



**What: Follow up answers to Questions raised at 2<sup>nd</sup> Public Information Meeting**

**Where: Acton District High School**

**When: October 26, 2009, 7:00 p.m. to 9:00 p.m.**

The following issues were raised during the Q & A portion of the evening;

**Barbara Halsall** – asked if Acton was going to have perpetual pumping like the Milton Quarry and are the taxpayers responsible for paying the bills on the water management once Dufferin is no longer running the quarry? Also wanted to know more about the Sustainable Halton Structure as it relates to quarrying.

**Andrea Bourrie** – advised that water management system proposed for Acton, although similar to Milton, not as active. Also indicated that like Milton none of the water management costs will be borne by taxpayers, instead agreements and funding will be in place to ensure that these costs are covered. Andrea also advised Barbara that the Region of Halton has an Aggregate Coordinator that differs from the past. We committed to provide Barbara with additional details on the Sustainable Halton structure for quarry applications.

**DFA Response** - The Region of Halton has been working on a new Official Plan as part of their Sustainable Halton initiative. The draft Official Plan was recently released and contains policies regarding the protection and availability of mineral aggregates. Based on an initial review the policies require further clarification to ensure they are consistent with the Provincial Policy Statement, Greenbelt Plan and Niagara Escarpment Plan which provide for the availability of mineral aggregates within the Escarpment Rural Area and Greenbelt Natural Heritage System subject to certain provisions.

**Leslie Adams** – How does the approval process work? Is everyone going to see and review the application at the same time? Will a new permit to take water be required for the extension lands or will the existing 10 year PTTW be renewed?

**Andrea Bourrie** – advised that application was made in its entirety and everyone will be reviewing it at the same time, exact process that was followed in Milton. Andrea clarified that we will require a new PTTW for the extension lands, however the Ministry of the Environment may request that the 2 get combined together.

**Councillor Joan Robson (Halton Hills)** – Was curious about gases and emissions of explosives, in particular on a bad day how far can they travel? What kind of pollutants?

**Andrew Curic** – responded that gases would dissipate in the air rather rapidly due to blasting with emulsion. Therefore harmless, environmentally friendly.

**RWDI Response** – Emissions from blasting with ammonium nitrate and fuel oil emulsion consist primarily of carbon monoxide (CO), oxides of nitrogen (NOx), and sulphur dioxide (SO<sub>2</sub>). With respect to the air quality standards set out in Ontario Regulation 419/05, NOx is the primary contaminant of interest from blasting operations, as emissions of CO and SO<sub>2</sub> are much lower in relation to the relevant standards.

Based on a dispersion modelling analysis conducted by RWDI, predicted concentrations of nitrogen oxides at the nearest residential receptor are within the air quality standards prescribed under Ontario Regulation 419/05.

**Robert Morley** – Does multitude over time (fatiguing) effect cause damage to structures? Also asked if there was any difference in blasting effects that occur in winter and summer?

**Andrew Curic** – confirmed that U.S. Bureau of Mines was asked the same question and their findings were that as long as we continue to blast within the Provincial limits there will be no damage to a structure as a result of blasting activities. Andrew confirmed that an individual would probably feel a blast more in the winter than in the summer because of the hardened state of the soil, however it would be negligible in the readings between blasts.

**Georgina Franklin** – Concerned about her house being built on bedrock. Indicated that Phase 1 blasts damaged her home by breaking windows. Would her concrete septic tank get damaged due to blasting?

**Andrew Curic** – he explained that she will feel blasts however due to levels being under the Ministry's limits she will not experience any damage to her home or septic tank. He referred her to the table in the presentation that illustrated cracking to concrete may occur at 150 to 200 mm/s whereas in Acton the average ground vibration is being recorded at 3 to 5 mm/s.

**Steve Lister** – notices that after blasting their well water is turning milky and wanted to know what is causing this? Also concerned about whirlpool sands damaging well pumps.

**Andrew Curic** – explained that one could find murky water known as temporary turbidity that could last for a couple of days. Referenced a report prepared by the U.S. Bureau of Mines that found that for protection of well water, the safe limit of ground vibration had to be no greater than 50 mm/s. Again our provincial limit is 4 times less than this.

**Leslie Adams** – she understands that blasting of limestone releases CO<sub>2</sub> and that Dufferin Aggregates is the largest contributor of CO<sub>2</sub> in Halton Hills (referenced the National Pollution Release Inventories). What levels of CO<sub>2</sub> are actually being released into the air due to blasting?

**Andrew Curic** – confirmed once again that the use of emulsion makes the blasting environmentally friendly and poses no negative effects on air pollution.

