SCIENCE & POLICY BRIEF
SIGNIFICANT RISKS TO WATER NEEDS IN CENTRE WELLINGTON

Prepared by Save Our Water

I. EXECUTIVE SUMMARY

In addition to the urgent societal issues associated with the proposed water taking at Middlebrook, Centre Wellington has concerns for its current water system. The urban area (Fergus and Elora) was mandated in 2016 to double in population to 44,690 by 2041 under Ontario's *Places to Grow Act*. This decision triggered a critical need to secure new water sources for a growing population. With 1 in 7 urban residences still on private wells, water infrastructure must support a 116% increase in population.

In July 2016, Centre Wellington attempted to purchase the Middlebrook Well and Property in Elora to ensure a future water source for the community's drinking water needs. This property was located within reasonable proximity to the urban core, requiring reduced infrastructure costs to connect the water source to the municipal system. Nestlé Waters Canada ("Nestlé") immediately exercised its previously acquired option to purchase the Middlebrook Property, and proposed the extraction of 1.6 million litres of water a day. This water would be trucked to its water bottling facility 40 km away in Guelph. The proposed volume is approximately equivalent to the current daily water use in Elora.

Nestlé's application for a Permit to Take Water has been on hold under Ontario's moratorium on water bottling permits scheduled to expire on October 1, 2020.

This report explains why granting Nestlé's application for a Permit to Take Water should be denied.

- **Science** – Granting a permit to a commercial water bottler poses a significant threat to Centre Wellington's already fragile water supply based on the findings of multiple scientific studies.
- **Economics** – Nestlé's economic contribution to Centre Wellington's immediate economy would be insignificant and would not outweigh the considerable costs over the mid to long-term.
- **Environment** – Beyond the obvious environmental problems associated with commercial plastic water bottling that need little explanation, there are natural impacts to the area.
- **Community** – The Township of Centre Wellington council and residents have made it abundantly clear that they are not a willing host community to large-scale water taking for the purpose of water bottling.

II. THE TIMELINE

July 2015:	Nestlé makes a conditional offer to purchase the Middlebrook Property and applies to the Ministry of the Environment and Climate Change ("MOECC") for a Pump Test permit. No decision was made by the MOECC.
May 2016:	Hunter and Associates issues its First Report on the municipal water system.
July 2016:	Centre Wellington offers to purchase the Middlebrook Property.
July 2016:	The MOECC announces funding for a Tier 3 Water Budget Study for Centre Wellington.
August 2016:	Nestlé waives its condition and purchases the Middlebrook Property.
October 2016:	The Ontario government announces a moratorium on new permits for commercial water bottlers using groundwater.
January 2017:	Centre Wellington Township advances the date for commencing its Water Supply Master Plan project.
2018 and 2019	Interim reports are issued from Water Supply Master Plan and Tier 3 Water Budget.
May 2018:	Centre Wellington Township Council unanimously passes a motion declaring it is "not a willing host community to any new commercial water bottling operation or the taking of water for that purpose under any circumstances."
November 2018:	Hunter and Associates issues its Second Report.
June 2019:	Informed by the Water Supply Master Plan, Centre Wellington Council passes a new Strategic Plan including to a) take action to protect the municipal water supply from new commercial water taking for the purpose of water bottling, and b) advocate that the province eliminate water taking for new commercial water bottling purposes.
July 2019:	Centre Wellington Township completes its Water Supply Master Plan and establishes that, given projected growth without additional water sources, planned demand is now close to equaling supply.
November 2019:	The Tier 3 Risk Assessment Report is completed and establishes that Centre Wellington's water supply system is at "Significant Risk".
January 2020:	The Ontario government extends the moratorium on new water taking permits to October 1, 2020.

III. THE SCIENCE

Three major scientific studies have independently identified the current vulnerable state of Centre Wellington's water supply and the significant challenges Centre Wellington faces in meeting the increased water needs for future growth.

1. **Hunter Report – Hunter & Associates - 2016 and 2018**
   (Funded by Concerned Residents of Centre Wellington)

   Conclusion: While dealing with current challenges with water quantity and quality, Centre Wellington must develop new municipal water sources. Water taking at Middlebrook will obstruct municipal water development.

   The eight municipal wells in Centre Wellington already have challenges with both water quality and quantity.

