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PRO SONICS

Project Report to

Friends Fur-Ever Pet Resort

For

Noise Assessment
Sudbury, Ontario

#

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Friends Fur-Ever Pet Resort

Noise Assessment

Prepared by: _____ September 21, 2017
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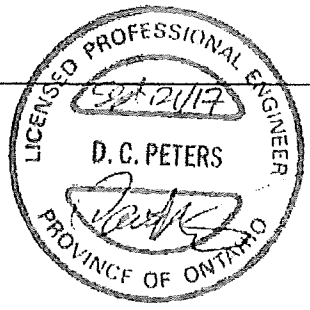

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1 Introduction

This document is the ProSonics Ltd. report for the Ambient Kennel-Related Noise Issues. ProSonics believes this report to be accurate based on the measurements and analysis undertaken, and the understanding of the project scope.

2 Background

ProSonics Ltd. was retained by Friends Fur-Ever Pet Resort to perform a noise assessment around their property at 15 Kalio Rd to determine what noise impact the kennel operations may be having on the surrounding properties.

The property in question is largely treed, with public roads on two sides.

The noise assessment was carried out in accordance with industry accepted practices and following the guidelines included in the Model Municipal Noise Control By-Law - Final Report, August 1978, Ontario Ministry of the Environment, and the Ontario Ministry of the Environment and Climate Change Environmental Noise Guideline: Stationary and Transportation Sources - Approval and Planning (NPC-300) August 2013.

Based on these references, the following definitions were established for the assessment:

- The commercial use of the property as a dog kennel operation classifies as a "Stationary Source" under the MOECC guidelines.
- The exemption from consideration as a stationary source of "noise produced by animals kept as domestic pets such as dogs barking" does not apply because the dogs kept at the kennel do not all belong to the property owner.
- The site is classified as a "Class 3 area", which means "a rural area with an acoustical environment that is dominated by natural sounds having little or no road traffic".

A noise source is considered measurable if it is 6 dB(A) above the background noise level in a space. An increase in volume of 3 dB(A) is a doubling of sound energy, and perceived as a doubling of loudness. So, a measurement grade signal is present when it is four times louder than the background noise, and it is considered potentially intelligible if it is twice the loudness of the background noise.

3 Facility Description

The facility houses domestic dogs on a temporary basis, mostly in a 'daycare' setting. The current facility contains 24 cages, with a normal maximum number of dogs kept being thirty (30) or fewer. Noise sources at the facility are the dogs themselves and a nearby chicken coop containing just under one hundred (100) chickens. No significant mechanical noise sources (e.g. air conditioner) are present.

The site plan below shows the site general arrangement and identifies the areas where the dogs are located during operation.

4 Scope Of Work

ProSonics was retained by Friends Fur-Ever Pet Resort to perform a noise assessment utilizing noise measurements taken at four (4) locations. These measurements are to be done utilizing Equivalent Sound Level (Leq), and are to be performed outdoors adjacent to the kennel outdoor yard and at three locations on the perimeter of the property. Equivalent Sound level is a time-integrated measurement that accounts for non-continuous noise or varying sound power levels and results in a value of an equivalent continuous sound level for the time period of the measurement.

Measurements were made on September 08, 2017. This report presents the results of these measurements.

