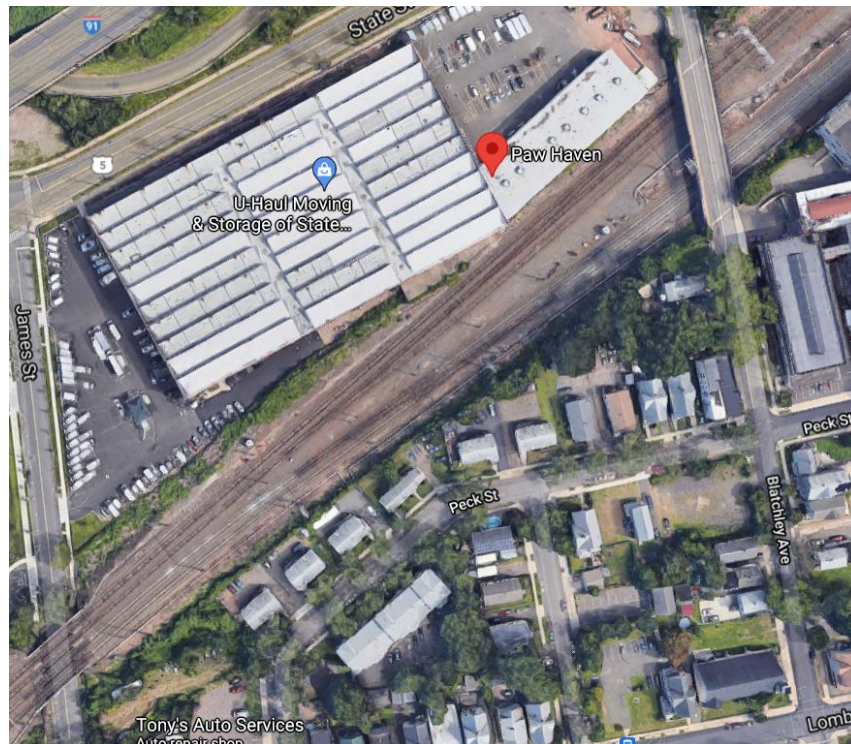




Peck Street Residence Acoustic Measurement Report



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Introduction and Executive Summary

SH Acoustics (SHA) was retained by several residents of Peck Street in New Haven, CT to evaluate the noise transmission of dog barks from the nearby Paw Haven Doggie Daycare facility. Paw Haven is situated at 1175 State Street, across from the railroad bed and has an outdoor playpen area for the dogs they watch over. Since opening, the residents of Peck Street have dealt with noise from the playpen area disturbing the peace at their houses.

SHA visited the Peck Street residences on Tuesday May 4th, 2021 to perform acoustic monitoring throughout the business hours of the Doggie Daycare. In summary, SHA found that despite previous noise mitigation recommendations, Paw Haven is still operating in violation of the City of New Haven's Noise Ordinance.

Background and Summary

Since the opening of Paw Haven, Residents on Peck Street have been subjected to barking of the dogs outside which has not stopped. In response to complaints, the city and Paw Haven hired an acoustician to evaluate the acoustic conditions and assess the impact on the residents.

That assessment led to a report issued to the City of New Haven Economic Development Office on November 2, 2020. The report included several recommendations split into two phases. The recommendation was to test after the Phase 1 recommendations were implemented and that if the noise levels were still in violation of the noise code, Phase 2 would need to be executed.

Reportedly, after phase 1 was completed, a city employee visited the Peck Street residents to test the noise levels of the dogs after Phase 1. The credentials of this city employee and the specific noise levels of the test are unknown to SHA. The results of that test reportedly found the doggie daycare to be compliant with local code, though SHA is unaware of any official documentation.

After a few more months of listening to the dogs, the residents reached out to have their own noise testing and monitoring done. SHA visited the site to perform this measurement and properly quantify the level of dog barking at the property line of the Peck Street residences.

