

To: American Beech (Attn: Ryan Farrell)
 From: Sean Harkin
 Date: August 9, 2024
 Project: 300 Main Street – Greenport, NY – American Beech
 Subject: **Revised Noise Ordinance Review and Compliance Readings**

Introduction:

SoundSense has been retained by American Beech located at 300 Main Street in Greenport, NY (“American Beech”) to provide documentation required for the application for an Entertainment Permit in the Village of Greenport. An acoustic memo was issued to American Beech on May 9th, 2024 (“Prior Memo”) by SoundSense providing an analysis of the existing Village of Greenport Noise Ordinance adopted by the Village of Greenport on April 8th, 1992 (“Prior Noise Ordinance”). Recommendations for acoustic mitigation and the implementation of a limiter for the speaker system at American Beech (“Speaker System”) were included in the Prior Memo. Since the issuance of the Prior Memo, the Village of Greenport requested that American Beech submit documentation of compliance with the new noise ordinance passed by the Village of Greenport on March 28th, 2024 (“Noise Ordinance”). The Noise Ordinance will still be Chapter 88 of the Village of Greenport Code.

This memo provides a discussion of the updated Noise Ordinance and required changes to the measurement locations to ensure that American Beech complies with the Noise Ordinance. Although the procedure for setting the limiter did not change, new evaluation locations were necessary to comply with the 2024 requirements in the Noise Ordinance which require compliance with noise levels at public right-of-way locations as well as across real property lines. This memo also provides a summary of the site visit completed on August 1st, 2024 (“Site Visit”) to collect acoustic measurements and ensure compliance with the Noise Ordinance. During the Site Visit, it was confirmed that the amplified sound system with the limiter at American Beech is in compliance with the Noise Ordinance.

Definitions:

Ambient

The ambient sound level is the existing background sound level without additional sources. This is typically measured as an L90 sound level, or a sound level which is exceeded 90% of the time during a given sound level measurement.

Decibel (dB)

Definition: The term used to identify ten times the common logarithm of the ratio of two like quantities proportional to power or energy. Thus, one decibel corresponds to a power ratio $10^{0.1}$. Since the decibel expresses the ratio of two like quantities, it has no units. In this document, all decibels are presented using industry standard 20 μ Pa as the reference quantity.

A-Weighting

This weighting metric is commonly applied to sound pressure levels as it approximates the hearing response of the human ear which is more responsive to higher frequencies than lower frequencies. To avoid confusion, A is typically added to the type of sound level collected, such as LAeq to denote an A-weighted Leq sound level.

Definitions (Continued):

Equivalent-Continuous Sound Level (Leq)

Definition: Equivalent-continuous, frequency-weighted sound pressure level over a specified averaging time is the equivalent steady level, in that time interval, of the time-mean-square, frequency-weighted sound pressure produced by the sources of steady, fluctuating, intermittent, irregular, or impulsive sounds.

The equivalent-continuous sound level of a time-varying sound is equal to the level of an equivalent steady sound at a measurement location for the same measurement duration. Specifically, Leq is 10 times the common logarithm of the ratio of the time-mean-square sound pressure $p^2(t)$ over time period $T = T_2 - T_1$ to the square of the standard reference sound pressure. Measured in dB the Leq is:

$$L_{eq} = 10 \cdot \log_{10} \left(\frac{1}{T_2 - T_1} \int_{T_1}^{T_2} \frac{p^2(t) \cdot dt}{p_o^2} \right)$$

Sound Level Meter Response (Fast, Slow)

Sound level readings are always averaged over a time period. While an Leq is an average over a longer period of time, Lmax or Lmin values are typically noted with fast or slow response. For example, fast response, A-weighted maximum and minimum sound levels would be noted as LAFmax and LAFmin, while slow response, A-weighted maximum and minimum sound levels would be noted as LASmax and LASmin. Fast response uses a time averaging constant of 125-milliseconds. Slow response, which uses a time averaging constant of 1-second is used in the Village of Greenport’s Noise Ordinance.

