



Lake Erie Region Source Protection Committee

Agenda

**AMENDED**

Thursday, June 17, 2021

1:00 pm

GRCA Zoom Virtual Meeting

Link to be distributed via email prior to meeting

Pages

1. Call to Order

Virtual meeting: by using the microphone and web camera, committee members agree to the recording and livestreaming of the meeting.

2. Roll Call and Certification of Quorum – 17 Members Constitute a Quorum (2/3 of Members plus Chair)

3. Chair's Remarks

4. Review of Agenda

5. Declarations of Pecuniary Interest

6. Minutes of the Previous Meeting

7. Hearing of Delegations

8. Presentations

9. Correspondence

10. Reports

a. SPC-21-06-01 Source Protection Program Update

THAT the Lake Erie Region Source Protection Committee receives report SPC-21-06-01 – Program Update – for information.

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- b. SPC-21-06-02 Guelph-Guelph/Eramosa Water Quantity Policy Development Progress Update 6

THAT the Lake Erie Region Source Protection Committee receives report SPC-21-06-02 – Guelph-Guelph/Eramosa Water Quantity Policy Development Progress Update – for information.

- c. SPC-21-06-03 S.34 Draft Updated Grand River Assessment Report and Source Protection Plan: Town of Grand Valley 23

THAT the Lake Erie Region Source Protection Committee receives report SPC-21-06-03 – S.34 Draft Updated “Grand Valley” Grand River Assessment Report and Source Protection Plan – for information;

AND THAT the Lake Erie Region Source Protection Committee direct staff to release the draft Updated “Grand Valley” Grand River Assessment Report and Source Protection Plan for a 30-day public consultation period from June 21 to July 20, 2021.

- d. **AMENDED:** SPC-2021-06-04 S.34 Revised Updated Grand River Assessment Report and Source Protection Plan: Wellington County and Region of Waterloo 29

THAT the Lake Erie Region Source Protection Committee receives report SPC-21-06-04 – S.34 Revised Updated “Wellington / Region of Waterloo” Grand River Assessment Report and Source Protection Plan – for information;

AND THAT the Lake Erie Region Source Protection Committee releases the revised Updated “Wellington / Region of Waterloo” Grand River Assessment Report and Source Protection Plan to the Grand River Source Protection Authority for submission to the Ministry of the Environment, Conservation and Parks, along with the municipal council resolutions received, and the comments as presented in this report.

## 11. Business Arising from Previous Meetings

- a. Lake Erie Region Source Protection Committee request under Technical Rule 119, from February 3, 2011, Re: rehabilitation activities at an aggregate operation within a vulnerable area of a municipal drinking water system that allows ponding of water.

## 12. Other Business

## 13. Closed Meeting

## 14. Next SPC Meeting

September 9, 2021, 1:00pm, virtual meeting

**15. Adjourn**

THAT the Lake Erie Source Protection Committee meeting of June 17, 2021 be adjourned.

## LAKE ERIE REGION SOURCE PROTECTION COMMITTEE

REPORT NO. SPC-21-06-01

DATE: June 17, 2021

TO: Members of the Lake Erie Region Source Protection Committee

SUBJECT: Source Protection Program Update

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### RECOMMENDATION:

THAT the Lake Erie Region Source Protection Committee receives report SPC-21-06-01 – Program Update – for information.

### REPORT:

#### **Public posting of the Lake Erie Region Source Protection Committee agenda**

For increased transparency, the June 17, 2021 Lake Erie Source Protection Committee (SPC) agenda, and all SPC agendas moving forward, will be publically posted on Lake Erie Region's website the Friday before a SPC meeting. This means that SPC members will receive the agenda package on the same day that it becomes available to the public. This change aligns with the agenda release protocol for local municipalities and the Grand River Conservation Authority.

#### **Lake Erie Source Protection Region review of recent ministry decisions on the Environmental Registry of Ontario**

At the April 1, 2021 SPC meeting M. Keller shared that Lake Erie Region staff would review the recent ministry decisions posted on the Environmental Registry of Ontario ([ERO 019-1340](#)) about updating Ontario's Water Quantity Management Framework and bring an update to June 17, 2021 meeting. This update will now be presented to SPC members at future SPC meeting.

#### **2021-22 Source Protection Grant Funding Agreement**

On June 1, 2021, Lake Erie Region staff received the signed 2021-22 Drinking Water Source Protection Program Transfer Payment Agreement from the province, covering the costs of the program from April 1, 2021 to March 31, 2022.

#### **Non-municipal drinking water systems not automatically addressed under the *Clean Water Act, 2006* (CWA)**

Staff at the Ministry of the Environment, Conservation and Parks continue to work on guidance on how to protect non-municipal drinking water systems outside of the CWA. Based on Ministry communication, it is expected that the guidance will be released in an online book format, i.e., integrated webpages, sometime this month. At the same time, the Ministry is planning also release a feedback survey for source protection regions to locally promote the guidance.

## **Update on Phase II changes to the Director's Technical Rules**

The Ministry has not communicated a timeline for releasing the final changes to the Director's Technical Rules; however, in the interim, Lake Erie Region staff have been engaging municipalities to assess how the proposed changes could impact them and the work that may need to be done. Municipal discussions have primarily focussed on impervious surface area re-calculations, hydrocarbon pipeline policy revisions, and climate change assessments.

## **Update on changes to the Conservation Authorities Act**

On May 13, 2021, the Ministry released a *Regulatory Proposal Consultation Guide: Regulations Defining Core Mandate and Improving Governance, Oversight and Accountability of Conservation Authorities* on the Environmental Registry ([ERO #019-2986](#)). Commenting period is 45 days until June 27, 2021.

The guide specifically proposes to prescribe in regulation the mandatory conservation authority programs and services, and other matters of governance and oversight of conservation authorities. Responsibilities of Source Protection Authorities under the *Clean Water Act, 2006* are proposed to be prescribed as a mandatory program and service, together with other core programs and services such as those related to risk of natural hazards, and management of conservation authority land.

Under the *Clean Water Act, 2006* conservation authorities are required to exercise and perform the powers and duties of a drinking water source protection authority. Each conservation authority therefore would be required to implement programs and services related to those responsibilities as source protection authorities under the *Clean Water Act, 2006*.

There are no changes proposed to the *Clean Water Act 2006* and its regulations. However, the proposal includes potential new responsibilities and obligations for source protection authorities, such as completing municipal related land use mapping necessary (e.g., managed lands, impervious surfaces) to determine the risk posed by prescribed drinking water threats, and responding to requests to review proposals in wellhead protection areas and intake protection zones. In Lake Erie Region, these tasks are undertaken by the municipality as the drinking water system owner, with support from source protection authority staff where requested.

It should also be noted that including the source protection program as a mandatory program and service under the Conservation Authorities Act enables the transfer of funding to support this program from the province to municipal levy.

Source protection staff are working together with other conservation authority staff in analysing the proposal. A report will be presented to the Grand River Conservation Authority board on June 25, 2021 and comments submitted to the Ministry by June 27, 2021. A copy of the board report will be circulated to the Lake Erie Region Source Protection Committee.

## **SPC Meeting Outlook**

Lake Erie Region staff are in the final phase of a s.34 Grand River Assessment Report and Source Protection Plan update incorporating results of the Centre Wellington and Halton Hills Tier 3 Water Budget studies, associated new water quantity policies for Wellington County and the Region of Waterloo, and revised wellhead protection areas (vulnerability mapping and scoring) for the Mannheim (Kitchener), Pinebush and Clemens Mill wellfields (Cambridge). The

Grand River Source Protection Authority will receive the s.34 plan update for submission to the ministry in July 2021, pending release from the SPC.

A further s.34 Grand River Assessment Report and Source Protection Plan update for the Town of Grand Valley is underway. This update incorporates a new well and associated updated Wellhead Protection Area (WHPA) technical assessments, including vulnerability scoring. Public consultation is scheduled from June 21 to July 20, 2021. Details of the update are presented in report SPC-21-06-03.

The Town of Shelburne is planning to increase the pumping rate for two of its production wells #7 and #8. Production wells #7 and #8 are located in the Township of Melancthon in the Grand River watershed. Draft technical work, i.e., revised WHPAs and vulnerability scoring for wells #7 and #8, is anticipated to be submitted to Lake Erie Region staff for review in summer 2021 and presented to the SPC at the September 9, 2021 meeting as part of another s.34 Grand River Assessment Report and Source Protection Plan update. Included in this update is the addition of a back-up well (Rocco Well) to the existing Membro Well as part of the City of Guelph's Waterworks Drinking Water System. Rocco Well is located approximately eight metres from the Membro Well and installed within the same aquifer. Source protection technical work is not required for this back-up well; therefore, minor amendments will be made to the Grand River Assessment Report and Plan to incorporate Rocco Well. Pre-consultation is tentatively scheduled for the fall 2021 with public consultation anticipated at the end of the year.

Results of the Guelph-Guelph/Eramosa (GGET) Tier 3 Water Budget study and new water quantity policies for Wellington County, City of Guelph, Region of Waterloo and Halton Region will be included in a future s.34 Grand River Source Protection Plan update. Progress on the development of water quantity policies is presented in report SPC-21-06-02. Additional policies and further policy revisions are expected to be presented again to the SPC at the September 9, 2021 meeting. The timeline for completing this plan update and commencing pre-consultation is still to be determined.

Work to update the Catfish Creek and Kettle Creek assessment reports and source protection plans under s.36 of the CWA is ongoing. The timeline for completion of these updates is dependent upon the finalization of the proposed Phase II changes to the Director's Technical Rules. Lake Erie Region staff hope to present the s.36 Catfish Creek and Kettle Creek Assessment Report and Source Protection Plan updates to the SPC at the September 9, 2021 meeting.

**Table 1** provides an overview of the next few SPC meetings and anticipated agenda items related to the s.34 "Wellington/Region of Waterloo" Grand River, s.34 "Grand Valley" Grand River, "s.34 "Melancthon/Guelph" Grand River, s.34 "GGET" Grand River, and s.36 Catfish and Kettle Creek updates.

Prepared by:



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Ilona Feldmann  
Source Protection Program Assistant

Approved by:



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Martin Keller, M. Sc.  
Source Protection Program Manager

**Table 1: SPC meeting outlook 2021**

SPC Meeting Date	Agenda Items				
	s.34 “Wellington/Region of Waterloo” Grand River Update	s.34 “Grand Valley” Grand River Update	s.34 “Melancthon/Guelph” Grand River Update	s.34 “GGET” Grand River Update	s. 36 Catfish and Kettle Creek Update
<b>June 17, 2021</b>	<ul style="list-style-type: none"> <li>revised draft updated AR and SPP: receive public consultation comments</li> <li>release to local SPA for submission to the Ministry</li> </ul>	<ul style="list-style-type: none"> <li>draft updated AR and SPP: receive pre-consultation comments</li> <li>release for public consultation</li> </ul>		<ul style="list-style-type: none"> <li>receive draft policies</li> </ul>	
June 21 – July 20, 2021		Public consultation period			
<b>September 9, 2021</b>		<ul style="list-style-type: none"> <li>revised draft updated AR and SPP: receive public consultation comments</li> <li>release to local SPA for submission to the Ministry</li> </ul>	<ul style="list-style-type: none"> <li>technical work and draft updated AR and SPP</li> <li>release for pre-consultation</li> </ul>	<ul style="list-style-type: none"> <li>receive draft policies</li> </ul>	<ul style="list-style-type: none"> <li>technical work and draft updated AR and SPP</li> <li>release for pre-consultation</li> </ul>
Fall 2021			Pre-consultation period		Pre-consultation period

SPC Meeting Date	Agenda Items				
	s.34 "Wellington/Region of Waterloo" Grand River Update	s.34 "Grand Valley" Grand River Update	s.34 "Melancthon/Guelph" Grand River Update	s.34 "GGET" Grand River Update	s. 36 Catfish and Kettle Creek Update
December 2, 2021			<ul style="list-style-type: none"> <li>• draft updated AR and SPP: receive pre-consultation comments</li> <li>• release for public consultation</li> </ul>		<ul style="list-style-type: none"> <li>• draft updated AR and SPP: receive pre-consultation comments</li> <li>• release for public consultation</li> </ul>

## LAKE ERIE REGION SOURCE PROTECTION COMMITTEE

REPORT NO. SPC-21-06-02

DATE: June 17, 2021

TO: Members of the Lake Erie Region Source Protection Committee

SUBJECT: Guelph-Guelph/Eramosa Water Quantity Policy Development Progress Update

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### RECOMMENDATION:

THAT the Lake Erie Region Source Protection Committee receives report SPC-21-06-02 – Guelph-Guelph/Eramosa Water Quantity Policy Development Progress Update – for information.

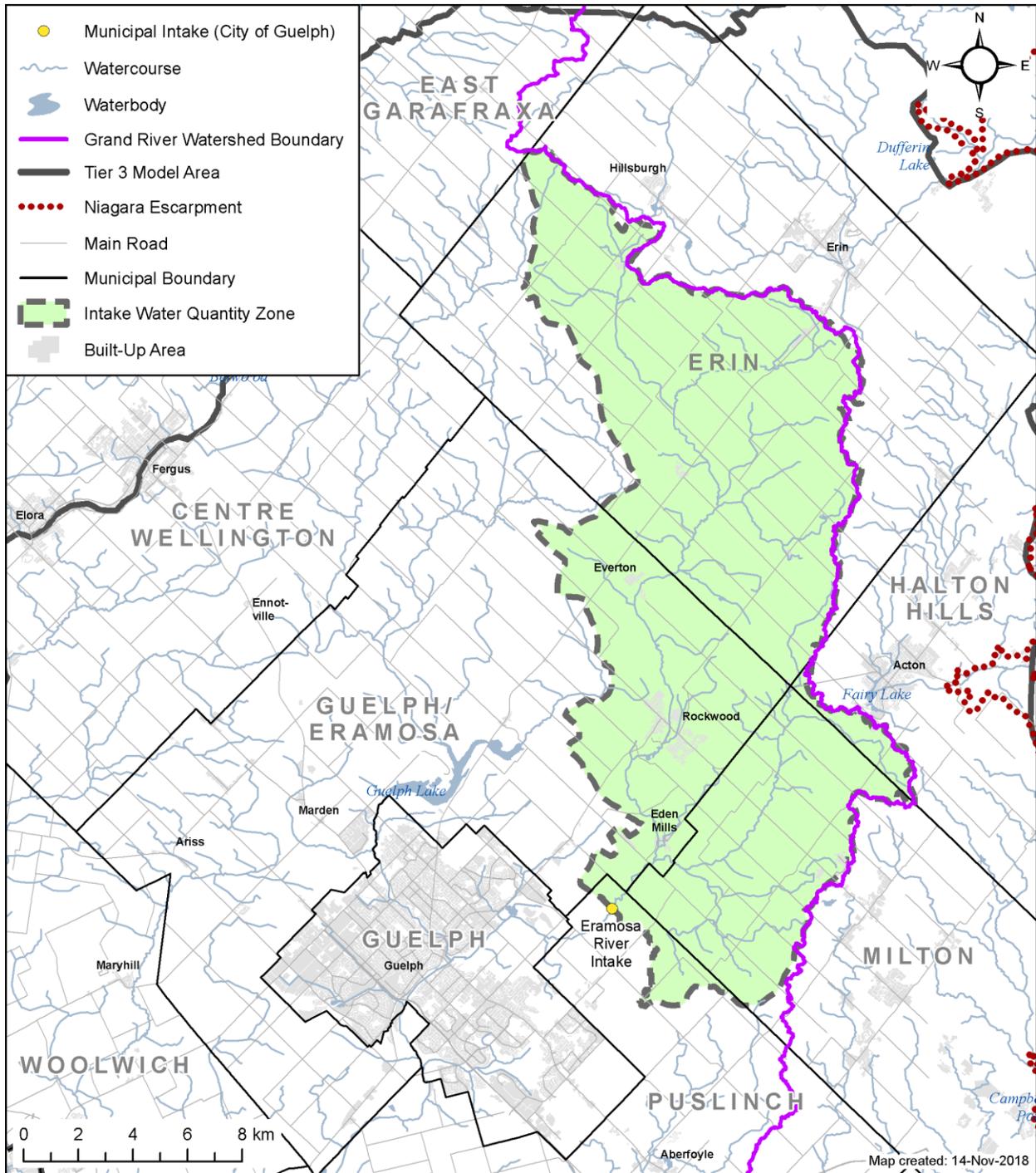
### REPORT:

Further progress is being made in developing water quantity policies for the Guelph-Guelph/Eramosa (GGET) Wellhead Protection Area Quantity (WHPA-Q) and Intake Protection Zone Quantity (IPZ-Q). A first set of draft policies that the Project Team reached consensus on was presented to the Source Protection Committee (SPC) at their meeting in January 2021 (Report SPC-21-01-03), with updates provided at the last committee meeting in April 2021 (Report SPC-21-04-03).

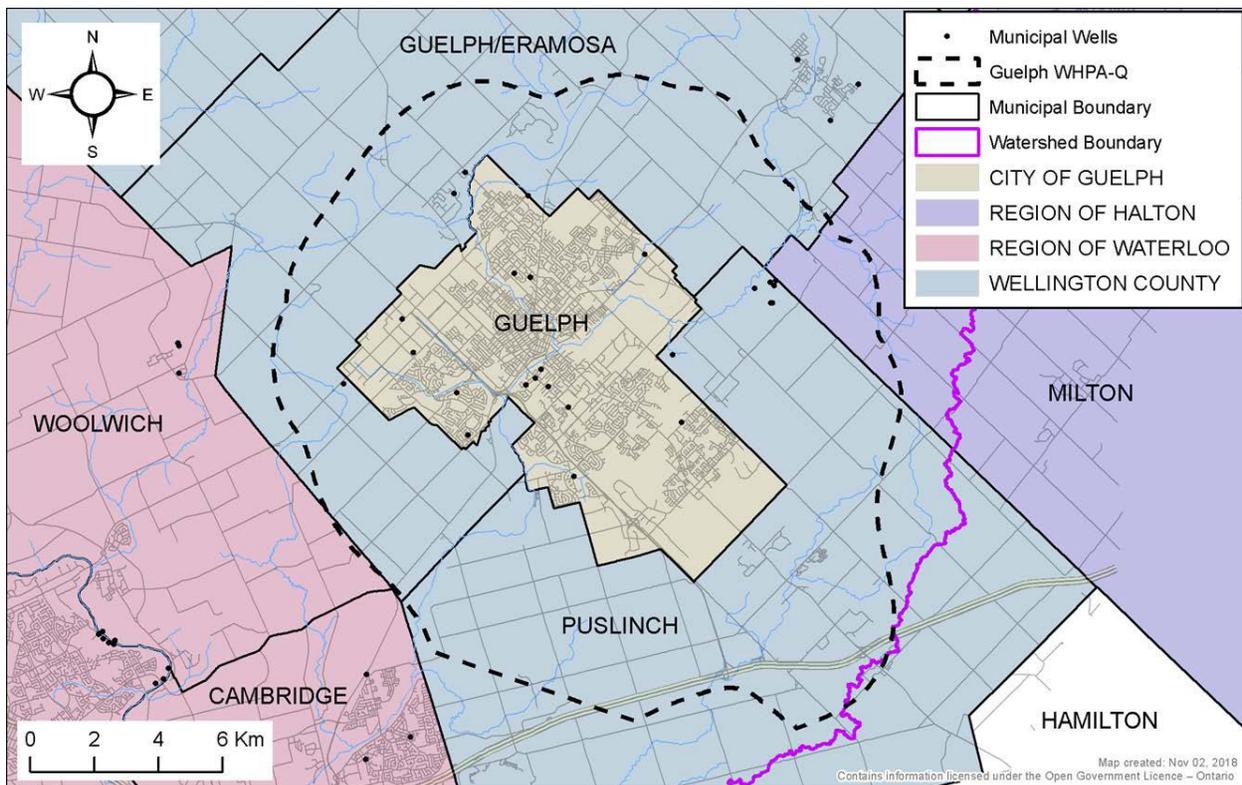
This report provides a further update and includes additional draft policies that the project team has reached consensus on. An updated table with the draft water quantity policies is attached in **Appendix A** for the two prescribed drinking water threats T19 – Consumptive Water Takings, and T20 – Recharge Reduction. New draft policies and definitions are indicated with yellow highlight. In some cases, draft policies presented to the SPC in January 2021 have been revised.

A subset of the WHPA-Q policies will also be applicable in the Intake Protection Zone Quantity (IPZ-Q). **Figure 1** shows the extent of IPZ-Q and affected municipalities. The IPZ-Q has the same significant risk level as the WHPA-Q due to the hydrologic connection through the Eramosa River intake and Arkell Recharge System; however, potential impacts on municipal drinking water systems from consumptive water taking and recharge reducing activities in IPZ-Q are indirect. Draft policies proposed to be applicable in IPZ-Q are identified with a purple frame in attached **Appendix A**. The IPZ-Q covers areas within Wellington County and Halton Region, hence policies applicable to IPZ-Q will only be included in the Wellington County and Halton Region chapters of the Grand River Source Protection Plan.

As indicated in report SPC-21-01-03, there will be water quantity policies in four different municipal chapters of the Grand River Source Protection Plan, reflecting the municipal jurisdictions of the City of Guelph, Wellington County, Region of Waterloo, and Region of Halton. **Figure 2** shows the GGET WHPA-Q and the municipalities affected. In **Appendix A**, policy numbers referenced for Wellington County and Region of Waterloo indicate where policies drafted for the Centre Wellington WHPA-Q are proposed to also be used for the GGET WHPA-Q.



**Figure 1: Intake Protection Zone – Quantity and affected municipalities**



**Figure 2:** Guelph-Guelph/Eramosa Wellhead Protection Area Quantity and Municipalities affected

In addition to specific terms and definitions, the table in **Appendix A** contains a number of new policies and revisions:

- Revised planning policy for Halton Region about coordination of planning application approval for new development where a PTTW may be needed (T19-Growth-7)
- City of Guelph specify action policy for the MECP to use Tier 3 Study and Water Supply Master Plan results and recommendations in its evaluation of PTTW applications (T19-Growth-8)
- New policy for Wellington, Guelph, Waterloo and Halton to request that the MECP update regulation to provide automatic notification to the municipalities and operating authority of Environmental Activity and Sector Registry (EASR) registrations pertaining to construction dewatering, road construction and pumping tests (T19-EASR).
- Revised coordination policy for Wellington, Guelph, Waterloo and Halton to provide greater consistency, additional detail about intent, and roles and responsibilities for the planned working group and its participants, and splitting the policy into two to account for different legal effects of the policy (T19-Coord-1).

The draft policies presented in **Appendix A** are a work in progress, with some policies still under discussion at the Project Team and/or municipal level. The project team is working on a small handful of additional consensus policies that are anticipated to be presented to the SPC at the September 9, 2021 meeting. Draft policies may change as further Project Team discussions occur and information is shared among municipalities and comments are received.

