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March 17, 2023

Mr. Gary Stougaard
PV Scottsdale Hotel Owner SPE, LLC
5721 Chelsea Avenue
La Jolla, CA 92037

Subject: ANdAZ Scottsdale Resort and Bungalows Expansion– Noise Impact Study – Town of Paradise Valley, AZ

Dear Mr. Stougaard:

MD Acoustics, LLC (MD) is pleased to provide this noise impact study and recommendations report as it relates to proposed operations and events at the ANdAZ Scottsdale Resort and Bungalows Expansion located at 6114 North Scottsdale Road, Scottsdale, AZ.

This is MD's fourth submittal regarding the Andaz resort: previous submittals include two (2) letter reports dated 10/20/2021 and 8/3/2022 and an addendum to the second letter report dated 12/5/2022. A summary of the previous reports and how this one differs is provided for your reference:

- The first report (dated 10/20/2021) was commissioned by the Town of Paradise Valley in partnership with the Andaz resort. It included background noise measurements and a simulated event on both the Albers and Cholla event lawns. Using the measured noise levels as a baseline, recommendations were provided to reduce the noise impact, including the recommendation to use a distributed audio system to reduce the noise levels.
- The second report (dated 8/3/2022) was commissioned by the Andaz resort to determine the potential noise impact of the proposed bungalows expansion. An addendum dated 12/5/2022 was issued to clarify the main findings, namely that noise levels from the proposed bungalows expansion will not exceed the Town noise limits.
- Working with the Town, the Andaz resort has gone forward with plans to install a distributed audio system at the Albers and Cholla event lawns to reduce the noise impact to the community. This study shows a) how the proposed audio system will reduce the noise impact to the community, b) how the proposed bungalows expansion will reduce the noise impact to the community, and c) how the combination of the proposed audio system and the proposed bungalows expansion will reduce the noise impact to the community.

A previous study for this project dated 10/20/2021 included baseline measurements and several options to reduce the impact of event noise to the surrounding environment. An additional study regarding the proposed bungalows expansion was provided on 08/03/2022. This study shows the combination of implementing a distributed audio system as suggested in the 10/20/2021 study with the proposed bungalows expansion referenced in the 08/03/2022 study.

The project was assessed with regard to potential operations and event noise at the existing Albers and Cholla Lawns. For your reference, Appendix A contains a glossary of acoustical terms and Appendix B contains the proposed site plan. All referenced noise contours are provided in Appendix C.

1.0 Assessment Overview

This assessment evaluates the Project Noise Levels from the existing event lawns with the proposed distributed audio systems with and without the proposed bungalow expansion and compares the projected noise levels to the Town's noise ordinance. Figure 1 below shows the site location, with a red box around the area under evaluation.

Figure 1: Site Location

Using acoustical modeling software, MD created acoustical models to show how the noise from the proposed distributed audio systems at the event lawns at the resort will propagate to the adjacent uses with and without the proposed bungalow expansion. The acoustical models are calibrated to real-world measurements.

2.0 Local Acoustical Requirements

MD compared the results of the noise assessment to Section 10-7-3 of the Town of Paradise Valley, Town Code. The Town Code states: "Table 1 sets forth the noise level limits for stationary sources, and it is unlawful to project a sound or noise, except those caused by motor vehicles, from one property into another in excess of the stated limits".

Table 1: Limiting Noise Levels for Stationary Sources

TIME	MAXIMUM ALLOWABLE NOISE LEVEL dB (A)
7:00 a.m. to 10:00 p.m.	56
10:00 p.m. to 7:00 a.m. and on all Sundays and specified legal holidays	45

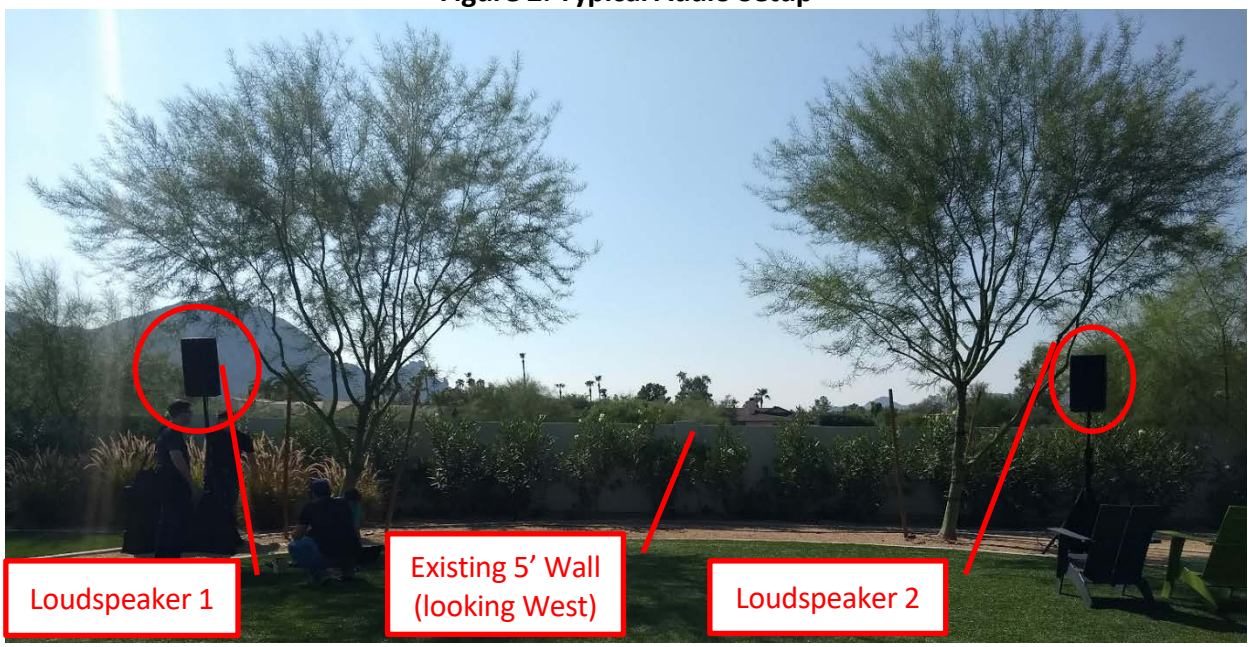
Therefore, project operations must comply with the Town's noise limit of 56 dBA during daytime hours (7AM to 10PM) Monday through Saturday and 45 dBA during nighttime hours (10PM to 7AM) or on Sundays and specified legal holidays.

3.0 Study Method and Procedure

3.1 Simulated Events

Figure 2 shows the audio system typical of events at Albers Lawn, consisting of two (2) loudspeakers with a microphone. This setup is simple for DJ's to implement; however, one of the drawbacks is that each loudspeaker has to be cranked up loud enough to provide sufficient coverage of the entire event area.

Figure 2: Typical Audio Setup



In the report dated 10/20/2021, MD recommended implementing a distributed audio system in which more loudspeakers would be used to cover the same area. With more loudspeakers located closer to the audience at the event lawn, each loudspeaker would use a lower volume to achieve the same sound coverage. This would result in a win-win for the resort and the Town: better quality sound for resort guests and less amplified sound propagating to the surrounding neighbors.

The proposed bungalows expansion further results in a win-win by placing more buildings to block and scatter between the existing event lawns and the community. In order to demonstrate the difference to the surrounding environment, MD modeled the following scenarios:

1. Typical Audio Scenario with no bungalows
2. Typical Audio Scenario with the bungalows
3. Distributed Audio Scenario at Albers Lawn with no bungalows
4. Distributed Audio Scenario at Albers Lawn with the bungalows
5. Distributed Audio Scenario at Cholla Lawn with no bungalows
6. Distributed Audio Scenario at Cholla Lawn with the bungalows

3.2 Stationary Noise Level Prediction Modeling

SoundPlan Acoustic Modeling Software (SP) was utilized to model the operational noise levels from the project site. SP acoustical modeling software is capable of evaluating stationary noise sources (e.g., loudspeakers for live events, DJs, parking lots, crowds, loading/unloading, patios, etc.) and much more. SP's software utilizes algorithms (based on inverse square law) to calculate noise level projections. The software

allows the user to input specific noise sources, spectral content, sound barriers, building placement, topography, and sensitive receptor locations. In addition, SP can model the noise sources as point sources, line sources, and area sources.

The future worst-case noise level projections were modeled using measured sound level data for the stationary on-site sources. The live event noise was represented as a point source representing the loudspeakers used for the event. The model incorporates the topography at the project site and the building and wall heights, and it shows how sound propagates to the surrounding area. Table 2 below outlines the reference noise levels used to calibrate the models.

Table 2: Reference Sound Level Measurements for SoundPlan Model

Source	Source Type	Reference Level (dBA)	Distance (ft)
Typical Audio Loudspeakers[1]	Point Source	93	3
Distributed Audio Loudspeakers[2]	Point Source	-	-

1. Based on sound measurements conducted 9/15/2021 at Andaz Resort. In addition, a 7 point reduction was included to account for a noise limit imposed by the resort after the 2021 measurements.

