New Orleans Sound Ordinance and Soundscape Evaluation and Recommendations New Orleans, Louisiana

For

City Council of New Orleans

By

Oxford Acoustics, Inc.

August 5, 2013

Project No. 11-01883-01
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Office of Kristin Gisleson Palmer
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New Orleans, LA 70112

Attention: Councilwoman Palmer, Nicole Webre

Report: New Orleans Sound Ordinance and Soundscape Evaluation and Recommendations
New Orleans, Louisiana
11-01883-01

Councilwoman Palmer and Nicole Webre:

This report covers the investigation made of the sound ordinance and current acoustic conditions for the City of New Orleans, Louisiana. The work was performed in accordance with our Proposal dated November 9, 2011, which were accepted by the city council in January 2012.

Thank you for the opportunity of working with you on this project. Please call me if we can help you further.

Very truly yours,

David S. Woolworth
Principal
Oxford Acoustics, Inc.
General Summary Statement

The history of New Orleans in regard to noise and its related complaints are documented from the late 1700's onward. The means by which commerce has flourished has shaped the city soundscape. Today the burgeoning industry is entertainment tourism and live performance, which is tied directly to the traditions of music in the city. Over the last three decades, the increase of higher fidelity and more powerful sound reproduction systems coupled with a change in the sonic signature of popular music has resulted in a considerable increase in low frequency sounds in the city, specifically around the areas that are designated for entertainment.

Four main issues have been identified that should be addressed immediately to improve the quality of life for all of those affected by unwanted sound:

1) The lack of provisions to address low frequency sound in the current ordinance.
2) The current methods designated for determining violations in the Vieux Carre Entertainment District (VCE) need to be simplified.
3) The lack of focused enforcement resources.
4) Violations of the sound ordinance are considered criminal violations and should be changed to civil violations.

All of these items need to be addressed in tandem for a successful code revision and improvement in quality of life.

The balance to be struck is to keep the city livable for everyone while allowing a sonic environment that is conducive to the development, evolution, and continuance of New Orleans' cultural traditions and protecting and enhancing attractiveness to visitors. The current debate regarding noise also necessitates a sustained effort on the education and cooperation of the key players and the general public for a lasting solution.

The investigation into the issue of noise led to the decision to make recommendations based on a holistic approach as music and the sounds of city's economic engines have been a fundamental part of the soundscape of New Orleans for well over 200 years. The approach to recommendations includes:

- Informed changes to legislation that take into account community expectations
- Improved methods for enforcement and record keeping
- Improved resources for enforcement
- Wherever possible, the reduction in the need for enforcement
- Consideration for health and safety issues
- Community awareness and education
- Community (business/residence/musician) participation in the (iterative) legislative process

Three guiding principles have been used in the development of the report and should be considered for the future work by the city in addressing the noise issue:

1) **Analysis must include consideration of the impact of recommendations on the entire population.** Recommendations are intended to take into account the neighborhood concerns, the social and cultural concerns, economic and business concerns, and the feasibility of successful enforcement where it is needed.
2) **Motivated human behavior is difficult to predict.** All of the entertainment sounds of the City of New Orleans have various factors that affect their schedule and their sound level. The reaction by the public may be intolerant of some sounds/times and permissive of others; at the same time members of the public are often split on the same issue.

3) **The expectations of the community at large drive the final recommendations.**

   While there are international standards as established by the World Health Organization (WHO)\(^1\)\(^2\) and base models available for noise ordinances, cities and communities use this as a starting point and these guidelines are adapted to the expectations of that community: for instance, if a local factory keeps the community employed, they view the sounds from the factory more favorably and make exceptions from the standard for that; those not benefiting from the factory may be annoyed and have an opposing view.\(^3\) A community's identity may be tied to the soundscape and soundmarks around them.\(^4\) A soundscape is the sonic environment particular to a given place, but it typically fluctuates with the time of day, and often repeats itself in daily and seasonal cycles. A soundmark is similar to a landmark; a sound that's unique to a particular area, community, or environment, with which most all of the inhabitants are familiar. Soundmarks exist within the soundscape.


**Change in Project Scope**

After approval of the Proposal by the city council, discussions with CM Palmer's office indicated that a priority was to be set on the Bourbon Street and Frenchman Street areas, where there were the largest number of complaints and the most pressing need for solutions that would reduce noise exposure by residents.

It was also discovered during the investigation that many of the parties interviewed had either very little information, selective information, or misinformation. Since the report was for the city council to make informed decisions on the future of the city soundscape which directly affects the music tourism industry, and that the report is to be public information, we have chosen to include additional information that we believe is relevant for all to consider when debating and solving these issues.

The specific changes to the original scope are shown under PURPOSES AND SCOPE OF STUDY below.
Executive Summary

1) **Enforcement:** The success of any ordinance relies on the regulated entities following the law, and equally important, the consistent and continuous enforcement of the ordinance.
   1. Administration, funding, training, equipment, and manpower are required beyond what is currently allotted in order to ensure continuous enforcement and the successful implementation of any new program as well as existing codes.
   2. Several options and resources for enforcement are discussed in Section 4 (sound officer, health department, police department) (also see Section 8).

2) **Ordinance and Zoning:** The following recommendations are presented to address entertainment venue sound levels (evaluation and recommendations in Sections 4, 5, 6, 7 and Appendix B):
   1. The noise ordinance should include provisions for the limits of low frequency noise from entertainment venues (both emitted from the venue and entering a residence).
   2. The Vieux Carre Entertainment District (VCE) should do away with the moving target of “ambient sound” and establish a sound level cap that cannot be exceeded for open facade buildings.
      1. The alternate compliance path for sound sources (establishments) in the VCE is to shut their facades if they cannot meet the sound level cap.
   3. The businesses of the Frenchman St. arts and culture overlay should adhere to the existing comprehensive zoning ordinance Section 10.13 that requires the doors to venues to be shut during a performance and that only live music is permitted.
   4. The loudspeaker placement ordinance appears to have reduced the sound level on Bourbon St. based on field measurements and local perception (see Section 5). A proposal for the use of outdoor loudspeakers for the purposes of providing ambient music for patrons is presented in Section 7. These recommendations have been submitted for consideration for use in the current outdoor speaker legislation proposal that is undergoing iteration.
   5. Areas of the city that are seeing growth of entertainment venues such as the warehouse district, St. Claude and Freret St. should be evaluated in regard to existing (or revised) sound level limits. This is an opportunity in the permitting process to ensure that clubs and residents can coexist in a satisfactory manner through education and evaluation (Section 6).
   6. A proactive approach to educating and helping entertainment venue owners understand and meet the necessary criteria to be within the law and work to eliminate complaints is advocated. The original approach by the Health Department in the early 1980's included educating the club owners and encouraging compliance with the ordinance (see Section 4).
   7. In all cases if a complaint still exists with all parties in compliance with the law, a mechanism should be in place to evaluate the nature and validity of the complaint and require abatement of the sound source as needed.

3) **Health and Safety:** The health and safety of the community is affected by noise (see Section 3 Health and Safety Issues):
   1. Sound levels in the public right of way must allow for communication for law enforcement. We recommend these sound levels should be achieved by the enforcement of a noise cap.
   2. Long-term exposure to high sound levels is detrimental to the health of residents and must be considered. We expect that enforcement of the recommended noise cap will improve conditions considerably.
   3. Long-term exposure to high sound levels is detrimental to the health of workers in entertainment venues. We recommend employers for all venues with higher sound levels
(i.e. live music and discotheques) should implement hearing conservation programs for their employees.

4) **Complaints:** The complaints about high sound levels come from residents, shops, restaurants, bar owners, and musicians. While not all people can agree on the exact threshold of “too loud” or “too late”, most agree that the existing conditions in certain areas exceed both subjective criteria (see **Section 2** and **Section 6**).

5) **Street Musicians:** Busking and street music are analyzed in **Section 6** with issues of concern outlined for consideration. A more remedial study of the problem is required; due to its complexity, localized solutions may be more effective than legislation at resolving problem spots and maintaining a coexistence of street musicians and any parties in their sonic footprint.

6) **Culture bearers:** The specific cultural sounds of New Orleans including second lines, Mardi Gras Indians, and Jazz Funerals are integral parts of the city's culture and identity. While Jazz Funerals are the only specifically identified cultural exemption to noise enforcement, it is recommended that the city work to ensure the protection of authentic cultural expressions and their contribution to the soundscape. Care should be taken to distinguish these cultural expressions from commercialized versions of the same. The cultural task force as established in 34.1.1 of the municipal code should include this duty in their responsibilities.

7) **Sound Control:** General guides for sound makers to reduce sound transmitted elsewhere and for sound receivers to reduce noise in their homes or businesses are in **Appendix C**, along with other information on annoyance and sound perception.

8) **Community Participation:** Members of the New Orleans community are working together with club owners, sound operators, and musicians to promote a higher awareness of hearing conservation, which translates directly to improved conditions for everyone in the city. The city's support for this movement will be beneficial for improving the quality of life while reducing the burden on enforcement. **Section 8** outlines some of the current ideas being offered by local organizations and additional resources that can be utilized by the city to this end.
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Appendix B – General Information on Sound, Selected New Orleans Sound Walks and Sound Level Measurements

Appendix C – Residence and Business Information on Annoyance and Sound Control

Appendix D – Documents
  · 311 Noise category memo.
  · OSHA 1983 nightclub sound level enforcement position statement
  · Merchants of Royal St. Letter to CM Palmer 3-15-12
  · Sample touring band contract sound level requirements
  · Charles Berlin letter on Ambient Measurement Intention 1994
  · Analysis of Recommended VCE Measurement Procedures by Arno Bommer, CSTI, David Woolworth 2012
  · Sound Ordinance Working Group notes, July 14, 2010
  · Sound Ordinance Working Group notes, March 8, 2012
  · Meeting with neighborhood associations/Bourbon Business Alliance (BBA) handout.

Appendix E – Papers on New Orleans Soundscape investigation for Internoise 2012

Appendix F – City of New Orleans Related Zoning and Ordinance Documents
  · Loudspeaker Placement Ordinance
  · CZO Section 10.13- Arts and Culture Overlay (Frenchman St.)
  · Excerpts of Chapter 34 of New Orleans Municipal Code
  · Sound Ordinance- Chapter 66 of New Orleans Municipal Code

Appendix G – Listing of organizations, meetings and interviewed persons

Appendix H - Resources for Sound Ordinance Creation Guidelines, Information on the Structure of Single Person Sound Enforcement Program, and Brazil's Noise Education Program.

Appendix I- Proposed phases for development of sound enforcement and awareness program
PROJECT DESCRIPTION

LOCATION

The investigation was performed across the City of New Orleans, with emphasis on Bourbon Street and Frenchman Street. Additional work was also performed in the Warehouse District, Vieux Carre, Marigny, Treme, Garden District and Uptown.

PROPOSED INVESTIGATION AND PURPOSE

The purposes of this investigation are to explore the acoustical conditions and soundscape across the City of New Orleans, and to provide engineering, cultural, economic, and enforcement analysis leading to recommendations for completion of the revision of the noise code and recommendations to address existing noise complaints.

PROVIDED BY THE CITY OF NEW ORLEANS

1. Contacts and access to the police department and community/business representatives and organizations.
2. Zoning maps and related information.
3. Relevant documents to noise complaints and noise enforcement.
4. Advising on details and progress reviews by the City Council Legislative Director, Nicole Webre.

SCOPE

The following services were performed:

1. Collected and reviewed project data available to us and prepared an investigation program.
2. Evaluation of current noise code, proposed noise code, and all comments and submissions regarding the proposed code.
3. Meeting with the business and neighborhood associations and the enforcement community to hear concerns and establish a network to aid in the investigation.
4. Soundwalks of the entertainment districts and other portions of the city to evaluate noise levels.
5. Testing of building facades to evaluate noise penetration.
6. Empirical evaluation of sound propagation from source to listener through the city.
7. Evaluation of the information/data obtained, and preparation of this report of our conclusions and recommendations.
8. Reporting and consulting to the city on the loudspeaker placement ordinance.
10. Additional advising to the city and locals on specific issues as they arose.
11. Meetings and correspondence with community members and organizations (see Appendix I).
Section 1: A Brief History of the New Orleans Soundscape

New Orleans was settled in 1699, and consisted of an extremely small footprint relative to the city as we know it today. It was located by 1722 on the area we know as the French Quarter, and over time the swamps were drained as canals and other means were used to create habitable territory. This initial section will describe the sounds you would expect to encounter and when they came about.

Early music of the soundscape:
As early as 1770 there were 100 fife and drum corps in the city and in an effort to impress the local Choctaw and Chickasaw Indians, the standing Governor Miro put on a celebration and parade in 1787 that was so impressive it became a regular occurrence. By the early 1800's every Sunday multiple military style music groups of different national origins would parade the city from dawn until dusk (and sometimes before dawn and after dusk); around this time second lines developed, eventually with hundreds of followers. By 1814, New Orleans boasted the largest number of brass bands in the world. Examining the footprint of the city during this period (Figure 1a), it would appear that the sounds of these marching bands could be heard by all throughout the city all day long on Sundays.

Starting in the late 1700's, slaves congregated on Congo square and on the levees in groups of up to 500 with all day (Sunday) celebrations that included dancing, drumming and singing (up to the 1850's, with a break 1820-1845 ). By the 1830's, individual (troubadour or serenading) musicians were appearing on the docks, streets, and hotels of New Orleans.

Elaborate funeral processions existed during French rule and musical procession funerals were well established by 1880 that included second lines (to evolve to the modern jazz funeral). Mardi Gras itself arrived in New Orleans with the French in 1699; it was prohibited during Spanish rule (1763-1803).

Here we can also note that the complaints about the parades and other celebrations originated at about the same time that they all started; 200+ years of parades and 200+ years of complaints. The tradition of parades and fanfare along with the complaints has continued to this day.
Figure 1a: The footprint of the City of New Orleans over time. 1722- Vieux Carre (French Quarter), 1788- the CBD, 1817- Warehouse, Garden, Marigny, Fauborg-Marigny, 1835- Uptown. Graphic used by permission of Richard Campanella from the book “Time and Place in New Orleans” (Pelican, 2002).

**Industry and transportation:**

Early transportation in New Orleans consisted of horse and carriage, followed by boat traffic in the city after the construction of the first canal (Old Basin Canal) in 1794. Steamboats were working in the Mississippi River in 1812 and dominated the commerce and trade transportation until the 1870's. By the 1820's the soundscape included the sounds of riverboats and the steam industry that was heavily utilized west of canal street in cotton, sugar and other processing. The entire riverfront was utilized for loading and unloading of cargo. It is interesting to note the now ubiquitous emergency siren was developed during the 1800's and by 1900 an electric version was available.
Figure 1b: New Orleans Waterfront 1853. Note the ships docked the entire Mississippi River bank from Uptown through the French Quarter. Near the center (green line) is Canal Street, on either side are the newspaper district, sugar district and cotton district (industrial). Also note the canals in the background, on which there was commerce and boat traffic. St. Louis Cathedral is seen to the right (red circle), the loading area in front of which was later filled with train tracks and warehouses. Used by permission of the Louisiana State Museum (Muller Print XX0672).

Steam trains began to reach the city by 1830, but the domination of steamboat commerce slowed its development, and during the Civil War the tracks were disabled by the Union. Street cars were connecting the city together by 1835 and were not affected by the conflict, although the steam powered street cars were considered too loud, and the street cars were pulled by horses and eventually other experimental means until they were switched to electricity (the current system) in 1893. After the Civil War, the city's rail system was developed and by the 1870's was servicing six of the nation's large railway lines.

The trains traveled through the city and the terminals and loading docks permeated the city including the Basin St. Station. The area in front of Jackson Square had 7 tracks with warehouses to support the volume of commerce (now considered the Vieux Carre Park, or VCP). Cars and electricity made their appearance in the early 1900's and began to add
to the din, the electric light extending industrial operational time to potentially 24 hours a day.

**Figure 1c: New Orleans waterfront 1915, about current Woldenburg Park.** Jackson Square (as indicated by the red arrow) directly across from ships, train tracks, and warehouses in the foreground. This industry existed before regulations or industry standards on noise. Also note the museum models have 6 separate martial bands parading in the streets and drumming on Congo Square. Model located at Basin Street Station Museum, created by the French in the 1950's.

