

April 4, 2023

The Corporation of the County of Prince Edward
Engineering Division
Department of Development Services
280 Main, 2nd Floor,
Picton, K0K 2T0

Attn: Matthew Coffey, MCIP, RPP (Planning Coordinator)

RE: Peer Review: Hydrogeological Assessment, Salem Road, Prince Edward County, Lot 90, Concession 3,

We are pleased to provide the results of our peer review of the report titled, **Hydrogeological Assessment, Salem Road, Prince Edward County, Lot 90, Concession 3 (Revised)**, prepared by Blue Metric for Hilden Homes, dated October 27, 2022.

We understand that the hydrogeological study was prepared in support of two proposed lots. The intended use is single family residence. The proposed lots are to be 0.81 hectares each. The retained property is 5.4 hectares. There is a newer dug-well located on each of the proposed lots and the retained lot. The subject property is located on the north side of Salem Road, east of Cunningham Road. just east of Shannonville Road. The proposed lot (subject property) is on the east end and is treed with deciduous trees. Surrounding property use is reported to be rural residential and agricultural. However there does appear to be significant coverage by natural lands including a PSW on the north end of the subject property. The property is described as being located within the Concecon Catchment on a topographic ridge, with drainage to the north on the northern portion of the property and drainage to the south on the southern portion of the property. Geology in the area is reported to be Ameliasburg loam and thin glacial drift deposits overlying Middle Ordovician nodular limestone of the Lindsay Formation. The target aquifer in the area is the fractured limestone bedrock. The consultant describes that there is a shallow fractured bedrock aquifer under 7 metres deep and a deeper aquifer. Locally wells target the deeper aquifer with drilled wells. The proponent was directed by the well driller to construct dug wells and target the shallow aquifer. The well driller observations reported by the consultant are:

A276050

- 3 m soil cover
- Depth below grade is 6.1 m
- Recommended pumping rate is 6 GPM (22.71 L/min)
- Reserve is 25,000 L

A330604

- 1.2 m soil cover
- Depth below grade is 6.71 m
- Recommended pumping rate is >90 GPM (340.7 L/min)
- Reserve is 34,000 L

A307941

- 1.5 m soil cover
- Depth below grade is 6.71 m
- Recommended pumping rate is (90+ L/min)
- Reserve is 34,000 L

Quantity & Interference

A 6-hour pumping test was conducted on A330605 and A276050 on May 25, 2022 and May 26, 2022 respectively. Each well was pumped at a rate of 26 L/min with a combined total of 18,600 Liters discharged. January 6, 2023. A second combined pumping test was conducted on September 8, 2022. Each well was pumped at a constant rate of 18.75 L/min with total discharge of 14,800 litres. During testing three off site wells were monitored for interference. Results:

A276050

- Static: 3.459 mbtoc
- Max drawdown: 1.345 metres
- Recovery: 95% after 2.3 days
- Interference: not observed

A330604

- Static: 3.59 mbtoc
- Max drawdown: 0.45 metres
- Recovery: 0.05% after 24 hrs
- Interference: not observed

Combined A276050 & A330604

- Static: 3.495 & 3.59 mbtoc respectively
- No data provided regarding max drawdown or recovery
- Interference: not observed

The consultant states that there is sufficient water quantity with low potential for well interference. However, the consultant also states that due to low recharge rates, the sustainability of the wells during periods of sustained drought may be an issue. The consultant recommends engineered storage as a remedy for periods of low base flow. In addition, the consultant has identified that the site is hydrogeologically sensitive to infiltration of contaminants.

Quality

One raw water sample was collected from each test well within the last hour of the pumping after determination of 0 mg/L free chlorine. Due to elevated Total Coliform and a few other parameters in A330604 (sodium, DOC, and manganese) a second sample was collected on September 8, 2022, with the result of 0 cfu/100ml for Total Coliform being reported. The following ODWSOG parameter exceedances for A276050 & A330604 are based on the lowest result of the May and September sampling for the above parameters:

The following operational guidelines (OG) were exceeded:

- Hardness (285 & 276 mg/L compared to OG of 80 – 100 mg/L)
- Turbidity (5.1 NTU)

The following aesthetic guidelines (AG) were exceeded:

- Colour (20 PCU compared to 5 PCU)

The following health criteria (MAC) were exceeded:

- Sodium (33.5 mg/L A276050 only, compared to health limit of 20 mg/L)

We have the following comments and recommendations:


- The consultant has stated that the supply wells can provide sufficient water with low potential for interference during non-suspended drought periods. The consultant has identified engineered storage as a solution for low flow periods. In our opinion, should the County proceed with approval, we recommend that the County place on Title that there may be a need for engineered storage during low flow periods.
- The consultant has identified that the site is hydrogeologically sensitive and recommends that the grading be sloped away from the supply wells by 3m, and that the supply wells be maintained according to O.Reg.903 requirements. In general, the D-5-5 Guideline does not support development in hydrogeologically sensitive areas. Should the County proceed with approval we recommend the following:
 1. the well's sensitivity to surface contaminants be placed on Title.
 2. we recommend that the consultant provide recommendations to augment/increase the Ontario Building Code setbacks at these sites.
- We agree with the consultant that the elevated sodium, in excess of the health standard, be placed on Title. The consultant should also notify the local Health Authority of the sodium exceedance.

- We agree with the consultant that the need for disinfection be placed on Title. In addition, we recommend the need for filtration also be placed on Title.
- We agree with the consultant that the remaining water quality issues are reasonably treatable. With respect to Colour, we agree with the consultant that it is treatable and likely to abate naturally during well use/development. We recommend that a professional water quality specialist be consulted for treatment options.

If there are any further questions or clarifications requested, please do not hesitate to contact the undersigned,

Yours Truly,

CCR Environmental



Christopher C Rancourt, M.Sc., P.Ge.
Senior Geoscientist, Hydrogeologist, President