



April 15, 2021

**Via: Email**

Mayor Cornell and Members of Council  
c/o Mr. Shaun Persaud, B.A., MCIP, RRP  
Township of Tiny  
130 Balm Beach Road West  
Tiny, ON L0L 2J0

Dear Mayor Cornell and Members of Council:

**Re:Renewal of Permit to Take Water-The Sarjeant Company Limited  
Ministry Reference Number 7577-BY4LDA  
EBR Registry Number 019-3146  
Burnside Project No.: MCG102990.2021**

In accordance with Ontario Regulation 387/04, the Ministry of the Environment, Conservation and Parks (MECP) posted an instrument on the Environmental Bill of Rights Registry (EBR) on February 22, 2021. The instrument indicates that the Sarjeant Company Limited (Sarjeant) has applied for a Permit to Take Water (PTTW) for its proposed Waverley Pit No. 2 located at 1379 Baseline Road South.

The comment period closes on April 23, 2021. Council, through the approval of Motion #115/21 requested that R.J. Burnside & Associates Ltd. (Burnside), Township Engineering Consultants review the application and provide a summary and recommendations to the Township.

The Township requested a digital copy of the supporting documentation submitted with the PTTW application on March 8, 2021. On April 9, 2021, the MECP provided the Township with an April 1, 2021 report entitled "**Hydrogeological Evaluation for PTTW Application Waverley Pit No. 2 Tiny Township**" prepared by Harden Environmental Services Limited (Harden). Portions of Page 8 from the report were redacted to remove names.

A summary of the EBR posting for the Waverly Pit No. 2 PTTW renewal is below:

*This proposal is for a new Permit to Take Water for The Sarjeant Company Limited to take water from two ponds for the purpose of aggregate washing. Details of the water taking are as follows:*

*Source name: Pond A*

- purpose of taking: aggregate washing*
- maximum rate per minute (litres per minute): 1,140 litres*
- maximum number of hours of taking per day: 24*
- maximum volume of taking per day: 1,641,600 litres*
- maximum number of days of taking in a year: 180*

- *earliest calendar date of taking (mm/dd): 03/01*
- *latest calendar date of taking (mm/dd): 12/31*
- *length of taking: 10 years*

*Source name: Pond B*

- *purpose of taking: aggregate washing*
- *maximum rate per minute (litres per minute): 1,140 litres*
- *maximum number of hours of taking per day: 24*
- *maximum volume of taking per day: 1,641,600 litres*
- *maximum number of days of taking in a year: 180*
- *earliest calendar date of taking (mm/dd): 03/01*
- *latest calendar date of taking (mm/dd): 12/31*
- *length of taking: 10 years*

If the PTTW is approved as requested, each pond will be permitted to pump at 1,140 L/min (250 Igpm) for 24 hours per day (1,641,600 L/day), 180 days per year. The ponds will not operate concurrently.

In comparison, at the proposed Teedon Pit a well (PW1-09) is used to supply water to the wash pond at a rate of 950 L/min (209 Igpm) for 24 hours per day, 210 days per year. Water is pumped from the wash pond at a rate of 7,274 L/min (1600 Igpm) for 12 hours per day (5,237,280L/day), 210 days per year. The Teedon pit is licensed for 600,000 tonnes of aggregate per year and Sarjeant has a license to remove 1,000,000 tonnes per year.

According to Harden *“The wash plant will be operated from water recirculated through a series of ponds containing water. The ponds will be lined with silt or clay and will be perched above the phreatic water surface (water table). As such, no permit to take water is required to operate the wash plant.*