Local Code & Noise Ordinance

Chapter 18, Article II – *Noise Control* of the New Haven Code of Ordinances defines allowable noise limits and the purpose of the noise code. Please note the text below does not represent the entire Noise Ordinance but rather relevant sections according to this particular issue.

Sec. 18-72. - Purpose.

"It is recognized that people have a right to and should be ensured an environment free from excessive sound and vibration that may jeopardize their health, safety, welfare, or quality of life. This article is enacted to protect, preserve and promote these values for the citizens of New Haven through the reduction, control and prevention of unlawfully excessive noise."

Sec. 18-75. - Noise levels.

(2) No person in a commercial zone shall emit noise beyond the boundary of his/her premises that exceeds the levels stated herein, and applies to adjacent residential, commercial or industrial zones:

<i>Emitter's zone:</i>	<i>Commercial</i>
<i>Receptor's zone:</i>	<i>Maximum level:</i>
<i>Industrial</i>	<i>62 dBA</i>
<i>Commercial</i>	<i>62 dBA</i>
<i>Residential/Day</i>	<i>55 dBA</i>
<i>Residential/Night</i>	<i>45 dBA</i>

(3) No person in an industrial zone shall emit noise beyond the boundary of his/her premises that exceeds the levels stated herein, and applies to adjacent residential, commercial or industrial zones:

<i>Emitter's zone:</i>	<i>Industrial</i>
<i>Receptor's Zone:</i>	<i>Maximum level:</i>
<i>Industrial</i>	<i>70 dBA</i>
<i>Commercial</i>	<i>66 dBA</i>
<i>Residential/Day</i>	<i>61 dBA</i>
<i>Residential/Night</i>	<i>51 dBA</i>

(4) Any non-conforming use shall be deemed to be in the zone which corresponds to the actual use.

The 1175 State Street site is located in an industrial zone; however the use of the space is used as a commercial space rather than industrial, meaning the commercial code applies. Therefore, the loudest a dog bark can be without exceeding the limits of the noise code is 55 dBA when measured on the receiving property during daytime hours.

In addition to the Noise Ordinance described above, the Code of Ordinances also specifically calls out animal disturbances. Chapter 7 – ANIMALS, Article I, Section 7-5 States:

Sec. 7-5. - Keeping nuisance animals; animals roaming at large; penalty for violations.

(a) No person shall keep, harbor, or cause to be kept or harbored, any animal in any place or manner within the city, so as to cause a nuisance by reason of such animal's vicious disposition or other disturbance. Any animal that disturbs the peace and quiet of neighbors or the public is deemed to be a nuisance.

Site Conditions

Paw Haven is located approximately 175 feet from the nearest residential property on the other side of a railroad bed. There is very little vegetation or other obstacles that could provide acoustic attenuation between the doggie daycare and Peck Street residences.