In parallel to the Project Team discussions, the City of Guelph and MECP have met on May 31, 2021 to discuss the approaches for prescribed instrument policies, specifically addressing Permits To Take Water and Aggregate Resources Act approvals in the Guelph source protection plan chapter. W. Wright-Cascaden, Chair Lake Erie Region SPC, and M. Keller, Source Protection Program Manager, have participated in these discussions. Draft prescribed instrument policies will be presented at a future SPC meeting, following discussions and recommendations from the project team.

Prepared and Approved by:

A handwritten signature in black ink, appearing to read 'M. Keller', is positioned above a horizontal line.

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Martin Keller, M. Sc.  
Source Protection Program Manager

## **Appendix A – Draft Water Quantity Policies for Guelph- Guelph/Eramosa**

### **Progress Update excluding Prescribed Instrument Policies**

N/A – policy not applicable in this municipality



Policy Approach	Policy Approach Reference	Existing / Future	Tool	Draft Policy Text Wellington	Draft Policy Text Guelph	Draft Policy Text Waterloo Region	Draft Policy Text Halton Region
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## T19 Consumptive Water Taking

T19-Opt-1	Optimization programs for municipal water supply systems: The municipalities evaluate opportunities to optimize systems based on the source protection water quantity technical work, and where appropriate develop, maintain, and enhance water	existing / future	Specify Action	N/A	To ensure that any Consumptive Water Taking within a WHPA-Q ceases to be or never becomes a significant drinking water threat to the City of Guelph municipal drinking water system as prescribed by the Clean Water Act, 2006, The City of Guelph shall update on a regular basis the Water Supply Master Plan and the Guelph-Guelph/Eramosa Tier 3 Study to secure new municipal water supplies, optimize existing supplies and new water sources and improve demand management initiatives including the water efficiency strategy.	N/A	N/A
T19-Opt-2	Optimization programs for municipal water supply systems: The municipalities evaluate opportunities to optimize systems based on the source protection water quantity technical work, and where appropriate develop, maintain, and enhance water supply system optimization.	existing / future	Specify Action	To ensure that any Consumptive Water Taking ceases to be or never becomes a significant drinking water threat as prescribed by the Clean Water Act, 2006, within the Guelph-Guelph/Eramosa WHPA-Q, Municipalities shall collaborate with the City of Guelph to optimize their water systems based on the results of the Tier 3 Study, and where appropriate develop, maintain, and enhance water supply system optimization programs	To ensure that any Consumptive Water Taking within a WHPA-Q ceases to be or never becomes a significant drinking water threat to the City of Guelph municipal drinking water system as prescribed by the Clean Water Act, 2006, The City of Guelph shall collaborate with the municipalities in the County of Wellington within the Guelph-Guelph/Eramosa WHPA-Q to optimize water supply systems based on the results of the Guelph-Guelph/Eramosa Tier 3 Study, and where appropriate develop, maintain, and enhance water supply optimization programs.	N/A	N/A
T19-Eff-1/2	Incentive programs for water conservation and efficiency: The municipalities are encouraged to establish, maintain and implement incentive programs for water conservation where funding is available.	Existing / Future	Incentive Programs	Existing policy WC-CW-1.6  The County and/or municipality, in collaboration with other bodies and levels of government wherever possible, may develop and implement incentive programs directed at various significant threat activities and/or condition sites prescribed under the Clean Water Act, 2006, where such programs are deemed necessary and/or appropriate by the County and/or municipality, subject to available funding.	To ensure that any Consumptive Water Taking within a WHPA-Q ceases to be or never becomes a significant drinking water threat to the City of Guelph municipal drinking water system as prescribed by the Clean Water Act, 2006, The City of Guelph shall establish and provide ongoing support to the Water Efficiency Strategy including but not limited to incentives, rebates, education and outreach programs to promote water conservation and demand management for all water users within the City of Guelph.	To ensure that any Consumptive Water Taking or Recharge Reducing Activity within a WHPA-Q ceases to be or never becomes a significant drinking water threat as prescribed by the Clean Water Act, 2006, the Regional Municipality of Waterloo shall support any water efficiency education and outreach programs developed by the Township of Centre Wellington and/or City of Guelph to promote water conservation, demand management and use of best management practices to maintain groundwater recharge for private water users within the Region of Waterloo.	To ensure that any Consumptive Water Taking ceases to be or never becomes a significant drinking water threat, as prescribed by the Clean Water Act, 2006, Halton Region will establish and/or maintain a water conservation plan that may include incentives, rebates, education and outreach efforts to promote water conservation.
T19-Reuse-1	Guidelines for water re-use systems and technologies: MECP develop water reuse system guidelines for potable and non-potable water use and re-use systems and technologies.	Existing / Future	Specify Action	To ensure that any Consumptive Water Taking ceases to be or never becomes a significant drinking water threat as prescribed by the Clean Water Act, 2006, the Ministry of the Environment, Conservation and Parks is requested to develop water reuse system guidelines for potable and non-potable water use and re-use systems and technologies.	To ensure that any Consumptive Water Taking within a WHPA-Q ceases to be or never becomes a significant drinking water threat as prescribed by the Clean Water Act, 2006, the Ministry of the Environment, Conservation and Parks is requested to develop water reuse system guidelines to promote potable and non-potable water reuse and reuse systems and technologies.	To ensure that any Consumptive Water Taking within a WHPA-Q ceases to be or never becomes a significant drinking water threat as prescribed by the Clean Water Act, 2006, the Ministry of the Environment, Conservation and Parks is requested to develop water reuse system guidelines for potable and non-potable water use and re-use systems and technologies.	To ensure that any Consumptive Water Taking ceases to be or never becomes a significant drinking water threat, as prescribed by the Clean Water Act, 2006, the Ministry of the Environment, Conservation and Parks is requested to develop water re-use system guidelines for potable and non-potable water use and re-use systems and technologies.
T19-Growth-1	Growth targets under Places to Grow Plan: MMAH ensures that assessment and determination of population and employment targets as part of Places to Grow Plan include consideration of Tier 3 water budget results and sustainable water quantities (current and planned municipal water supplies) to support growth targets.	Future	Specify Action	To ensure that any Consumptive Water Taking never becomes a significant drinking water threat, where this activity would be a significant drinking water threat as prescribed by the Clean Water Act, 2006, the County in consultation with the Municipalities shall take into consideration water quantity constraints identified through the Tier 3 Study when allocating projected growth as part of a municipal comprehensive review.	To ensure that any Consumptive Water Taking within a WHPA-Q ceases to be or never becomes a significant drinking water threat to the City of Guelph municipal drinking water system as prescribed by the Clean Water Act, 2006, The Ministry of Municipal Affairs and Housing should ensure that assessment and determination of population and employment targets as part of the review and amendment of the Places to Grow Plan include consideration of the Guelph-Guelph/Eramosa Tier 3 Study results and sustainable water quantities for current and future municipal water supplies to support growth targets and that the Ministry of Municipal Affairs and Housing have meaningful consultation with the City of Guelph as part of this review and give due regard to comments provided.	N/A	N/A

Policy Approach	Policy Approach Reference	Existing / Future	Tool	Draft Policy Text Wellington	Draft Policy Text Guelph	Draft Policy Text Waterloo Region	Draft Policy Text Halton Region
T19-Growth-3	Water demand management for new drinking water supply sources: The municipalities engage in municipal water demand management planning when assessing and establishing new drinking water supply sources.	Future	Specify Action	To ensure that any Consumptive Water Taking ceases to be or never becomes a significant drinking water threat as prescribed by the Clean Water Act, 2006, within the Guelph-Guelph/Eramosa WHPA-Q, the Municipalities shall collaborate with the City of Guelph on water demand management planning for their respective municipal drinking water systems when identifying future projects with respect to new water supply, assessing and establishing new municipal drinking water sources through engagement in the study processes and consultation through the technical working group.	To ensure that any Consumptive Water Taking within a WHPA-Q ceases to be or never becomes a significant drinking water threat as prescribed by the Clean Water Act, 2006, The City of Guelph shall collaborate with municipalities in the County of Wellington on water demand management planning for their respective municipal drinking water systems when identifying future projects with respect to new water supply, assessing and establishing new municipal drinking water sources through engagement in the study processes and consultation through the technical working group.	N/A	N/A
T19-Growth-5	Conditions as part of development approvals: The municipalities shall review and update their Official Plan and include conditions of development approvals to support Tier 3 water budget results, where appropriate.	Future	Specify Action	To ensure that any Consumptive Water Taking never becomes a significant drinking water threat, where this activity would be a significant drinking water threat as prescribed by the CWA, the County in consultation with the Municipalities, when assessing settlement area expansions within a WHPA-Q as part of a municipal comprehensive review or as otherwise provided by the Provincial Growth Plan for the Greater Golden Horseshoe, shall be satisfied that such expansion will not adversely impact the aquifer's ability to meet the municipal water supply requirements for current and planned service capacity. Where appropriate, this assessment shall consider the use of the Tier 3 Model or other equivalent means. The required data-gathering and analysis to demonstrate no adverse impact should be completed through collaboration and coordination among the County, the affected Municipality(ies), the Water Operating Authority, the Grand River Conservation Authority, Province and / or private developers. This policy applies to settlement area expansions where cumulative water taking to service the expansion is greater than 50,000 litres per day.	To ensure that any Consumptive Water Taking within a WHPA-Q ceases to be or never becomes a significant drinking water threat as prescribed by the Clean Water Act, The City, when assessing growth through a water supply master plan to support a municipal comprehensive review or as otherwise required under the Planning Act and/or Provincial Growth Plan for the Greater Golden Horseshoe, shall be satisfied that such growth will not adversely impact the aquifer's ability to meet the municipal water supply requirements for current and planned service capacity. This assessment shall use the Tier 3 Model, Tier 3 Study results / recommendations and Water Supply Master Plan results / recommendations or other equivalent means. The required data-gathering and analysis to demonstrate no adverse impact should be completed through collaboration and coordination among the City, County of Wellington municipalities, the Grand River Conservation Authority, and/or the Province of Ontario as appropriate.	N/A	N/A
T19-Growth-6	Water takings in areas of municipal servicing: Municipalities regulate new non-municipal groundwater wells where municipal water services are available, except for construction dewatering, site assessment, and site remediation, or similar water taking activities.	Future	Specify Action	To ensure that any Consumptive Water Taking never becomes a significant drinking water threat, where this activity would be a significant drinking water threat as prescribed by the Clean Water Act, 2006, in the Guelph-Guelph/Eramosa WHPA-Q, where municipal water services are available, the municipalities in the County of Wellington should consider adopting municipal by-laws to manage and/or restrict private water takings.	To ensure that any Consumptive Water Taking within a WHPA-Q never becomes a significant drinking water threat to the City of Guelph municipal drinking water system as prescribed by the Clean Water Act, 2006, the City of Guelph shall enact a by-law under the Municipal Act to regulate new private wells where municipal water services are available.	N/A	N/A
T19-Growth-7	Water takings associated with development applications: Municipalities manage growth and development where a PTTW is required.	Future	Land Use Planning	To ensure that any Consumptive Water Taking never becomes a significant drinking water threat, where this activity would be a significant drinking water threat as prescribed by the Clean Water Act, 2006, Municipalities, when reviewing planning applications for New development requiring a new or amended PTTW for groundwater taking within a WHPA-Q and IPZ-Q, shall consult with the MECP to discuss any necessary approval conditions of the PTTW.  Municipalities shall consider the use of holding zone provisions or a community planning permit in order to ensure that a PTTW, if required, is in place prior to the commencement of any development activity.	To ensure that any Consumptive Water Taking within a WHPA-Q ceases to be or never becomes a significant drinking water threat as prescribed by the Clean Water Act, 2006, the following shall apply: a. The City, when reviewing planning applications for development requiring a new or amended PTTW for groundwater taking within a WHPA-Q, shall consult with the Ministry of the Environment, Conservation and Parks to discuss any necessary approval conditions of the PTTW. b. That the City not permit development within the WHPA-Q where a new or amended PTTW is required for a development that would result in permanent dewatering.	N/A	To ensure an activity that takes water from an aquifer or surface water body without returning the water to the same aquifer or surface water body ceases to be or never becomes a significant drinking water threat, where an increased or new water taking would be a significant drinking water threat as prescribed by the Clean Water Act, 2006, the municipal planning authority, when reviewing planning applications for new development requiring a new or amended PTTW for groundwater taking within the WHPA-Q and IPZ-Q, shall consult with the Ministry of the Environment, Conservation and Parks to discuss any necessary approval conditions of the PTTW

Policy Approach	Policy Approach Reference	Existing / Future	Tool	Draft Policy Text Wellington	Draft Policy Text Guelph	Draft Policy Text Waterloo Region	Draft Policy Text Halton Region
T19-Growth-8	Water takings associated with development applications: Municipalities manage growth and development where a PTTW is required.	Future	Specify Action	N/A	To ensure that any Consumptive Water Taking within a WHPA-Q ceases to be or never becomes a significant drinking water threat as prescribed by the Clean Water Act, 2006, the Ministry of the Environment, Conservation and Parks, in consultation with the City of Guelph and the Grand River Conservation Authority, shall use the Tier 3 Model, Tier 3 Study results / recommendations and Water Supply Master Plan results / recommendations in its evaluation of new or expanded municipal takings through the PTTW process and should require the use the Tier 3 Model and Tier 3 Study results / recommendations in Class Environmental Assessment processes, where those new or expanded municipal takings could affect the assigned risk level for the City of Guelph WHPA-Q. For context, this policy is meant to provide support, through the Ministry of the Environment, Conservation and Parks approval and / or review processes to ensure the provision and distribution of municipal water supply to support the City of Guelph population and growth forecasts.	N/A	N/A
T19-Drought-1	City of Guelph drought response plan: City of Guelph develops a drought response plan for the City's municipal supply within three years of the approval of the water quantity policies effective date.	Existing / Future	Specify Action	N/A	To ensure that any Consumptive Water Taking within a WHPA-Q ceases to be or never becomes a significant drinking water threat to the City of Guelph municipal drinking water system as prescribed by the Clean Water Act, 2006, the City of Guelph develop a drought response plan for the City's municipal drinking water supply to mitigate the potential impacts of a longer-term (greater than 3 years) drought. This plan shall be completed within three years of this policy taking effect.	N/A	N/A
T19-Mon-1	Subwatershed monitoring program: City of Guelph, working with GRCA, establish and undertake and maintain monitoring program within the City to assist in characterization and management of the subwatershed.	Existing / Future	Specify Action	N/A	To ensure that any Consumptive Water Taking within a WHPA-Q ceases to be or never becomes a significant drinking water threat to the City of Guelph municipal drinking water system as prescribed by the Clean Water Act, 2006, the City of Guelph, working with the GRCA, shall establish, undertake and maintain surface water and groundwater monitoring programs to assist in characterization and management of the subwatersheds and to ensure the long-term sustainability of the municipal water supply. Monitoring results shall be provided to the MECP on an annual basis. Where funding is not provided by MECP for this program, the City of Guelph shall develop and fund this program for its own use.	N/A	N/A
T19-Mon-2	Collection of water usage data for water takers exempted from PTTW requirements: Where funding is available, Wellington County municipalities consider collecting and assessing water usage data for water takers exempted from PTTW requirements.	Existing / Future	Specify Action	To ensure that any Consumptive Water Taking ceases to be or never becomes a significant drinking water threat as prescribed by the Clean Water Act, 2006, where funding is available, the Municipalities collect and assess water usage data from water takers within the Guelph-Guelph/Eramosa WHPA-Q and exempted from the Permit to Take Water (PTTW) requirements, such that the data can be used in updates to the Tier 3 Model.	N/A	N/A	N/A
T19-Prior-1	Prioritization of municipal water use: MECP consider the need to prioritize water uses to guide future water quantity management and recognize drinking water as a high priority use (City of Guelph policy approach).	Future	Specify Action	N/A	To ensure that any Consumptive Water Taking within a WHPA-Q ceases to be or never becomes a significant drinking water threat as prescribed by the Clean Water Act, 2006, the MECP is requested to prioritize municipal water use as a component of future water quantity management.	N/A	N/A

Policy Approach	Policy Approach Reference	Existing / Future	Tool	Draft Policy Text Wellington	Draft Policy Text Guelph	Draft Policy Text Waterloo Region	Draft Policy Text Halton Region
T19-Prior-2	Prioritization of Inspection and Abatement: The Ministry of the Environment, Conservation and Parks (MECP) and Ministry of Natural Resources and Forestry (MNRF) should prioritize inspections and abatement activities related to water quantity for sites with PTTW and/or Aggregate Resources Act (ARA) approvals.	Existing / Future	Specify Action	To ensure that any Consumptive Water Taking ceases to be or never becomes a significant drinking water threat as prescribed by the Clean Water Act, 2006, the Ministry of Environment, Conservation and Parks (MECP) and the Ministry of Natural Resources and Forestry (MNRF) should ensure source protection is included as a risk factor of sites with Permits to Take Water (PTTW) and / or Aggregate Resources Act, 1990 Licenses in WHPA-Q Areas in the ministry local office risk-based inspection planning process and compliance response planning. (ref. policy WC-NB-22.14)	N/A	To ensure that any Consumptive Water Taking within a WHPA-Q ceases to be or never becomes a significant drinking water threat as prescribed by the Clean Water Act, 2006, the Ministry of Environment, Conservation and Parks (MECP) and Ministry of Natural Resources and Forestry (MNRF) should ensure source protection is included as a risk factor of Sites with Permits to Take Water (PTTW) and / or Aggregate Resources Act, 1990 Licenses in WHPA-Q Areas in the Guelph District Office risk-based compliance inspection planning process. (ref. policy RW-NB-67)	To ensure that any Consumptive Water Taking ceases to be or never becomes a significant drinking water threat, as prescribed by the Clean Water Act, 2006, the Ministry of Environment, Conservation and Parks (MECP) and Ministry of Natural Resources and Forestry (MNRF) are requested to prioritize inspections and abatement of these activities for existing Permits to Take Water (PTTW) and/or Aggregate Resources Act (ARA) approvals.
T19-Fund-1	Tier 3 Water Budget model maintenance: MECP to consider providing ongoing funding to the GRCA and the municipalities to maintain and update the Tier 3 water budget model including the climate change assessment, to ensure the long-term sustainability of municipal systems in the City of Guelph and Wellington County municipalities.	Existing / Future	Specify Action	see combined T19/T20 policy	To ensure that any Consumptive Water Taking within a WHPA-Q ceases to be or never becomes a significant drinking water threat as prescribed by the Clean Water Act, 2006, the City of Guelph requests MECP to provide ongoing funding to maintain and update the Guelph-Guelph/Eramosa Tier 3 Model. Where funding is not provided, the City of Guelph shall fund for its own use the maintenance and updating of the Guelph-Guelph/Eramosa Tier 3 Model, including the climate change assessment model, to ensure the long-term sustainability of municipal water supply systems in the City of Guelph and develop a user pay system for other users of the Guelph-Guelph/Eramosa Tier 3 Model.	N/A	see combined T19/T20 policy
T19-Dewater-6	Managing non-municipal water takings for non-potable purposes where no PTTW is required	Existing / Future	Specify Action	N/A	To ensure that any Consumptive Water Taking within a WHPA-Q ceases to be or never becomes a significant drinking water threat to the City of Guelph municipal drinking water system as prescribed by the Clean Water Act, 2006, the City of Guelph ensure that existing and future non-municipal water takings for non-potable purposes, where a PTTW is not required, adhere to the City's outside water by-law to support demand reduction activities during times of water stress.	N/A	N/A
T19-EASR		Existing / Future	Specify Action	To ensure that any Consumptive Water Taking ceases to be or never becomes a significant drinking water threat as prescribed by the Clean Water Act, 2006, within the Guelph-Guelph/Eramosa WHPA-Q, the Ministry of the Environment, Conservation and Parks should update regulation to provide automatic notification to the Municipalities and the Operating Authority of Environmental Activity and Site Registry (EASR) registrations pertaining to construction dewatering, road construction and pumping tests when an EASR registration is located within a wellhead protection area defined pursuant to the Clean Water Act, 2006.	To ensure that any Consumptive Water Taking within a WHPA-Q ceases to be or never becomes a significant drinking water threat as prescribed by the Clean Water Act, 2006, the Ministry of the Environment, Conservation and Parks should update regulation to provide automatic notification to the Municipalities and the Operating Authority of Environmental Activity and Site Registry (EASR) registrations pertaining to construction dewatering, road construction and pumping tests when an EASR registration is located within a wellhead protection area defined pursuant to the Clean Water Act, 2006.	To ensure that any Consumptive Water Taking within a WHPA-Q ceases to be or never becomes a significant drinking water threat as prescribed by the Clean Water Act, 2006, the Ministry of the Environment, Conservation and Parks should update regulation to provide automatic notification to the Municipalities and the Operating Authority of Environmental Activity and Site Registry (EASR) registrations pertaining to construction dewatering, road construction and pumping tests when an EASR registration is located within a wellhead protection area defined pursuant to the Clean Water Act, 2006.	To ensure that any Consumptive Water Taking ceases to be or never becomes a significant drinking water threat, where this activity is or would be a significant drinking water threat as prescribed by the Clean Water Act, 2006, the Ministry of the Environment, Conservation and Parks should update regulation to provide automatic notification to the Municipalities and the Operating Authority of Environmental Activity and Site Registry (EASR) registrations pertaining to construction dewatering, road construction and pumping tests when an EASR registration is located within a wellhead protection area defined pursuant to the Clean Water Act, 2006.

