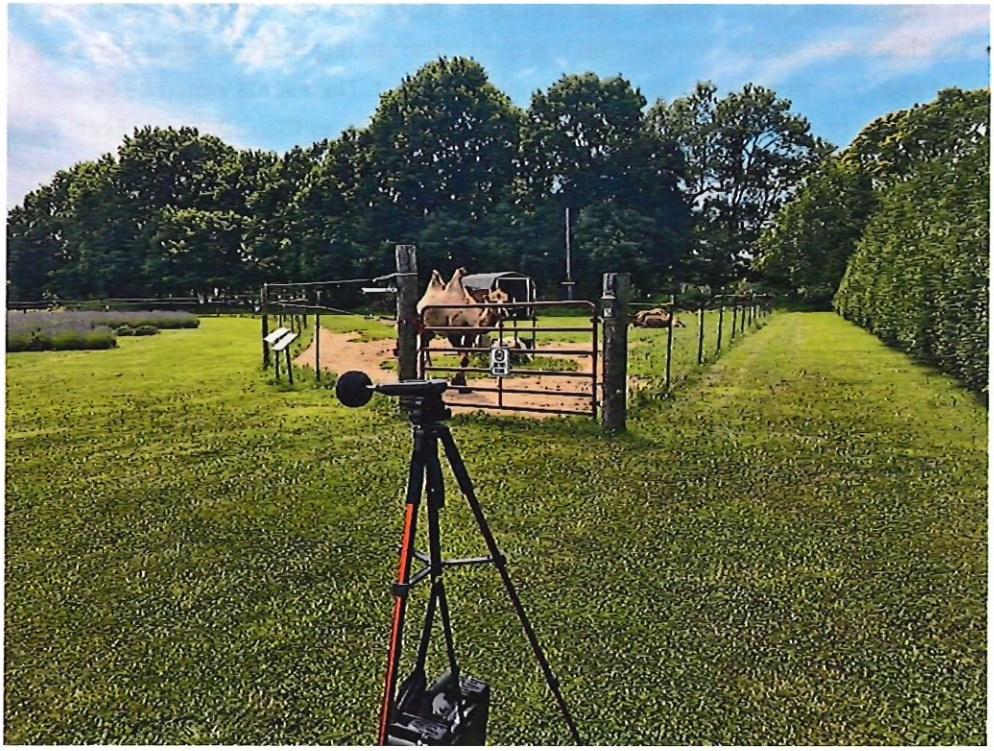
Acoustic Analysis
Lavendar Waves Farms
3814 Commodore Oliver Hazard Perry Highway
South Kingstown, Rhode Island



PREPARED FOR:

Lavendar Waves Farm
C/O Angell Law, LLC
1062 Reservoir Avenue
Cranston, Rhode Island 02910