**WWII:**
During World War II the city saw a peak of activity and a particularly loud and busy soundscape. Industry was extremely active on the canals and spread through the city (including 3 separate factories for the Higgins boat). The Navy testing facility in Algiers was flying military aircraft for testing, and steam trains and tracks were at their most dense in the history of the city (see **Figure 1d**). The train lines were eventually limited to the certain sections of the city due to complaints.¹
Fig. 1d: 1924 Map of New Orleans with rail and canal routes marked. Red indicates (steam) rail routes, Green indicates street car routes, Blue indicates canals. Rail yards populated the North end of the city, and the riverfront was populated by warehouses and industrial operations. The U.S. Naval Reserve is located across the river from the Bywater in Algiers. These conditions existed until after the 1950's, when a number of the tracks penetrating the city were no longer used. Map courtesy of Historic New Orleans Collection www.hnoc.org.

Outdoor Concerts:
Outdoor concerts for private and public events have been a part of the New Orleans outdoor soundscape since the late 1700's, using the military and brass bands for balls, political rallies, openings of buildings, charities, summer gardens, and other events. In
addition there were a considerable number of classical concerts outdoors since the early 1800's.

Dueling with swords and pistols were regular occurrences in the French Quarter behind St. Louis Cathedral (St. Anthony's Park) and the cargo and commerce area between Jackson Square and the riverfront from the late 1700's to the 1850's. Dueling was prohibited in St. Anthony's Park due to noise complaints by the priests and later outlawed in the city but it persisted in the periphery such as Dueling Oaks in city park.2,3,4,5,6 Gallatin St. (the first tenderloin district) occupied the area that is now the French Market and was known for nightly brawls and shootings. This area was active from 1850's to 1900 and finally razed in 1936.1,3,6,7

There has been a change in the soundscape of the French Quarter in the last four decades, beginning with the opening of the facades of the Bourbon St nightclubs in the 1960's by Jim Garrison in an effort to reduce other crimes that occurred inside.8,9 This was followed in the late 60's with the advent of “Window Hawking” which brought the activity of selling alcohol and food onto Bourbon Street. Window hawking put the burden of competitively attracting customers on the Bourbon Street businesses.1,10 Changes in amplification capability and accessibility also brought changes in the way music was composed (to emphasize low frequency content), as composers through history have written for the instruments and venues that were available to them. The 1980's saw the advent of “boom music” which is marked by heavy and loud bass beating or pulsing; with this came the boom cars and the boom nightclubs. In the late 1990's the city made great efforts to increase tourism, and during this period allowed the development of T-shirt and souvenir shops along Bourbon and Decatur, which utilized loudspeakers pointed outward playing music to attract business into their shops. All of these are additive effects, raising the sound level on Bourbon St. as well as across the city. While there has been considerable work in the acoustics field on noise exposure and regulations in industry, military, transportation, rockets, and other areas, the specific phenomenon of exposure to low frequency pulsing of music with its high variability has not been adequately characterized.

Katrina:
Immediately following Katrina there were very few sound sources. One recovery worker in the city immediately after the storm noted the lack of insect and bird sounds and that a conversation could be heard from a block and a half away.11 Gradually all of the sounds returned, including the music. New Orleans' recovery from Katrina included a massive effort to revitalize the tourism industry, which prior to the storm provided a third of the city's operating budget;12 the result is tourism industry is approaching pre-Katrina magnitude and in the process issues such as noise have been neglected (as before) while the city deals with more critical issues.

Current Music of the soundscape:
As the industrial and commercial aspects of the economy have shifted toward tourism, and with the advent of higher fidelity and more powerful amplification systems, the soundscape has changed to include considerably more and louder amplified music from
cars, bars, homes, and festivals which includes low frequencies in the sound signature, as well as a shift from transient to more continuous sounds. At the same time, the number of festivals, musicians (amplified and not) and tourists have increased in tandem, all on a limited (tourist/entertainment district) footprint. The challenge that faces the city at this point is that the street layout and buildings were not designed to accommodate residents with an expectation of a certain degree of quiet in tandem with such a dense, busy and loud soundscape.

References Section 1:
1. Interview, Richard Campanella, Tulane School of Architecture Geographer, 1-12-13
5. “1881: Dueling was a way to settle disputes in New Orleans”, Times Picayune, Sept 15, 2011.
http://www.nola.com/175years/index.ssf/2011/09/1881_dueling_was_a_way_to_sett.html
8. Interview, Freddie Pincus, resident of French Quarter since 1954, widow of musician and electrical engineer Alan S. Pincus, 12-11-12.
http://www.time.com/time/nation/article/0,8599,1334012,00.html#ixzz2Gs7og6mu
Figure 1e: The Sounds of New Orleans 1700 to date. The blue lines represent the period in which the sound existed, and the thickness is an indication of its estimated significance in the soundscape. Red lines indicate marked changes in the soundscape.
Section 2: Complaints About Noise

1) The documented complaints about noise in New Orleans go back over 200 years.
1. As noted in Section 1, the 1770's introduced the tradition of martial parades through the city. This developed into Sunday parades from dawn until dusk (and sometimes earlier and later) that included non-martial bands. Some residents did not take kindly to the hours kept; for example a slave is documented as dreading being placed on a New Orleans plantation for fear of having to play for a band all of Sunday instead of resting.\(^1\)
2. Music on the street was typical by the 1830's, including band “wars” in which bands would make as much noise as possible at each other, including between steamboats on the river. While the band wars and proliferation of horns amused some people, there were those not amused.\(^1,2\)
3. Around 1830 the city moved the jail to the opposite side of the city out of earshot of the church who complained of the noise created by the whipping of the inmates.\(^3\)

Figure 2a: Times Picayune anti-street music editorial cartoon from 1880's. The concerns about the soundscape of the city go to its origins. At this time windows were left open for ventilation, so all outside sounds were also potentially inside sounds.
2) Meetings and interviews with the VCPORA, French Quarter Citizens, Faubourg Marigny Improvement Association, NOPD, individual residents of the French Quarter/Marigny/Warehouse District/Garden District, and field observations and measurements have yielded the following information (see interviewees in Appendix I):

1. There are a significant number of residents with valid complaints about noise from sources that include tourist buses, trash trucks, and nightclubs. Some of the nightclub complaints are compounded by poor crowd management by the venue resulting in street noise from people, trash, and other related concerns.

2. French Quarter Citizens surveyed their membership (350) and determined the noise to be in the top five concerns. In order of priority the concerns are (1) crime, (2) graffiti, (3) historic preservation, (4) parking, and (5) noise.

3. Merchants on Royal St. submitted a letter to the city (see Appendix D) in which they identified crowds and noise associated with street performers as a primary concern. Also see Section 6 on street musicians about specifics of the complaints.

4. Some residents have identified specifically low frequency pulsing as a problem, typically in a one half block radius from the source.

5. The irresponsible and inconsiderate use of portable amplification to produce excessive sound levels is considered to be one of the worst problems in regard to noise across the whole French Quarter; these cases typically involve newcomers to busking, religious hawkers, dance troupes, party buses, and boom cars.

2. Many residents are extremely apprehensive about the changing of hands of a venue or the new permitting of music clubs for fear of a change that negatively affects their quality of life due to unwanted sounds, with no recourse to correct the situation.

3. Noise complaints also include transportation sources:
   1. Motorcycles and scooter exhaust system noise.
   2. “Boom cars” that have extremely loud sound systems.
   3. Tour buses with loud sound systems. There are also related complaints of neighborhoods being overtaken by tour groups that behave inconsiderately.
   4. Trash trucks (hours of operation)
   5. Highway noise

4. Until now there was no formal system of registering or tracking complaints, so police city wide complaint data are nonexistent and the health department data if kept, are lost now.

1. On October 25, 2012 CM Palmer's office requested a category under 311 for noise complaints (see Appendix D) so a record of the date, time, and
potentially offending location can be identified. The 311 procedures and hours were determined inappropriate and NOPD Chief Serpas has designated 911 as the noise complaint number.

2. A handwritten log of personal noise complaints kept by French Quarter resident Peter Yokum from 2002-2007 was obtained (Yokum vs. 615 Bourbon St. 977 So.2d 859, 2007-1785 (La. 2/26/08)). During this period hundreds of complaints were called in to the police regarding the nearby entertainment venues. Some items of interest:

1. The log refers to Officer David Holtsclaw who, in 2002, indicated in his interview (see Section 4) that he was needed city wide to answer noise complaints in other districts.
2. From the log notes on 4/16/2007: “spoke with QOL (Quality of Life officer) Jones and still no meters or qualified person.”, indicating that training and equipment are an issue (post-Katrina).
3. Also mentioned in the notes are the additional efforts made by Mr. Yokum to involve public officials.

3) Several hotels on Bourbon St. and St Peter St. were surveyed to understand the impact of entertainment sound on the lodging industry. Their policy is to warn clients ahead of time if room windows face entertainment venues. If a client complains, they attempt to move them elsewhere shielded from the sound, but no refund is provided. The exception to this is the Hampton Inn Convention Center which provides a refund based on a 100% satisfaction guarantee.

4) An interview with a company that installs internal storm windows for thermal and sound insulation provided anonymous information regarding clients in New Orleans that purchased windows for soundproofing reasons. The clients were spread throughout the entire city, and the reasons included street traffic noise, motorcycles, neighboring fraternity house, local pub jukebox, and nightclub/music venue.

5) Property values and quality of neighborhood character can be affected by noise:
1. Those most affected by noise, typically adjacent to a poorly managed entertainment venue, can see a reduction of rental or sale value of 20-50%. This is attributed to high sound levels and criminal activity.
2. Landlords experience difficulty finding tenants for apartment adjacent to entertainment venues with poorly managed sound amplification systems or no soundproofing measures, and heavy “party-goer” traffic.
3. Sound is an essential part of the “tout ensemble” or sum of the assembly of (diverse) parts of a neighborhood; excessive or unwanted sound can have a detrimental effect. Other factors include schools, crime, cost of real estate, available local services and shopping, parking, and excessive tourism.
4. The combination of the above factors (1-3) may leave some buildings vacant or used for storage, which in turn can lead to the degradation of the buildings due to lack of occupancy and maintenance. This has been shown to be a problem linked to the “downward spiral” of other major historical cities.
Discussion:
The concern and complaints about noise are citywide; Bourbon St. and Frenchman St. (and now the Marigny) have been consistent in terms of noise complaints. As areas of the city develop and look to increase the number of venues for music, there is push back from neighborhoods who are concerned with protecting their quality of life.

The term “Quality of Life” must be understood in this context; for the purposes of this study, quality of life is typically an indicator of the ability to enjoy the peace and quiet of one’s dwelling or to sleep at night. To many other cities, quality of life is an indication of the amount of activity.\textsuperscript{11}

Due to the non-existence of a noise complaint documentation system and the unknown number of people affected, it would be of interest to survey the most heavily affected areas to better understand the impact on the population and the size of the area affected. This would better help identify how many people do not bother to complain, or how many are not affected. Such a study could clarify:

1) What percentage of people are affected by noise and where the worst problems are.
2) What are the sound sources of concern? What types of sounds?
3) Demographics of the affected population (i.e. age, gender, home ownership, employment, etc.)
4) Additional information for the city regarding these neighborhoods.

Recommendations:

1) Thorough documentation of complaints should be part of any planned noise abatement program. While identifying the source of the noise and resolving the problem is critical, understanding the location and demographics of the complainant provides more insight to arrive at solutions faster and more effectively. See Section 4 regarding recommendations of the duties of a noise officer.

2) A survey of noise and its effects on the residents and businesses should be performed in the French Quarter and Marigny at a minimum, city-wide preferably; such a survey should be conducted promptly to help guide the efforts to improve the soundscape. The surveys can also include other topics of interest to the city. Additional suggestions for community noise and annoyance surveys are available: Green, Fidell, Chapter 23 Noise induced Annoyance of Individuals and Communities, Handbook of Acoustical Measurements and Noise Control, 3\textsuperscript{rd} Edition, McGraw Hill 1998.

References Section 2:
2. Times Picayune, August 2, 1938.
4. Meeting with VCPORA (Vieux Carre Property Owners and Residents Association), February 2, 2012; Interview, Brobson Lutz, New Orleans Health Department Director 1983-1995, January 7, 2013; Interview, Tatiana Clay, resident 500 block Royal St. 8 years and granddaughter to Larry Borenstein (Preservation Hall founder); Conversation with Stephen Swain, Administrator for St. Louis Cathedral and French Quarter resident, 2-15-13; meetings and conversations with French Quarter Citizens and members thereof.
5. Survey of the following hotel operations in Jan 2013: Bourbon St: Astor, Sonesta, and Sheraton. St. Peter: Courtyard Marriott and Spring Hill Suites Marriott, both facing several clubs across the street.
7. David Mintz, letter to City Planning Commission, 12/5/00 in regard to Docket 165-2000, 400 Burgundy St.
8. Interview with Betty DeCell, 50 year resident of New Orleans, landlord, 12-10-12; Interview, Freddie Pincus, resident of French Quarter since 1954, widow of musician and electrical engineer Alan S. Pincus, 12-11-12.
10. Deposition of Max Tung, Yokum vs. Court of Two Sisters, No. 2004-17286, Division “I” Section:14, Civil District Court, Parish of Orleans, State of Louisiana.
Section 3: Health and Safety Issues

1) **Hearing Conservation in the Workplace:**
   1. Sound levels in the clubs of New Orleans have been measured in a range of 70-110dBA(±); these levels are not unusual worldwide.\(^1,2\) Exposure to high sound levels cause complications such as tinnitus, hyperacusis, and permanent threshold shift or permanent hearing loss. Hearing loss is a gradual phenomenon, and is usually recognized when it is too late. Hearing aids do not correct hearing loss as lenses correct vision; they amplify all sounds, and during their use the ear maintains its deficiencies as well as having difficulty distinguishing sounds in noisy environments.

   One analogy that has been made is that while it is expected that you should visit the dentist twice a year, you typically do not have your ears checked until you are being fit for a hearing aid, which takes out any preventative measures that could have preserved your hearing. Hearing aids, like dentures, are not quite like the original equipment. Audiograms are the equivalent annual checkup for the ear, and can identify degradation of hearing so that protective measures can be put in place to prevent further unnecessary hearing loss.

   2. Studies have shown that musicians and workers in the entertainment industry experience a variety of hearing related effects and disorders from regular exposure to high sound levels, but definitive methods for specific evaluation of music sound level exposure are not yet established in the U.S., while the European Union has developed some metrics.\(^3,4,5\)

2) **Safety and Sound Levels:**
   1. High sound levels can be problematic in regard to safety when they interfere with communication. Recently a ticket was issued for high sound levels on a sidewalk emanating from an entertainment venue\(^6\) that kept the officer from hearing his radio. At the time of this writing reductions in sound levels on the street in the entertainment districts due to the loudspeaker ordinance make this particular issue less of a concern. 85 dBA background level has been established as making telephone use impossible.\(^7\)

3) **Perception of Sound, Annoyance, and Health Effects (also see Appendix C)**
   1. Annoyance to sound is highly subjective, and though it is difficult to define, has very real effects on the quality of life and health of those affected. Two statements below begin to shed some light on the complexity of annoyance due to sound (note that noise is unwanted sound):
     1. “Noise induced annoyance eludes succinct definition. It is an attitude: a covert mental process with both acoustic and non-acoustic determinants. Noise induced annoyance is not a behavior such as a complaint (which may or may not be motivated by annoyance), nor is it a simple and
immediate sensation like loudness, entirely free of cognitive and emotional influences.”

2. “The annoyance due to a sound can be highly personal. Any sound that is audible is potentially annoying to a given individual.”

2. It is shown that once an annoyance concern about a sound (level) is established, over time the perceived loudness drops, but the annoyance escalates.

1. Long term community annoyance prediction is possible through established metrics, but the prediction of complaints is not as easy to relate to these measures. Annoyance complaints are also affected by the individual's willingness to describe themselves as annoyed.

2. Unwanted sound annoyance also is co-determined by personal and social variables, which must be addressed in tandem to the reduction of noise levels. It is important to recognize these factors such as communication and trust to reduce community annoyance with noise.

1. It is discussed in Section 4 that the enforcement response to noise complaints is not reliable from a public perspective; this must be remedied.

2. Unwanted sound complaints are often coupled with the behavior of bar patrons in neighborhoods. Taking steps to ensure that patrons respect the neighborhood residents is an important part of venue-neighborhood relations.

3. Sleeplessness and sleep disturbance can result from exposure to sound from transportation or entertainment; this can lead to a number of related effects on the health of the individual, including stress, memory loss, and can lead to other potentially worse problems; this is one of the most deleterious effects of noise.

