Tim Lotimer & Associates Inc.
Environmental Geosciences

t: 289.235.8387
e: tim@timlot.ca

9 - 91A Main Street East
Grimsby, ON Canada L3M 1N6

LOTIMER
& ASSOCIATES INC.

To: Mrs. Sandy Buxton, Midhurst Ratepayers' Association
From: Mr. Tim Lotimer, FGC, P.Geo.,
Date: September 8, 2018
Subject: Midhurst Class EA, Draft Environmental Study Report

In accordance with your request, we have reviewed the Golder comments, dated April 21, 2017, on our slides prepared for presentation at the Council of Springwater Township meeting on March 8, 2017.

Reference Slide	Golder Comment	Response of Midhurst Ratepayers Association
6	In this comment, Golder suggests that a detailed assessment of private wells is not necessary. One reason given is that many of the area wells are in an aquifer shallower, and therefore hydraulically separated, from the proposed pumping wells that will be installed in a deeper aquifer.	Large scale groundwater takings often cause adverse impacts to private wells and should be thoroughly assessed during groundwater studies to ensure that there are no water shortages for private well users. The pumping tests of the test wells showed that there was drawdown even in the shallow aquifer from pumping the test wells in the deep aquifer, suggesting that all wells within the zone-of-influence may be impacted by the proposed taking.
8	In this comment, Golder suggests that the well head protection areas for the existing Midhurst wells is small and home owners do not face land use restrictions	The proposed water taking is much greater than the existing taking; therefore the well head protection areas will extend well beyond the municipal boundaries and possibly affect home owners via land use restrictions even though they are not serviced by the proposed water taking.
9	In this comment, Golder suggests that the cumulative impact on Willow Creek is below MNR and DFO thresholds	The thresholds used by Golder were not appropriate as noted by the Ministry of the Environment in their review (April 30, 2018) of Golders report
10	In this comment, Golder suggests that the proposed water-taking will not result in an equivalent water loss to Willow Creek	The capture zones of the proposed new wells are delineated in Figure 12 of the groundwater modelling report of Golder (May 2018 p 356). The deep A3/A4 aquifer equipotentials illustrate that Willow Creek is the regional groundwater discharge boundary for this aquifer. The capture zones of the proposed new wells show that the proposed water-taking will result in the interception of water flowing to Willow Creek and thus result in a reduction of flow in Willow

		Creek equal to the proposed taking – upstream of the point of sewage discharge. Golder does not address in detail, the ecological impacts of this stream flow loss, on reaches of Willow Creek that are upstream of the sewage discharge location.
11-14	In this comment, Golder suggests that the discussion of recharge and discharge is incorrect	The groundwater model of Golder (May 2018) supports the concept of recharge and discharge as set out in the slides
12, 13, 14 22	In this comment, Golder suggests that these slides are inaccurate and misleading	The slides prepared for the presentation are based on the most recent geological and hydrogeological interpretations of the Ontario Geological Survey and illustrate fundamental concepts of groundwater flow in a multiple aquifer/aquitard system such as those found in the Midhurst area. We note that considerable updating and revisions to the geological understanding of the area have been done by the Ontario Geological Survey since Golder completed their studies. The work of the Ontario Geological Survey shows that the stratigraphy of the Central and South Parts of the County of Simcoe is much more complex than is modelled by Golder. This calls into question the reliability of the predictions made using the Golder model.
16	In this comment, Golder suggests that the 3 day individual pumping tests were conducted in a fashion that provided data which allow the use of a groundwater model to predict impacts	Pumping all wells at the same time is a much better way to provide data for a groundwater model. Water level decline in the shallower aquifers require a longer period to respond to pumping in a predictable way. A 30 day test or longer is often necessary to adequately assess the water level decline and the resultant impacts in areas of sensitive ecological features, such as Willow Creek and the Minesing Wetlands. Areas where pumping tests of this duration are common include the Region of Waterloo and the Region of Halton.
17	In this comment, Golder suggests that an investigation of the potential impacts to private wells “is simply unheard of”	Given that the Township of Springwater will be required by law to mitigate any adverse impacts to private wells, it is in the taxpayers’ best interests to accurately understand the costs of mitigation that will result from the proposed taking. The mitigation process is often lengthy and private well owners should not have their supply disrupted by a municipal taking that does not extend to them.

17 (con't)	In this comment, Golder suggests that baseflow loss will be minor and meet MNR and MOE thresholds	The thresholds used by Golder were not appropriate as noted by the Ministry of the Environment in their review (April 30, 2018) of Golders report
20	In this comment, Golder suggests that their groundwater model is already being used by Springwater Township for source water protection purposes and is a reliable way to assess water supply impacts	The purpose of the source water protection program is significantly different from a prediction of water supply impacts. Use of models prepared for source water protection for wells completed in deeper aquifers, such as is proposed, are not designed to accurately determine, with sufficient spatial coverage, the impacts to sensitive ecological features such as Willow Creek and the Minesing Wetlands.
21,22 and 23	In this comment, Golder suggests that their geological model and numerical groundwater flow model reflects an accurate assessment of the current understanding	We note that considerable work has been done by the Ontario Geological Survey (OGS) since completion of Golders work. A recent OGS report (Mulligan, 2017) notes that, in 2017, the OGS has just finished the mapping and collection of geological information for the area that includes the Minesing Wetlands and augments the area in which the proposed wells will be completed. Their next step, a multi-year project starting in 2018, is to conduct hydrogeological mapping of this area. Predictions of impacts using the existing geological model and numerical flow model should be updated to reflect the findings of the completed OGS studies.
24	In this comment, Golder advises that treatment is proposed to remove nitrate from the groundwater that is interpreted to be caused by the application of agricultural fertilizer on the land within the capture zones of the proposed wells. They further suggest that changing the land use from agricultural to residential will eliminate this major source of nitrate.	The presence of nitrate is further evidence of the hydraulic connection between all of the aquifers in the Midhurst area and demonstrates that the deep aquifer is connected with the shallow aquifer via infiltration/recharge. Similar changes in land use in other areas of Ontario (for example the Region of Waterloo and County of Oxford) have shown that it may take many decades before any land use changes result in the elimination of nitrate contamination.