2. Volume of each speaker adjusted as necessary to achieve similar sound coverage. o

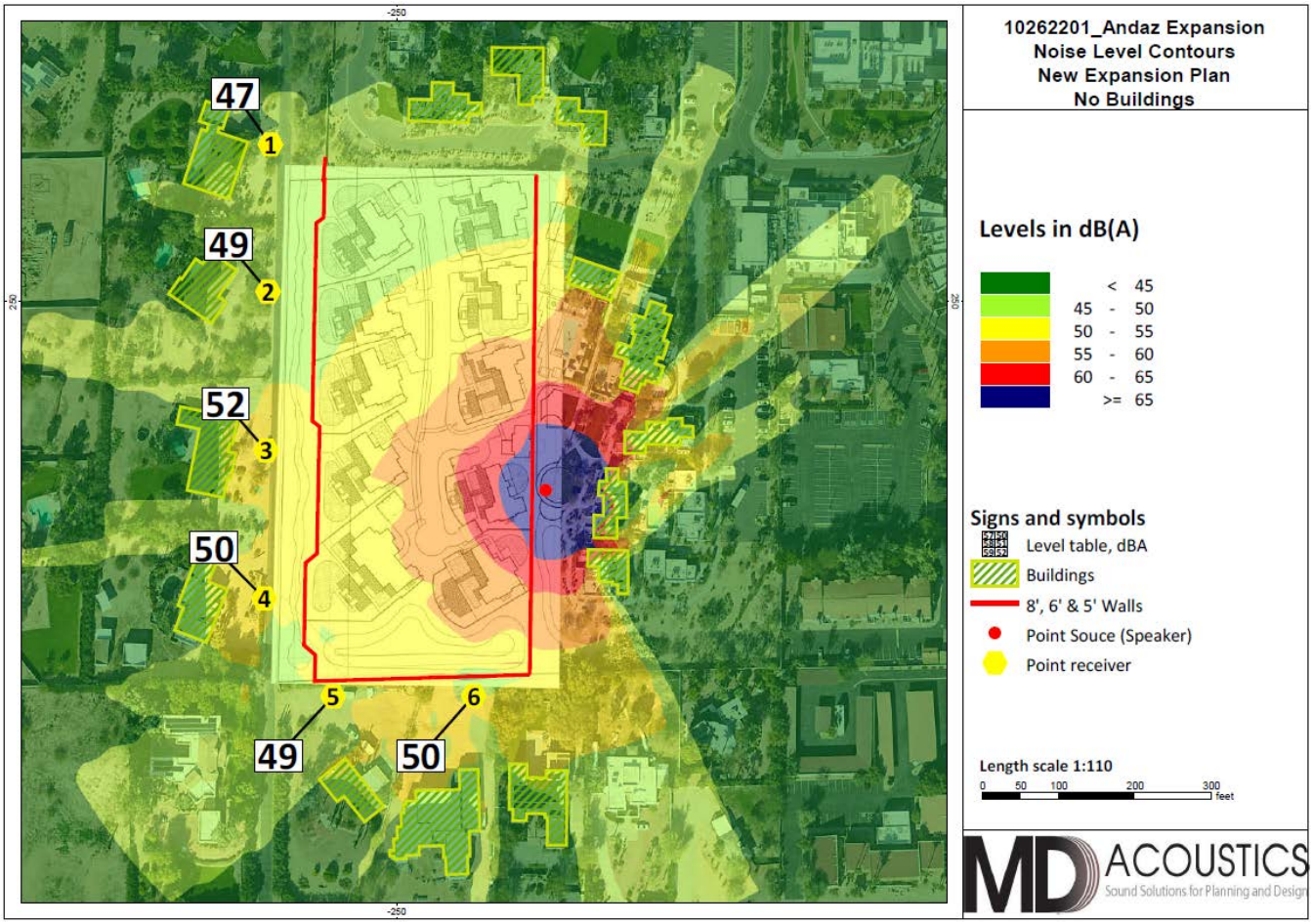
4.0 Findings and Recommendations

4.1 Scenario 1 - Typical Audio Scenario with No Bungalows – Albers Lawn Event

Figure 3 shows the results of the typical audio scenario with no Bungalows. The noise levels due to amplified music or speech can vary from 47 to 50 dBA at receptors 1-6. Note that this scenario includes the proposed 6’ property line wall proposed at the west end of the proposed expansion and the 8’ property line wall proposed at the south end of the proposed expansion.

<*Figure 3, next page*>

Figure 3: Baseline - Typical Audio Scenario with No Bungalows (Scenario 1)



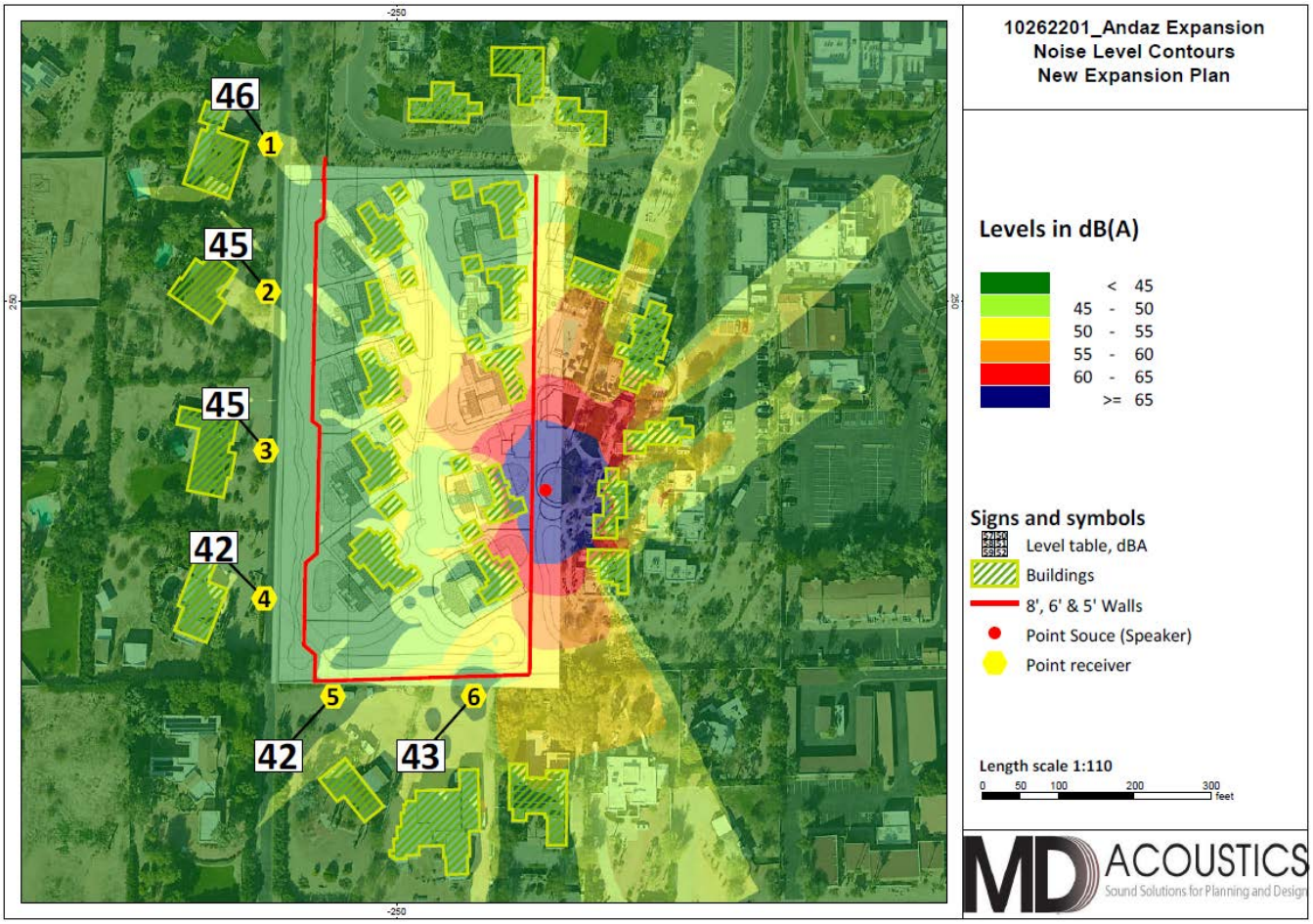
These results are consistent (within +/- 3 dB) with those of Figure 8 in the report dated 10/20/2021. In other words, without the proposed bungalows, the baseline condition is the same as the existing condition. The following sections will show that the buildings in the proposed bungalows expansion provide further shielding from events at the event lawns.

4.2 Scenario 2 - Typical Audio Scenario with Bungalows – Albers Lawn Event

Figure 4 shows the results of the typical audio scenario with the proposed Bungalows expansion. The noise levels due to amplified music or speech can vary from 42 to 46 dBA at receptors 1-6. The average reduction in noise level at receptors 1-6 is 6 dB, which is a significant and noticeable difference.

<Figure 4, next page>

Figure 4: Typical Audio Scenario with Bungalows Expansion (Scenario 2)



The buildings have been placed to reduce the direct line of sight from the existing event lawn to the residences, and the result is an average reduction in noise level of 6 dB at the nearest residences. Note that the only difference between Figures 3 and 4 is the presence of the buildings of the proposed Bungalows expansion.