4. Health effects for those living with environmental (industrial or transportation) sounds can include:

1. Increased risk of heart attack.

2. Increased likelihood of hypertension.

3. Increased rates of annoyance, mental health problems, headaches, drowsiness, irritation, and speech interference.

4. Delayed speech and reading in children, cognitive impairment, and memory impairment.

5. 20% of the general population is considered to be “sound sensitive” with an emphasis on the women and children.

5. When sounds are for a brief time (“transient”) or if there is an event such as a festival with a defined beginning and end, the relative annoyance and anxiety caused by high sound levels is reduced. It is also noted that if there are financial interests in the noise such as a factory or business one works at, the noise may be perceived more favorably.
1. Example: Residents will generally enjoy or tolerate a local parade or event, especially if they are participating, know people who are participating in it, or are invited.

2. The opposite of transient sounds would be continuous sounds, and loud continuous sounds might be considered the most annoying. **Figure 3a** shows the elements of the typical soundscapes encountered in New Orleans based on sound level and transient nature vs. continuous nature.

![Figure 3a: Elements of the Soundscape, their Sound Pressure Levels and Transience](image)

**Figure 3a: Elements of the Soundscape, their Sound Pressure Levels and Transience.** Approximate sound pressure range (+/-5dB) at typical distances as experienced in public. Louder (high level) and continuous is usually perceived as more annoying, but this is subject to personal experience, preference, and financial stake.

4) **Decibels (dB), dBA, dBC** (for more detail see Section 5 and Appendix B)

1. The use of dBA and dBC (decibels A-weighted and C-weighted) are standard practice for evaluating sound levels of sources.
   1. A-weighting is for evaluating middle and upper frequencies. These frequencies are also in the speech range and the curve roughly simulates the filtering of the human ear.
   2. C-weighting is useful for evaluating low frequency content in addition to the middle and high frequencies.
      1. The accuracy of low frequency measurements can be difficult to achieve as the size of the wave lengths may put an observer in a place of low or high pressure for (certain) frequency(ies), and some measurements will be affected by the immediate geometry or geography.

5) **Low Frequency Hearing Sensitivity (audible sound)**

1. Low frequency hearing sensitivity has been shown to vary considerably from person to person, so much so that one person's threshold of perception of low frequency sounds can be another person's threshold of annoyance.\(^{22,23}\)

2. “Annoyance grows very rapidly with sound pressure level at very low frequencies.”\(^{10}\) Low frequencies require a higher sound level threshold to be perceived initially, but once they are perceived, small increases in sound level
have a larger impact than the same increase in the mid-range and high frequencies.\textsuperscript{22}

3. A heightening in low frequency sensitivity is shown to occur in aging adults, which is a permanent effect. Also the ability to cope or adjust to this increase in sensitivity or to new sounds reduces with age.\textsuperscript{22}

4. Recent studies have shown that people exposed to low frequencies (such as the bass frequencies from music that penetrate into a closed building) can develop a hypersensitivity over time to those frequencies.\textsuperscript{24} Some people have actually had to introduce higher frequency noise (i.e. open the windows to introduce higher frequency sounds) to mask the low frequency component that penetrates a closed building.\textsuperscript{22}

\textbf{6) Safety in Building Vibration}

1. Preservationists express concern that exposure to low frequency vibrations from large vehicles and amplified music may be causing damage to historical buildings.\textsuperscript{25,26,27,28} Such a discussion requires a local field study correlated with available literature on vibration based structural degradation. At this writing there is little conclusive evidence that vibration levels experienced in the Vieux Carre would cause significant damage, and such damage would be difficult to quantify relative to other environmental factors.\textsuperscript{29,30}

\textbf{7) Noise and Violence}

1. At the request of CM Palmer's office, a literature search and inquiries were made regarding any conclusive work regarding any connection between high sound levels and violent behavior. Nothing conclusive was found on the matter of people willfully exposing themselves to high sound levels (i.e. in clubs), but one study showed the connection to domestic violence as a result of exposure to intrusive noise from uncontrollable external sources in residential areas.\textsuperscript{31} The sound levels outside and inside these homes were higher than those of the non-violent households.

2. It is clear that speech intelligibility is hindered by excessive sound levels, which can lead to miscommunication, which in turn can degrade into confrontation. The complexity of the phenomenon of violence and its driving factors is considerable and is beyond the scope and expertise of this report.

\textbf{8) OSHA}

1. A number of times during the investigation the use of Occupational Safety and Health Administration (OSHA) standards and OSHA as enforcement have come up. It is clear that there are entertainment venues that exceed OSHA limits (see Figure 3b and Section 6), but this is based on individual employee shift length and exposure sound levels. The following information was provided by OSHA:\textsuperscript{32}

   1. OSHA’s position on nightclub noise was established \textasciitilde1983 (see full letter in Appendix D):
“Due to limited inspection resources, however, OSHA normally conducts inspections only in "high hazard" industries, in workplaces where occupational safety and health violations are likely, and in response to formal employee complaints alleging specific workplace hazards. In addition, certain budgetary and statutory restrictions preclude the Agency from scheduling inspections in workplaces where there are only a few employees, except in response to formal complaints. Night clubs and dance halls are not classified as high hazard industries, and they usually have a limited number of employees. OSHA would give due consideration, however, to any formal complaint filed by an employee of such an establishment alleging a serious noise hazard.”

2. The member of OSHA compliance interviewed also expressed the position that people seeking employment in nightclubs do not have an expectation of a quiet environment, so complaints are rare.

2. A search of the OSHA database under the SIC code 5813 “Drinking Places (alcoholic beverages)” yielded 496 OSHA inspections as planned, follow up, or due to complaints nationwide from 2002 to 2012 (~4/month nationally); there is no breakout for noise specifically.

3. The time exposure limits before permanent hearing damage based on OSHA and the National Institute for Occupational Safety and Health (NIOSH) are shown in Figure 3b below. The NIOSH exposure limits are based on 97% of the population and the OSHA limits are based on 75% of the tested population. The difference is due to the variation of physiological sensitivity between people.

<table>
<thead>
<tr>
<th>Exposure Time</th>
<th>NIOSH dBA</th>
<th>OSHA dBA</th>
</tr>
</thead>
<tbody>
<tr>
<td>8 hrs</td>
<td>97</td>
<td>110</td>
</tr>
<tr>
<td>4 hrs</td>
<td>100</td>
<td>115</td>
</tr>
<tr>
<td>2 hrs</td>
<td>103</td>
<td>120</td>
</tr>
<tr>
<td>1 hrs</td>
<td>106</td>
<td>&gt; 1min</td>
</tr>
<tr>
<td>30 min</td>
<td>109</td>
<td>&gt; 2 min</td>
</tr>
<tr>
<td>15 min</td>
<td>&gt; 112</td>
<td>&gt; 2 min</td>
</tr>
<tr>
<td>7.5 min</td>
<td></td>
<td>&gt; 112</td>
</tr>
<tr>
<td>3.75 min</td>
<td></td>
<td>&gt; 112</td>
</tr>
</tbody>
</table>

Figure 3b: Table of OSHA and NIOSH allowed sound level exposure limits before permanent hearing damage is incurred. Source: Hearing Conservation Workshop.

Discussion:

The health effects due to noise are real and can be substantial. To attempt to meet the criteria of a noise free environment would be to put almost all public utility, public service, and commercial (i.e. transportation, construction, tourism) interests out of work. The strategy/challenge is to address the very real health effects of noise while finding ways to balance with the activity of the commercial and public utility/public service sectors. Just like any other health issue, effects of sound exposure and hearing hazard/damage varies from person to person.
Based on interviews with residents near the entertainment districts, for some people entertainment (club) sound levels is a very real issue, as it occurs at night and it occurs almost every day; on the other hand, other residents will say that their expectation is that they will experience higher sound levels to some degree. This illustrates the fact that annoyance is subjective and highly personal. Another point to consider is that once annoyance is established, it may take reduction of sound levels below acceptable levels to provide relief for annoyed people; this points to identifying and solving these problems early or taking steps to avoid creating an annoyance.

Perceived low frequency annoyance varies greatly between subjects. A brief discussion of measuring low frequencies is given in Section 5 and recommendations are given in Section 7. It is noted that entertainment (club) sound is sometimes described as “thumping”, “pounding”, or “booming”; this would point to a low frequency problem.

Music is a transient event, and it is operator (human) controlled; as Murray Rothbard, an economic historian, has stated, “motivated human behavior cannot be modeled”, or “there are no simple elements of 'facts' in human action”. The music sound levels and duration at each location and on each evening vary night to night, and it is not practical to try to monitor every venue every night. It may be more effective to utilize education and training of entertainment workers and owners, and their own self-policing (see Section 8). If consistent enforcement of sound level limits is in place, this will also affect the motivation of behaviors in regard to the risks of breaking the law.

Based on the OSHA position statement for entertainment venues (Appendix D), we cannot look to them to enforce workplace sound levels except for noise complaints filed by workers of entertainment venues, which are rare.

For entertainment venues, the use of an employee dosimeter or in-house sound level monitor could provide the venue with an ability to self-policing their own levels and ensure that employees exposed to high levels were provided with hearing protection; entertainment venue sound levels typically fall into the OSHA category for industries requiring hearing conservation programs. More information can be found about this in Appendix C.

An annual hearing evaluation (audiograms) provided by employers would help workers protect their hearing at the first sign of hearing loss.

All parties (musicians, residents, workers, etc.) would benefit from sound level reduction in the loudest areas.

An interesting example of soundmarks and the way we assimilate them was relayed by a new arrival to New Orleans who moved to an apartment beside the St Charles street car line. She asked the neighbor (a long-time resident) about getting used to the street car cars, and he remarked that he had difficulty sleeping after Katrina until they were up and running again. She reports she no longer notices the street cars so much and her sleep is not disturbed. Not all people are able to adapt to this.(ref)
Recommendations:

1) The City Council and Health Department must prioritize these health and safety issues among those that face the City of New Orleans at this time. The reintroduction of health officers into noise enforcement issues are discussed in Section 4.

   1. Development of noise related infrastructure and training for addressing noise are critical to address the existing noise problems (see Section 4).

2) The development of a city wide hearing conservation education program (see Section 4 and Section 8).


4) The establishment of a “noise cap” as discussed in Section 7 to prevent excessive sound levels from entertainment sources for reasons of public health and safety.

5) The requirement of special events to post public notice to help residents plan around sound issues.

References Section 3:
5. Safe Sounds meeting February 2012 with guests from the National Hearing Conservation Association.
6. Lt. Michael Field, 8th District
24. A Review of Published Research on Low Frequency Noise and its Effects Report for DEFRA, Dr Geoff Leventhall, Dr Peter Pelmear, Dr Stephen Benton, May 2003
32. Phone conversation with OSHA/Department of Labor Compliance Guidance Group, December 6, 2012
Section 4: History of Noise Law in New Orleans and Enforcement

1) History of Code and Enforcement
   1. While certain subjective ordinances regarding noise created by a source have been on the books since the 1800's\(^1\), the first unified city code from 1959 contains the first introduction of the section of the code dedicated to noise\(^2\), and actual decibel limits were introduced in 1981. Until the 1960's there was no practical (or hand held) way for police or other public employees to effectively measure and enforce sound level limits; the city obtained its first sound level meters in 1982. Before that time resolution of a noise disturbance or the identification of a noise offense was left to the subjective judgment of the police officer present.

   1. In the current Louisiana Civil Code (developed in 1800's), article 667 states “Although a proprietor may do with his estate whatever he pleases, still he cannot make any work on it, which may deprive his neighbor of the liberty of enjoying his own, or which may be the cause of any damage to him.” This applies to noise as a nuisance; also see health effects in Section 3.

   2. In Flynn's Digest (published 1896) there are references to no horns, trumpets, or drums allowed at all outside militia, processional, and auctioneer sources;\(^1\) due to the nature of the municipality ordinance compilation, it is difficult to determine the exact date and source municipality of this ordinance. See Figure 2a.

   3. The New Orleans health department adopted a noise policy in 1972 as a reaction to the establishment of the EPA and an identification of noise as an important issue in need of attention. New Orleans health department established a noise task force that included health department employees and citizens that monitored the city as of 1981.\(^3,4\)

   4. In 1981 the Unified City Code was amended to include a more comprehensive noise policy (Section 42 of the code) that utilized sound levels and sound level meters, and additional budget money was allocated to the health department to facilitate the enforcement of the ordinance.\(^3\) The original dates of adoption are clearly indicated in the old ordinance, but not indicated in the current ordinance in which Environmental Noise is addressed in Section 66.
Figure 4a: excerpt from Unified City Code of 1959-1995 containing references to Flynn's Digest. It is clear that there have been considerable horns, trumpets, and drums considered illegal by this ordinance from at least 1896 to 1995. This was eliminated as unconstitutional.

2. Modifications and efforts to update the New Orleans' sound ordinance from 1995 to date (note ordinance modification dates show the date of introduction of the legislation):

1. 1995- the municipal code is transferred over to the current system, Migrating Noise from Chapter 42 to Chapter 66 Environmental.

2. 1997, April 17:
   1. Definition of “plainly audible” distance is altered to 300' for sounds other than amplified, and 100' for amplified sounds. (66-136)
   2. Daytime SHD/VCC and SHD/VCR sound levels are increased to 75dB $L_{A_{10}}$ and 80dB $L_{A_{max}}$. (66-202 Table 1)
   3. Playing of musical instruments of amplified are restricted by “plainly audible” at 50' as well as a limit of 80dB (203 (3)(a)), AND musical
instruments are restricted in public by “plainly audible” at 50’ (203 (3)(c)).

3. 1998, January 8:
   1. Definition of “plainly audible sound” is struck and replaced with 80 decibels at 50ft. (66-203(3)(a)) and
   2. 66-203(3)(c) is struck, which effectively prohibits the operation of a musical instrument in public.

4. 1998, February 19: Defining of a decibel limit of 78dBA at 50’ for all music in Jackson Square during St. Louis Cathedral services and functions. (66-208)
   1. This is a result of efforts made by attorneys Howell and Klotz jointly to resolve issues related to the sound ordinance and issues around Jackson Square during the period December 1996-February 1998

5. 1999, October 7: Permitted hours for commencement of demolition and construction are moved from 8am to 7am. (66-138(7))

6. 2007, June 21: Exemption of golf course maintenance from the sound levels in Table 1 between 6am and 6pm. (66-138)

7. 2010-2011
   1. Efforts by CM Palmer's office and others*
      1. Discussion of comprehensive ordinance revision and examination of other ordinances
      2. Reduction in authorized administrators to accordingly reduce ambiguous enforcement
      3. The discussion of 10pm as a cutoff time for outdoor activities
      4. Brass band field measurements of were taken to create a baseline to work from.
      5. Meetings with the community (musicians, public, and business owners)
   2. A sound ordinance working group was assembled by Mayor Landrieu, working with Councilmember Kristin Gisleson Palmer in July of 2010
      1. The first meeting was July 14, 2010. Minutes from 2 of the 4 meetings are in Appendix D.
      3. A proposed revision of the ordinance was produced after the 2nd meeting of the Sound Ordinance Working Group and was posted on line for public comment.
   
*others include but are not limited to members of neighborhood associations FQC and VCPORA, Scott Hutcheson (cultural adviser to the Mayor), Ashlye Keaton, Esq., Alan Alario, Esq., Clyde McCoy (Smith Stag), Suzanne Nelson-Pittle, and members of the sound ordinance working group.

8. In 1982 the health department obtained seven sound level meters, created a special police status for health department employees dealing with noise, and trained the police sergeants in the use of sound level meters.³
4. In 1983 the health department obtained sound level meters with printouts, enhancing the division's capabilities for enforcement.³

5. Health department records indicate the last year budgeted for Environmental Specialist II-III whose responsibilities included noise was 1985; in 1986 budget issues forced furloughs and layoffs, eliminating the position (See Appendix A). The health department has not been involved in noise monitoring since then; the responsibility for enforcement of noise codes has been handed over to the police.

6. The police have made efforts to purchase equipment and train officers in noise enforcement since 1986; Quality of Life (QOL) officers were responsible parties in the late 1990's (see interview with David Holtsclaw below); since then the responsibility has gravitated away from QOL and become whoever is trained with sound level meters.