GZA GeoEnvironmental, Inc

55 Lane Road | Fairfield, New Jersey 07004
(973) 534-4090
31 Offices Nationwide
www.gza.com

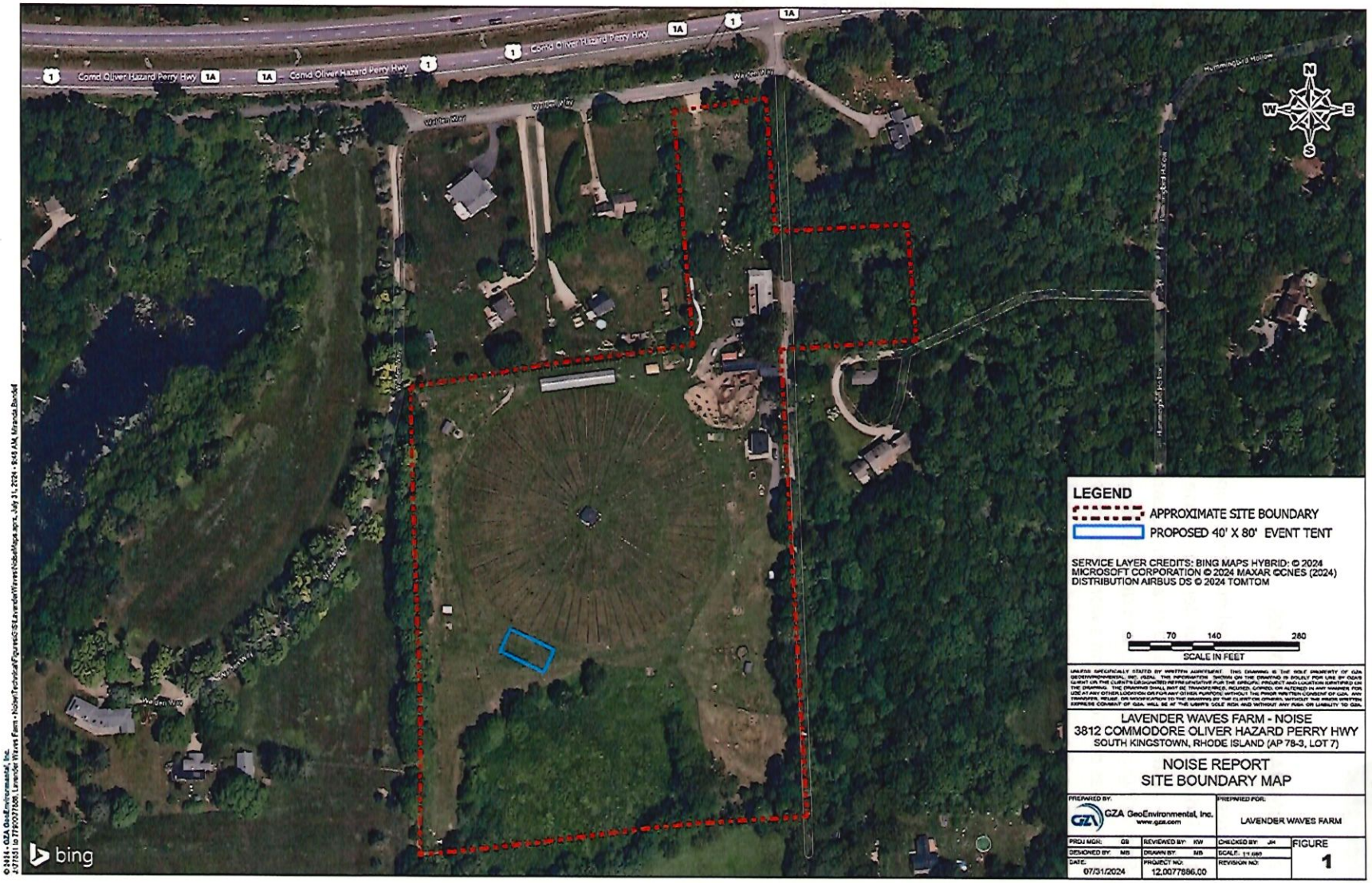
7/31/2024

1. OVERVIEW

GZA GeoEnvironmental, Inc (GZA) performed an acoustic investigation to evaluate the potential impact of noise generated by the operation of proposed outdoor wedding venue planned at the Project Site – 3814 Commodore Oliver Hazard Perry Highway. The site is a 13.5-acre parcel that currently farms and cultivates lavender. There is an existing gathering area a gazebo as well as two farm (barn) outbuildings used for machinery and farm storage. In addition, there is a residential structure on-site that is not part of the farm cultivation process. The Project Site is shown in **Figure 1** below. The evaluated space is a 40 x 80-foot event tent that is to be located on the southwestern portion for the Site. It is our understanding that the event space will host no more than 15 events per season with a maximum of 150 people per event. The events would be generally scheduled between 9:00 am and 9:00 pm with clean-up expected to be finished no later than 10:00 pm. Event parking is sited within an existing open field and is designed with 47 spaces. To evaluate the potential collective impact of background music and patron generated noise on adjacent sensitive residential receptors, GZA has performed the following work:

1. Monitored existing noise levels outdoors at multiple locations;
2. Determined the sound levels of the proposed event space and used distance calculations and the existing ambient sound levels to understand the worst-case sound level at the exterior nearby sensitive uses due to the event space; and
3. Compared results to the Town of South Kingstown Noise Ordinance.