5 Methodology And Measurements

5.1 Setup and Methodology

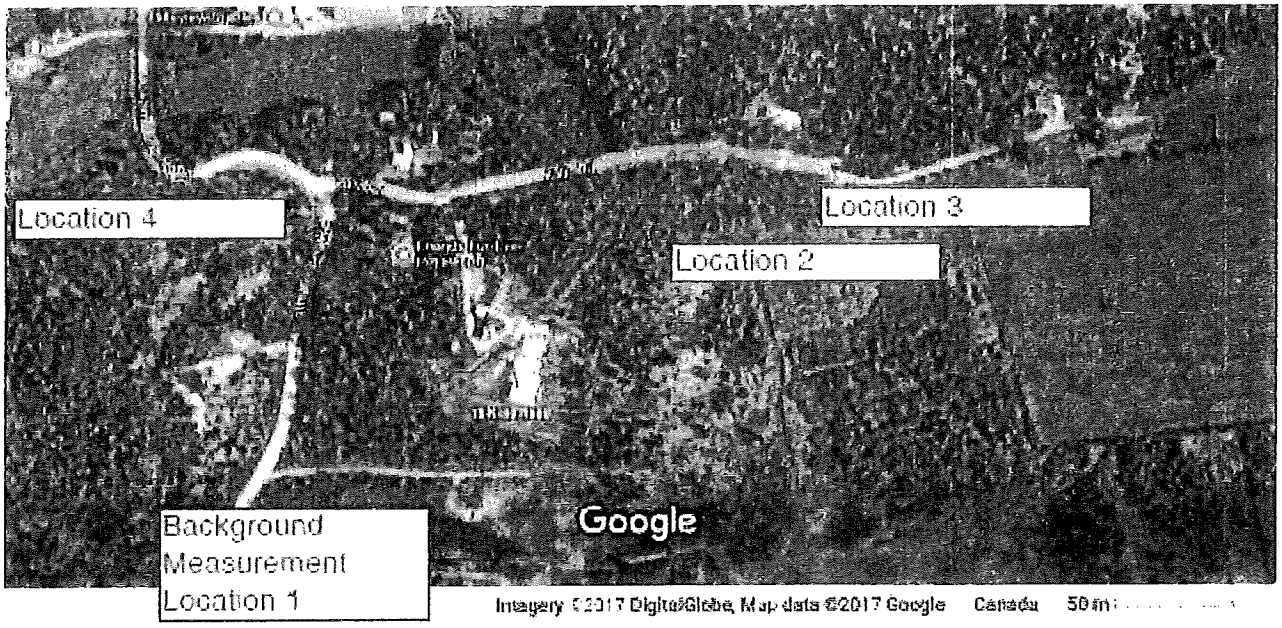
On September 08, 2017, ProSonics Ltd. attended 15 Kalio Rd. to perform acoustic measurements of the background noise and of a full kennel of dogs. The client had arranged for as many dogs as could be accommodated to be present for the measurements. Twenty seven (27) dogs were present for the duration of the measurements. During the measurement period, the dogs were kept "excited" by the kennel staff and no quieting methods were used, i.e. the dogs were allowed to bark without restriction, and the staff actively encouraged the dogs to bark as much as possible.

Measurements were made with a calibrated noise measurement system consisting of an Earthworks M30 measurement microphone with self noise of 17 dB(A). This microphone was connected through a PreSonus digital preamplifier to a PC running SIA SmaartLive acoustical analysis software. The microphone and system were calibrated using a Cirrus model D537 acoustical calibrator accurate to +/- 0.1 dB at 1000 Hz, +/- 10 Hz. Calibration was made at 94 dB and checked at 104 dB. Measurements were all made with a microphone height of 1.5m, with the microphone pointed towards the kennel exercise yard. Calibration was rechecked after the series of measurements and found to be 94.1dB, within acceptable tolerance. The equipment was powered from a 120V UPS system mounted inside a vehicle and was not powered down or adjusted between measurements. The vehicle was not operating during the measurements.

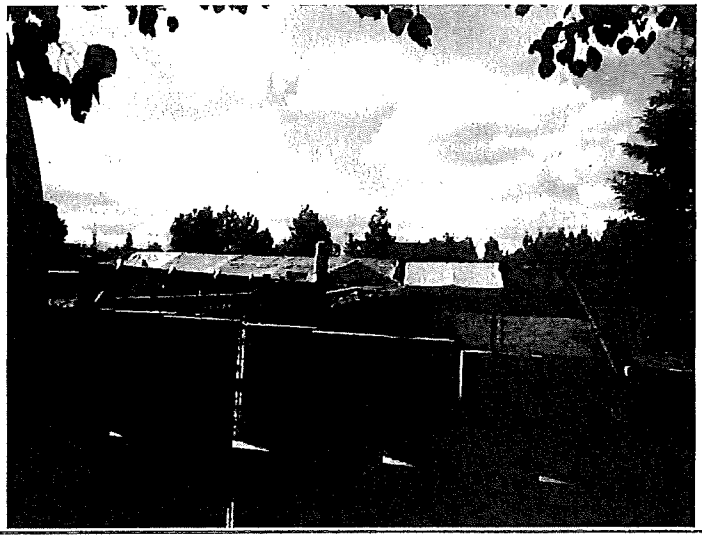
Weather conditions at the time of the measurements were clear skies with a temperature of 16C and light winds. Winds were not constant, ranging from zero to approximately 10 kph. Measurements were made after 10:30am. No local road traffic was present during measurements except as noted below.