   - Recommendation to decommission one well with unacceptable level of Total Dissolved Solids.
   - Water from another well becomes turbid when pumped over 50% of permitted rate.
   - One well requires remediation of Trichloroethylene contamination.
   - Two municipal wells pumping simultaneously at a high rate interfere with neighbouring private wells.
   - Four of eight wells do not have the capacity to pump to the permitted amount.
   - Current water infrastructure supplies and distributes water as two independent water systems.
   - Township of Centre Wellington currently provides good water to residents, but this is challenging.

   The Hunter Report outlines an implementation plan for an efficient and integrated water system that can be expanded to provide water service for the future. **Four to six additional wells are needed to support forecasted growth to 2041. It can take eight years to get a new well online.**

   Centre Wellington has a history of difficulties finding good sites for municipal wells. Engineering reports recommend a 2 km distance between wells. Based on a number of factors (including groundwater flow and existing well capture-zones), the optimal location for future municipal wells is west of Elora. "***The issuance of a private Permit to Take Water for the Middlebrook Artesian Well will sterilize the prime deep aquifer water quantity and quality area immediately west of Elora for municipal water production and reduce the finite quantity of water available in the deep hydraulically connected production aquifers required to support population growth***".

2. **Water Supply Master Plan – AECOM Canada Ltd. – July 2019**
(Funded by the Township of Centre Wellington)
https://www.connectcw.ca/water-supply

Conclusion: Four new municipal wells are required, starting immediately, to meet municipal water needs. Optimal well sites are identified. Municipal pumping at the identified sites is not feasible with Nestlé's proposed pumping at the Middlebrook Well.

The Township of Centre Wellington commissioned the WSMP to define how municipal water will be provided until 2041. **The WSMP concludes that 4 new wells are needed to meet future water needs.** The operational capacity of the current water system is substantially less than was previously assessed. Predicting that the firm pumping capacity of the existing system (the contingency of one well off-line) will be approximately equal to the volume required for maximum day demand shortly after 2019, **the WSMP recommends that the Township begin work on new wells immediately.**

The WSMP identifies 4 prime option areas for new wells north and west of Elora in an area of high aquifer productivity (See Map). Pumping at the Middlebrook Well concurrently with three of these wells would endanger existing municipal wells. Water would be drawn down at two existing Elora wells to inoperable levels. **The WSMP concludes that the optimal scenario of future wells, together with private large-scale pumping in the same area, is not feasible. Further, pumping at the Middlebrook Well with any scenario of wells west of Elora will reduce municipal pumping by 560 cubic metres/day, requiring an additional municipal well to make up the difference.** This situation would eliminate the option of new wells being situated in the recommended area for future water sources.

3. **Tier 3 Water Budget Study and Risk Assessment – Matrix Solutions Inc. – November 2019**
(Funded by the Ontario Ministry of Environment, Conservation and Parks)
https://www.sourcewater.ca/en/source-protection-areas/Centre-Wellington-Tier-3---Reports---Presentations.aspx

Conclusion: The Tier 3 study assessed the Water Quantity Risk Level as 'Significant' for the Centre Wellington study area. This is the highest risk level. All consumptive water uses within the area are considered 'significant drinking water quantity threats', including water taking for water bottling.

Tier 3 studies are in-depth computer-model based assessments of present municipal groundwater quantities, as well as a prediction of reductions in groundwater in the future due to drought, other climate variables, future water demands, and loss of recharge from impermeable surfaces such as roads and buildings from urban sprawl.

The provincial Tier 3 Risk Assessment establishes Centre Wellington at Significant Water Quantity Risk – the highest risk level designation. The Assessment identified this Significant Water Quantity Risk level to all of Centre Wellington and extending beyond it, which is the entire area where any reduction in recharge or large water extraction has the potential to impact the municipal wells. Accordingly, the MECP has now funded a further technical study - a Risk Management Measures and Evaluation Process - to determine policies and steps that can be put in place to minimize this risk.

Given the 'Significant' risk level, all consumptive water uses and reductions in groundwater recharge within the study area are considered Significant Water Quantity Threats. Consumptive water use, where water is removed from a water source and not returned to the same source, applies to water bottling.

The risk assessment did not calculate any pumping volume from the Middlebrook Well since there is currently no Permit to Take Water from this well.

The Tier 3 project was increased in scope when it was determined that older bedrock models for the area were outdated. Since 2015, the Ontario Geological Survey has published interpretations of the bedrock layers in this area that are substantially different from what was previously thought.

