

**SEWAGE SYSTEM UPGRADE AND EXPANSION - SUMMARY**

11/09/21

- Restoration of the Alton Mill was done between 1997 & 2006 and was predicated on an anticipated future municipal system for Alton that would have supported the entire Alton Mill business plan.
- The Region of Peel has since decided not to put in such system. A long term sewage solution for the Alton Mill is needed.
- Current septic system has rated capacity of 3,000 lpd. Water meter data since 2009 confirms that on an average daily flow basis, we are running at 35% of this capacity and 12% of prescribed OBC flow rates.
- Current operation of the system has avoided any breakout or tank overflow by pump outs in advance of large events
- We plan to continue using existing system for existing uses. Installation of dosing pump is possible for the existing system to manage peaks, which would minimize or avoid the need for pump outs.
- A full service restaurant and conversion of the existing cafe from paper service to china service and a permanent, seasonal tent for the Annex Courtyard (vs. a fully enclosed building shown on the approved Site Plan) is proposed as per the original business plan and contemplated in the zoning.
- three alternative sewage flow calculations have been prepared:
  - using OBC rates for the entire building
  - a combination of actual measured flows for the existing uses and OBC rates for future additional uses
  - actual flows plus anticipated flows based on our actual plan
- There is insufficient land area on site for a Class 4 system if full OBC rates are applied
- The solution requires innovative thinking and use of efficient technology/systems including:
  - initially a combination of ultra low flow fixtures and a holding tank to permit monitoring to determine actual flows
  - ultimately a combination of a greywater treatment system and either on-site treatment, composting toilets, or continued trucking of highly-concentrated blackwater.



## **SEWAGE SYSTEM UPGRADE AND EXPANSION - OVERVIEW**

This will outline the background information and approach we are proposing for the upgrading and expansion of the sewage system at the Alton Mill.

### **Larger Sewage and Planning Context**

At the time of restoration of the existing building between 1997 to 2006, the Region of Peel had indicated that it would eventually be installing a municipal sewage system in Alton. The plan was to use the existing septic system in the interim and an H was put on the restaurant use until such time as a sewage solution is in place. Now that the Region has abandoned the municipal sewage system, we have to find a practical solution to allow the full business plan and potential of the Alton Mill to be realized.

We'd like to remind you that this is an existing 135-year-old building, a highly-valued heritage resource and one of the Town's prime tourism destinations. The Arts Centre use has great social value, but is economically marginal. The plans and approved zoning always included events and a restaurant to make it economically viable. We need the Town's cooperation and assistance to the greatest extent possible to make this happen.

