ Family of sound alarms were developed in response to increased emphasis on hearing conservation both in the workplace and community.

SLARMSolutions™ BEING A GOOD NEIGHBOR

**Community/Environmental -
Indoors and Out**

Auditoriums, Amphitheaters, Churches, Clubs, Classrooms, Rehearsal Halls, Hospitals, Health Clubs, Studio Monitor Rooms, Labs, Drive by and Traffic Noise Enforcement and Vivariums. These are just a few applications...

Industrial

Machine/Plant Noise, Machine Fault Detection, Assembly Lines, Marshalling Yards, Warehouses, Construction Sites, Product Testing, Hearing Protector Alert, Emergency Siren/ Horn verification and many more uses...

- Standalone or w/PC
- Ethernet/InterNet *
- USB, and Serial Connections
- Secure Multi-User Access
- SPL and LeqS and LeqL
- Remote Control and Monitoring
- WebSLARM™ Browser Access*
- Text, SMS and e-Mail Alarms*
- 2 Opto Isolated Alarm Outputs
- Date/Time with 24/7 Scheduler
- Rolling Data Storage >3 weeks
- 100 dB Dynamic range
20 to 140 dB SPL - 2 Ranges
- A,C and Z (Lin) Weighting
- Titanium Measurement Mic
- Remotable Mic/Preamp >300feet
- 110/220Vac or 12Vdc Power
- SLARMSoft™ Package includes:
 - WinSLARM™
 - SLARMWatch™
 - SLARMAalarm™
 - SLARMAanalysis™
 - SLARMNet™
 - SLARMScheduler™

Options:

- ODM - Outdoor Microphone
- Remote Mic/Preamp >300 ft
- SLARMulti™ - Multiple mics
- SLARMLink™ RF mic link
- Mic Calibration with 521

*NetSLARM™

The SLARMSolution™ is on YouTube
Search: SLARMSolution

Try the St Paul WebSLARM™

Address: <http://NetSLARM.timewave.com>

User Name: Demo

Password: SLARM (this is case sensitive)

Uses Javascript

It's monitoring classical music on FM

ACOustics Begins With ACO™

SLARM™ Accessories

SLARMLink™ Wireless Measurement Mic System

- Wireless – up to 300 feet or more
- 8 transmit frequencies - up to 2 microphones per channel
- 16 bit FM digital Transmission minimize interference
- <10 Hz to 20 kHz non compressed audio
- Low THD (<0.1% FS)
- Permits ease of installation and placement of monitoring microphone
- Designed for easy connection to the SLARM™ and NetSLARM™
- Models for Outdoor Installations, IEPE Power, and Instrumentation
- Gain/Attenuator and Filter packages optional
- TX - Battery or External power
- RX - Battery, External and SLARM connected power



SLARMulti™ - Multiple Mic Combiner

- Provides Area Wide Monitoring
- Connects to the SLARM™ Mic Connection
- SLARM or External Power
- Excessive SPL at any mic triggers SLARM
- Supports up to 4 microphones
- May be combined for even larger arrays
- Internal Calibration of Mic Sensitivity
- Rugged outdoor housing
- Custom version for Multiple Thresholds

ODM Family

- Designed for Long-term Installation
- Accepts 1/2 Inch Preamps
- WS1-80T Treated Windscreens
- Hydrophobic and UV resistant
- Improved Wind Noise Reduction
- Allows “A” Weighted Measurements
- ODM1 for Pole Mount
- ODM2 for Wall Mount
- ODM2 for Right Angle Mount

(not shown)



October 9, 2013

Heather Maieritsch
Deputy Village Administrator/Village Clerk
Village of East Dundee
120 Barrington Ave
East Dundee, IL 60118
HMaieritsch@eastdundee.net

Subject: reducing music noise impact on community

Dear Ms. Maieritsch:

On September 23rd, I visited two bars in East Dundee with you and Village President Lael Miller. The purpose was to observe the conditions in the beer gardens at these bars and offer advice on controlling emission of music noise from them to the community. This brief letter documents our discussion and provides supplemental information that may be of use. My comments and this supplemental information are general in nature and do not include site (venue) specific technical assessments or site specific recommendations for controlling noise.

Background

The two bars that we visited have relatively large outdoor seating areas and regularly host live bands during the summer time. It is my understanding that the Village regularly receives complaints from residents about the music noise from these, and possibly other bars in town. The Village in cooperation with these bars is interested in determining if there are steps that can be taken to reduce noise impact on the community.

Terminology

The following terminology is not used in the report, but you may find knowledge of them useful as you continue to grapple with this issue.

Sound level is measured in units called decibels (abbreviated dB). Decibels are logarithmic rather than linear quantities and thus a doubling of the sound level does not translate to a doubling of decibels. Also, the human ear does not interpret a doubling of sound energy as a doubling of loudness. For these reasons, the following approximate relationships should be kept in mind when reading this report.

