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May 2, 2008
Project No. 40-010

Mr. Rob Eastwood
Santa Clara County Planning Dept.
East Wing, 7th Floor
70 West Hedding Street
San Jose, CA 95110

Subject: Noise Assessment Study for the Planned Pavilion, Boulder Ridge Country Club, Santa Clara County

Dear Mr. Eastwood :

This report presents the results of a noise assessment study for the planned Pavilion at the Boulder Ridge Country Club in Santa Clara County, as shown on the Site Plan, Ref. (a). The noise exposures and noise levels presented herein were evaluated against the standards of the County of Santa Clara Noise Element, Ref. (b), and the County of Santa Clara Noise Ordinance, Ref. (c). In addition, the noise exposures and noise levels were evaluated against the standards of the City of San Jose Noise Element, Ref. (d), and San Jose Zoning Ordinance, Ref. (e), respectively, as the property adjacent to the east of the site is in the City of San Jose. The purpose of the analysis was to determine the project-generated noise exposures and noise level impacts from music at the facility to the adjacent and nearby residential land uses. The results of the analysis reveal that the project-generated noise exposures and noise levels will be in compliance with the standards. Mitigation measures will not be required.

Section I of this report contains a summary of our findings. Subsequent sections contain site and project descriptions, analyses and evaluations. Appendices A and B, attached, contain the list of references, descriptions of the standards, definitions of the terminology, and descriptions of the acoustical instrumentation used for the field survey

I. Summary of Findings

The findings presented below were evaluated against the standards of the County of Santa Clara Noise Element, which utilizes the Day-Night Level (DNL) noise descriptor to define acceptable noise exposures for noise sensitive land uses. The DNL is a 24-hour time-weighted average descriptor commonly used to describe community noise environments. The standards specify a limit of 55 decibels (dB) DNL at residential land uses.

The findings were also evaluated against the standards of the County of Santa Clara Noise Ordinance, which limits the short-term maximum (dBA) noise at residential properties (receiving land use) to various levels depending upon the time of day, the duration of the noise and the noise type, as shown below.

TABLE I

	Noise Level Limit, dBA	
	Daytime	Nighttime
Duration of Noise	(7:00 a.m. - 10:00 p.m.)	(10:00 p.m. - 7:00 a.m.)
30 min./hr.	55	45
15 min./hr.	60	50
5 min./hr.	65	55
1 min./hr.	70	60
Maximum	75	65

The above noise limits are reduced by 5 dB if the noise contains a steady whine, screech, hum, music or speech, but are increased by 5 dB if the noise source and noise receptor are in different zoning districts.

The noise standards of the Santa Clara County General Plan Noise Element are in terms of noise exposure, using the 24 hour average metric DNL. The noise standards of the Santa Clara County Noise Ordinance are in terms of noise level, reported as dBA. Noise in terms of dBA and in DNL, although related, are different and shall not be confused.

The most acoustically-intense use of the Pavilion will be wedding receptions with either live bands of mobile DJ's providing entertainment. The plans used for this analysis and evaluation include noise mitigation measures designed specifically for compliance with the standards of the Noise Element and Noise Ordinance under the worst-case most noisy conditions. Thus, the plans are considered "mitigated" plans resulting in acceptable levels of noise.

Although the Noise Ordinance requires a 5 decibel penalty for music, the property boundary directly behind the Pavilion is residential in the City of San Jose. Therefore, the 5 dB increase is allowed for the zoning boundary. Thus, no adjustment is applied to the noise limits shown in the table. Bands and DJ's usually perform for at least 40-45 minutes per hour, with a 15-20 minute break. DJ's sometimes perform continuously throughout the event. Therefore, the most restrictive limit of the Noise Ordinance is the 30 minute/hour limit of 55 dBA. As events are planned to end before 10:00 p.m., the nighttime noise limits are not applicable. Compliance with the 55 dBA limit of the Noise Ordinance results in automatic compliance with the remaining limits shown in the table. For the sake of brevity and simplicity on Noise Ordinance evaluation, only the 55 dBA limit is identified in this study.

The City of San Jose noise limits are the same as the noise limits of Santa Clara County. The City of San Jose Zoning Ordinance limits short-term noise to 55 dBA at residential property lines. The City of San Jose Noise Element limits non-transportation related noise to 55 dB DNL at residential land uses. Compliance with the County standards yields compliance with the City of San Jose standards.

The effects of the atmosphere can cause changes in sound propagation that cannot be accurately predicted. However, wind and temperature inversions are the most common affects to be considered. The data presented in this study were recorded on a windy day, thus, the effect of the prevailing northwest wind is included.

Temperature inversions usually occur during summer months and in the early to late evenings. The refraction of sound waves (sound bending down off of warmer upper atmospheric layers) is considered beyond approximately 1,200 ft. from the source and is also wind speed/wind direction dependent. Under worst-case conditions, the music sound levels could be up to 10 decibels higher at receptor locations to the south-southwest than what is reported in this study.

The noise exposures and noise levels shown below include the noise mitigation measures developed for this project as shown on the plans.

A. Project-Generated Noise Exposures

- The project-generated noise exposure at the most impacted property line to the east of the Pavilion could be up to 47 dB DNL under a worst-case scenario. Four hours of 55 dBA continuous sound between the hours of 7:00 a.m. and 10:00 p.m. yields a noise exposure of 47 dB DNL. Thus, the project-generated noise exposures are expected to be within the limits of the Santa Clara County and City of San Jose Noise Elements.