## T20 Recharge Reduction

T20-1	Incentive programs for recharge: The municipalities are encouraged to establish, maintain and implement incentive programs for recharge where funding is available.	Existing / Future	Incentive programs	Existing policy WC-CW-1.6  The County and/or municipality, in collaboration with other bodies and levels of government wherever possible, may develop and implement incentive programs directed at various significant threat activities and/or condition sites prescribed under the Clean Water Act, 2006, where such programs are deemed necessary and/or appropriate by the County and/or municipality, subject to available funding.	To ensure that any Recharge Reducing Activity within the WHPA-Q ceases to be or never becomes a significant drinking water threat to the City of Guelph municipal drinking water system, as prescribed by the Clean Water Act, 2006, the City of Guelph shall encourage storm water rebates for industrial, commercial, institutional and residential customers to promote the ongoing installation and maintenance of Low Impact Development (LID) systems that infiltrate rain water.	N/A	N/A
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Policy Approach	Policy Approach Reference	Existing / Future	Tool	Draft Policy Text Wellington	Draft Policy Text Guelph	Draft Policy Text Waterloo Region	Draft Policy Text Halton Region
T20-2	Groundwater recharge maintenance: municipalities maintain or enhance pre-development recharge where appropriate.	Future	Land Use Planning	<p>To ensure that any Recharge Reducing Activity never becomes a significant drinking water threat, where this activity would be a significant drinking water threat as prescribed by the Clean Water Act, 2006, the Planning Approval Authority shall, within a WHPA-Q, require that all site plan, subdivision and vacant land condominium applications to facilitate Major Development for new residential, commercial, industrial and institutional uses provide a water balance assessment for the proposed development which addresses each of the following requirements:</p> <ol style="list-style-type: none"> <li>maintain pre-development recharge to the greatest extent feasible through best management practices such as LID, minimizing impervious surfaces, and lot level infiltration;</li> <li>where pre-development recharge cannot be maintained on site, implement and maximize off-site recharge enhancement (within the same WHPA-Q) to compensate for any predicted loss of recharge from the development; and</li> <li>within a WHPA-Q in a Chloride, Sodium or Nitrate ICA, the water balance assessment must consider water quality when recommending best management practices and address how recharge will be maintained and water quality will be protected including consideration of how water quality will be protected from application and storage of winter maintenance materials including Salt.</li> </ol> <p>The Planning Approval Authority shall use its discretion to implement the requirements of this policy to the extent feasible and practicable given the nature of the proposed development, specific circumstances of a site and off-site recharge opportunities.</p>	<p>To ensure that any Recharge Reducing Activity within the WHPA-Q never becomes a significant drinking water threat to the City of Guelph municipal drinking water system, as prescribed by the Clean Water Act, 2006, the City of Guelph shall require that Planning Act applications for development of industrial, commercial, institutional or residential uses within a WHPA-Q maintain pre-development recharge to the greatest extent feasible through best management practices including but not limited to Low Impact Development (LID), minimizing impervious surfaces, or lot level infiltration.</p>	N/A	<p>To ensure that any Recharge Reducing Activity never becomes a significant drinking water threat, where the activity would be a significant drinking water threat as prescribed by the Clean Water Act, 2006, the municipal planning authority shall require:</p> <ol style="list-style-type: none"> <li>New development and site alteration under the Planning Act to implement best management practices such as Low Impact Development (LID) with the goal to maintain predevelopment recharge. Implementation of best management practices is encouraged, but voluntary, for Agricultural Uses, Agriculture-related Uses, or On-farm Diversified Uses where the total impervious surface does not exceed 10 per cent of the lot.</li> <li>All site plan and subdivision applications to facilitate Major Development for new residential, commercial, industrial and institutional uses provide a water balance assessment for the proposed development to the satisfaction of the Planning Approval Authority, that maintains pre-development recharge to the greatest extent feasible through best management practices such as LID, minimizing impervious surfaces, and lot level infiltration.</li> </ol>
T20-2a	Groundwater recharge maintenance: the municipalities maintain or enhance pre-development recharge where appropriate.	Future	Land Use Planning	<p>To ensure that any Recharge Reducing Activity never becomes a significant drinking water threat, where this activity would be a significant drinking water threat as prescribed by the Clean Water Act, 2006, the County, as the Planning Approval Authority, in consultation with the Municipalities, shall only approve settlement area expansions within a WHPA-Q as part of a municipal comprehensive review or as otherwise provided by the Provincial Growth Plan for the Greater Golden Horseshoe, where it can be adequately demonstrated that recharge functions can be maintained or improved on lands designated Significant Groundwater Recharge Areas within a WHPA-Q.</p>	N/A	N/A	N/A
T20-2b	Groundwater recharge maintenance: the municipalities maintain or enhance pre-development recharge where appropriate.	Future	Land Use Planning	<p>To ensure that any Recharge Reducing Activity never becomes a significant drinking water threat, where this activity would be a significant drinking water threat as prescribed by the Clean Water Act, 2006, the Planning Approval Authorities within the WHPA-Q shall require that all site plan applications under the Planning Act, to facilitate New development not meeting the Major Development definition for new residential, commercial, industrial and institutional uses, implement best management practices such as Low Impact Development (LID) with the goal to maintain predevelopment recharge. This shall include consideration of how recharge will be maintained and water quality will be protected such as from the application and storage of winter maintenance materials including Salt. Planning Approval Authorities shall also encourage implementation of best management practices for site plan applications related to agricultural uses, agriculture-related uses, or on-farm diversified uses provided that such measures are recognized to be voluntary, where the total impervious surface does not exceed 10 per cent of the lot.</p>	N/A	N/A	N/A

Policy Approach	Policy Approach Reference	Existing / Future	Tool	Draft Policy Text Wellington	Draft Policy Text Guelph	Draft Policy Text Waterloo Region	Draft Policy Text Halton Region
T20-3	Guidelines for groundwater recharge maintenance: The City of Guelph and Wellington County municipalities are encouraged to develop and update guidelines for maintaining and / or enhancing recharge.	Existing / Future	Specify Action	To ensure that any Recharge Reducing Activity ceases to be or never becomes a significant drinking water threat, where this activity is or would be a significant drinking water threat as prescribed by the Clean Water Act, 2006, Municipalities, where appropriate, shall develop and update design standards (e.g., development manuals, design guidelines) for maintaining and enhancing groundwater recharge. These shall include implementation of Low Impact Development (LID), minimizing impervious surfaces and / or lot level infiltration for the purposes of maintaining recharge function. The design standards shall consider water quality when recommending best management practices and address how recharge will be maintained and water quality will be protected from application and storage of winter maintenance materials including Salt. (ref. policy WC-CW-23.6)	To ensure that any Recharge Reducing Activity within the WHPA-Q ceases to be or never becomes a significant drinking water threat to the City of Guelph municipal drinking water system, as prescribed by the Clean Water Act, 2006, the City of Guelph shall develop and implement standard rates for infiltration and recharge with the objective of maintaining pre-development infiltration rates post development and to sustain the City of Guelph's Natural Heritage and Water Resource Systems.	N/A	N/A
T20-4	Environmental Compliance Approvals (ECA) for stormwater management facilities with LID systems: MECP review and amend, where appropriate, existing and issue new ECAs for stormwater management facilities with Low Impact Development (LID) systems to ensure they include groundwater recharge considerations.	Existing	Prescribed Instrument	To ensure that any Recharge Reducing Activity ceases to be a significant drinking water threat, where this activity is a significant drinking water threat as prescribed by the Clean Water Act, 2006, the Ministry of the Environment, Conservation and Parks (MECP) shall review and amend, if necessary, Environmental Compliance Approvals for Stormwater Management Facilities and/or Sewage Works to incorporate conditions, where appropriate, to address groundwater recharge considerations. Where appropriate and feasible, the MECP shall encourage the implementation of measures for the maintenance of groundwater recharge functions including LID, minimizing impervious surfaces and lot level infiltration. Where appropriate and feasible, the MECP shall consider establishing approval conditions in the Environmental Compliance Approvals to ensure the proper functioning of groundwater recharge measures including, but not limited to, conditions requiring or related to operations, inspection and maintenance of the Stormwater Management Facilities and/or Sewage Works, groundwater or surface water monitoring related to groundwater recharge, and documentation including manuals and maintenance records.  For Stormwater Management Facilities and/or Sewage Works located within a WHPA-Q in a Chloride, Sodium or Nitrate ICA, the MECP shall consider conditions which require best management practices to protect water quality and which address how recharge will be maintained and water quality will be protected from application and storage of winter maintenance materials including Salt.	N/A	N/A	To ensure that any Recharge Reducing Activity ceases to be a significant drinking water threat, where this activity is a significant drinking water threat, as prescribed by the Clean Water Act, 2006, the Ministry of Environment, Conservation and Parks (MECP) shall review and, if necessary, amend Environmental Compliance Approvals for stormwater management facilities with Low Impact Development (LID) systems to ensure that terms and conditions are incorporated that include groundwater recharge considerations.

Policy Approach	Policy Approach Reference	Existing / Future	Tool	Draft Policy Text Wellington	Draft Policy Text Guelph	Draft Policy Text Waterloo Region	Draft Policy Text Halton Region
T20-4a	Environmental Compliance Approvals (ECA) for stormwater management facilities with LID systems: MECP review and amend, where appropriate, existing and issue new ECAs for stormwater management facilities with Low Impact Development (LID) systems to ensure they include groundwater recharge considerations.	Future	Prescribed Instrument	To ensure that any Recharge Reducing Activity never becomes a significant drinking water threat, where this activity would be a significant drinking water threat as prescribed by the Clean Water Act, 2006, the Ministry of the Environment, Conservation and Parks (MECP) should, during any pre-submission consultation for Environmental Compliance Approvals for Stormwater Management Facilities and/or Sewage Works, encourage design and implementation measures for the maintenance of groundwater recharge functions including but not limited to Low Impact Development (LID), minimizing impervious surfaces and lot level infiltration. The MECP shall issue Environmental Compliance Approvals for Stormwater Management Facilities and/or Sewage Works that, where appropriate, incorporate conditions that address groundwater recharge considerations. In addition, the MECP, where appropriate, shall consider incorporating conditions in the Environmental Compliance Approvals to ensure the proper functioning of groundwater recharge measures including, but not limited to, conditions requiring or related to operations, inspection and maintenance of the Stormwater Management Facilities and/or Sewage Works, groundwater or surface water monitoring related to groundwater recharge, and documentation including manuals and For Stormwater Management Facilities and/or Sewage Works located within the WHPA-Q in a Chloride, Sodium or Nitrate ICA, the MECP shall consider conditions that require best management practices to protect water quality and that address how recharge will be maintained including consideration from the application and storage of winter maintenance materials including Salt.	To ensure that any Recharge Reducing Activity within the WHPA-Q ceases to be or never becomes a significant drinking water threat to the City of Guelph municipal drinking water system, as prescribed by the Clean Water Act, 2006, the Ministry of Environment, Conservation and Parks (MECP) should, during any pre-submission consultation for Environmental Compliance Approvals for Stormwater Management Facilities and/or Sewage Works, encourage design and implementation measures for the maintenance of groundwater recharge functions including but not limited to Low Impact Development (LID), minimizing impervious surfaces and lot level infiltration. The MECP shall issue, or amend, Environmental Compliance Approvals for Stormwater Management Facilities and/or Sewage Works that, where appropriate, incorporate conditions that address groundwater recharge considerations. In addition, the MECP, where appropriate, shall consider incorporating conditions in the Environmental Compliance Approvals to ensure the proper functioning of groundwater recharge measures including, but not limited to, conditions requiring or related to operations, inspection and maintenance of the Stormwater Management Facilities and/or Sewage Works, groundwater or surface water monitoring related to groundwater recharge, and documentation including manuals and maintenance records.	N/A	To ensure that any Recharge Reducing Activity never becomes a significant drinking water threat, where this activity would be a significant drinking water threat, as prescribed by the Clean Water Act, 2006, the Ministry of Environment, Conservation and Parks (MECP) shall issue Environmental Compliance Approvals for stormwater management facilities with Low Impact Development (LID) systems to ensure that terms and conditions are incorporated that include groundwater recharge considerations.
T20-8	Web-based resources as part of EnviroGuide platform: The City of Guelph include water quantity and recharge as part of the future development of the EnviroGuide web platform and will include information on how to promote and enhance water quantity and recharge as part of the development approvals process.	Existing / Future	Specify Action	(ref. policy WC-MC-23.2)	To ensure that any Recharge Reducing Activity within the WHPA-Q ceases to be or never becomes a significant drinking water threat to the City of Guelph municipal drinking water system, as prescribed by the Clean Water Act, 2006, the City of Guelph shall include information on how to promote and enhance water quantity by maintaining and improving recharge after occupancy by the resident/business occupant.	N/A	N/A
T20-10	Prioritization of Environmental Compliance Approvals (ECA): The Ministry of the Environment, Conservation and Parks (MECP) should prioritize inspection and abatement activities of stormwater management facilities with Low Impact Development (LID) systems.	Existing / Future	Specify Action	To ensure that any Recharge Reducing Activity ceases to be or never becomes a significant drinking water threat as prescribed by the Clean Water Act, 2006, the Ministry of the Environment, Conservation and Parks should ensure source protection is included as a risk factor of sites with Stormwater Management Facilities and / or Sewage Works in WHPA-Q Areas in the ministry local office risk-based inspection planning process and compliance response planning. (ref. policy WC-NB-23.7)	N/A	N/A	To ensure that any Recharge Reducing Activity ceases to be or never becomes a significant drinking water threat, as prescribed by the Clean Water Act, 2006, the Ministry of Environment, Conservation and Parks (MECP) shall prioritize inspection and abatement activities of stormwater management facilities with Low Impact Development (LID) systems.

Policy Approach	Policy Approach Reference	Existing / Future	Tool	Draft Policy Text Wellington	Draft Policy Text Guelph	Draft Policy Text Waterloo Region	Draft Policy Text Halton Region
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### T19 + T20 Consumptive Water Takings and Recharge Reduction

T19-Growth-2 T20-5	subwatershed studies: Any lead agency completing or updating a subwatershed study should review and incorporate the Tier 3 water budget results, where appropriate, in the development of the subwatershed study's terms of reference and monitoring program.	Future	subwatershed planning  Specify Action	To ensure that any Consumptive Water Taking or Recharge Reducing Activity never becomes a significant drinking water threat as prescribed by the Clean Water Act, 2006, within the Guelph-Guelph/Eramosa WHPA-Q and / or IPZ-Q, the County shall review, and if necessary, update their Official Plan to ensure that any lead agency (e.g., Conservation Authority, Province, Municipalities) developing or approving a sub-watershed study terms of reference and monitoring program shall review, and where appropriate, incorporate the Guelph-Guelph/Eramosa Tier 3 Study as part of the sub-watershed study in addition to information from watershed planning.	To ensure that any Consumptive Water Taking or Recharge Reducing Activity within a WHPA-Q ceases to be or never becomes a significant drinking water threat to the City of Guelph municipal drinking water system as prescribed by the Clean Water Act, 2006, the designated lead agency (e.g., Conservation Authority, Province, Municipalities) completing or updating a subwatershed plan shall, where appropriate, incorporate the Guelph-Guelph/Eramosa Tier 3 Study results in the development and implementation of the subwatershed plan.	To ensure that any Consumptive Water Taking or Recharge Reducing Activity within a WHPA-Q never becomes a significant drinking water threat as prescribed by the Clean Water Act, 2006, any municipality or conservation authority developing or approving a sub-watershed study terms of reference and monitoring program shall review, and where appropriate, incorporate the Tier 3 Study results as part of the sub-watershed study. (ref. policy RW-CW-64)	To ensure that any Consumptive Water Taking or Recharge Reducing Activity ceases to be or never becomes a significant drinking water threat as prescribed by the Clean Water Act, 2006, any lead agency (e.g., Conservation Authority, Province, Municipalities) completing or updating a subwatershed study shall review, and where appropriate, incorporate the Tier 3 Study results as part of the subwatershed study.
T19-Coord-1 T20-6	Water Resource Technical Working Group (WRTWG): The municipalities, in collaboration with GRCA and MECP, establish a Water Resource Technical Working Group (WRTWG) to support management of local water resources, which may include establishing a drought response program to support the management of drinking water sources during times of drought, consideration of climate change, encourage monitoring, data sharing and coordination, and support the use, maintenance, and update of the Guelph/Guelph-Eramosa Tier 3 model.	Existing / Future	Collaboration  Specify Action	<p>To ensure that any Consumptive Water Taking and/or Recharge Reducing Activity ceases to be or never becomes a significant drinking water threat as prescribed by the Clean Water Act, 2006, the Municipalities, the County, and the Grand River Conservation Authority shall mutually share information with the City of Guelph, Region of Waterloo, Halton Region, and Ministry of the Environment, Conservation and Parks to collaboratively manage local water resources within the Guelph-Guelph/Eramosa WHPA-Q and IPZ-Q. This may include, but is not limited to establishing a drought response program to support the management of drinking water sources during times of drought, sharing of EASR notifications, consideration of climate change, and encouraging monitoring, data sharing and coordination among the agencies, and support the use, maintenance, and update of the Guelph-Guelph/Eramosa Tier 3 Model, and/or any other topics identified.</p> <p>The Grand River Conservation Authority shall develop, in cooperation with the County, Municipalities, City of Guelph, Region of Waterloo, Halton Region, and the Ministry of the Environment, Conservation and Parks, an information-sharing document that includes roles and expectations of the agencies, requirements for meetings, including frequency, agendas and participants, and for the nature, format and types of information to be mutually shared. The information-sharing document shall be established within one (1) year of this policy taking effect. Consideration should also be given to linking in other groups such as Grand River Water Managers and / or Low Water Response Group to this process.</p>	<p>To ensure that any Consumptive Water Taking and/or any Recharge Reducing Activity within a WHPA-Q ceases to be or never becomes a significant drinking water threat as prescribed by the Clean Water Act, 2006, the City of Guelph and the Grand River Conservation Authority shall mutually share information with the municipalities in the County of Wellington, Ministry of the Environment, Conservation and Parks, Region of Waterloo, and Halton Region to collaboratively manage local water resources within the Guelph-Guelph/Eramosa WHPA-Q and IPZ-Q. This may include, but is not limited to establishing a drought response program to support the management of drinking water sources during times of drought, sharing of EASR notifications, consideration of climate change, and encouraging monitoring, data sharing and coordination among the agencies, and support the use, maintenance, and update of the Guelph-Guelph/Eramosa Tier 3 Model.</p> <p>The Grand River Conservation Authority shall develop, in cooperation with the City of Guelph, municipalities in the County of Wellington, Region of Waterloo, Halton Region, and the Ministry of the Environment, Conservation and Parks, an information-sharing document that includes roles and expectations of the agencies, requirements for meetings, including frequency, agendas and participants, and for the nature, format and types of information to be mutually shared. The information-sharing document shall be established within one (1) year of this policy taking effect. Consideration should also be given to linking in other groups such as Grand River Water Managers and / or Low Water Response Group to this process.</p>	<p>To ensure that any Consumptive Water Taking and/or any Recharge Reducing Activity within a WHPA-Q ceases to be or never becomes a significant drinking water threat as prescribed by the Clean Water Act, 2006, the Regional Municipality of Waterloo will collaborate with the City of Guelph, County of Wellington, Grand River Conservation Authority, and Ministry of the Environment, Conservation and Parks, to support management of local water resources and protection of municipal drinking water supply sources, including but not limited to establishing a drought response program, sharing of EASR notifications, consideration of climate change impacts and mitigation, encourage monitoring, data sharing and coordination among the agencies, and support the use, maintenance, and update of the Tier 3 model. (ref. policy RW-CW-63)</p>	<p>To ensure that any Consumptive Water Taking and/or any Recharge Reducing Activity within a WHPA-Q or IPZ-Q ceases to be or never becomes a significant drinking water threat as prescribed by the Clean Water Act, 2006, the Halton Region and the Grand River Conservation Authority shall mutually share information with the municipalities in the County of Wellington, City of Guelph, Ministry of the Environment, Conservation and Parks, and Region of Waterloo to collaboratively manage local water resources within the Guelph-Guelph/Eramosa WHPA-Q and IPZ-Q. This may include, but is not limited to establishing a drought response program to support the management of drinking water sources during times of drought, sharing of EASR notifications, consideration of climate change, and encouraging monitoring, data sharing and coordination among the agencies, and support the use, maintenance, and update of the Guelph-Guelph/Eramosa Tier 3 Model.</p> <p>The Grand River Conservation Authority shall develop, in cooperation with Halton Region, the City of Guelph, municipalities in the County of Wellington, Region of Waterloo, and the Ministry of the Environment, Conservation and Parks, an information-sharing document that includes roles and expectations of the agencies, requirements for meetings, including frequency, agendas and participants, and for the nature, format and types of information to be mutually shared. The information-sharing document shall be established within one (1) year of this policy taking effect. Consideration should also be given to linking in other groups such as Grand River Water Managers and / or Low Water Response Group to this process.</p>

