



# ONTARIO'S BOTTLED WATER MORATORIUM

*A Report of a Panel of Independent Experts Assembled by  
Professional Geoscientists Ontario*

For

*The Ministry of the Environment Conservation and Parks*

Submitted to MECP on May 19, 2020

# **A Report from a Panel of Independent Experts Assembled by Professional Geoscientists Ontario**

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## **1. BACKGROUND**

Owing to citizens' concerns over the allocation of water to bottled water companies (in particular, the purchase of a well near Elora by a bottled water company), the Ontario government put in place a moratorium on the issuance of new and expanded water taking permits for bottled water operations on January 1, 2017. The moratorium was put in place to allow the government and the Ministry of the Environment and Climate Change/Ministry of the Environment, Conservation and Parks (MOECC/MECP) to assess the overall Permit to Take Water (PTTW) program to ensure it was sufficiently robust in its processing of permits to manage Ontario's groundwater resources sustainably.

During this time the MECP was to complete a comprehensive review of "the province's water taking policies, programs, and science tools to ensure that vital water resources are adequately protected and sustainably used." To complete this work, the MECP retained BluMetric Environmental Inc. (BluMetric) to complete an assessment of the province's groundwater resource management practices, which included consultation with stakeholders and water managers.

As a final stage in the review process, MECP sought an independent expert opinion of the MECP Science Findings with respect to the PTTW process, with specific emphasis on how bottled water permits have been managed. The intention was to provide the people of Ontario with an independent, third party expert environmental geoscience (hydrogeology expertise) opinion on the potential impact of water bottling takings on the sustainability of Ontario's groundwater resources in areas where water bottling is being undertaken.

The current PTTW moratorium follows on nearly 20 years of increasing scrutiny on how the province allocates water. Following drought years of 1998/99, the province announced a moratorium on new PTTW issuance; however, it was never officially introduced by the then Ministry of the Environment (MOE). That announcement, coupled with the subsequent review of the PTTW process by the Environmental Commissioner of Ontario (see ECO 1999 Annual Report), led to enhanced scrutiny being placed on MOE staff in their review of permit applications. Similarly, in response to low stream flows observed in 2003 and similar public concerns, the province announced in December 2003 that a one-year moratorium would be placed on new water taking permits related to a limited subset of uses, including bottled water. With the backing of a 2004 AquaResource Inc. report ("Scientific Process for Lifting Ontario's Permit to take Water Moratorium"), the moratorium was not extended.

Note that this review is strictly related to the technical aspects of managing Ontario's water resources in general, and in particular, for groundwater that is taken by bottled water operations. Other aspects related to the bottling of Ontario's waters, i.e. pricing of water, the cost of the management of water resources, plastic use, allocation of water for profit, etc. although of

importance from a societal perspective, are not considered in this review. This review similarly does not include all the other users of water that are held to the same standards.

### **Assembly And Charge To Panel**

Professional Geoscientists Ontario (PGO) agreed to a request by MECP, to assemble a panel of qualified professional geoscientists to undertake the required independent expert opinion of MECP staff findings. In February 2020, a voluntary panel was commissioned by PGO to undertake the necessary review work. The six-member Panel consists of highly respected, long-serving PGO members who have practiced in the field of hydrogeology for many years. Collectively, the Panel brings to bear on this issue some 170 years of cumulative practice in the field of hydrogeology either in private consulting, university settings or in the public sector. Panel members have considerable experience in assessing the sustainability of drinking water sources and the natural environment, and in preparing PTTW applications, and/or reviewing applications. Although one individual Panel member has historically worked on behalf of bottled water companies, thereby bringing this experience to the Panel, it is important to note that no Panel member has been in such a work position for over 10 years and therefore, following MECP directives, no conflict of interest has been declared by any of the six panelists.