Relevant Village of Greenport Noise Ordinance Sections:

§88-2 Definitions; word usage

UNREASONABLE NOISE

Sound that:

- (1) Endangers or injures any person or animal; or
- (2) Annoys, disturbs or discomforts a reasonable person of normal sensitivities; or
- (3) Adversely affects the sleep, repose, health or safety of any person

Standards to be considered in determining whether “unreasonable noise” exists in a given situation include, but are not limited to the following:

- (a) The volume of the sound.
- (b) The intensity of the sound.
- (c) Whether the nature of the sound is usual or unusual.
- (d) Whether the origin of the sound is natural or unnatural.
- (e) The volume and intensity of the background sound, if any.
- (f) The proximity of the sound to residential sleeping facilities.
- (g) The nature and zoning district of the areas within which the sound emanates.
- (h) The time of day or night the sound occurs.
- (i) The duration of the sound.
- (j) Whether the sound source is temporary.
- (k) Whether the sound is impulsive sound or a repetitive impulsive sound.

Relevant Village of Greenport Noise Ordinance Sections (Continued):

§88-4 Maximum permissible sound pressure levels.

A. Subject to §88-6, no person shall make, continue to make, cause to be made or continued, or permit to occur on premises owned by such person, any sound, or use any sound source, within the boundaries of the Village of Greenport, including any waters or beaches falling within the jurisdictional boundaries of the Village, in such a manner as to create a sound pressure level that exceeds the particular limits set forth in Table I when measured at or beyond the real property line of the applicable sound source site, except those acts specifically prohibited pursuant to §88-5 for which no measurement of sound pressure level is required.

Table I: Maximum Permissible A-Weighted Pressure Levels by Receiving Property Category, in dBA

Sound source property category	Receiving Property Category			
	Residential Area, Public Space or any Public Right-of-Way or Public Waterway abutting a Residential Area		Commercial Area, Public Space or any Public Right-of-Way or Public Waterway abutting a Residential Area	
	12:30 a.m. to 8:00 a.m. (next day)	8:00 a.m. to 12:30 a.m. (next day)	12:30 a.m. to 8:00 a.m. (next day)	8:00 a.m. to 12:30 a.m. (next day)
Residential Area, Public Space or any Public Right-of-Way or Public Waterway abutting a Residential Area	50	65	60	70
Commercial Area, Public Space or any Public Right-of-Way or Public Waterway abutting a Residential Area	50	65	60	70

§88-5 Prohibitions.

Subject to §88-6, no person shall make, continue to make, permit or cause to be made or continued or permit to occur on premises owned by such person, any unreasonable noise as defined in §88-1 within the boundaries of the Village of Greenport, including any waters or beaches within the boundaries of the Village of Greenport. In particular, without limitation of the foregoing provision of this Section, the following enumerated acts are declared to be in violation of this Section:

A. Sound reproduction devices.

- (1) The operation, playing, use or permitting the operation or playing or use of any sound reproduction device that results in any sound that is plainly audible at a distance of 50 feet or more from either (a) the applicable sound source (including, any vehicle or motorboat) or (b) beyond the real property line on which or from which such sound is produced as follows:

Relevant Village of Greenport Noise Ordinance Sections (Continued):**§88-5 Prohibitions (Continued).**

- (a) In any residential area:
 - (i) on any Friday, Saturday or any public holiday occurring between May 15 and October 1 of each calendar year, between the hours of 11:00 p.m. of such day and 10:00 a.m. of the immediately following day; and
 - (ii) on any other day between the hours of 10:00 p.m. of such day and 10:00 a.m. of the immediately following day; and
- (b) In any commercial area:
 - (i) on any Friday or Saturday occurring between May 15 and October 1 of each calendar year, between the hours of 12:30 a.m. and 10:00 a.m. of the immediately following day;
 - (ii) on any public holiday occurring between May 15 and October 1, between the hours of 11:00 p.m. of such day and 10:00 a.m. of the immediately following day;
 - (iii) on any other Friday or Saturday, between the hours of 11:00 p.m. of such day and 10:00 a.m. of the immediately following day; and
 - (iv) on any other day, 10:00 p.m. of such day and 10:00 a.m. of the immediately following day.