*The estimated dimensions (length, width, depth) of these ponds are as follows:*

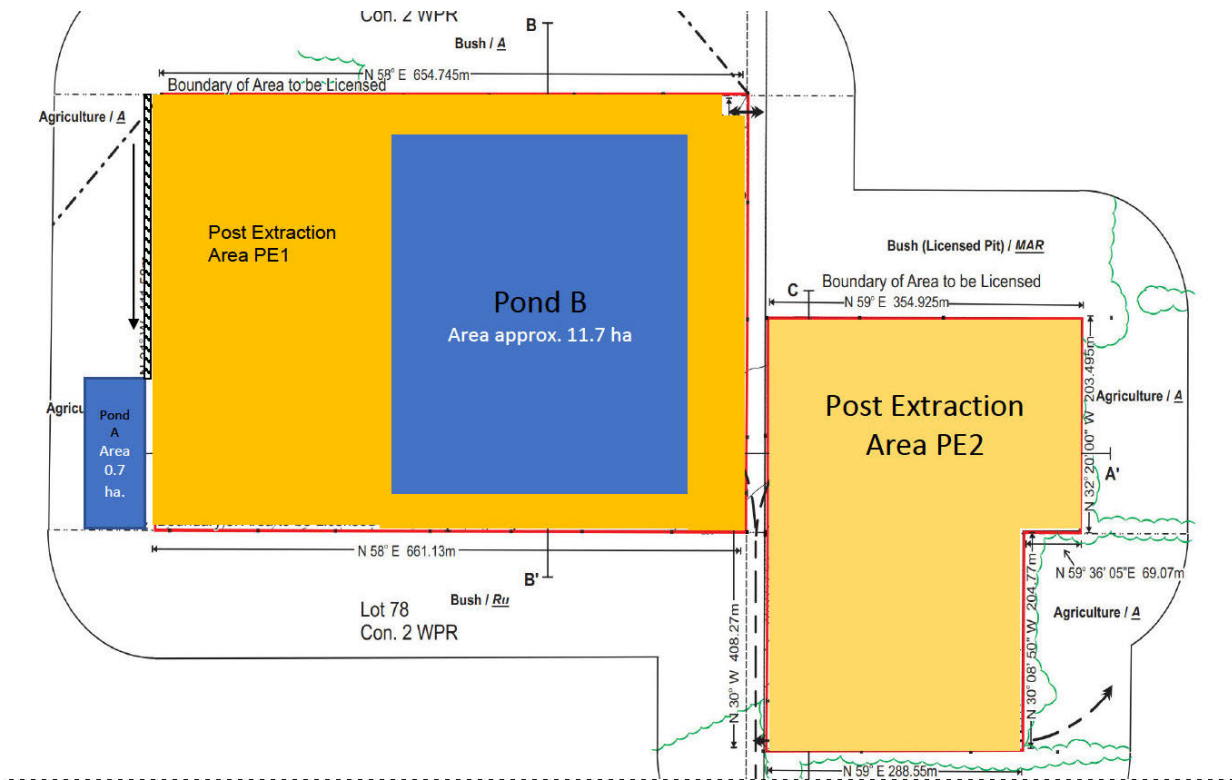
*Sedimentation Pond 1 – 24 m x 40 m x 3 m*

*Sedimentation Pond 2 - 25 m x 40 m x 3 m*

*Clear Water Pond - 40 m x 40 m x 3 m*

*There is a total potential storage of 10,800 m<sup>3</sup> of water in these ponds. The location of these ponds is not shown in the Harden report or on the Site Plans.*

*Ponds A and B will be excavated about 3 metres below the water table and will be completed in the surficial sand and gravel at the locations shown below. Water will be pumped from these ponds into the sedimentation/clear water ponds. Water will then be pumped from these ponds to the wash plant as needed.*

