

**From:** [Guo, Thomas \(MOECC\)](#)  
**To:** [Brian Zeman](#); [Shalla, Paul \(MNRF\)](#); [Orpana, Jon \(MOECC\)](#); [Morrish, Jon \(MOECC\)](#)  
**Cc:** [Faaren, Greg \(MOECC\)](#); [Taylor, Peter \(MOECC\)](#); [Peter A. Gray](#); [Patrick Townes](#); "[Lou Freymond](#)"; "[Becky Freymond](#)"; "[Dan Freymond](#)"; [freymondcarson@gmail.com](mailto:freymondcarson@gmail.com); [Moreen Miller](#)  
**Subject:** RE: Proposed Freymond Quarry  
**Date:** July-19-18 8:21:18 AM

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Yes, Brian.

Thomas

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**From:** Brian Zeman [<mailto:bzeman@mhbcplan.com>]  
**Sent:** July-18-18 11:46 AM  
**To:** Guo, Thomas (MOECC); Shalla, Paul (MNRF); Orpana, Jon (MOECC); Morrish, Jon (MOECC)  
**Cc:** Faaren, Greg (MOECC); Taylor, Peter (MOECC); Peter A. Gray; Patrick Townes; 'Lou Freymond'; 'Becky Freymond'; 'Dan Freymond'; [freymondcarson@gmail.com](mailto:freymondcarson@gmail.com); Moreen Miller  
**Subject:** RE: Proposed Freymond Quarry

Good morning Thomas and Paul

Freymond confirms that they will update the ARA Site Plans to include the recommended conditions. Based on this we understand, MOECC has withdrawn its objection to the application.

Paul we anticipate sending you the updated site plans by the end of the month.

Regards,

**BRIAN ZEMAN, BES, MCIP, RPP | President**

**MHBC** Planning, Urban Design & Landscape Architecture

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May 31, 2018

Paul Shalla  
Aggregate Technical Specialist  
Ministry of Natural Resources and Forestry, Bancroft District  
106 Monck Street, PO Box 500  
Bancroft, ON K0L 1C0

Dear Mr. Shalla,

Re: Response to MOECC Response  
Level 1 and Level 2 Hydrogeological Investigation Report  
Proposed Freymond Quarry  
Lot 51 and 52, Concession W.H.R.  
Township of Faraday  
County of Hastings

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I have reviewed the document entitled "Response to MOECC Comments, Re: Level 1 and Level 2 Hydrogeological Investigation Report, Proposed Freymond Quarry", prepared by MTE Consultants Inc. (MTE) and dated April 3, 2018 with MTE File No.: C33886-100.

This document responds to my memorandum dated May 3, 2017 and subsequent correspondences between MTE and myself.

### **Chronology**

#### December 1, 2016

On December 1, 2016 MTE on behalf of Freymond Lumber Ltd. submitted a Level 1 and Level 2 Hydrological Investigation Report for a proposed Category 2, Class A Quarry Below Water.

#### May 3, 2017

On May 3, 2017, Mr. Guo, a hydrogeologist with the MOECC, provided a memorandum regarding the Level 1 and Level 2 Hydrogeological Investigation Report for the Freymond Quarry related to the requirement for a Permit to Take Water (PTTW) and the zone of influence calculations. MTE obtained clarification on these comments with a follow up telephone conversation which occurred on May 10, 2017.

#### May 24, 2017

On May 24, 2017 MTE responded to Mr. Guo's comments in which the amount of water actively draining from the quarry face post extraction was examined and calculated using five different analytical models.

The zone of influence was found to be approximately 500 m from the quarry face extending predominantly toward the west and southwest. In addition, the amount of water draining into the quarry from a single fracture via gravity drainage was estimated using Darcy's Law (1856). The estimated drainage rate was found to coincide with the flows estimated by the analytical models above. Based on the calculations being less than 50,000 L/day MTE maintains that a PTTW would not be required with respect to the operation of the site.

#### June 12, 2017

On June 12, 2017, Mr. Guo responded to MTE, indicating that he was not in agreement with the assessment and conclusions provided by MTE. Following Mr. Guo's response on June 12, 2017 MTE proposed a site meeting at the Freymond proposed quarry with the MOECC. Representatives from Freymond Lumber (Site Owner) and Fowler Construction (Proposed Operator) were also invited to attend the Site meeting.

#### October 2, 2017

On October 2, 2017 representatives from MTE, Fowler Construction and Freymond Lumber met on-Site to discuss comments the MOECC had provided with respect to the Level 1 and Level 2 Hydrological Investigation Report submitted by MTE. As an outcome of the meeting it was agreed that MTE would outline a work plan to address comments raised by the MOECC.

#### October 6, 2017

On October 6, 2017, MTE sent the MOECC a work plan which included, a short term (up to 72 hour) pumping test on MW7 and an associated monitoring plan, as well as the location and construction details of an additional open borehole (MW8) at the northwest corner of the Site.

#### October 17, 2017

MTE submitted a Category 2 PTTW application for a short term pumping test to be performed on MW7.

#### October 25, 2017

On October 25, 2017 MTE received a response from Mr. Guo related to the work plan submitted by MTE on October 6, 2017.

#### November 6, 2017

MTE revised the previously submitted PTTW application to include a short term (24 hr) pumping on newly constructed open borehole MW8, in addition to the pumping test to be conducted on MW7.