MECP's directive to PGO was to provide a "third party expert environmental geoscience opinion on *the reasonableness of the Ministry's findings* with respect to the potential impact of water bottling takings on the Sustainability of Ontario's groundwater resources in areas where permitted water bottling is being undertaken"

To undertake its work the Panel was provided with what MECP staff deemed to be the essential background materials to undertake the review. These included:

1. The Ministry's high-level conclusions/findings;
2. Key scientific documentation considered in developing the Ministry's Findings, including:
  - BluMetric Reports that provide hydrogeological assessments of PTTW files for water bottlers and assessments of the sustainability of the groundwater resources in their vicinity:
    - a. **BluMetric Environmental Inc., January 11, 2019.** *A Review of Ontario's Water Quantity Management Framework - Water Bottling Study Areas Report prepared for the Ontario Government, Ontario Ministry of the Environment, Conservation and Parks, 305 p.*
    - b. **BluMetric Environmental Inc., March 28, 2019.** *A Review of Ontario's Water Quantity Management Framework - Water Quantity Study Areas Report prepared for the Ontario Government, Ontario Ministry of the Environment, Conservation and Parks, 877p.*
3. The Ministry's one-page summary of BluMetric's findings for each of the water bottlers (total 11p).

The Panel was tasked with reviewing specific relevant parts of the above documents and then preparing a report providing their opinion. In addition to the above documentation, the Panel also

brought to bear their considerable technical hydrogeological expertise and regulatory experience to the work.

Via conference call, the Panel discussed their operating process, deciding in favour of a consensus (as opposed to a voting) approach to discussing and arriving at conclusions. All panelists read the required materials and provided their input to all, via email documentation and/or via teleconference calls. Conclusions were arrived at independently by each panelist and then discussed. Of significance is the fact that there were no dissenting opinions on the conclusions arrived at by the panelists. However, all panelists contributed an exchange of ideas related to longer term ongoing management of Ontario's PTTW process; these are presented below. Discussions with Ministry staff took place on three occasions to discuss Ministry comments on the report and compliance with requested deliverables, once at the onset of the work to discuss contract issues, a second time after an initial outline of this report was provided to MECP by the Panel, and a third after the submission of the draft report. Besides contractual arrangements, these discussions generally focused on confirmation of timing and format of deliverables and clarification of Ministry comments.

## **2. OVERVIEW OF BLUMETRIC'S WORK**

The MECP's approach to reviewing PTTW applications has evolved considerably since attention was brought to bear on the PTTW process with the onset of the 1998/1999 drought. From the Panel's experience, Ministry staff recognize that water is both a valuable environmental, as well as an economic, resource that requires consideration of both aspects when reviewing any given PTTW application. The current MECP PTTW review approach is to encourage proponents to participate in a pre-consultation exercise to inform them of MECP expectations. The proponent usually retains a consultant to lead it through the application process. A permit application is reviewed by Ministry staff from a variety of technical perspectives (e.g., amount and duration of taking, water budgets, impact to surface waters, input received from potentially affected nearby water users, etc.). Staff rely on science and recognize the uncertainty involved in characterizing the subsurface environment and therefore commonly require follow-up confirmatory monitoring and periodic re-evaluation at times of permit renewal. Subsequent reviews of incoming data and the addressing of any complaints are all part of the process once a permit has been issued.

BluMetric was charged with the task of reviewing ten current bottled water permits with takings of more than 50,000 L/day, the amount at which a permit is required, and of providing an assessment as to whether the permits could be causing significant impacts on available drinking water resources or to the natural environment. The Panel agreed with the work that BluMetric carried out for the MECP with respect to the overview of these active bottled water permits that have been issued by the province. In particular, the Panel found the structure of the report to be very helpful in addressing the initial concerns of Panel members with respect to the water takings, including the overall water budget of the watershed within which the taking is located; as well as its potential impact on:

1. Municipal water supplies;
2. Neighbouring wells/water users; and
3. Surface waters and the natural function of ecosystems.

BluMetric highlighted isolated instances where shortcomings in the Ministry evaluation of the specific permit applications could be improved. The Panel agrees with BluMetric and echoes the need for improvement in some of the technical work, reporting and/or data management related to specific reviewed permits.

The Panel noted that BluMetric frequently relied upon original hydrogeological work conducted by the proponents, which in turn relied upon conclusions from earlier reports. It would have been more re-assuring to the Panel if BluMetric had provided some commentary regarding their professional opinion of that original work, especially given that some of the earlier work dates back several decades now.

### **3. SUMMARY OF PANEL'S REVIEW**

#### ***MECP Finding #1 - Bottled water takings are not impacting the sustainability of groundwater resources in Ontario or of other water resources users.***

The Panel considers the Ministry's findings reasonable.