### **Existing Septic System**

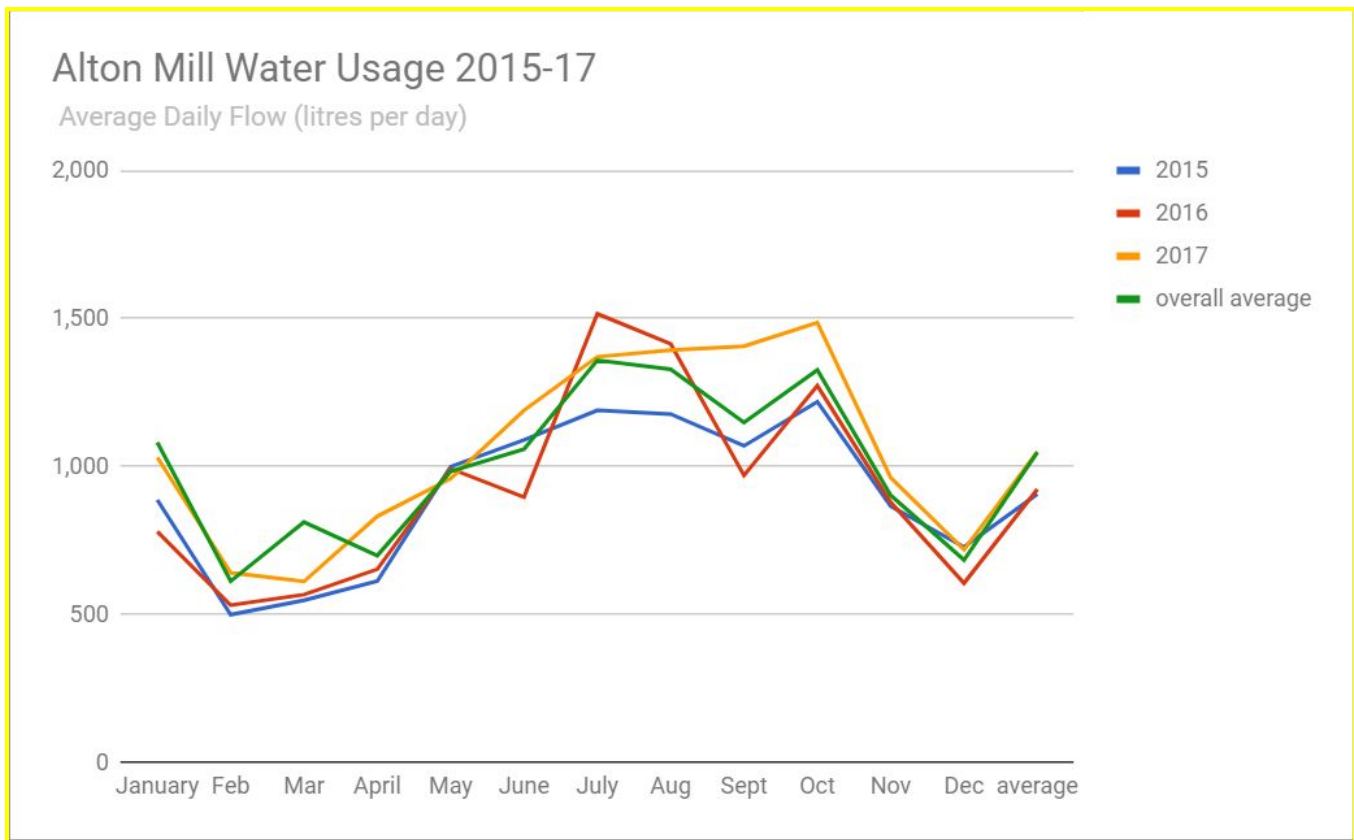
The existing 22,500 litre septic tank has a design capacity of approx. 7,500 L/Day, or more than double the absorptive capacity of the tile field, which is the limiting factor. In July 1998, the existing septic system was inspected and rated/approved for up to 2,500 lpd in connection with the phase 1 restoration. This was based on the abandonment of one of the tile lines that was then plugged and conservatively used an estimated 25 m. length of the runs despite a measured length of 30 m. Subsequently the system was cleaned out, the header pipe replaced and the blocked line plus two other tile lines were replaced with a permit by a licensed septic installer. Using the full length of the runs, this resulted in a revised capacity calculation of 3,600 L/day (see Terraprobe reports January 2009 and Dec. 2014).

In 2015 at the request of CVC, Terraprobe performed updated infiltration testing and boundary nitrate calculations and recalculated tile bed capacity back down to 3,000 L/day. Their 2014-15 reports recommended that additional sewage could be safely accommodated by converting from gravity flow to a dosing pump to control flows into the tile bed and even out peak flow variations.

## Actual Water Usage

The actual water usage (and by extension the daily sewage flow volume) has been monitored daily since January 2009. As the building has become more established and traffic/usage has increased, the flows have increased, but are still way below both the building code-predicted volumes and the rated capacity of the tile field. Flows do fluctuate greatly from day-to-day due to the unique and varied uses of the space. The studio tenants' hours vary greatly, as does public traffic. Weekends are always busier than weekdays and the building is closed to the public Mondays (except Public Holidays) and Tuesdays. The average daily flow for the calendar year 2017 was 1,050 lpd and average event day flow was 2,850 lpd (including all types of events). Flows exceeding 3,000 lpd have been recorded, primarily from weddings and public events. Occasional operational incidents (eg. faulty valves, dripping tap) have occurred which have skewed the overall average daily flow figures upwards.

Flows over the past three years are shown on the following graph:



A copy of the water meter readings is available at the following link:

[https://docs.google.com/spreadsheets/d/1X1AjFitj0\\_kM9M0CoTITeU0RwFpwPrOFVed7hdVco nM/edit?usp=sharing](https://docs.google.com/spreadsheets/d/1X1AjFitj0_kM9M0CoTITeU0RwFpwPrOFVed7hdVco nM/edit?usp=sharing)

The data for 2017 is the most applicable as it reflects the last entire year of operation and the highest annual flows experienced. It shows the daily readings and calculated daily flow and contains notes indicating what was happening at the mill to explain any major fluctuations.