Policy Approach	Policy Approach Reference	Existing / Future	Tool	Draft Policy Text Wellington	Draft Policy Text Guelph	Draft Policy Text Waterloo Region	Draft Policy Text Halton Region
T19-Coord-1b T20-6		Existing / Future	Collaboration  Specify Action	To ensure that any Consumptive Water Taking and/or Recharge Reducing Activity ceases to be or never becomes a significant drinking water threat as prescribed by the Clean Water Act, 2006, the Ministry of the Environment, Conservation and Parks, the City of Guelph, Region of Waterloo, and Region of Halton should mutually share information to collaboratively manage water resources within the Guelph-Guelph/Eramosa WHPA-Q and IPZ-Q. The Ministry of the Environment, Conservation and Parks is requested to participate in regular meetings to support information sharing, as identified in policy T19-Coord-1a.	To ensure that any Consumptive Water Taking and/or Recharge Reducing Activity ceases to be or never becomes a significant drinking water threat as prescribed by the Clean Water Act, 2006, the Ministry of the Environment, Conservation and Parks, the municipalities in the County of Wellington, Region of Waterloo, and Region of Halton should mutually share information to collaboratively manage water resources within the Guelph-Guelph/Eramosa WHPA-Q and IPZ-Q. The Ministry of the Environment, Conservation and Parks is requested to participate in regular meetings to support information sharing, as identified in policy T19-Coord-1a.	N/A	To ensure that any Consumptive Water Taking and/or Recharge Reducing Activity ceases to be or never becomes a significant drinking water threat as prescribed by the Clean Water Act, 2006, the Ministry of the Environment, Conservation and Parks, the municipalities in the County of Wellington, Region of Waterloo, and City of Guelph should mutually share information to collaboratively manage water resources within the Guelph-Guelph/Eramosa WHPA-Q and IPZ-Q. The Ministry of the Environment, Conservation and Parks is requested to participate in regular meetings to support information sharing, as identified in policy T19-Coord-1a.
T19-E&O-1 T20-7	Education and outreach initiatives: The municipalities implement and maintain public education and outreach initiatives to promote recharge. Where possible, these education and outreach initiatives should be coordinated.	Existing / Future	Education & Outreach	To ensure that any Consumptive Water Taking or Recharge Reducing Activity ceases to be or never becomes a significant drinking water threat as prescribed by the Clean Water Act, 2006, the Municipalities shall implement and maintain public education and outreach initiatives regarding water conservation and the use of best management practices that reduce the impact on groundwater recharge. Where possible, these education and outreach initiatives will be coordinated with other Municipalities. (ref. policy WC-CW-21.4)	To ensure that any Consumptive Water Taking or Recharge Reducing Activity within a WHPA-Q, ceases to be or never becomes a significant drinking water threat to the City of Guelph municipal drinking water system as prescribed by the Clean Water Act, 2006, the City of Guelph shall, in collaboration with the municipalities in the County of Wellington, implement and maintain public education and outreach initiatives regarding water conservation and efficiency, and maintaining and improving recharge during the development approval process and after occupancy by the homeowner. The education program shall encourage the use of best management practices that reduce the impact on groundwater.	To ensure that any Consumptive Water Taking or Recharge Reducing Activity within a WHPA-Q ceases to be or never becomes a significant drinking water threat as prescribed by the Clean Water Act, 2006, the Regional Municipality of Waterloo shall support any water efficiency education and outreach programs developed by the Township of Centre Wellington and/or City of Guelph to promote water conservation and demand management and use of best management practices that reduce the impact on groundwater recharge for private water users within the Region of Waterloo. (ref. policy RW-CW-62)	To ensure that any Consumptive Water Taking or Recharge Reducing Activity ceases to be or never becomes a significant drinking water threat as prescribed by the Clean Water Act, 2006, Halton Region will establish and/or maintain education and outreach efforts to promote water conservation. Where possible, these education and outreach initiatives will be coordinated with adjacent municipalities.
T19-Mon-3 T20-9	Long-term monitoring of shallow groundwater and surface water systems: Collaboratively develop and maintain long-term monitoring programs of shallow groundwater and surface water systems to assess potential surface water impacts from water takings, where funding is available. Monitoring agencies report to Water Resource Technical Working Group (WRTWG) on a regular basis.	Existing / Future	Monitoring	To ensure that any Consumptive Water Taking or Recharge Reducing Activity ceases to be or never becomes a significant drinking water threat as prescribed by the Clean Water Act, 2006, the Ministry of Environment, Conservation and Parks (MECP) and the Grand River Conservation Authority (GRCA) in collaboration with the Municipalities and the City of Guelph, develop, maintain and implement a long-term monitoring program of shallow groundwater and surface water systems to assess potential surface water impacts from water takings and recharge reductions, where funding is available. All proposed monitoring programs and results will be regularly reported to the Water Resource Technical Working Group.	To ensure that any Consumptive Water Taking or Recharge Reducing Activity within a WHPA-Q ceases to be or never becomes a significant drinking water threat as prescribed by the Clean Water Act, 2006, the MECP and GRCA, in collaboration with the City of Guelph and the municipalities in the County of Wellington, are encouraged to develop and maintain long-term monitoring program of shallow groundwater and surface water systems to assess potential surface water impacts from water takings and recharge reductions and to assess and manage the impact on surface water, where funding is available. Agencies are requested to report to Water Resource Technical Working Group (WRTWG) on a regular basis on the monitoring results.	N/A	To ensure that any Consumptive Water Taking or Recharge Reducing Activity ceases to be or never becomes a significant drinking water threat as prescribed by the Clean Water Act, 2006, the Ministry of Environment, Conservation and Parks (MECP) and the Grand River Conservation Authority (GRCA), in consultation with the the City of Guelph and other municipalities develop and maintain a long-term monitoring program of shallow groundwater and surface water systems to assess potential surface water impacts from water takings and/or data gaps/recommendations from the Guelph-Guelph/Eramosa Tier 3 Study, where funding is available. All proposed monitoring programs and results will be regularly reported to the Water Resource Technical Working Group and other municipalities.
T19-Fund 1 T20	Tier 3 Water Budget model maintenance: MECP to consider providing ongoing funding to the GRCA and the municipalities to maintain and update the Tier 3 water budget model including the climate change assessment, to ensure the long-term sustainability of municipal systems in the City of Guelph and Wellington County municipalities.	Existing / Future	Specify Action	To ensure that any Consumptive Water Taking or Recharge Reducing Activity ceases to be or never becomes a significant drinking water threat as prescribed by the Clean Water Act, 2006, the Ministry of the Environment, Conservation and Parks should consider providing ongoing funding to the Grand River Conservation Authority and the Municipalities to maintain and update the following:  a. Tier 3 Models; b. Tier 3 climate change assessment models; c. updates to Tier 3 Studies; and d. long-term monitoring programs of groundwater and surface water systems to assess potential impacts from Consumptive Water Takings and / or Recharge Reducing Activities.	see policy T19-Fund-1	N/A	To ensure that any Consumptive Water Taking or Recharge Reducing Activity ceases to be or never becomes a significant drinking water threat as prescribed by the Clean Water Act, 2006, the Ministry of Environment, Conservation and Parks (MECP) provide ongoing funding to the Grand River Conservation Authority and the municipalities within the WHPA-Q and IPZ-Q for the following:  a. to maintain and update the Tier 3 Models; b. climate change assessment; and c. long-term monitoring program of shallow groundwater and surface waters systems to assess potential surface water impacts from water takings.

Policy Approach	Policy Approach Reference	Existing / Future	Tool	Draft Policy Text Wellington	Draft Policy Text Guelph	Draft Policy Text Waterloo Region	Draft Policy Text Halton Region
T19-Fund-2	Tier 3 Water Budget model maintenance: MECP to consider providing funding to the GRCA and municipalities for long-term monitoring programs of shallow groundwater and surface water systems to assess potential surface water impacts from water takings.	Existing / Future	Specify Action	(ref. policy WC-CW-21.5)	N/A	N/A	
T19-Fund-3	Climate change assessment model: MECP to consider providing funding for the Water Resources Technical Working Group (WRTWG) to develop and coordinate climate change assessment model.	Existing / Future	Specify Action		N/A	N/A	
Definitions	<b>County</b>			<b>County</b> - means the Corporation of the County of Wellington	N/A	N/A	N/A
	<b>Consumptive Water Taking</b>			<b>Consumptive Water Taking</b> - means an activity that takes water from an aquifer or a surface water body without returning the water taken to the same aquifer or surface water body, an activity prescribed as a drinking water threat pursuant to Regulation 287/07 under the Clean Water Act, 2006.			
	<b>Drinking Water Threat Disclosure Report</b>			<b>Drinking Water Threat Disclosure Report</b> – means a report required pursuant to the County of Wellington Official Plan which discloses whether or not any of prescribed drinking water threats identified in section 1.1 of Ontario Regulation 287/07 pursuant to the Clean Water Act are expected to occur on a property that is the subject of a development application or as a condition of site plan control for the development, redevelopment or site alteration of non-residential uses within a Wellhead Protection Area, Intake Protection Zone or Issue Contributing Area as may be required pursuant of the official plans of the County and other Municipalities.	N/A	N/A	N/A
	<b>Existing</b>			<b>Existing</b> – except where otherwise indicated in this Plan, existing means: a. A use, activity, building or structure at a location in a vulnerable area that is in compliance with all applicable regulations on the effective date of this Source Protection Plan, or at some point prior to the effective date of the Source Protection Plan with a demonstrated intent to continue; or b. An expansion of an existing use or activity, which may include a new building or structure to service the existing use or activity, where the expansion reduces the risk of contaminating drinking water; or c. The expansion, replacement or alteration of an existing building or structure associated with a significant drinking water threat that does not increase the risk of contaminating drinking water; or d. The conversion of an existing use to a similar use, provided it is demonstrated that the conversion will reduce the risk of contaminating drinking water.	as per existing definition in Source Protection Plan chapter	as per existing definition in Source Protection Plan chapter	as per existing definition in Source Protection Plan chapter

Policy Approach	Policy Approach Reference	Existing / Future	Tool	Draft Policy Text Wellington	Draft Policy Text Guelph	Draft Policy Text Waterloo Region	Draft Policy Text Halton Region
	Major Development			<b>Major Development</b> – means development consisting of: a. the creation of four or more lots; b. the construction of a building or buildings with a ground floor area of 500 m <sup>2</sup> or more; or c. the establishment of a Major Recreational Use.	N/A	N/A	<b>Major Development:</b> means development consisting of, (a) the creation of four or more lots, (b) the construction of a building or buildings with a ground floor area of 500 m <sup>2</sup> or more, or (c) the establishment of a major recreational use
	Major Recreational Use			<b>Major Recreational Use</b> – means a recreational use that requires large-scale modification of terrain, vegetation or both and usually also requires large-scale buildings or structures, including but not limited to the following: golf courses; serviced playing fields; serviced campgrounds; and ski hills. (Source: Greenbelt Plan)	N/A	N/A	<b>Major Recreational Use</b> – means a recreational use that requires large-scale modification of terrain, vegetation or both and usually also requires large-scale buildings or structures, including but not limited to the following: golf courses; serviced playing fields; serviced campgrounds; and ski hills. (Source: Greenbelt Plan)
	Municipalities			<b>Municipality(ies)</b> – means one or more of the seven lower tier Municipalities located within the County, consisting of the Township of Guelph-Eramosa, Township of Centre Wellington, Town of Erin, Township of Mapleton, Township of Puslinch, Town of Minto, and the Township of Wellington North <b>Planning Approval Authority(ies)</b> - means an approval authority, or approval authorities, pursuant to the Planning Act, RSO 1990, c. P.13, as amended (the “Planning Act”).	N/A	N/A	N/A
	Municipal Supply			<b>Municipal Supply</b> – means a municipal drinking water system pursuant to the Safe Drinking Water Act, 2002, s 2			
	New or Future			<b>New or Future</b> – means not existing, as defined herein.	as per existing definition in Source Protection Plan chapter	as per existing definition in Source Protection Plan chapter	as per existing definition in Source Protection Plan chapter
	Operating Authority			<b>Operating Authority</b> - means, in respect of a drinking water system, the person or entity that is given responsibility by the owner for the operation, management, maintenance or alteration of the system (Safe Drinking Water Act, 2002)			
	Planning Approval Authority(ies)			<b>Planning Approval Authority(ies)</b> - means an approval authority, or approval authorities, pursuant to the Planning Act, RSO 1990, c. P.13, as amended (the “Planning Act”).			
	Recharge Reducing Activity			<b>Recharge Reducing Activity</b> – means an activity that reduces the recharge of an aquifer, an activity prescribed as a drinking water threat pursuant to Regulation 287/07 under the Clean Drinking Water Act, 2006.			
	Sewage Works			<b>Sewage Works</b> - means any works for the collection, transmission, treatment and disposal of sewage or any part of such works, pursuant to the Ontario Water Resources Act RSO 1990, s. 1, as amended.			
	Stormwater Management Facility(ies)			<b>Stormwater Management Facility(ies)</b> – means one or more of the following measures constructed to collect, control, infiltrate and / or discharge stormwater run-off and / or groundwater. • Stormwater management ponds (i.e. wet ponds) • Dry or retention ponds • Constructed wetlands • Low impact development measures including, but not limited to, infiltration galleries / basins, soak away pits, pervious pipe (subsurface) and/or permeable pavement • Infiltration trenches (open to surface) including but not limited to swales, vegetated strips • Lot level infiltration measures used to infiltrate storm run-off from Salt Application Areas. • Measures used to increase groundwater recharge through enhanced infiltration, e.g. measures used to infiltrate roof run-off and groundwater from foundation drains or sumps.			
	Tier 3 Study			<b>Tier 3 Study</b> – means one or more of the component reports, memorandums and / or data that together form the official record for an accepted Tier 3 Water Budget and Risk Assessment as referenced in the Grand River Assessment Report and completed in accordance with the Director’s Technical Rules, as amended. This includes, but is not limited to, reports on physical characterization, model development, risk assessment, uncertainty analyses, risk management measures evaluation processes, threats management strategies, climate change assessment, peer review, municipal peer review and any supporting documents / memorandums.			
	Tier 3 Model			<b>Tier 3 Model</b> – means a computer-based representation of the physical system. Groundwater flow is then calculated within the model using complex mathematical calculations. The calibrated groundwater flow model is used to calculate portions of the water budget and to evaluate the Risk Assessment Scenarios referenced in the Grand River Assessment Report and completed in accordance with the Director’s Technical Rules, as amended.			
	Water Supply Master Plan			<b>Water Supply Master Plan</b> – means a long-range plan, for a Municipality, which integrates water supply infrastructure requirements for Existing and Future land use with environmental assessment principles and is prepared in accordance with the Municipal Class Environmental Assessment process (Source: Municipal Engineers Association, October 2000 as amended).			

## LAKE ERIE REGION SOURCE PROTECTION COMMITTEE

**REPORT NO. SPC-21-06-03**

**DATE:** June 17, 2021

**TO:** Members of the Lake Erie Region Source Protection Committee

**SUBJECT: S.34 Draft Updated Grand River Assessment Report and Source Protection Plan: Town of Grand Valley**

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### **RECOMMENDATION:**

THAT the Lake Erie Region Source Protection Committee receives report SPC-21-06-03 – S.34 Draft Updated “Grand Valley” Grand River Assessment Report and Source Protection Plan – for information;

AND THAT the Lake Erie Region Source Protection Committee direct staff to release the draft Updated “Grand Valley” Grand River Assessment Report and Source Protection Plan for a 30-day public consultation period from June 21 to July 20, 2021.

### **REPORT:**

The most recent update of the Grand River Source Protection Plan was approved by the Ontario Ministry of the Environment, Conservation and Parks (MECP) and came into effect on February 3, 2021. Since then additional updates have been undertaken, the latest impacting the Town of Grand Valley, Dufferin County.

The draft Updated “Grand Valley” Grand River Assessment Report and Source Protection Plan pre-consultation period ended on May 11, 2021. Comments received from the Ministry of the Environment, Conservation and Parks (MECP) were considered for incorporation into the draft updated plan. No comments were received regarding the assessment report. A formal public consultation period begins on June 21 and ends on July 20, 2021. Comments received during the public consultation period will be reviewed and the assessment report and plan updated where appropriate. The revised draft updated Grand River Source Protection Plan will be brought to the committee on September 9, 2021, and is expected to be submitted to the MECP by the Grand River Source Protection Authority at its next meeting.

### **Revisions to the “Grand Valley” Grand River Assessment Report**

The draft Updated “Grand Valley” Grand River Assessment Report includes technical updates to municipal and non-municipal sections. **Table 1** below illustrates the high-level changes within each section and references the Source Protection Committee (SPC) report which contains more detailed information.

**Table 1: Grand River Assessment Report Amendments for the draft Updated “Grand Valley” Grand River Assessment Report Update**

<b>Assessment Report Section</b>	<b>Description of Amendments</b>	<b>SPC Report Reference</b>
<b>Section 1</b> Introduction	Updated to reflect changes in content referenced in the body of the assessment report.	N/A
<b>Section 5</b> Dufferin County	Updated to reflect changes to Grand Valley Water Supply System, including new WHPA, vulnerability scoring and threats assessment.	SPC-21-04-02
<b>Section 26</b> Conclusions	Updates to reflect changes to municipal systems within the assessment report.	N/A
<b>Section 27</b> References	Updated to reflect changes in content referenced in the body of the assessment report.	N/A

### **Revisions to the “Grand Valley” Grand River Source Protection Plan**

The draft Updated “Grand Valley” Grand River Source Protection Plan includes a new Town of Grand Valley administrative transition policy and an update to Section 5, Schedule A: the policy applicability map for the Town of Grand Valley Well Supply. Updated Schedule A was brought to the SPC alongside assessment report updates in report SPC-21-04-02.

The draft updated sections of the “Grand Valley” Grand River Assessment Report and Source Protection Plan and Explanatory Document are available on the June 17, 2021 eScribe meeting site. Sections that have not been updated are posted on the [Lake Erie Region website](#).

### **Pre-consultation Process**

As part of the s.34 update process, municipalities and ministries affected by the proposed amendments were notified of the proposed changes and the opportunity for pre-consultation. The draft Updated Grand River Source Protection Plan pre-consultation period began on April 6, and ended on May 11, 2021. Lake Erie Region received source protection plan pre-consultation comments for consideration from the MECP (**Appendix A**). Comments received were considered for incorporation, if applicable, into the updated plan. No comments were received regarding the assessment report.

### **Public Consultation Process**

A formal public consultation period will begin on June 21 and end on July 20, 2021. During this time, the proposed amendments will be published on [Lake Erie Source Protection Region’s website](#). Due to the ongoing COVID-19 pandemic, viewing the plan in person will not be available; however, alternate arrangements will be made if requested.

### **Council Resolutions**

Section 34 of the *Clean Water Act, 2006* (CWA) requires that source protection authorities obtain a municipal council resolution from each municipality affected by the amendments. Council resolutions in support of the amendments to the draft Updated “Grand Valley” Grand River Assessment Report and Source Protection Plan were received from Dufferin County and the Town of Grand Valley.

### **Public Letter Notification**

As per O. Reg. 287/07 section 50(2), persons with properties affected by the proposed changes to the wellhead protection areas in the Grand River watershed require notification letters highlighting the updates and public consultation process. Property owner notification letters will be mailed to persons affected within the new WHPA.

### **Timeline for “Grand Valley” Grand River Source Protection Plan Update**

**Table 2** presents the key milestones for completing the necessary technical and policy work, undertaking the necessary formal pre-consultation, public consultation, and submitting the draft Updated “Grand Valley” Grand River Assessment Report and Source Protection Plan to the MECP.

**Table 2: Key milestones for the draft Updated “Grand Valley” Grand River Assessment Report and Source Protection Plan**

<b>Activity</b>	<b>Date</b>	<b>Complete</b>
Completion of technical study for new Grand Valley Water Supply System WHPA	March, 2021	✓
Municipal and Ministry pre-consultation on draft updates made to the Grand River Assessment Report and Source Protection Plan	April 6 – May 11, 2021	✓
SPC receives draft Updated Grand River Assessment Report and Source Protection Plan for consideration and release for public consultation	June 17, 2021	✓
Council resolutions in support of the amendments to the draft Updated Grand River Assessment Report and Source Protection Plan	April – June, 2021	✓
Letter notification for properties affected by changes to the draft Updated Grand River Assessment Report and Source Protection Plan	Mid-June 2021	
Formal public consultation for draft Updated Grand River Assessment Report and Source Protection Plan	June 21 – July 20, 2021	
SPC receives draft Updated Grand River Assessment Report and Source Protection Plan and public consultation comments for consideration; SPC releases the document to the Grand River Source Protection Authority	September 9, 2021	
Grand River Source Protection Authority receives revised Updated Grand River Assessment Report and Source Protection Plan to for submission to the MECP.	September 24, 2021	

## Next Steps

Following the public consultation period, the Lake Erie Region Source Protection Committee will consider any comments received and proposed plan revisions at their meeting on September 9, 2021. The revised draft updated plan will then be released to the Grand River Source Protection Authority for submission to the MECP.

Prepared by:



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Ilona Feldmann,  
Source Protection Program Assistant

Approved by:



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Martin Keller, M. Sc.  
Source Protection Program Manager

**Appendix A**  
**Pre-consultation Comments**

Table 1: Draft Updated “Grand Valley” Grand River Source Protection Plan - pre-consultation comments				
#	Comment Source	SPP Section	Comment	How the Comment will be Addressed
1	MECP	Section 5, Town of Grand Valley	Please give some consideration if it would be appropriate to edit the timing of implementation for certain existing threat policies as a result of these amendments. For example, where Prescribed Instrument or Risk Management Plan amendments are required for any new vulnerable areas, consider if the implementation timeline as currently noted in plan (3 years) is still suitable or if a shorter timeframe would be more appropriate. Some committees may also choose to revise or amend affected policies to reflect the same timing (i.e. within 3 years of the effective date of the plan or amendments).	Comment considered and decision made to retain the three-year implementation timeline.
2	MECP	Section 5, Town of Grand Valley	Also consider if it would also be appropriate for the source protection plan to include edits to any transition provisions. Transition policies were originally included to allow anyone with an in-progress application, or the first of many stage of approvals confirmed, to be subject to existing policies even if the activities were not actually established prior to the effective date of the plan. With any amendments, a review of the transition provisions should be considered to determine if the existing and future threat policies have different policy outcomes - namely manage for existing and prohibit for future. If they do, and without modifying the transition policies, any person or business who may have secured initial approval in the affected vulnerable areas (where significant threat policies apply) may be prohibited from moving forward in the approvals process.	Propose to include new transition policy DC-GV-CW-1.1.3.

## LAKE ERIE REGION SOURCE PROTECTION COMMITTEE

REPORT NO. SPC-21-06-04

DATE: June 17, 2021

TO: Members of the Lake Erie Region Source Protection Committee

SUBJECT: **AMENDED: S.34 Revised Updated Grand River Assessment Report and Source Protection Plan: Wellington County and Region of Waterloo**

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### RECOMMENDATION:

THAT the Lake Erie Region Source Protection Committee receives report SPC-21-06-04 – S.34 Revised Updated “Wellington / Region of Waterloo” Grand River Assessment Report and Source Protection Plan – for information;

AND THAT the Lake Erie Region Source Protection Committee releases the revised Updated “Wellington / Region of Waterloo” Grand River Assessment Report and Source Protection Plan to the Grand River Source Protection Authority for submission to the Ministry of the Environment, Conservation and Parks, along with the municipal council resolutions received, and the comments as presented in this report.

### REPORT:

Work under s.34 of the *Clean Water Act, 2006* (CWA) to update the Grand River Assessment Report and Source Protection Plan has been completed for proposed updates that affect Wellington County and the Region of Waterloo (water quality and quantity).

Source protection technical work and policy updates, where necessary, have been completed and presented to the Lake Erie Region Source Protection Committee (SPC) in previous reports. A formal public consultation period was held from January 25 to March 8, 2021. All comments received, along with additional proposed revisions, are presented in the revised Updated Grand River Assessment Report and Source Protection Plan for consideration by the SPC and release to the Grand River Source Protection Authority for submission to the Ministry of the Environment, Conservation and Parks (MECP).

### Pre-consultation and Public Consultation Process

As part of the s.34 update process, municipalities and ministries affected by the proposed amendments were notified of the proposed changes and the opportunity for pre-consultation. Pre-consultation comments were received from the Township of Centre Wellington, MECP and the Ministry of Natural Resources and Forestry (MNRF) (See report SPC-21-01-02). A few responses to MECP comments on the assessment report required additional information to be provided in supplementary technical memos. That information has been included in **Appendix A**.

The public consultation period began on January 25 and ended on March 8, 2021. As per O. Reg. 287/07 section 50(2), persons with properties affected by the proposed changes in Wellington County and the Region of Waterloo were sent notification letters highlighting the updates and public consultation process. Due to the ongoing COVID-19 pandemic, Lake Erie Region hosted

two virtual public open houses on February 17 and 18, 2021 for the s.34 “Wellington / ROW” Grand River Source Protection Plan update. The virtual public open houses included online webinars, a video presentation and other supporting materials. The video and webinars focussed on technical study results for the updated municipal water supply systems and changes to plan policies.

Section 34 of the CWA requires that source protection authorities obtain a municipal council resolution from each municipality affected by the amendments. Municipal Council resolutions in support of the amendments to the revised Updated Grand River Assessment Report and Source Protection Plan were received from Wellington County, Township of Centre Wellington, Township of Mapleton, Township of Puslinch, Town of Erin, the Region of Waterloo and Township of Woolwich.

Lake Erie Region received public consultation comments on the assessment report and the source protection plan (**Appendix B, Tables 1, 2, 3 and 4**). The comments have been sorted into four tables according to whether or not they address the amendments proposed in the assessment report or the source protection plan:

- **Table 1:** Revised Updated Grand River Assessment Report – Public consultation comments received that address the amendments proposed in this update
- **Table 2:** Revised Updated Grand River Assessment Report – Other public consultation comments received not related to the amendments proposed in this update
- **Table 3:** Revised Updated Grand River Source Protection Plan – Public consultation comments received that address the amendments proposed in this update
- **Table 4:** Revised Updated Grand River Source Protection Plan – Other public consultation comments received not related to the amendments proposed in this update

Please note that proposed Wellington County and Region of Waterloo policy numbers have changed in response to public consultation comments, and that the comments presented in Tables 1, 2, 3 and 4 may reference policy numbers that are now out of date.

