Sept 29, 2008

Section 34 Director
Ministry of the Environment, West Central Region
119 King Street West
HAMILTON, Ontario
L8P 4Y7

F O R C E
Friends of Rural Communities and the Environment

Dear Director/Mr. Bardswick,

Re: Phase 1 PumpingTest Reports under MOE PTTW #8461-7CFLG5
St Marys CBM Proposed Flamborough Quarry

Please accept this cover letter, with enclosure from our expert hydro-geologist (Dr. K Raven, INTERA) as FORCE's comments on the Phase 1 pumping test results/reports, for the public record, on behalf of our communities. We ask that you take them into consideration as you and your staff review the reports along with municipal, agency and other stakeholder feedback and as you consider authorizing any form of Phase 2 testing. As you are aware, St Marys next plans to test its unproven and theoretical Groundwater Recirculation pumping System (GRS) to try to reduce the unacceptable negative impacts of their proposed quarry development on our communities.

Key Hydro-geological Concerns

The key hydro-geological concerns identified by Dr. Raven include:

1. The Phase 1 pumping tests were performed during a significant period of rainfall, runoff and recharge that have biased and compromised the results of both the surface water and groundwater monitoring programs.
2. The Phase 1 pumping tests have failed to achieve the intended primary objective of providing a baseline which represents the anticipated full quarry drawdown (as outlined in the various Hydro-geological Work Plan iterations) against which the effects of mitigation by GRS can be evaluated in the proposed Phase 2 and 3 pumping tests.
3. The Phase 1 pumping tests have failed to achieve the intended secondary objective of repeating the November 2004 pumping test under conditions of normal rainfall and recharge.
    a. In November 2004, the rainfall during the relevant test was 93 mm. MOE correspondence from B. Ryter (Jan 19, July 27, and Aug 31, 2005) documented issues relating to the drawdown and water level response being impacted by recharge along with associated interpretational inaccuracies.
    b. In July 2008, the rainfall during the relevant test was 155 mm – almost double and followed prolonged heavy precipitation in the preceding winter and spring seasons.

Further, the Gartner Lee Limited (GLL)/Stantec reports and supporting documentation confirm Dr. Raven's earlier scientific opinion on the great difficulty of undertaking a meaningful pilot scale GRS and of applying the results of a pilot scale GRS to a full quarry scale at this site.

Other Test and Evaluation Comments

We would like to comment further on these conclusions which speak to the reliability and representativeness of the data derived from the Phase 1 testing.

We emphasize that Dr. Raven points out that the objectives of the test must be clarified and examined before the success or failure of the pump test can be assessed and determined. The proponent and its consultants appear to be changing the primary objective of the Phase 1 test in the test reports. This is in contrast to the Hydro-geological Work Plan, which was requested by the City of Hamilton and the Combined Aggregate Resource Team (CART) in order to outline the scope of work and provide a common understanding for assessment. The Hydro-geological Work Plan iterations, including those specific to the GRS, clearly indicate that the primary objective of the Phase 1 test is to assess the unmitigated impact of the proposed quarry dewatering and to establish a baseline against which the effectiveness of mitigation measures can then be evaluated. Characterization of the aquifer and its properties is clearly a secondary objective in response to MOE's concerns about the validity of the November 2004 pumping test and its data.

We have noted in previous submissions our communities' concern that "success" factors needed to be defined for evaluation of the testing phases and results. That the phase 1 test may not have clearly "failed" by tripping trigger conditions is not a sufficient definition of success. And, while safety is obviously paramount, design of a "safe" test, in and of itself, is not sufficient grounds to proceed in the opinion of our communities either. Safety must be considered in the context in which the test was authorized. No testing was clearly the safest course of action, reflecting the pre-cautionary principle of source water protection. That being said, limited testing was authorized for what was deemed to be the useful purpose of research: to show the unmitigated impact of the proposed quarry and to redo the aquifer characterization work to meet MOE requirements. Clearly, there is a need to evaluate the Phase 1 test and its results in the context of safety under which it was authorized and against the useful purpose and the specific objectives which it was designed to achieve. It is the role of MOE, along with the other public agencies, to protect the public interest and to ensure that the hydro-geological work plan is actually followed or stewarded and the test evaluated against its objectives. If the testing is achieving nothing, then any risk of continuing should be considered too great and the testing should be halted or, at a minimum, Phase 1 should be repeated under more normal conditions.

Dr. Raven is clear that the compromised results mean that the baseline of unmitigated pumping test response from this test will underestimate the impact of full quarry drawdown. We have already documented our communities' concern about whether the tests authorized represent a meaningful field test and notably in our June 3, 2008 submission noted the risks in placing a greater emphasis on modeling in a fractured bedrock environment rather than on mimicking the quarry drawdown. Modeling in this environment is already challenging and the proponent's work, to date, has consistently underestimated impacts for documented reasons relating to both data inputs and the model used in Dr. Raven's previous reports and in MOE correspondence from B. Ryter. Unless Phase 1 is repeated under improved conditions, skewed data underestimating the impacts will be used as variables in the MODFLOW revised model and will continue to generate results that are statistically inaccurate and render the results conservative.

It is also important to note that since future Phase 2 and 3 pumping tests will not be completed under similar rainfall and recharge conditions, there will be no common basis for assessment of the effectiveness of the GRS mitigation tests.

We also want it noted, for the record, that the low steady state pumping rate of 10 L /second was not set because it was an appropriate and preferred level by the proponent's consultants compared to the level of 50 L /second authorized by the PTTW, as has been inferred in the test reports and media coverage. Rather, the low steady state pumping rate was determined through the step test procedure used and due to challenges experienced by the lone pumping well, observed by those attending the daily monitoring meetings. Field notes from the test show that step tests were run at 5, 10 and 15 L/ second. Pumping at 15 L /second was only possible for 4 minutes due to issues encountered. The well was allowed to recover and then constant rate pumping at 10 L /second was started and remained throughout the testing period. In reality, the steady state pumping rate of 10 L /second was set based on limitations on how much water the one well that was used for pumping could produce. This single well and its production issues speak to both the lack of representativeness of the test/data, in terms of full quarry drawdown, and to the nature and fragility of the aquifer in this fractured bedrock setting, where one home can have an abundantly producing well and the home next door has limited quantity and flow rate. It certainly points to the challenge of analyzing at a regional level without underestimating the localized impacts.

Approval to Proceed to Phase 2

As you are aware, our communities believe that this quarry should be stopped and we do not support the testing as currently designed. Should the testing continue to proceed, however, we believe that, at a minimum, there is a requirement to redo and re-evaluate Phase 1 before consideration be given to any form of Phase 2 testing. This would be consistent with MOE and proponent response to the November 2004 testing results.

We also ask that any written correspondence by MOE authorizing St Marys to proceed to any form of Phase 2 test be qualified as being subject to required approvals by the City of Hamilton (for a site alteration permit for the GRS as described in the original PTTW application) and any further approvals that may be required by Conservation Halton (in relation to the GRS works and discharge structure at the wetland complex).

Thank You

Thank you for consideration of our concerns.

Respectfully submitted,

Graham Flint BASc, P. Eng
Chair & Spokesperson

ENCLOSURE