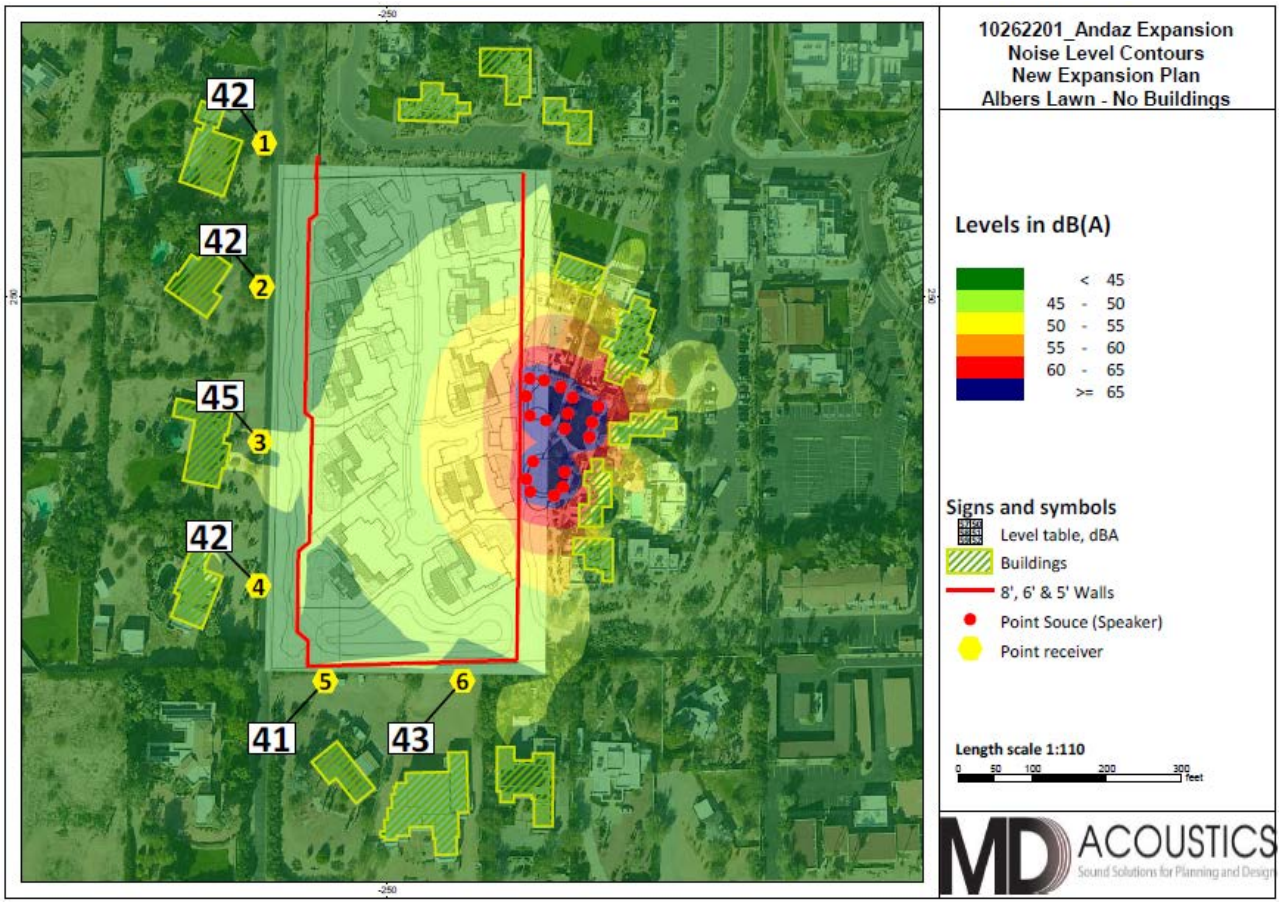
4.3 Scenario 3 - Distributed Audio Scenario with no Bungalows – Albers Lawn Event

In the report dated 10/20/2021, MD recommended installing a distributed audio scenario with at least eight (8) loudspeakers distributed around the Albers Lawn event space. In partnership with the Town of Paradise Valley, Andaz has made plans to install a distributed audio system with eighteen (18) loudspeakers and three (3) subwoofers around the Albers Lawn. This reduces the noise impact by bringing the amplified sound directly to the farthest guest: each loudspeaker needs much less "throw" than before in order for each guest to be able to hear the program.

Figure 5 shows the noise contours with the distributed audio scenario on Albers Lawn without the proposed bungalows expansion.

<Figure 5, next page>

Figure 5: Distributed Audio Scenario with No Bungalows (Scenario 3)



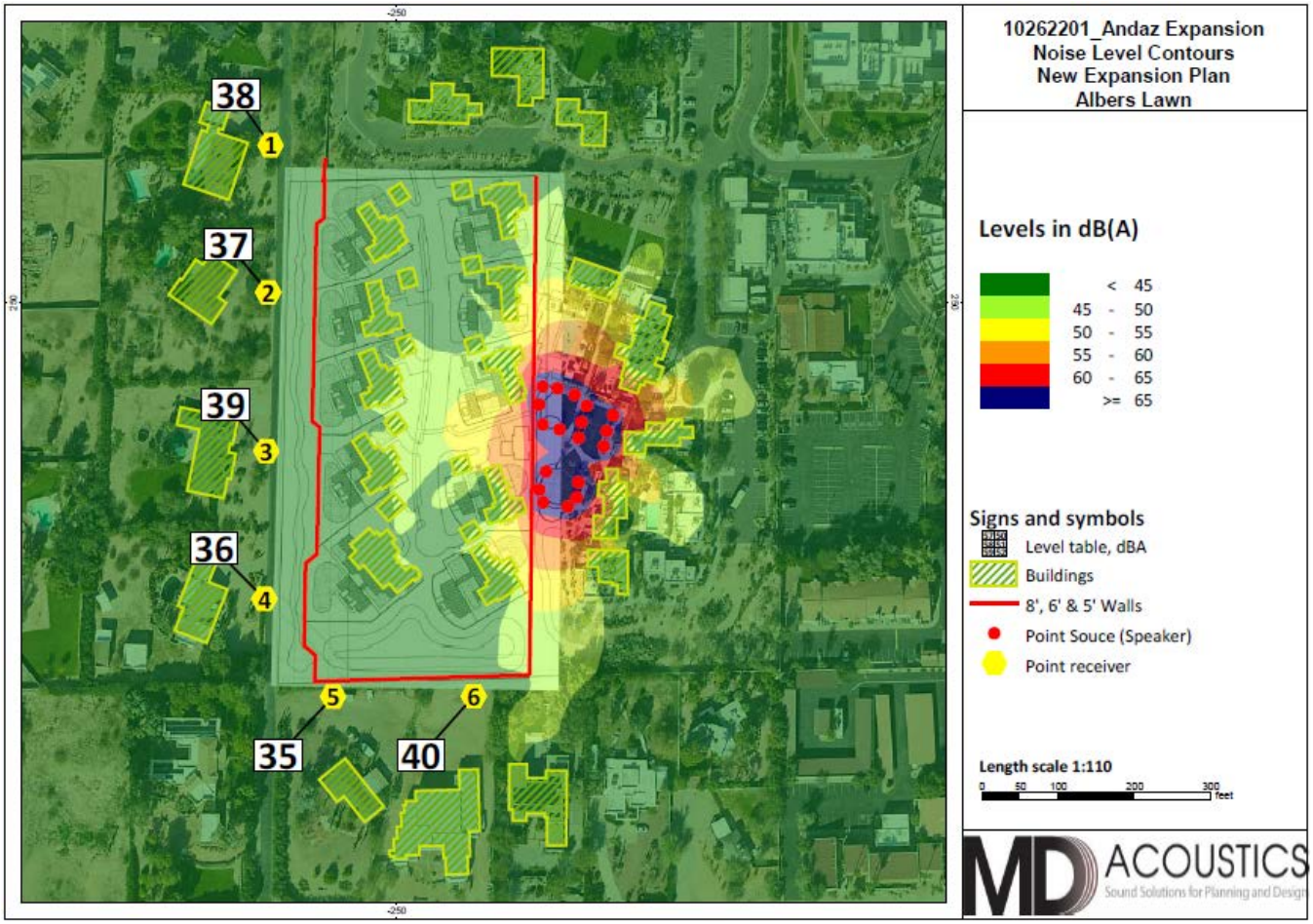
Comparison between Figures 3 and 5 show an average reduction in the noise levels of 7 dB due to the distributed audio system versus the typical audio scenario. The distributed audio system enables amplified music and speech to be louder for resort patrons and quieter for the surrounding environment.

4.4 Scenario 4 - Distributed Audio Scenario at Albers Lawn with Bungalows

Figure 6 shows the noise contours with the distributed audio scenario on Albers Lawn with the proposed bungalows expansion.

<Figure 6, next page>

Figure 6: Distributed Audio Scenario at Albers Lawn with Bungalows (Scenario 4)



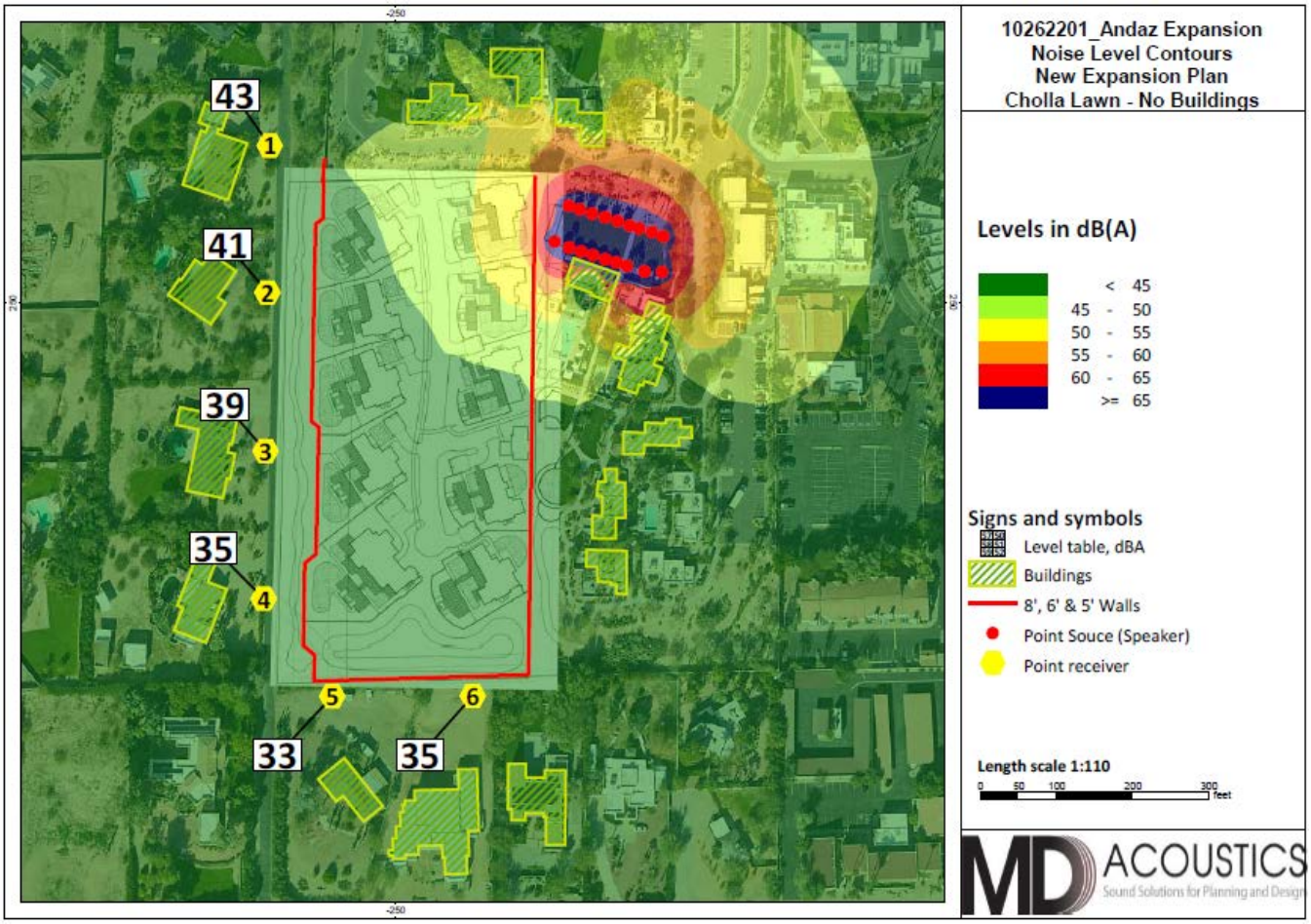
As shown in Figure 6, the bungalows expansion provides an additional 5 dB of reduction in addition to the 7 dB reduction due to the distributed audio system. This provides a combined 12 dB reduction (7 dB due to the distributed audio system and 5 dB due to the bungalows buildings) when compared to the typical audio scenario with no bungalows shown in Figure 3 (Scenario 1).