The logarithmic nature of dB and the human subjective perception of relative sound levels result in the following approximate rules for judging increases in noise. A 3 dB sound level increase (or decrease) typically cannot be heard or is barely perceptible. A 5 dB sound level increase is perceptible and is often considered significant. A sound level which increases by 10 dB will be perceived as twice as loud. These perceived changes in the noise level are mostly independent of the absolute noise level. That is, a 35 dB noise will be perceived as twice as loud as a 25 dB noise, and a 60 dB noise will be perceived as twice as loud as a 50 dB noise.

Audible sound occurs over a wide frequency range, from low pitched sounds at approximately 20 Hertz (Hz) to high pitched sounds at 20,000 Hz. These frequencies are commonly grouped into octave bands or 1/3 octave bands. Building mechanical systems generally produce noise in the 63 Hz to 1000 Hz octave bands, with the lower frequency noise generated by large fans. Human speech is predominantly contained in the 250 Hz to 2000 Hz octave bands.

Humans do not hear equally well at all frequencies. We are especially poor at hearing low frequency sound and are best at hearing sound in the frequency range of human speech. A microphone does not have these same characteristics. Therefore, when sound is being measured to determine how well people will be able to hear it, a "weighting" is applied to the sound level measured using a microphone. The most common weighting is the "A-weighting" and the resulting sound level is expressed in A-weighted decibels (dBA). This weighting reduces the low frequency sound, slightly increases the sound at the dominant frequencies of human speech, and slightly lowers the sound level at high frequencies.

Equivalent Sound Level (Leq) is the average sound level in an environment where the sound level changes. However, the Leq is not a simple arithmetic average of the sound level over time, but is a logarithmic average. Leq is the "energy" average noise level over a period of time. Leq can be measured for any time period, but is typically measured for some increment or fraction of an hour such as 15 minutes, 1 hour or 24-hours.

Lmax is the maximum sound level that occurred during a measurement period.

Lmin is the minimum sound level that occurred during a measurement period.

Fast Response or Fast Time Weighting uses a time constant of 125 milliseconds.

Slow Respond or Slow Time Weighting uses a time constant of 1 second.

When the sound level being measured fluctuates quickly, it is often more appropriate to use fast time weighting. While time weighting will not affect the average sound level (Leq) measurement result, it will affect the maximum sound level (Lmax) measurement result. For example, if measuring the sound level of music, the fast time weighting will result in higher Lmax results. When presenting a Lmax result, the time weighting, fast or slow, should be specified. However, some regulations and ordinances require all measurements be made with slow time weighting or all measurements be made with fast time weighting, regardless of the type of noise source.

Observations and Comments

Band Shells:

Currently, the bands play on open stages at the two bars we visited. This allows the sound to easily transmit in all directions. Band shells could be constructed to better direct sound toward the audience. Band shells are not as effective for amplified music as they are for unamplified music, but they will still provide some benefit and would also provide protection from rain for the audio gear on stage (in case it starts raining during a performance). The band shell should have three sides and a roof. The side walls should splay outward and the roof should splay upward. The inside surface of the back wall should be finished with a sound absorbing material. There are many sound absorbing finishes that are suitable for outdoor environments. We can provide suggestions and cutsheets if you want to pursue construction of

band shells. We could also assist in designing the band shells. It will be most important for the band shell to cover the entire area of the stage that is used and for the band shell to be constructed of a material that has enough mass to block the low frequency sound.

House Sound Systems:

More control of noise production can be gained by installing and requiring the use of a “house sound system.” While many bands prefer to use their own, familiar equipment, requiring that a house system be used will give the bar better control over sound production. Loudspeakers for a house system can be fixed in place, directed, and selected to focus the sound on the audience. When a band brings its own loudspeakers and stacks them on the stage, much of the sound is transmitted right over the heads of the audience and into the community beyond. Also, use of a house system enables the incorporation of compressor-limiters that can be set to limit loudspeaker output to a preset amplitude. An engineered house system will also provide better sound quality than many systems that bands bring with them and simply place on stage.

Noise Barrier Walls:

Both of the bars that we visited had tall fences or walls surrounding the beer gardens. At one establishment, the wall was masonry. At the other, it was a wooden fence. Sound barrier walls will block some of the noise transmitted to residents close by the beer garden, but they will not be as effective for residents located further away. A wall will create a shadow zone where the sound is attenuated, but sound bends over the tops of walls, especially low frequency sound, and this limits the size of the shadow zone so that residences further from the barrier do not benefit as much. In general, the taller the wall the better, and the heavier the wall the better. Sound barrier walls need to not have openings or perforations. Masonry walls are very effective. Wood walls are less effective. Lightweight wood fences without overlapping fence boards are mostly ineffective. There are acoustical calculations that can be performed to calculate the effectiveness of a sound barrier wall.

Some additional noise reduction can be achieved by finishing the inside face of these walls with a sound absorbing material.

Sound barrier walls can provide some containment of not only the noise produced by music, but also noise produced by the crowd.

If you wish, we can further advise with respect to improving or replacing specific walls at specific venues.