Figure 1 – Project Site



2. SUMMARY OF FINDINGS

The results of the acoustical monitoring and simulation of noise generation associated with the proposed event tent indicated that even under worst case noise generation assumptions, the combination of simulated patron and PA system music, and small string band music from the event tent would not result in exceedances of the South Kingston, Rhode Island Noise Ordinance at the nearest residential homes. The evaluation of potential noise impact was developed on a worst-case basis to assess potential impact i.e., the combination of the lowest outdoor ambient noise monitored and the consideration of continuous noise levels that are well above comparable establishments.

The potential for noise impact to all adjacent neighbors was evaluated and is expected to result in no exceedance of the South Kingston, Rhode Island Noise Ordinance. Outdoor noise levels were collected during the acoustical study, and it was determined that the lowest ambient sound levels monitored during the proposed operating hours were 40.0, 42.2 and 49.2 dB(A) at locations along the east, west, and north property lines shown in Figure 2 below. Using distance reduction calculations to the nearest residential buildings, and the lowest ambient sound levels, the following total sound levels are expected as a worst-case scenario during the quietest ambient noise hours:

Table 1: Expected Outdoor Sound Levels Inclusive of Ambient Due to Event Space

Location	Outdoor Noise Level dB(A)
Western Neighbor – 504.6'	58.05
Western Neighbor – 737.96'	54.87
Southern Neighbor - 656.19'	55.84
Southern Neighbor – 676.27'	55.59
Eastern Neighbor – 846.29'	53.76
Eastern Neighbor – 576.07'	56.93
Northern Neighbor – 560.89'	57.74
Northern Neighbor – 511.96'	58.42

3.South Kingstown, Rhode Island Noise Ordinance

The local noise code is set forth in Appendix A – Zoning Ordinances, Article 5 – Supplementary Regulations – Section 507 – Standards for the Regulation of Commercial and Industrial Uses.

3.1 § 507.13 Noise

Section §507.13 states that no person shall create, operate, or cause to be operated on private property any source of sound which exceeds the limits set forth in the table below for the receiving land use category when measure at or within the property boundary of the receiving land use.

Table 2 – Maximum Sound Levels for Receiving Land Use (dB(A))

Time	Industrial Receptor	Commercial Receptor	Residential Receptor
7 am – 9 pm	70	65	60
9 pm – 7 am	70	65	50

4. ACOUSTICAL INVESTIGATION

The evaluated area (sound generating location) is a 40 x 80-foot event tent that is to be located on the southwestern portion for the Site as shown in **Figures 1- 3**. It is our understanding that the event space will host no more than 15 events per season with a maximum of 150 people per event. The events would be generally scheduled between 9:00 am and 9:00 pm with clean-up expected to be finished no later than 10:00 pm. Event parking is cited within an existing open field and is designed with 47 spaces.

4.1 Ambient Sound Measurements

To establish existing baseline ambient sound levels, outdoor measurements were performed along the property boundary, as shown in **Figure 2** below. The minimum overall A-weighted[1] sound level measured during the proposed hours of operation was 42.0 dB(A) at Location 1, 49.6 dB(A) at Location 2, and 42.2 dB(A) at Location 3. The measured sound levels are shown below in **Table 3** through **Table 5** below.

[1] A-weighting, noted as dB(A), is a standardized sound level meter setting having a frequency characteristic similar to the human ear/brain frequency.