4.5 Scenario 5 - Distributed Audio Scenario at Cholla Lawn with no Bungalows

Figure 7 shows the effect of the proposed distributed audio system at the Cholla Lawn event area without bungalows. The noise levels range from 33 to 43 dBA at receptors 1-6.

<Figure 7, next page>

Figure 7: Distributed Audio Scenario at Cholla Lawn with No Bungalows (Scenario 5)



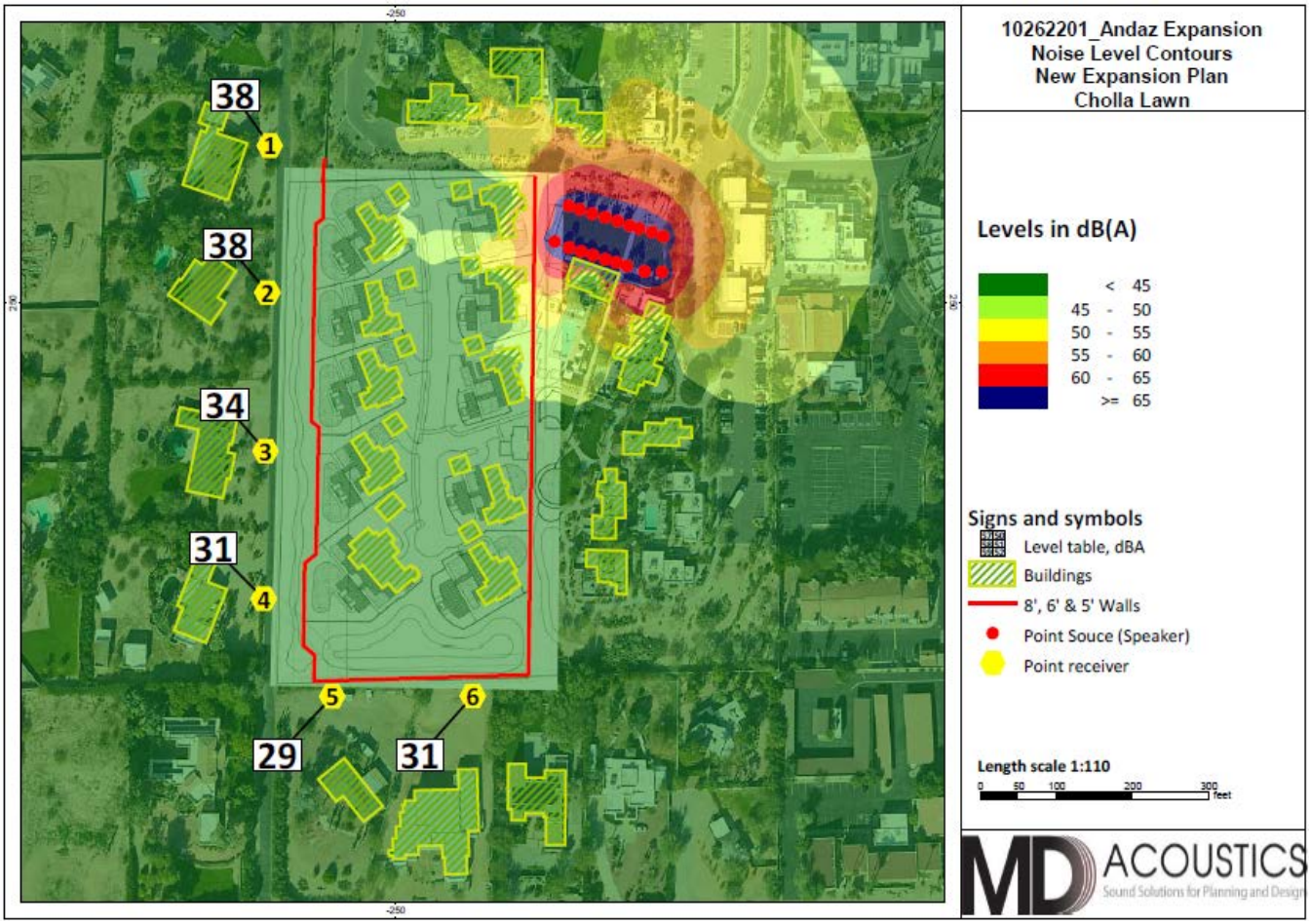
The noise levels do not exceed the town limits.

4.6 Scenario 6 – Distributed Audio Scenario at Cholla Lawn with Bungalows

Figure 8 shows the effect of the proposed distributed audio system at the Cholla Lawn event area with the proposed bungalows. The noise levels range from 31 to 38 dBA at receptors 1-6, which is an average of 4 dB less than without the bungalows.

<Figure 8, next page>

Figure 8: Distributed Audio Scenario at Cholla Lawn with Bungalows (Scenario 6)



5.0 Conclusions

MD is pleased to provide this noise impact study for the ANdAZ Scottsdale Resort Expansion. When compared to the baseline condition, the proposed bungalows expansion provides a 6 dB reduction in sound levels from Albers Lawn. The combination of the proposed bungalows expansion with the proposed distributed audio system provides an additional 6 dB reduction, for a total reduction of 12 dB. Similar findings were demonstrated at the Cholla Lawn. Table 1 provides a summary of the findings.

Table 1: Summary of Acoustical Results

Location	Scenario	Delta (dB)[1]
Albers Lawn	Baseline Condition: Typical Audio - No Bungalows[2]	-
	Typical Audio - With Bungalows	-6
	Distributed Audio - No Bungalows	-7
	Distributed Audio - With Bungalows	-12
Cholla Lawn	Baseline Condition: Typical Audio - No Bungalows (10/21 report)[3]	-
	Distributed Audio - No Bungalows	-9
	Distributed Audio - With Bungalows	-13

Notes:
1. Average dB difference between the baseline condition and each scenario. Negative values represent a quieter noise level than the baseline; positive values represent a louder noise level than the baseline.
2. See Figure 8 (p. 9) of the report dated 10/20/2021
3. See Figure 13 (p. 15) of the report dated 10/20/2021

The noise levels from the special events with the proposed distributed audio system do not exceed the 45 dBA noise limit and therefore are compliant. Furthermore, the proposed expansion provides barriers and buildings to further scatter and block noise from special events held at the resort, providing an additional 5 dB reduction in noise level.

If you have any questions regarding this analysis, please call our office at (602) 774-1950.

Sincerely,
MD Acoustics, LLC

Samuel Hord, INCE
Acoustical Consultant

Appendix A

Glossary of Acoustical Terms

Glossary of Terms

A-Weighted Sound Level: The sound pressure level in decibels as measured on a sound level meter using the A-weighted filter network. The A-weighting filter de-emphasizes the very low and very high frequency components of the sound in a manner similar to the response of the human ear. A numerical method of rating human judgment of loudness.

Ambient Noise Level: The composite of noise from all sources, near and far. In this context, the ambient noise level constitutes the normal or existing level of environmental noise at a given location.

C-Weighted Sound Level: The sound pressure level in decibels as measured on a sound level meter using the C-weighted filter network. The C-weighting filter greatly de-emphasizes very high frequency components of the sound and slightly de-emphasizes the very low frequency components. A numerical method of rating human judgment of loudness.

Community Noise Equivalent Level (CNEL): The average equivalent A-weighted sound level during a 24-hour day, obtained after addition of five (5) decibels to sound levels in the evening from 7:00 to 10:00 PM and after addition of ten (10) decibels to sound levels in the night before 7:00 AM and after 10:00 PM.

Decibel (dB): A unit for measuring the amplitude of a sound, equal to 20 times the logarithm to the base 10 of the ratio of the pressure of the sound measured to the reference pressure, which is 20 micro-pascals.

dB(A): A-weighted sound level (see definition above).

dB(C): C-weighted sound level (see definition above).

dB(Z): Z-weighted sound level (see definition of dB above).

Equivalent Sound Level (LEQ): The sound level corresponding to a steady noise level over a given sample period with the same amount of acoustic energy as the actual time varying noise level. The energy average noise level during the sample period.

Habitable Room: Any room meeting the requirements of the Uniform Building Code or other applicable regulations which is intended to be used for sleeping, living, cooking or dining purposes, excluding such enclosed spaces as closets, pantries, bath or toilet rooms, service rooms, connecting corridors, laundries, unfinished attics, foyers, storage spaces, cellars, utility rooms and similar spaces.

