House Family Vineyards

Saratoga, CA

OUTDOOR NOISE ANALYSIS

13 April 2021

Prepared for: Jim Cargill
House Family Vineyards
13336 Old Oak Way
Saratoga, CA 95070
jim@housefamilyvineyards.com

Dave House
House Family Vineyards
13336 Old Oak Way
Saratoga, CA 95070
dave@housefamilyvineyards.com

Prepared by: **Salter**
Matt Hsiung – Consultant mhsiung@salter-inc.com
Valerie Smith – Senior Associate vsmith@salter-inc.com
Phil Sanders – Senior Vice President psanders@salter-inc.com

Salter Project 21-0146

INTRODUCTION

We have reviewed the plans for the House Family Vineyards tasting room and conducted a noise analysis for several event types at the facility. This report summarizes the relevant noise standards and the results of our noise model. This report is divided into the following sections:

- Section 1: Acoustical Criteria
- Section 2: Project Understanding
- Section 3: Noise Modeling Description
- Section 4: Estimated Noise Levels

In summary, noise from the vineyard tasting room is expected to meet the Saratoga Noise Ordinance with no additional mitigation measures.

Those readers unfamiliar with the concepts of environmental noise may refer to **Appendix A** for additional information.

SECTION 1: ACOUSTICAL CRITERIA

The Saratoga Noise Ordinance[1] has the following noise standards in Section 7-30.040 for noise levels measured at any point outside of the property boundary:

Table 1: Maximum Permissible Outdoor Noise Levels Generated (dB[2])

Land Use	Daytime (7 am to 7 pm)		Evening (7 pm to 10 pm)		Nighttime (10 pm to 7am)	
	Average Leq[3]	Maximum Lmax[4]	Average Leq	Maximum Lmax	Average Leq	Maximum Lmax
Residential	55	65	45	55	40	50
Open Space/Parks	60	70	50	55	45	50
Commercial/Office	65	75	60	70	55	60
Public and Quasi-Public Facilities	60	70	55	60	45	50

1 Article 7-30, Noise Control of the Saratoga Municipal Code

2 A-Weighted Sound Level – The A-weighted sound pressure level, expressed in decibels (dB). Sometimes the unit of sound level is written as dB(A). A weighting is a standard weighting that accounts for the sensitivity of human hearing to the range of audible frequencies. People perceive a 10 dB increase in sound level to be twice as loud.

3 Per Section 7-30.020 of the Saratoga Municipal Code, "Leq" means the average A-weighted noise level over a stated time period

4 Per Section 7-30.020 of the Saratoga Municipal Code, "Lmax" means the typical maximum A-weighted noise level measured using the "slow" meter response

House Family Vineyards is located at 13336 Old Oak Way. The nearest adjacent properties in each direction are as follows:

Table 2: Nearest Adjacent Residence/Building

Direction	Approximate Distance[5]	Property Type
North	1,100 ft	Residential
East	1,300 ft	Residential
South	1,400 ft	Residential
West	950 ft	Commercial (Vineyard/Farm)

Based on the property types listed above, the project would be subject to the "residential" noise criteria in Table 1 at the north, east, and south property lines. At the west property line, the "commercial" noise criteria from Table 1 would be used.

SECTION 2: PROJECT UNDERSTANDING

House Family Vineyards features a wine tasting room at Vineyard Point, a 0.2-acre outdoor area in the middle of the overall House Family property (see Figure 1 at right). The tasting room is a 20-foot by 60-foot structure that is partially open on all four sides – with windows and railings – and includes a solid roof. Additional seating is located directly outside of the tasting room, on the east side. There is no acoustically effective cover over the additional seating.

Figure 1: House Family Vineyard

The maximum seating capacity is 120 guests, but we understand that attendance varies seasonally, averaging about 93 guests over the course of a day. Between 2017 and 2019 70%, of wine tastings and events had group sizes of less than 50 people.

There are two types of activities held at the tasting room: public wine tastings and private wine tastings/events. The public wine tastings generally occur from Thursday to Sunday, between 11 am and 5 pm, with some days open until 8 pm. We understand that these "typical" days include approximately 70 people.

[5] Approximate distances are listed from the Vineyard tasting room

Private wine tastings and events are by appointment only and are limited to times between 8 am and 10 pm. We understand that the "typical" House Family Vineyard events include approximately 70 people. For larger events – which occur only a few times a year – capacity would be between 100 and 148 people.