5.2 Measurements

Measurements were made at the locations indicated below.



Initial instantaneous background noise measurements were made at Location 1 with no dogs barking. Location 1 was 1m from the corner of the kennel structure. With no wind blowing, background noise was instantaneously observed to be 39 dB(A). With the light wind blowing, and from a location within 3m of a birch tree, the instantaneous background noise level was observed to be up to 79 dB(A).



Without relocating the microphone, an Leq measurement was initiated and a baseline background Leq was measured. The Leq measurement was observed to read 59.9dB(A) until a helicopter flew nearby, raising the final Leq to 65.1dB(A).

Again without relocating the microphone, an Leq measurement was initiated and all of the dogs were released into the exercise area and allowed to bark freely as described above. This measurement yielded a minimum reading of 39.1dB(A), peak maximum of 90.9 dB(A), and an Leq of 62.6dB(A). It should be noted that the dogs were actively barking for a period of 3 minutes then they naturally quieted despite efforts to continue their barking.

A second measurement was then taken at the same location which yielded a minimum reading of 35.4 dB(A), maximum of 99.9 dB(A), and an Leq of 68.5 dB(A). The 99.9 dB(A) peak reading resulted from a single dog coming close to the measurement location and barking one time at the engineer.

At Location 2 (end of the driveway), the measurement microphone was again set up, pointed towards the exercise area at 1.5m above the ground, and the dogs were again released into the exercise area. This measurement location is approximately 135m from the exercise yard. Minimum instantaneous SPL was 35.0 dB(A), max 66.1 dB(A), and Leq was 45.8dB(A). It should be noted that the dogs were audible to the engineer, but the crickets in the grass nearby were actually louder. Dogs essentially stopped barking after approximately four(4) minutes into the measurement. Wind was calm but present during this measurement.

At location 3 (under power line, across from #28 Kalio Rd.), the measurement microphone was again set up, pointed towards the exercise area at 1.5m above the ground, and the dogs were again released into the exercise area. This measurement location is approximately 220m from the exercise yard. Minimum instantaneous SPL was 37.4 dB(A), max 80.3 dB(A), and Leq was 53.8dB(A). It should be noted that the dogs and people's voices were sometimes audible to the engineer, and the light wind was blowing from the kennel towards the measurement location. Horses from the nearby stable were louder than the noises from the kennel. The noise of rustling leaves in the light breeze completely obscured the sounds of the dogs during the measurement period. One car passed by twice during the measurement period, creating the peak noise level of 80.3 dB(A). The wind picked up towards the last 30% of the measurement period, and the Leq (which is displayed continuously by

the measurement software) increased from 46 dB(A) to the final measurement of 53.8 dB. Wind was otherwise calm during this measurement.

At location 4 (across from #191 Moxam Landing Rd., adjacent to the mailbox), the measurement microphone was again set up, pointed towards the exercise area at 1.5m above the ground, and the dogs were again released into the exercise area. This measurement location is approximately 166m from the exercise yard. After approximately 4 minutes into this measurement, no noise from the dogs could be heard. Minimum instantaneous SPL was 36.6 dB(A), max 70.6 dB(A), and Leq was 50.6dB. It should be noted that the dogs and people's voices were audible to the engineer when there was no wind blowing. The light wind when present was blowing from the kennel towards the measurement location. The noise of rustling leaves in the light breeze, when it occurred, completely obscured the sounds of the dogs during the measurement period. Wind was occasional during this measurement.

The table below summarizes these findings.

	Background	Location 1a	Location 1b	Location 2	Location 3	Location 4
Instantaneous Minimum (dBA)	39	39.1	35.4	35.0	37.4	36.6
Instantaneous Maximum (dBA)	79	90.9	99.9	66.1	80.3	70.6
Leq (dBA)	(59.9) 65.1	62.6	68.5	45.8	(46.0) 53.8	50.6

6 Analysis

From reviewing the data, several things become apparent.