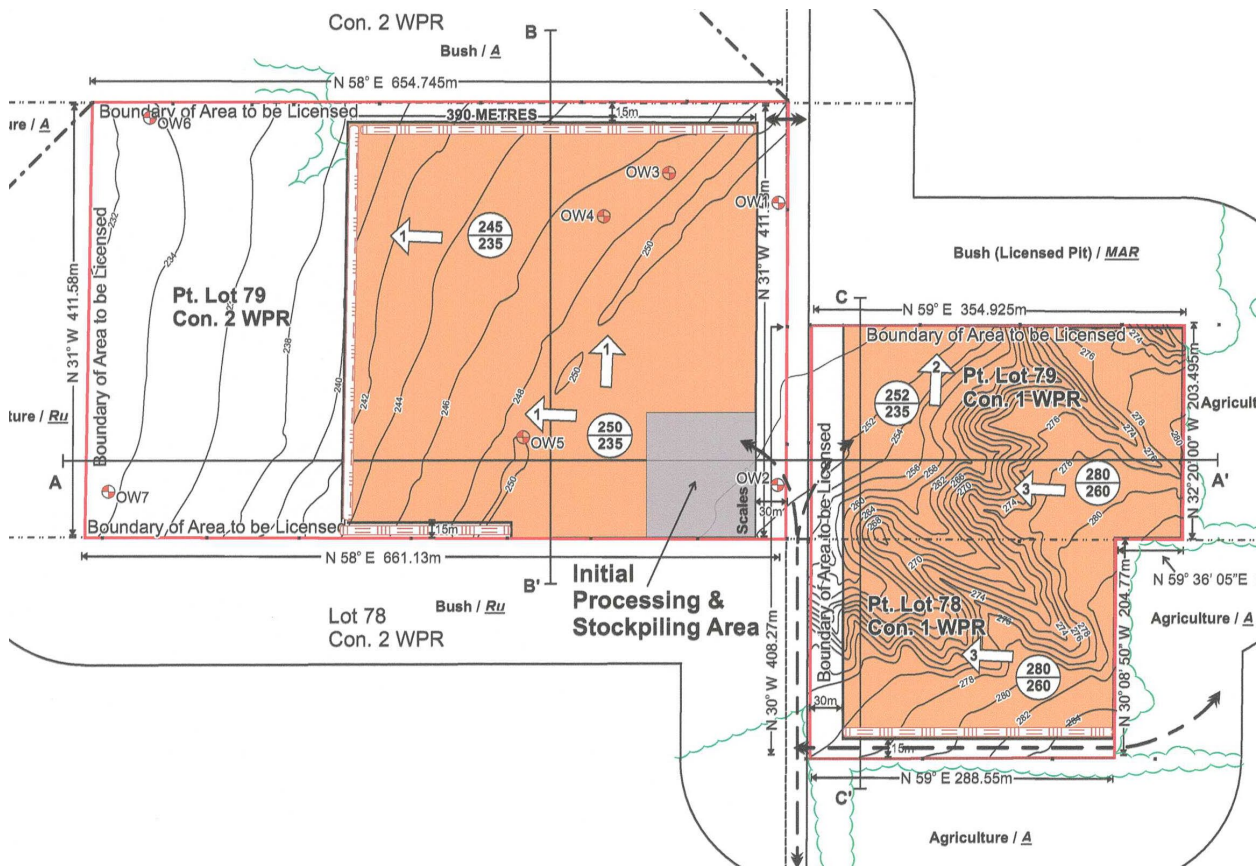


Burnside has identified a list of questions that should be answered by the supporting documentation that was provided to the MECP with the PTTW application. The Harden report (April 1, 2021) was dated two weeks after the February 22, 2021 EBR posting. It is not known if any other supporting documentation was provided at the time the PTTW application was submitted to the MECP. The questions along with information obtained from the Harden report are found below.

1. *What is the source of water for the ponds?*

The Harden report indicates that there will be two ponds used as a source of wash water for the site as follows: "Aggregate extraction will commence at the southeast corner of the western portion of the pit as shown on the site plans in Figure 16. Water will be removed from Source A and pumped into the clear water pond in the processing area on the site. As the excavation progresses from east to west, the pit floor will become closer to the water table and Pond B will be dug on the southeastern corner of western portion of the pit where groundwater will be more accessible to processing area. Aggregate extraction will commence on the higher, eastern side of the road allowance after the development of Pond B, and water will be pumped from Pond B to processing areas on the eastern portion of the Pit or the gravel will be transferred to an existing processing area west of the road allowance".