2) New Orleans Health Department and Noise Enforcement

1. A short interview with Dr. Brobson Lutz, Director of the New Orleans Health Department (1983-1995), provides us with a better understanding of the initial years of Health Department's enforcement of the noise ordinance:⁵

   1. The department had 1 person plus another in reserve as the noise officers under the job title of Sanitarian. These officers were college graduates fully trained in the details of the ordinance and had public health expertise.
   2. There was an emphasis on getting out the information about the law to those that were potential violators, and voluntary compliance was encouraged.
   3. All health codes violations had to go to Municipal Court where procedures of criminal law had to be followed. The Municipal Court was run by part-time court employees and part-time judges who also had private legal practices. The judges often presided for less than 30 minutes and had little or no interest in health code violations that required thinking. Dr. Lutz indicated that convictions in this court were difficult to achieve.
   4. The Health Department sought and secured state legislative approval to create its own adjudication process and was able to handle thousands of cases; however, Dr. Lutz believes this was after the noise unit was defunded so they did not handle noise cases in this arena. Violators who did not pay their fines ended up with a lien on their property.
   5. Dr. Lutz or city attorney Earl Perry (who was detailed to the health department) served as the adjudication officer for all the hearings.
   6. The health department as it was then has been dismantled. It does not have the same capabilities as before. The adjudication unit was moved to another department in the city, and the adjudication officers are now private attorneys with contracts with the city. The process is more complicated.
7. When the noise control unit was disbanded, the responsibilities of noise enforcement were handed over to the police who did not have the same level of expertise and could not dedicate the time to continuously monitor the issue. Noise enforcement ended up being a low priority for the police whose focus was more properly the city's rising crime rate.

8. Dr. Lutz credits whatever success they experienced in reducing noise to a combination of factors:
   1. Well qualified and trained employees.
   2. Targeting the worst offenders.
   3. Adjudication that understood the law.
   4. The use of the news media to publicize the violations.

Dr. Lutz also noted that the current health department lacks the same level of expertise as they had 20 years ago, which is a handicap when trying to consider re-establishing the health department's role in noise enforcement.

2. A short interview with attorney Earl Perry; Mr. Perry worked for the city as a deputy attorney from 1976-2006. Mr. Perry worked with Brobson Lutz in the adjudication process as part of the administrative deciding body that reviewed cases for the health department.

2. Mr. Perry indicated that he presided over a number of noise violations and they were generally one of two types:
   1. Violators that pay the fine and agree not to continue operating in violation of the law.
   2. Violations that are challenged under constitutional law (i.e. free speech) and require continuance. The city currently does not have the capabilities to properly address these cases and needs to deal with them in a timely manner with an appropriately trained staff. This staff trained in federal law must be put in place to prevent the stagnation of such cases.

3. Mr. Perry outlined the shortcomings of the current process:
   1. The burden of proof falls on the city in the municipal court, which is a misdemeanor court called “Section D”; noise violations should be prosecuted in a non-criminal court, or preferably by a hearing board or adjudication process similar to that previously used by the health department as mentioned above.
   2. The noise code is “poorly written”, and requires revision to address constitutionality issues and other details in order to make it usable by enforcement parties and prosecutable.
   3. The enforcement of the noise code is a low priority for the police. Mr. Perry pointed out that the manpower needed to stake out and catch a noise violator may consume the better part of an evening, while other more serious crimes are being committed due to diversion of this
manpower/lack of police presence. The result is the perception of poor enforcement. He recommended that a well informed and dedicated noise staff and administrator are an important element in noise enforcement.

4. The process does not have real consequences for multiple violations. 3rd offenses should result in revocation of the operational license of the violator, and should be sent to municipal court, and have a judge assigned to these cases that understands the issue(s).

4. The above shortcomings show that, in his opinion, no one is completely at fault, although the blame typically falls on the police when the entire process is the problem.

Mr. Perry pointed out that the idealistic expectation of low to no noise is unrealistic in places like the French Quarter. Many residents accept the fact that there will be activity, and that the code for that area should reflect a more realistic expectation.

3. A discussion with Charlotte Parent, Deputy Director of the New Orleans Health Department, provides additional items to consider:

1. The Health Department has an interest in noise code enforcement, however this would require a shift in authority granted by the city with funding for equipment, staffing and training.
2. The Health Department may be able to provide more tools than fines to ensure compliance, including renewal of licensing.
3. It was suggested that a web listing of violation addresses could be maintained for public viewing as part of a more unified and collaborative approach to enforcement.
4. It was noted that the State Environmental Division has a noise ordinance on file but no mechanism for enforcement.

3) New Orleans Police Department (NOPD)

1. NOPD have been responsible for the enforcement of the noise ordinance after the Health Department ~1986 (noted above).

2. The current ordinance and procedures for 10dB above ambient limit in the entertainment districts is unenforceable based on firsthand observation during soundwalks. It is too complex and does not provide for an accurate measure of the sounds being produced (see Section 7 and Appendix D for a more detailed analysis).

3. Meters

1. At this time the police force owns 2 sound level meters that are utilized by officers in the 8th District; the meters are kept in a safe at the 8th District HQ for 24 hour access, deployed to address complaints or make surveys.
20 officers from various units in the district are trained in the use of the meters.

2. There were apparently seven sound meters purchased for the health department in 1981, and some number of sound level meters with printout capability purchased in 1982. It is not clear that the two meters in the 8th District are from 1982 or not. The location of the other meters was not determined.
   1. A noise complaint log made by Peter Yokum in the French Quarter (8th District) includes the entry on April 16, 2007, “Still no meters or qualified person”.

3. The city has indicated in the past that they will provide more equipment, but this has not happened.²

4. **Officers/enforcement 1990's – 2000's**

The following information is a summary of an interview with David Holtsclaw, who served part of his time in the NOPD as a Quality of Life officer in District 8. The information describes his experience regarding noise enforcement around the years 1995-2002.⁹

1. In the late 1990's there was a purchase of equipment and training of Quality of Life (QOL) officers in the use of sound level meters. Over the next years many of the officers were transferred, retired, put on regular patrol, or otherwise were no longer designated QOL. There was no mechanism for re-training, and Officer Holtsclaw was often asked to answer noise complaints in other districts. Having to pull an officer from regular duty to answer calls elsewhere was not an efficient process, so some complaints were not addressed. No one person oversaw the continuity of noise training and staffing.

2. Revisions were made of the ordinance and procedures around that time that made the issuance of violations difficult. Officer Holtsclaw indicated in the 4-5 years that he worked on noise there were “very few violations”.
   1. A warning was issued to street musicians that were too loud. If an officer had to return, the musician(s) would stop playing before a measurement could be made at the appropriate distance to issue a ticket.
   2. The 10 dB over ambient rule produced “no prosecutable violations”; variations in the ambient levels and proximity of other sound sources in the entertainment district made this rule unenforceable.

3. Violations that made it to court were dismissed frequently due to the ordinance wording or judges being unfamiliar with the ordinance and related procedures.
4. Sound levels encountered in the entertainment district (i.e. Bourbon St.) were a safety issue due to hindrance of communication for emergency response.

5. Low frequency complaints could not be addressed as the ordinance only used A-weighting, which emphasizes middle and high frequency noise primarily.

6. Over time all of the above elements combined to make noise enforcement an uphill battle for the police department, and as a result it was given low priority.

7. Officer Holtsclaw indicated that during his service with noise one club was identified as being particularly loud, and he was able to work with the owner to get the club's security to self-police their levels with sound level meters.

5. Officers/enforcement and current law
The following information is a summary of discussions with District 8's Commander Jeff Walls and Lt. Mike Fields as well as field observations:

1. Typically 10 officers, 2 sergeants, and 1 lieutenant are assigned to Bourbon Promenade, but these officers' primary duty is more in the realm of crowd management. The number of areas and events requiring detail simultaneously across the district leave some areas poorly represented by police. The lack of police presence allows poor behaviors (i.e. excessive sound levels) by less responsible operators to proliferate. Other illegal activities such as food and alcohol vending by unlicensed individuals are also a concern on streets such as Frenchman. There are currently 2 Quality of Life officers for the 8th District who work 8.35 hr shifts; QOL officers are not the primary enforcers for noise complaints, as their responsibilities include addressing all complaints.

2. At this writing District 8 has lost funding and manpower over the last year, reducing their ability to answer non emergency calls.

3. District 8 is working to educate all of the officers about all of the relevant laws and regulations. Currently enforcement is on more of a basic level, with less awareness of the details of District 8-specific rules.

4. Doors and windows on Frenchman Street are expected to be closed at all times pursuant to the arts and cultural overlay district set forth in the CZO; this is not adhered to and not enforced. Typically, doors will remain open until 10pm and sometimes later.

4. It is of the opinion of the officers interviewed that a sound level limit at the curb or doorway of an establishment would be enforceable, and
measurement outside of the venue is not a definitive measure of a single source due to the proximity of the other sound sources (street noise and other venues). The current measuring positions outlined in the Municipal Code Sec 66-202b are commented on in Section 7 and Appendix D.

5. It is also noted that sound levels were typically lower during a police observation than with covert measures. See sound walks in Appendix B and in Section 6.

6. It was suggested that the inclusion of audio and video evidence would be useful as back-up evidence in the event of a disputed noise violation ticket.

7. Clubs' adherence to sound levels and cooperation on noise was indicated as an affair that needed to be tended to day to day to ensure compliance.

8. It was suggested that the penalties should be steeper to dissuade noise violators.

9. It was noted that going to court was time consuming for both the police and the offender, while simultaneously reducing the human resources available to the District.

10. It was also noted that although the current ticketing procedure has no cumulative limit, multiple offenses may come to the attention of Alcoholic Beverage Control Board during licensing; this would require that accurate records are kept.

6. Training on the use of the sound level meter

The following information was provided by Doug Price, Retired Southeast regional director for Quest Technologies, the supplier of New Orleans' sound level meters. Mr. Price has performed over 100 trainings in OSHA and community noise since 1987. He teaches how to measure sound levels, but not how to enforce ordinances.\textsuperscript{11}

1. Mr. Price has performed 4 trainings in New Orleans approximately 1990, 2005, 2009, and 2011. He indicated that he is aware of two other trainings being held by two other individuals (once each) from Tulane or Xavier.

2. Inspectors in New Orleans and in other locations around the Southeast that have a 10 minute observation (plus 10 minute ambient rule for some) find it nearly impossible to get a measurement without extraneous noise or the establishment turning down the sound source, degrading the accuracy of the reading.

3. The New Orleans' method is too complex in his opinion; he describes the training as "an exercise in frustration" primarily due to the field conditions and the transient target to be measured.
Discussion:
It is first important to note that nothing legislated will be of value if it cannot be enforced; qualified and dedicated people must be utilized to make use of any recommendations in the report and begin the process of addressing complaints. It may be of interest to note that New York City has 33 full-time noise enforcement officers, and they have indicated that may not be enough people to handle all of the complaints; a proportionally sized noise team for New Orleans based on population would be 2 or 3 people.

The responsibility of noise enforcement and training has organizationally changed hands multiple times since 1981 without continuity in supervision, and some laws that have been on the books regarding noise for over 100 years have been largely ignored. Noise enforcement or legislation becomes a priority in a periodic cycle as a result of complaints or overall sound level; this has been observed within neighborhoods and citywide. In addition, the judicial process is inconsistent and sometimes uninformed; the byproduct of this a low priority for enforcement (i.e. why issue a ticket if it ends up being thrown out?).

Figure 4b: Problems that face current noise enforcement. See details in Section 2.
The public perception of noise enforcement is mixed: some believe that there is a low priority in noise enforcement (as noted above), which makes them skeptical of being able to exert any control over any sources that may produce noise. Reactionary or complaint driven enforcement causes others to perceive selective enforcement. This illustrates the frustration of the public in the current ordinance shortcomings and the NOPD's related enforcement issues; the goal needs to be even handed, consistent, and continuous enforcement.

The current methodology of (reverse) incremental changes in the ordinance and sound level limits increases the ability of the city to examine and adjust each step as it is implemented, protecting the public health and safety while attempting to prevent undue burden on commercial concerns.

At this time the police have issues with staffing and other enforcement concerns that override sound level issues. In order to improve this situation, training, equipment, guidance, and/or a dedicated noise staff is needed. The Quality of Life officers were at one time the noise enforcement officers, but this duty is among many others and noise enforcement has shifted to patrolling officers who have the sound level meter training, further decentralizing the responsibility for noise enforcement.

Lack of equipment and the difficulties surrounding ordinance procedures are two of the major concerns for enforcement. Section 7 addresses ordinance procedures.

The enforcement of sound level ordinances will require that the time of day should not be relevant; a sound officer(s) must be available all hours, as violations occur at all hours, especially at night. The advantage to the police force is that it already operates 24 hours a day.

A central person (sound officer) should be responsible for the overseeing of enforcement and all noise issues to ensure enforcement is fair, consistent, informed, and continuous: this person could be a professional in regard to sound and sound measurements or be advised by such a professional for resolving more complex issues that arise. The proposal of a central sound officer has been put forth by several people and articulated in the sound ordinance working group.

The methods employed by the Health Department 1982-1985 included a proactive approach of educating sound system and entertainment venue operators and helping them and encouraging them to be within the law. This type of communication will be a critical element to maintaining consistent sound level limits.

The Downtown Development District (DDD) has rangers that patrol and address issues such as sanitation, helping tourists find their way, illegal sidewalk cafes, illegal signage, public urination, panhandling, and to assist in the enforcement of existing ordinances and other issues via foot patrol. They coordinate with the NOPD quality of life officers for enforcement of certain offenses. Richard McCall, Director of the DDD, has offered to include sound ordinance enforcement in that list of items; Rangers could use non-
documenting sound level meters to spot check questionable noise levels, and if warranted, call NOPD or sound officer for a verification and citation if appropriate. Inclusion of DDD in noise code enforcement would require some form of fundamentals training.

The New Orleans Health Department was directly responsible for noise code enforcement from 1972 to 1986. Noise is a health and safety issue that should involve the Health Department on some level.

**Recommendations:**

1. Establishment of a sound officer and administrator working for the police, health dept, or city whose sole job would be to oversee noise issues in the city. The solely dedicated office could consist of the following responsibilities and requirements:
   1. Evaluate the functionality of the noise ordinance provisions, and provide data and practical field experience for improvement of existing ordinances as needed.
   2. Sound control enforcement support (training, equipment, and equipment calibration) for NOPD.
   3. Education of entertainment venues on meeting code, and verification of meeting code during the permitting process.
   4. Ensure adherence of new entertainment venues to appropriate external sound levels for the location in the city.
   5. Checking of event (sound) permits.
   6. This person/office would need to keep daytime/nighttime hours, as numerous violations are on weekend evenings.
   8. Regular meetings with neighborhood, musician and business associations to identify any sound issues as they develop (Section 8).
   10. Coordination of efforts of Safe Sounds and other hearing conservation advocacy groups (Section 8).
   11. Map the city to better follow the soundscape changes in the city over time.
   12. Press releases on hearing conservation and noise reduction efforts (Section 8).
   13. Educational outreach (schools, local organizations (Section 8)).
   14. Development of public participation in observing shifts in the city soundscape to aid in identifying areas requiring remediation.

2. The city should engage the health department as the responsible body for organizing and maintaining noise enforcement. It must then take the steps to ensure that the funding, equipment, training, manpower, etc are insured for continuous and consistent enforcement of all ordinance revisions.
   1. The Health Department needs to be granted the authority and training to resume the enforcement of code. The officers could enforce noise exclusively or in addition to the other concerns of permitting, blight, etc. The planned
hierarchy of Health Department sound enforcement in 1972-1973 is shown in the Appendix A.

1. A dedicated sound enforcement administrator with expertise in noise control should coordinate all enforcement efforts and investigations into complaints.
2. A dedicated noise enforcement officer with technical expertise and sufficient experience must be available during hours of the majority of complaints.
3. The NOPD officers must be retained in sound level enforcement capacities.
4. The DDD Rangers can be trained and included in the future enforcement resources.

3. A Type 2 sound level meter that can be calibrated will allow more effective self policing by those who create higher sound levels, verification checks for complainants before filing complaints, and others such as the DDD Rangers for identifying potential violations (for instance, a Quest Type 2 meter may be purchased for $300-$600, and a Quest Type 1 meter can be purchased for $2500-$3000).
   1. There are now cell phone “app” sound level meters that have been considered in the discussion of resources for enforcement. The variability in software, hardware (electronics), and field conditions can create a variability of up to +/-10dB from a calibrated Type 1 or Type 2 sound level meter in worst case, making them unusable for legal work.

4. The enhancement of documentation for noise violations would be useful in resolving disputed tickets. The following equipment should be considered for future noise enforcement:
   1. Audio recording (integrated into the meter).
   2. Video and audio recording (independent or integrated).
   3. GPS stamp to go with time stamp of record.