- Bottled water takings, similar to other permitted takings in Ontario, can certainly affect the groundwater system by causing localized changes in groundwater flow in response to water level declines near the point of taking. If not managed properly through the PTTW Program, this could lead to a localized lowering or drawdown of groundwater levels that could jeopardize neighbouring water supplies, and/or nearby surface water resources.
- Ontario is fortunate to have a temperate climate that provides on average between 800 and 1,000 mm of precipitation annually. Much of this water is either evaporated directly back to the atmosphere or is utilized by vegetation and then transpired back to the atmosphere. Despite this, a tremendous volume of water remains and either runs off directly, or infiltrates into the ground to recharge the water table. It then moves slowly by groundwater pathways, to eventually discharge into many streams, rivers, wetlands and lakes.
- The best means to evaluate the impact of permitted takings on adjacent users is through the appropriate monitoring and reporting to MECP of water taking volumes and water levels (and streamflow if warranted). Of the ten permits for bottled water reviewed by BluMetric, hydrographs of longer-term water levels were either presented or discussed in the report. In no instance was there any evidence for continued long term declining trends in groundwater levels as a result of pumping, thus indicating that in each case the local hydrologic system had reached an equilibrium and there is little prospect of additional impacts to the groundwater system in the future by continued pumping at the existing rates for these takings.

***MECP Finding #2 - Overall, water takings for bottling in Ontario are managed sustainably under existing legislation, regulation and guidance.***

The Panel considers the Ministry's findings reasonable.

- Given the BluMetric overview of the ten existing bottled water takings requiring permits in Ontario, coupled with the Panel's expertise in this regard, the Panel found no evidence to indicate that the current framework for allocating bottled water permits, or indeed any other water taking permit, has failed to serve Ontario well.
- The BluMetric report notes some shortcomings in the longer-term management and renewal of certain permits. These 'housekeeping' types of issues should certainly be rectified moving forward, however they do not change the overall assessment of Ontario's current PTTW program.

***MECP Finding #3 - The science does not support the need to regulate water bottlers any differently than other takers.***

The Panel agrees with the Ministry's findings.

- Bottled water takings are in every way similar to other types of water takings. Water is typically managed: i) for a specific number of hours in a day; ii) for a specific number of days in a week; and iii) for a specific number of days in a year. When compared to many of Ontario's water takings, the volumes of water extracted by water bottlers are negligible, and therefore do not require special attention or use of additional Ministry resources.
- Even though many believe bottled water is considered highly consumptive, the Panel observes that almost all takings are largely consumptive, in that taken water is lost to evapotranspiration (i.e., irrigation water), transferred to surface water (i.e., municipal uses) or incorporated into products (i.e., food). The impact to the aquifer is independent of the end use of the taken groundwater.
- At the time of deciding upon a permit approval, the key to making reasonable allocation decisions is related to both: i) understanding the local subsurface geology/hydrogeology in proximity to the proposed taking; and ii) understanding the water availability within the regional watershed context. The current PTTW program requires proponents to undertake hydrogeological assessment studies, and to often provide pumping test and monitoring data. At the time of permit renewals, proponents may also be required to provide long term monitoring data. Each of these robust science-driven requirements allow MECP staff to make informed water allocation decisions.

#### **4. PANEL'S RECOMMENDATIONS FOR CONSIDERATION GOING FORWARD**

Having reached the above conclusions, the Panel does believe that there are ways in which Ontario's water allocation framework can be improved. The Panelist's comments below come from our review of the BluMetric work as well as from the collective experience of the panel members. Our comments are provided both from a purely technical point of view as well as from the perspective that going forward there will continue to be a need for more transparency in water permitting.

##### **a) Permitted Volumes**

**Concern** - A PTTW application is evaluated assuming the maximum taking is the long-term operating rate. The focus on a maximum taking goes against the grain of effective water management by leading proponents to think of potential future operational expansions, emergency situations, or other untenable situations, all of which lead them to request unreasonably greater volumes in their permits than might ever be needed. It also does not encourage good stewardship of water, as there are no incentives to conserve water once a PTTW is issued.