## **Smoothing of Peaks**

To date the tile field has been protected from peak flows through a simple management regime utilizing the excess capacity of the septic tank. Before major events that have the potential to generate flows exceeding 3,000 litres, the septic tank is partially pumped out by a local septic hauler. This gives a buffer to be filled during and following the event prior to any effluent being discharged to the tile field. It has been effective in that there have been no instances of breakout or backup in the tank in almost ten years of operation *even during the most extreme peaks*.

## **Continued Use of Existing System for Existing Uses (with minor modifications)**

Based on water meter records, the rest of the mill is generating approx. 12% of the OBC predicted flows. As we are still using only 35% of the tile bed's rated capacity, we propose to continue using the existing septic system to serve the existing uses in the mill on an ongoing basis. We will continue to pre-pump the tank prior to major events unless and until the management regime is automated by replacing the gravity flow with a dosing pump.

## **Sewage Flow Calculations**

We have prepared three alternative sewage use calculations for the property:

- a) using OBC prescribed rates for existing and proposed additional uses
- b) using actual flows for existing uses and OBC rates for proposed existing uses
- c) Using actual flows for existing uses and projected flows for the proposed new uses based on our actual plan (to come)

The detailed calculations are available at the following link:

<https://docs.google.com/spreadsheets/d/1xdY9dhktnXELYNywgzLL-e5OR6Sj0fSCpofU-3i1vM/edit?usp=sharing>

The proposed restaurant will have 54 indoor seats which, using OBC standards and combined with the 3,000 litre capacity of the existing system would result in total flows on the property of 9,750 lpd. However the restaurant also proposes to have an outdoor patio and we will be applying for a permit for a permanent seasonal tent over the Annex. We will be adding composting toilets for that, which we understand don't require a permit. However if the patio seats and the Annex toilets were counted and OBC standards applied to all uses, we would be 28,130 litres per day.

It is clear there is insufficient land for an onsite-wastewater system designed to meet the flows that would be predicted by current Building Code tables for all the uses in the Mill. And even if it were possible, the cost would be prohibitive.

Therefore we propose to take an innovative approach to the problem by firstly minimizing the amount of wastewater generated and secondly managing what is generated in the most efficient manner possible. The plan will result in less than 10,000 lpd being generated. The question is, is the Town Building Department prepared to use the discretion it has under the Building Code to work with us to make this happen, or do we have to go through the MOECC to obtain an ECA. Regardless of where jurisdiction lies, following is a description of our plan for the Town's information.

### **Proposed System for Restaurant and Annex Courtyard**

- initially install a holding tank pursuant to Section 8.8.1.2. (c) of the OBC ie *“to upgrade a sewage system serving an existing building, where upgrading through the use of a Class 4 sewage system is not possible due to lot size, site slope or clearance limitations”*. (Other restaurants in the area currently use holding tanks and truck their septage to municipal facilities eg. Ray's Bistro in Alton, Bistro Riviere in Erin).
- use an ultra-low flow dishwasher in the kitchen, separate and meter the kitchen greywater and direct it to the holding tank.
- Use Envirolet (or similar) 0.2 lpf vacuum flush composting toilets for seasonal use for the Annex (Whether they go to composters or to the holding tank TBD.). This will take some of the existing “event” load off the indoor washrooms.
- Continue to direct the existing washrooms inside the building to the existing system.
- Continue to monitor the flows to the septic system and as a contingency plan if flows approach capacity, convert the toilets in the washroom closest to the restaurant to 0.2 lpf vacuum flush units and urinal to waterless and either redirect the toilets/urinal to the holding tank or obtain certification from a Process Engineer that the septic system can handle the concentrated effluent.

With the above management plan to minimize the amount of wastewater, It may turn out that there is in fact room to treat and dispose of the actual amount of effluent generated on site. This may possibly entail separate greywater and blackwater systems. We understand that at least three years' monitoring is required to rely on actual flows for the design of a new treatment system. If that is the case, we can revisit the whole situation after three years' of operations.

That is the strategy. In our meeting we'd like to find out if you are ready, willing and able to work with us to make it happen. If it requires an MOECC application, then we would appreciate the Town's support for this innovative pilot.

The completion of the project will allow the vision for the Alton Mill to be fully realized and enhance and reinforce the significant private and public investment that has been made into this spectacular place.