Table 3 – Noise Monitoring Location 1 Results

Date	Time	Run Duration	LAeq	LASmin	LASmax	LAS 10.0	LAS 50.0	LAS 90.0
2024-07-10	14:00:00	01:00:00.0	45.1	39.8	56.4	47.5	43.3	41.7
2024-07-10	15:00:00	01:00:00.0	45.6	40.6	58.1	47.5	44.4	42.4
2024-07-10	16:00:00	01:00:00.0	45.6	40.4	57.5	47.7	44.4	42.3
2024-07-10	17:00:00	01:00:00.0	44.7	39.8	54.6	46.7	43.8	42.1
2024-07-10	18:00:00	01:00:00.0	44.1	37.8	56.7	46.5	42.4	40.4
2024-07-10	19:00:00	01:00:00.0	43.9	37.9	62.8	45.1	41.5	39.9
2024-07-10	20:00:00	01:00:00.0	42.0	34.8	59.2	43.3	39.5	37.1
2024-07-10	21:00:00	01:00:00.0	40.1	34.7	53.7	41.3	39.0	37.4
2024-07-10	22:00:00	01:00:00.0	37.4	31.6	51.3	39.1	36.3	33.9
2024-07-10	23:00:00	01:00:00.0	36.0	30.2	53.0	37.3	34.8	32.2
2024-07-11	00:00:00	01:00:00.0	39.6	32.3	58.6	40.2	37.5	34.6
2024-07-11	01:00:00	01:00:00.0	42.6	36.2	51.4	44.8	41.9	39.3
2024-07-11	02:00:00	01:00:00.0	41.0	35.1	51.2	43.2	40.2	37.6
2024-07-11	03:00:00	01:00:00.0	40.6	35.4	49.4	42.5	39.7	37.8
2024-07-11	04:00:00	01:00:00.0	39.3	33.7	49.4	43.7	36.4	34.9
2024-07-11	05:00:00	01:00:00.0	45.0	36.3	60.8	48.2	43.0	39.0
2024-07-11	06:00:00	01:00:00.0	44.6	37.0	60.5	46.7	42.7	40.3
2024-07-11	07:00:00	01:00:00.0	46.8	39.4	59.3	50.1	44.3	42.0
2024-07-11	08:00:00	01:00:00.0	43.7	39.7	54.1	45.1	43.0	41.8
2024-07-11	09:00:00	01:00:00.0	43.6	38.9	54.6	45.2	42.9	41.5
2024-07-11	10:00:00	01:00:00.0	45.8	40.8	57.2	48.1	44.9	43.0
2024-07-11	11:00:00	01:00:00.0	47.1	40.8	57.2	49.7	45.9	42.8
2024-07-11	12:00:00	01:00:00.0	45.9	40.5	59.1	47.7	45.2	43.4
2024-07-11	13:00:00	01:00:00.0	45.3	40.8	55.2	47.0	44.7	42.9