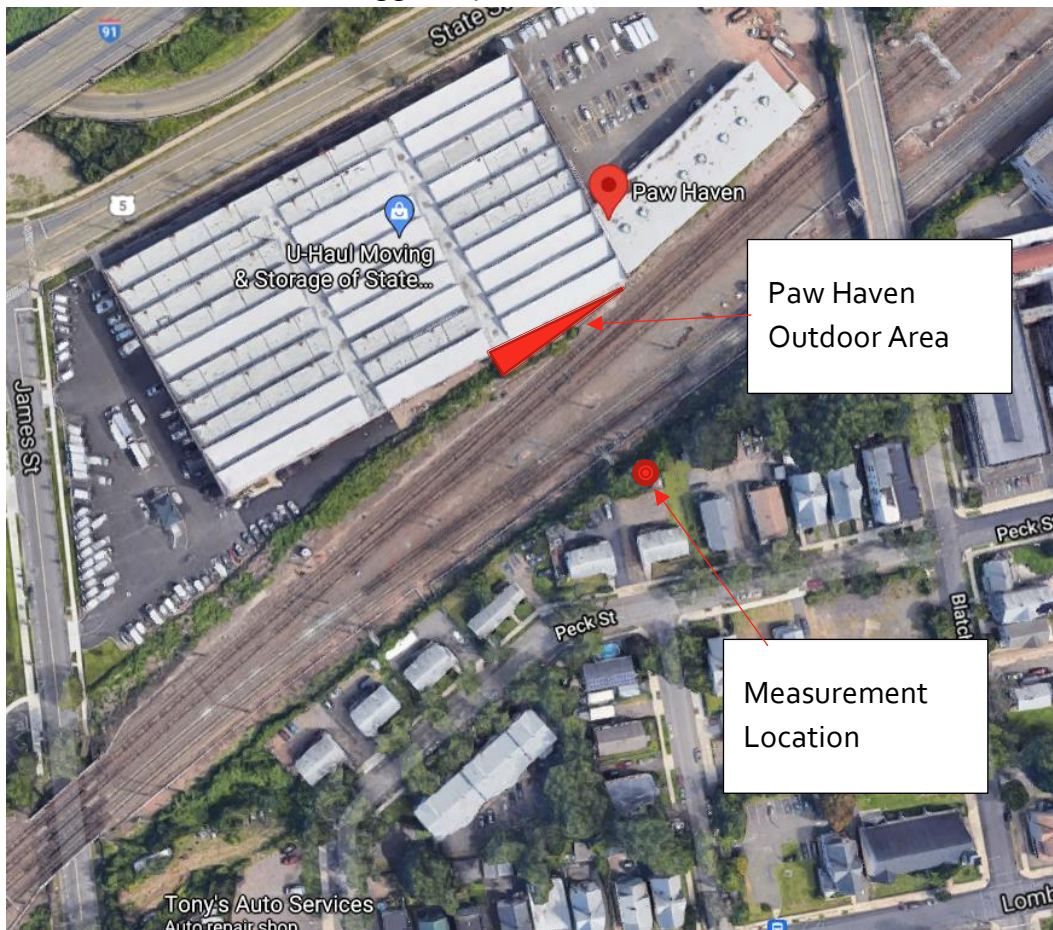


Figure 1 – Satellite View

Based on observations from outside the playpen area, it appeared absorptive sound blocking blankets were installed on the fence though exact materials were not confirmed. SHA was unable to see if any of the other "Phase 1" recommendations of the initial acoustician's report had been implemented, though it was clearly visible that Phase 2 had not been executed.

Measured Results and Analysis

On May 4th, 2021, SH Acoustics visited Peck Street and set up measurement equipment to monitor noise levels throughout the day on residential property, 1 foot within the property line of the residence, per the noise code measurement procedures.

Throughout the day, dog barking was plainly audible, usually occurring in clusters of time between periods of silence, likely matching up with times the dogs were outside. The measurement started at 8:42 AM and lasted until 6:18 PM, covering all the normal business hours of Paw Haven.

Loudest Bark

Throughout the day-long measurement, the loudest moment attributable to dog barks occurred at 9:58 AM at a level of 72.3 dBA. The ambient noise level immediately surrounding this bark and octave data is shown below:

	dB(A)	31.5 Hz	63 Hz	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz	16 kHz
Dog Bark @ 9:58 AM	72.3	79.1	73.1	62.7	65.7	67.0	69.2	67.4	59.1	44.4	32.0
Surrounding Ambient Noise Levels	66.0	76.9	71.9	61.5	62.2	60.6	63.2	60.7	51.6	40.4	30.5

Figure 2 – 9:58 AM Dog Bark Levels in dBA and Full Octave Levels

Ambient Noise Vs. Dog Barks

While the loudest measured moment occurred in the morning, a clear example of the difference between dogs barking and the area's existing ambient noise occurred around 2 PM. Directly before this moment, there was no barking, presumably because there were no dogs outside at the time. At approximately 1:58 PM, the dogs were either let outside or simply started barking, creating a sound pressure level of 71.0 dBA at the loudest moment throughout this 3-minute example.