- Music is not audible in the Almaden Hills Estates neighborhood. Therefore, noise exposures could not be calculated.

- The project-generated noise exposure at the most impacted residential property on Pfeiffer Ranch Road could be up to 28 dB DNL under a worst-case scenario. Note that music was slightly audible for a few seconds at a time during lulls in the background sound levels. Thus, the project-generated noise exposures are expected to be within the limits of the Santa Clara County Noise Element.

B. Project-Generated Noise Levels

- The project-generated noise level at the most impacted property line to the east of the site will be up to 55 dBA. Thus, the noise levels will be within the 55 dBA noise limits for "continuous" noise of the County of Santa Clara Noise Ordinance and the City of San Jose Zoning Ordinance standards.

- Noise from music is not audible in the Almaden Hills Estates neighborhood. Noise levels could not be measured.

- During a few second period of low background sound, music sound levels were measured to be 36 dBA at the front of the home at 6426 Pfeiffer Ranch Road where there is a line-of-sight to the edge of terrace where the Pavilion will be located. Thus, noise from music will be within the limits of the Santa Clara County Noise Ordinance.

The measurement data show that music sound levels, whether live bands or DJ's, are below 45 dBA at any of the receptor locations beyond 1,200 ft. from the Pavilion unless the receptor has a direct line-of-sight to the music source. There are no receptors that have a direct view due to topographic shielding and that are within 2,800 ft. (45 dBA direct path distance) of the source. Therefore, adding 10 decibels to the music sound levels yields temperature inversion affected sound levels below 55 dBA.

As shown above, noise from music at the Pavilion during social events will be within the limits of the County of Santa Clara Noise Element and Noise Ordinance and within the City of San Jose Noise Element and Zoning Ordinance. Further mitigation measures will not be required. Because of the small size of the property line noise barrier in relation to geographic elements, reflections of sound off the barrier and back toward the residential areas will be negligible.

II. Site and Project Descriptions

The planned project site is located at the crest of Boulder Ridge Country Club in Santa Clara County (elevation of approximately 524 ft.) and is surrounded primarily by the golf course to the north, west and south. A large area of vacant residential land (in San Jose) is immediately adjacent to the site to the east. The building on the property (likely some type of out-building) to the southeast is approximately 600 ft. from the site and is shielded by topography. The nearest existing residences in the Almaden Hill Estates development are approximately 2,200 ft. to the west and 260 ft. below the site elevation. The nearest residences in the Pfeiffer Ranch development are approximately 1,050 ft. to the south and 250 ft. below the site elevation. Because of the steep topography of the area, homes that are closest the site are in the "shadow zone" of the hills and do not have views to the site. Sight lines occur at homes at greater distances from the site.

The planned project includes the construction of a quasi-temporary pavilion tent structure with a solid front wall (facing west) and fabric sides and roof. The roof will be removable and the fabric sides will be de-mountable. A permanent "L-shaped" structure containing the restrooms and storage will be located behind the tent that will act as a noise barrier. The restroom/storage building will have a 16 ft. high roof peak.

A 6 ft. high, 120 ft. long noise control barrier will be situated on the property line to the east extending in a southerly direction to shield the residential property from noise flanking around the south corner of the restroom/storage building and from noise reflecting off of the solid front wall of the pavilion and back to the property line.

Events that will have music, either live bands or DJ's, will be wedding receptions primarily. These events will typically take place on weekends during late afternoon and early evenings. Events will end before 10:00 p.m. Entertainers will be situated in the corner of the tent that will be tucked into the corner of the restroom/storage building and will play toward the southwest. Information on project operations was provided by the project sponsor, Ref. (f).

III. Description of the Analytical Methodologies

A. Noise Measurement Methods

To determine the levels of noise created by either live music or DJ music, a high powered professional music sound (P.A.) system was set up on the site at the location where bands or DJ's will set up inside the pavilion. In addition, a drum set was also used to provide live music sound levels. A local professional "rock" drummer was commissioned to play at loud levels for the purposes of conducting sound level measurements. Pre-recorded pop/rock music program material was played through the sound system. The speakers were placed on stands 5 ft. above the ground and oriented to the southwest similarly to how the bands and DJ's will be set up. Most band instrumentation and DJ speakers are fairly directional with the exception of live drums which radiate sound more spherically. Music from speakers, horns, etc., will produce higher levels of sound because the sound energy is focused in one general direction whereas sound from drums dissipates quicker because of a larger radiation pattern. Drums were used in this study to determine the effect of sound propagation in the backward direction (to the north).

The music sound level was set to 88 dBA at a distance of 20 ft. from the front of the speakers and directly between the speakers which were spaced 20 ft. apart. Although the level of 88 dBA at 20 ft. is somewhat loud for a wedding reception, the intent was to represent a worst-case scenario of a loud or raucous party with a powerful band.

The sound level of the drum set being played was up to 81 dBA at a distance of 30 ft. from the front of the set. Most drummers will not play this loud at a wedding reception as this intensity of playing is more indicative of nightclub playing.

The music sound tests were conducted on a Sunday afternoon on March 16, 2008 at 4:00 p.m. The weather was clear and mild with a strong breeze blowing from the northwest, indicative of the prevailing winds in the area. This time was chosen as it represents a typical time when the pavilion will be used and when the background sound level will be lowest.

B. Project-Generated Noise Levels

The sound level measurements were made using a Larson Davis 2900 Real Time Analyzer, which provides sound level data over 1/3-octave bands in real time. The measurement locations consisted of 20 ft. in front of the speakers and 30 ft. in front of the drum set, four locations along the easterly property line, two locations in the Almaden Hills Estates neighborhood and at one location in the Pfeiffer Ranch neighborhood.