Human Sensitivity to Sound: In general, the healthy human ear can hear between 20 Hz to 20,000 Hz. Frequencies below 125 Hz are typically associated with low frequencies or bass. Frequencies between 125 Hz and 5,000 Hz are typically associated with mid-range tones. Finally, frequencies between 5,000 and 20,000Hz are typically associated with higher range tones.

The human ear is sensitive to changes in noise levels, depending on the frequency. Generally speaking, the healthy human ear is most sensitive to sounds between 1,000 Hz and 5,000 Hz (A-weighted scale) and perceives a sound within that range as being more intense than a sound with a higher or lower frequency with the same magnitude. At lower and higher frequencies, the ear can become less sensitive depending on a number of factors. Table 1 provides a brief summary of how humans perceive changes in noise levels.

Table 1: Change in Noise Level Characteristics[1]

Changes in Intensity Level, dBA	Changes in Apparent Loudness
1	Not perceptible
3	Just perceptible
5	Clearly noticeable
10	Twice (or half) as loud

https://www.fhwa.dot.gov/environMent/noise/regulations_and_guidance/polguide/polguide02.cfm

L(n): The A-weighted sound level exceeded during a certain percentage of the sample time. For example, L10 in the sound level exceeded 10 percent of the sample time. Similarly, L50, L90 and L99, etc.

Noise: *A*ny unwanted sound or sound which is undesirable because it interferes with speech and hearing, or is intense enough to damage hearing, or is otherwise annoying. The State Noise Control Act defines noise as "...excessive undesirable sound...".

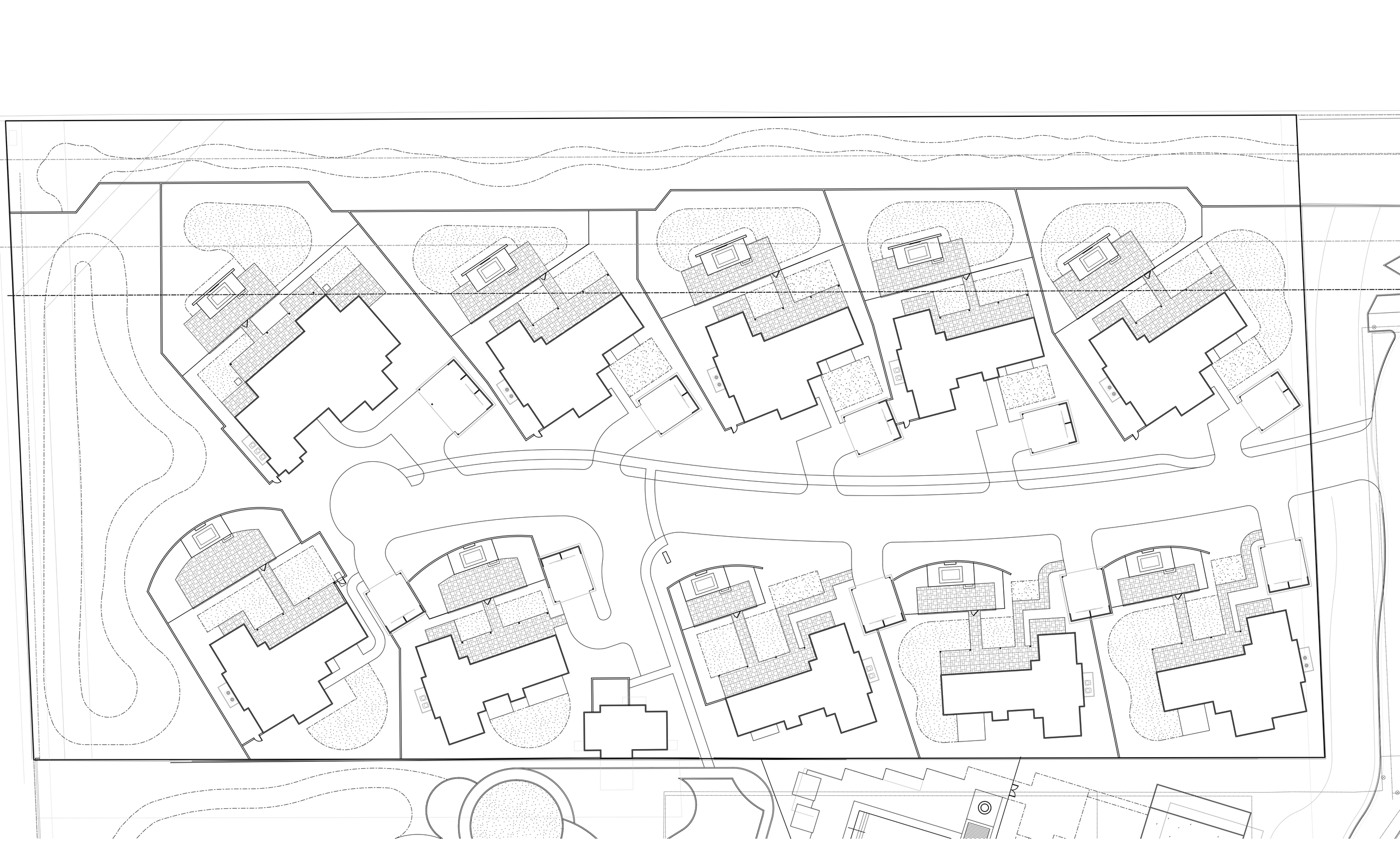
Percent Noise Levels: See L(n).

Sound Level (Noise Level): The weighted sound pressure level obtained by use of a sound level meter having a standard frequency-filter for attenuating part of the sound spectrum.

Sound Level Meter: An instrument, including a microphone, an amplifier, an output meter, and frequency weighting networks for the measurement and determination of noise and sound levels.

Single Event Noise Exposure Level (SENEL): The dB(A) level which, if it lasted for one second, would produce the same A-weighted sound energy as the actual event.

