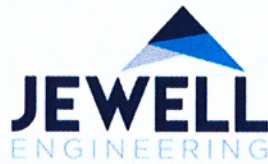


**Nautical Lands**  
**Wellings of Picton Phase 2**  
**Sanitary Sewer Analysis / Assessment**



**Kingston**

4 Cataraqui St.  
Unit D  
Kingston, ON K7P 1R7  
Phone 613-389-7250  
Fax 613-389-2754

**Belleville**

1-71 Millennium Pkwy.  
Belleville, ON  
K8N 4Z5  
Phone 613-969-1111  
Fax 613-969-8988

**Mississauga**

2155 Leanne Blvd.  
Suite 200A  
Mississauga, ON L5K 2K8  
Phone 905-855-1592  
Fax 905-855-5428

February 13, 2019

Nautical Lands Contractors Inc.  
700 Finley Avenue, Unit #4  
Ajax, ON  
L1S 3Z2

Attn: Peter Gregor, B.Tech, Arch. Sci., PMP  
VP of Planning and Design

Re: Phase 1 / 2 Sanitary Sewer Effluent Review  
Our File 180-4466

---

**BELLEVILLE**  
(HEAD OFFICE)  
1-71 Millenium Pkwy.  
Belleville ON K8N 4Z5  
Tel: 613-969-1111  
info @ jewelleng.ca

TOLL FREE  
**1-800-966-4338**

**KINGSTON**  
208-4 Cataragui St.  
Kingston ON K7K 1Z7  
Tel: 613-389-7250  
kingston @ jewelleng.ca

**MISSISSAUGA**  
200A-2155 Leanne Blvd.  
Mississauga ON L5K 2K8  
Tel: 905-855-1592  
mississauga @ jewelleng.ca

[www.jewelleng.ca](http://www.jewelleng.ca)

Dear Sir.:

In response to our conversations regarding water usage from Wellings of Picton Phase 1 retirement facility, we are pleased to provide you with the following review of the sites actual consumption compared to the original allocated peak flows, to explore the possibility that due to low water usage there will be sufficient capacity to service the proposed development under this application.

A summary of our findings is provided below.

**Original Allotment of Phase 1 (88 Units)**

Based on anticipated occupancy and allowable sewage flows in the County Road 49 gravity sewer:

- 1.75 people/unit
- 225 L/day/person

Daily Consumption:

88 units x 1.75 people/unit x 225 L/person/day =  
34,650 L/day

(394 L/unit)

**Calculated Peak Design Flow**

= **2.00 L/sec.**

### **Actual Water Consumption and Occupancy of Phase 1 (88 Units)**

Based on water and wastewater measurements from onsite metering and projection of full occupancy within Phase 1:

Actual Consumption in March 2018 (Max Month): = 223m<sup>3</sup> @ 39 units occupied =  
5.7m<sup>3</sup>/unit/day

= 503.2m<sup>3</sup>/month (Projected to full occupancy of 88 units)

= 0.191litres/sec. = 16,502 L/day  
(188 L/unit)

Calculating daily consumption per person:

$$\frac{16,502 \text{ L/day}}{88 \text{ units} \times 1.75 \text{ people/unit}} = 107.16 \text{ L/person/day}$$

Calculated Peak Design Flow = 1.12 L/sec.

(Based on population of 1.75 people/unit and 107.16 L/person/day and peaking factor of 4.19)

**Therefore, Phase 1 is projected to only use 47% of the original daily allocated consumption and 56% of the discharge at a peak flow of 1.12 L/sec.**

The following two case studies analyze the actual water usage of phase 1, with the addition of Phase 2 flows to determine if the combined flows surpass the original peak design flow of 2.0L/sec.

---

**Case 1 (theoretical consumption @ 225 l/day/person)**

---

**Phase 2 (50 units)**

Daily consumption based on:

- 1.75 people/unit
- 225 L/day/person

$$50 \text{ units} \times 1.75 \text{ people/unit} \times 225 \text{ L/person/day} = 19,681 \text{ L/day} \\ \text{(394 L/unit)}$$

$$\text{Calculated Peak Design Flow} = 1.48 \text{ L/sec.}$$

**Actual + Phase 2**

$$\text{Daily Consumption (16,502 + 19,681)} = \mathbf{36,183 \text{ L/day}}$$

$$\text{Calculated Peak Design Flow} = \mathbf{2.6 \text{ L/sec.}}$$

---

**Case 2 (theoretical consumption based upon actual consumption 107.16 l/day/person)**

---

**Phase 2 (50 units)**

Daily consumption based on:

- 1.75 people/unit
- **107.16** L/day/person

$$50 \text{ units} \times 1.75 \text{ people/unit} \times 107.16 \text{ L/person/day} = 9,376 \text{ L/day} \\ \text{(187 L/unit)}$$

$$\text{Calculated Peak Design Flow} = 0.97 \text{ L/sec.}$$

**Actual + Phase 2**

$$\text{Daily Effluent} = \mathbf{25,878 \text{ L/day}}$$

$$\text{Calculated Peak Design Flow} = \mathbf{2.1 \text{ L/sec.}}$$

---

Based on the results of each case study, Phase 1 is expected to generate only 47% of the original allocated daily consumption. The proposal of Phase 2 will see the use of low flow / low consumption fixtures, along with the installation of pressure sewer forcemains that reduces infiltration potentials. Phase 2 full build-out will exceed the original peak design flow of 2.0 L/sec, however in our opinion the potential build of 40 units, utilizing a 1.75 ppl/unit and reduced consumption of 107.16L/person/day would be satisfactory under this application.

If you have any additional questions or concerns, please do not hesitate to contact the undersigned.

Yours Truly,

A handwritten signature in black ink, appearing to read 'Pat Schick', written in a cursive style.

Pat Schick, A.Sc.T.  
Jewell Engineering Inc.