The measurement locations in the Almaden Hills Estates neighborhood were in front of the homes at 5938 Crossmont Circle and 990 Mazzone Drive. The measurement location in the Pfeiffer Ranch neighborhood was in front of the home at 6426 Pfeiffer Ranch Road on the west side of the cul-de-sac. The noise measurement locations are shown on Figures 1 and 2.

Table II, below, provides the results of the noise measurement study. The data indicate that there is no noise impact to residences in the Almaden Hill Estates neighborhood. This is due not only to the great separation distance but also to the intervening topography.

Although music may be slightly audible at times in the Pfeiffer Ranch neighborhood, the sound levels will be low and intermittent due to changing background sound levels (gardening equipment, lawn mowers, aircraft flyovers, motorcycles, etc.). For instance, a lawn motor started up in one of backyards of a home on Pfeiffer Ranch Court that drowned out the music during the measurement period. The lawn mower sound level was measured to be 40 dBA.

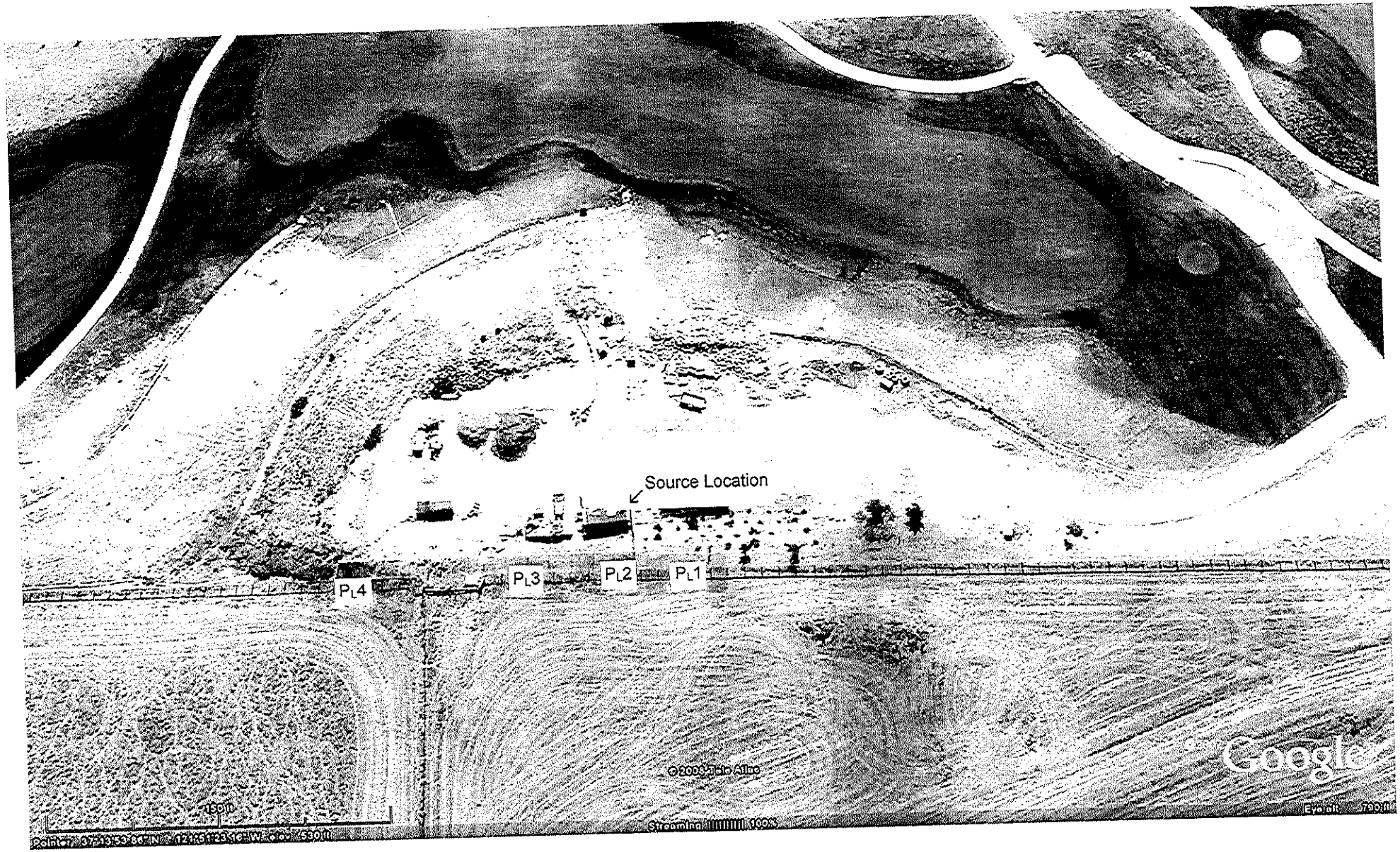

FIGURE 1

Noise Level Measurement Locations

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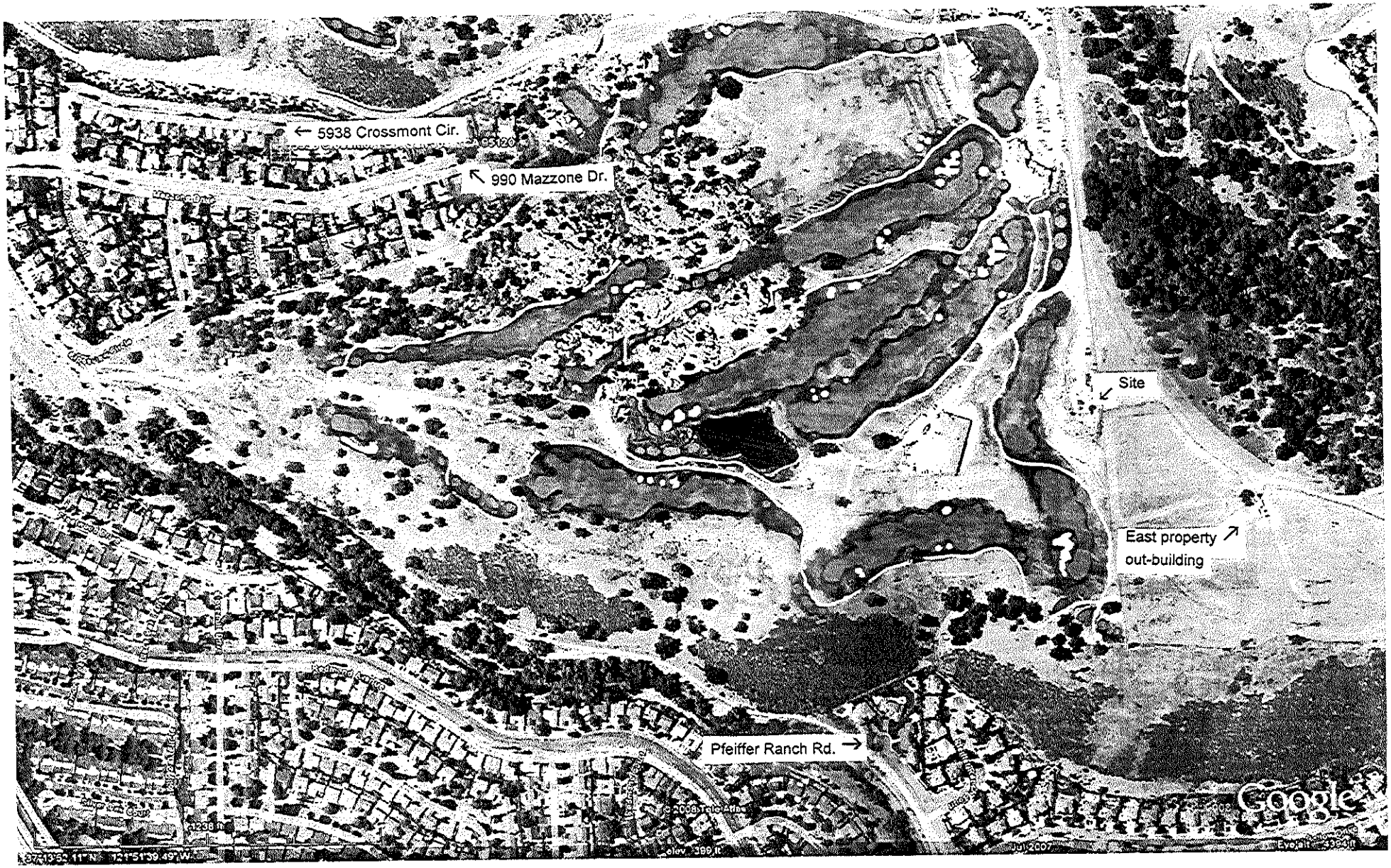

FIGURE 2

Noise Receptor Locations

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TABLE II		
Noise Level Measurements		
Location (Fig's. 1 & 2)	Music	Drums
East Property Line #1	66 dBA	70 dBA
East Property Line #2	69 dBA	77 dBA
East Property Line #3	72 dBA	70 dBA
East Property Line #4	58 dBA	52 dBA
5938 Crossmont Cir.	Not Audible	Not Audible
990 Mazzone Dr.	Not Audible	Not Audible
6426 Pfeiffer Ranch Rd.	36 dBA	Not Audible