Noise monitoring devices for self-monitoring:

There are several devices that can be used to monitor noise levels in these types of situations. The simplest of them provide a green/yellow/red light to indicate when the sound level is below, near, or above a preset limit. These give the bar owner and management the ability to objectively gauge the sound level at any given time and, if possible, take actions to reduce it.

Soundear:

<http://www.soundear.com/area-of-interest/noise-monitoring-equipment-for-clubs.html>

NTi Audio model XL2 plus stack light and accessories:

<http://www.nti-audio.com/Portals/0/data/en/NTi-Audio-Digital-IO-Adapter-Box-Product-Data.pdf>

Of these two products, the NTi Audio equipment is more versatile, but more complex and more expensive. Some of these sound monitoring systems cost several thousand dollars.

Restricting Time of Day:

It is common to restrict the time when outdoor music performances can take place so that they do not carry on late into the night. Restrictions are also sometimes placed on which days of the week outdoor music performances can be held.

Regulatory Noise Limits:

Restricting noise level at the property line or at a specific distance from the property line is a common component of local noise ordinances. In ordinances, music should be, and often is, treated differently than other types of noise. Often different limits are imposed on music then on other types of noise. If objective sound level limits are incorporated into the local ordinance, rather than a test for inaudibility, it is necessary for the local police department to have and know how to use a sound level meter to measure the sound level when complaints occur. Music should be evaluated based on the maximum sound level it generates during a particular amount of time, say 5 minutes, rather than based on the average sound level that it produces.

State of Illinois Regulations:

If you not already, you should be aware that the Illinois Pollution Control Board has extensive environmental noise control regulations (Title 35, Subtitle H, Chapter 1).

This concludes my comments and observations from the walk-through. I will be happy to elaborate on anything contained within this report or to continue working with the Village on this issue.

Sincerely,

Soundscape Engineering LLC

Per:



Nathan Sevens, Principal Consultant
PE, LEED AP, INCE Bd. Cert.

nsevens@SoundscapeEngineering.com
(312) 436-0032

Cc: Lael Miller, Village of East Dundee, LMiller@eastdundee.net

LOUDNESS COMPARISON CHART (dBA)

Common Outdoor Activities	Noise Level (dBA)	Common Indoor Activities
Jet Fly-over at 1000 ft	110	Rock Band
Gas Lawn Mower at 3 ft	100	
	90	Food Blender at 3 ft
Diesel Truck at 50 ft at 50 mph	80	Garbage Disposal at 3 ft
Noisy Urban Area, Daytime		Vacuum Cleaner at 10 ft
Gas Lawn Mower at 100 ft	70	Normal Speech at 3 ft
Commercial Area		
Heavy Traffic at 300 ft	60	Large Business Office
Quiet Urban, Daytime	50	Dishwasher Next Room
Quiet Urban, Nighttime		Theater, Large Conference Room (Background)
Quiet Suburban, Nighttime	40	Library
	30	Bedroom at Night, Concert Hall (Background)
Quiet Rural, Nighttime	20	Broadcast/Recording Studio
	10	
Lowest Threshold of Human Hearing	0	Lowest Threshold of Human Hearing

An increase of 3 dBA is barely perceptible to the human ear.

SAMPLE NOISE LIMITATIONS

City	Noise Limitations
New Orleans, LA	<p>L10-65 dBA from 7am-10pm L10- 60dBA from 10pm-7am</p> <p>LMax-75 dBA from 7am-10pm LMax- 65 dBA from 10pm-7am</p> <p>* L10 is the A-weighted sound pressure level which is exceeded ten percent of the time in any measurement period. (Example L10 is the sound level that is exceeded a total of one minute in a ten minute period).</p>
Elgin, IL	<p>Max 55dBA- Daytime Max 45 dBA- Nighttime</p>
Dallas, TX	Max 63 dBA on commercial lot line
Nashville, TN	<p>65 dBA from 1am-7pm 60 dBA from 7pm – 7am</p>
Atlanta, GA	70dBA during the day and 65dBA at night
St. Louis, MO	<p>*Specifies commercial near neighborhood 7am-10pm Max 65dBA 10pm-7am Max 60dBA</p> <p>*In commercial not abutting residential allows Max 70dBA</p>
San Diego, CA	<p>7am-7pm 65dBA 7pm-7am 60dBA</p>
San Francisco, CA	<p>Max 70dBA daytime Max 60 dBA nighttime</p>
San Antonio, TX	<p>Max 63 dBA measured on adjacent residential property under separate ownership from noise source property.</p> <p>Max 70dBA on all other commercial property</p>
Savannah, GA	65 dBA at all times
Seattle, WA	Sound source
Tampa, FL	<p>Entertainment Zones 6pm-3pm Max 85 dBA 3am-6pm 65dBA</p> <p>All other commercial 7am-10pm Max 60dBA 10pm-7am Max 55dBA</p>
Los Angeles, FL	<p>Daytime 60dBA Nighttime 55dBA</p>
Boston, M	<p>11pm-7am Max 50dBA Max 70dBA all other times</p>