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December 19, 2012

Ravine Vineyard Estate Winery c/o Barbara Wiens Quartek Group Inc. 89-91 St. Paul Street, St. Catharines, ON L2R 3M3 Tel: 905-682-2624 Email: <u>bwiens@quartekgroup.com</u>

Re: Noise Investigation, Ravine Vineyard Estates Winery, St. David's Ontario

Dear Ms. Wiens,

As requested by you on behalf of the owners of Ravine Vineyard Estate Winery, HGC Engineering performed sound level measurements of amplified noise during a wedding event at Ravine Vineyard Estates Winery. The noise levels at three representative existing residences were investigated to determine the impact of amplified music from the venue at the neighbouring residential properties for the purpose of evaluation, with reference to the Town of Niagara-on-the-Lake's by-law regarding noise. Recorded music was played through the sound system at the wedding event which was held in a tent. HGC Engineering performed attended sound level measurements at three locations during the wedding event and also performed automatic sound level monitoring for a number of days at each location to obtain typical background sound levels in the area.

The measurements and observations indicate that sounds levels from the wedding event were not significantly louder than the background sound levels due to road traffic. At the closest residence to the wedding event, sound levels were occasionally audible, during periods of low traffic sounds corresponding to loud events during the wedding such as chanting or louder music portions.

Site Description and Noise Sources

Figure 1 shows a key plan of the Ravine Vineyard Estates Winery, which is located on the north side of York Road and west of Four Mile Creek Road in the Town of St. David's, Ontario. Figure 2 indicates a plan showing the property owned by the winery and the adjacent existing residences. Figure 2 also indicates the location of the tent in which wedding events occur. The closest

residential receptors are located along Four Mile Creek Road and York Road, along the south and east property lines of the vineyard. The existing residences are mostly 2-storey dwellings. There is a parking area adjacent to the winery buildings and numerous rows of vines. There is a significant amount of vehicular traffic on both York Road and Four Mile Creek Road.

Typical outdoor wedding events occur during the summer months from June to October. Typically a DJ will make announcements for speeches and play music for the dance portion of the wedding reception, The DJ is able to control the volume of the music but is not able to exceed the level chosen by management of the venue. Live bands are not allowed at the venue.

Study Methodology

HGC Engineering personnel visited the site on Saturday, September 22, 2012 in order to make observations of the surrounding acoustical environment and to perform sound level measurements at the nearby residences during a wedding event. A typical wedding event includes the ceremony, photos, dinner, speeches and dancing at the reception.

Automatic sound level monitoring was also performed for a number of days to obtain typical background sound levels in the area.

The weather during the measurement period was approximately 14 to 15 degrees Celsius, mainly clear and with low winds.

Criteria

Ontario Ministry of the Environment (MOE) Guidelines

Under MOE Guidelines, the acoustical environment in this area is classified as "urban", as background sound levels are set by significant volumes of road traffic on surrounding roadways during daytime and night-time hours. Traffic on York Road and Four Mile Creek Road is audible at the existing residences and dominates the existing sound levels.

Under the MOE guidelines, excluded sources of noise include:

• occasional movement of vehicles on the property such as infrequent delivery of goods to convenience store, fast food restaurants etc.

Other noise sources, normally addressed in a qualitative manner in municipal noise by-laws include:

• the operation of auditory signally devices, including but not limited to the ringing of bells or gongs and the blowing of horns or sirens or whistles, or the production, reproduction or amplification of any similar sounds by electronic means;



- Tools and devices used by occupants for domestic purposes such as domestic power tools, radios and televisions, etc, or activities associated with domestic situations such as domestic quarrels, noise parties etc.
- noise resulting from gathering of people at facilities such as restaurants and parks.

The impact of amplified music is covered by the new Town of Niagara-on-the-Lake By-Law No. 4588-12, and is attached in Appendix A. The by-law prohibits and regulates noise by using time restrictions.

New By-law to Prohibit and Regulate Noise (Passed October 9, 2012)

Section 3. provides a general prohibition.

"No person shall make, cause or permit Sound or Vibration at any time, which is likely to disturb the quiet, peace, rest, enjoyment, comfort or convenience of the Inhabitants of the Town."