5. Utilize a special court to deal with environmental issues: The Louisiana revised statutes provides under the Orleans Parish Municipal Court a Quality of Life Court that addresses environmental issues.
   1. This process could include a mediation program and other resources for 1st time offenders.

References Section 4:
7. Interview: Charlotte Parent, Deputy Director of the New Orleans Health Department, March 16, 2012.
8. Meetings with Commander Walls and Lt. Field of NOPD 8th District, February 16, 2012.
9. Interview: David Holtsclaw, NOPD officer (retired), November 15, 2012.
10. Neighborhood walks and neighborhood interviews in the Frenchman Arts and Culture overlay with Jimmy Delery, citizen activist, and also field observations.
11. Interview with Doug Price, Quest Technologies Regional Manager and trainer for sound level meter operation, December 6, 2012.
12. Interview with Arline Bronzaft, October 2012.
Section 5: Propagation and Measurement of Sound in New Orleans

Background on Metrics Used:
Below is a layman's summary of the metrics used for the report. Additional information is found in Appendix B.

All sounds contain various amounts of low, middle, and high frequencies within the frequency range we can hear. Let's look at what low, middle, and high frequencies mean:

<table>
<thead>
<tr>
<th>Frequency (Hz)</th>
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<tr>
<td>125</td>
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<td>250</td>
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<td>500</td>
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<td>4000</td>
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**Figure 5a: Distribution of frequencies into low, middle and high regions.** The frequency is identified using hertz (Hz), or cycles per second, the number of vibrations per second. Note that most speech consists of middle and high frequencies (yellow arrows), and sounds from industry and music can include considerable low frequencies content as well. Data from “Architectural Acoustics”, Egan 1988, graph from “A companion booklet for Architects for ANSI 12.60”, Woolworth, Phinney, to be published online 2013.

Another way to think about it is that low frequencies include rumbles and throbs, and the middle and high frequencies include whistles, whines, buzzes, and hisses. We generally can identify the location of a sound source easily based on middle and high frequencies, but low frequency sources can be trickier to locate.

A familiar example: the dominant sound of most train whistles is around 500Hz, in the middle or midrange frequencies, and you can sing along with the train as it is in the voice range.

The **decibel (dB)** is a unit of measurement used to quantify the magnitude of the sound pressure in the air.

If you add up all the decibel contributions across the low to high frequencies of a sound, you end up with a single number description, also measured in decibels. While this does not provide much information about the character of a sound, it gives us a single number descriptor that we can use to easily compare sound levels of different sounds.
Below (Figure 5b) is a graph of the sound signature of a male voice (blue line) that shows the decibel levels broken into frequency groupings called octave bands. These are added together logarithmically to get the single level 67dB.

The red line or A-weighted sound below shows us how our ears will filter the same sound and the sound signature we perceive. These separate octave band levels are added together to get 63dBA, which is less than the 67dB of the flat response due to the weighting out of the low frequencies. dBA measures the high and middle frequency content.

**Figure 5b: Conversational Speech at 3 ft., male voice.** The blue line represents the raw data, and the red line represents how the sound is filtered by the human ear. The data points represent the decibel levels of each octave band, which are added together for the total level. Data from “Architectural Acoustics”, Egan 1988, graph from “A companion booklet for Architects for ANSI 12.60”, Woolworth, Phinney, to be published online 2013.

A-weighting, or dBA, is the most commonly used method for measuring sound, especially for enforcement.

C-weighting, or dBC, is very similar to the flat response above (blue curve), and it includes the low frequencies in the summing of the decibel levels to a single number. It is useful in measuring sounds with considerable low frequency content such as music or mechanical sounds.
For a chart of A-weighted levels and examples, see Appendix B; also see Figure 3a, Section 3 for a chart of A-weighted local sounds and sound levels.

Field Measurements and Testing Program:
A program of measurement and testing was performed to help to evaluate sound levels encountered in different places of the city and propagation through the city. Due to the scope of this study the majority of the measurements were taken in or near the existing entertainment districts, although readings were taken in the Marigny, Central Business, Warehouse, and Garden districts. The main points of the measurement program:

1) Sound level measurements ("sound walks") of entertainment districts
2) Sound level measurements in and around clubs
3) Sound level measurements at various distances from the sources
4) Measurement of sound transmission loss through the facade of a variety of historical residential buildings.

More detail on the results of the measurement program is available in the papers found in Appendix E.

Sound Walks
“Sound Walks” were performed over the course of a year starting in October 2011. Three of these walks were made with a police presence. It was of interest that on Bourbon Street the presence of police with sound level meters was communicated up and down the street such that the sound levels were ~10dB lower than typical levels measured without a police presence. Another item of interest was that initially after the enactment of the loudspeaker placement ordinance, measurements without a police presence were similar to previous measurements with police; the street was subjectively quieter and verbal communication was noticeably easier than during previous observations (see Figure 5c).
Figure 5c: Pre and post loudspeaker placement ordinance sound levels on Bourbon St. Shown are A-weighted and C-weighted measurements (dark blue and dark green) taken on a police sound walk before the loudspeaker ordinance. The “spot checks” are an average of three follow-up measurements without a police presence (light green and light blue). The yellow and orange lines are the average of two sound walks after the loudspeaker ordinance without police presence; from these observations it appears that the loudspeaker ordinance reduced the sound level on Bourbon Street.

Measurement of sound propagation in the French Quarter (VCC/VCE) and Marigny (HMC-1, HMC-2)
Sound level measurements were taken inside clubs, at the plane of the open facade in the middle of the doorway or window, 5' from the open facade, and finally 1/2 block and 1 block from the street (district) center line. The significance of 1/2 block is an average of the distance to the edge of the residential district from the center of VCE Bourbon St.
Using field measurements of live and prerecorded music as sound sources at a variety of venues, the average attenuation of sound level due to propagation in the Vieux Carre was calculated as shown in Figure 5e below. A follow-up study was performed in January 2013 with the cooperation of several venues to compare daytime and night time sound propagation with a consistent sound source and different background sound levels. The results confirmed the earlier work and can be found in Appendix B.
Figure 5e: Average sound attenuation measured from the source typical for the Vieux Carre Entertainment district and average reduction through a closed facade to a receiver. For a more detailed explanation of the procedure and data, see Appendix E. A verification study can be found in Appendix B. Notes: Source building measures are inside building nearest location to facade in typical sound field (~5'-10' inside doorway) and 1/2 block is ~180'.

Additional measurements of sounds typically encountered in New Orleans can also be found in Figure 3a: Elements of the Soundscape, their Sound Pressure Levels and Transience; this is a compilation that may be helpful for comparative purposes, and to identify some of the elements outside of nightclubs that contribute to the soundscape of the city.

Discussion:
The study of sound propagation in the city was needed to give a basis for any numerical sound limits. The recommended level limits and measurement points are suggested in Section 7, and are based on these studies.

The numbers calculated are average, so there will be better and worse cases to contend with; however, the suggested level limits will result in reduction of the overall sound level outdoors and in receiving buildings with minimal impact* on the entertainment venues.

*See nightclub sound level studies in Section 6 and alternative compliance method in Section 7.

It can be seen that dBC, which contains information about the low frequency content of the sound, does not drop off as much over distance as dBA (A-weighted) which weights out the low frequency sounds. This difference is normal and indicates that low frequencies do not attenuate as much over distance, and travel through building facades (walls/windows) more easily.
It should be noted that dBC also is not typically affected by crowds, as people do not produce low frequency sound levels that compete with subwoofers or machinery, and people do not absorb significant amounts of low frequency sound, but will absorb middle and high frequencies. This would make dBC a more consistent indicator for all conditions (crowded/not crowded) that have a consistent ratio of dBA to dBC.

As we can see that (1) the dBC levels are higher than the dBA levels in the street, and (2) the dBA reduction due to distance is more than the dBC, we can expect to hear more bass-heavy or low frequencies in the receiving buildings. This is not an uncommon occurrence for the complainants to experience this problem. A typical example would be to hear the rumble of a truck or the thumping bass from a “boom car” passing by when you are in a residence with the doors and windows shut.

If we consider the spectrum of music programming (live and pre-recorded), the ratio of dBA to dBC can vary somewhat; however, for the specific situation in the VCE if we consider that the loudspeaker placement ordinance already creates a limitation on high and middle frequency sounds emitted from venues, dBC is a logical and definitive metric that can be used in a variety of situations as a sound level cap. It has been verified in the measurements documented in the BBA letter in Appendix B.

Suggested measures to improve noise control at the source and receiving end are outlined in Appendix C.

Over time the world's cities have gotten louder, and currently in New Orleans there is no mechanism except complaints to check the increase in noise due to development, which is too late and sometimes too expensive for mitigation. The measurements taken for this report indicate a more thorough sound mapping study should be performed of the city in the interest of (1) protection of existing sound levels in the various communities, (2) fairness of enforced sound levels in regard to new development, and (3) helping home buyers or developers make informed decisions about locations.

Recommendations:
1) The inclusion of dBC limits to help to address low frequency noise; the proposed values are shown in Section 7 and Appendix B.

2) $L_{eq}$ limits for the municipal code to replace existing $L_{A10}$ and $L_{A_{max}}$ measures (Section 7).
   1. Establish sound level limits for entertainment districts at the venue that take into consideration the measurement results of this section.

3) A complete map of the typical sound levels across the city (day/night) should be undertaken with the following goals (this can be incorporated into the day to day work of the sound officer(s)):
   1. Identifying all areas of the city with the highest sound levels and their sources (industry, traffic, etc.) to look into noise reduction efforts for the worst areas.
2. Establish each zone's (CZO) current sound levels (day/night) for reference as the city develops entertainment, industry, and transportation.

3. As a tool for real estate purchasers to make informed choices about locations based on expected noise levels.
Section 6: Entertainment Districts and Tourism

The tourism economy of New Orleans is considerable: Pre-Katrina 30% of the taxes collected by the city came from this industry.¹ New Orleans' music culture is a focal point of this industry; there are over 110 festivals a year in New Orleans, most of which have live music (ref 2011 NOC). Examples of the impact and reach of the New Orleans music and entertainment industry are:

- Jazz Fest 2012 had an attendance of 450,000 people over seven days, 90,000 peak on a given day. As a point of reference, the attendance in 1993 was 316,000.² 110,000 full access 7 day passes (“Brass Pass”) were sold.
- WWOZ, the local radio station that plays jazz and New Orleans music, raised $0.75M in operating funds from out of the broadcast area in 2012 (53% of donating listeners). The station has grown 181% each year for the last 10 years.³
  - WWOZ website contains a club music calendar and information about New Orleans musicians; it is accessed 110,000 times a week.
  - WWOZ exports a live radio program of New Orleans music that reaches 60 markets around the United States.
- OffBeat magazine which exclusively covers Louisiana music has 88% of its paid print distribution to other states (this does not include online statistics).⁴
- The number of gigs played by musicians is considerable and increases each year: 2010- 24,000 gigs, 2011- 26,000 gigs, and 2012- 29,700 gigs.⁵
- Wages earned in the entertainment sector recorded for 2011 are $370M.⁵

Currently there are two main concentrations of nightclubs with music of concern: Bourbon St. and Frenchman St.; additional clubs hosting music can be found grouped along Freret St., Magazine St. (Garden and Uptown), St. Claude (Treme), in the Warehouse District, and elsewhere in the Vieux Carre.

- The regulations on Bourbon St. and Frenchman St. are different in that Bourbon is zoned as part of the Vieux Carre Entertainment District (VCE) and Frenchman Street is an arts and culture overlay established in 2004 (see CZO Section 10.13 in Appendix F).
  - The music clubs on Frenchman St. are supposed to have closed doors and windows during performances (only live music permitted) and must meet the local noise ordinance. This is not enforced on a regular basis.
  - Bourbon St. does not have the same restrictions of a closed facade, but must meet the 10dB over ambient limit as discussed in Section 7.
  - The remaining areas do not have any special regulations, only the noise code for that zone.

Recently permitting of live music venues has become an enforcement issue: some clubs do not have the appropriate paperwork and permits to host live music, and this has come to light after noise complaints have been lodged against the establishment(s). The clubs have come back to say that the permitting process is convoluted and requires streamlining and clarity. The procedures are found online under “Zoning, Permits, and Licenses for Cultural Businesses”, and the city is working to make an online procedure available (see under Recommendations below).
1. **Night Club Noise** differs in nature from industrial noise as noted earlier in **Section 3: Health and Safety Issues**

1. One of the main differences between live and prerecorded music is that prerecorded does not sleep or need a break. Sound levels for both may vary based on popularity of songs, crowd activity, time of night, the musicians or DJ, and the club's expectations. The style and purpose (Background music? Rock concert? Dance club?) of music also is a factor in how loud the venue gets; some genres have a heavy booming bass content (“boom music”).

2. The improved accessibility of subwoofers due to lower cost, size and portability has made it less expensive to be louder in recent years in regard to low frequencies.

3. The sound of discotheques has become “boomier” starting in the 1980's, and the music created for dance clubs has adapted to take advantage of these more dynamic sound systems.

2. Over the course of the night (or performance) several factors may dictate how loud a performance or a dance club gets. It is not unusual for music to get louder over the course of an evening, and as a result desensitization of the ear due to exposure to high levels (ear muscles tighten temporarily); also the peak or climax of a performance is often the loudest part, among other factors (see Figure 5a).
3. How loud does it have to be to keep the party going? As noted in Section 5, the sound levels in the clubs vary from 72dBA to 115dBA based on the music genre, operator, and other factors. Note that a typical rider for a touring band is a requirement of a capability of 115dBA or greater at the sound board location (see Appendix D).

1. Brian Marston, an acoustical consultant in Australia, made observations that estimated music sound levels in the 85dBA-90dBA range was the cutoff where people started leaving a venue, which coincides with the sound level created by a loud crowd; that is, interest was lost once the music sound level was no longer dominating the soundscape in the club. Marston also suggests a maximum desensitizing of 10dB due to inebriation, putting proposed operating levels at 95-100dBA.

2. A small club that hosted punk and hard rock bands was refitted with acoustic absorption and better speaker placement. There was an effective reduction of 9dB, which put the loudest acts at 100dB. 1. 96% of Musicians and patrons felt this was an improvement and felt the experience was more enjoyable.

3. 3 separate Lafayette Square Park concerts were measured. The levels at the sound board were consistently 96dBA and in all cases the park was full of people from beginning to end.

4. A paper from 2008 on experimental research in alcoholism shows that more alcohol is consumed in a shorter amount of time when comparing the same environment and people in sound levels of 88dBA (“foreground music”) versus 72dBA (background music).

5. An additional study on exposure of employees in the music sector indicates that in the range 95-100dBA is the threshold where most patrons of discotheques determine that the sound is “very” or “extremely” loud.

Discussion:

Late night noise that increases in sound level is in direct conflict with people trying to sleep. This must be addressed by the establishment creating such sound by two means (either or both):

1) Soundproofing and closing the building facades/other means of sound isolation.
2) Regulating the sound level in the club.

As noted earlier, heavy bass music penetrates facades of buildings easier and travels through the city easier, so it is of interest to control it at the source (building); once it gets away from the source, then everything around it requires soundproofing, which is economically unrealistic.
It is again noted that more of the offensive sound levels occur at night and on weekends, which would indicate that any noise enforcement work must have hours that include this time frame.

It appears that internal sound levels for live music and club music in the 95dB-100dB range can satisfy the club owner's need to keep a crowd and maximize profits while having manageable levels for local residences, although this is case by case. That being said some music is meant to be played at extremely high sound levels, and this is part of the culture associated with that music: (1) some forms of hard rock/punk/heavy metal are intended to be amplified to high sound levels as expressions of aggression and release, and (2) Reggaeton and Aroxa (Brazil) are intended to limit inter-personal communication to body language through high sound levels.\(^\text{12}\)

Some clubs in New Orleans pro-actively manage sound levels and soundproof their venues with success; these include dBA, Snug Harbor, Siberia, Blue Nile, and others. These are not discotheques, but the approach is a good example that can be emulated. Some clubs on Bourbon were observed self-policing with sound level meters and were interested in making sure they were within the law as well. More information on the soundproofing and noise reduction from clubs can be found in Appendix C.

Outdoor concert sound levels observed in Lafayette Park may be an indicator that this sound level range can work; multiple events observed at the park were packed with people from beginning to end, and sound levels measured were \(\sim 96\text{dBA}\) at the sound board and over a large area of the audience. This is a topic of proposed further study (see Additional Studies at the end of this report).