### **Revisions to the Grand River Assessment Report**

The revised Updated Grand River Assessment Report primarily includes technical updates to municipal and non-municipal sections. See report SPC-21-01-02, **Table 1** for high-level changes within each section. The table also references the Source Protection Committee (SPC) report, which contains more detailed information.

### **Revisions to the Grand River Source Protection Plan**

The revised Updated Grand River Source Protection Plan includes new water quantity policies for both Wellington County and the Region of Waterloo. Source Protection Plan municipal sections were brought to the SPC alongside the assessment report sections as detailed in report SPC-20-10-04.

The revised Updated Grand River Assessment Report and Source Protection Plan are available in their entirety on the June 17, 2021 eScribe meeting site.

## Submission Comments

The Source Protection Program under the CWA is designed with continuous improvements in mind and will require updates to the source protection plan and assessment report when new information, changes to municipal supply infrastructure and advanced technologies become available. The submission of the revised Updated Grand River Assessment Report and Source Protection Plan for the Grand River Source Protection Area marks the fourth s.34 update completed in accordance with the updated Ontario Regulation 205/18, which came into force on July 1, 2018 where a new or changed municipal drinking water system within a source protection area requires a Minister approved assessment report and source protection plan before drinking water can be distributed to the public.

The following list includes ongoing work and comments staff recommend should be submitted to the MECP together with the revised updated assessment report and plan, pre-consultation and public consultation comments, and municipal resolutions:

### Ongoing Work

- Guelph-Guelph/Eramosa water quantity policy development
- Proposed items identified in the Grand River S.36 Workplan, such as:
  - Addressing Technical Rule changes
  - Assessing environmental monitoring data
  - Updating assessment report as a result of further municipal drinking water system infrastructure changes, e.g., new wells or intakes
  - Policy review and revisions to address gaps and/or implementation challenges
  - Update to Tier 3 groundwater models
  - Re-modeling of existing vulnerable areas based on new and updated information
  - Transport pathway identification and review

### Comments

- Need for long-term, multi-year sustainable provincial funding for conservation authorities for continued program oversight and support to ensure successful implementation of the Source Protection Plans and to meet the mandatory legal responsibilities of conservation authorities on an ongoing basis.
- Need for simple and easy to administer future program processes, e.g., annual progress reporting and plan update processes, to not burden conservation authorities with complex and resource intensive processes and reporting requirements.
- Need for provincial funding and support for maintenance of scientific technical tools, e.g., surface water and groundwater models, including Tier 3 models.

## Timeline for Grand River Source Protection Plan Update

**Table 1** presents key milestones for completing the necessary technical and policy work, undertaking the necessary formal public consultation, and submitting the revised Updated Grand River Source Protection Plan to the MECP. Next step in the update process is for the committee to consider the revised updated plan, assessment report and consultation comments and release the documents to the Grand River Source Protection Authority for submission to the MECP.

**Table 1: Key milestones for the revised updated Grand River Assessment Report and Source Protection Plan**

Activity	Date	Complete
Completion of Centre Wellington Tier 3 Water Budget and Risk Assessment	June, 2020	✓
Completion of technical studies to update WHPAs for Mannheim ASR (Kitchener), Pinebush and Clemens Mill (Cambridge)	August, 2020	✓
Municipal and Ministry pre-consultation on draft updates made to the Grand River Assessment Report and Source Protection Plan	October 5 – November 16, 2020	✓
SPC receives draft Updated Grand River Assessment Report and Source Protection Plan for consideration and release for public consultation	January 21, 2021	✓
Letter notification for properties affected by changes to the draft Updated Grand River Assessment Report and Source Protection Plan	Mid-January 2021	✓
Council resolutions in support of the amendments to the draft Updated Grand River Assessment Report and Source Protection Plan	October 2020 – January 2021	✓
Formal public consultation for draft Updated Grand River Assessment Report and Source Protection Plan	January 25 – March 8, 2021	✓
SPC receives draft Updated Grand River Assessment Report and Source Protection Plan and public consultation comments for consideration; SPC releases the document to the Grand River Source Protection Authority	June 17, 2021	✓
Grand River Source Protection Authority receives revised Updated Grand River Assessment Report and Source Protection Plan to for submission to the MECP.	August 27, 2021	

Prepared by:



Ilona Feldmann  
Source Protection Program Assistant

Approved by:



Martin Keller, M. Sc.  
Source Protection Program Manager

## **Appendix A**

Supplementary information in response to Ministry of the Environment, Conservation and Parks pre-consultation comments

## TECHNICAL MEMORANDUM

**DATE** February 23, 2021

**Project No.** 19133989

**TO** Don Corbett, Senior Hydrogeologist  
Water Services, Region of Waterloo

**CC** Eric Hodgins, Region of Waterloo

**FROM** Jennifer Hancox and John Piersol

**EMAIL** [jennifer\\_hancox@golder.com](mailto:jennifer_hancox@golder.com)

### UPDATED WELLHEAD PROTECTION AREA DELINEATION AND VULNERABILITY SCORING MANNHEIM AQUIFER STORAGE AND RECOVERY WELLS

#### 1.0 INTRODUCTION

Golder Associates Ltd. (Golder) was retained by the Region of Waterloo (the Region) to update the Wellhead Protection Area (WHPA) delineation and vulnerability scoring for the Mannheim Aquifer Storage and Recovery (ASR) well field to include the addition of two new wells to the well-system as part of the ASR Stage 1B Expansion Program (wells RCW3 and RCW4). This technical memorandum describes the methodology used and the resultant WHPA delineation and vulnerability scoring. In addition, the percent managed lands, livestock density and percent impervious area were calculated for the delineated WHPA.

#### 1.1 Background

The Lake Erie Region Source Protection Area (LERSPA) Approved Assessment Report (LERSPC, 2020) delineated WHPAs for selected well fields in the Region (Chapter 8). WHPAs correspond to the travel time of potential contaminants to a municipal well. New WHPAs and vulnerability scoring for most the Region's water supply wells were completed in 2017 (Matrix, 2017a; 2017b; and 2017c) while WHPAs and vulnerability scoring for the Mannheim ASR well field were completed in 2018 (Golder, 2018). This technical memorandum describes the updated WHPAs and vulnerability scoring completed by Golder for the Mannheim ASR well field. The updated WHPAs and vulnerability scoring will be included in a future amended Assessment Report.

The Mannheim ASR well field includes the following wells:

- ASR injection/recovery wells ASR1, ASR2, ASR3, ASR4 and ASR5 (previously RCW1), which are screened from 52 to 80 metres below ground surface (mbgs) in the Middle Waterloo Moraine Aquifer (Ontario Geological Survey conceptual aquifer unit AFB2 per Bajc and Shirota, 2007); and
- ASR recovery wells RCW2 and new wells RCW3 and RCW4 are screened from 62 to 73 mbgs also in aquifer unit AFB2.

The adjacent Mannheim municipal well fields have wells screened in the same aquifer and include Mannheim East (wells K21, K25 and K29), Mannheim Peaking (wells K91, K92, K93 and K94) and Mannheim West (wells K23, K24 and K26).

Pumping tests were conducted at new wells RCW3 and RCW4 in October 2019 and February 2020, respectively. The pumping tests were conducted for a duration of 24 hours at rates of 50 L/s. Based on the pumping tests the aquifer hydraulic conductivity was interpreted as 190 m/day from RCW3 and 350 m/day from RCW4 (Stantec, 2020).

The WHPAs for the ASR and RCW wells cannot be delineated in the standard way since the ASR system is operated to be water-balance neutral, meaning water extraction is balanced by an equal volume of water injection within the same year. For the previous ASR well WHPA delineations only WHPA-A and WHPA-B areas were delineated for these wells.

In a previous study, AECOM in association with Golder was retained by the Region to develop the preliminary design for the Stage 2 ASR system expansion at the Mannheim Water Treatment Plant. This previous study included hydrogeological field studies and the development of a groundwater model and predictive modelling scenarios as documented in the following report:

- Golder Associates Ltd. (Golder) Aquifer Storage and Recovery Stage 2 Expansion Project: Phase 1 Hydrogeology Report, July 2017.

The Mannheim ASR system groundwater model developed previously by Golder was used in 2018 to update the Mannheim ASR WHPAs and vulnerability scoring as documented in the following report:

- Golder Associates Ltd. (Golder) Updated Wellhead Protection Area Delineation and Vulnerability Scoring Mannheim Aquifer Storage and Recovery Wells – Technical Memorandum, November 19, 2018.

Throughout the completion of this study, Golder reviewed the following additional background materials:

- Matrix Solutions Inc. (Matrix) Region of Waterloo Wellhead Protection Area Delineation Study, February 2017;
- Matrix Groundwater Vulnerability Assessment for the Region of Waterloo Using a Modified Intrinsic Susceptibility Approach, June 2017;
- Matrix Transport Pathways Assessment and Vulnerability Scoring for an Updated Assessment Report in the Region of Waterloo, September 2017; and
- Lake Erie Region Source Protection Committee Grand River Source Protection Area Approved Assessment Report, June 2, 2020.

## 2.0 METHODOLOGY

The methodology used in this study followed the *Technical Rules: Assessment Report* set out by the Ontario Ministry of the Environment, Conservation and Parks (MECP) Clean Water Act (MOECC, 2009a).

This study consisted of updating the existing model for use in this study including the addition of two new wells (RCW3 and RCW4), delineating WHPAs, scoring the vulnerability, assessment of uncertainty and assessing

percent managed lands, livestock density and percent impervious area of the new WHPA, as described in the following sub-sections.

## 2.1 Groundwater Model Update

The existing groundwater model of the study area was used to delineate the updated Mannheim ASR WHPA. The following is a summary of the model. For a more detailed description of the model development and calibration please refer to Golder (2017).

The Mannheim ASR MODFLOW model (Golder, 2017) simulates an area of approximately 45 km<sup>2</sup> centred on the Mannheim Water Treatment Plant area. The numerical mesh consists of two layers representing the Mannheim Aquifer unit bounded above by the topographic ground surface and below by the Maryhill Till aquitard. The elevations of these bounds were interpolated from borehole logs and subsequently imported to MODFLOW. Constant head and no flow boundaries were assigned around the edge of the model based on groundwater flow mapping, surface water features and inferred groundwater flow divides. Drainage features in the landscape were represented either as river boundary conditions (Alder Creek) or as drain boundary conditions.

Hydraulic conductivity and recharge were calibrated to measured groundwater elevations and observed groundwater responses to pumping in the ASR wells. As described in detail in Golder (2017), the model was calibrated to observed static groundwater flow conditions from September 2006 to September 2008, the operational start-up period of the ASR system from November 2005 through to December 2006 and transient groundwater responses to controlled operation of the Stage 1 ASR system over a 30-day period in June 2010.

As part of the current scope, the saturated thickness encountered at the new wells RCW3 and RCW4 was compared to the existing 2017 groundwater model and was found to be consistent; therefore no changes were made to the model layer thicknesses.

Table 1 shows a comparison of the hydraulic conductivity values estimated from the pumping tests at the new wells (Stantec, 2020) to the values in the 2017 model and the revised 2020 model.

**Table 1: Hydraulic Conductivity Values at New Well Sites RCW3 and RCW4**

Well Name	Hydraulic Conductivity Estimate from Pumping Test (Stantec, 2020) (m/day)	2017 Model Hydraulic Conductivity (m/day)	2020 Model Hydraulic Conductivity (m/day)
RCW3	190	200	200
RCW4	350	200	350

The hydraulic conductivity in the 2017 model in the vicinity of RCW3 was left unchanged at 200 m/day as it was similar to the hydraulic conductivity value estimated from the pumping test and the simulation results for this test matched the pumping test results as further described below.

Modifications to the previous model were limited to the addition of the two new recovery wells, updates to the municipal well pumping rates applied in the model and a change in the hydraulic conductivity zones in the vicinity of RCW4 from 200 m/day to 350 m/day and as further described below.

The simulated model response was checked against the observed response to the two 24-hour pumping tests at RCW3 and RCW4. The results of the simulated drawdown compared to the observed drawdown are included in Table 2 for the RCW3 pumping test.

**Table 2: RCW3 Pumping Test Model Verification Results**

Well Name	Distance from Pumping Well (m)	Observed Drawdown (m)	Simulated Drawdown (m)
RCW3	0	12.65	1.62*
ASR4	180	0.06	0.10
K-ASR-OW1-16-A	110	0.18	0.20
K-ASR-TW1-08	6	0.94	0.71
K-ASR-TW13-85-A	180	0.04	0.09
K-ASR-TW2-08	230	0.04	0.08
K-MA-ASR-OW1-08-A	170	0.07	0.11

**NOTE:**

\*Simulated drawdown in RCW3 not including well losses/effects of well efficiency.

For RCW3, based on a distance-drawdown assessment from the monitoring well observations during the pumping test, a total drawdown of 1.85 m would be expected at RCW3, compared to an observed drawdown of 12.65 m, suggesting a well efficiency of 15% (Stantec, 2020). Considering the expected well losses in the pumping well, the simulated drawdown matched the observed drawdown from the RCW3 pumping test closely as shown in Table 2.

The results of the simulated drawdown compared to the observed drawdown are included in Table 3 for the RCW4 pumping test for both the 2017 model and the 2020 model with the hydraulic conductivity adjusted to match the pumping test estimate.

**Table 3: RCW4 Pumping Test Model Verification Results**

Well Name	Distance from Pumping Well (m)	Observed Drawdown (m)	Simulated Drawdown (m) 2017 model K = 200 m/day	Simulated Drawdown (m), 2020 model K = 350 m/day
RCW4	0	1.35	1.52*	0.96*
RCW2	190	0.08	0.10	0.08
K-MA-ASR-OW4-09-A	190	0.07	0.09	0.07
K-MA-ASR-TW4-08	15	0.33	0.52	0.39

**NOTE:**

\*Simulated drawdown in RCW4 did not include well losses/effects of well efficiency.

For RCW4, based on a distance-drawdown assessment from monitoring well observations during the pumping test, a drawdown of 0.75 m would be expected at the pumping well compared to observed drawdown of 1.35 m, indicating a well efficiency of 55% (Stantec, 2020). Considering the expected well losses in the pumping well, the simulated drawdown matched the observed drawdown from the RCW3 pumping test closely for the 2020 model with the hydraulic conductivity increased in the vicinity of the well as shown in Table 3. Prior to adjusting the hydraulic conductivity in the model to match the estimate derived from the pumping test, the 2017 model was over-predicting the drawdown in the pumping well and nearby observation well ASR-TW4-08 (distance of 15 m) and the modelled drawdown was within 2 cm of observed at wells RCW2 and ASR-OW4-09 (at distances of 190 m). The revised hydraulic conductivity zone was limited to within 100 m of RCW4 to maintain the close calibration at observation wells RCW2 and ASR-OW4-09 and to avoid disrupting the calibration previously achieved at the nearby wells during the extensive calibration work performed during the model development (Golder, 2017).

For the Mannheim ASR well field wells, the modelling schedule (over a period of two years) was applied consistently with Scenario A of the Golder (2017) ASR modelling assessment and the Golder (2018) WHPA updates. This consisted of a transient annual cycle including a 30-day pumping period, followed by a 180-day storage period in which all pumping/injection ceases, followed by a 60-day injection period, and a 95-day storage period. The transient modelling schedule is summarized in Table 4.

**Table 4: WHPA Transient Modelling Schedule (2 years)**

Time Period	Start (days)	End (days)	Total Days	Action
1	0	30	30	Pumping
2	30	210	180	Storage
3	210	270	60	Injection
4	270	365	95	Storage

The municipal well injection and pumping rates in the model for the ASR well field wells were updated for use in the 2020 WHPA delineation, maximizing the pumping rates to be equivalent to the permitted limit of 23,674 m<sup>3</sup>/day. The rates used for ASR1 through ASR5 and RCW2 were similar to the 2017 Well Performance Optimization rates for the Stage 1 ASR System (Stantec, 2019). The rates for new wells RCW3 and RCW4 were set at the maximum pump capacity of these wells. The injection rates were distributed evenly between the five ASR wells. Injection and extraction rates for the ASR wells are shown in Table 5. For the other Mannheim well field municipal wells, the rates were assigned consistently with those used in the Matrix (2017a) WHPA delineations. Pumping rates for the other Mannheim well fields are summarized in Table 6.

**Table 5: 2020 WHPA Injection and Extraction Rates - ASR Well Field**

Production Well	Injection Rate (m <sup>3</sup> /day)	Pumping Rate (m <sup>3</sup> /day)
ASR1	2,367	2,250
ASR2	2,367	1,800
ASR3	2,367	1,365
ASR4	2,367	2,860
ASR5 (Previously RCW1)	2,367	4,600
RCW2	0	4,320
RCW3	0	2,592
RCW4	0	3,888
<b>Total Volume (m<sup>3</sup>)</b>	<b>710,226</b>	<b>710,226</b>
<b>Daily Rate (m<sup>3</sup>/day)</b>	<b>11,837</b>	<b>23,674</b>

**Table 6: Mannheim Well Fields Pumping Rates**

Well Field	Production Well	Pumping Rates (L/s)	Pumping Rates (m <sup>3</sup> /day)
Mannheim East	K21	25	2,160
	K25	50	4,320
	K29	40	3,456
Mannheim West	K23	10	864
	K24	35	3,024
	K26	80	6,912
Peaking	K91	30	2,592
	K92	30	2,592
	K93	30	2,592
	K94	35	3,024

## 2.2 WHPA Delineation

The delineation of WHPAs represents the area projected to land surface where groundwater can be captured by pumping at the municipal wells. The annual cycle of pumping and injection described in Section 2.1 and Table 4 and Table 5 was simulated transiently for a period of 2 years using the groundwater model.

Reverse particle tracking was implemented with the release of twenty particles in a 2.5 m radius around each ASR well and tracked backwards through time over a period of two years. This reverse tracking simulates the theoretical distance from which groundwater (and hence potential contaminants) would take to travel to the well. The reverse particle tracking is shown in Figure 1, colour coded by pumping/injection and pause periods (as per Section 2.1).

The 2-year capture zone (WHPA-B) is defined by drawing an area that encompasses the combined particle traces for the 2-year travel. In order to take into account the uncertainty of the groundwater flow direction and travel time, conservative adjustments were made to the capture zone to account for conceptual model uncertainty. The area of the WHPA was increased by 20% to account for uncertainty in the aquifer material properties. Further, the orientation of the capture zone is adjusted by  $\pm 5$  degrees about the well to account for uncertainty in the regional flow direction. The combination of both these adjustments were used to delineate the final WHPA, which is shown in Figures 1 and 2. Note that the WHPA-A zones are also shown on Figure 2, which are the 100 m radius around the wells.

Generally, the capture zones cover most of the Mannheim Water Treatment Plant site and extend to the south. The land use overlying most of the WHPA out to the 2-year time of travel is primarily commercial, residential, and agricultural.

## 2.3 Vulnerability Scoring

Surface and sub-surface contaminants may pose a risk to groundwater resources and can have long-lasting impacts that can impair water quality conditions. The intrinsic vulnerability of the aquifer refers to the level of protection provided by the geological materials overlying the aquifer and is independent of the potential contaminant. The vulnerability assessment and scoring involves assigning the intrinsic vulnerability of groundwater, identification of transport pathways that may increase the vulnerability, and assigning vulnerability scores within the WHPA. The intrinsic vulnerability of groundwater and the identification of transport pathways that may increase the vulnerability were completed previously as described by Matrix (2017b and 2017c) and is presented on Figure 3 for the ASR well field aquifer (AFB2).

The vulnerability scores were applied by overlying the existing intrinsic vulnerability mapping for the Mannheim ASR aquifer (AFB2) and the WHPA zones. The scoring of the vulnerability from 2 (lowest vulnerability) to 10 (highest vulnerability) was completed as per the Technical Rules. Within the WHPAs, the vulnerability of the aquifers was scored as follows:

**Table 7: Wellhead Protection Area Vulnerability Scores**

Groundwater Intrinsic Vulnerability Category	Location Within a Well Head Protection Area			
	WHPA-A	WHPA-B	WHPA-C	WHPA-D
High	10	10	8	6
Medium	10	8	6	4
Low	10	6	2	2

The vulnerability scoring was conducted for the WHPA-A and WHPA-B zones (no WHPA-C or WHPA-D zones were delineated for this well field as described previously). The vulnerability scoring map is shown on Figure 4 and was prepared to provide an indication of the relative vulnerability of the aquifer within the WHPAs and will be used for the threat risk scoring procedure (not part of this study). WHPA-A (100 m radius zone) is categorized as a vulnerability of 10 and WHPA-B (2-year time of travel capture zone) is categorized as a vulnerability of 10, 8 or 6 depending on the intrinsic vulnerability category.

## 2.4 Uncertainty Assessment

An uncertainty assessment associated with the development of WHPAs and vulnerability mapping is required in order to assess the level of confidence in the results and determine the need for additional data collection and/or analysis as part of future assessments. Uncertainty ratings within each WHPA are to be designated as either high or low and can vary within the zones of the WHPA. The following are some of the conditions where a low uncertainty rating would be considered:

- In areas where the density of the data is high, and there is a high level of confidence in the quality of the data;
- In areas where hydrogeological studies have been completed to confirm the regional scale mapping that has been completed; and
- Where a numerical model has been sufficiently calibrated to observe data that includes aquifer testing at the well location, and water level data across the capture zone footprint, and there is a high level of confidence in the representation of the flow system (and flow system boundaries) through local hydrogeological studies, or subsequent verification simulations.

Within the Technical Rules a specific outline to determine the uncertainty is not given but indications are provided that the following factors are to be considered in the analysis:

- The distribution, variability, quality and relevance of data used in the assessment;
- The ability of the methods and models used to accurately reflect the flow processes in the hydrogeological system;

- The quality assurance and quality control procedures applied;
- The extent and level of calibration and validation achieved for models used or calculations or general assessments completed; and
- The accuracy to which the groundwater vulnerability categories effectively assess the relative vulnerability of the underlying hydrogeological features.

For the Mannheim area, in addition to the regional studies that have been conducted, local hydrogeological studies have also been completed including high quality field data collected and locally calibrated numerical modelling. The uncertainty scoring is based on both the WHPA delineation and the intrinsic vulnerability mapping and therefore the overall uncertainty is related to the combined uncertainty of these two tasks.

Based on the above criteria, the WHPAs, intrinsic vulnerability and resulting vulnerability scoring for the Mannheim ASR well field are therefore estimated to have a low uncertainty rating.