As shown above, music sound levels exceeded the 55 dBA limits of the Santa Clara County Noise Ordinance and the City of San Jose Zoning Ordinance along the east property line within 100 ft. of speakers to the north and within 140 ft. of the speakers to the south. Drumming sound levels exceeded the 55 dBA limits of the standards along the property line to the north within 170 ft. of the drums and within 120 ft. of the drums to the south. Note that at approximately 100 ft to the south, the property line trends downhill, thus topographic shielding begins to contribute to sound reduction. Sound from the speakers, which represent music from a live band or DJ, is greatest in the southerly direction and dissipates quickly in the northerly (backward) direction. Sound from the live drums is greatest at the closest point, whether the receptor is behind, at the side or in front.

C. Noise Mitigation Determination

To reduce the noise excesses at the east property line to comply with the 55 dBA standards of the Santa Clara County Noise Ordinance and the City of San Jose Zoning Ordinance, the band/speaker location/direction (tent orientation) was refined to minimize the directional nature of sound from the speakers and most live instruments from transmitting to the east property line in both the southerly and northerly directions.

As the primary path of sound is directly to the east, a noise barrier was determined to be necessary to shield the easterly property boundary. The easterly property line is up to 10 ft. above the pavilion pad grade with the property line elevation sloping down to the south and to the north. The restroom/storage building was re-designed to provide 22 dB of drumming noise reduction and at 14 dB of music noise reduction for the most impacted property line location. Noise barrier calculations indicated that the building must be 16 ft. high to adequately shield noise emanating directly to the east. However, because of the angle of the tent orientation and the solid front wall, sound will have a tendency to flank around the south end of the building and reflect off the front wall and back to the east property line south of the tent.