At the tasting room, typical background music is provided by speakers playing recorded radio stations[6]. During events, "light" live music could be used, consisting of an acoustic guitarist and drummer (or similar) playing background music.

Since all events will end by 10 pm, the noise ordinance criteria for "Daytime" and "Evening" hours would apply to the project. The "Nighttime" criteria would not apply.

SECTION 3: NOISE MODELING DESCRIPTION

To analyze noise from the House Family Vineyard property, we used the CadnaA acoustical modeling software. Topography information for the area was obtained from USGS and site drawings provided by Westfall Engineers.

We modeled the average hourly noise levels for the following three scenarios:

1. Typical Event: Approximately 70 guests, with half speaking simultaneously at a raised voice level[7]
2. Large Event: Approximately 150 guests, with half speaking simultaneously at a raised voice level
3. Large Event with Live Music: Same occupant count as the "large event", but with additional noise sources for a guitarist and drummer. We have assumed the guitarist and drummer would be approximately 75 dB at 15 feet, which is consistent with "light" live music that can be used as background music.

For events, approximately 30 occupants were located inside the partially enclosed wine room, with all additional occupants at the adjacent outdoor seating area. Noise sources were modeled as groups of point sources. Further information on speech-based noise sources used in our model can be found in Appendix B.

[6] This is consistent with the noise ordinance definition of "background music", which is "prerecorded music played through permanently mounted speakers which is clearly incidental to the primary use, and (at any location five feet or more from the source of the sound) allows for normal conversation levels".

[7] Per Handbook of Noise Control – Harris, Cyril M, a "raised" voice level is 66 dB at 3 feet

SECTION 4: ESTIMATED NOISE LEVELS

We estimate noise levels will be as follows:

Table 3: Estimated Average Hourly (Leq(h)) Noise Levels (dB) at Property Line

Direction	Typical Event	Large Event	Large Event with Live Music	*Criteria*
North	30	32	35	*45*
East	30	34	38	*45*
South	< 20	< 20	< 20	*45*
West	33	36	40	*60*

As shown above in Table 3, all event scenarios are estimated to meet the Noise Ordinance Leq(h) criterion for daytime, evening, and nighttime hours at adjacent residential property (at the North, East, and South property lines) and commercial property (West property line).

Although noise levels from the vineyard are expected to meet the Noise Ordinance noise level criteria, speech or music could be audible at adjacent residences during periods with quiet ambient noise levels (e.g., no wind rustling in the trees). Figure 2 shows the sound propagation path from the vineyard tasting room to adjacent properties.