## 2.5 Percent Managed Lands, Livestock Density and Percent Impervious Scoring

Managed lands are defined as land to which agricultural source material, commercial fertilizer or non-agricultural source material are potentially applied (MOECC, 2009b). Golder reviewed publicly available data to identify areas of intensive agriculture or other land management activities consisting of the following two components:

- Delineation of Agricultural Managed Lands - this was estimated to be approximately 14 hectares (Ha) within the WHPA capture area (total area of 69 Ha) using air photo-based delineation of cultivated lands and review of Southern Ontario Land Resource Information System (SOLRIS) mapping; and
- Delineation of Non-Agricultural Managed Lands - this was completed using air photo-based delineation of lawn/turf land use where fertilizer/nutrients may be applied and review of SOLRIS mapping. Residential lawns were not included as part of the non-agricultural managed land because they likely do not represent a significant nutrient loading to municipal aquifers (LERSPC, 2020). The estimated non-agricultural managed lands were estimated to be 5 Ha.

The percent managed land was 28% and categorized as <40%, as shown on Figure 5.

Livestock density is defined in nutrient units per acre (NU/acre) as a surrogate measure of the potential for generating, storing and land applying agricultural source material within the study area (MOECC, 2009b). The quantity of NU can be estimated by calculating the square footage of barns or by documented animal numbers. Golder reviewed the latest available aerial imagery and no barns were identified within the WHPA-B capture area. Based on this review, the average livestock density was categorized as less than 0.5 NU/acre (zero) for this WHPA study, as shown on Figure 6.

Golder calculated the Salt Loading Potential based on GIS road and sidewalk lengths, which provides a more precise assessment of salt threats. The Salt Loading Potential method follows the relationship between Quantity Score, Hazard Score and MOE Circumstance ID and calculates the Salt Loading Potential according to the following formula (LERSPC, 2020):

$$\text{Salt Loading Potential} = (2 P + 1 S + 0.075 \text{ IMP})$$

Where;

P = Primary roads, including highways, regional roads and key city roads (2-lane km/km<sup>2</sup>);

S = Secondary roads (2-lane km/km<sup>2</sup>); and

IMP = Percent impervious area of parking lots, sidewalks and other impervious areas (km<sup>2</sup>/km<sup>2</sup>).

The Salt Loading Potential for the WHPA B capture area was calculated to be 2.8 2-lane km/km<sup>2</sup>. Since the Salt Loading Potential is between 1 and <5 2-lane km/km<sup>2</sup>, it corresponds to an impervious area score of between 1% and <8% impervious (LERSPC, 2020). As such, Golder adopted an impervious area score of between 1% and <8% for this WHPA study (Figure 7).

## 2.6 Summary

The 2-year capture zone (Wellhead Protection Area B) for the Mannheim ASR well field has been delineated as part of this study. The overall vulnerability scores, percent managed land, livestock density and percent impervious surfaces adopted for the Mannheim ASR well field study are shown in Table 8.

**Table 8: Vulnerability Scores, Percent Managed Land, Livestock Density, Salt Loading Potential and Corresponding Percent Impervious Surfaces in the Mannheim ASR WHPA-B zone**

WHPA Zone	Vulnerability Score	Percent Managed Land (%)	Livestock Density (NU/acre)	Salt Loading Potential (2-lane km/km <sup>2</sup> )	Corresponding Percent Impervious Surfaces
WHPA-B	10, 8 and 6	<40%	<0.5	2.8	1% to <8%

## 3.0 LIMITATIONS

### 3.1 Use of Report and Contents

This report has been prepared for the exclusive use of the Region. The factual information, descriptions, interpretations, comments, recommendations and electronic files contained herein are specific to the project described in this report and do not apply to any other project or site. Under no circumstances may this information be used for any other purposes than those specified in the scope of work unless explicitly stipulated in the text of this report or formally authorized by Golder. This report must be read in its entirety as some sections could be falsely interpreted when taken individually or out-of-context. As well, the final version of this report and its content supersedes any other text, opinion or preliminary version produced by Golder.

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References to acts and regulations that may be contained in this report are informally provided on a technical basis. Since acts and regulations are subject to interpretation, Golder recommends Region to consult with legal counsel to obtain suitable advice.

### **3.2 General Groundwater Modelling Limitations**

Hydrogeological investigations and groundwater modelling are dynamic and inexact sciences. They are dynamic in the sense that the state of any hydrological system is changing with time, and in the sense that the science is continually developing new techniques to evaluate these systems. They are inexact in the sense that groundwater systems are complicated beyond human capability to evaluate them comprehensively in detail, and we invariably do not have sufficient data to do so. A groundwater model uses the laws of science and mathematics to draw together the available data into a mathematical or computer-based representation of the essential features of an existing hydrogeological system. While the model itself obviously lacks the detailed reality of the existing hydrogeological system, the behaviour of a valid groundwater model reasonably approximates that of the real system. The validity and accuracy of the model depends on the amount of data available relative to the degree of complexity of the geologic formations, the site geochemistry, the fate and transport of the dissolved compounds, and on the quality and degree of accuracy of the data entered. Therefore, every groundwater model is a simplification of a reality and the model described in this report is not an exception.

The professional groundwater modelling services performed as described in this report were conducted in a manner consistent with that level of care and skill normally exercised by other members of the engineering and science professions currently practising under similar conditions, subject to the quality and quantity of available data, the time limits and financial and physical constraints applicable to the services. Unless otherwise specified, the results of previous or simultaneous work provided by sources other than Golder and quoted and/or used herein are considered as having been obtained according to recognised and accepted professional rules and practices, and therefore deemed valid. This model provides a predictive scientific tool to evaluate the impacts on a real groundwater system of specified hydrological stresses and/or to compare various scenarios in a decision-making process. However, and despite the professional care taken during the construction of the model and in conducting the simulations, its accuracy is bound to the normal uncertainty associated to groundwater modelling and no warranty, express or implied, is made.

## 4.0 REFERENCES

- Bajc A.F. and Shirota, J., 2007. Three-dimensional mapping of surficial deposits in the Regional Municipality of Waterloo, southwestern Ontario; Ontario Geological Survey, Groundwater Resources Study 3.
- Golder Associates Ltd. (Golder), 2018. Updated Wellhead Protection Area Delineation and Vulnerability Scoring Mannheim Aquifer Storage and Recovery Wells – Technical Memorandum. November 19, 2018.
- Golder Associates Ltd. (Golder), 2017. Aquifer Storage and Recovery Stage 2 Expansion Project, Phase 1 Hydrogeology Report. July 2017.
- Lake Erie Region Source Protection Committee (LERSPC), 2020. Grand River Source Protection Area Approved Assessment Report. November 25, 2015.
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- Matrix Solutions Inc. (Matrix), 2017b. Groundwater Vulnerability Assessment for the Region of Waterloo Using a Modified Intrinsic Susceptibility Approach. June 2017.
- Matrix Solutions Inc. (Matrix), 2017c. Transport Pathways Assessment and Vulnerability Scoring for an Updated Assessment Report in the Region of Waterloo. September 2017.
- Ontario Ministry of the Environment and Climate Change (MOECC), 2009a. Technical Rules: Assessment Report. November 16, 2009.
- Ontario Ministry of the Environment and Climate Change (MOECC), 2009b. Technical Bulletin: Proposed Methodology for Calculating Percentage of Managed Lands and Livestock Density for Land Application of Agricultural Source of Material, Non-Agricultural Source of Material and Commercial Fertilizers. December 2009.
- Stantec, 2020. RCW3 and RCW4 Draft Pumping Test Results.

## 5.0 CLOSURE

We trust that this report meets your requirements. If you have any questions regarding the content of this report, please do not hesitate to contact the undersigned.



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[https://golderassociates.sharepoint.com/sites/118596/project/files/6 deliverables/revise report jan 2021/19133989- fnl tm\\_asr\\_whpa\\_delineation\\_23feb2021.docx](https://golderassociates.sharepoint.com/sites/118596/project/files/6%20deliverables/rev%20report%20jan%202021/19133989-fnl%20tm_asr_whpa_delineation_23feb2021.docx)

**FIGURES**



**LEGEND**

- ASR System Well
- ⊕ Municipal Production Well
- ⊕ Peaking Well
- Mannheim Water Treatment Plant Property
- Highway
- Road
- Utility Line
- Watercourse, Permanent
- Water Body
- Wetland

**Particle Tracks**

- Particle Tracks (Day 30)
- Particle Tracks (Day 210)
- Particle Tracks (Day 270)
- Particle Tracks (Day 365)
- Particle Tracks (Day 730)
- 2-year Capture Zone (WHPA-B)

0 230 460  
1:7,000 Metres

**REFERENCE(S)**  
 1. BASE DATA - MNRF LIO, OBTAINED 2018  
 2. PROJECTION: TRANSVERSE MERCATOR DATUM: NAD 83 COORDINATE SYSTEM: UTM ZONE 17

**CLIENT**  
 REGION OF WATERLOO

**PROJECT**  
 MANNHEIM ASR WHPA DELINEATION AND VULNERABILITY SCORING

**TITLE**  
 REVERSE PARTICLE TRACKING

CONSULTANT	YYYY-MM-DD	2020-08-23
DESIGNED	PR	
PREPARED	PR	
REVIEWED	JH	
APPROVED	JP	

PROJECT NO. 19133989 CONTROL 0001 REV. 0 FIGURE 1

Path: S:\Clients\Region\_of\_Waterloo\Mannheim\19133989\_001\_Hydro\mgis\19133989\_001\_CS-001.mxd

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM 28mm



- LEGEND**
- ASR System Well
  - Municipal Well
  - Municipal Production Well
  - Peaking Well
  - Mannheim Water Treatment Plant Property
  - Highway
  - Road
  - Utility Line
  - Watercourse, Permanent
  - Water Body
  - Wetland
  - 2-year Capture Zone (WHPA-B)
  - 100m Zone of Prohibition (WHPA-A)



**REFERENCE(S)**  
 1. BASE DATA - MNRF LIO, OBTAINED 2018  
 2. PROJECTION: TRANSVERSE MERCATOR DATUM: NAD 83 COORDINATE SYSTEM: UTM ZONE 17

**CLIENT**  
 REGION OF WATERLOO

**PROJECT**  
 MANNHEIM ASR WHPA DELINEATION AND VULNERABILITY SCORING

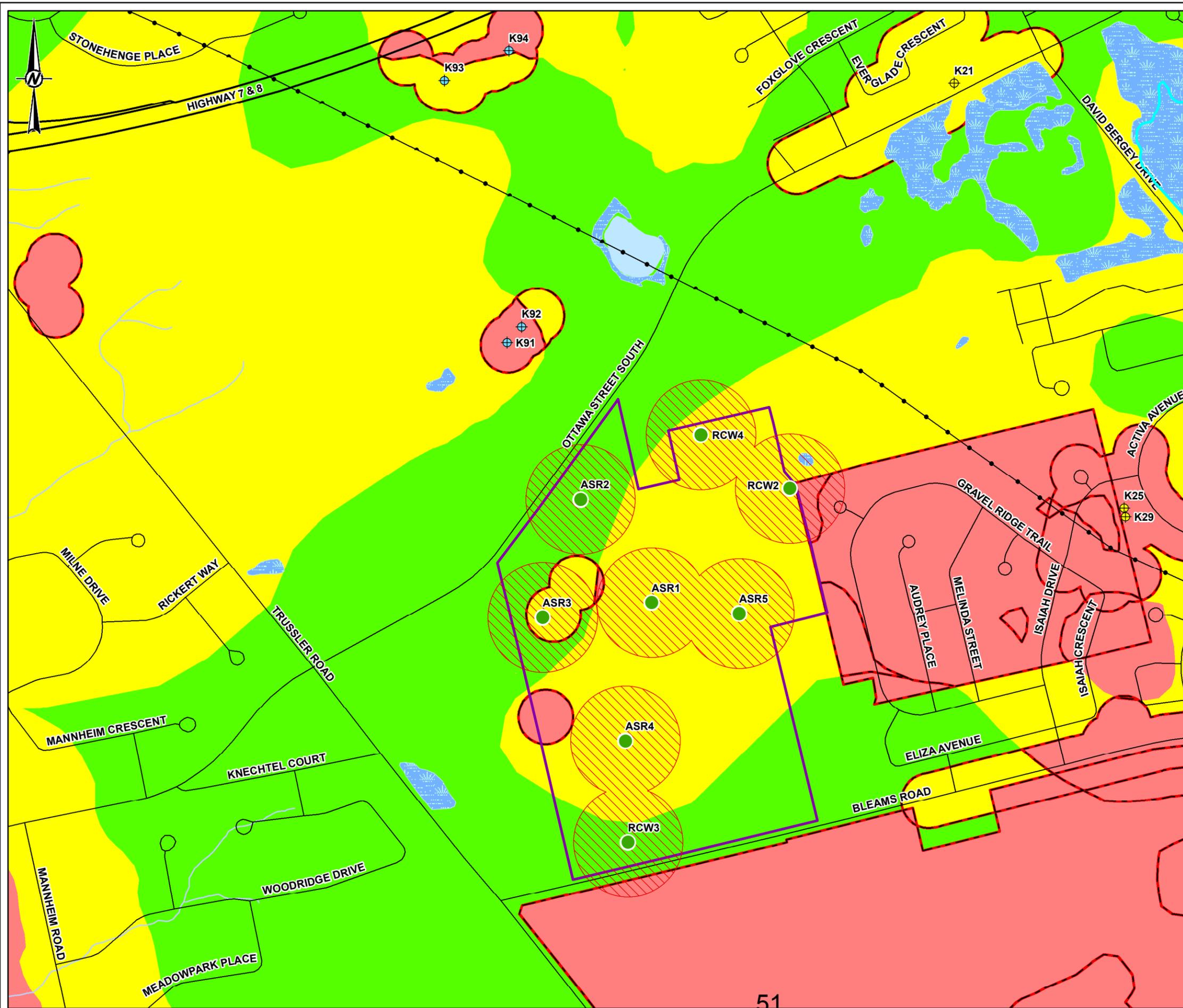
**TITLE**  
 WELLHEAD PROTECTION AREAS

CONSULTANT	YYYY-MM-DD	2021-01-28
DESIGNED	PR	
PREPARED	PR	
REVIEWED	JH	
APPROVED	JP	

PROJECT NO. 19133989 CONTROL 0001 REV. 0 FIGURE 2

Path: S:\Science\Region\_of\_Waterloo\Mannheim09\_FPOD\19133989\04\_FPOD\2001\_Hydrology\19133989\001\_CS-0002.mxd

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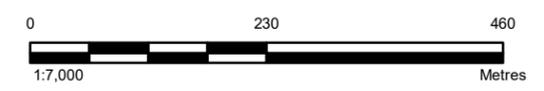


**LEGEND**

- ASR System Well
- ⊕ Municipal Production Well
- ⊕ Peaking Well
- ▭ Mannheim Water Treatment Plant Property
- Highway
- Road
- Utility Line
- Watercourse, Permanent
- Water Body
- Wetland
- ▨ 100m Zone of Prohibition (WHPA-A)

**Intrinsic Susceptibility Index for AFB2**

- High (<30)
- Moderate (30-80)
- Low (>80)
- ISI Adjustment Area as a Result of Transport Pathway Assessment



**REFERENCE(S)**

1. BASE DATA - MNRF LIO, OBTAINED 2018
2. PROJECTION: TRANSVERSE MERCATOR DATUM: NAD 83 COORDINATE SYSTEM: UTM ZONE 17

**CLIENT**  
REGION OF WATERLOO

**PROJECT**  
MANNHEIM ASR WHPA DELINEATION AND VULNERABILITY SCORING

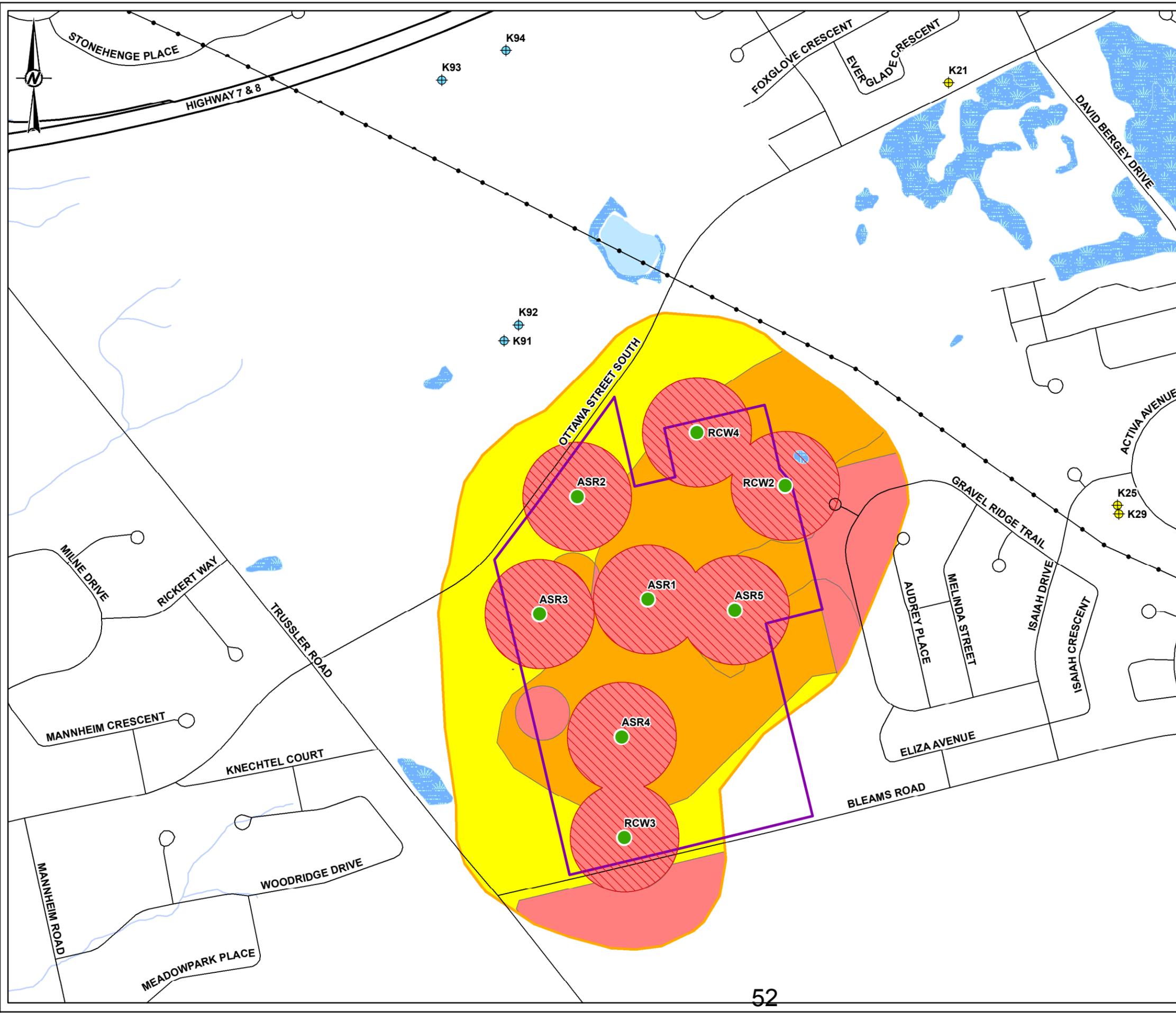
**TITLE**  
INTRINSIC VULNERABILITY MAPPING ( WITH PREFERENTIAL PATHWAY ADJUSTMENT)

CONSULTANT	YYYY-MM-DD	2020-08-23
DESIGNED	PR	
PREPARED	PR	
REVIEWED	JH	
APPROVED	JP	

PROJECT NO. 19133989	CONTROL 0001	REV. 0	FIGURE 3
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Path: S:\Clients\Region\_of\_Waterloo\Mannheim\19133989\19133989\_0001\_C5-03.mxd

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM 28mm



**LEGEND**

- ASR System Well
- ◆ Municipal Production Well
- ◆ Peaking Well
- Mannheim Water Treatment Plant Property
- Highway
- Road
- Utility Line
- Watercourse, Permanent
- Water Body
- Wetland
- 2-year Capture Zone (WHPA-B)
- 100m Zone of Prohibition (WHPA-A)

**Vulnerability Scoring**

- WHPA Vulnerability Scoring - 10 (High)
- WHPA Vulnerability Scoring - 8
- WHPA Vulnerability Scoring - 6 (Low)



**REFERENCE(S)**

1. BASE DATA - MNRF LIO, OBTAINED 2018
2. PROJECTION: TRANSVERSE MERCATOR DATUM: NAD 83 COORDINATE SYSTEM: UTM ZONE 17

**CLIENT**  
REGION OF WATERLOO

**PROJECT**  
MANNHEIM ASR WHPA DELINEATION AND VULNERABILITY SCORING

**TITLE**  
VULNERABILITY SCORING

CONSULTANT	YYYY-MM-DD	2020-08-23
DESIGNED	PR	
PREPARED	PR	
REVIEWED	JH	
APPROVED	JP	

PROJECT NO. 19133989	CONTROL 0001	REV. 0	FIGURE 4
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IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM 28mm



**LEGEND**

- ASR System Well
- ⊕ Municipal Production Well
- ⊕ Peaking Well
- Mannheim Water Treatment Plant Property
- Highway
- Road
- Utility Line
- Watercourse, Permanent
- Water Body
- Wetland
- 100m Zone of Prohibition (WHPA-A)