A supplemental property line noise barrier was designed to shield the additional area of noise excess. The property line barrier is 120 ft. long which extends in a southerly direction from a point on the property line 6 ft. to the south of the intersection of a line perpendicular from the corner of the restroom/storage building to the property line. The barrier terminates at a point where the property line is approximately 6 ft. below the site grade. Noise from music will not reflect off of the front wall and back to the property line north of the tent due to the angled nature of the tent. The north leg of the restroom/storage building was designed to reduce flanking noise in the northerly direction.

The property line barrier will be acoustically-effective, i.e., will be constructed air-tight, with no cracks, gaps or other openings. The barrier shall be constructed to meet a minimum surface weight of 2.5 lbs./sq. ft. and may be constructed of wood, concrete, stucco, earth berm or a combination thereof. The barrier height is in reference to the existing elevation at the property line.

The resulting sound level along the entire east property line will be 55 dBA or less during worst-case music performances.

D. Project-Generated Noise Exposures

The project-generated noise exposure (dB DNL) at the residential property to the east was calculated by assuming a constant noise emission level of 55 dBA for four hours during the daytime hours of 7:00 a.m. -10:00 p.m. The noise exposure was calculated to be 47 dB DNL, which includes the noise mitigation measures designed for this project and are included on the plans.

The music sound levels could not be quantified in the Almaden Hills Estates neighborhood, thus, the noise exposures could not be calculated.

The music sound levels in the Pfeiffer Ranch neighborhood were measured to be up to 36 dBA. Under the continuous 4-hour playing scenario, the noise exposure was calculated to be 28 dB DNL.

The noise exposures at the residential properties adjacent to the east, in the Almaden Hills Estates neighborhood and in the Pfeiffer Ranch neighborhood will be within the limits of the Santa Clara County Noise Element and the City of San Jose Noise Element.

In conclusion, with the incorporation of the noise mitigation measures designed for this project, the noise levels at the most impacted properties will be within the limits of the standards of Santa Clara County and the City of San Jose. Further mitigation measures will not be required.

This report presents the results of a noise assessment study for the planned pavilion at Boulder Ridge County Club in Santa Clara County. The study findings are based on field measurements and other data and are correct to the best of our knowledge. However, changes in the operational scenario, operational hours, noise regulations or other future changes beyond our control may result in long-term noise results different from our estimates. If you have any questions or would like an elaboration on this report, please call me.

Sincerely

EDWARD L. PACK ASSOC., INC.

Jeffrey K. Pack
President

Attachment: Appendices A, B and C

Appendix A

References:

(a) Site Plan and Preliminary Landscape Plan, Boulder Ridge Pavilion Area, by Greg G. Ing & Associates, April 4, 2008

(b) Noise Element of the General Plan, County of Santa Clara, 1981

(c) Noise Ordinance of the County of Santa Clara, Chapter VII, Section B11-192, 1981

(d) San Jose 2020 General Plan, Focus on the Future, City of San Jose, Department of City Planning and Building, August 16, 1994

(e) City of San Jose Municipal Code, Title 20, "The Zoning Ordinance", Part 6, Performance Standards, Section 20.40.600, November 29, 2001

(f) Information on the Planned Pavilion Operations Provided by Mr. Rocke Garcia by Personal Communication with Edward L. Pack Associates, Inc., March 13, 2008

APPENDIX B

Noise Standards, Terminology, Instrumentation,

1. Noise Standards

A. Santa Clara County Noise Element Standards

The Land Use Compatibility Standards of the Santa Clara County Noise Element, use the Day-Night Level (DNL) noise descriptor and identify an exterior noise environment of up to 55 dB DNL as satisfactory for residential uses. Where the noise level at a proposed development site is below 55 dB DNL, mitigation measures are not required. The exterior noise level range between 55 and 65 dB DNL is identified as "cautionary", and over 65 dB is "critical".

Industrial land use noise exposures are limited to 70 dB DNL.

For interior exposures in residential buildings, a compatibility level of 45 dB DNL is specified.

B. City of San Jose "Noise Element" Standards

The noise section of the San Jose 2020 General Plan, Focus on the Future, adopted August 16, 1994 identifies an exterior limit of 60 dB Day-Night Level (DNL) at outdoor living or recreation areas of residential developments. This standard applies at the property line of residential areas impacted by transportation related noise sources. For off-site noise sources, such as commercial and industrial operations, an exterior limit of 55 dB DNL for residential areas is specified. A long-term goal of 55 dB DNL from transportation sources anticipates future reductions in transportation noise due to improvements in design, such as quieter engines and improved muffler systems.

At interior living spaces of residential area, the standards established an interior limit of 45 dB DNL for noise levels due to exterior sources.

C. City of San Jose Zoning Ordinance Performance Standards

The City of San Jose Zoning Ordinance of the Municipal Code, Title 20, contains noise level performance standards for commercial and residential zones.

Part 6 of the Ordinance specifies limits on noise generated on commercial property. For residential property lines common with the commercial use, the noise limit is 55 dBA. For commercial property lines common with commercial uses, the noise limit is 60 dBA.

Part 7 of the Ordinance specifies limits on noise generated on residential property. For residential property lines common with the noise source residence, the noise limit is 55 dBA.