**Recommendation for Consideration** - MECP staff could give more consideration to structuring permits with watershed water budgets foremost in mind. That would be with a focus placed on the average (or actual) volume of water that will typically be taken, rather than on the maximum permitted allowance. Certainly, a maximum daily pumping rate (and a maximum number of days per year for this amount) is required and should be specified in all permits. However, depending upon the proponent's use of the water, perhaps the maximum taking could be specified as a percentage of the actual average anticipated daily use (e.g. the maximum taking shall be no more than 20% of the average daily use for a specific number of days per year). The current practice of managing permits with a focus on the maximum volume allowed, also leads to significantly unrealistic cumulative watershed assessments that often mislead public perceptions (e.g. many Source Water Protection (SWP) water budgets have shown that if all permits in a watershed were to suddenly pump at their maximum rates, this amounts to more water than is available within the watershed). When a focus is placed on average permitted day taking, then the uncertainty of having a permit holder significantly and unexpectedly increase their regular takings is reduced.

##### **b) Monitoring**

**Concern** – In reviewing the BluMetric work, panelists noted that over time certain monitoring locations were removed from the monitoring program. Historically, this is done once the permit holder's consultant and MECP staff agree that the hydrogeological conditions are such that the monitoring location will not be affected by the water taking. This serves to reduce monitoring costs and is generally a scientifically defensible approach. However, in these times of climate change and ever-increasing scrutiny by the public on water takings in Ontario, it might be prudent to re-visit this approach to ensure long term data is collected.

**Recommendation for Consideration** – Upon approving a permit and the associated monitoring plan, MECP staff should carefully consider adjustments to the monitoring plan given the public's desire for transparency.

One simple graph/figure showing long term monitoring data is the easiest, most transparent way for hydrogeologists to convey to non-scientists that a specific water taking is not having an impact on adjacent water users. The costs to society of trying to explain historical changes to monitoring decisions may well be more expensive than simply undertaking the relatively simple task of monitoring water levels, particularly if modern dataloggers are used and download frequencies and reporting requirements are minimized to lower costs for permit holders.

In addition, the Panel recommends that both the long-term water level monitoring data as well as the actual pumping data that is delivered to the Ministry from PTTW holders be made readily available to the public via a web-based system. Data should be made available in raw format for download as well as in graphical format to convey to the public any long-term trends. This would go a long way towards alleviating public concern with water taking in Ontario.

### **c) Wellington County**

**Concern** – The Panel noted that one of the key proposed water bottling permits, that of the Middlebrook well in Elora, was not part of the BluMetric work. This is understandable from the perspective of the well not currently having a permit. However, the well was subjected to a 30-day pumping test in 2005, which could provide sufficient information to assess the potential impacts of any taking at this well and could have been used in the MECP's review. The release of the MECP's review, without any analysis of the Middlebrook well, may result in questions arising from the public. While such analysis would not address public concerns that the well should be reserved for a municipal supply, it would clarify whether the proposed taking would have an unacceptable impact on the environment.

**Recommendations for Consideration** – The Panel believes that MECP staff should undertake some level of review of the Middlebrook well. There are certainly historical data from previous pumping that could be reviewed and evaluated in a similar manner to BluMetric's earlier work. In addition, one of Ontario's sophisticated Tier 3 numerical model covers the Elora area. It is the Panel's understanding that the Middlebrook well was not actively pumping in the model scenarios that have been run. Consideration should be given to incorporating a 'reasonable' pumping rate for this well into the model so that MECP staff can provide comment to the Minister and the public when the questions surrounding this well inevitably arise.

The panel understands the Ministry cannot evaluate takings that are not part of an application process. The Moratorium prevented bottled water proponents from applying for pumping tests PTTW. The Ministry should consider excluding pumping tests for the purpose of collecting scientific data during future moratoriums.

### **d) Maintaining PTTW Approach Diversity**

**Concern** – The panel notes that there is a substantial variability in the level of stress on the groundwater system in different parts of the province and indeed the MECP's PTTW program has evolved over five decades to consider this variability. This being the case,



the technical sophistication and analyses needed to assess permit applications should vary across the province.

**Recommendation for Consideration** - In areas with large population centres, and many stresses on the groundwater system, the Ministry has access to, and should strive to make use of, the available numerical groundwater models to help in assessing water takings. These models were built with public dollars and are now mostly administered through the Provincially established Source Water Protection Regions. In other areas with sparse populations, limited stresses on the groundwater system, and abundant rainfall, complex groundwater models and excessively stringent monitoring requirements would represent an unnecessary financial burden to manage groundwater and are therefore likely unnecessary. In these areas the permit application process should continue to take a risk-based approach, allowing for a lower threshold of study for the issuance of permits.