SoundSense's Recommended Criteria:

Based on a detailed review of the Noise Ordinance, the sound reproduction devices of American Beech would fall under two criteria. Section 88-5.A.1 of the Noise Ordinance notes that sound should not be plainly audible either 50 feet from the sound source or real property line when created in a commercial zone after 12:30 AM on the day directly following a Friday or Saturday between May 15 and October 1, on any public holiday after 11:00 p.m., on any other Friday or Saturday after 11:00 p.m., or on any other day after 10:00 p.m. Audibility is highly complex and can never be guaranteed, since some people may hear it even when music is not playing. As such, it is recommended that music is stopped no later than the times noted in Section 88-5.A.1.b on the appropriate days noted in the Noise Ordinance. During daytime hours before inaudibility is required, the sound reproduction devices must comply with the unreasonable noise section. Based on the criteria in Section 88-2 for unreasonable noise, SoundSense applied the Village's criteria provided in Sections 88-5 and Table I to establish a quantitative benchmark to use to set the limiters. The Noise Ordinance has a key change compared to the Prior Noise Ordinance. The Noise Ordinance requires that the sound levels provided in Table I must be complied with at the Public Right-of-Way adjacent to the Commercial Area. These new requirements mean that additional receiving locations for Noise Ordinance compliance must be included in the compliance review. **Figure 1** provides the new locations which were confirmed for Noise Ordinance compliance. **Table 1** provides the requirements for each of the locations.

SoundSense’s Recommended Criteria (Continued):