2. Terminology

A. Statistical Noise Levels

Due to the fluctuating character of urban traffic noise, statistical procedures are needed to provide an adequate description of the environment. A series of statistical descriptors have been developed which represent the noise levels exceeded a given percentage of the time. These descriptors are obtained by direct readout of the Sound Level Meters and Noise Analyzers. Some of the statistical levels used to describe community noise are defined as follows:

L_1 - A noise level exceeded for 1% of the time.

L_{10} - A noise level exceeded for 10% of the time, considered to be an "intrusive" level.

L_{50} - The noise level exceeded 50% of the time representing an "average" sound level.

L_{90} - The noise level exceeded 90 % of the time, designated as a "background" noise level.

L_{eq} - The continuous equivalent-energy level is that level of a steady-state noise having the same sound energy as a given time-varying noise. The L_{eq} represents the decibel level of the time-averaged value of sound energy or sound pressure squared and is used to calculate the DNL and CNEL.

B. Day-Night Level (DNL)

Noise levels utilized in the standards are described in terms of the Day-Night Level (DNL). The DNL rating is determined by the cumulative noise exposures occurring over a 24-hour day in terms of A-Weighted sound energy. The 24-hour day is divided into two subperiods for the DNL index, i.e., the daytime period from 7:00 a.m. to 10:00 p.m., and the nighttime period from 10:00 p.m. to 7:00 a.m. A 10 dBA weighting factor is applied (added) to the noise levels occurring during the nighttime period to account for the greater sensitivity of people to noise during these hours. The DNL is calculated from the measured L_{eq} in accordance with the following mathematical formula:

$$DNL = [(L_d+10\log_{10}15) \,\&\, (L_n+10+10\log_{10}9)] - 10\log_{10}24$$

Where:

L_d = L_{eq} for the daytime (7:00 a.m. to 10:00 p.m.)
L_n = L_{eq} for the nighttime (10:00 p.m. to 7:00 a.m.)
24 indicates the 24-hour period
& denotes decibel addition.

C. A-Weighted Sound Level

The decibel measure of the sound level utilizing the "A" weighted network of a sound level meter is referred to as "dBA". The "A" weighting is the accepted standard weighting system used when noise is measured and recorded for the purpose of determining total noise levels and conducting statistical analyses of the environment so that the output correlates well with the response of the human ear.

3. Instrumentation

The on-site field measurement data were acquired by the use of one or more of the sound analyzer listed below. The instrumentation provides a direct readout of the L exceedance statistical levels including the equivalent-energy level (L_{eq}). Input to the meters were provided by microphones extended to a height of 5 ft. above the ground. The "A" weighting network and the "Fast" response setting of the meters were used in conformance with the applicable standards. The Larson-Davis meters were factory modified to conform with the Type 1 performance standards of ANSI S1.4. All instrumentation was acoustically calibrated before and after field tests to assure accuracy.

Bruel & Kjaer 2231 Precision Integrating Sound Level Meter
Larson Davis LDL 812 Precision Integrating Sound Level Meter
Larson Davis 2900 Real Time Analyzer

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January 6, 2008
Project No. 40-010-1

Mr. Rob Eastwood
Santa Clara County Planning Dept.
East Wing, 7th Floor
70 West Hedding Street
San Jose, CA 95110

Subject: Supplemental Noise Assessment Study for the Planned Pavilion, Boulder Ridge Country Club, Santa Clara County

Dear Mr. Eastwood:

This report is a supplemental analysis of event noise for the planned Pavilion at the Boulder Ridge Country Club in Santa Clara County. The purpose of this supplement was to analyze the noise emission levels from music at the pavilion since the pavilion building design has been modified to be a permanent structure. The noise exposures and noise levels presented herein were evaluated against the standards of the County of Santa Clara Noise Element, the County of Santa Clara Noise Ordinance, the City of San Jose Noise Element, and City of San Jose Zoning Ordinance. The City of San Jose standards are applicable to the property immediately adjacent to the site to the east. The purpose of the analysis was to determine the project-generated noise exposures and noise level impacts from music at the facility to the adjacent and nearby residential land uses. The results of the analysis reveal that the project-generated noise exposures and noise levels will be in compliance with the standards and will be inaudible at existing residences. The project will result in no noise impacts to existing residence. Mitigation measures will not be required.

Section I of this report contains a summary of our findings. Attached to this report is a spreadsheet showing the calculations of noise reduction of the building shell for recorded music and drumming.

I. Summary of Findings

As this report is a supplement to the original noise study, detailed descriptions of the standards, site and project are not reiterated. The Santa Clara County standards are 55 dB DNL and 55 dBA. The City of San Jose standards are also 55 dB DNL and 55 dBA.

As stated in the original study, music at wedding receptions will be the loudest noise source expected at the pavilion. Therefore, music, whether a live band or DJ, is considered the worst-case scenario.

Atmospheric effects are discussed in detail in the original study. Therefore, the effects of wind, temperature, pressure and inversions are not discussed in this supplement.

A. Description of the Pavilion Building

The redesigned pavilion building will be a permanent building constructed of wood framed walls and roof, stucco exterior walls, gypsum board interior walls and ceiling, composite roofing, doors and windows. Of all of these building shell components, glass windows and doors have the lowest sound ratings. Therefore, almost all of the noise created inside the building that transmits to the exterior does so through the glass elements.

The lowest sound rated dual-pane windows and doors are typically rated Sound Transmission Class (STC) 28. The STC rating scheme roughly describes the amount of sound reduction provided by a building material, component or assembly. For instance, the stucco exterior wall is rated approximately STC 48 and the roof/ceiling assembly is rated approximately STC 40.