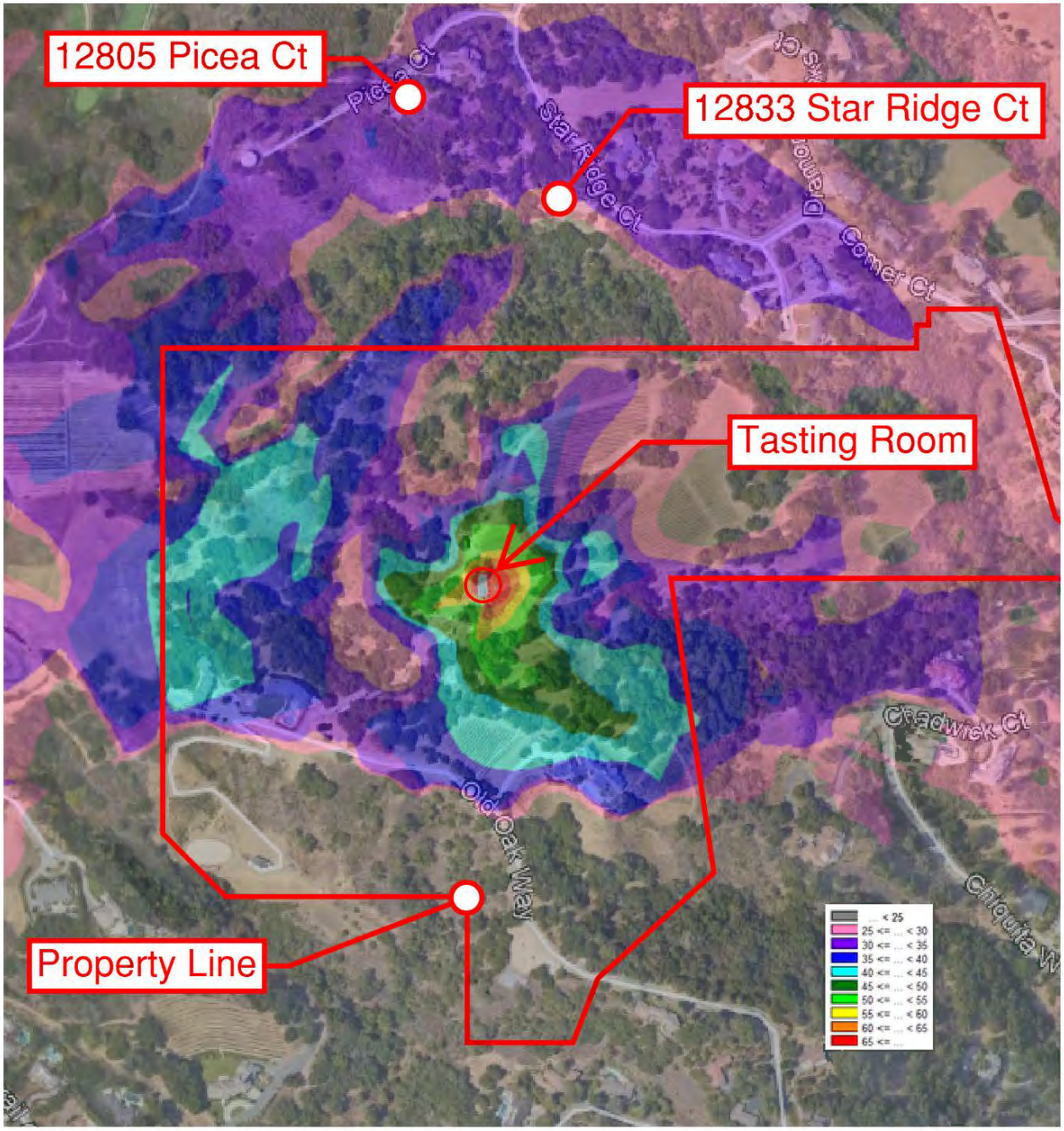


Figure 2: Sound Propagation from Tasting Room

* * *

APPENDIX A

Fundamental Concepts of Environmental Noise

This section provides background information to aid in understanding the technical aspects of this report.

Three dimensions of environmental noise are important in determining subjective response. These are:

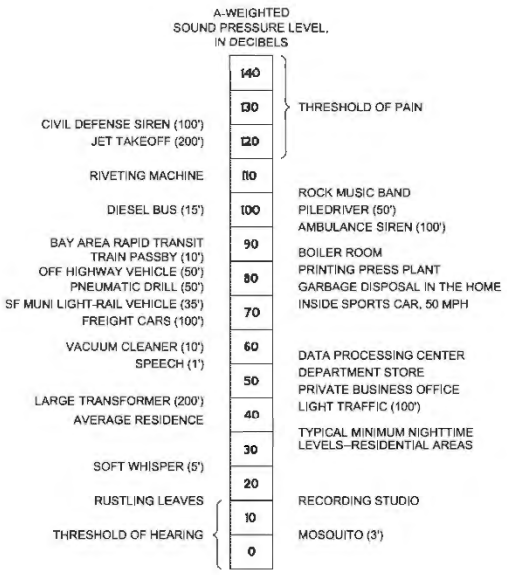
- The intensity or level of the sound
- The frequency spectrum of the sound
- The time-varying character of the sound

Airborne sound is a rapid fluctuation of air pressure above and below atmospheric pressure. Sound levels are usually measured and expressed in decibels (dB), with 0 dB corresponding roughly to the threshold of hearing.

The "frequency" of a sound refers to the number of complete pressure fluctuations per second in the sound. The unit of measurement is the cycle per second (cps) or hertz (Hz). Most of the sounds, which we hear in the environment, do not consist of a single frequency, but of a broad band of frequencies, differing in level. The name of the frequency and level content of a sound is its sound spectrum. A sound spectrum for engineering purposes is typically described in terms of octave bands, which separate the audible frequency range (for human beings, from about 20 to 20,000 Hz) into ten segments.

Many rating methods have been devised to permit comparisons of sounds having quite different spectra. Surprisingly, the simplest method correlates with human response practically as well as the more complex methods. This method consists of evaluating all of the frequencies of a sound in accordance with a weighting that progressively de-emphasizes the importance of frequency components below 1000 Hz and above 5000 Hz. This frequency weighting reflects the fact that human hearing is less sensitive at low frequencies and at extreme high frequencies relative to the mid-range.

