

May 16, 2024

Lena La Fleur
Four Paws Pet Services
3440 Meadow Road
Verona, Wisconsin 53593

Re: Results of Sound Study for the Proposed Four Paws Pet Services Facility

Lena,

This letter describes the methods and results of the assessment of potential noise impacts from the proposed Four Paws Pet Services facility (Facility) located at 3440 Meadow Road in the Town of Middleton, Wisconsin conducted on May 13, 2024. This is the second test conducted at the Facility, and it was witnessed by officials from the Town of Middleton and the town's acoustical consultant Richard Talaske (Consonant Design). Also discussed herein are the results of observations that Hankard Environmental staff conducted at an existing dog kennel in the Madison area regarding the degree to which dogs bark when being dropped off and picked up.

EXECUTIVE SUMMARY

- Both broadband "white noise" and a recording of dogs barking were broadcast over a powerful speaker system inside the Facility. White noise was played at 98 dBA, and dog barking was played at an average level of 97 dBA with peak levels of 113 dBA. This is considered representative of worst-case conditions where multiple dogs are barking vehemently and simultaneously. It was uncomfortably loud inside during the test, and it is unlikely that it would be that loud.
- All windows were closed during the tests, as will be the case during Facility operations.
- The roll-up door on the east end of the building was closed, as an internal wall is planned inside the Facility that would block noise from reaching this door. The roll-up door on the west end of the building was open, as the applicant would prefer to have the option of opening this door on warm days.
- Observations were made around the Facility property while both broadband and dog noise was being produced inside the Facility.
- At the southeast corner of the property, broadband sound and dog noise were not audible. The nearest residences in this direction are twice as far from the Facility as the observation point. Given this, we do not believe dogs barking inside the Facility will be audible at the residences on Feather Edge Drive.
- At the northeast corner of the property the generated sounds were audible. The nearest residence in this direction is twice as far from the Facility as this northeast observation point, therefore audibility there is expected to be lower.
- North of the Facility in the direction of one of the nearest residences the generated sounds were not audible.

- While not necessary given the results of the study, noise levels could be reduced by installing sound absorption materials inside the Facility.
- An existing dog kennel in the area was visited to determine the degree to which dogs bark while being dropped off and picked up. The results of the observations were that two dogs barked briefly out of 30 that were dropped off, and only one barked while still in the car out of 40 that were picked up. In summary, it is by far the exception and not the rule that dogs bark while being dropped off and picked up from a kennel.
- In summary, noise from dogs barking inside the Facility is expected to be inaudible at nearby residences, with the exception of the nearest residence to the northeast where barking may be faintly audible. Barking during pick up and drop off is expected to be minimal.

TEST DETAILS

A set of Vidsonix Super Nova X12A powered speakers and a Brüel & Kjaer Omnipower dodecahedral speaker powered by a Yamaha P1600 amplifier were set up in the center of the proposed kennel area inside the Facility. Larson Davis 831 sound level meters (ANSI Type 1) were used to measure resulting noise levels inside and outside the Facility. The meters were calibrated during the survey using a handheld calibrator and were certified by an accredited laboratory within the past year. Broadband noise, which is a random signal of sound with equal intensity across the audible frequency spectrum, was played, as was a recording of dogs barking. Both were produced at levels of 97 to 100 dBA inside the Facility, which represents the scenario of a large group of dogs barking loudly (Purdue University, 2016). Figure 1 shows the frequency spectrum of both sources.