First, the naturally occurring background noise Leq is above the Class 3 Area daytime Leq guideline of 45 dB(A). This is noise naturally occurring in the area due to the simple rustling of leaves in the light breeze on the day of measurement. Since the background noise level is higher than the guideline, the guideline value cannot be used as a determining factor for compliance with the intent of the guideline. The intent of the guideline is that stationary noise sources do not impose an objectionable level of noise on adjacent properties. "Objectionable", however, is a subjective thing, however a conservative approach would be to consider "measurable difference" for guidance. As mentioned above, a measured audio signal must be a minimum of 6dB louder than the background noise to be considered measurable. It may be audible at a lower level, but to be considered measurable the minimum signal-to-noise ratio for accurate audio measurement is generally taken as 6dB.

With reference to the baseline Leq measurement, all of the measurements with dogs barking were +3.4 to -19.3 dB(A) from the reference background noise level at the kennel building. Given the very small difference between the final Leq values measured above the baseline, the impact of the dogs barking on the Leq value is insignificant, with the natural noise from the trees being dominant.

Second, other ambient sounds easily obscured the noise of the dogs such that the dogs were inaudible. Reference the crickets and horses were louder, and the rustling leaves completely obscured the sound of the dogs. Since the sound of the dogs was rendered indistinguishable from the background noise, and was overpowered by small insect noises, again the determination is that the noise from the barking dogs is insignificant.

Third, given the Leq measurement taken at 1m with the dogs barking, and calculating the predicted sound pressure level (SPL) at the closest measurement point (135m)), the mathematically predicted SPL at the end of the driveway solely due to the noise at the corner of the kennel itself is 22.5 dB(A). (Note that typically a doubling of distance from the source will have an attenuation of approximately 3dB(A), however the relationship of sound level to distance from a source is non-linear). Given the two orders of magnitude difference in the source measurement distance (1m) and the test location (135m), this non-linearity becomes significant. In any case, a predicted Leq of 22.5 dB(A) would be considered audible. The dogs were audible at this location. But at an SPL of 22.5 dB(A), the rustling leaves at 45 dB(A) would totally obscure the dog noises, and this is consistent with what the engineer observed during the measurements. The modeled attenuation of Leq at the property line of 22.5 dB(A) is one half of the published guideline of 45 dB(A) and therefore in compliance with the guideline. The subject dog noise at the property line calculated at 22.5 dB(A), and the background noise instantaneous minimum value of 35.0 dB(A) puts the dog noise at approximately 13 dB(A) below the background noise, and therefore the dog noise is not separably measurable at this location and is considered indistinguishable from the background noise.

Note that the measurements performed in front of #28 Kalio Rd. and #191 Moxam Landing Rd. were further from the noise source than the sample attenuation calculation above, so the resultant noise attenuation of the dog noise would be even greater at those locations, and even more difficult to distinguish from the background noise, so no further calculations were performed to specifically model these locations.

7 Conclusions

As a result of the measurements, observations and analysis above, the folowing conclusions are made:

- It is concluded that the noise generated by the dogs at the Friends Fur-Ever Pet Resort on September 08, 2017, even with the dogs in an unusually excited state and without the use of quieting methods normally employed, was within the published guidelines for a Class 3 Area as described in the Ontario Ministry of the Environment and Climate Change Environmental Noise Guideline: Stationary and Transportation Sources - Approval and Planning (NPC-300) August 2013

- The noise was essentially inaudible at the measurement locations to the trained human ear, and did not in any way impose an objectionable level of noise on adjoining properties in front of which the measurements were made

- There is no adverse noise impact from the Friends Fur-Ever Pet Resort facility on properties adjoining along Kalio Rd and Moxam Landing Rd.

8 Closing

We trust that we have properly understood the scope and deliverables in preparing our report, and the methodology, results, analysis and conclusions have been presented in a clear manner. If this is not the case, we are ready to update our report to ensure that our methodology and analysis is presented clearly and unambiguously.