The new areas/non-entertainment district areas hosting music (those having a “non-conforming use” in a particular zone) need to be examined, and planning needs to be in place for appropriate development to maintain quality of life for these neighborhoods. The expansion of the footprint of entertainment venues side by side with residential areas on Freret St, in the Bywater, and the Warehouse District should be done with the understanding that existing neighborhoods redeveloped for mixed use are complicated in regard to sound control. The renovation and re-purposing of old buildings for music or habitation requires special sound isolation treatments which adds cost, and certainly can be more expensive to consider after a renovation is complete. Careful planning by the developer and minimum requirements by the city are in order to prevent serious problems after the fact. Already in the warehouse district old factories developed into condominiums experience problems living side by side with nightclubs.

This is an excellent opportunity to improve the entertainment venue/live music venue permitting process by making it simpler\(^\text{13}\) and including provisions to reduce noise impact on neighborhoods simultaneously.

**Recommendations:**
1) Nightclubs/entertainment venues requiring excessive internal sound levels should make provisions to reduce impact on the surrounding areas. Suggestions for these provisions and self-monitoring can be found in Appendix C.

2) An external sound level cap for nightclubs/entertainment venues should be established (see Section 7); attempting to control the propagation of sound after it escapes the shell of the source building is unrealistic.

3) The city should examine the policies around the permitting/opening of new entertainment venues and development of new entertainment districts in regard to noise:
   1. The process should be easy to find online and at city hall. At the time of this writing, the city is developing an online permitting and licensing process which is intended to simplify the process and ensure that the proper paperwork is filed based on the intended venue programming. Currently the instructions and forms are available online.
   2. Establish “best practice” guidelines for development of new entertainment venues:
      2. Methods of external noise reduction, including crowd noise.
      3. Community relations.
   3. New entertainment venues should be made aware of their immediate neighborhood and the emitted sound level expectations based on the noise ordinance.
   4. The permitting process should ensure that standards for noise control and external sound levels are met, and include a trial period. Neighborhood feedback can be included if appropriate.
   5. Provisions in the process for new entertainment venue permitting should include venues changing hands.
      1. This process should not be treated as a new designation for the venue, but is intended to ensure that the noise control and sound level standards are met in the event that the nature of the venue programming changes with changes in ownership.
      2. A new permit for venue ownership change could include a copy of the ordinance with an affidavit indicating it has been read and understood.
      3. A probationary period of up to 6 months could be enacted at the end of which any complaints can be reviewed and sound mitigation efforts mandated as needed.

References Section 6(1):
   http://www.time.com/time/nation/article/0,8599,1334012,00.html#ixzz2Gs7og6mu
2. Interview: Scott Aiges of The Jazz and Heritage Foundation, 2-21-12.
3. Phone correspondence with David Freedman of WWOZ. 12-10-12.
4. Phone/email correspondence with Jan Ramsey of OffBeat Magazine 12-7-12, 12-8-12.

6. Marston, Brian, personal correspondence with the author on summary of work performed in Australia on minimum club sound levels and alcohol desensitization to sound. May 2012.


12. Interview with Sandy Hill, bar owner and musician of Rio, Brazil. Friday October 5, 2012.

13. Correspondence of author with David Richards- Paragon Lofts Condominium Owners Association President, Troy Dupuis- resident warehouse district, Shaun Talbot-Talbot Realty Group servicing the warehouse district.


2. Street Musicians

Background. The history of street musicians (or “buskers”) is documented to the 1830's and parade bands to the 1770's (see A Brief History of the New Orleans Soundscape in Section 1 above). Most tourist literature or articles about the city include a picture of a street band or street musician. Discussions with members of the music community, residents, and business owners have revealed that agreements for coexistence are needed. It is also noted that street performance has been a critical part of many of New Orleans' most famous and successful musicians' history.

Pre-Katrina buskers interviewed indicated that the musicians around the quarter (Royal Street for example) had informal agreements on locations and etiquette. A successful
coexistence was noted in Jackson Square where the musicians outside St. Louis Cathedral do not play during services or weddings and newcomer musicians are educated on the “rules” by the experienced buskers.

Post-Katrina busking has seen a boom in the number of musicians, increasing the competition for the limited space. It has been remarked a few times that the pre-Katrina buskers have lost their “spots” and no longer perform in the quarter.6,7 Lost with this is also some of the informal agreements that previously existed, although Jackson Square continues to function as before (see “St Louis Cathedral” below). Some have complained that out of town, visiting, or new (street) musicians have less respect for those around them in terms of understanding that they are sharing the sidewalk and sonic space with other musicians, residents, and businesses. Royal Street for 20 years has defined periods when the street is closed off as a pedestrian mall. Street performers utilize this space; some residents and shopkeepers have identified the resulting sound levels as a nuisance.8,9

Acoustically, each type of busker has a unique sonic footprint, that is, a sphere of influence where they dominate the perceived soundscape.

![Figure 6b: Examples of approximate busker sonic footprints assuming vehicle traffic present.](image)

Shown is an acoustic busker (i.e. acoustic guitar and voice, red), a solo horn or electric busker utilizing lower level amplification (blue), and a brass band with drums or electric busker with higher level amplification (green). Note that there can be different directionality to these examples due to the instrumentation and geography, the size of the footprint can vary, and there are many other instrumentation combinations. This is a conceptual representation to show that there are different size areas commanded (sonically) by different types of busker instrumentation; each individual or group will have a unique size and shape footprint.

1. A UNO thesis by Aram Lief10 on French Quarter Buskers (2008) provides insight to the culture of professional busking and its importance in the larger picture of
the New Orleans culture from an anthropological perspective. The main points Lief makes in his study (which included some study of Beale St. in Memphis):
1. Busking is a manifestation of the music culture of the city and its accommodation of the wide variety of people.
2. The environment and locations for buskers have evolved over time.
3. “traditional parades should be unencumbered by bureaucratic formalities”
4. A high level of control of busking has an undesirable effect on the authentic cultural expression, which is a critical element to the evolution of the local music scene.

2. Complaints: there are four main categories of complaint about street musicians (also see petition filed by Royal Street Businesses in Appendix D):
   1. Blocking Access: musicians that set up in front of a business or residence and block the entrance to a building. It is in violation of city code to obstruct a door or window and prevent proper use thereof. Sec. 146-494 Obstruction of Sidewalks, and also see Sec. 54-401 Obstruction of Public Passages.
   2. Intrusive Noise: sounds from buskers can enter into residents and businesses. This may disturb people trying to relax after work, affect the ambiance of a restaurant or store, or prevent communication with patrons. There are cases in which musicians hired by a restaurant are overpowered by street musicians, and even worse making it uncomfortable for patrons. Excessive levels of portable amplified devices have also been identified as an issue (see Section 2).
   3. Hours of Operation: currently the cutoff for street music is 8pm. This is not observed or enforced for the most part. Some speculate that there are 10pm or 11pm “gentleman's agreements” with the police, and soundwalks revealed that buskers can be heard at 1am (latest observed). The current status is that the permitted hours are not enforced with any consistency and “alternate hours” are nebulous.
   4. Length of Stay: there is a higher tolerance (from owners) if the length of stay at a given location is limited or known.

3. Examples of types of buskers and some remarks:
   1. Amplified: Amplified busking generally has a larger (louder) sonic footprint than its acoustic instrumentation counterpart.
      1. Solo/duo/ensemble through a central system
      2. Instrument with amplified “band in a box” backup
      3. Full band with individual amplifiers.
   2. Un-amplified (acoustic)
      1. Stringed instruments and voice (low output): these buskers are generally of a smaller sonic footprint, but the addition of percussion such as buckets or washboards increases the size of the sonic footprint.
      2. Solo wind instruments: wind instruments have a higher sound power output than strings, and a larger sonic footprint.
3. Brass ensembles (brass bands) or other high sound power output instruments such as bagpipes and drums: These typically have a larger sonic footprint, and can be clearly heard for up to a block in all directions depending on the geography and orientation/instrumentation of the band.

1. **A note about brass bands:** the city's brass bands is one of its most powerful and unique cultural elements, as well as boasting the greatest number of brass bands in the world since 1814 (as noted in the History Section 1). Not only traveling the world to represent New Orleans, these bands have earned a very unique place in current world music and are generating new forms of music only found in New Orleans cross breeding the rap, funk, and rock styles.

For some communities in New Orleans, brass bands and marching bands provide a critical alternate path to guns and drugs that plague these communities. There is encouragement from the city and various organizations\(^{11,12,13}\) to grow more of these bands, and schools are helping as “incubators”\(^{14}\), however the lack of planning to accommodate them in the limited tourist footprint points to a serious issue that will need to be addressed in the near future.

4. Permitting Issues

0. There have been suggestions to establish a permit process for street musicians to help regulate the abundance of them inside the tourist footprint in the interest of safety and fairness. Currently no permit is required for the Central Business District (CBD) or the Vieux Carre (VC), although a street performer's permit is required outside that area by Sec 30-1452 of the New Orleans municipal code.

1. At this time no permits are issued for street performers for inside or outside the CBD/VC.\(^{15}\)

2. In Chapter 30 (Street Performers) Sec 30-1463 is a grandfathering ordinance that allows for the validity of “vendor” permits inside the CBD/VC if the vendor held a permit previous to January 1, 1972 and operated for at least 8 years up to that point. This is intended for (food) vendors, not street performers. The date of creation is not indicated in Municode.

1. Introducing permitting requires careful study; below are some of the issues and suggestions brought forth during interviews:
   - Permits and permitting process could be designed to work in the interest of safety and communication with authorities and residents/businesses, and provide a mechanism to deal with buskers who do not operate in good faith with other musicians or the community.
   - Some have expressed that permits are a restriction of free speech; if all street musicians need a permit to play, the city can at any
time revoke all of the permits which can be argued as unconstitutional.

5. **St Louis Cathedral**: as a case study, it is of interest to look at the relationship of the Jackson Square buskers and the church. The following information was provided by Stephen Swain, administrator for St. Louis Cathedral. The solution is unique to the conditions:¹⁶

1. Schedule of services are posted. Signs are posted for special events.
2. The Jackson Square musicians respect these hours and use appropriate sound levels, including brass bands and amplified acoustic music. Mr. Swain indicated that “they appreciate the musicians on the (Jackson) square and their contributions to the culture of music in New Orleans.”
3. No music is allowed in Pere Antoine Alley, behind St. Anthony's Garden on the sidewalk, or directly in front of the church entrance.
4. Once in a while there is someone who plays during a service. Church personnel, veteran musicians, and/or police deal with the situation and in “98% of the times” the sound source is stopped promptly. The offender is typically a newcomer to the area and unaware of the customary behaviors.

**Discussion:**

The tradition of prolific brass bands and parades is a rich history that is uniquely held by New Orleans and is also a major tourist attraction. Efforts should be made by the city to encourage existing venues and create new venues to accommodate this music, and strike a balance with the neighborhoods to determine reasonable hours of operation and finding prime locations that do not interfere with other venues supporting entertainment. The nature of the issue requires an intense effort to accommodate all factions and to ensure a fertile environment for its continuance.

Crafting direct legislation to fairly resolve any issues regarding street music will be difficult without input from all parties involved; to some extent rules may be in place as a last resort as such issues may be best negotiated outside of the law and on a localized basis.

The 8pm curfew for street musicians (Sec 66-205) has been debated as being too early by musicians and musicians’ organizations. A 10pm curfew has been discussed in the last two years and has the advantage of coinciding with the 10pm start of nighttime sound level limits in Table 1 of the sound ordinance, simplifying the shift in enforcement and being consistent with the overall shift to the nighttime soundscape with all sound sources. Extending the allowed time would require the blessing of the neighborhood associations but more importantly the observation of the cutoff time by musicians and consistent enforcement.

Understanding that there are different sonic footprints, some musicians and residents interviewed have suggested that the elimination of or limitations put on amplifiers for
busking may provide some relief from the sound levels and open up more area for (quieter) buskers. Since amplified free speech is considered constitutionally protected (Saia v. New York, 1948), the appropriate route would be to limit levels emitted by sound amplification devices such that the amplified speech could be clearly heard at an appropriate distance without a significant impact on the quality of life as a mechanism to ensure responsible use of such devices (see Section 7 Recommendations). Other allowable limitations to prevent abuse of free speech amplification are restrictions on location and time of day.

The tradition of brass bands continues today, although the nature of the bands has changed; New Orleans is the primary incubator of the world. Not only do the traditional brass bands (non military) exist, but these bands and marching bands are now being integrated into other forms (such as collaborations with the rock bands Galactic and Widespread Panic) that reach a different and sometimes wider audience via touring and recording; marching bands have adopted new sounds and are now releasing records for popular airplay.

Recommendations:

1) The city should study the street musician issue in detail, not limited to the following suggested actions/foci:

1. Utilize a mediator and community groups (see Section 8) to approach each particular local area of concern (i.e. Royal St., Frenchman St., etc.) to attempt to reach common ground between street performers and complainants. This makes the factors more manageable, and each situation can have a unique solution suited to that area. This approach reduces the burden on enforcement, and opens the lines of communication between the businesses, residents and musicians.
   1. At the time of this writing Music and Culture Coalition of New Orleans (MACCNO) and French Quarter Citizens are entering discussions about resolving complaint issues.

2. A working group should be formed that includes restaurant owners, shop owners, musicians (or musician associations), and residents to examine issues not limited to hours and cutoff times, distance to establishments, etiquette, permitting, and which busking areas are working well and which ones are not and why. The larger purpose is to build the relationships and understanding that allows the coexistence of all of these players on the limited tourism footprint, without having to resort to regulations and police enforcement. In the event that agreements cannot be made, regulation would be the next step based on the findings of the working group.
   1. The identification and selection of Ombudsmen for the working group is the first critical step.
3. The city should investigate the potential to create more opportunities for street musicians (specifically brass bands) to play that do not adversely affect other businesses or residents (reduce impact of number of musicians and hours). These can include incentives for acoustic venues that host these bands (i.e. no sound system), and the introduction of (paid) events to develop the tourist traffic for the French Market and riverfront, especially “after hours”. As number of visitors is on the increase (footnote A), the city should explore the expansion of the tourism footprint, including the existing proposals for the waterfront development. Many ideas have been put forth for “after hours” locations including Woldenburg Park, the French Market, and the levee, but none of these ideas have merit unless they are financially viable for the musicians.

4. Ordinance Sec. 30-1463 should be clarified or moved from Chapter 30 by the city attorneys.

References for Section 6(2):
1. AAA Southern Traveler July /August 2012 identifies New Orleans as the “Best Large City for a Weekend Getaway” and prominently displays a 2/3 page picture of a saxophonist in the Quarter. Another full page ad in the magazine features a traditional brass band in the street.
4. see Appendix I
7. Interview, Tatiana Clay, resident 500 block Royal St. 8 years and granddaughter to Larry Borenstein (Preservation Hall founder).
8. see Appendix D Royal St. Merchants Letter.
9. Meetings with French Quarter Citizens, VCPORA.
15. Verified with Wendell McCall, New Orleans Bureau of Revenue, on March 11, 2013
Section 7: Ordinances/Laws

Current Ordinance:
The current ordinance has a number of issues that have been identified by the police (see Section 4), community members, and other observations made during this investigation. These same issues make it difficult to issue or prosecute a violation:

1. Ambient levels are difficult to establish in the entertainment districts.
2. Low frequency noise is not addressed in the ordinance.
3. Motor vehicle noise regulations are difficult to enforce:
   1. The transient nature of vehicles makes any accurate sound level measurements of an exhaust or sound system unrealistic. In addition, vehicle sound system levels are controlled by the end user, which falls under "motivated human behavior".

There has been a large scale revision to the ordinance suggested over the last year. This met with considerable resistance from various parties in the community, and has been withdrawn from public viewing and comment.

Discussion:
At this time the city is using an incremental approach to revising the old ordinance. This allows one item at a time to be examined, enacted, and iterated if needed. The larger scale revision has proven to be too complicated at this time, and brings up too many open ended questions, so it may be best to extract the most useful portions of it to be considered for use in later revisions. In addition, existing enforcement issues are only burdened further by a more complex set of regulations.

The technically based argument for eliminating the ambient measurement in the entertainment district is as follows:
For Bourbon Street, if a club on either side of the street is putting out 90dBA in the middle of the street, they add (logarithmically) to 93dBA at the center of the street. Since the measurement must be taken at 25' from the source, this effectively puts the measurement point in the middle of the street (street width between building facades ~40'). If one bar shuts off their music, the middle of the street drops to 90dBA, so they meet the regulation that they must not exceed 10dBA over the ambient, but they are at the same time unacceptably loud for the neighbors (other clubs or residences). Also see Appendix D for more discussion of procedural details.