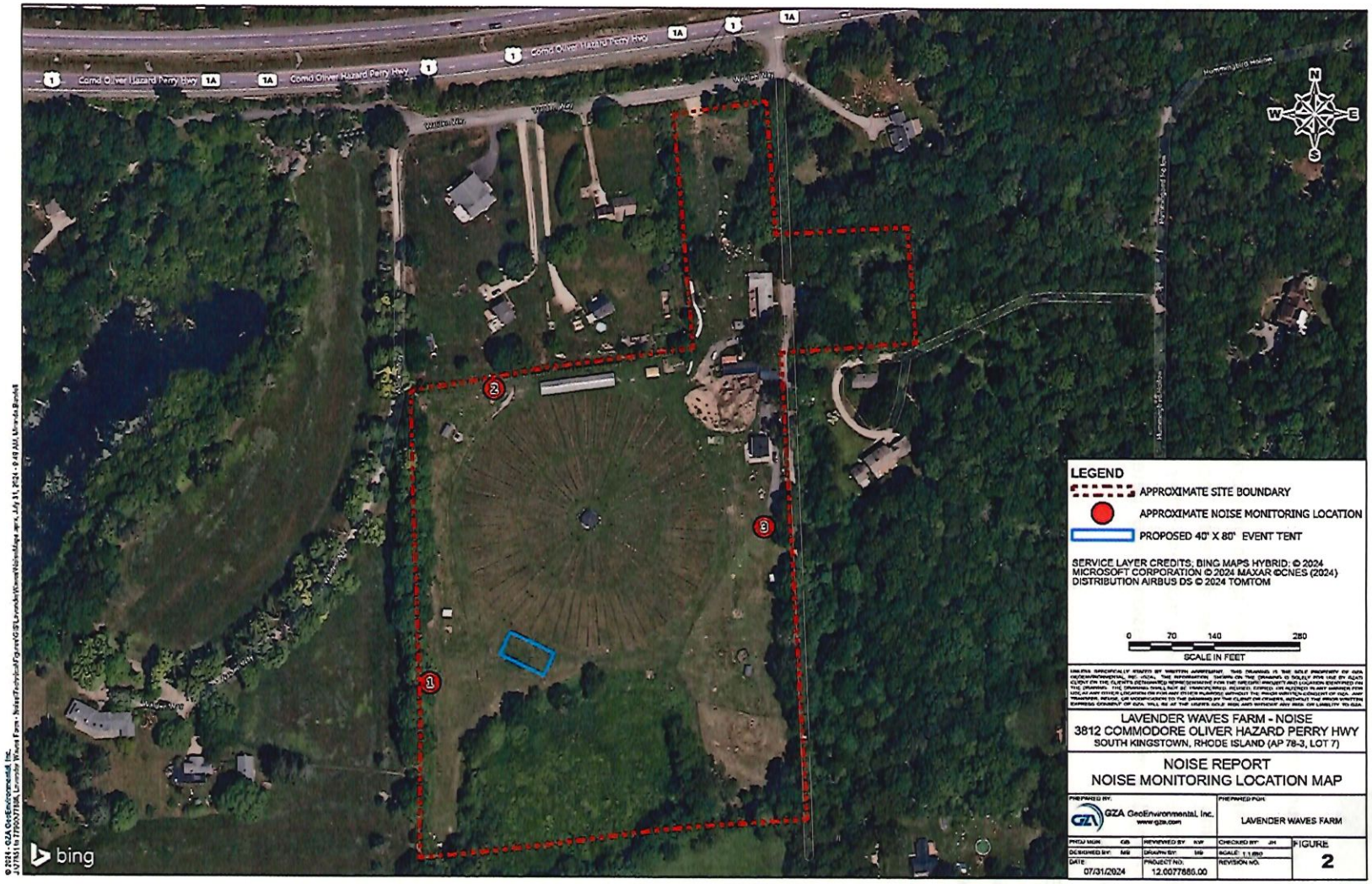
Table 4 – Noise Monitoring Location 2 Results