#### November 21, 2017

The MOECC issued PTTW No. 1205-ASYT3W authorising the taking of water associated with the short term pumping tests on MW7 and MW8.

#### December 4, 2017

MTE undertook a 24 hour pumping test on MW7 beginning at a rate of 50 L/min, which was maintained for the first 450 minutes. The pumping rate was observed to drop to 40 L/min 750 minutes into the test. The pumping rate continued to decline and at the end of the test the rate was measured to be 30 L/min.

#### December 11, 2017

MTE undertook a 24 hour pumping test on MW8 at 50 L/min. MW8 was unable to sustain a sufficient yield (>35 L/min) and the test ended after approximately 285 minutes. The pumping rate was noted to be approximately 11L/min prior to the pump being shut off.

### **Results from the Pumping Tests**

Based on the results of the pumping tests, MTE provides the following results and conclusions:

- Monitoring well MW3d was the only monitoring well to respond to the pumping of MW7.
- The pumping tests conducted on MW7 and MW8 indicate that fractures are random and discontinuous across the Site and of limited aerial extent;
- Pumping at MW8 which is located at the northwest corner of the Site did not affect the two closest off-Site receptors (domestic wells) to the Site;
- Neither MW7 nor MW8 was capable of sustaining a pumping rate greater than 35L/min (~ 50,000 L/day);
- MTE maintains that a Permit to Take Water will not be required to manage groundwater discharging into the quarry at a rate higher than 50,000 L/day.
- MTE maintains that the potential impact of the quarry post extraction has been appropriately assessed by MTE utilizing the analytical methods described in the 2016 Level 1 Level 2 Hydrogeological Investigation Report, and supporting documentation provided to the MOECC by MTE in our correspondence with the MOECC.

### **Discussion & Conclusions**

The results of the pumping test provide evidence that the hydraulic conductivity at the site is dependent on the presence of fractures which appear to be randomly distributed and discontinuous. The testing has demonstrated that fractures intersected by monitoring wells MW7 and MW8 do not appear to be hydraulically connected to domestic wells PW2 and PW13. However, the lack of a hydraulic response at monitoring wells MW1, MW2, MW4, MW5, and MW6 should be interpreted with caution due to the improper completion of these monitoring wells, which may have resulted in the screening of these monitoring wells over low permeability areas.

The estimation of groundwater inflow in discretely and discontinuously fractured media is subject to significant uncertainty and error. The calculation provided by MTE assumes that the bulk permeability of the rock at the site is extremely low; however, it is possible that more transmissive conditions may be encountered which would result in significantly higher groundwater inflow rates. As previously discussed, a PTTW is required for water takings which exceed 50,000 L/day as per Section 34 of the Ontario Water Resources Act (OWRA). Given the non-conservative estimate (biased low) and high degree of uncertainty associated with groundwater inflow at the site, it would be prudent to obtain a PTTW in the event that the groundwater inflows exceed 50,000 L/day. If it is determined in the future that groundwater inflow exceeds 50,000 L/day on any day, a PTTW will be required. If it is determined that a PTTW is required in the future, site activities may be impacted and additional hydrogeological investigations may be required. It is ultimately at the discretion and responsibility of the site owner and operator of the site to ensure that the operations of the site comply with section 34 of the OWRA.

The conducted pumping tests provide evidence that the excavation of rock in the vicinity of MW7 and MW8 will not result in adverse impacts to domestic wells PW2 and PW3; however, uncertainty exists with respect to the location of the fractures which supply these domestic wells and whether they extend beneath other areas of the site. As such, it is my recommendation that a groundwater monitoring program be implemented. It is the responsibility of the site owner/operator to ensure that existing water supplies (wells) are not adversely impacted.

As the volume of storm water is expected to exceed 10,000 L/day, an Environmental Compliance Approval (ECA) is required for the site operation as per Section 53 of the OWRA.

### **Recommendations**

For those reasons outlined above, I would be willing to remove my objection to the proposed quarry application, so long as the following requirements are included in the MNRF site license:

- The requirement that the MOECC be notified and a PTTW be obtained if water takings exceed 50,000 L/day, as per the requirements of section 34 of the OWRA.
- The requirement that a flow measuring device/method be developed and implemented that is capable of measuring groundwater inflow at the site.
- A groundwater monitoring program be established as proposed in the Level 1 and Level 2 Hydrogeological Investigation Report, with the exception that private wells PW2 and PW13 should also be included in the monitoring program with the permission of the property owners.
- The groundwater monitoring results and groundwater inflow data should be reviewed annually by a qualified hydrogeologist and kept at or near the site and provided to MOECC or MNRF upon request. If the hydrogeological conditions differ from those currently predicted, the local MOECC district office should be notified and provided with a copy of the data and assessment.

- The well interference complaints procedure outlined in the Level 1 and Level 2 Hydrogeological Investigation Report should be implemented at the site and included in the MNRF site plans.

It is recommended that a draft site plans be prepared to address those issues outlined above and provided to me for my review.



Thomas Guo, M. Eng, P. Geo.  
Hydrogeologist  
Technical Support Section  
Eastern Region  
TG/dv

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GW File: GW HA FA 02 07 (Freymond Quarry)  
TG/ IDS # 1364-AKNKS8