**2-year Capture Zone (WHPA-B)**

- Managed Land < 40%
- Managed Land 40 - 80%
- Managed Land > 80%



**REFERENCE(S)**

1. BASE DATA - MNRF LIO, OBTAINED 2018
2. PROJECTION: TRANSVERSE MERCATOR DATUM: NAD 83 COORDINATE SYSTEM: UTM ZONE 17

CLIENT  
REGION OF WATERLOO

PROJECT  
MANNHEIM ASR WHPA DELINEATION AND VULNERABILITY SCORING

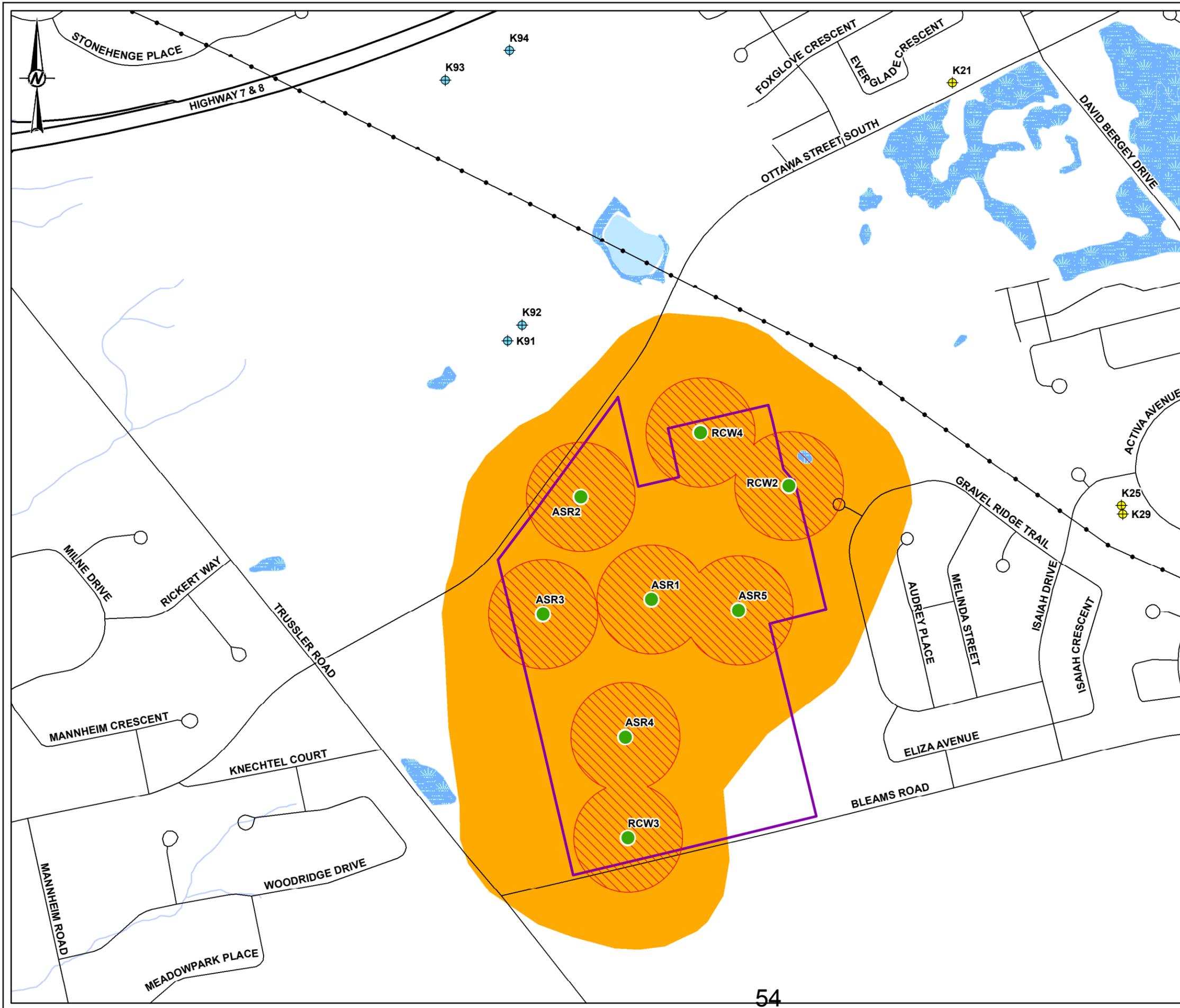
TITLE  
**PERCENT MANAGED LANDS**

CONSULTANT	YYYY-MM-DD	2020-08-23
<b>GOLDER</b>	DESIGNED	PR
	PREPARED	PR
	REVIEWED	JH
	APPROVED	JP

PROJECT NO. 19133989	CONTROL 0001	REV. 0	FIGURE <b>5</b>
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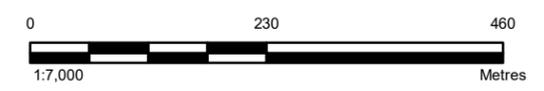
Path: S:\Clients\Region\_of\_Waterloo\Mannheim\19133989\19133989\_0001\_CS\_0005.mxd

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM 297mm



**LEGEND**

- ASR System Well
- ⊕ Municipal Production Well
- ⊕ Peaking Well
- Mannheim Water Treatment Plant Property
- Highway
- Road
- Utility Line
- Watercourse, Permanent
- Water Body
- Wetland
- 100m Zone of Prohibition (WHPA-A)
- 2-year Capture Zone (WHPA-B)
- WHPA - Nutrient Unit per Acre - < 5.0 NU/acre



**REFERENCE(S)**  
 1. BASE DATA - MNRF LIO, OBTAINED 2018  
 2. PROJECTION: TRANSVERSE MERCATOR DATUM: NAD 83 COORDINATE SYSTEM: UTM ZONE 17

**CLIENT**  
 REGION OF WATERLOO

**PROJECT**  
 MANNHEIM ASR WHPA DELINEATION AND VULNERABILITY SCORING

**TITLE**  
 LIVESTOCK DENSITY

CONSULTANT	YYYY-MM-DD	2020-08-23
DESIGNED	PR	
PREPARED	PR	
REVIEWED	JH	
APPROVED	JP	

PROJECT NO. 19133989	CONTROL 0001	REV. 0	FIGURE 6
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IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM 28mm



**LEGEND**

- ASR System Well
- ⊕ Municipal Production Well
- ⊕ Peaking Well
- Mannheim Water Treatment Plant Property
- Highway
- Road
- Utility Line
- Watercourse, Permanent
- Water Body
- Wetland
- 100m Zone of Prohibition (WHPA-A)

**2-year Capture Zone (WHPA-B)**

**Impervious Surface Related to Road Salt**

**Percent Impervious**

- < 1%
- 1 to < 8%
- 8 to < 80%
- => 80%

0 230 460  
1:7,000 Metres

**REFERENCE(S)**

1. BASE DATA - MNRF LIO, OBTAINED 2018
2. PROJECTION: TRANSVERSE MERCATOR DATUM: NAD 83 COORDINATE SYSTEM: UTM ZONE 17

CLIENT  
REGION OF WATERLOO

---

PROJECT  
MANNHEIM ASR WHPA DELINEATION AND VULNERABILITY SCORING

---

TITLE  
**PERCENT IMPERVIOUS SURFACES**

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CONSULTANT	YYYY-MM-DD	2020-08-23
<b>GOLDER</b>	DESIGNED	PR
	PREPARED	PR
	REVIEWED	JH
	APPROVED	JP

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PROJECT NO. 19133989	CONTROL 0001	REV. 0	FIGURE <b>7</b>
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IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM 28mm



Region of Waterloo

Transportation and Environmental Services  
**Water Services**

## Memorandum

**To:** Martin Keller, Source Protection Program Manager, GRCA

**From:** Eric Hodgins, Manager Hydrogeology and Source Protection

**Subject:** Section 34 Update to Grand River Source Protection Plan for Cambridge East and ASR wells in Waterloo Region

**File #:** E06-80/GRSPP/CambridgeE/ASR

**Date:** March 19, 2021

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As part of the pre-consultation on the above, the Ministry of Environment, Conservation and Parks provided the following comment in their November 13, 2020 letter:

For the Region of Waterloo's Cambridge East Wellfields, we recognized the WHPA delineation is small part of the process of bringing the new Cambridge East well into service; however, it would be helpful if the technical reports were more standalone. Ideally, the report should provide a complete picture of the new information triggering this update, corresponding updates to the model, approach to WHPA delineation, uncertainty analysis etc. This information will be required ahead of final approval and included in the future SPP update. It could be provided in the assessment report if you feel it is appropriate, or a supplementary memo with the submission..

Response:

As noted above, the delineation of the updated protection areas was undertaken over a number of years. To complicate this, the underlying technical assessment was started prior to the initiation of the Tier 3 water budget work, was then delayed while the Tier 3 work was completed and then recommenced once the Tier 3 assessment was completed. Accordingly, the development of the model as applied to the Cambridge East EA had a number of updates following completion of Tier 3 assessment that were unrelated to the Cambridge East EA. The information provided below provides a chronological description of the updates to the Tier 3 model and the subsequent well protection area delineation and scoring.

### **Cambridge Tier 3 Model Updates**

Delineation of protection areas for Cambridge East EA wells was undertaken using the Cambridge Tier 3 Water Budget FEFLOW Model. The model was updated to reflect several studies completed following the data compilation work for the Tier 3 models. A summary of the reports and updates area provided below.

Updates to the groundwater models were made following completion of the Tier 3 report in the Hespeler and Pinebush well fields (Regional and Cambridge Model Updates Following the Tier 3 Water Budget and Local Area Risk Assessment Matrix 2015). The following excerpt provides an overview of the changes in the Hespeler wellfield area:

Pumping tests were undertaken following the drilling of three new wells in Hespeler (i.e., H3A, H4A and H5A; Burnside, 2009, 2012a, 2012b). The results of the pumping tests were reviewed and compared to the hydraulic conductivity values applied in the model and discrepancies were noted. Updates to the modelled hydraulic conductivity values were undertaken to bring the modelled values in line with those estimated through the interpretation and analysis of pumping test results.

The results of the calibration update to the Hespeler wellfield area are noted in Section 4 of the report. The following excerpt provides an overview of the changes in the Pinebush well field area:

#### 5.1.1 Model Structure

No changes were made to the model layers in the Cambridge Model from those documented in the Tier Three Assessment; however, the mesh was refined slightly around Wells P10B and P10C to improve the resolution and the model’s ability to simulate changes in drawdown around the production wells.

#### 5.1.2 Model Input Parameters

The hydraulic input parameters in the bedrock units of the Pinebush Well Field area in the vicinity of the P10, P10A, P10B and P10C wells were updated as part of the calibration efforts in the Cambridge East Environmental Assessment project. The updates made in the model, relative to those applied and documented in the Tier Three Assessment, are illustrated on a cross-section through the model in the Pinebush Well Field area (Figure 6) and are discussed below in Section 5.2.

The results of the calibration update to the Pinebush wellfield area are noted in Section 5 of the report.

As part of the delineation of new well protection areas that are included in the approved 2020 Grand River Assessment Report, a summary of the changes that were made to the Cambridge model includes further information on the updates noted above and several others undertaken for the delineation project (Appendix A, Well Head Protection Area Delineation Study, Matrix 2017). This summary is provided below:

Cambridge	Base Case Model	33	Started with the Tier Three Assessment Model that had refinements made by SSPA in the Cambridge East area as part of the Cambridge East Environmental Assessment. Included refinements by SSPA to hydraulic conductivity values in the transition area between the Hespeler and Pinebush Well Fields to better represent 15 day pumping test at Pinebush. Matrix updated the hydraulic conductivity values in the Hespeler area (and recalibrated to steady-state conditions) to improve conceptual model in that area. Additional wells (P10A, P10B, H3A, H4A, and H5A, etc.) added to the model. Matrix removed a few small boundary conditions upstream of Hespeler and Blair where Well H4A and Well G4A particles were terminating. Matrix updated porosity values of 0.25 and 0.03 for overburden and bedrock, respectively, and applied capture zone delineation pumping rates.
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The above changes were included in the 2020 Approved Assessment Report.

An extensive amount of new well drilling and sampling was completed as part of the EA. The following summary is provided in Cambridge East Water Supply Class Environmental Assessment Project File Report (Golder Associates Ltd, September 2018):

#### **2.1.4.3 Hydrogeological Investigations**

The Hydrogeological and Natural Environment Report (Appendix A) presents a characterization of existing environmental conditions, interpretation of the field study results and an evaluation of potential effects from optimized pumping scenarios in the Cambridge East Study Area to meet future water demands. The test wells and monitoring wells installed as part of these hydrogeological investigations are shown on Figure 6.

The main activities of the IUS project Class EA hydrogeological program included:

- Review of available background information including: geological, hydrogeological and hydrological information such as previous study reports, borehole groundwater levels, regional climate data, groundwater pumping records and the Region's groundwater monitoring program results;
- Review of available information and testing data for the existing Cambridge East municipal wells including: well construction, pumping tests, operational history, water quality and well rehabilitation activities;
- An extensive test drilling program to assess hydrogeological conditions to the base of the bedrock aquifer including:
  - Drilling, installing and step testing twelve (12) 152 mm (6-inch) diameter test wells;
  - Drilling, installing and step testing five 305 mm (12-inch) diameter test production wells at the five most favourable test well sites. These wells included CMPW2-06 (Cedarbrook Well), PBPW1-06 (Witmer Park Well), CMPW1-06 (Portuguese Club well), PBPW2-08 (Can-Amera Pky Well) and NDPW1-08 (Clyde Park Well); and
  - Monitoring well drilling and installation at 20 sites, including multi-level monitoring wells (72 piezometers) completed in the bedrock and overburden at locations up to about 1 km from the test wells.
- Geophysical logging and flow profiling of boreholes that were completed as test wells and monitoring wells;
- The development of comprehensive monitoring programs in support of a long-term pumping test including: shallow water table piezometers located in environmentally sensitive areas and cold-water streams, private wells, multi-level monitoring well nests, staff gauges in lakes and ponds, stream flow measuring stations and ecological monitoring transects;
- A 28-day long-term pumping test with a staggered start of pumping from three test production wells (Cedarbrook, Witmer Park and Portuguese Club wells);
- Three additional constant rate pumping tests, ranging from 3 to 6 days in duration, at other test wells and test production wells;
- Sampling for water quality;

- Communication with the public and public meetings focused on the field-testing program; and
- Comprehensive analysis of all test data and groundwater modelling to assess long-term aquifer yields and potential effects on nearby sensitive environmental features and groundwater users.
- The IUS project Class EA field program focused on the investigation of areas located more than 500 m from existing supply wells, as earlier efforts at rehabilitating wells to restore capacity had not proven successful. Additional optimization projects were carried out by the Region to drill replacement or new deeper wells located either on the existing well sites, or on adjacent Region owned lands. At well sites supplying the WTPs, these additional investigations included:
  - The deepening and installation of a steel well casing liner in production well G16 at the Clemens Mill well field (Lotowater, 2011);
  - The construction and testing of new test production wells P10A, P10B, PBTW1-10, the installation of a steel well casing liner in existing production well P17, and the re-drilling and re-construction of existing production well P11, at the Pinebush well field (Bumside 2010b, 2011; Stantec, 2013a). A 15-day constant rate pumping test at P10A, P10B, PBTW1-10 and P17 was conducted in 2011 to evaluate sustainable aquifer yield, potential well interference and well field optimization. The total combined pumping rate for the test was as high as approximately 156 L/s; and
  - The construction and testing of a new test production well SMPW1-11 (later to be renamed G40) at the Shades Mill well field (Stantec, 2013b).

Details of this work is provided in Appendix A of the above report.

Appendix D of the above report (Appendix D: Cambridge East Water Supply Class EA: Groundwater Modelling Final Report, S.S. Papadopoulos & Associates, January 2016) presents a detailed description of the groundwater flow modelling used in the EA project including model set up, calibration, sensitivity analysis and testing/verification of the results to specific events where extensive monitoring was completed. The level of detail presented in this document is equivalent to what was produced in the Tier 3 model.

### **Protection Area Delineation and Scoring**

New well protection areas were delineated as per the Technical Rules and are presented in the technical memorandum WHPA Delineation for the Cambridge East Well Fields in Support of the Cambridge East Environmental Assessment (Matrix, April 28, 2017).

Following the identification of the new sodium and chloride ICA for the Pinebush well field (P9/P15A) in the 2020 Approved Assessment Report, it was determined that separate protection areas needed to be generated to separate the ICA from the other wells. This new delineation and the methods are presented in the technical memorandum Update to Pinebush Well Head Protection Areas In Support of the Cambridge East Environmental Assessment (Matrix, October 15, 2020).

Vulnerability scoring threat assessment mapping for the wells as per the Technical Rules is presented in the technical memorandum Updated Source Water Protection Mapping for the Pinebush and Clemens Mill Well Fields – Environmental Assessment New Well Scenarios (Golder Associates Ltd, December7, 2020).

## **Appendix B**

### Public Consultation Comments

**Table 1: Revised Updated Grand River Assessment Report – Public consultation comments received that address the amendments proposed in this update**

#	Comment Source	AR Section	Comment	How Comment is Addressed
1	Public Member	S22, CW Tier 3	<p>There was an error of contradictory statements in the original Centre Wellington Tier 3 Physical Characteristics report, and so the GRCA posted an 'Erratum' on the Tier 3 website to correct the error. Whoever did the cutting and pasting to put the summary together for Chapter 22 of the SPP forgot about the Erratum. (Which could have been a problem arising from not just opening up the document and correcting the text where required.)</p> <p>Here is the error:</p> <p>Page 22-10, Table 22-2 lists the 'Eramosa Formation - Vinemount' as an aquitard in the study area. (correct, but barely...it's a large study area) Page 22-11 (top of the page) states that this formation is present and acts as a competent aquitard east of Elora. (not correct)</p> <p>The fact is that the town of Fergus and the 5 municipal Fergus wells are east of Elora, and there is no Eramosa Vinemount member as an aquitard protecting the Fergus wells. The Physical Characterization report on page 25 states, "As with the Elora wells, the Vinemount and Reformatory Quarry Members of the Eramosa Formation were interpreted to be absent in the pumping and monitoring wells within the Fergus area." (It's the Vinemount that is the competent aquitard layer of the Eramosa Formation.)</p> <p>In fact the Tier 3 shows that this Vinemount Member does not show up at monitoring wells at all until 20 kilometres south of Fergus near Guelph Lake and 30 kilometres east of Fergus at Hillsburgh, which are either at the very extreme edges or beyond the study area altogether, where it could not protect the Fergus and Elora municipal wells in any way. The groundwater in this area flows basically northwest to southeast, and so would never possibly come close to encountering this aquitard.</p> <p>For the Flow Model Report, the Tier 3 used instead the lower part of the Guelph Formation as the functioning aquitard for Centre Wellington's municipal wells.</p> <p>This is actually significant. It means that the statement on page 22-11 is not consistent with the modelling, which was done with the Lower Guelph Formation as aquitard for Centre Wellington's municipal wells. It also means that the bedrock geology under Centre Wellington is very different from under Guelph, which has a large Eramosa layer</p>	<p>The following paragraph from assessment report Section 22.2.3 reads:</p> <p>The Eramosa Formation is thin throughout the Study Area (&lt; 7 m) and where present east of Elora, the mud-rich and microbial mat-bearing Vinemount Member is interpreted to act as a competent aquitard. The Stone Road Member of the Eramosa Formation is absent or very thin (&lt; 5 m) in this area and in previous studies (Brunton 2008), the unit was noted to have similar hydrogeologic properties to the lower portion of the Guelph Formation. As such, the Guelph Formation and Stone Road Member were grouped together to form one hydrostratigraphic unit.</p> <p>The assessment report section is proposed to be revised as follows:</p> <p>The Eramosa Formation is largely absent throughout the Study Area. Where present, east of Belwood Reservoir, the mud-rich and microbial mat-bearing Vinemount Member is very thin. The Stone Road Member of the Eramosa Formation is also either absent or very thin (&lt;5m) where present. In previous studies (Brunton, 2008), the Stone Road Member was noted to have similar hydrogeologic properties to the lower portion of the Guelph Formation. As such, the Guelph Formation and Stone Road Member were grouped together to form one hydrostratigraphic unit in the Centre Wellington Tier 3 Study Area.</p>

**Table 1: Revised Updated Grand River Assessment Report – Public consultation comments received that address the amendments proposed in this update**

#	Comment Source	AR Section	Comment	How Comment is Addressed
			<p>functioning as aquitard. It is important that this difference is recognized, that Centre Wellington is dealing with different bedrock geology.</p> <p>In addition, I am sure that the OGS geologist Frank Brunton, who interpreted for the Tier 3 that there is no Eramosa aquitard protecting the Centre Wellington municipal wells, would like this corrected. There seems to be no point in having a misconception perpetuated from report to report.</p>	
2	MECP	S8, ROW	<p>Region of Waterloo Section 8.1.7 of the assessment report states that the delineation of non-agricultural managed lands does not include residential lawns citing the area likely does not represent a significant nutrient loading to municipal aquifers. As per the 2009 managed land technical bulletin, residential areas are to be included in the calculation. Please provide additional information to support this decision, as the ministry cannot estimate by looking at the maps if adding the percent of residential grassed areas would change the total percent of managed lands significantly (i.e. a certainty that adding residential lawns would not increase the percentage of managed lands above the 80% threshold).</p>	<p>Please see the attached memo from Golder Associates dated March 22, 2021 that concludes the inclusion of residential lawns does not alter the percent managed lands.</p>
3	Public Member	S22, CW Tier 3	<p>About surrogate wells being placed with 1 km of the Municipal wells for modelling... I understood that. What I don't understand about the surrogate wells relates to this sentence from 3.7.4.2 of Matrix 2020:</p> <p>* Fourteen wells were added to the model in the vicinity of the Fergus and Elora areas, and four wells represented domestic water demands in the communities surrounding the Belwood Reservoir and Inverhaugh in the southwest.</p> <p>Why include domestic demands from Belwood rather than Alma in the simulation when Alma is closer to several of the existing (and proposed) wells than is Belwood, and Alma (not Belwood) is within the WHPA-Q?</p>	<p>The scope of the Tier 3 study was to evaluate existing municipal wells only; proposed municipal well locations identified in the Township's Water Supply Master Plan were not a part of the Tier 3 assessment. According to the Ministry of the Environment, Conservation and Parks (MECP) Technical Rules for Tier 3 studies, only municipal wells with either a completed Environmental Assessment or identified in the Township's Official Plan can be included in a Tier 3 study.</p> <p>Alma is within the WHPA-Q, however the surrogate well locations were selected prior to the WHPA-Q delineation. At the time the surrogate well locations were chosen, the groundwater model was in development and the size and orientation of the WHPA-Q was unknown.</p> <p>The surrogate wells placed in the groundwater model were simulated to be open hole bedrock wells open from the overburden/bedrock contact zone aquifer to the Upper Goat Island Formation. In the Alma area, many domestic wells are</p>

**Table 1: Revised Updated Grand River Assessment Report – Public consultation comments received that address the amendments proposed in this update**

#	Comment Source	AR Section	Comment	How Comment is Addressed
				<p>completed in the overburden, as shown on the cross-section in Figure 11 from the Physical Characterization Report (eastern portion of the section) (see Appendix C). It would not be an accurate representation of water takings to have placed bedrock surrogate wells in the Alma area.</p>
4	Public Member	S22, CW Tier 3	<p>Why no text or Table in the Draft Update SWPP for Centre Wellington about estimated water usage from domestic/private wells per person (251 litres/day = .251 m<sup>3</sup>/day), and the overall estimated consumptive water taking by domestic/private wells simulated by Matrix Solutions Inc? (See details below about the '18 surrogate wells'.) Isn't that needed to back up the assertion in the presentations and on the Source Protection website that:</p> <p>* Cumulative effect of existing unserviced domestic water well pumping on water supply aquifer is minimal (i.e., 0.1 to 0.4 m of aquifer drawdown)</p>	<p>A section is proposed to be added into the assessment report: section 22.2.5 under Non-Municipal Water Demand as follows:</p> <p>Domestic water takings were estimated within the Fergus, Elora, and Salem areas. Domestic water demands in a clustered area were represented using a single surrogate pumping well in the numerical model. A total of 18 surrogate wells were included in the model area representing the distribution of domestic well clusters within approximately 1 km of a municipal well. The total demand simulated in the model from these 18 wells was 943 m<sup>3</sup>/day.</p> <p>Each surrogate well was simulated to be an open hole bedrock well that was open from the overburden/bedrock contact zone aquifer to the Upper Goat Island Formation as is typical of many wells in the Fergus and Elora areas. The wells were assumed to represent fully consumptive water takings, whereby water is removed from the deep bedrock and not returned to the same source in a reasonable period of time.</p> <p>The intent of the assessment report is to report on results, therefore the calculations for the domestic water taking (943 m<sup>3</sup>/day) will remain available in the Tier 3 technical reports and not included in the assessment report.</p>
5	Public Member	S22, CW Tier 3	<p>1. This concern is central. There are two different "Average Day" pumping rates in the various municipal water system reports. The first (A) is 9,060 m<sup>3</sup>/d, which is based on a total of what each existing well could reliably pump on a continuous basis. The second (B) is 7,720 m<sup>3</sup>/d, which adheres to the set 1.75 ratio of average to maximum day pumping (13,510 m<sup>3</sup>/d ÷ 1.75). This rate ensures that there is always going to be enough water for maximum days. (System pumping capacity and peaking factor are stated in both Water Supply Master Plan and Tier 3 reports.)</p>	<p><b>Comment 1:</b> This comment has previously been responded to in the document 'Community Liaison Group Comments and Responses August 14, 2020', which states: "The Tier 3 study used average annual demand to complete a higher level analysis to determine whether the existing municipal system was at risk of not being able to meet existing and future average</p>