- The high production aquifer under Centre Wellington is 8 to 10 metres deep, compared to 25 to 70 metres deep under Guelph, meaning that there is less water available for the deep municipal wells.
- Water moves slowly underneath Centre Wellington, and especially slowly underneath Fergus. This means a long replenish time, and the best water supply sources are near Elora.
- Contrary to what was believed just four years ago, groundwater in this area does not come from tens or hundreds of kilometers away; the recharge area is much smaller with 98% of the water in Centre Wellington's deep aquifers originating as rain and snowmelt within the immediate area.

Had Nestlé been granted a Permit to Take Water for the Middlebrook Well in 2015 that permit would have been issued based on outdated scientific information.

All three scientific studies demonstrate that:

- The existing water supply infrastructure in Centre Wellington is already at or near operational capacity.

- Even without commercial water taking Centre Wellington is at significant risk for drinking water quantity.
- Proposed commercial water taking at the Middlebrook Well will make prime locations for new municipal wells unviable.

IV. THE ECONOMICS

Centre Wellington faces significant challenges in expanding its current water system to meet the growth target mandated by the Ontario government. It must increase from eight to at least twelve wells at an accelerated rate, which necessitates enormous capital investment in infrastructure development. The mandated growth also includes an economic development target of 9,000 new jobs by 2041. **With significant water issues Centre Wellington offers little incentive for industry to invest in the area.**

Centre Wellington needs businesses that create jobs and pay taxes. Such businesses demand reliable sources of water. The economic benefits of allowing Nestlé to take water at the Middlebrook Well are negligible – 1 part-time job and $9,000 in tax revenue for the Township. The potential costs explored in Table 1 far outweigh the meager benefits.

Table 1 – Comparing economic benefits and costs of allowing water taking for commercial water bottling at Middlebrook Well

Benefits	Costs
• 1 part-time job at Middlebrook Well • $9,000 in tax revenue for the Township of Centre Wellington (based on $34,000 in annual property tax) • $503.71 per million litres paid to the MECP for administrative costs	• Forcing the community to locate future wells in less accessible areas of less reliable quality and capacity, and at a much higher cost to transport and treat the water. • A loss of water that could service 2,700 homes and generate $2 million in property taxes for the Township of Centre Wellington. • The loss of potential industrial investment in the community and the consequent loss of employment, tax revenues and spin-off development. • Increased load burdens on roads from water trucking, reducing road life from 20 years to 7 years, thereby significantly increasing the cost of maintaining and replacing roads and bridges.

If the Centre Wellington community is to grow, prosper and encourage industrial development, a reliable source of water is imperative.

V. ENVIRONMENTAL IMPACTS

There exists significant risk that permitting this commercial water taking will trigger a host of negative environmental impacts, some of which are well-documented and need little explanation, including:

- **Natural Impacts**
    - Groundwater, besides providing aquifer water necessary to meet human needs, interacts with surface waters, discharging upwards to provide base flow to creeks and rivers and to maintain wetlands.
    - Centre Wellington's Tier 3 groundwater modelling predicts that future municipal water taking will impact groundwater to surface water discharge in the extensive Salem South and Irvine Creek Wetland Complexes by 12 to 14%.
    - There is significant risk that large-scale commercial water extraction will augment both of the above negative impacts.
    - The MNRF's 2017 *Wetland Conservation Strategy for Ontario* outlines the urgent necessity to protect and restore "all" wetlands, as protection from both drought and flooding, reducing the effects of climate change, and to filter pollutants.
    - Wetlands support complex ecosystems, and locally the wetlands predicted for impacts are ideal habitat for Species at Risk, including the endangered Jefferson's salamander.
    - A portfolio of municipal wells in the recommended future source water location will require coordinated management in order for risks to be minimized. Such management stands a better chance of working if high capacity wells in the area remain in public hands.
- **Climate change**
    - The energy needed to produce bottled water requires up to 2,000 times the energy needed for the equivalent volume of tap water.
    - Plastics emit greenhouse gases from cradle to grave – from the extraction of oil and gas that are the fossil-fuel building blocks of plastic, to the greenhouse gases released when plastic breaks down in the environment.
- **Plastic Pollution**
    - Approximately 34% of Ontario's plastic bottles are not recycled and end up in landfill, according to Ontario's bottled water moratorium press release.
    - There is abundant evidence proving plastic pollution is harmful to the planet.