#### **e) Assisting Proponents with Investment Decisions**

**Concern** – A number of communities across Ontario heavily rely on groundwater resources and continue to face significant growth pressures. While many water professionals and MECP staff have a knowledge on the ease or likelihood of obtaining additional PTTWs in these communities, it is not conveyed to the general public and therefore is often unknown to PTTW proponents, who may have received conflicting information from municipalities required to meet growth targets. A failure of the current approach then relates to the number and timing of approvals (aside from the PTTW), that are sometimes required of proponents. Although some SWP Assessment Reports are clear on the order of approvals (i.e. municipal land development approval prior to PTTW) many parts of the Province have no such clarity. This can result in a process where proponents have already made significant investments in securing development approvals from local jurisdictions by the time they come forward to MECP to apply for a PTTW. This can create misunderstandings on the part of proponents, who are desirous of locations for the businesses near population centers and transportation routes, only to find their plans are thwarted by a lack of a water supply.

**Recommendation for Consideration** - The existing PTTW system is effective in that it encourages proponents to have early consultations with the MECP to obtain input as to the level of work that might be required for MECP staff to adequately assess the application. However, it would be extremely helpful for proponents to be able to distinguish between parts of the province where water supplies are readily available and where they are not, prior to making significant investment decisions. It is recommended that, along with other Ministries (e.g. Ministry of Municipal Affairs and Housing), as well as municipalities, the MECP identify as accurately as possible, those regions which rely on groundwater and where obtaining a new groundwater based PTTW, could be problematic. Such mapping (along with any supporting technical information and numerical models) should be made available to the public and periodically updated as needed. Such cooperation would be helpful in explaining how general public consultation, and where needed, First Nation consultation, can be met, thus allowing proponents early on to evaluate investment decisions.

#### **f) BluMetric Report**

**Concern** – The Panel believes that, as written, the BluMetric report would not be readily comprehended by the average non-scientific reader. In addition, the report does not convey how robust the PTTW framework/system is. As such it may do little to reassure the public that obtaining a PTTW is not actually a simple process or convince them of the robustness of the existing management system.

**Recommendation for Consideration** – The Panel believes that MECP needs to improve communications with the public. Our current experience with COVID-19 shows how effective scientific communication can assist the public in understanding complex issues. Selecting ‘communications specialists’ over MECP scientists might not always be the correct path. The Panel encourages MECP staff to develop a short brief that could be made available on the MECP website. Amongst other issues, this brief could:

- Provide a brief history of changes to the PTTW process over the years;
- Provide simplified flowchart/figures showing how PTTW application process works, and point out the checks and balances;
- Provide a summary of current water taking in the province by all parties with a PTTW, compared to that of the water bottling industries.
- Provide some indication of how many permits were withdrawn, denied or sent back for additional work (if this is not readily available from the Ministry’s data then going forward the Panel recommends that this be tracked);

#### **g) Improving Flexibility**

**Concern** – Although recognizing that the Permit system is generally working well, in the experience of the panelists, additional flexibility built into the PTTW process would result in enhanced benefits for all of Ontario.

**Recommendation for Consideration** - In areas where there is significant groundwater use, provided that appropriate and adequate technical studies are undertaken, specific and/or innovative PTTW applications could perhaps be more readily approved. With a slight change in approach, the structure of issued Permits could perhaps incorporate creative solutions such as: i) habitat compensation; ii) flow supplementation; iii) water re-use or re-injection (e.g. for quarry dewatering); or iv) water injection with subsurface storage and flexible permit terms allowing more or less taking depending on seasonal conditions.

### **5. CLOSING REMARK**

Finally, while Ontario is generally blessed with a large quantity of groundwater, the Panel feels obliged to point out that Ontario’s groundwater supplies are also vulnerable to contamination. Even where feasible, contaminated groundwater is difficult and costly to clean. Careful management of road salt, stricter enforcement of environmental regulations that protect the quality of Ontario’s groundwater, holding polluters accountable, and education, are all effective strategies that must continue to help ensure that our groundwater is available for future generations.