The current procedure for establishing the emitted sound levels from an establishment includes measuring the club sound levels at a given distance, asking them to turn off the music to measure ambient levels, and then turning the music back on to verify the measurement. Based on the behavior of clubs in the presence of police with sound level meters on sound walks and police experience, it is unrealistic to expect that this procedure will produce a repeatable measurement or any violations. There have been other measurements taken by acoustical consultants that may more accurately identify source levels, but this procedure has to be created case by case, which is unrealistic for enforcement or convictions. This procedure must be changed.
The original intention of the ambient measurement is expressed in a letter by Charles Berlin in 1994 (see Appendix D). In the letter he states that “The current interpretation (of ambient measurement) is far removed from our original intent as to be useless”. In addition, the original procedure was created for a different set of circumstances thirty years ago.

- The original intention was to measure a 7pm ambient sound. This is a moving target daily.
- The original intention was that ambient would not include any manmade sounds such as prerecorded/live music or crowds and was estimated at 62dBA. It is apparent that at 7pm this is no longer the case, and may not have projected fluctuations such as the current magnitude of the Superdome pregame activity.
- The procedure does not take into account that later in the evening crowd noise alone can be 10 dB over ambient as measured at 7pm.

Low Frequency complaints from entertainment sources have become more prevalent over the years due to several factors:
1) The development of more efficient amplifiers and speakers for producing low frequency sound.
2) The reduction in cost/increase of portability of low frequency speakers.
3) The resulting evolution of some musical styles to incorporate the low frequency region to a higher degree as a signature of the sound, and other older styles to adopt more low frequency content as well.

It is noted that many cities now incorporate dBC in their noise ordinances to address this issue to some degree. The use of dBA ignores the donation of low frequency sounds in the overall sound level as they are weighted out of the measurement. The use of dBC incorporates the low frequency component that often accompanies it for entertainment sources. Based on Section 5 that covers the propagation of sound through the city and the limitations of sound attenuation by historical construction, we also see that the facade of buildings cut out the middle and higher frequencies, leaving the resident to contend with low frequencies that penetrate inside the home. dBC sound level limits are designed to address this issue. The procedures for measuring low frequency noise inside the home are different than measuring dBA. An excellent resource for the current understanding of low frequency issues is the DEFRA Noise Program Low Frequency Report (http://www.scotland.gov.uk/Resource/Doc/158512/0042973.pdf); additional detailed references on noise are available at the DEFRA website.

Motor vehicle noise by its transient nature is nearly impossible to address using a sound level meter. The judgment of the enforcer is the primary means for identifying a problem, but the loading of the engine or the user control of a car stereo volume knob further complicates getting a clearly defined violation.

1) It may be that warnings (with clear records kept) are the means to address such violations.
2) The enforcement of the existing EPA approved motorcycle muffler.
3) Clear identification of elements in disrepair are good methods to effective regulations.

4) To compensate for the transient nature of the source, consider using the criteria of “plainly audible” for identifying violations or probable cause to curb the vehicle for further inspection, if such is desired. This may be able to compensate for vehicles with loud systems (recommended reading: Zwerling, Meyers, Shamoon, “Analysis of the “plainly audible” standard for noise ordinances”, Internoise Proceedings 2012, NYC).

**Recommendations:**

1) The incremental approach to the noise ordinance revisions should be maintained to ensure thoroughness, enforceability, and consistency; the areas requiring revisions of the ordinance must be prioritized (see below). Approaches to address more complicated issues are suggested throughout the report.

2) Adoption of the proposed edits to the current ordinance found at the end of this section (the current ordinance can be found in Appendix F). The following information provides the basis and explanations for the proposed edits and provides guidance to additional work on the ordinance itself.

3) The indicated dBA /dBC limits for the Vieux Carre Entertainment districts are based on sound traveling in a line of sight 1/2 block (180 ft) from an open facade to the facade of a residence, and with an expected 85dBA in the middle of the street. Methodology can be found in Appendix E.

   1. Exceeding either the dBA or dBC limit constitutes an overage.
   2. If a venue cannot or will not meet the dBA/dBC limits for an open facade, they can meet code by closing their facade. There are additional dBA/dBC limits for this alternate compliance path. See (5) below.
   3. One warning for a regulated entity should be issued each new day (starting at 7am) before any tickets are issued in the event of a measured overage.

4) Due to the nature of low frequency sound propagation being less predictable, indoor sound limits have been established to address complaints that may occur for unique situations not covered by the outdoor sound level limit. These situations are more complex and may require the use of an expert to suggest the simplest or least costly solution(s).

   1. The measurement of dBC indoors should follow the procedures as outlined in the DEFRA Noise Program Low Frequency Report, Section 2.7 & 5.4 referenced in the discussion above. Two of the defining elements from this are of immediate interest:
      1. The measurement of dBC should be taken at the location identified by the complainant as the worst in the room and/or 15cm (6”) from a corner to capture room resonances.
      2. If difference of 20dB or more for dBC-dBA is measured when the dBA level is 45 or greater then a low frequency problem is suspected and should be investigated with a more detailed analysis. Such an analysis
program needs to be developed and executed by a specialist, such as the recommended “noise officer”. It should include positive identification of the source and abatement recommendations to be implemented by the owner of the source.

5) Measurements on a receiving property should be made at the property line unless a building facade is within 15’ of the measuring location:
   1. Set the measuring location to 4’-8’ from the building; all measurements should have 2dB subtracted, and at least 3 measurements should be made at different locations and averaged.
   2. If the meter is held flush (microphone at 1/2” distance) with the building surface, all readings should be lessened by 5dB, and at least 3 measurements should be made at different locations and averaged.

6) A closed facade can be considered as an alternate compliance path to the noise cap regulations, if a night club chooses. A closed facade containing a sound source should produce no more than:
   1. 95 dBC at 5’ from the establishment.
   2. 85 dBA at 5’ from the establishment, given consideration for outdoor “ambient or crowd noise”. In the event that the ambient noise is 82 dBA or greater at 5’ with the source turned off, dBA cannot be used to determine compliance.

7) $L_{\text{max}}$ and $L_{\text{10}}$ should be removed from the metrics used to simplify and empower enforcement, community observations, and self-policing.

8) Sec. 34-22 and 34-22.1 (2009): the sound level limit for sound amplification in the Vieux Carre should be changed from 85dBA at 30’ to 82dBA at 20’ or 88dBA at 10’. This applies to all non permitted, non-commercial applications that include religious hawkers, street performers with sound reinforcement and amplified street musicians. The current regulation allows them to be louder than the level cap recommended for the Bourbon Street entertainment venues (see Appendix F). The reduction to 20’ is more realistic for enforcement as the street and sidewalk is 40’ wide, and it is not unusual for loudspeakers to be pointed across the street towards businesses. The addition of a 10’ limit allows adaptability to specific geometrical, crowd, or performance restrictions.
   1. Sec. 34-22 should be examined for redundancy with 34-22.1.
   2. Sec. 34-22.1(d) should be struck.
   3. The relevant sections (34-21 and 34-22) should be migrated to Chapter 66. It is noted that these ordinances are located under Chapter 34 “Carnival, Mardi Gras” but they are written to apply year round.

9) Penalties for violations should distinguish between Alcoholic Beverage Outlets (ABO’s), non-ABO’s and individual operators.
10) The motor vehicle regulations require a re-evaluation as outlined in the discussion and are set aside for later development. Existing EPA muffler regulations for motorcycles should be enforced.

**Loudspeaker Placement Ordinance:**
The loudspeaker placement ordinance appears to have helped in reduction of sound levels in the entertainment districts based on initial measurements (noted above in this section). This also affects restaurants and nightclubs that wish to have “ambient” music for patrons who wish to utilize a front porch, sidewalk cafe, or courtyard. The ordinance can be found in Appendix F and affects the Vieux Carre and Central Business District; it also eliminates the use of outdoor loudspeakers.

If the city council wishes to pursue the allowance of “non-nuisance” ambient music that is not considered advertising, we make the following initial suggestions:

1) Outdoor loudspeakers should require a permit and approval process with a displayed permit.
   1. Officers will know immediately if the loudspeaker is permitted and the allowed sound limit at that venue.
   2. The approval process will cover agreement to the sound levels and education of the owner on self-policing in order to minimize any need for enforcement.
   3. The permits can be issued or maintained through the sound officer's Section 2 office.
      1. Outdoor loudspeakers may be limited to those that fall within a given frequency response to reduce low frequency issues.

2) The sound limit for the venue can be a sound level at 3' from the speaker. Due to the variety of patio/porch configurations and local background noise the sound level there will need to be a calibration of each system with permitting and the established level and hours of operation can be in the permit and available online as public information, as well as written on the permit. A benefit here would be to have a system calibrated and checked during off hours could result in a “set it and let it be” approach.
   1. The reason we would use 3' from the speaker is to distinguish between crowd and loudspeaker sound levels.
   2. If complaints are lodged after the establishment of the sound level, it can be adjusted to address any local concerns.

3) Other measurement methods have been considered; however, they have shortcomings:
   1. The sound level could be limited such that the sound system and ambient level together are no greater than 3dB above ambient. This regulation runs into difficulty in establishing ambient, which fluctuates. It also requires the establishment to turn off the system for the second measurement.
   2. The sound level can have a uniform cap at 3' from the speaker (i.e. 70dBA). This may be effectively enforced, but also might be too loud/too quiet for different situations. It may be too quiet due to ambient sounds and distance from the loudspeaker; it may be too loud and make the patrons louder than
normal, creating a problem (as per the Lombard effect, where the talker raises the loudness of the voice to compensate for louder background noise in order to be heard). The use of a limiter (governor) to the house amplification system will be a potential approach to helping meet this requirement, but is an additional expense.

3. A property line cap can be established. This will also meet with problems when ambient sounds are louder than the property line cap, or the caps would require a sliding scale which is too complicated.

4. Subjective measures such as understanding the lyrics of a song at a certain distance or location may be useful in identifying a potential problem, but are not practical in terms of enforcement.

4) Additional conditions in permitting can include loudspeaker orientation (i.e. must be pointed directly at the patrons or ground and cannot be pointed directly outward from the building) as needed.

Alterations to the 1995 Municipal Code Section 66:
Below are the recommendations to modification of the current Municode as it relates to Noise
Only the sections of concern are listed
All edits below are **highlighted in bold and underlined** for clarity
Explanations or comments are in *Italics*

Code of Ordinances, City of New Orleans
Chapter 66 Environment
ARTICLE IV. NOISE*

*Cross references: Sound trucks prohibited, § 54-482; playing of audio or video equipment on public transit vehicles prohibited, § 122-9.*

DIVISION I. GENERALLY
Sec. 66-136. Definitions.
The following words, terms and phrases, when used in this article, shall have the meanings ascribed to them in this section, except where the context clearly indicates a different meaning:

*A-weighted sound pressure level* means the sound pressure level as measured on an ANSI-S1.4-1971 Type 1 or Type 2 sound level meter using the A-weighted network. It is the approximate sound level as heard by the human ear, measured in decibels, and denoted as dBA.

*C-weighted sound pressure level* means the sound pressure as measured on an ANSI-S1.4-1971 Type 1 or Type 2 sound level meter using the C-weighted network. This measurement includes most of the low frequency information omitted in A-weighting.

*Noise sensitive area* means posted, designated quiet zones.

- The definition of a noise sensitive area or a quiet zone should be clarified so that it can be used.
Sound level meter means an instrument for measuring sound, including a microphone, amplifier, output meter, and weighting network that is sensitive to pressure fluctuations as specified in American National Standards Institute (SI.13-1971, R1976). Due to the inconsistent quality of smart phone apps, they are not admissible in court.

Sec. 66-176. Temporary permits.
- It is understood that temporary permits apply to smaller occasional events such as music outdoors at restaurants (private business) or private parties.

(b) Permits shall be granted upon application, at a cost of $20.00, provided an investigation assures that the permit will not result in a condition injurious to health or safety.
(c) The following factors shall be considered, in the initial investigation, in order to determine whether granting the permit will result in a condition injurious to health or safety:
1. Distance of proposed activities from a residential zone.
2. Number and location of amplification loudspeaker devices, if any, to be used in the proposed activities.
3. Sound level of amplification devices.
   - This should be struck (makes no sense) or changed to agreement to a sound level limit(s) at a given location(s) i.e. soundboard and property line.

(f) Issued permits will be surrendered to any city police officer or city health official upon request when the restrictions of the permit have been violated.
- warnings and ticketing/permit revocation is not clear as a process.

Sec. 66-202. Maximum permissible sound levels by receiving land use. Permissible Sound Level Limits (Leq) by receiving land use
(b) L10 is the A-weighted sound pressure level which is exceeded ten percent of the time in any measurement period. The measurement period shall not be less than ten minutes when measured at or beyond the property boundary of the receiving land use category (example: L10 is the sound level that is exceeded a total of one minute in a ten-minute period). In the SHD/VCE, the measurement may be taken at a minimum distance of 7.5 meters (25 feet) from the source being measured within a minimum clearance of three feet from any reflecting surface.
(c) For any source of sound the maximum sound level (Lmax) shall not be exceeded.
(d) In the case of two-family or multiple-family dwellings the sound level shall be measured within an adjacent intrabuilding dwelling.

(f) dBA will be used as the primary measure for evaluating a complaint. dBC may be used as a secondary measure, especially when the complaint about low frequencies or in a residence.
(g) dBA and dBC will be measured a minimum of 20 seconds for each record taken.
(h) dBC measurements taken indoors will be made 6” from the corner of the interior room of complaint, and will otherwise follow the low frequency measurement procedures as outlined in the DEFRA Noise Program Low Frequency Report. —mentioned above in Section 6.
# TABLE I

## SOUND LEVELS BY RECEIVING LAND USE

<table>
<thead>
<tr>
<th>Receiving Land Use</th>
<th>Time</th>
<th>( L_{Aeq} ) (dBA)</th>
<th>( L_{Ceq} ) (dBC)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Resident, public space</strong> <em>(Excluding parks)</em></td>
<td>7:00 a.m.--10:00 p.m.</td>
<td>60</td>
<td>70</td>
</tr>
<tr>
<td></td>
<td>10:00 p.m.-- 7:00 a.m.</td>
<td>55</td>
<td>65</td>
</tr>
<tr>
<td><strong>Two-family or multiple-family dwelling (intra dwelling)</strong></td>
<td>7:00 a.m.--10:00 p.m.</td>
<td>50</td>
<td>60</td>
</tr>
<tr>
<td></td>
<td>10:00 p.m.-- 7:00 a.m.</td>
<td>45</td>
<td>55</td>
</tr>
<tr>
<td><strong>Business and commercial</strong></td>
<td>7:00 a.m.--10:00 p.m.</td>
<td>65</td>
<td>70</td>
</tr>
<tr>
<td></td>
<td>10:00 p.m.-- 7:00 a.m.</td>
<td>60</td>
<td>70</td>
</tr>
<tr>
<td><strong>Industrial</strong></td>
<td>At all times</td>
<td>75</td>
<td>85</td>
</tr>
<tr>
<td><strong>SHD/VCE districts (measured at source)</strong></td>
<td></td>
<td>91 at plane of open door or window, 85 5' from closed facade</td>
<td>101 at plane of open door or window, 95 5' from closed facade</td>
</tr>
<tr>
<td><strong>SHD/VCR</strong></td>
<td>7:00 a.m.--10:00 p.m.</td>
<td>* 75</td>
<td>* 85</td>
</tr>
<tr>
<td></td>
<td>10:00 p.m.-- 7:00 a.m.</td>
<td>* 55</td>
<td>* 65</td>
</tr>
<tr>
<td><strong>SHD/VCC</strong></td>
<td>7:00 a.m.--10:00 p.m.</td>
<td>* 75</td>
<td>* 85</td>
</tr>
<tr>
<td></td>
<td>10:00 p.m.-- 7:00 a.m.</td>
<td>* 60</td>
<td>* 70</td>
</tr>
<tr>
<td><strong>SHD/HMR</strong></td>
<td>7:00 a.m.--10:00 p.m.</td>
<td>60</td>
<td>70</td>
</tr>
<tr>
<td></td>
<td>10:00 p.m.-- 7:00 a.m.</td>
<td>55</td>
<td>65</td>
</tr>
<tr>
<td><strong>SHD/HMC</strong></td>
<td>7:00 a.m.--10:00 p.m.</td>
<td>65</td>
<td>75</td>
</tr>
<tr>
<td></td>
<td>10:00 p.m.-- 7:00 a.m.</td>
<td>60</td>
<td>70</td>
</tr>
</tbody>
</table>

- Adjusted for other, intrusive sounds.
- All readings shall not include unique loud or intrusive “events” in the sampling period.