B. Noise Analysis Results

As the property line to the east directly behind the pavilion is the closest receptor location, it will receive the highest noise levels, thus, represent the worst-case condition. The results of the analysis are shown below:

Recorded Music Sound Level		87.5 dBA @ 20 ft.
Sound Buildup		+6 dB
Distance to East Prop. Line (114 ft.)		-15.1 dB
Building Shell Reduction		-26.1 dB
Resultant Sound Level	=	52.3 dBA

Live Music (Drumming) Sound Level		81.4 dBA @ 30 ft.
Sound Buildup		+6 dB
Distance to East Prop. Line (124 ft.)		-12.3 dB
Building Shell Reduction		-27.9 dBA
Resultant Sound Level	=	47.2 dBA

Note that the distance to the property line for the drums is 10 ft. greater than the recorded music speakers as the drums are typically set up about 10 ft. from the front of the stage, as it was during the sound testing procedure.

As shown above, the noise levels from music inside the pavilion will be within the 55 dBA limit of the Santa Clara County Noise Ordinance and City of San Jose Zoning Ordinance standards.

The noise exposures generated by music, assuming 5 hours of constant entertainment before 10:00 p.m., will be 45 dB DNL for recorded music and 40 dB DNL for live music. Thus, the project-generated noise exposures will be within the 55 dB DNL limits of the Santa Clara County Noise Element and the City of San Jose Noise Element standards.

In terms of other receptor locations in the area, the original noise study determined that music was not audible in the Almaden Hill Estates neighborhood under the original pavilion tent design, which provided no reduction of sound. Reducing music sound levels by 26-28 decibels will further yield inaudibility of music produced within the pavilion building.

Music sound levels in the Almaden Hill Estates neighborhood could estimated to be lower than 20 dBA, which is approximately equivalent to the background sound inside a suburban during late night hours. Outdoor noise levels below 30 dBA are uncommon at any time.

In the Pfeiffer Ranch neighborhood, music sound levels were slightly audible and at one point were measured to be up to 40 dBA under the original pavilion tent design when there was a lull in background noise. Drumming was not audible and not measurable. Reducing music sound levels by 26 decibels results in a sound level of 14 dBA. Drumming sound levels were 6 dB lower than music sound levels at the close position. The new pavilion building will provide 28 dB of drumming sound reduction. Thus, drumming (live music) will be approximately 6 dBA at the Pfeiffer Ranch homes.

The noise exposures at the Pfeiffer Ranch homes, again assuming 5 hours of constant playing before 10:00 p.m., were calculated to be 7 dB DNL for music and -1 dB DNL for drumming.

Music sound levels will not be audible at other residential locations at greater distances from the pavilion. Residential areas north of the Santa Teresa foothills will not experience sound from the pavilion. The noise reduction provided by the pavilion in conjunction with great distances and intervening topography will result is sound levels that will be inaudible.

With the inclusion of worst-case atmospheric effect that could increase the noise levels at homes at distances greater than approximately 1,200 ft., the sound levels would be no more than 32 dBA. This sound level is very low, and at the time of day when atmospheric effects would be enough to increase noise by 20 decibels, the background sound levels would be higher than 32 dBA.

As shown above, noise from music at the Pavilion during social events will be within the limits of the County of Santa Clara Noise Element and Noise Ordinance and within the City of San Jose Noise Element and Zoning Ordinance. The project will not cause any substantial temporary or permanent increases in the noise environment, nor will the project subject anyone to significant levels of noise. No environmental noise impacts will occur. Noise mitigation measures will not be required.

Note that the use of a permanent structure will eliminate the need for an acoustical barrier along the east property line.

This report presents the results of a supplemental noise assessment study for the planned pavilion at Boulder Ridge County Club in Santa Clara County. The study findings are based on field measurements and other data and are correct to the best of our knowledge. However, changes in the operational scenario, operational hours, noise regulations or other future changes beyond our control may result in long-term noise results different from our estimates. If you have any questions or would like an elaboration on this report, please call me.

Sincerely

EDWARD L. PACK ASSOC., INC.