Section 5. provides limitations by time and place.

"No person shall emit, cause or permit the emission of a Sound resulting from any act listed in Schedule C – Prohibitions by Time and Place, if audible at a Point of Reception with the prohibited time shown."

In the case of the vineyard, section 2. of Schedule C would apply.

"Operation of any electronic device or group of connected electronic devices incorporating one or more loudspeakers or other electromechanical transducers, and intended for the production, reproduction or amplification of sound, including but not limited to a radio, television, amplifier, loud speaker, public address system, and other Sound equipment. The time prohibition listed is between 10:00 pm to 7:00 am next day and between 10:00 pm – 9:00 am Sundays/Statutory holidays.

In the case of the vineyard, section 10. of Schedule C would also apply.

"Yelling, shouting, hooting, whistling or singing."

The time prohibition listed is between 11:00 pm to 7:00 am next day and between 11:00 pm - 9:00 am Sundays/Statutory holidays.

The new by-law only mentions the time period where unusual noises are not allowed to be made. The by-laws do not indicate what guidelines these undue sound levels should be evaluated against. The bylaw is qualitative in nature. "Audible" is a subjective test in regard to the bylaw and we are interpreting "audible" at a point of reception as exceeding the ambient sound levels. This is the basis of the MOE Guidelines.

Sound intrusions at a level below the ambient sounds may still be audible to some individuals.



Under the new by-law, exemptions are available for venues such as the winery for special events. The winery may make an application to Council to grant an Exemption from any of the provisions of the By-Law with respect to any source of sound.

Measurement Results and Discussion

Automatic Sound Level Monitoring

Automated sound level measurements were conducted at three locations, as indicated in Figure 2: location 1 - behind house along Four Mile Creek Road, location 2 - behind house along York Road and location 3 - near Tanbark Road.

Weather data for the monitoring periods was obtained from Environment Canada for the weather station at St. Catharines, the closest monitoring station to the subject site. The weather data was used to determine periods of high winds and precipitation during the automatic monitoring periods. Periods of high winds and rain are excluded from the analysis as per MOE Guidelines. The results are provided in terms of both the energy equivalent (L_{EQ}) sound level, which represents the energy equivalent (average) level of all the sound from all sources recorded over 1 minute measurement periods. Raw data collected at each of the measurement locations is provided in Figures C1 to C14 in Appendix C.

Automatic sound level monitoring was performed for a period of 4 days at locations 1 and 3 and for a period of 6 days at location 2. The automatic sound level meters were deployed from Saturday, September 22, 2012 to September 27, 2012.

Summary of Results

The average hourly sound levels were calculated from the sound levels monitored every minute. The monitored sound levels correspond well with on-site measured background sound levels.

Table I summarizes the average daytime (07:00 to 23:00) and nighttime (23:00 to 07:00) sound levels during the automatic measurement periods at each measurement location.



| | Location | | | | | | | | | | | | | |
|----------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|--|--|--|--|--|--|--|--|
| Date | | 1 | | 2 | 3 | 3 | | | | | | | | |
| Date | Daytime | Nighttime | Daytime | Nighttime | Daytime | Nighttime | | | | | | | | |
| | L _{EQ-16hr} | | | | | | | | |
| Sept. 22, 2012 | 50 | 44 | 54 | 48 | 50 | 40 | | | | | | | | |
| Sept. 23, 2012 | 51 | 42 | 56 | 48 | 49 | 40 | | | | | | | | |
| Sept. 24, 2012 | 54 | 49 | 60 | 50 | 53 | 51 | | | | | | | | |
| Sept. 25, 2012 | | | 53 | 49 | 53 | | | | | | | | | |
| Sept. 26, 2012 | | | 55 | 48 | | | | | | | | | | |
| Sept. 27, 2012 | | | 46 | | | | | | | | | | | |

Table I: Summary of Average Daytime and Nighttime Sound Levels L_{EQ-16hr} [dBA]

Note:

Daytime is 07:00 – 23:00. Nighttime is 23:00 – 07:00.

Location 1 - Near Four Mile Creek Road

Location 2 – East of Entrance (between York Road and Four Mile Creek Road)

Location 3 – Near Tanbark Road

At location 1, the sound levels measured indicate a typical curve for road traffic sound levels. During the daytime hours, the average sound levels range from 50 to 54 dBA. During the nighttime hours, the average sound levels range from 42 to 49 dBA.

