



33 Moulton Street
Cambridge MA 02138
617 499 8000
acentech.com



9 January 2020

Town of Great Barrington
334 Main Street
Great Barrington, MA 01230

Attention: Mark Pruhenski
Town Manager

Subject: Peer Review of Sound Study
Fulcrum Enterprises, LLC for Marijuana Facility Application
22 Van Deusenville Road, Great Barrington, MA
Acentech Project No. 632500

References: Special Permit Application prepared by Design Group, Inc. (July 2019)
Acoustical Assessment report prepared by Cross-Spectrum Acoustics (4 September 2019)
M. Pruhenski email with fan information to Acentech (5 September 2019)
Additional information from CSA (September 2019)
Acentech draft letter (20 September 2019)
Revised Information - Special Permit Application prepared by DGI (26 November 2019)
Revised Greenhouse Acoustical Assessment report prepared by CSA (3 December 2019)
Additional information from CSA (January 2020)

Dear Mr. Pruhenski:

Introduction

At your request, we conducted a peer review of the above-referenced Revised Greenhouse Acoustical Assessment report that was submitted to the Town of Great Barrington for Fulcrum Enterprises' application for a new marijuana cultivation and manufacturing facility. The revised November 2019 application and the December 2019 sound report supersede the original July and September 2019 submittals. The Applicant is proposing to construct and operate a 63,500 sq. ft. commercial marijuana cultivation and manufacturing facility, which will include 13 greenhouses and one manufacturing and distribution warehouse within a 5.78 acre industrial-zoned property. Each greenhouse has one ventilation fan and one heater and the following typical operating conditions: all fans on during warm day periods, one fan only on during warm night periods, and all heaters on during cold day and night periods. The vent fans and heaters will not operate at the same time. The mostly vacant parcel is adjacent to the east side of a rail line and Van Deusenville Road, south of a solar array facility, north and west of other industry and open land, west of an auto salvage yard, and west several residences, which are the nearest noise-sensitive receptors to the planned project. The findings and comments from our peer review of the above-referenced revised materials submitted to the Town by the Project Applicant are presented below.

Fulcrum/Cross-Spectrum Sound Study

Fulcrum Enterprise's consultant, Cross-Spectrum Acoustics (CSA), conducted a noise study for the proposed marijuana cultivation and manufacturing project. For this study, CSA identified applicable project noise

criteria, performed baseline ambient sound measurements at the site, and developed a computer sound model for the proposed equipment. The above-referenced CSA December 2019 report discusses the local and State noise requirements, ambient sound measurements, the project sound model, and their conclusions. Based on the results of their study, CSA concluded that the predicted sound for the facility at the nearest community residences meets both state and local noise requirements and that no noise mitigation measures are required for the project during day and night operation.

Figure 1 of the CSA report displays an aerial photograph of the project site and surrounding land parcels and Figure 2 shows the project site plan with the proposed 13 greenhouses and one manufacturing building. Figure 3 is a set of photographs that identify the residences nearest the project site and show the monitoring location selected to characterize the community ambient sound environment. Figure 4 plots the time history of the ambient sound levels that were measured over a 48-hr period from Friday, 30 August to Monday, 1 September 2019. This figure indicates hourly residual background sound levels (L90) as low as 33 dBA during the night and 39-40 dBA during the day. Figure 5 presents the octave band sound power levels for the vent fan and heater units; these values are based on measurements that were conducted by other parties. The overall A-weighted sound power levels (LwA) are 96 dBA for each fan and 72 dBA for each heater. Table 1 provides comparisons of the predicted total sound levels (facility + residual ambient) at the nearest noise sensitive receptors (six residences) with the measured lower values of daytime and nighttime ambient background sound levels. Results of the CSA analysis indicated that with no special mitigation measures, the sound of the proposed new equipment would comply with the applicable noise criteria during both daytime and nighttime hours. Figures 6 and 7 plot the predicted A-weighted octave band spectra for, respectively, the fan and heater sounds predicted at the six residences. The plots, if suitably adjusted from A-weighted to linear sound pressure levels, indicate that the facility would not produce a clear tonal condition as defined by MassDEP.

Acentech Review Comments

We believe that the approach used by CSA is generally valid for estimating and evaluating the noise impacts of the proposed project. Our review indicates that the baseline ambient measurements may be used to establish the background sound levels in the neighborhood and that the project noise limits address the MassDEP noise criteria for nighttime operation. However, our review of the spectral ambient data and discussions with CSA confirmed that seasonal insect sound contributed significantly to the measured residual ambient sound levels. During months with less insect sound, we would expect that quiet daytime and nighttime sound levels could be 5 dBA lower than those listed in Tables 1 and 2 along with their associated MassDEP and Barrington limits.

The commercial software program, SoundPLAN, is widely-accepted for modeling the sound of industrial projects. We reviewed the inputs and results of the SoundPLAN model that CSA specifically developed for this project. The model inputs included source octave band sound power levels, equipment and building layouts and heights, source and receptor locations and elevations, topography, and ground and atmosphere propagation conditions, etc. Based on this information and on CSA sound model assumptions of relatively hard (i.e., reflective) ground conditions, no foliage, and acoustically transparent greenhouses (i.e., no shielding for the fan and heaters), we believe that the predicted facility sound levels are reasonable and conservative.

We believe that the project could be designed, constructed, and typically operated in compliance with the MassDEP broadband and tonal noise criteria and the Town noise regulation. However, we also expect that during the quietest daytime and nighttime periods - in seasons without cicadas or spring peepers – that the facility sound will cause a greater than 10 dBA increase above the residual ambient sound levels.

To protect the nearby residential community we would recommend that the Town of Great Barrington adopt feasible and realistic noise conditions on the project, which would be lower than the Town's noise limits and most likely be lower than the MassDEP limits suggested by CSA in Table 1 and 2. Current MassDEP policy directs projects to identify reasonable mitigation measures that minimize increases in community sound levels; the "increase of 10 dBA" criterion is considered an upper value for projects, not a goal by MassDEP. The permit conditions could include project sound limits and no prominent tones in the residential community (outside homes or at residential property lines), and one or more compliance sound tests that can be

witnessed by the Town. And on the design side, we would recommend that the project consider installing variable frequency drives (VFDs) to reduce fan speeds and fan sound when feasible and/or installing original or retrofit fan treatments (e.g., silencers or acoustically lined plenums).

Sincerely yours,

ACENTECH INCORPORATED

A handwritten signature in black ink, appearing to read "J. D. Barnes". The signature is written in a cursive style with a long horizontal stroke at the end.

James D. Barnes, P.E., F. INCE

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