(Code 1956, § 42A-4; M.C.S., Ord. No. 18,399, § 2, 9-4-97)

Sec. 66-203. Specific nuisance noises prohibited.
In addition to the general prohibitions set out in this article, the following specific acts are declared to be in violation of this article:

(3) Radios, televisions, musical instruments and similar devices.
a. It shall be unlawful to operate or play in any public right-of-way, public park, playground or recreational area, any musical instruments, radio, television, phonograph, tape player, cassette player, compact disc player, or any sound device, including but not limited to loudspeakers or other devices reproducing or amplifying sound in such a manner, or with such volume, as to exceed an average of 80 decibels measured at a distance of 50 feet from the sound source. The New Orleans police department or the department of health shall order any person or persons in violation of this section to immediately cease creating or causing the creation of noise. If said person or persons fail to obey this order, appropriate action shall be taken pursuant to section 66-137. The readings shall be in succession.

- Property line should be considered if closer than 50ft.

d. It shall be unlawful between the hours of 9:00 p.m. Sunday through Thursday and 10:00 a.m. on the subsequent morning or between the hours of 10:30 p.m. on a Friday or Saturday and 10:00 a.m. the subsequent morning to operate or play in a dwelling occupying a parcel or lot of land or to operate or play anywhere on a parcel or lot of land contiguous or adjacent to another parcel or lot of land occupied by a neighboring dwelling any radio, television, phonograph, loudspeaker, sound-amplification equipment or similar device which produces or reproduces sound in such a manner as to be plainly audible at a distance of one foot from any exterior wall of the neighboring dwelling or at a distance beyond the boundary between the parcels or lots, whichever is the lesser distance from the point where the sound is produced or reproduced.

e. It shall be unlawful between the hours of 9:00 p.m. Sunday through Thursday and 10:00 a.m. on the subsequent morning or between the hours of 10:30 p.m. on a Friday or Saturday and 10:00 a.m. the subsequent morning to operate or play in an apartment, condominium unit or other dwelling unit of a multiple-unit structure occupying a parcel or lot of land or in any common or exterior area of such land any radio, television, phonograph, loudspeaker, sound-amplification equipment or similar device which produces or reproduces sound in such a manner as to be plainly audible within any other apartment, condominium unit or other dwelling unit within the same dwelling structure.

- One foot from an exterior wall reinforces the sound. This should be re-examined and sited to 3’ from the structure, the property line, or a different point based on the intention of the rule and the potentially different neighborhood layouts. Also the days and hours need to be re-evaluated—currently Friday night is fine to do whatever you like. “Plainly audible” should be defined as clearly as possible.

(6) Power equipment.

a. It shall be unlawful to operate or permit to be operated any power equipment in residential zones outdoors between the hours of 10:00 p.m. and 7:00 a.m. the following day, and on weekends between 10:00 p.m. and 8:00 a.m.

b. During daytime hours (7:00 a.m.-10:00 p.m. weekdays, 8:00 a.m.-10:00 p.m. on weekends) power equipment rated five horsepower or less shall not exceed a sound level of 75 dBA at a distance of 50 feet. Power equipment rated more than five horsepower shall not exceed a sound level of 82 dBA at a distance of 50 feet.

- It would make sense to establish one level regardless of the equipment to avoid confusion. 75dBA at 50’ is acceptable.
(7) Machinery, fans, and air conditioners. It shall be unlawful to operate or permit the operation of any stationary machinery, air-conditioners, air-handling equipment, fans, or similar devices in such a manner as to exceed Table 1 of the receiving land use categories when measured on receiving property.

- This should be the subject of a short survey or study that includes sound levels and resident feedback. There are too many close quartered properties that are in violation that this requires some different thinking and community input; it may be zone to zone or broken into the most typical cases.

a. Stationary machinery, equipment, fans, and air conditioners shall have the following replacement schedule:
1. Installed and operating sources, of age ten years or older, shall comply with the provisions of this subsection within a reasonable time period, upon determination of a condition of violation. This time period shall not exceed six months.
2. Installed and operating sources, of age five to ten years shall comply with the provisions of this subsection within a reasonable time period, upon determination of a condition of violation. This time period shall not exceed one year.
3. Installed and operating sources under five years of age, shall comply with the provisions of this subsection within a reasonable time period, upon determination of a condition of violation. This time period shall not exceed two years.

- Get rid of numbers 1-3 and set a shorter limit such as three months or less. Two years is unacceptable.

Sec. 66-205. Persons playing musical instruments on public rights-of-way.
It shall be unlawful for any person to play musical instruments on public rights-of-way between the hours of 8:00 p.m. and 9:00 a.m. Persons may obtain a temporary permit as provided by this article. The provisions of this section shall not apply to any person who has obtained a temporary permit as provided for by section 66-176 or are specifically exempted from the provisions of this article as provided by sections 66-138 and 66-139 or any noise resulting from activities of a temporary duration, for which a temporary permit has been granted by the city as provided for in section 66-176.

- This is the subject of a study as per Section 5 of the report.

(Code 1956, § 42A-15)

Sec. 66-206. Motor vehicles.

- Motor vehicles section requires a full revision with coordination with police. Most of it is unenforceable, and the police indicated that it is rare that a ticket can be issued for a violation. Simpler measures such as approved mufflers are easier to enforce. Sound levels can be included for reference, but it is not realistic to attempt to measure a passing vehicle with a sound level meter and then catch them to issue a ticket; beyond that, the vehicles have various operating states/load conditions and dynamic sound levels accordingly.

Sec. 66-208. St. Louis Cathedral noise buffer zone.
It shall be unlawful for any person or persons in the St. Louis Cathedral noise buffer zone to create or to cause the creation of any noise in excess of 78 decibels at a distance of 25 feet from the source during religious services in St. Louis Cathedral, provided that conspicuous signs are displayed outside of the cathedral during the conduct of such services. The New
Orleans Department of Police or the Department of Health shall order any person or persons in violation of this section to immediately cease creating or causing the creation of noise. If such person or persons fail to obey this order, appropriate action shall be taken pursuant to section 66-137 (administration).

(M.C.S., Ord. No. 18,857, § 2, 9-3-98)
Secs. 66-209--66-240. Reserved.

Addressing complaints for all zones in the event that decibel limits (Table 1) are met by the identified sound sources (see Figures 7a, 7b, 7c):

1) If an answered complaint yields no noise violation and the complainant chooses to identify themselves, the sound enforcement officer will contact the complainant to clarify the problem and will troubleshoot and/or mediate the problem. The identified sound source will also be made aware of the complaint.
   1. In the event that the complainant identifies a low frequency problem, the following general procedures shall be followed if granted access to the indoors of the complainant residence:
      1. The sound enforcement officer shall take measurements at all locations that the complainant identifies as offensive, as well as 6” from the corner of rooms nearest the supposed source with all external windows and doors closed.
      2. If the value of dBC-dBA is greater than 20dB with a reading of no less than 65 dBC, then a low frequency noise problem is suspected and the source will need to be positively identified.
      3. When the source has been positively identified, the source operator will be required to take abatement actions.

2. In the event that the investigation does not yield a low frequency problem, additional steps such as monitoring or cooperative testing with the identified sound source and the complainant may be employed to aid in a solution.

3. A full investigation may be required if the above procedures are insufficient. The sound enforcement officer's expertise will be the limiting factor in determining the depth of the city's investigation and whether outside help is needed. The use of a qualified acoustical consultant may be required for abatement, identification of source, or in-depth investigations.
Figure 7a: Flowchart for recommended VCE noise ordinance enforcement.
Arts and Culture Overlay Sound Ordinance Enforcement Flowchart

- **Inform potential sound sources of complaint**
- **Complainant ID'd**
- **Respond to complaint for further investigation**
- **Measure LF exceedance indoors**
- **ID source**
- **Abatement measures by source**

- **Further investigation**
  - **Low Frequency (LF)**
    - **No**
    - **Yes**

- **Complaint response, noted overage, or spot check**

- **Door Open?**
  - **Yes**
  - **No**

- **Warning issued**
  - **Close door/reduce level**
  - **Open door/level exceedance**

- **Return check**
- **Violation**

**Figure 7b:** Flowchart for recommended Arts and Culture Overlay noise ordinance enforcement.
Figure 7c: Flowchart for noise ordinance enforcement in zones outside of VCE and Arts and Culture Overlay.
Section 8: Community resources and advocacy for lower sound levels

Through the (New Orleans) Noise Ordinance Working group and the New Orleans Musicians Clinic, several initiatives have been identified:

1. **Safe Sounds:**
   1. Safe Sounds is a movement that is being headed by Bethany Bultman of the New Orleans Musicians' Clinic. The goal is to educate musicians, DJ's, sound operators, producers, club owners, and workers on dangerous sound levels and recommended procedures for hearing conservation in light of job security and employee health. The idea is to shift the collective consciousness of the general public about hearing conservation and acceptable sound levels through musician and music industry advocacy. This is a benefit on several points:
      1. Health of the New Orleans community as a whole.
      2. Awareness of sound levels translates to a reduction in sound levels, which will benefit the community and reduce the demand on enforcement.

2. Safe Sounds hosted an event in February 2012 with guests from the National Hearing Conservation Association; attending were a variety of attendees from the New Orleans music, legal, and (music) media community. The panelists each presented specific information on hearing conservation, exposure levels, and health consequences, especially as related to music. The discussion yielded some additional ideas from community members:
   1. David Freedman of WWOZ offered to include advocacy, announcements, or listings of clubs that were utilizing “safer” sound levels; this information could be updated from the WWOZ staff on location. He also suggested the radio station going to the loudest clubs and running events there at lower sound levels to show them firsthand that people will fill the clubs at these levels—higher sound levels are not necessary.
   2. Jan Ramsey of OffBeat offered to include ratings of clubs using a simple loudness scale, such as 1 to 5 stars (bells in this case) as the Dallas Observer has done in the past. Other weekly papers can incorporate similar measures.
      1. An extension of this system is nightclub participation: the clubs display a rating for that evening or a general rating, and suggest hearing protection if appropriate as a courtesy to the patrons. If the club knows it will be loud on that evening, it can also be conscious enough to take measures to reduce the impact on the surrounding area.

2. **Night Clubs:** Some bars already employ sound level reduction measures to reduce impact on patrons, workers and musicians, as well as sound insulation measures to reduce the impact on neighbors. These are good examples for others in the city to show that being a good neighbor can be a successful business model.
Discussion:
It is important to note that the Safe Sounds meeting did not necessarily provide solutions to the sound ordinance problems, however it identified resources that if used in tandem could constitute the basis for a hearing conservation program for New Orleans, and reduce the burden on noise ordinance enforcement.

These ideas are all well intended and are in line with the goal of hearing conservation for everyone and reducing unhealthy sound levels. As they come from different but related places, it would suggest that a central organizer (sound officer) could be in charge of coordinating these efforts; the parties named have other responsibilities that would make it difficult to oversee such a program over a prolonged period. A consistent and continuous effort can be made to bring this topic constantly in front of the public in a positive light (in tandem with the enforcement and outreach to homeowners and club owners) to create a shift in consciousness about hearing conservation, and how sound affects everyone around us.

Recommendations:
1) Incorporate (and nurture) the above efforts and organizations; the city may wish to provide organizational or staffer support or the help of the sound officer suggested in Section 2 to this program to coordinate the efforts with a comprehensive plan that includes enforcement, education, and public awareness, as well as recruiting additional organizations to participate.

2) Include DJ's and sound operators (those with their hands on the volume knobs) in the New Orleans Musicians Clinic's annual/semi-annual audiogram program and education efforts. Their awareness is one of the keystones to changing the soundscape of the city without leaning heavily on enforcement.

3) Create educational information for schools and local organizations: architects, historical preservation, social clubs, sound operators, neighborhood associations to spread the word about the effort and to educate people about hearing conservation and understanding/appreciating New Orleans' unique soundscape.

4) Mount a continuous media campaign to constantly bring the issue of hearing conservation to the public in a positive manner, ensuring the media continuously publicize the progress to help the movement take root in the general public as well.

5) Other resources available to the city include
   1. New Orleans Speech and Hearing Center
   2. Local Universities' cultural anthropology, architecture, and health divisions.
   3. All neighborhood organizations including VCPORA, French Quarter Citizens, and the Marigny Improvement Association.
   4. MACCNO (Music and Culture Coalition of New Orleans)
   5. Hear the Music- Stop the Noise www.heartheNOLAmusic.org
   6. New Orleans Noise
7. OSNO http://www.opensoundneworleans.com/core/
RECOMMENDED SERVICES

It is recommended that Oxford Acoustics be retained to review preliminary plans of action in order that the report's recommendations may be properly interpreted and implemented.

It is recommended that a qualified acoustical consulting firm, such as a member of the National Council of Acoustical Consultants, be retained to provide acoustic engineering services during execution of the work related to these recommendations. This is to observe compliance with the design concepts, specifications or recommendations and to allow design or iterative changes in the event that conditions change from that anticipated prior to the start of implementation, or that further iteration is required after the first phase.

ADDITIONAL STUDIES

1. Limitations of study: The scope of this study provides recommendations for the first steps to a functional noise ordinance and enforcement body. The original limited scope, modifications of scope, and discoveries during the investigation leave areas for additional study if the city wishes to pursue the following items.

2. Scope of additional work and purpose
   ○ Survey of noise and its effects on residents and businesses: To make the most effective use of resources in an education and enforcement program, a door to door survey should be performed in the French Quarter and Marigny at a minimum, preferably citywide (see Recommendations Section 2).

   ○ Concerts/festivals: Concerts and festivals were observed during this investigation, but require further study on sound propagation and coordination with local sound contractors to minimize impact on the surrounding neighborhoods. Direction-based sound level limits are required and recommended methods for achieving them, along with revising the permitting process to reduce impact of festivals on neighboring areas. It is noted that technology exists (and is sometimes deployed) to exert a high degree of control over outdoor sound to limit sound traveling past festival grounds. In addition geography and weather are important considerations to outdoor sound propagation.

   ○ CZO: the Comprehensive Zoning Ordinance is for the most part complete but does not provide any numerical sound limit numbers that would be used for enforcement purposes. The sections of the CZO should be evaluated with local measurements to quantify appropriate sound level limits for each section.

   ○ Street musicians- community relationships and agreements: Organization, advising, and/or coordination of community groups consisting of business
owners, residents, and musicians to work toward acceptable terms for coexistence in the limited tourist footprint available. (see Recommendations Section 6)

- **Training of Officers:** Instruction to assigned enforcement personnel (health, police, other) on specifics of noise ordinance revisions and particulars of dealing with certain noise issues including low frequency problems.

- **Sound Officer Advising:** Setting up and organizing of a sound officer's duties, programs for inspection and enforcement, databases, real time observations, iteration of the ordinance, low frequency investigations, and sound permitting process.

- **Complete City Sound Map:** A complete observation of the city over the course of a year will be a useful tool for future decision making in terms of zoning and enforcement, and to observe any shifts in the soundscape. It will also identify any “hotspots” that require abatement measures.

- **Highway Noise:** evaluation of highway noise and seasonal effects on neighborhoods to find areas most impacted and provide recommendations for the reduction or mitigation of noise.

- **Construction Noise and Vibration:** Observation of current practice and evaluation of current regulation to make recommendations to minimize this donation to the city noise problem. One major problem observed that deserves attention and can be addressed is pile driving.

- **Investigation of historical building fatigue from exposure to vibration and other environmental factors:** A general safety investigation into the structural soundness of buildings in the Vieux Carre may be of interest to the city due to the age of the buildings and exposure to the many environmentally detrimental factors over time. This will require a multi-disciplinary approach.

**LIMITATIONS**

The recommendations contained in this report are our best professional judgment as to the procedures to be followed in the ordinance revision process. There may be additional conditions not disclosed by this investigation, or environmental changes not anticipated. However, in our opinion the investigation is adequate to determine the first steps to resolving the priority noise ordinance issues and maps out further work to complete a comprehensive noise policy tailored to the needs of the City of New Orleans.
ACKNOWLEDGMENTS

I would like to extend my gratitude to all of the people who have participated in the process of making this report and the City of New Orleans.

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