Appendix B
Proposed Site Plan

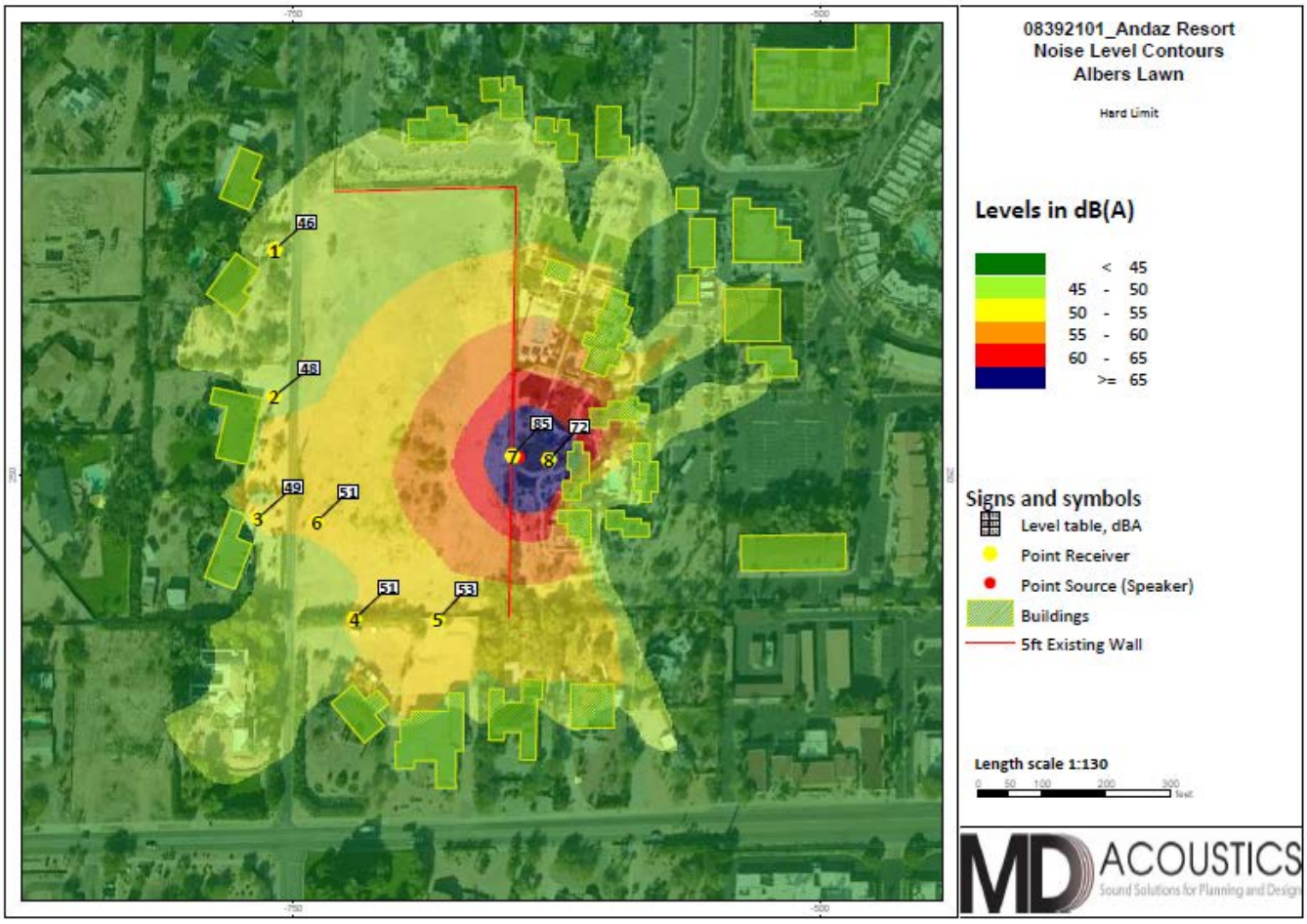


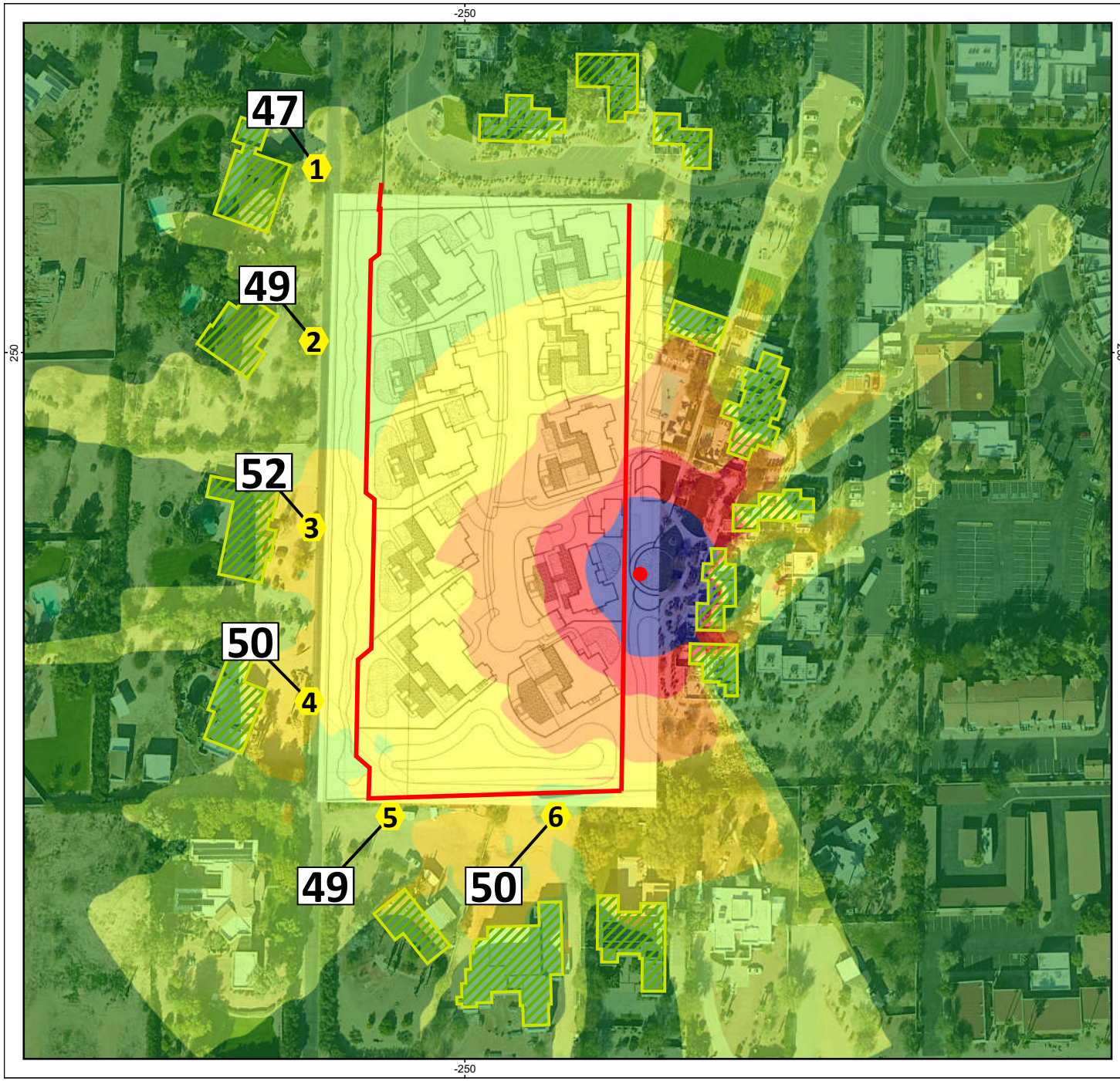
Appendix C
Noise Contours

Figure 8 from the report dated 10/20/2021. Consider this the baseline condition for the Albers Lawn scenarios.

Hard Limit: This situation was modeled as if a limiter were installed on the audio system such that the maximum source level is constrained not to exceed 93 dBA at 3 ft. See Figure 8 below.

Figure 8: Albers Lawn Hard Limit





10262201_Andaz Expansion
Noise Level Contours
New Expansion Plan
No Buildings

We recreated the baseline condition to show an apples-to-apples comparison. Note that the values match Figure 8 from the previous report very closely, with some differences due to the proposed property line walls.

Levels in dB(A)

	< 45
	45 - 50
	50 - 55
	55 - 60
	60 - 65
	>= 65

Signs and symbols

- Level table, dBA
- Buildings
- 8', 6' & 5' Walls
- Point Souce (Speaker)
- Point receiver

Length scale 1:110

0 50 100 200 300 feet

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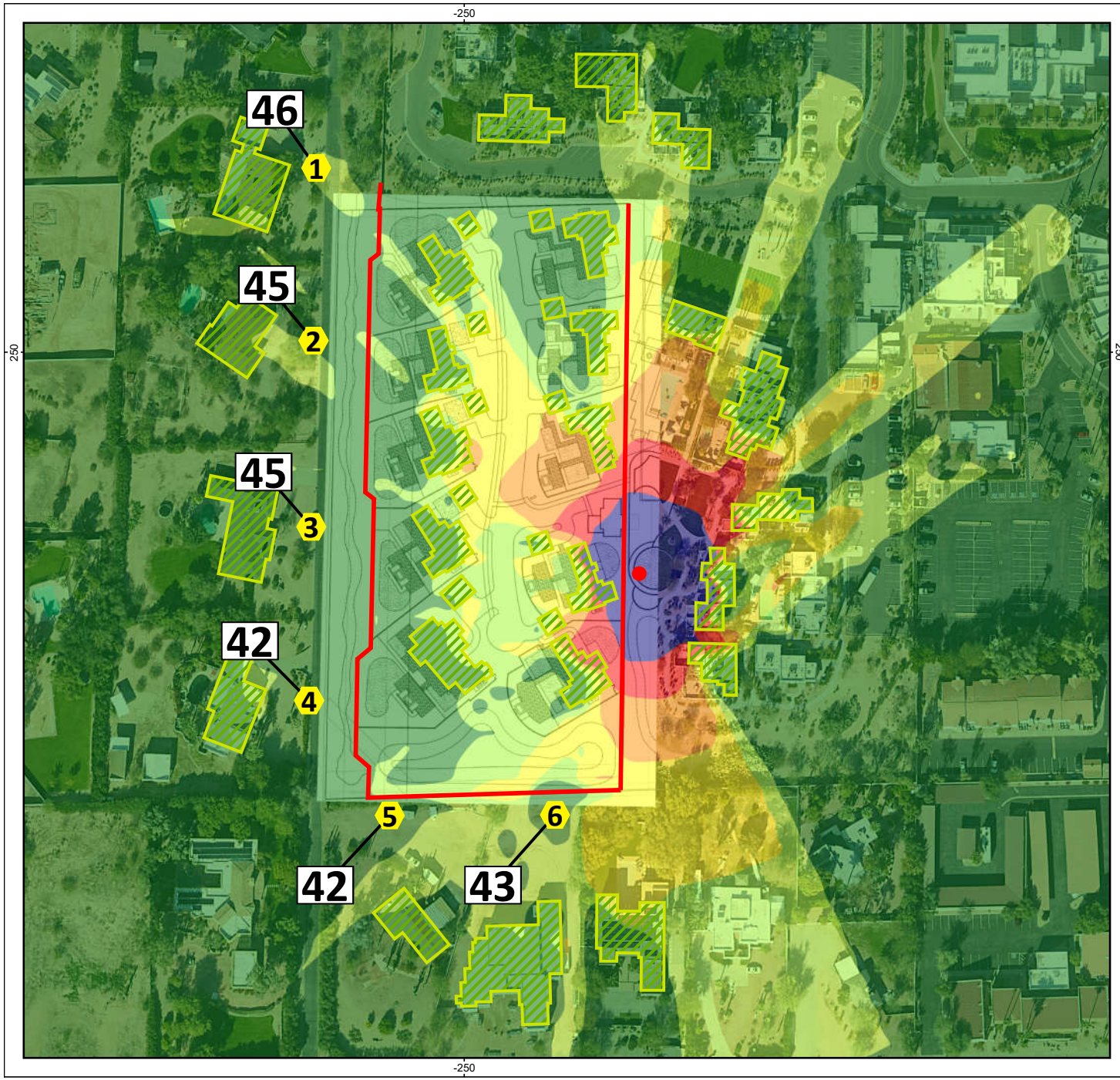

10262201_Andaz Expansion
Noise Level Contours
New Expansion Plan

This model has the same noise source as the baseline condition. Note that the proposed bungalow expansion dramatically reduces the noise levels to the south and west of the resort.