The spectrograph (Figure 3) below is a visual representation of the transition from typical ambient conditions to dogs barking. The darker colors represent louder moments and frequencies, while the gray and blue represent quieter portions of the measurement.

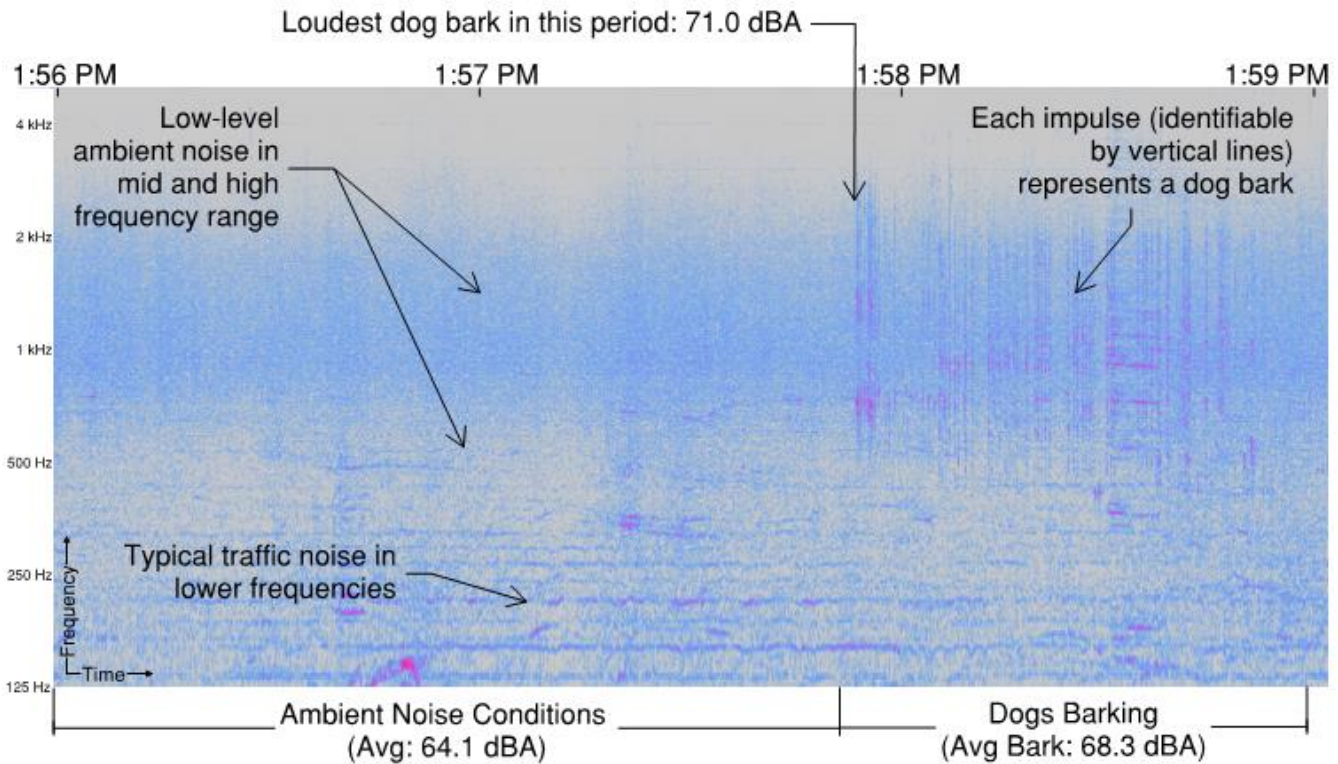


Figure 3 – Spectrograph of ambience and dog barks

Specific octave band sound pressure levels for the period of ambience and dogs barking are listed below in Figure 4:

	dB(A)	31.5 Hz	63 Hz	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz	16 kHz
Average Ambient Noise Levels w/o dogs	64.1	79.8	70.7	64.0	61.1	58.8	61.5	55.7	45.5	36.8	31.3
Dogs Barking (Max)	71.0	80.8	68.7	61.9	59.2	66.3	69.4	61.1	46.2	37.4	30.7
Dog Barks (Average)	68.3	80.7	68.9	62.4	60.7	63.3	66.1	59.4	47.0	36.7	31.2