The weighting system described above is called "A"-weighting, and the level so measured is called the "A-weighted sound level" or "A-weighted noise level." The unit of A-weighted sound level is sometimes abbreviated "dB." In practice, the sound level is conveniently measured using a sound level meter that includes an electrical filter corresponding to the A-weighting characteristic. All U.S. and international standard sound level meters include such a filter. Typical sound levels found in the environment and in industry are shown in the figure at right.



Although a single sound level value may adequately describe environmental noise at any instant in time, community noise levels vary continuously. Most environmental noise is a conglomeration of distant noise sources, which results in a relatively steady background noise having no identifiable source. These distant

sources may include traffic, wind in trees, industrial activities, etc. and are relatively constant from moment to moment. As natural forces change or as human activity follows its daily cycle, the sound level may vary slowly from hour to hour. Superimposed on this slowly varying background is a succession of identifiable noisy events of brief duration. These may include nearby activities such as single vehicle pass-bys, aircraft flyovers, etc. which cause the environmental noise level to vary from instant to instant.

To describe the time-varying character of environmental noise, statistical noise descriptors were developed. "L10" is the A-weighted sound level equaled or exceeded during 10 percent of a stated time period. The L10 is considered a good measure of the maximum sound levels caused by discrete noise events. "L50" is the A-weighted sound level that is equaled or exceeded 50 percent of a stated time period; it represents the median sound level. The "L90" is the A-weighted sound level equaled or exceeded during 90 percent of a stated time period and is used to describe the background noise.

As it is often cumbersome to quantify the noise environment with a set of statistical descriptors, a single number called the average sound level or "L_{eq}" is now widely used. The term "L_{eq}" originated from the concept of a so-called equivalent sound level which contains the same acoustical energy as a varying sound level during the same time period. In simple but accurate technical language, the L_{eq} is the average A-weighted sound level in a stated time period. The L_{eq} is particularly useful in describing the subjective change in an environment where the source of noise remains the same but there is change in the level of activity. Widening roads and/or increasing traffic are examples of this kind of situation.

In determining the daily measure of environmental noise, it is important to account for the different response of people to daytime and nighttime noise. During the nighttime, exterior background noise levels are generally lower than in the daytime; however, most household noise also decreases at night, thus exterior noise intrusions again become noticeable. Further, most people trying to sleep at night are more sensitive to noise. To account for human sensitivity to nighttime noise levels, a special descriptor was developed. The descriptor is called the L_{dn} (Day/Night Average Sound Level), which represents the 24-hour average sound level with a penalty for noise occurring at night. The L_{dn} computation divides the 24-hour day into two periods: daytime (7:00 am to 10:00 pm); and nighttime (10:00 pm to 7:00 am). The nighttime sound levels are assigned a 10 dB penalty prior to averaging with daytime hourly sound levels.

For highway noise environments, the average noise level during the peak hour traffic volume is approximately equal to the L_{dn}.

The effects of noise on people can be listed in three general categories:

- Subjective effects of annoyance, nuisance, dissatisfaction
- Interference with activities such as speech, sleep, and learning
- Physiological effects such as startle, hearing loss

The sound levels associated with environmental noise usually produce effects only in the first two categories. Unfortunately, there has never been a completely predictable measure for the subjective effects of noise nor of the corresponding reactions of annoyance and dissatisfaction. This is primarily because of the wide variation in individual thresholds of annoyance and habituation to noise over time.

Thus, an important factor in assessing a person's subjective reaction is to compare the new noise environment to the existing noise environment. In general, the more a new noise exceeds the existing, the less acceptable the new noise will be judged.

With regard to increases in noise level, knowledge of the following relationships will be helpful in understanding the quantitative sections of this report:

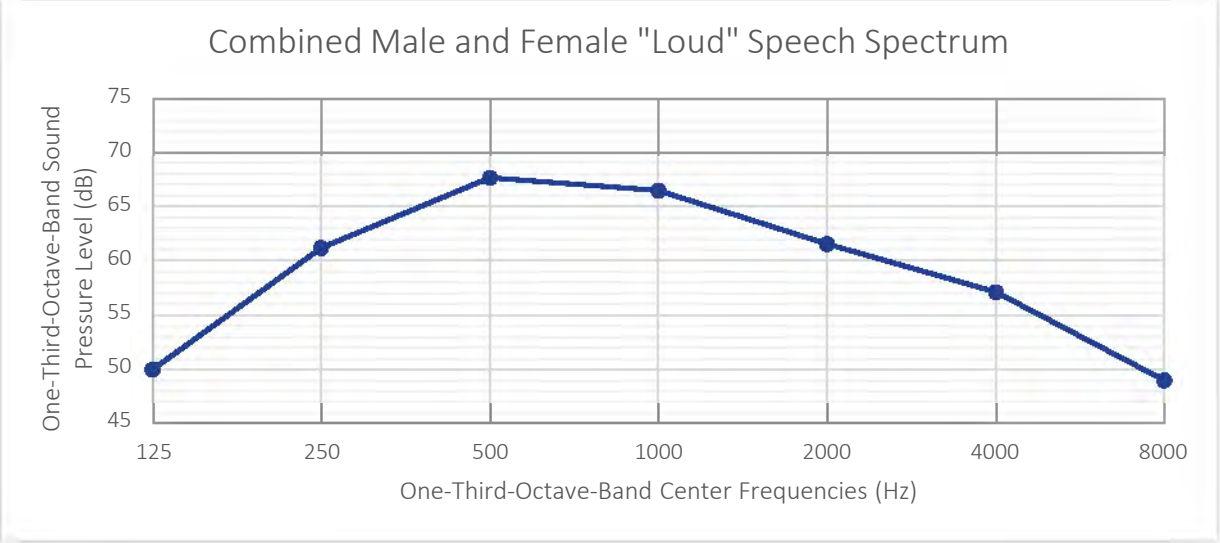
Except in carefully controlled laboratory experiments, a change of only 1 dB in sound level cannot be perceived. Outside of the laboratory, a 3 dB change is considered a just-noticeable difference. A change in level of at least 5 dB is required before any noticeable change in community response would be expected. A 10 dB change is subjectively heard as approximately a doubling in loudness, and would almost certainly cause an adverse community response.

APPENDIX B

Information on Speech Noise Levels

This section provides background information to aid in understanding the estimated speech noise levels used in our analysis.

In speaking, a person generates continuously changing complex sound waves, varying widely both in overall sound pressure level and frequency. The graph below shows one-third-octave-band spectrum for combined speech produced by adult males and females using a "loud" level of vocal effort.[8]



The spectrum was adjusted to represent sound levels at based on crowd sizes varying between 70 and 150 people with 50% of the group talking at once, to simulate typical conversations.

For reference, the table below shows average A-weighted sound levels for various vocal efforts measured at 3 feet from the person in a free field.

Sound Levels for Different Vocal Efforts (dBA)[9]

Vocal effort	Male, dB(A)	Female, dB(A)
Casual	53	50
Normal	58	55
Raised	65	65
Loud	75	71
Shout	88	82

[8,9] Per Handbook of Noise Control – Harris, Cyril M, a "raised" voice level is 65 dB at 3 feet

Rawnsley, Emma

From: Matthew Hsiung <mhsiung@salter-inc.com>
Sent: Thursday, September 26, 2024 12:54 PM
To: Rawnsley, Emma; Josh Roper
Cc: Valerie Smith; Kaiser, Chris
Subject: RE: Question about House Family Vineyard project, Salter Project 21-0146

Hi Emma,

Nice to chat with you yesterday, and please find the attached markup indicating receiver locations in Figure 2 that correspond to the levels shown in Table 3 from the report. For clarity, the levels shown in Figure 2 correspond with the "Large Event with Live Music" scenario from Table 3 (apologies for misstating that previously).