Date	Time	Run Duration	LAeq	LASmin	LASmax	LAS 10.0	LAS 50.0	LAS 90.0
2024-07-10	14:00:00	01:00:00.0	50.5	42.8	62.0	53.9	47.8	45.7
2024-07-10	15:00:00	01:00:00.0	49.8	43.6	64.4	51.9	48.3	46.3
2024-07-10	16:00:00	01:00:00.0	62.3	43.8	81.1	59.5	50.4	46.8
2024-07-10	17:00:00	01:00:00.0	50.2	42.7	67.5	52.8	48.2	45.7
2024-07-10	18:00:00	01:00:00.0	51.8	41.5	68.7	53.6	47.1	44.3
2024-07-10	19:00:00	01:00:00.0	50.1	40.4	65.7	51.9	46.0	43.4
2024-07-10	20:00:00	01:00:00.0	47.1	36.6	74.9	48.6	44.3	40.8
2024-07-10	21:00:00	01:00:00.0	43.4	36.3	56.8	45.5	42.3	39.8
2024-07-10	22:00:00	01:00:00.0	41.5	32.8	52.3	44.0	40.4	36.7
2024-07-10	23:00:00	01:00:00.0	39.4	31.2	51.5	42.1	37.7	34.3
2024-07-11	00:00:00	01:00:00.0	42.7	33.7	57.9	45.4	40.7	36.4
2024-07-11	01:00:00	01:00:00.0	47.4	37.4	57.0	50.5	45.5	41.1
2024-07-11	02:00:00	01:00:00.0	44.5	35.9	56.2	47.5	42.7	38.9
2024-07-11	03:00:00	01:00:00.0	44.4	36.3	57.5	47.5	42.0	38.6
2024-07-11	04:00:00	01:00:00.0	45.4	34.2	59.8	49.0	39.0	35.3
2024-07-11	05:00:00	01:00:00.0	48.5	38.8	64.6	51.3	46.1	42.7
2024-07-11	06:00:00	01:00:00.0	48.4	40.6	66.9	50.3	47.0	44.1
2024-07-11	07:00:00	01:00:00.0	50.2	42.4	61.2	52.8	48.6	45.6
2024-07-11	08:00:00	01:00:00.0	48.2	41.8	64.8	49.7	47.5	45.6
2024-07-11	09:00:00	01:00:00.0	50.2	43.2	76.9	50.6	47.9	45.9
2024-07-11	10:00:00	01:00:00.0	51.4	43.7	65.7	53.1	49.2	47.1
2024-07-11	11:00:00	01:00:00.0	49.6	43.7	64.3	51.3	48.9	46.9
2024-07-11	12:00:00	01:00:00.0	50.2	42.8	66.7	52.1	48.9	46.3
2024-07-11	13:00:00	01:00:00.0	49.6	43.4	65.9	51.6	48.2	46.1

Table 5 – Noise Monitoring Location 3 Results

Date	Time	Run Duration	LAeq	LASmin	LASmax	LAS 10.0	LAS 50.0	LAS 90.0
2024-07-10	15:00:00	01:00:00.0	47.1	42.2	69.5	48.5	46.2	44.4
2024-07-10	16:00:00	01:00:00.0	49.4	41.5	72.0	49.3	46.4	43.8
2024-07-10	17:00:00	01:00:00.0	54.4	40.9	81.3	47.1	44.6	43.0
2024-07-10	18:00:00	01:00:00.0	44.7	38.8	62.6	46.3	43.4	41.7
2024-07-10	19:00:00	01:00:00.0	43.4	38.9	53.4	45.1	42.7	40.9
2024-07-10	20:00:00	01:00:00.0	42.4	35.2	58.4	45.1	40.6	37.3
2024-07-10	21:00:00	01:00:00.0	42.8	34.0	57.6	44.0	38.3	36.6
2024-07-10	22:00:00	01:00:00.0	37.7	32.4	51.4	39.0	36.7	34.3
2024-07-10	23:00:00	01:00:00.0	36.6	30.4	50.8	38.0	35.5	32.9
2024-07-11	00:00:00	01:00:00.0	39.2	32.1	59.1	39.3	37.2	34.6
2024-07-11	01:00:00	01:00:00.0	41.9	36.6	52.8	43.7	41.3	38.9
2024-07-11	02:00:00	01:00:00.0	40.1	35.3	48.6	42.1	39.4	37.2
2024-07-11	03:00:00	01:00:00.0	40.0	36.2	49.6	41.9	39.4	37.8
2024-07-11	04:00:00	01:00:00.0	41.4	33.4	53.8	45.8	37.2	35.2
2024-07-11	05:00:00	01:00:00.0	47.0	37.3	57.9	50.2	45.0	40.9
2024-07-11	06:00:00	01:00:00.0	45.5	37.9	60.8	47.5	44.6	42.0
2024-07-11	07:00:00	01:00:00.0	46.8	40.4	63.3	48.8	45.1	42.9
2024-07-11	08:00:00	01:00:00.0	44.9	41.1	53.4	46.2	44.6	43.2
2024-07-11	09:00:00	01:00:00.0	46.5	41.3	64.7	47.7	45.0	43.4
2024-07-11	10:00:00	01:00:00.0	48.5	42.1	70.1	48.8	46.0	44.3
2024-07-11	11:00:00	01:00:00.0	48.1	42.0	63.7	50.2	47.4	44.7
2024-07-11	12:00:00	01:00:00.0	50.2	41.8	70.3	49.2	46.3	44.1
2024-07-11	13:00:00	01:00:00.0	47.2	41.7	66.9	48.0	45.9	44.2