At location 2 (east of the entrance between York Road and Four Mile Creek Road), sound levels during the mid-morning, mid-day and mid-afternoon are as high as 65 and 70 dBA. This is likely due to road noise along York Road and contributions from Four Mile Creek Road also due to the large gaps between the existing residential dwellings. During the daytime hours, the average sound levels range from 53 to 60 dBA. During the nighttime hours, the average sound levels range from 48 to 50 dBA.

At location 3 (near Tanbark Road), the sound levels measured also indicate a typical curve for road traffic sound levels. During the daytime hours, the average sound levels range from 49 to 53 dBA. During the nighttime hours, the average sound levels range from 40 to 51 dBA. Since this measurement location is near a school property, sound levels are higher during recess periods, lunch periods and after school.

Figures 3 to 5 show the valid hourly sound levels recorded when wind speeds were less than 15 kph, at locations 1, 2 and 3.

The minimum hourly sound levels are lower than the minimum MOE exclusionary limits at locations 1, 2 and 3. It is noted that during much of the daytime hours, the background sound levels at location 1 are between 41 to 43 dBA, at location 2 are between 48 and 49 dBA and at location 3 are between 40 and 41 dBA. It is noted that during much of the nighttime hours, the background sound levels at location 1 are between 36 to 40 dBA, at location 2 are between 47 and 48 dBA and at location 3 are between 31 and 37 dBA.



It should be noted that the minimum sound levels occur when wedding events are unlikely to occur. A typical wedding event would range in time from 4 pm to as late as 1 am when background sound levels are dominated by road traffic sounds at the closest residences.

Attended Sound Level Measurements and Observations

A site visit was performed during a wedding event from 6 pm to 8 pm while automatic monitoring was also being performed to investigate the sound levels at the existing residences.

The attended sound level measurements were performed using methods described in MOE guideline NPC-103 'Procedures'. A Bruel & Kjaer 2238 Sound Analyzer (Serial No. 2562611, Serial No. 2562612 and Serial No. 2522505) were used. The weather conditions were suitable for measurement and the meter was correctly calibrated in the field before and after each measurement using a Bruel & Kjaer Type 4231 Acoustical Calibrator (Serial Number 2170332).

Tables II to IV show the sound levels measured during the wedding event at locations 1, 2 and 3, as indicated in Figure 2. Figures 6 to 8 show the valid hourly sound levels recorded during the wedding event at locations 1, 2 and 3.



| | | | LOCA | NOIT | | | | | |
|-------|--|--------------------------|----------------------|--------------|--------------|------------------------|----------------------|--------------|--------------|
| | At Wedding | 1 - near Four | Mile Creek Ro | ad | | 2 - I | near Entrance | | |
| TIME | Description | Description | Sound level (dBA) | Leq (dBA) | L90 (dBA) | Description | Sound level (dBA) | Leq (dBA) | L90 (dBA) |
| 18:35 | Speech, clapping and laughter | | | | | | | | |
| 18:39 | Bird Banger (3X) | | - | | | | | | |
| 18:53 | | Speech & Clapping | 46 - 47 | | | | | | |
| | | Bird Banger | 50 | | | | | | |
| 18:54 | Bird Banger (3X) | | | | | | | | |
| 18:55 | | Bird Banger | 66/60 | | | | | | |
| 18:56 | | Speech & Clapping | 46 - 47 | | | | | | |
| | | Passing Car - Screeching | 57 | | | | | | |
| 18:57 | | Speech & Clapping | 45 - 46 | | | | | | |
| 18:58 | | Bird Banger | 54 | | | | | | |
| 18:59 | People chanting | People chanting | 46 | | | No measurements | | | |
| 19:00 | ' | Music | 44 - 46 | 51 | 49 | taken at this location | ł | 51 | 45 |
| 19:01 | First dance with groom and | - | | | | during this time | | | |
| 19:02 | mother | Bird Banger | 78/72 | | | | | | |
| 19:03 | | Music | 45 - 46 | | | | | | |
| 19:04 | | People cheering | 48 | | | | | | |
| 19:05 | Music with DJ | Speech & Clapping | 44 - 47 | | | | | | |
| | | Bird Banger | 48 | | | | | | |
| 19:06 | | | | | | | | | |
| 19:07 | Deditional and a short of | Speech & Clapping | 43 - 44 | | | | | | |
| 19:08 | background music playing with speech and chatters | | | | | | | | |
| 19:09 | | Bird Banger | 56 | | | | | | |
| 19:10 | | Bird Banger | 49 | | | | | | |