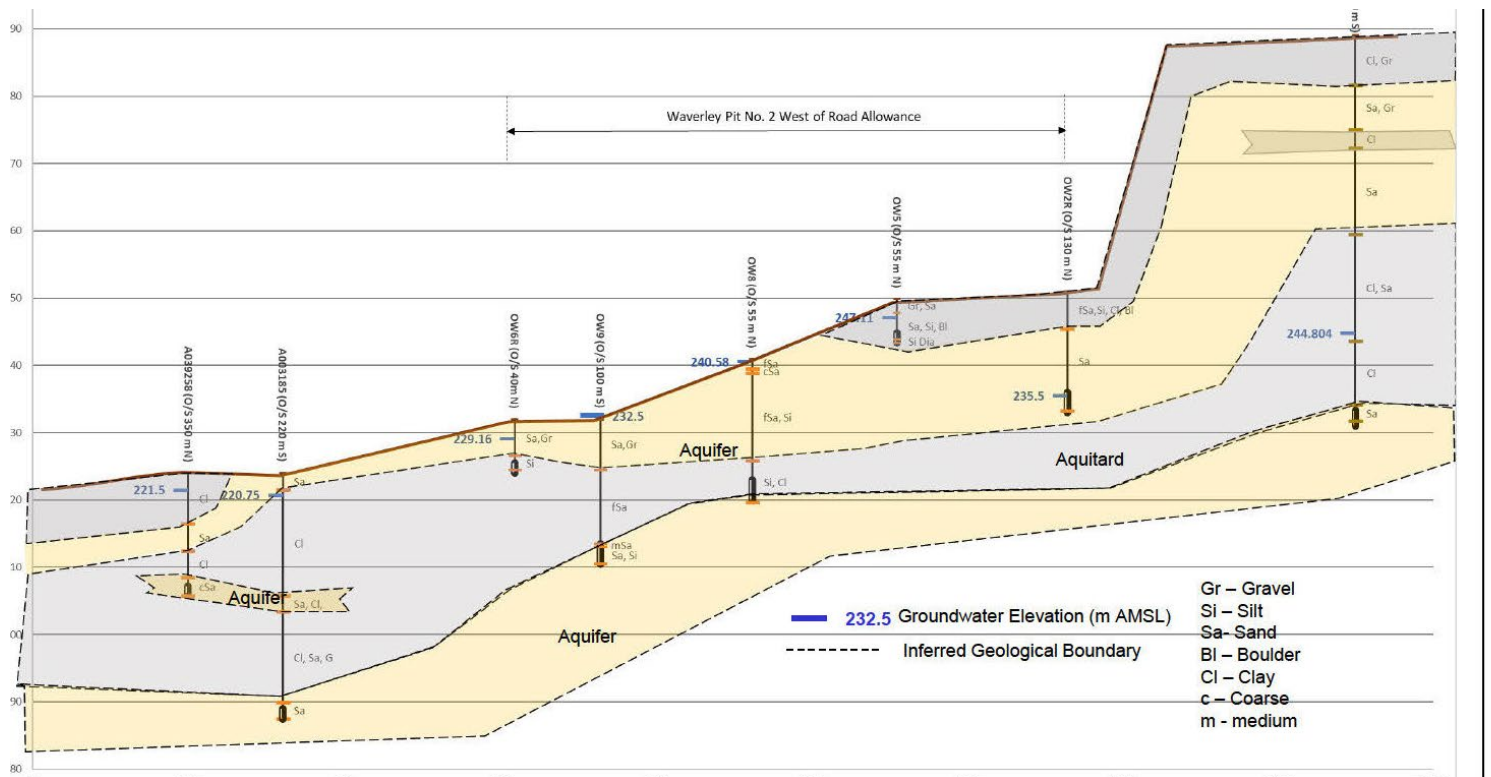
The location of the initial processing and stockpiling area is shown on the excerpt from the Site Plans below. As indicated above, the location of the sedimentation and clear water ponds are not shown on any of the site plans or in the Harden report.



**Burnside Comments**

- The location of the sedimentation and clear water ponds should be added to the maps and cross sections.
- The actual depths of the ponds should be provided. The highest water level in the area of Pond B (shown on cross section below) is 235.5 mAMSL. It is not clear how the 11.7 ha Pond A will be completed at a depth sufficiently below the water table without excavating below the approved pit floor depth of 235 mAMSL.

Sarjeant to confirm that the Ministry of Natural Resources and Forestry (MNRF) has approved their plan to excavate below the approved pit floor depth of 235 mAMSL.



## 2. Are the ponds lined or are they in contact with the shallow groundwater table?

There is limited information provided about the construction of any of the ponds. Harden indicates "The measured water table varies from 235.5 m mAMSL at the east part of the site to 228 mAMSL metres at the west part of the site. The source ponds (A and B) will be excavated approximately three metres into the water table to allow the shallow groundwater to be taken for aggregate processing. The sedimentation ponds will be lined with silt or clay and will be perched above the water table. Water from Ponds A and B will be used to fill the sedimentation ponds and water from those ponds will be used at the wash plant".

### Burnside Comments

- The approved floor of the pit is 235 mAMSL. Since none of the wells are within the footprint of Pond B, the depth of water table can only be estimated.

Based on water level data in the Harden report from OW1R and OW2R, the water table at the east end of the pit is between 233.5 and 234.5 mAMSL, declining to about 233 mAMSL near the west end of the pond.

The creation of an 11.7 ha pond will require a substantial volume of material (up to 4 m) to be excavated below 235 mAMSL so that 2 m of drawdown can be available in the pond.

Harden should provide additional details on the actual depths of the ponds and the rationale for their sizes. The ponds should be added to the Geological Cross Section (Figure 15).

- Harden indicates that the sedimentation ponds will be lined with silt or clay. Additional detail on the source of the silt/clay material as well as its hydraulic values needs to be provided.

It is not indicated if there is material on site in sufficient volume with the appropriate hydraulic properties that could be used for the liner.

Since the sedimentation ponds are to be above the water table (potentially constructed in coarse-grained material), a properly engineered liner is required to ensure leakage does not occur as this could increase the amount of "make-up" water required from Ponds A and B.

*3. How big are the ponds and where are they located?*

As indicated above, there are two sources of water: Pond A and Pond B. The Operational Plans for both pits (attached) indicate that the washing operations will be located within the processing area and that washing of aggregate on site is proposed subject to issuance of a Permit to Take Water by the MECP. Pond A will be 0.7 ha in size and will be located outside the western edge of the extraction area. Pond B will be about 11.7 ha in size and will be located on the eastern half of extraction area PE1.