Figure 4 – 1:58 PM Dog Bark Levels in dBA and Full Octave Levels

Throughout the rest of the measurement, typical dog barks ranged from 58 – 70 dBA, which is still well above the noise ordinance allowable limits. Beyond the decibel levels though, the audibility of the dog barks inside the residences and outside in backyards disrupts the peace and wellbeing of the residents and clearly violates the more subjective but very important “Nuisance Animal” section of the Code of Ordinances.

In addition to the dog barks, it was reported that the staff at Paw Haven use an air horn to control the dogs. SHA found several instances of air horn use throughout the day, the loudest of which occurred at 9:03 AM, reaching a level of 76.7 dBA at the property line of the Peck Street residence.

These noises are disruptive to the peace and wellbeing of the Peck Street neighborhood. Unlike a passing train which exceeds the decibel levels of dogs, barks and horn blasts are impulsive, with no “ramp up” time. (This is not meant to be confused with impulsive noise as defined in the noise code which is meant to allow for single or occasional isolated incidents that may exceed the normal limits.) Incessant barking like what is experienced by the residents of Peck Street is stress-invoking due to the impulsivity and frequency content that aligns with the frequencies that are most sensitive to the human ear (500 Hz – 2 kHz). Any reasonable person would find the dog barks to be a nuisance. This is especially true when residents try to enjoy outside spaces like decks or backyards and must put up with hearing constant barking. The issue is still prevalent inside especially when residents spend time indoors with open windows or doors.

Next Steps

Based on similar experiences and the noise levels measured on site, SHA is confident that the Phase 2 recommendations will not reduce barks to below the required level by code. We feel that the only way to be noise and animal code compliant is to enclose the space with solid walls on all sides and installing acoustic absorption on the both the new walls and mounted to the building itself. Another acceptable option is to move the playpen to the other side of the building using the building itself as a barrier wall.

Until these measures can be implemented, all operations must be held inside. If a dog must be taken outside, there should only be one dog at a time to discourage barking.

Test Procedure and Equipment

The measurement equipment was set up according to the measurement procedure section of the noise ordinance. The microphone was set up 1' within the property line of the Peck Street residence and was equipped with a proper windscreen.

The microphone was calibrated using an acoustic calibrator both before and after the measurement, confirming the measurement was accurate throughout the entire recording period.

An Earthworks M30 measurement microphone was connected to a an iAudio interface with an iPad recording all measurements. This specific hardware has a lab-certified Type 1 sound level meter certification.

The measurement started at 8:42 AM and lasted until 6:18 PM, covering all of the normal business hours of Paw Haven. The equipment recorded the noise level in dBA and at each 1/3 octave frequency.

After the measurement, much of the recorded acoustic events had to be combed through to ensure that the noise levels were in fact dogs. By use of spectrographs and listening to specific acoustic events recorded throughout the day, SHA was able to isolate and eliminate all instances of noise from trains, sirens, truck traffic, air traffic, or birds singing close to the microphone. After the other noises were eliminated, SHA then listened to all major acoustic events and isolated dog barks to determine the loudest level.

Conclusion

Based on our measurements and analysis, we have demonstrated that Paw Haven is in violation of the City of New Haven's Noise Ordinance and Chapter 7, Article I, Section 7-5. Since the opening of the doggie daycare, the residents of Peck Street have had to tolerate dog barking that exceeds the limits set by the city to "*ensure an environment free from excessive sound and vibration that may jeopardize their health, safety, welfare, or quality of life.*" Immediate action must be taken to remedy this issue.

The It has been a pleasure working with you. Please feel free to reach out for clarifications or anything else you might need regarding this matter.

Kind regards,



Kevin Peterson
Senior Acoustical/Audio Consultant
SH Acoustics