VI. THE COMMUNITY

The conclusions of the science studies on Centre Wellington's water system are timely. They support the critical need to carefully manage municipal groundwater resources now and into the future.

The unacceptable risk to the municipal water supply, comprehensive threat to the municipality's economic prosperity, and the societal values that must be considered justify Centre Wellington's strong opposition to the granting of a Permit to Take Water from the Middlebrook Well to any large-scale water bottler.

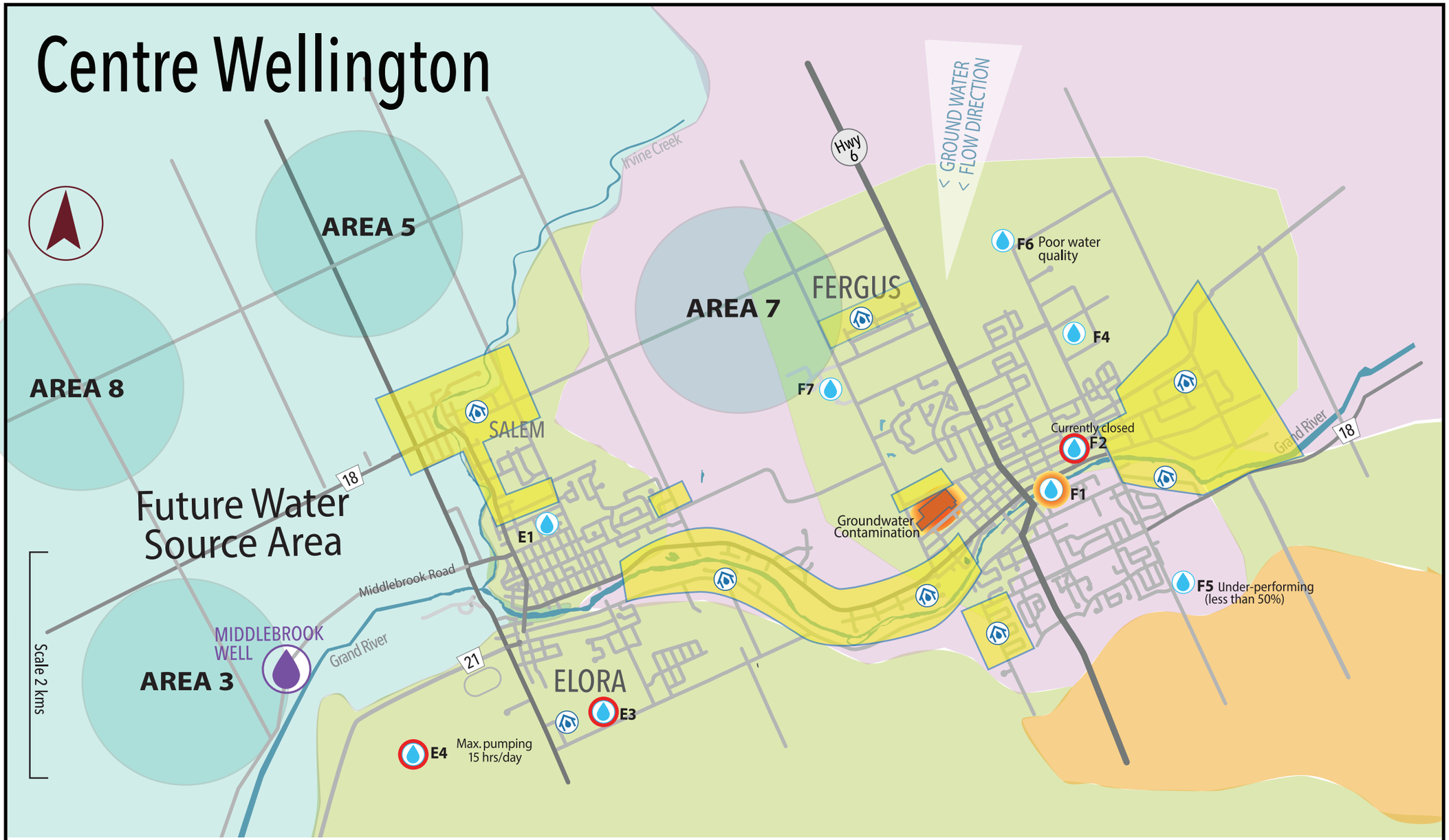
The Community of Centre Wellington has spoken emphatically. The Council of Centre Wellington Township has spoken clearly. We are "not a willing host community" to water taking for commercial water bottling purposes.