Table II: Attended On Site Sound Level Measurements, September 22, 2012



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Table III: Attended On Site Sound Level Measurements, September 22, 2012 (Continued)

| | | L90 (dBA) | | | | | | | | | 45 | | | | | | | | | |
|--|---------------|----------------------|---------------|--------------------------|---------------|-------------------------|------------------------|------------------|---------------|-------|------------------------------|-----------------|---------------|-------------------|-----------------|-------------------|---------|--------------------------|---------------|--|
| | | Leq (dBA) | | | | | | | | | 48 | | | | | | | | | |
| | iear Entrance | Sound level (dBA) | | | | | ł | | | | | 41 - 42 | 42 | | 47 - 49 | | | 41 - 48 | | |
| | 2 - I | Description | | | | No measurements | taken at this location | during this time | | | | Music | Bird Banger | * Traffic Audible | Passing Car | - | | Music & People | Chatting | |
| | | L90 (dBA) | | | | | | | | | 48 | | | | | | | | | |
| LOCATION At Wodding 1 - near Four Mile Creek Road | ad | Leq (dBA) | S. | | | | | | | | | | | | | | | | | |
| | Mile Creek Ro | Sound level (dBA) | - | 40 - 42 | - | 41 - 42 | 45 | 43 | 1 | 1 | 46 | 52 | ł | 1 | 47 - 49 | 52 | 42 - 50 | 42 - 50 52 46 - 50 | | |
| | 1 - near Four | Description | 1 | Music | 1 | Music & People Chatting | People Chanting | Passing Car | 1 | 1 | Speech & Clapping | People cheering | 1 | 1 | People cheering | Speech & Clapping | Music | Music with loud bass | Music | |
| | At Wedding | Description | | Background music playing | with chatters | | | | | | Dance begins; with bride and | | Music playing | | | | | | | |
| | | TIME | 19:11 - 19:25 | 19:26 | 19:27 | 19:28 | 19:29 | 19:30 | 19:31 - 19:32 | 19:33 | 19:34 | 19:35 | 19:36 | 19:37 | 19:38 | 19:39 | 19:40 | 19:41 | 19:42 - 19:44 | |



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| | | L90 (dBA) | | | | | | | | | | | | 46 | | | | | | | | | | | |
|------|---------------|----------------------|----------------------|---------------|-------------|---------------|-----------------------------|---------------|-----------|--------------|-------------|---------------|----------|-------|---------------------------|---|---------|---|---------------|-------|---------|--------|---|--|---------------|
| | | Leq (dBA) | | | | | | | | | | | | 48 | | | | | | | | | | | |
| NOIL | near Entrance | Sound level (dBA) | I | 49 | 51 | 42 - 43 | 49 | 43 - 46 | 45 | 46/47 | 49 - 50 | 48 - 49 | 45 - 46 | 1 | 07 | 48 - 49 | 43 - 48 | | | | | 1 | | | |
| | 2 - 1 | Description | ; | Plane Flew By | Passing Car | Music | Passing Car | Music | Dog Barks | Bird Bangers | Passing Car | Plane flew by | Music | 1 | - | Motorcycle | Music | | | | | 1 | | | |
| | | L90 (dBA) | | 1 | 1 | I | | | 1 | 1 | <u> </u> | <u> </u> | <u> </u> | 49 | <u> </u> | | | | | | | | | | |
| | ad | Leq (dBA) | | 20 | | | | | | | | | | | | | | | | | | | | | |
| LOCA | Mile Creek Ro | Sound level (dBA) | 46 - 53 | 15 57 | 40- C4 | | 46 - 49 (43 - 44 low) | | | | | | | | | | | 59 | ł | 49 | | 45 -53 | | 45 - 55 (40 - 42 1 ₀₁₁) | 44 |
| | 1 - near Four | Description | Music with Loud Bass | | Music | | Music | | | | | | | | | Motorcycle People Cheering Music with people shouting | | | | | | | Music with people shouting from time to time | Speech | |
| | At Wedding | Description | | Music Playing | | | | | | | | | | | Music with People Singing | Along | | Music Playing People Chanting Music Playing with People Singing Along | | | | | | Music Playing with People Singing Along | DJ Announcing |
| | | TIME | 19:45 - 19:48 | | 19:49 | 19:50 - 19:51 | 19:52 | 19:53 - 19:59 | 20:00 | 20:01 | 20:02 | | 20:03 | 20:04 | | CU:U2 | 20:06 | 20:07 | 20:08 - 20:10 | 20:11 | 20:12 - | 20:14 | 20:15 | 20:16 – 20:33 | 20:24 |