Levels in dB(A)

<	45
45 -	50
50 -	55
55 -	60
60 -	65
>=	65

Signs and symbols

- Level table, dBA
- Buildings
- 8', 6' & 5' Walls
- Point Souce (Speaker)
- Point receiver

Length scale 1:110

0 50 100 200 300 feet

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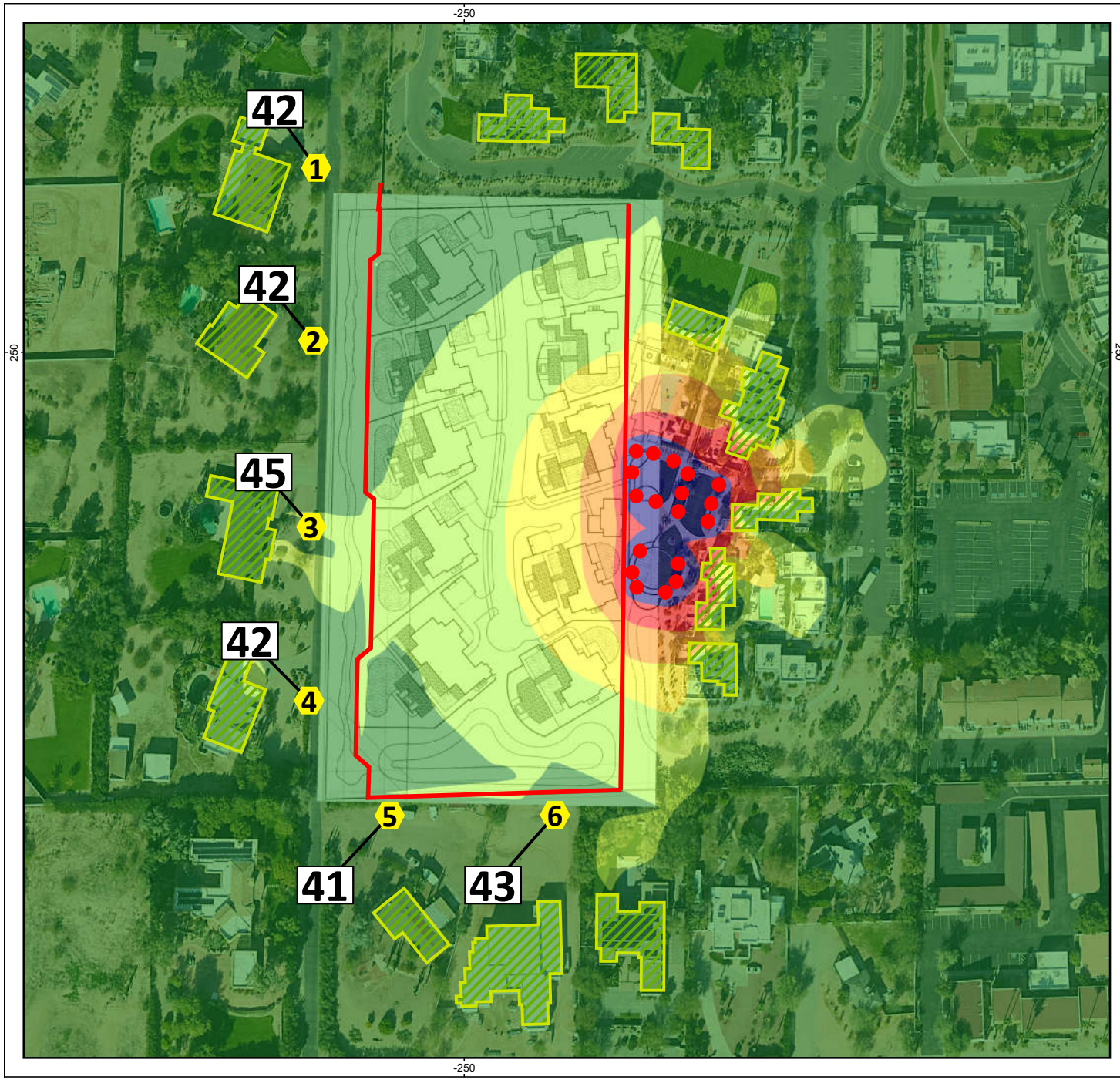

10262201_Andaz Expansion
Noise Level Contours
New Expansion Plan
Albers Lawn - No Buildings

This model shows that the distributed audio system concentrates the red and blue areas on the event lawn and reduces the noise impact to the community - even without the nungalows.

Levels in dB(A)

<	45
45 -	50
50 -	55
55 -	60
60 -	65
>=	65

Signs and symbols

- Level table, dBA
- Buildings
- 8', 6' & 5' Walls
- Point Souce (Speaker)
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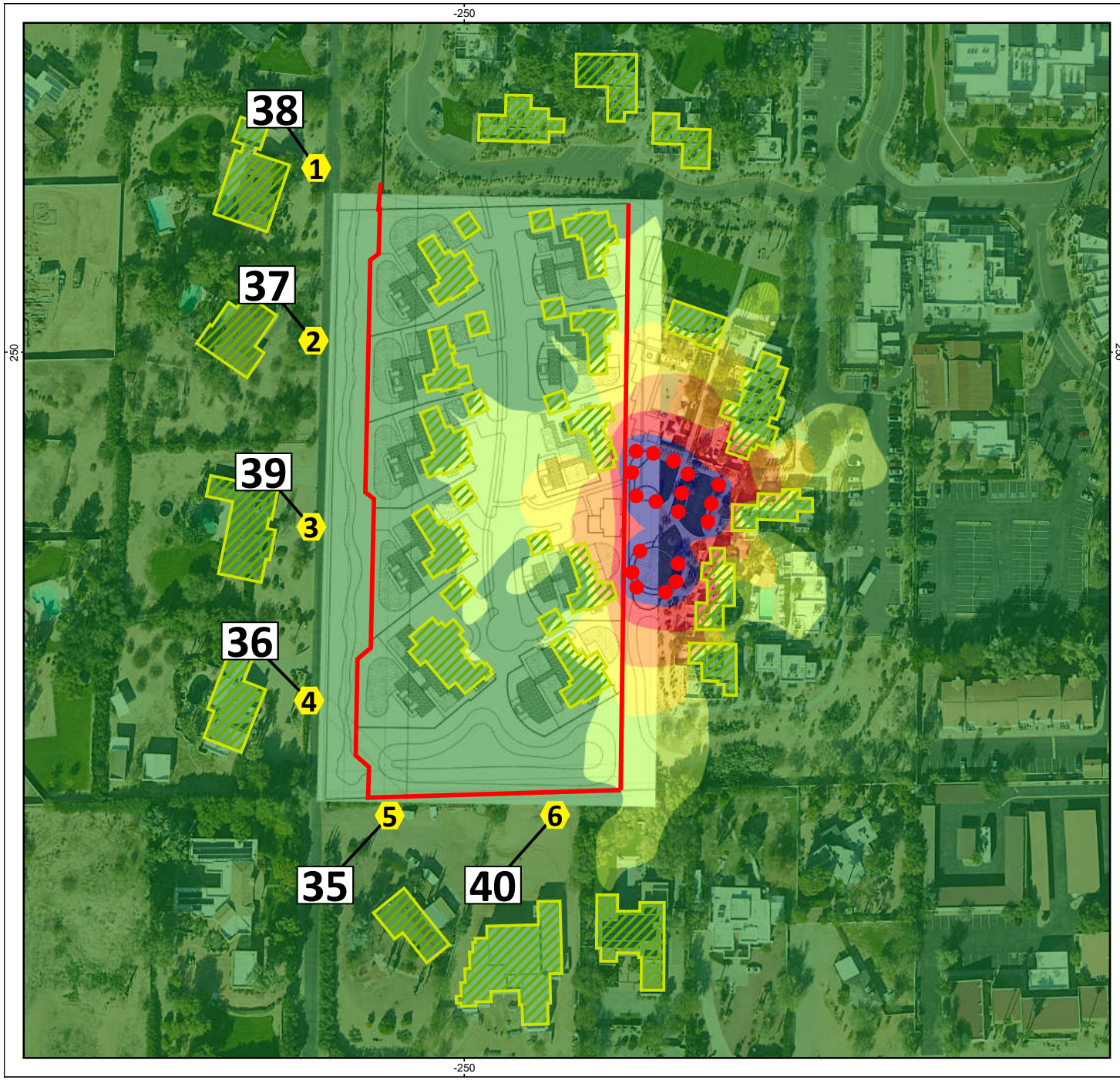
Length scale 1:110

0 50 100 200 300 feet

MD ACOUSTICS
Sound Solutions for Planning and Design



10262201_Andaz Expansion
Noise Level Contours
New Expansion Plan
Albers Lawn

Note that the bungalows further reduce the noise impact to the community by an additional 5 dB on average.

Levels in dB(A)

<	45
45 -	50
50 -	55
55 -	60
60 -	65
>=	65

Signs and symbols

- Level table, dBA
- Buildings
- 8', 6' & 5' Walls
- Point Souce (Speaker)
- Point receiver