Figure 2 – Ambient Noise Monitoring Locations



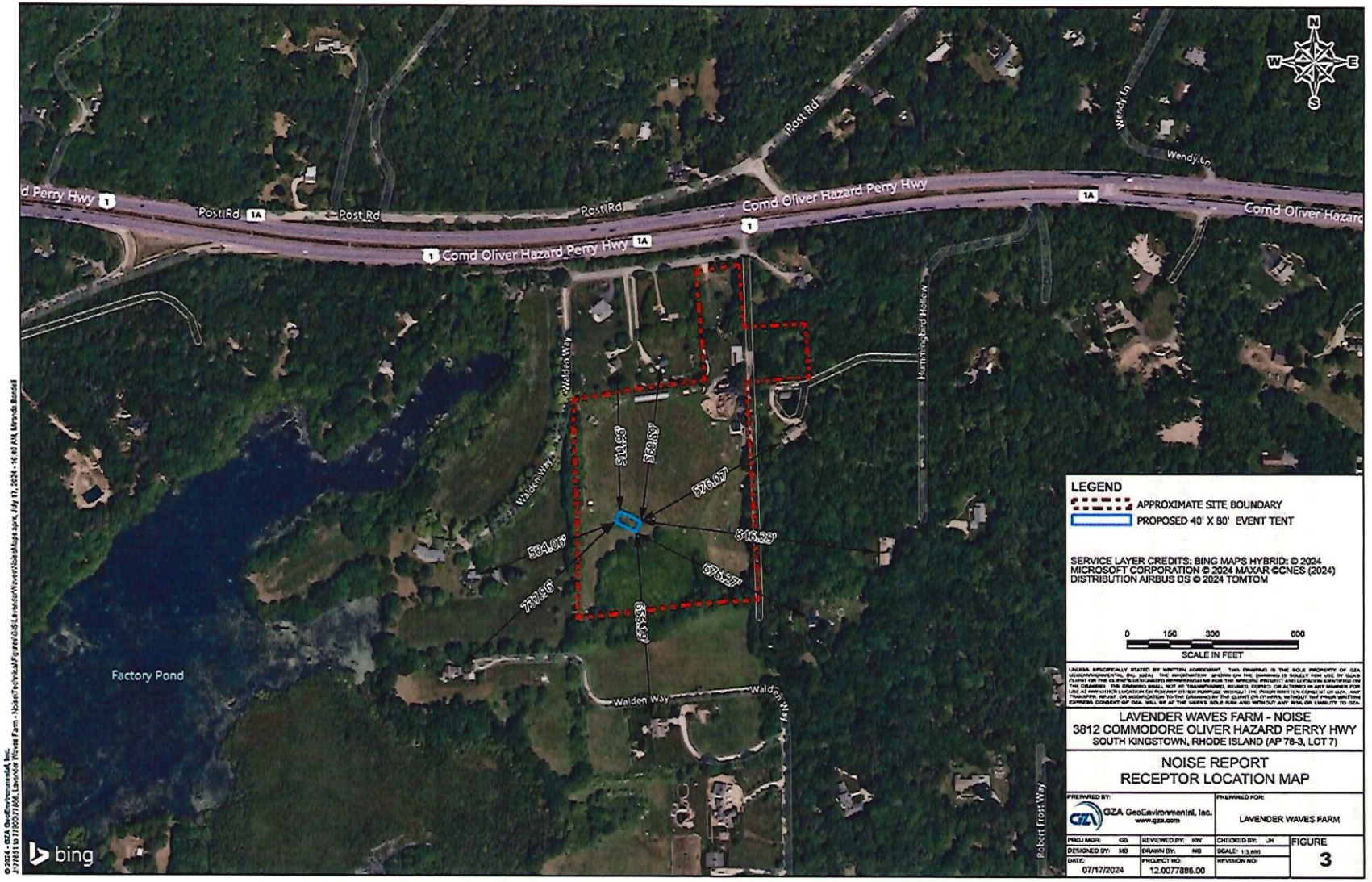
4.2 Measurement Equipment

Measurements of the airborne sound pressure levels were performed using a Type 1 Larson Davis Sound Expert 821 sound level meter with wind screen. The monitor was placed on a tripod at a height of approximately four feet above the ground. Away from any other noise-reflective surfaces. The monitor was calibrated prior to and following the monitoring session. Noise meter calibration certification and backup data can be provided upon request.

4.3 Event Space Evaluation Analysis / Results

The event space is to be located at the southwestern portion of the Site. The nearest noise sensitive receptors are shown in **Figure 3** below. These receptors are all residential dwellings.

Figure 3 – Nearest Noise Sensitive Receptors



The average person speaks a normal conversation level of 60 dB(A). The event space is to have a small PA system with speakers on the inside of a walled tent. The event space may also have a small string band. For conservative purposes a level of 92 dB(A) was assumed to analyze the noise generation associated with the combination of PA/live music and public assembly noise. Event noise generation calculation assumptions were developed based with consideration of the sound level of average conversation, number of patrons, sound levels of a PA system or small string band, ambient sound levels, and the distance to nearby receptors.

To calculate the reduction in noise levels over a distance, the following equation was used:

$$\mathrm{SPL}_2 = \mathrm{SPL}_1 - 20\log\left(\frac{R_2}{R_1}\right),$$

where:

- SPL_1 – Sound pressure level at point 1;
- SPL_2 – Sound pressure level at point 2;
- R_1 – Distance from the sound source to point 1; and
- R_2 – Distance from the sound source to point 2.

To add the monitored and projected noise levels, the following equation was used:

$$L = 10\,\mathrm{Log}_{10}\left(\sum_{i=1}^{n} 10^{(L_i/10)}\right)$$

As an example, one of the western neighbors is located approximately 504.6' from the event tent. Considering the generated noise level of 92.0 dB(A) at the tent, using the distance reduction would result in a generated sound level of 57.95 d B(A) at the western neighbor. Adding that level to the measured ambient level of 42.0 dB(A) using the above equation, results in a total sound level of 58.06 dB(A) at the western neighbor. This result as well as the predicted sound levels of all the nearest receptors are shown below in **Table 6.**

Table 6: Expected Outdoor Sound Levels Inclusive of Ambient Due to Event Space

Location	Outdoor Noise Level dB(A)
Western Neighbor – 504.6'	58.05
Western Neighbor – 737.96'	54.87
Southern Neighbor - 656.19'	55.84
Southern Neighbor – 676.27'	55.59
Eastern Neighbor – 846.29'	53.76
Eastern Neighbor – 576.07'	56.93
Northern Neighbor – 560.89'	57.74
Northern Neighbor – 511.96'	58.42

If you have any questions, please do not hesitate to contact me at gene.bove@gza.com or (973) 534-4090.

Very truly yours,

GZA GEOENVIRONMENTAL, INC.

Gene Bove
Project Manager

Kevin Williams
Vice President / Associate Principal