Table IV: Attended On Site Sound Level Measurements, September 22, 2012 (Continued)

At location 1 (at Four Mile Creek Road), the sound levels measured indicate bird bangers as the loudest noise source, which are legal and exempt.

At location 2 (east of entrance between York Road and Four Mile Creek Road), during the wedding event the average sound levels were as high as 55 dBA, but for the majority of the event sound levels were close to 50 dBA. Sound levels were at times audible but most often were not measurable.

At location 3 (near Tanbark Road), sounds associated with the wedding event were not audible.

Summary

The ambient sound levels at the existing residential receptors were set by road traffic on Four Mile Creek Road and York Road.

From the automatic monitoring, the sound levels from vehicle traffic were often higher than the sound levels from the wedding event.

From the measurements taken at the wedding event, with a few exceptions of "louder" moments of hooting and portions of music, the sound levels from the wedding event were not significant at the residential receptors. The sound levels at the residential receptors are dominated by road traffic sounds.

The new by law is restrictive and indicates that amplified music cannot occur after 11 pm. Under the bylaw, sound levels may be audible at times at the residential receptors, but in our opinion, the sound levels from the venue are not significant over a long period of time and occur only for a short duration. Traffic sound levels are in the same range as the sound levels produced from the wedding event with occasional sound levels above traffic sounds.

Since exemptions are available with the new bylaw, the management of the winery should apply for a bylaw exemption for specific time periods when wedding functions occur at the venue and should maintain noise levels at or below those experienced during the testing in order to remain reasonable at the nearest residential receptors.

Under the new by-law, exemptions are available for venues such as the winery for special events. The winery may make an application to Council to grant an Exemption from any of the provisions of the By-Law with respect to any source of sound.



Conclusion

The measurements and observations made during this investigation indicate that the maximum volume levels from the wedding event are in the range of 3 to 4 dBA above the background road traffic sound levels for short durations. Since these levels are momentary noises, they may be considered to be acceptable by the municipality. It is our opinion that sound levels from wedding events would not exceed the indoor sound level criteria, if the windows are closed. If the windows are open, there may be momentary intrusions.

The new bylaw is restrictive and indicates that amplified music cannot occur after 11 pm. Under the new bylaw, sound levels may be audible at times at the residential receptors, but in our opinion, the sound levels are not significant over long periods of time. Traffic sound levels are in the same range as the sound levels produced from the wedding event.

Management of the winery should apply for a bylaw exemption for specific time periods when wedding functions occur at the venue.

We appreciate the opportunity to be of further assistance. Please do not hesitate to contact us if you have further questions or require clarification.

Yours truly, Howe Gastmeier Chapnik Limited S. FAUL Ms. Sheeba Paul, MEng, PEng NOUNCE OF ONTP Cc.

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Attached: Figure 1 – Key Plan Figure 2 – Plan of Winery and Residential Receptor Locations Figures 3 to 5 at locations 1, 2 and 3. Figures 6 to 8 at locations 1, 2 and 3.

Appendix A – Old ByLaw Appendix A – New ByLaw Appendix B – Raw data Raw data collected at each of the measurement locations is provided in Figures C1 to C3.





Figure 1 - Key Plan



Figure 2 - Site Plan of Ravine Vineyard Estates Winery