Figure 2: Proposed Compliance Locations for Measurements

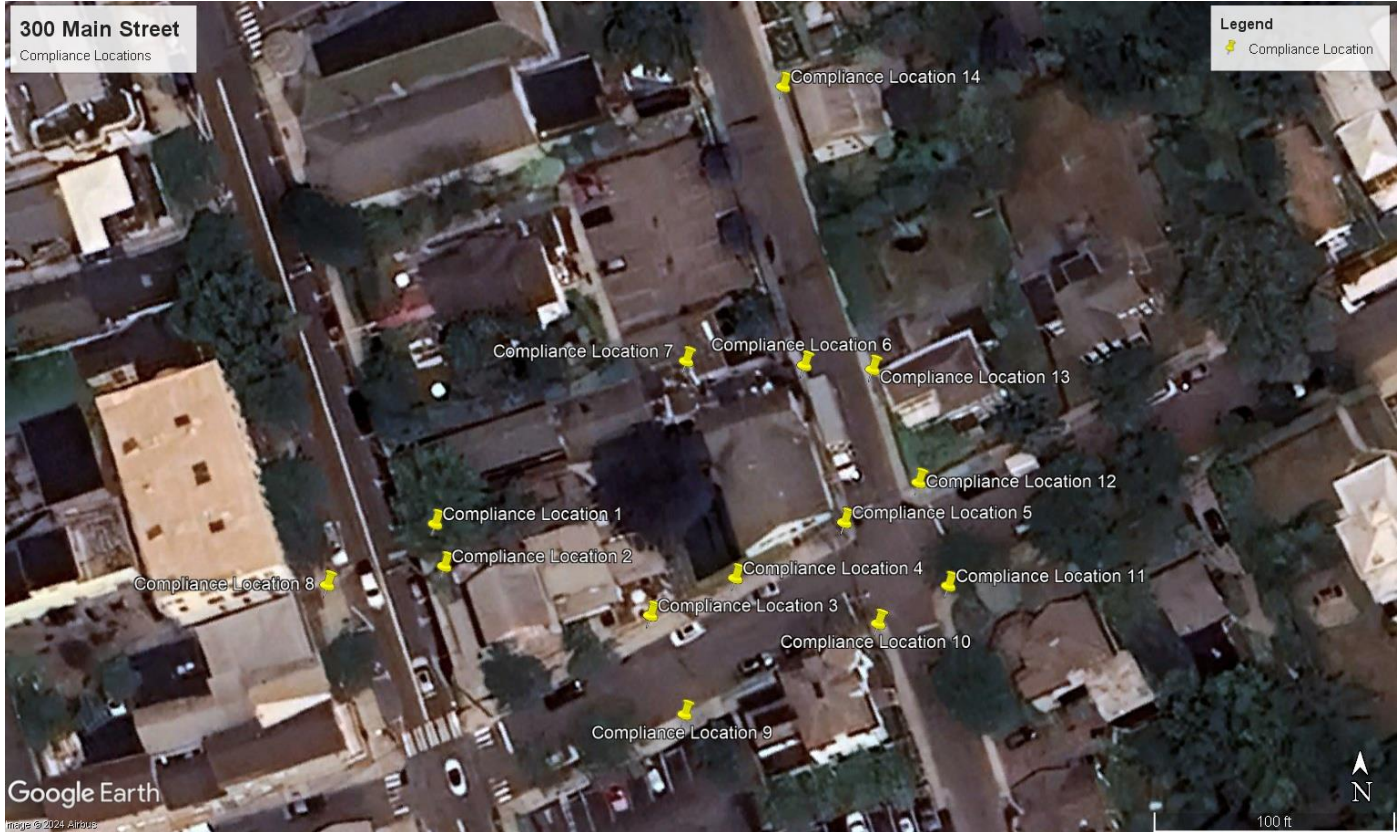


Table 1: Proposed Sound Level Limits for Each Compliance Location

Compliance Location	Sound Pressure Level (dBA)	Property Category
Location 1	70	Commercial
Location 2	70	Commercial
Location 3	70	Commercial
Location 4	70	Commercial
Location 5	70	Commercial
Location 6	70	Commercial
Location 7	70	Commercial
Location 8	70	Commercial
Location 9	70	Commercial
Location 10	70	Commercial
Location 11	65	Residential
Location 12	65	Residential
Location 13	65	Residential
Location 14	65	Residential

Limiter Setting Notes:

Following the procedure detailed by SoundSense in the Prior Memo, the limiters were set to ensure compliance with the Noise Ordinance during the Site Visit. Weather conditions during the Site Visit were acceptable for acoustic readings. These conditions were minimal cloud cover, no precipitation, and wind speeds between 3-6 mph as reported at the nearest historical weather station on Long Island at MacArthur Airport.

A limiter function was already a component of American Beech’s existing Sonance DSP 8-130MKII amplifier and was used to set the thresholds for the amplifier. SoundSense confirmed with American Beech that only American Beech’s authorized audio consultant has access to the limiter settings so that the settings used during the compliance review cannot be altered. Prior to setting the limiter, it was confirmed that the pink noise signal used for evaluation was producing noise at the same level as peaks in music played through the Speaker System which was producing levels observably reaching the threshold of the limiter. The Noise Ordinance states in §88-3.B.3 that compliance should be determined “using ‘slow’ meter response, except as necessary to identify a repetitive impulsive sound.” Since music can have repetitive impulsive sounds, the readings collected of music were used to confirm that the LAFmax collected was equivalent to the sound level of the pink noise played through the system. These readings therefore ensured that the pink noise signal utilized in the compliance testing was equivalent to peaks in music that would be played.

Per Item 5 of the procedure for setting the limiter included in the Prior Memo, the readings of the Speaker System should not include extraneous noise from additional sources. Since the pink noise signal utilized in the compliance testing is constant, the LASmin can be used at each location as a measure for the sound level from the Speaker System which excludes extraneous noise from vehicles, passers-by, and unloading trucks in the measurements collected. However, additional contribution from exhaust fans associated with the restaurant at American Beech at Location 6 was included in the readings collected. Even with the additional noise from exhaust fans, the readings collected are well within the criteria for compliance and are therefore the Speaker System was deemed to be compliant. Results of the readings collected are provided below in **Table 2**.

Table 2: Proposed Sound Level Limits for Each Compliance Location

Compliance Location	Measured Sound Pressure Level with Limiter (dBA)	Noise Ordinance Requirement (dBA)	Property Category
Location 1	67	70	Commercial
Location 2	60	70	Commercial
Location 3	69	70	Commercial
Location 4	64	70	Commercial
Location 5	51	70	Commercial
Location 6	60	70	Commercial
Location 7	61	70	Commercial
Location 8	56	70	Commercial
Location 9	56	70	Commercial
Location 10	54	70	Commercial
Location 11	48	65	Residential
Location 12	50	65	Residential
Location 13	55	65	Residential
Location 14	50	65	Residential

Conclusion:

As can be seen from the results listed in **Table 2**, the settings on the limiter bring the sound levels from music at American Beech to within the daytime requirements in place in the Noise Ordinance in Table I. Although the limiter in place ensures that the music complies with the requirements of the Noise Ordinance, it does not guarantee inaudibility. Therefore, it is recommended that music needs to stop at the times delineated in Section 88-5.A.1.b in the Noise Ordinance. Although this concludes SoundSense's comments at this time, SoundSense can provide further guidance as needed upon request from American Beech.