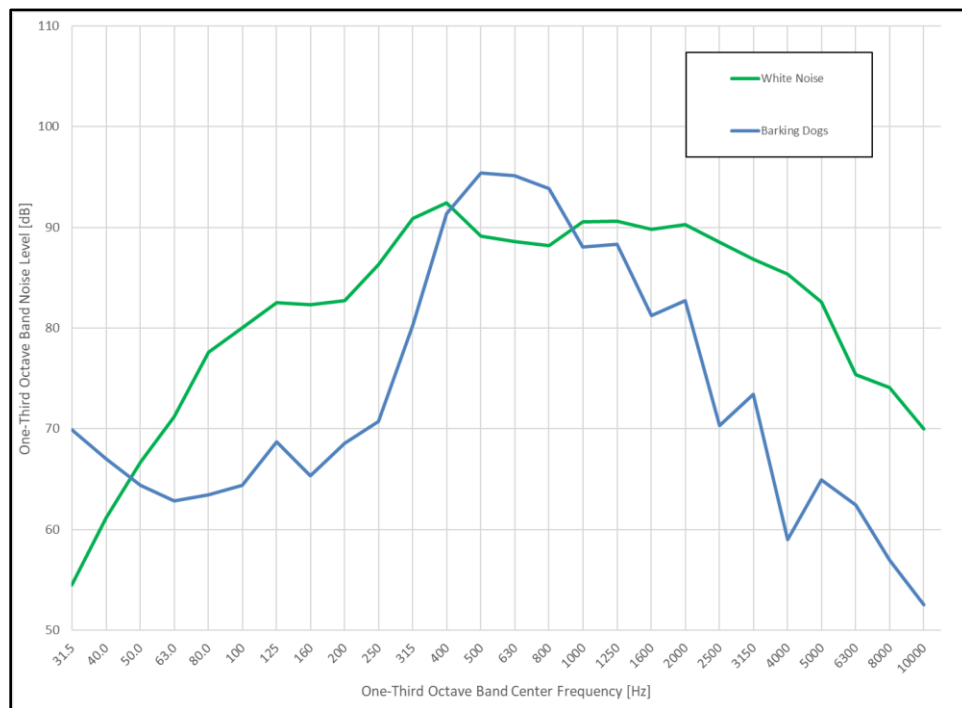


Figure 1. 1/3 Octave Band Noise Levels Produced Inside Facility



Figure 2. Site Overview

LISTENING TEST RESULTS

Table 1 shows the results of the measurement of noise levels inside the Facility during listening tests. Three different noise metrics are presented. The L_{eq} is the equivalent constant sound level for the measurement period. The L_{peak} is the maximum sound level and is particularly useful for a transient source such as barking. The L_{90} is the noise level that is exceeded 90% of the time and represents the sound level exceeded 90% of the time during the test interval.

Table 1. Noise Levels Produced Inside the Facility

Noise Source	Noise Level (dBA)		
	L_{eq}	L_{peak}	L_{90}
White Noise	98	112	98
Barking Dogs	97	114	86

While the recordings of dogs barking and white noise were playing, measurements and listening tests were conducted at the locations shown in Figure 2 around the edges of the property both with the roll-up door on the west end of the building closed and open.

- Barking was audible at Locations 1, 2, and 5, which are all located on the grounds of the Facility.
- Barking was inaudible at Location 3 in the direction of the residences on Feather Edge Drive.
- Barking was audible at Location 4 in the direction of the nearest residence to the northeast.
- At Location 6 barking was inaudible.

OBSERVATIONS OF BARKING DURING PICK UP AND DROP OFF

A nearby dog day care facility (TailWaggers Doggy Daycare Verona) was observed to determine the amount of barking outdoors during dog pick up and drop off. The parking lot was observed on May 9, 2024 from 4:45 p.m. to 6:00 p.m., and again on May 10th from 6:50 a.m. to 9:00 a.m. On the afternoon of May 9 approximately 30 dogs were picked up. Two of these dogs barked twice and there was no other barking. On the morning of May 10 approximately 40 dogs were dropped off. One dog barked while still in the car and there was no other barking.

QUALIFICATIONS

Mr. Hankard has been practicing in the field of acoustics for the past 34 years. His firm, Hankard Environmental, Inc., has completed over 600 environmental noise projects relating to land development of various types including dog kennels, gravel pits, wind and solar energy facilities, transmissions lines, and mines. Mr. Hankard has experience in all aspects of environmental noise, including field measurements, predictions, mitigation design, and expert testimony at local, state, and court proceedings. His professional resume is attached. See www.hankardinc.com for more information. Mr. Spencer Thomas, who assisted in this effort, graduated from the University of Hartford with a degree in mechanical engineering with a concentration in acoustics. He has worked on a variety of acoustical consulting projects, including dog kennel noise analyses.

CONCLUSIONS AND RECOMMENDATIONS

- Overall, the existing building does a very good job of blocking noise from reaching nearby residences. This conclusion is valid for the case of all windows being closed and the east roll-up door closed, as will be the case during Facility operations.
- In fact, noise from dogs inside the Facility is not expected to be audible at any of the adjoining residences a majority of the time, particularly at the Feather Edge Drive neighborhood.
- The applicant discussed with us the possibility of installing acoustic baffles inside the Facility to absorb noise and make the interior environment more palatable to workers (and dogs, perhaps). This would serve to further reduce exterior noise levels as well.
 - Panels covered in nylon or PVC fabric, such as NetWell Noise Control VET baffles, or similar, should be considered for ease of cleaning. Ten to 15 2'x4' baffles will significantly lower reverberation time and improve speech audibility inside.

Thank you very much for commissioning Hankard Environmental for this study. If I can answer any questions or provide additional information, please call.

Sincerely,



Michael Hankard
Owner / Principal Acoustical Consultant
Full Member of INCE and ASA

Cc: Erik Olsen – Eminent Domain Services, LLC
Spencer Thomas – Hankard Environmental, Inc.