**RWDI Response** - Emissions from blasting with ammonium nitrate and fuel oil emulsion consist primarily of carbon monoxide (CO), oxides of nitrogen (NO<sub>x</sub>), and sulphur dioxide (SO<sub>2</sub>). Emissions of CO<sub>2</sub> from blasting are on the order of 166 kg of CO<sub>2</sub> per tonne of explosive emulsion used<sup>1</sup>, which, based on the maximum annual limit of 4,000,000 tonnes of aggregate per year, would produce approximately 170 tonnes of CO<sub>2</sub>. For comparison, Canada's reporting threshold for 2009 is 50,000 tonnes of CO<sub>2</sub>. In this context CO<sub>2</sub> emissions from blasting are not significant.

It should be noted that CO<sub>2</sub> emissions are not actually reported to the National Pollutant Release Inventory, and Canada's GHG Monitoring, Accounting and Reporting program does not list any Dufferin Aggregates facilities as significant emitters.

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<sup>1</sup> Straten (Glenwood Nominees Pty Ltd), for Hanson Construction Materials Pty Ltd. Red Hill Quarry Development Proposal, Public Environmental Review. Perth, Australia. June 2008.

**Barbara Halsall** – indicated that previous quarry ownership would pay the costs associated with broken windows experienced by neighbouring residents. Curious as to what Dufferin's position is with regards to damage to resident's property?

**Andrea Bourrie** – assured that DFA will remain consistent as we have always been by making sure to properly investigate any damage complaints in order to accurately assess the cause of the damage. We will correct any damages that we find could be credited to our current operation.

**Mike Djurinec** – concerned that his house has had to undergo extensive repairs due to quarry blasting. Would like to know where we are obtaining our readings from in order to be comfortable that we are within Ministry standards and are the readings exceeding 128 dBL's? Had engineering company assess damage to his home and insurance paid for repairs. Mike concerned that instrument placement on grass will not provide an accurate reading. Would like to see reading taken from 2<sup>nd</sup> floor of his home as he indicates that is where one would feel the greatest amount of vibration. Also not satisfied with quarry blasting on overcast days.

**Rob McDougall** – advised Mike that the seismograph is set at the nearest receptor to the blasting area which is presently a residence approximately 400m away. Readings at this receptor continue to come in under 128 dBL's. Rob indicated to Mike that a reading was taken at his residence during a blast and it came in at 3.2 mm/s and 112 dBL's, both well under Ministry limits.

**Andrea Bourrie** – advised Mike that we can continue to do everything we can to lower the readings that are being generated from blasting, however he could still perceive that damage is being done because he feels it. There is a fundamental issue that Mike is not satisfied, with the Ministry standards that are in place, as being acceptable levels.

**Andrew Curic** – indicated that the most desirable location to achieve a ground vibration reading is buried in the ground close to the corner of the structure.

**Geoff Knuff** – asked whether or not there is a difference felt or recorded from a receptor depending on what side of the blast it is located on.

**Andrew Curic** – responded that typically the greatest vibration is felt directly behind the bench as opposed to being located in front of the quarry face.

**Leslie Adams** – asked of there is any Canadian data that can be obtained in order to compare Ontario's Provincial limits? Can we provide comparison of North American blasting limits to those in Europe, for example France? What are Holcim standards for blasting and best practices internationally? Would like a copy of audio recording of meeting. Asked for clarification that being on bedrock is actually better than being on soil with regards to blasting. Asked if homes built on soil such as those north of site along Churchill Road would be adversely affected by blasting because they are not on bedrock?

**Andrew Curic** – indicated that in work that was done at Parliament Hill in Ottawa in the early 90's and limits used for historically sensitive structures were 17.5 mm/s at the Library Parliament and 40 mm/s at the Centre Block. After 300 blasts and over 200 monitors and sensors there was no damage found to the structures. We indicated to Leslie that we will try and get her limits from other Canadian provinces. Andrew explained that being on bedrock is actually safer than on soil.

**Andrea Bourrie** – explained to Leslie that we would attempt to obtain blasting comparisons from Europe as well as Holcim's standards and practices. Confirmed that we would attempt to gather data on proximity of Churchill Road subdivision as well as impacts to them due to soil conditions and dissipation of distance.