Jeffrey K. Pack
President

Attachment: Noise Reduction Calculations

CALCULATION WORKSHEET

CLIENT: SANTA CLARA CO.
FILE: 40-010-A
DATE: 12/28/2008
SOURCE: RECORDED MUSIC AND DRUMMING

LOCATION	Dist.			A	63	80	100	125	160	200	250	315	400	500	Freq. (Hz) 630	800	1000	1250	1600	2000	2500	3150	4000	5000		A	
				81.4																							
Drums Front	30 ft		Sound Level		41.4	52.3	55.7	58.2	63.0	64.6	63.3	62.2	61.8	65.5	64.6	65.7	65.9	67.3	67.5	68.6	69.4	74.9	74.9	71.4			
			Pressure	1	13804	169824	371535	660693	1995262	2884032	2137962	1659587	1513561	3548134	2884032	3715352	3890451	5370318	5623413	7244360	8709636	30902954	30902954	13803843	1.28E+08	81.1	2.56E+08
Window	3/4" DP	TL	Sound Level		22	19	21	15	20	20	19	16	20	24	28	31	33	34	33	32	32	35	37	31		28	
	STC 28	-28dB	Pressure	1	158.5	79.4	125.9	31.6	100.0	100.0	79.4	39.8	100.0	251.2	631.0	1258.9	1995.3	2511.9	1995.3	1584.9	1584.9	3162.3	5011.9	1258.9	22061.03	43.4	44122.05
Exterior at Building			Sound Level		19.4	33.3	34.7	43.2	43.0	44.6	44.3	46.2	41.8	41.5	36.6	34.7	32.9	33.3	34.5	36.6	37.4	39.9	37.9	40.4			
			Pressure Sum=		87	2138	2951	20893	19953	28840	26915	41687	15136	14125	4571	2951	1950	2138	2818	4571	5495	9772	6166	10965	224123.1	53.5	448246.2
Music Front	20 ft.		Sound Level		66.6	68.8	67.3	65.4	69	62.2	67.1	70.2	73.4	77.3	71.6	73.9	74.5	78.7	81.7	74.7	77.6	72.6	73.8	72.6			
			Pressure Sum=	1	4570882	7585776	5370318	3467369	7943282	1659587	5128614	10471285	21877616	53703180	14454398	24547089	28183829	74131024	147910839	29512092	57543994	18197009	23988329	18197009	5.58E+08	87.5	1.12E+09
Window	3/4" DP	TL	Sound Level		22	19	21	15	20	20	19	16	20	24	28	31	33	34	33	32	32	35	37	31		26	
	STC 28	-26 dB	Pressure Sum=	1	158	79	126	32	100	100	79	40	100	251	631	1259	1995	2512	1995	1585	1585	3162	5012	1259	22061.03	43.4	44122.05
Exterior at Building			Sound Level		44.6	49.8	46.3	50.4	49.0	42.2	48.1	54.2	53.4	53.3	43.6	42.9	41.5	44.7	48.7	42.7	45.6	37.6	36.8	41.6			
			Pressure Sum=		28840	95499	42658	109648	79433	16596	64565	263027	218776	213796	22909	19498	14125	29512	74131	18621	36308	5754	4786	14454	1372938	61.4	2745876

Subject: RE: Boulder Ridge Event Tent
Date: Wednesday, March 11, 2009 4:26 PM
From: Jeff Pack <jeffpack@pacbell.net>
To: 'Rob Eastwood' <Rob.Eastwood@pln.sccgov.org>
Conversation: Boulder Ridge Event Tent

Hi Rob,
Per our conversation,

The Boulder Ridge event pavilion noise mitigation measures are necessary only for the property line to the rear, not to Almaden Hills or Pfeiffer Ranch. Thus, the windows and doors facing the existing residential areas may be opened without exceeding the Noise Ordinance limits. The windows/door facing the rear must be kept closed while a band/DJ is playing.

Softer music, such as background music common during dinners and acoustic music (guitar, piano, harp, flute, hand drums, etc.) that does not exceed 70 dBA at 20 ft. would allow the rear doors/ windows to be opened. However, louder music (electric bass, electric guitar, stick drumming, brass, woodwinds) would require that the doors/windows facing the rear be kept closed.

Soft music for wedding ceremonies would be acceptable on the outdoor turf area.

Crowd noise at the rear terrace will be acceptable provided that the people on the terrace are talking at normal conversation levels and not shouting, screaming, laughing loudly or carrying on in a raucous manner.

If you have any further questions, please call or write back.

Jeffrey K. Pack
EDWARD L. PACK ASSOCIATES, INC.
1975 Hamilton Avenue
Suite 26
San Jose, CA 95125
Tel: (408) 371-1195
Cell: (408) 921-4886
Fax: (408) 371-1196

From: Rob Eastwood [mailto:Rob.Eastwood@pln.sccgov.org]
Sent: Monday, March 09, 2009 5:07 PM
To: Jeff Pack
Subject: Boulder Ridge Event Tent

Jeff -

Subject: RE: Boulder Ridge Reception Building - Additional Attenuation
Date: Thursday, March 12, 2009 4:40 PM
From: Jeffrey Pack <jeffpack@pacbell.net>
To: 'Rob Eastwood' <Rob.Eastwood@pln.sccgov.org>
Conversation: Boulder Ridge Reception Building - Additional Attenuation

Hi Rob,
1) Yes. Increasing the STC rating from 28 to 32 would provide 4 decibels of additional noise reduction. Thus, the "noise limit" inside the building would be 95 dBA before 55 dBA is exceeded at the most impacted property boundary (property to the east).

2) Yes. Maintaining the front doors/windows closed when music sound levels reach 90 dBA would preclude the exceedance of any of the Santa Clara County Noise Ordinance limits at any other property near or far.

Sincerely,

Jeffrey K. Pack
Edward L. Pack Associates, Inc.

From: Rob Eastwood [mailto:Rob.Eastwood@pln.sccgov.org]
Sent: Thursday, March 12, 2009 3:18 PM
To: Jeff Pack
Subject: Boulder Ridge Reception Building - Additional Attenuation

Jeff -

This is to confirm our phone conversation where you told me that raising the STC Rating on the Windows and Doors with windows on the Northeast and Southeast elevations of the Reception building from 28 to 32 would provide an additional attenuation of 4 dBA.

Thus, whereas now with an STC rating of 28 on these windows would bring a simulated noise of 88 dBA inside the Reception facility down to 52.3 dBA at the closest property line (accounting for 26.1 dBA Building Shell reduction, distance, and 'sound buildup), this would now reduce to 48 dBA +/- as the Building Shell reduction would increase to 30 dBA +-.

Also, if you could confirm for me that a requirement to close the front doors (facing northwest) when the music crosses 90 dBA would also act to prevent any music / noise inside the facility from crossing the noise thresholds at the closest (or any) property line.

Thanks Jeff,