**Burnside Comment**

- The ponds are significantly larger than they need to be. The combined area of Ponds A and B is 124,000 m<sup>2</sup>. If they were completed 1m below the water table they would store 124,000m<sup>3</sup> of water, 11.5 times what is contained in the sedimentation ponds. There is no need for the ponds to be this large since they are acting as large diameter wells to provide water to the wash operations.

Harden should provide rationale for the sizing of the Pond B.

*4. What on-site wells were monitored during the pumping test?*

Rather than completing a conventional pumping test to establish aquifer properties, Falling Head Permeability Test was conducted in each groundwater monitors BH1R, BH2R, BH6R, OW10 and OW11 to calculate the hydraulic conductivity of the sand and gravel formation.

The hydraulic conductivity values were used to calculate the theoretical radius of influence from pumping the ponds.

**Burnside Comment**

- The calculated impacts for the water taking from the ponds is based on hydraulic conductivity data from monitoring wells. No details are provided on how the wells were developed prior to completion of the hydraulic conductivity testing.

The wells used for Pond A (OW1R and OW2R) are not within the proposed pond location. OW10 and OW11 are 50mm piezometers installed in test pits and the hydraulic conductivity values may represent values from the disturbed material around the piezometers.

Harden should complete a more rigorous investigation to confirm aquifer characteristics to better understand the impact of the Ponds.

*5. What domestic wells were monitored during testing?*

No domestic wells were tested. A previous domestic well survey completed by Waterloo Geoscience in 2005 was included, but all the information had been redacted.

### **Burnside Comment**

- An updated door to door domestic well survey needs to be completed to confirm that no new wells have been installed in the vicinity of the proposed pit since 2005.
6. *Why is the PTTW amount for the wash ponds much less than Teedon when extraction rates are much higher?*

Harden references a 2006 Golder study that indicates that about 89 L of water are “consumed” for every tonne of aggregate processed. Harden assumes 400,000 tonnes of aggregate will be processed annually for a consumption of 35,600 m<sup>3</sup> of water per year. The sedimentation and clear water ponds hold a combined total of 10,800 m<sup>3</sup> of water.

The volumes taken from the sedimentation ponds are not included in the PTTW total. Harden indicates “The clear water pond and the sedimentation ponds will not be constructed below the water table and therefore a permit will not be required to operate the pump for the plant”.

### **Burnside Comment**

- The total daily volume of water used at the pit should be provided including the volume of water pumped from the sedimentation/clear water pond for use at the wash plant.
7. *Did the pumping test result in any water level changes in the Teedon Ponds?*

The theoretical calculations indicate a maximum area of influence of 160 m from pond B, which is close to the Teedon Pit.

Harden indicates that there will be no cumulative impact on groundwater resources as a result of the water taking.

### **Burnside Comment**

- Harden should complete a more rigorous investigation to confirm no cumulative impact on groundwater resources as a result of the water taking.
8. *The proposed length of the PTTW is ten years. What mechanisms will be in place to revoke/modify the PTTW in the event there is an adverse impact on water levels in the area?*

Harden proposes a monitoring program, however no details on reporting/assessment of results are provided.

### **Burnside Comment**

- Typically, the MECP requires a monitoring program and annual report. Burnside agrees with the recommendation that daily water levels be recorded as part of the monitoring program. If the PTTW is approved, Burnside recommends that residents identified as R4 and R5 (Figure 11) be added to the program.
- Harden should prepare a report after the first year of operation to document the water levels in the on-site monitoring wells, Ponds A and B.
- *What is the cumulative impact from the Sarjeant and Teedon (CRH) water takings?*



This has not been assessed other than in a cursory manner by Harden.

**Burnside Comment**

- MECP should consider the cumulative impact from the Sarjeant and Teedon (CRH) water takings in their evaluation of the Sarjeant Waverley Pit No.2 PTTW application.

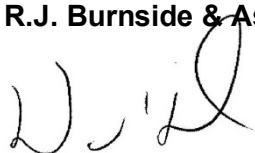
**Summary**

Burnside recommends that the Township provide these comments to the MECP before the April 23, 2021 deadline.

We trust that you will find the above to be in order. Should you have questions regarding the above, please contact the undersigned.

Yours truly,

**R.J. Burnside & Associates Limited**



Dave Hopkins  
DH:js

CC: Shawn Persaud, Director of Planning & Development for the Township of Tiny  
Tim Leitch, Director of Public Works for the Township of Tiny

Other than by the addressee, copying or distribution of this document, in whole or in part, is not permitted without the express written consent of R.J. Burnside & Associates Limited.