**GOLDER Response** – the following is the blast limits for certain Canadian provinces, please note that not all provinces have blasting regulations;

**British Columbia:** 50 mm/s for construction blasting  
**New Brunswick:** 12.5 mm/s and 128 dBL for quarry blasting  
**City of Halifax:** Frequency dependant, 12.5 mm/s < 15Hz  
12.5 – 50 mm/s 15 – 40 Hz  
50 mm/s > 40 Hz

\*\*\*This is more for construction blasting

**Nova Scotia:** 12.5 mm/s and 128 dBL for quarry blasting

It is somewhat more difficult to compare North American regulations and limits with those in Europe for a number of reasons. Most of the North American guidelines and regulations are based on studies carried out by the US Bureau of Mines as well as others over a 40 year period. Comparisons are also difficult in that most regulations do not stipulate where the monitoring is to take place (on the structure or in the ground) or to what the regulations apply.

Many regulations are also frequency dependent, providing a sliding scale of limits for different dominant frequencies. As an example, Ireland has the following ground vibration limits for preventing damage;

8 mm/s, < 10Hz  
12.5 mm/s, 10Hz – 50Hz  
20 mm/s, 50 – 100Hz

The British standard (BS7385) is based on damage to structures;

15 – 20 mm/s, 4 – 15HZ  
20 – 50 mm/s, 15 – 40Hz  
50 mm/s, > 40Hz

**DFA Response** - In reviewing the 2 sets of European Standards above (Ireland and Britain) it can be noted that the British Standards are less stringent than Ontario's Standards and the Irish Standards are comparable to Ontario's.

In Acton, if we use the lowest frequency number as is in the Irish standard (8 mm/s, < 10Hz), the readings are consistently well below this number.

**Councillor Bryan Lewis** – Is the closest receptor the most significant one? Can a greater reading be taken from a further receptor by somehow going around, over or under the receptor that is closest in proximity? The councillor would like to see receptors placed at Mr. Djurinec's residence at main floor, second floor, buried in the ground at the corner of the structure in order to capture all the information and eliminate an individuals perception. Would like to see receptor placed at Ms. Franklin's residence as well in order to get accurate readings at her property.

**Andrea Bourrie** – informed councilor Lewis that the ministry requires that we meet the regulations at the closest in proximity receptor to the operations. Impacts of both ground and air concussions will typically diminish with distance. Andrea offered to accommodate receptors at both Djurinec and Franklin residence as long as they agree.

**Andrew Curic** – advised that in the case of air vibrations one could on occasion get a higher reading at a property that is further away than the closest receptor if there is overcast conditions. With ground vibration, distance is the greatest factor in diminishing effects.

**DFA Response** – 2 employees of Dufferin Aggregates met with Mr. Djurinec after the Oct. 26/09 public meeting to discuss providing a receptor on his property once the blasting operations would start up again (spring 2010). He was agreeable to this.

**Leslie Adams** – would like to know if there is any data on blasting effects on species at risk, the aquifer itself, breeding birds, spawning fish etc.?

**Andrea Bourrie** – indicated that similar question was brought forward by JART and we have committed to provide this information in further detail & clarification.

**DFA Natural Environment Team Response** – The *Blasting Impact Assessment* (Golder 2008) report documents how blasting effects will be mitigated to current MOE standards to protect sensitive human receptors. Mitigation of ground and air vibrations from blasting for sensitive human receptors will reduce the impacts to a point where they should not [note: NE report says “will not”] significantly disturb or interrupt wildlife activities. The current level of wildlife activity adjacent to the existing quarry demonstrates that healthy and functional wildlife habitat can co-exist with an active quarry. Area-sensitive breeding bird communities and species-at-risk such as the Jefferson Salamander are present adjacent to active portions of the existing Acton Quarry.

Section 6.4 of the *Blasting Impact Assessment* addresses effects on fisheries. Suitable spawning habitat for Brook Trout has been identified within the main branch of Black Creek. Based on Golder’s study, peak ground vibration levels would be expected to fall below the DFO guideline limit of 13 mm/s beyond a distance of 300 to 400 m from the blasting operations. At its closest point, Black Creek is located approximately 400 m northeast of Phase 4. Therefore, maintaining compliance with DFO guidelines can be achieved due to the distance separating Black Creek from the proposed extraction area in Phase 4.

- There was a general question as to what is the difference between dBL's and dBA's  
**Golder Response** - Sound waves can consist of both an inaudible component (that portion of the noise spectrum below 20Hz) and an audible component (that portion of the spectrum above 20Hz). When measuring blast noise in dBL, the inaudible component is weighted the same as the audible component (is a linear weighting, hence the L in dBL), while dBA measures only the audible component of sound. They cannot be compared. 120 dBA is entirely different from 120 dBL because most of the energy in a dBL reading from a blast lies within the inaudible spectrum below 20Hz, that which you do not hear but is often the source of secondary rattling and shaking within a structure. It is conceivable to measure a high dBL and no noise.