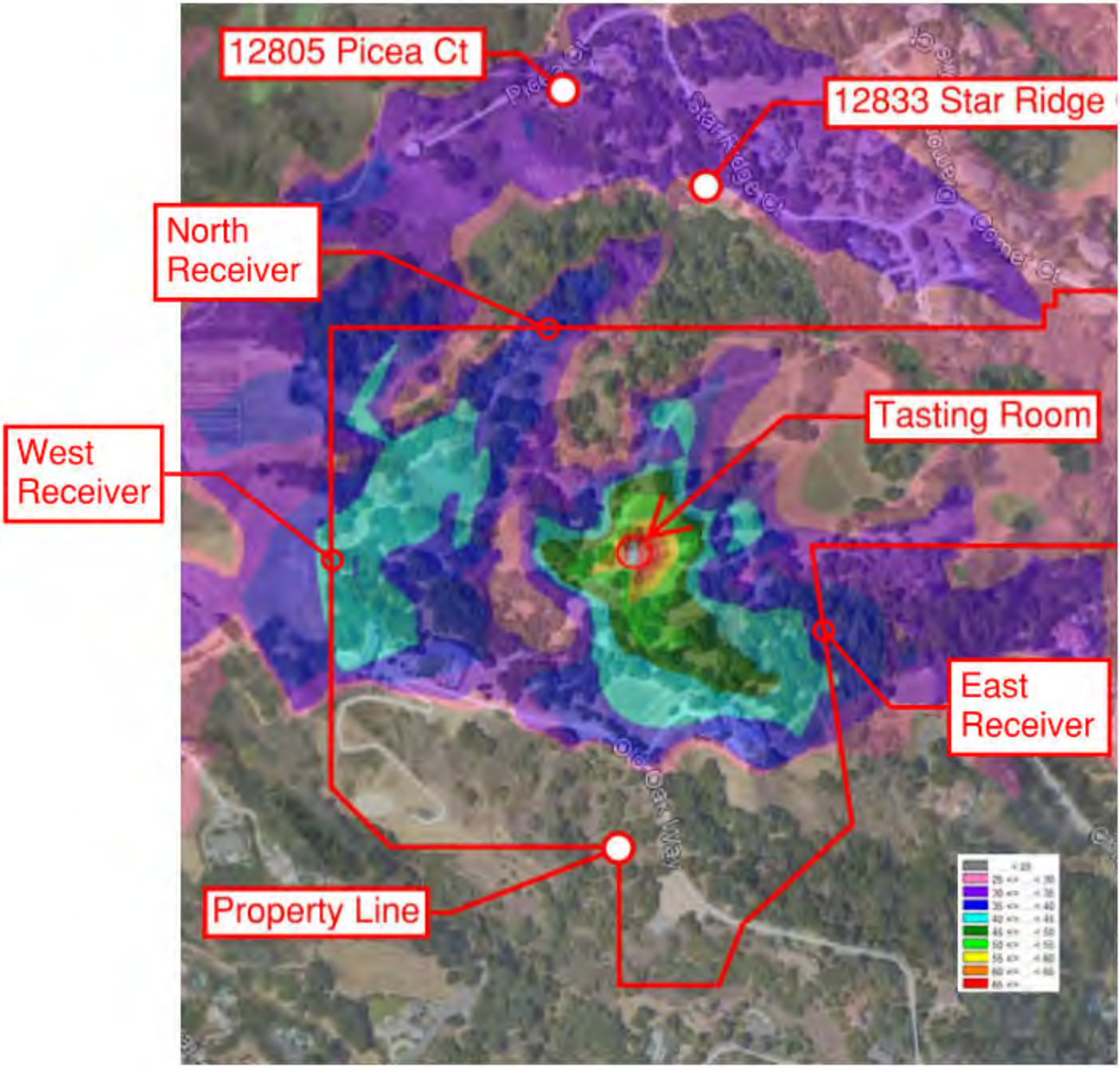


Figure 2: Sound Propagation from Tasting Room

Thanks,

Matthew Hsiung
Senior Consultant

Salter
Acoustics | Audiovisual | Telecommunications | Security
60 South Market Street, Suite 480 | San Jose, CA 95113
d: 408.240.7729 | t: 408.295.4944 | c: 707.673.3244
mhsiung@salter-inc.com | www.salter-inc.com

Salter Project: 21-0146

From: Rawnsley, Emma <emma.rawnsley@aecom.com>
Sent: Tuesday, September 24, 2024 2:29 PM
To: Matthew Hsiung <mhsiung@salter-inc.com>; Josh Roper <jroper@salter-inc.com>
Cc: Valerie Smith <vsmith@salter-inc.com>; Kaiser, Chris <chris.kaiser@aecom.com>; 'Nicole Johnson' <njohnson@saratoga.ca.us>
Subject: RE: Question about House Family Vineyard project, Salter Project 21-0146

Hi Matt & Josh,

Thanks for taking the time to meet with us today.
As discussed, please find attached the KMZ file showing the 4 parcels that form the "House Family Vineyard property" as we are analyzing it within the EIR.
We look forward to hearing from you soon regarding the requested clarity on how the noise levels in Table 3 relate to Figure 2 of the report, and the level of effort required to either generate new figures for all 3 scenarios and/or to provide an estimate of the anticipated noise level under the "large event with live music" scenario at the closest property line to the tasting deck.

Many thanks, Emma

Emma Rawnsley
She/Her/Hers

Environmental Planner | Project Manager
Environmental Planning and Permitting
Phone +1-971-323-6333
Mobile +1-408-386-4182
emma.rawnsley@aecom.com

AECOM
aecom.com

Delivering a better world
LinkedIn | Twitter | Facebook | Instagram