Length scale 1:110

0 50 100 200 300 feet

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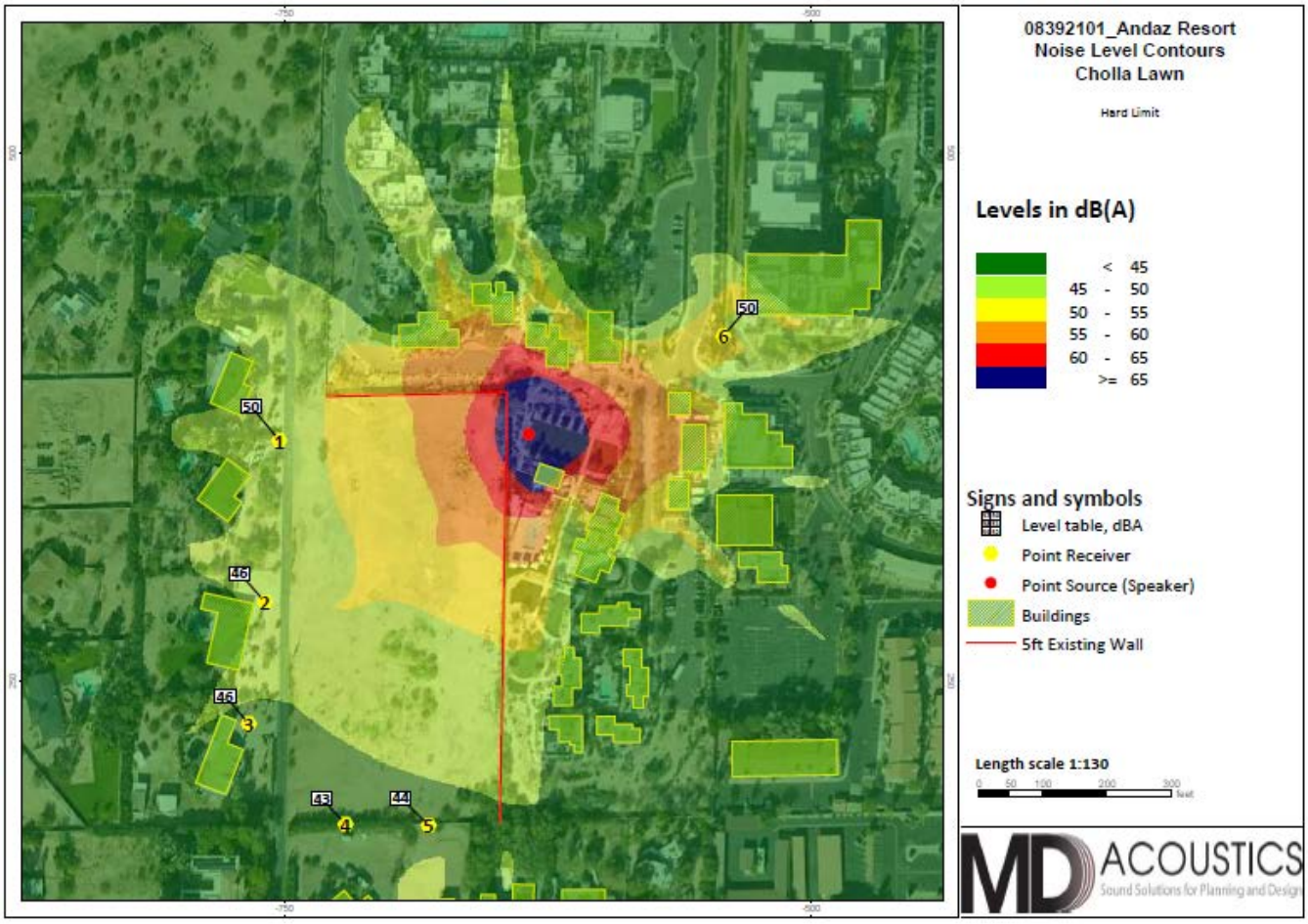
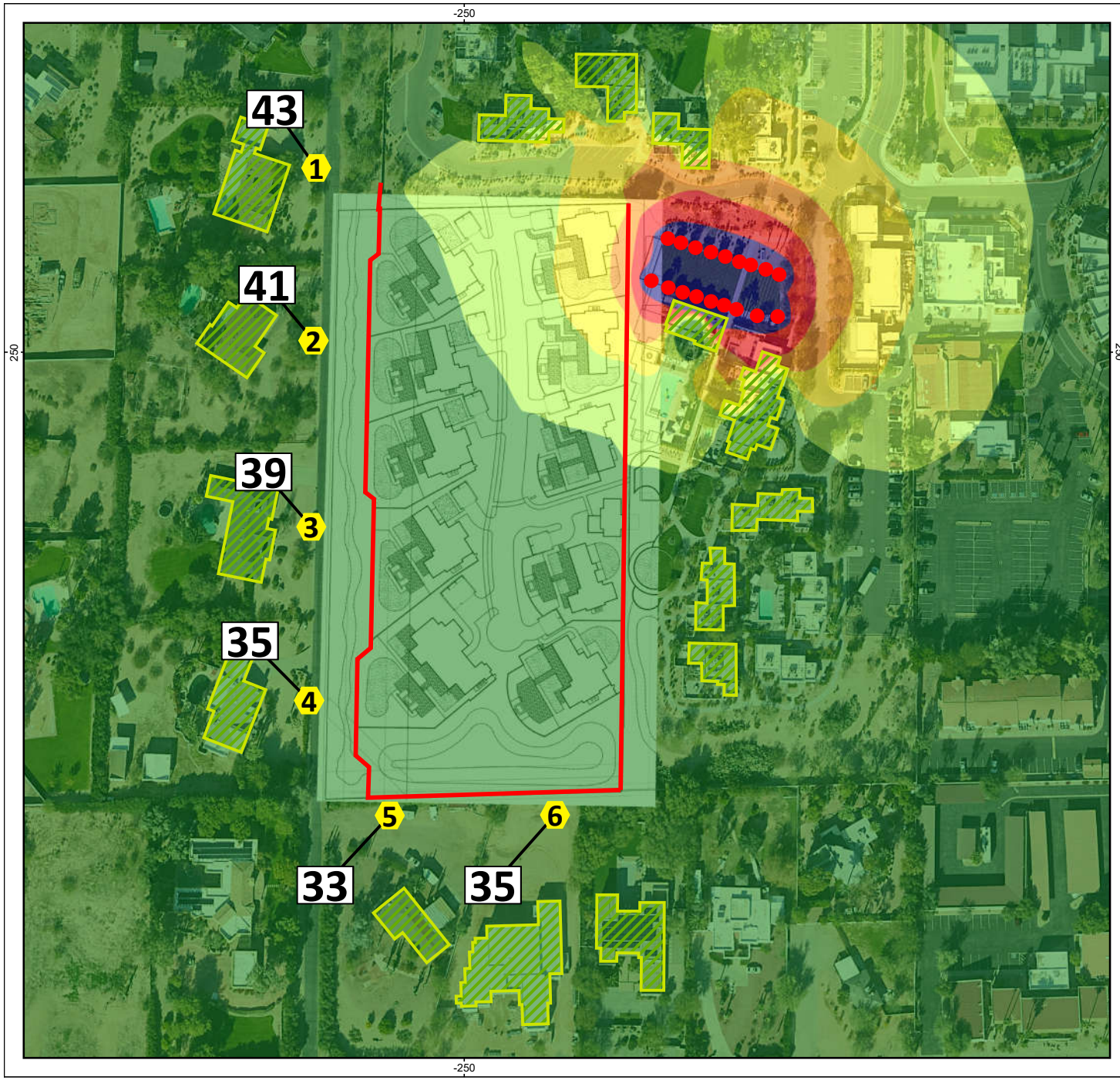
Figure 13 from the report dated 10/20/2021. Consider this the baseline condition for the Cholla Lawn scenarios.

Hard Limit: This situation was modeled as if a limiter were installed on the audio system such that the maximum source level is constrained not to exceed 93 dBA at 3 ft.

Figure 13: Cholla Lawn Hard Limit





10262201_Andaz Expansion
Noise Level Contours
New Expansion Plan
Cholla Lawn - No Buildings

Levels in dB(A)

<	45
45 -	50
50 -	55
55 -	60
60 -	65
>=	65

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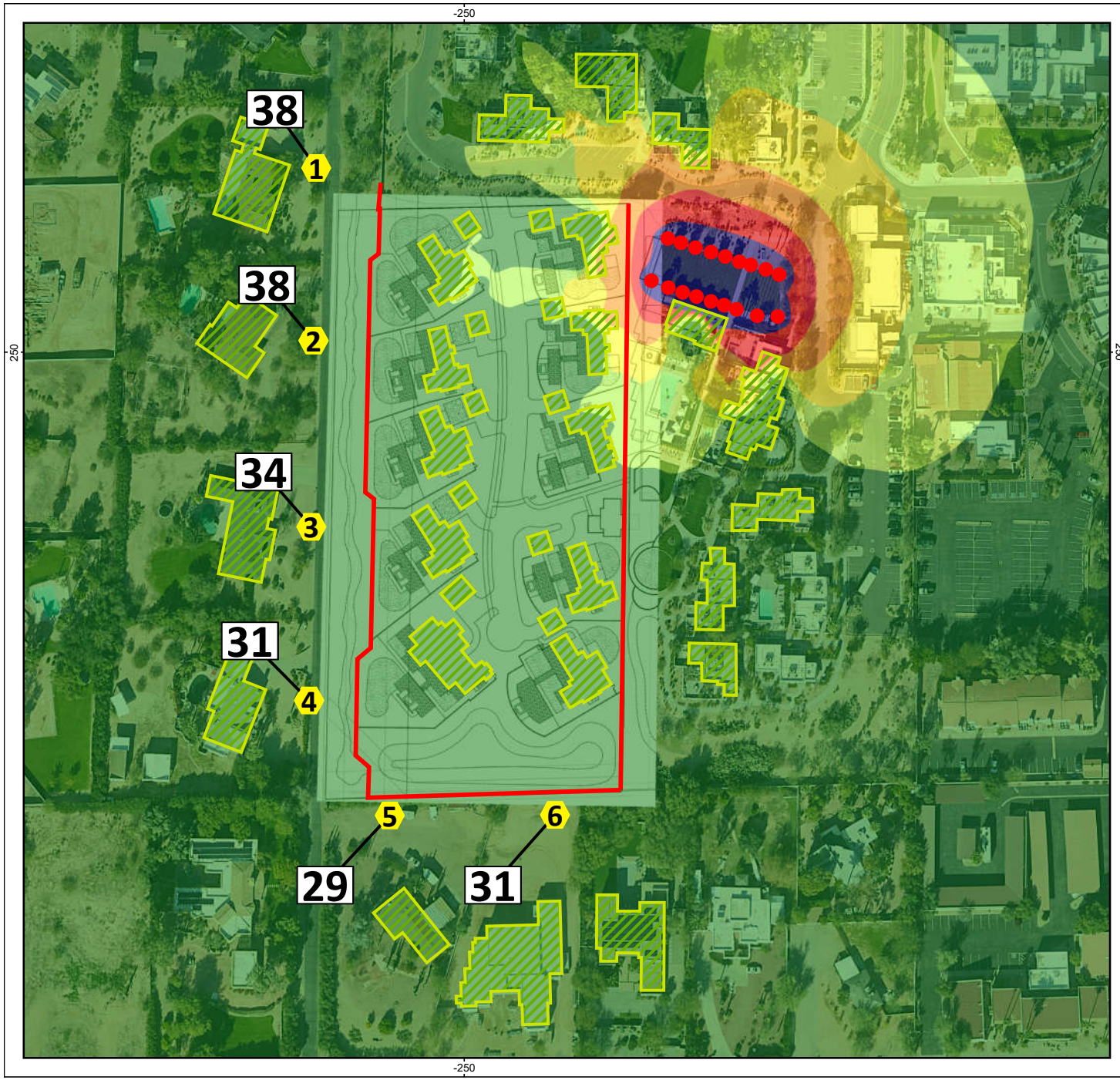

10262201_Andaz Expansion
Noise Level Contours
New Expansion Plan
Cholla Lawn

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<	45
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