Table 2 - Summary of arguments

Scientific Conclusions	Economic Considerations	Environmental Impacts
• Three independent scientific studies indicate significant risk related to Centre Wellington's future water needs. • A Permit to Take Water at the Middlebrook Well would threaten Centre Wellington's ability to meet those water needs.	• Centre Wellington is mandated to double in size to 44,490, requiring first priority for an at-risk water supply. • Economic benefits from Nestlé at Middlebrook are negligible, while the costs to the township are considerable.	• Water bottling is a consumptive use, removing water from the local environment. • Removal of this volume from the groundwater system would have consequences to ecological integrity of local wetlands with implications to Species at Risk.

References

- Hunter and Associates, *Potable Water Sources 2018 to 2041 and Beyond*, 4 volumes, prepared for Concerned Citizens of Fergus and Elora, November 2018.
- Hunter and Associates, "Letter to Ministry of the Environment and Climate Change Re: Comments on Nestle Waters Canada Temporary Permit to Take Water Application", May 2016.
- AECOM Canada Ltd., *Township of Centre Wellington Water Supply Master Plan Draft*, July 2019
- AECOM Canada Ltd., *Township of Centre Wellington Water Supply Master Plan, Technical Memorandum 3: Water Supply Alternatives and Preliminary Evaluation*, April 2019.
- AECOM Canada Ltd., *Interim Consultation Summary Report*, June 2018
- MECP, "Reducing Litter and Waste in Our Communities," discussion paper, March 6 2019.
- Matrix Solutions Inc., *Centre Wellington Tier Three Water Budget Draft Final Risk Assessment Report*, prepared for Grand River Conservation Authority, November 2019.
- Matrix Solutions Inc., *Centre Wellington Scoped Tier Three Water Budget Assessment: Physical Characterization Report*, September 2017.
- Matrix Solutions Inc., *Centre Wellington Scoped Tier Three Water Budget Assessment: Groundwater Flow Model; Development and Calibration Report*, May 2018.
- Watson and Associates. 2016. "Wellington County Population, Household and Employment Forecast."



LEGEND

- Area of Private Wells
- Town Well
- Area of Contamination
- Pumping Constrained by Private Wells
- Recommended Future Well Area
- Best Water Flow 3000 m/year
- Moderate Water Flow 1000 m/year
- Poor Water Flow 150-750 m/year
- Low Water Flow 30 m/year
- Middlebrook Well

WATER TAKING AT MIDDLEBROOK OBSTRUCTS MUNICIPAL WATER DEVELOPMENT

Municipality requires 4 additional wells
Future water source is west of Elora

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Sources: Hunter and Associates Reports; AECOM, Centre Wellington Water Supply Master Plan; Matrix, Provincial Tier 3 Groundwater Study for Centre Wellington

Centre Wellington needs 4 new wells to accommodate population growth but 5 are necessary if Middlebrook Well is activated.

Operation of Middlebrook Well in conjunction with new wells at locations 3, 5 and 7 will reduce flow at existing wells E1 and E4.

Water Taking at Middlebrook Obstructs Municipal Water Development

Groundwater flow is not consistent across the area; optimal future water is where groundwater flow is fastest.

Provincial Growth Plan requires Fergus and Elora serviced population to grow from 19,000 in 2016 to over 41,000 in 2041. That's 116%!

Existing water supply infrastructure is close to operational capacity - It can take 8 years to get a new well online.

Some urban private well areas will require municipal servicing (1 in 7 urban homes is not on municipal water service).

Optimal separation distance between wells (2 km) limits possible locations for new well sites.

Even without commercial water taking, Provincial Tier 3 Groundwater Study establishes Centre Wellington at **SIGNIFICANT RISK** of not having enough drinking water to meet future needs.

Proposed Commercial Water Taking effectively eliminates a substantial area west of Elora as a site for a municipal well.

Sources: Hunter and Associates Reports; AECOM, Centre Wellington Water Supply Master Plan; Matrix, Provincial Tier 3 Groundwater Study for Centre Wellington

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