**Table 1: Revised Updated Grand River Assessment Report – Public consultation comments received that address the amendments proposed in this update**

#	Comment Source	AR Section	Comment	How Comment is Addressed
			<p>Pumping rate B ensures that the existing system could never pump at rate A. Why is this never explained in the Tier 3 Assessment Report?</p> <p>2. Garry Hunter is concerned that, given that the existing wellfield infrastructure system could never pump at an average rate of 9,060 m<sup>3</sup>/d, the resultant Source Protection Zones are not defensible.</p> <p>3. In assessing risk and interference with existing wells with the predicted drawdown, why does the Tier 3 only consider <u>average</u> water levels in wells and not <u>minimum</u> water levels, which must be taken into account if the wells are going to operate? Historical 10-year daily minimum water levels as shown in WSMP June 2018 App. D and Hunter May 2020 App. B illustrate that balancing pumping rates between the wells will not address this concern.</p> <p>4. Why is there no consideration that as the ambient water levels in the municipal wellfield decline with long term pumping, well capacity is reduced?</p> <p>5. Further, the Source Protection project has now identified an extensive Issues Contributing Area for TCE, and identifies a highly contaminated and irredeemable site (TCE) within the urban area as a significant drinking water condition site. Tier 3 modelling in support of the WSMP was never done on the permitted wells on the site that are required to pump continuously, forever, in order to contain that contamination from spreading. It is concerning that there has been no attempt to determine the effects of the TCE wellfield drawdowns in containing that contamination with respect to the existing F1 and the proposed F2 production wells.</p> <p>6. I have great respect for the work that has been done on this project and am in awe of the modelling report. But given the above questions, it is difficult to have confidence in some of the key results. The Tier 3 is based on an average pumping rate of 9,060 m<sup>3</sup>/d that cannot be achieved by the existing infrastructure designed for peaking considerations. Therefore, the Tier 3 conclusion that the existing municipal wells can satisfy average demand requirements until 2031 to 2036 is extremely misleading to any reader.</p>	<p>annual demands. Average annual demand is the recognized provincial approach to calculating Risk Assessments in Tier 3 studies (<a href="http://www.waterbudget.ca/waterbudgetguide">http://www.waterbudget.ca/waterbudgetguide</a>; page 98). Average annual demand is used for modelling purposes as peak or permitted rates are often not a rate that a well can sustain on a continuous basis but are required for short-term variations in demand. The average annual demand of 9,060 cubic metres used for the Tier 3 analysis is taken directly from the Water Supply Master Plan (2019).” For the second part of this question regarding Pumping Rate B, this pumping rate was not a part of the Tier 3 study and therefore not included in the Assessment Report.</p> <p><b>Comment 2:</b> Refer to response to Comment 1 regarding the explanation for the average annual demand selection. The Provincial Peer Review team consisting of Professional Geoscientist (P.Geo) and Professional Engineer (P.Eng) local experts reviewed and signed off on the defensibility of the Tier 3 study. The February 2, 2021 Minister approved Source Protection Plan update for quality WHPAs for Centre Wellington were based on Ministry technical review (ministry P.Geo and P. Eng) of the Tier 3 study.</p> <p><b>Comments 3 and 4:</b> As detailed in the Tier 3 Groundwater Model Development and Calibration Report, the model calibration process in this study included a steady-state calibration, and a transient calibration to 6 weeks of groundwater monitoring and pumping data during the shutdown/pumping tests conducted in Elora and Fergus between September 17, 2012, and October 28, 2012. Neither average nor minimum water levels were used for the calibration, but rather a 6 week period of monitoring data.</p> <p>Please also refer the following response regarding the use of average annual demand that was provided in the document</p>

**Table 1: Revised Updated Grand River Assessment Report – Public consultation comments received that address the amendments proposed in this update**

#	Comment Source	AR Section	Comment	How Comment is Addressed
			<p>The community is grateful to know that there is an adequate volume of aquifer water for municipal supply available to 2031 to 2036 and perhaps beyond.</p>	<p>“Community Liaison Group Comments and Responses August 14, 2020” which states that, “The Tier 3 study used average annual demand to complete a higher level analysis to determine whether the existing municipal system was at risk of not being able to meet existing and future average annual demands. Average annual demand is the recognized approach to calculating Risk Assessments in Tier 3 studies (<a href="http://www.waterbudget.ca/waterbudgetguide">http://www.waterbudget.ca/waterbudgetguide</a>; page 98). Average annual demand is used for modelling purposes as peak or permitted rates are often not a rate that a well can sustain on a continuous basis but are required for short-term variations in demand. The average annual demand of 9,060 cubic metres used for the Tier 3 analysis is taken directly from the Water Supply Master Plan (2019). Through the WSMP, municipalities determine the preferred solution to obtain additional water supply (i.e., water conservation and efficiency, optimization of existing water supply wells, and additional groundwater wells), when those water supplies are needed, and identifies where new water supplies could be located. The WSMP has identified that, based on growth projections, new water supplies may be needed by 2026 to meet peak demands whereas the Tier 3 identifies new water supplies may be needed between 2031 to 2036 to meet average annual demand. Although different dates, new water supplies are needed, at the earliest by 2026. As a result, the Township has already started work, with Council approval, on various options to increase the Township water supply.</p> <p><b>Comment 5:</b> The TCE contamination and ongoing remediation identified in this comment is regulated by the Province under the <i>Environmental Protection Act</i>. In response to the last sentence, this includes determining whether the remediation wells are containing the migration or spread of the TCE contamination including potential impacts to F1, F2 and private wells. The Ontario Ministry of the Environment, Conservation and Parks</p>

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#	Comment Source	AR Section	Comment	How Comment is Addressed
				<p>has required the responsible party for the contamination to complete an off-site assessment of risk including continued groundwater quality monitoring. This work is ongoing as of June 2021.</p> <p><b>Comment 6:</b> The concerns raised in this comment have been brought forward on numerous occasions throughout the Tier 3 study. The document 'Community Liaison Group Comments and Responses August 14, 2020' provides a list of all correspondence received and in response to these comments, the document provides comprehensive responses which outline the objective of the Tier 3 study, the selection of average annual demand, the linkages and differences with the Township's Water Supply Master Plan, and any discrepancies in timelines.</p> <p>The Tier 3 followed all provincial guidance for the completion of water budget studies and was completed by a project team with experience successfully completing numerous water budget studies across the province.</p> <p>Please see response to comment 1 for more detail.</p>
6	Public Member	S22, CW Tier 3	<p>1. First is the matter of the input data about average day capacity and the fact that our current municipal wells could not pump on an average day to the Tier 3's 'average day' assessment volume of 9,060 m<sup>3</sup> / day. Your Figure A1 shows that average day pumping is not an independent number but has a relationship to maximum day pumping and also accommodation for firm capacity (if one well has to be offline). What was missing with the Tier 3 was a rationale for the number they used for assessment.</p> <p>I note that you (Garry Hunter) have reduced the average day pumping at each well by 2041. You have explained it to me this way, that as the water level in the wellfield decreases, we have less drawdown at the wells, and so the yield decreases.</p> <p>2. A second question that was never answered is about well drawdowns. This relates to the fact that if the wells could pump to the Tier 3 average, they couldn't handle the drawdown. Tier 3 used the 'average water level' at each well to determine that their</p>	<p><b>Comment 1:</b> Comments similar to this have been received in the past through the Centre Wellington Tier 3 Community Liaison Group. A previous response to this comment is provided in the document 'Community Liaison Group Comments and Responses August 14, 2020', which provides the following response to this comment: "The average annual demand of 9,060 cubic metres used for the Tier 3 analysis is taken directly from the Water Supply Master Plan (2019). Through the WSMP, municipalities determine the preferred solution to obtain additional water supply (i.e., water conservation and efficiency, optimization of existing water supply wells, and additional groundwater wells), when those water supplies are needed, and identifies where new water supplies could be located. The WSMP has identified</p>

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#	Comment Source	AR Section	Comment	How Comment is Addressed
			<p>predicted future drawdown at each well was feasible. But what matters for operating the well is not the average level but the lowest level the water gets to on a daily basis. While average water levels seem reasonable when considering the sustainability of the aquifer, minimum water levels matter when considering operational sustainability of the wells. Given the Township's data on the actual daily minimums at each well, our primary wells could not have handled the Tier 3 predicted drawdown on most days over the past 10 years.</p> <p>3. It seems to me that the Tier 3 was an excellent and very impressive study in every other way. I am most appreciative that we have it, and now have the model to work with. It is very helpful to know that the municipal water source is sustainable to at least 2031 to 2036. The problem as I see it came when the Tier 3 used a high pumping rate to draw conclusion that the existing water infrastructure is adequate to service future growth until the mid-2030s, a conclusion that conflicts with the Water Supply Master Plan and Hunter reports, and doesn't reflect other operational constraints on a water system.</p> <p>I am aware that the Township is planning for a new well online by 2026, another by 2031, a third well by 2036-7 and a fourth by 2040, recognizing that new water sources are needed sooner.</p> <p>4. The reason I can't just drop these topics about the Tier 3 is that the study is the benchmark for future work. We're not going to have another Tier 3. There is always going to be a need to come back to this study as new real time data becomes available. Ideally, every 5 years the computer model could be run with new updated data. We want the benchmark to be valid.</p> <p>5. I am worried, too, that this report could be used as a regulatory instrument when issuing water-taking permits while there are still outstanding issues.</p> <p>I appreciate your continued interest in our future municipal water.</p>	<p>that, based on growth projections, new water supplies may be needed by 2026 to meet peak demands whereas the Tier 3 identifies new water supplies may be needed between 2031 to 2036 to meet average annual demand. Although different dates, new water supplies are needed, at the earliest by 2026. As a result, the Township has already started work, with Council approval, on various options to increase the Township water supply.</p> <p><b>Comment 2:</b> As per Provincial Technical Rules, Tier 3 studies assess at an average annual demand and do not assess operational sustainability of the wells.</p> <p>As stated in the document 'Community Liaison Group Comments and Responses August 14, 2020', the Tier 3 study used average annual demand to complete a higher level analysis to determine whether the existing municipal system was at risk of not being able to meet existing and future average annual demands. Average annual demand is used for modelling purposes as peak or permitted rates are often not a rate that a well can sustain on a continuous basis but are required for short-term variations in demand.</p> <p>Comments such as those received in comment 2 were received throughout the course of the Centre Wellington Tier 3 water budget study. All correspondence was responded to in comprehensive documentation available on the Centre Wellington Tier 3 web page.</p> <p><b>Comment 3:</b> Comments similar to this were received as a part of the Centre Wellington Tier 3 Water Budget Study. The following information was provided in the document 'Community Liaison Group Comments and Responses August 14, 2020' to address past similar comments: The Tier 3 Study and Water Supply Master</p>

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#	Comment Source	AR Section	Comment	How Comment is Addressed
				<p>Plan (WSMP) are scoped under different frameworks but are moving towards the same goal - ensuring there is enough water for the Township of Centre Wellington to meet the water demands of the communities of Elora and Fergus. The conclusions of both studies are the same, new water supplies are needed to service population and employment growth in the Township. The WSMP has identified that, based on growth projections, new water supplies may be needed by 2026 to meet peak demands whereas the Tier 3 study identifies new water supplies may be needed between 2031 to 2036 to meet average annual demand. As a result, the Township has already started work, with Council approval, on various options to increase the Township's water supply. The projects have benefited from shared resources as Township staff led the WSMP and were active participants on the Tier 3 project. Average annual demand was used in the Tier 3 study for modelling purposes as peak or permitted rates are often not a rate that a well can sustain on a continuous basis but are required for short-term variations in demand. The average annual demand of 9,060 cubic metres used for the Tier 3 analysis is taken directly from the Water Supply Master Plan (2019). Through the WSMP, municipalities determine the preferred solution to obtain additional water supply (i.e., water conservation and efficiency, optimization of existing water supply wells, and additional groundwater wells), when those water supplies are needed, and identifies where new water supplies could be located. The WSMP has identified that, based on growth projections, new water supplies may be needed by 2026 to meet peak demands whereas the Tier 3 identifies new water supplies may be needed between 2031 to 2036 to meet average annual demand. Although different dates, new water supplies are needed, at the earliest by 2026. As a result, the Township has already started work, with Council approval, on various options to increase the Township water supply.</p>

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#	Comment Source	AR Section	Comment	How Comment is Addressed
				<p><b>Comment 4:</b> The Tier 3 Study and source protection process are designed to be a continuous improvement cycle with regular updates to the technical and policy work including the Tier 3 studies.</p> <p><b>Comment 5:</b> Matrix (2020) reports that the existing demand values provided in Table 6 of the Risk Assessment Report are from 2018.</p> <p>The existing demand refers to the amount of water required to be currently taken from each well during the study period. The municipal pumping rates for the 2018 calendar year were considered as existing demand and were provided by Centre Wellington for each municipal well in Fergus and Elora.</p> <p>The current configured system of wells and pumps can achieve an average daily rate of 9,060 m<sup>3</sup> /day based on AECOM's well capacity assessment (AECOM2019) and this number is calculated differently than existing demand. The methodology for the calculation of the 9,060 m<sup>3</sup>/day is outlined in AECOM 2019 and includes analysis of multiple years of pumping data ending in December 2017.</p> <p>Based on the above response, references in Matrix (2020) and the draft Source Protection Plan to existing demand as the 2018 calendar year are correct.</p>
7	Public Member	S22, CW Tier 3	<p><i>For further content and information, see original comments attached.</i></p> <p><b>Salem in the municipal groundwater supply system</b> I found it confusing that the Draft SWPP doesn't mention Salem.</p> <p>The 'Draft Water Supply Master Plan' (WSPP) for Centre Wellington by AECOM 2019 reports the following about Salem:</p> <ul style="list-style-type: none"> <li>(see 1. Introduction) <i>'The Township of Centre Wellington (Township) owns and operates the <b>municipal groundwater supply system located in the urban</b></i></li> </ul>	<p>The following changes are proposed for the assessment report:</p> <p>Insert the following paragraph into Section 22.2.5: <i>'The Township of Centre Wellington owns and operates the municipal groundwater supply system located in the urban areas of Elora/Salem and Fergus. A continued reliable supply of potable water is necessary for the social, economic, and environmental wellbeing of the Township.'</i></p>

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#	Comment Source	AR Section	Comment	How Comment is Addressed				
			<p><b>areas of Elora/Salem and Fergus, referred to as the Fergus- Elora Water Supply System (FEWSS). The municipal wells are located within the village and town and the systems are connected. A continued reliable supply of potable water is necessary for the social, economic and environmental wellbeing of the Township.'</b></p> <p>Recommendations:</p> <ul style="list-style-type: none"> <li>• item 22.2.5 subsection 'Municipal Supply System and Demand':               <ul style="list-style-type: none"> <li>○ add the above quote from AECOM 2019 about the FEWSS for clarity.</li> <li>○ change '19,330 residents in Elora' to '19,331 residents in Elora/Salem'.</li> </ul> </li> </ul> <p>(Note: '19,331' to match details in Table 22-8).</p> <ul style="list-style-type: none"> <li>• paragraph preceding Table 22-8, change 'Elora' to 'Elora/Salem'.</li> <li>• paragraph 1 of 22.2.6, change 'Elora' to 'Elora/Salem'.</li> <li>• if groundwater recharge also applies to Salem (see Matrix 2020 Figure 5 and Figure 11):</li> </ul> <p>Change 'Elora' to 'Elora/Salem' in footnote 2 and 4 for Table 22-10</p>	<p>Revise the last sentence of Section 22.2.5 paragraph 1 to read "The current water supply system provides drinking water to approximately 19,331 residents in Elora/Salem and Fergus (AECOM, 2019)."</p> <p>Revise the first paragraph of 'Future Demand' to refer to Elora/Salem</p> <p>Revise Paragraph 1 of Section 22.2.6 from 'Elora' to 'Elora/Salem'</p> <p>Revise footnotes 2 and 4 for Table 2210 from 'Elora' to 'Elora/Salem'</p>				
8	Public Member	S22, CW Tier 3	<p><i>For further content and information, see original comments attached.</i></p> <p><b>Totals for population, urban population, serviced population</b></p> <p>I was confused about population details when reading the Draft SWPP because:</p> <ul style="list-style-type: none"> <li>• total population wasn't included,</li> <li>• 'serviced population' was sometimes described only as 'population', and</li> <li>• an explanation wasn't given for the difference between 'urban population' and 'serviced population',</li> </ul> <p>I compiled the following table for Centre Wellington taking:</p> <ul style="list-style-type: none"> <li>• 'total population' from Table 5 of the Wellington County Official Plan,</li> <li>• 'total urban population' (Elora/Salem/Fergus) and 'total serviced population' (Elora/Salem/Fergus) from Table 3.2 AECOM 2019:</li> </ul> <table border="1"> <tr> <td><b>Township of Centre Wellington</b></td> <td><b>2016</b></td> <td><b>2036</b></td> <td><b>2041</b></td> </tr> </table>	<b>Township of Centre Wellington</b>	<b>2016</b>	<b>2036</b>	<b>2041</b>	<p>The urban population was not evaluated separately as a part of the Tier 3 study and was not included in the assessment report.</p> <p>To define serviced population, it is proposed to revise the wording in paragraph one of 'Future Demand' to the following: As part of the Water Supply Master Plan (WSMP) for Centre Wellington, AECOM (2019) reported the projected serviced population growth in Fergus and Elora and associated future water demands as summarized in <b>Table 228</b>. Serviced population refers to homes that are serviced by, or connected to, the Township's water distribution system. Some homes have access to municipal water but have not opted to connect, while other homes do not (and will not) have access to municipal water servicing.</p> <p>It is also proposed to revise the title of Table 228 to 'Table 228: Projected Serviced Population and Water Demand Based (AECOM 2019)'.</p> <p>Total and urban population were not added to Table 228 as it</p>
<b>Township of Centre Wellington</b>	<b>2016</b>	<b>2036</b>	<b>2041</b>					

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#	Comment Source	AR Section	Comment	How Comment is Addressed												
			<table border="1"> <tr> <td><b>Total Population</b></td> <td>29,885</td> <td>48,520</td> <td>52,310</td> </tr> <tr> <td><b>Total Urban Population</b></td> <td>22,850*</td> <td>40,860</td> <td>44,690</td> </tr> <tr> <td><b>Total Serviced Population</b></td> <td>19,331</td> <td>37,429</td> <td>41,698</td> </tr> </table> <p>Recommendations context and clarity:</p> <ul style="list-style-type: none"> <li>• Add the above Table about population to page 22-1.</li> <li>• Following that Table add these excerpts from AECOM 2019: <ul style="list-style-type: none"> <li>○ (see 3.1.1) <b><i>‘Not all persons living in Fergus and Elora are serviced by the Township’s water distribution system. Some homes have access to municipal water but have not yet opted to connect, while other homes do not (and will not) have access to municipal water servicing...’</i></b></li> <li>○ (see 3.3.2) <b><i>‘... The proportion of residents unserved is assumed to decrease over time from 15% currently to only 7% in year 2041. However, should circumstances change such that there is an increase in home owners that choose to connect or are mandated to connect to the municipal distribution system, the projected municipal water demands would increase proportionately to the population serviced. This could occur over a short period of time, as in the case of a policy change to possibly address water quality or well interference issues, or over a longer period as indicated in Table 3.2.’</i></b></li> </ul> </li> <li>• Table 22-8, change <b>‘Projected Population’</b> to <b>‘Projected Service Population’</b>.</li> <li>• Sentence preceding Table 22-8, change <b>‘projected population’</b> to <b>‘projected service population’</b></li> <li>• In each of the two paragraphs following Table 22-8, change the 2 occurrences of <b>‘projected population’</b> to <b>‘projected service population’</b>.</li> <li>• In paragraph 3 of 22.4.2, change <b>‘2041 population demand’</b> TO <b>‘2041 serviced population demand’</b>.</li> </ul>	<b>Total Population</b>	29,885	48,520	52,310	<b>Total Urban Population</b>	22,850*	40,860	44,690	<b>Total Serviced Population</b>	19,331	37,429	41,698	<p>could be misleading as the Average and Max Day Demands shown in Table 228 are related to the serviced population only, not total or urban.</p> <p>It is proposed to revise the two paragraphs following Table 228 to edit the phrase ‘projected population’ to ‘projected serviced population’. In paragraph 3 of 22.4.2, change ‘2041 population demand’ TO ‘2041 serviced population demand’.</p>
<b>Total Population</b>	29,885	48,520	52,310													
<b>Total Urban Population</b>	22,850*	40,860	44,690													
<b>Total Serviced Population</b>	19,331	37,429	41,698													
9	Public Member	S22, CW Tier 3	<p><i>For further content and information, see original comments attached.</i></p> <p><b>Totals for population, urban population, serviced population</b></p>	<p>Information related to draft population growth by urban centre will be available, by the County of Wellington, in June 2021. The County is hosting a virtual Public Information Centre on June 23, 2021 at 7:00 pm.</p>												

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#	Comment Source	AR Section	Comment	How Comment is Addressed
			<p>Question: The 'Growth Plan for the Greater Golden Horseshoe' (dated Aug 28, 2020) is showing a population of 160,000 for the County of Wellington as 2051 (<i>compared to 140,000 in 2041</i>). How much of that 20,000 total population growth for the County from 2041 to 2051 will be allocated to Elora/Salem/Fergus?</p>	
10	Public Member	S22, CW Tier 3	<p><i>For further content and information, see original comments attached.</i></p> <p><b>Average annual capacity for municipal wells - “existing well capacity”</b></p> <p>Matrix 2020 items 5.2.1.1 and 9.2 plus Table 6 all report that the pumping rates for the <b>2018 calendar year</b> were considered the 'existing demand' for the Elora and Fergus wells.</p> <p>The same information is included in the Draft SWPP:</p> <ul style="list-style-type: none"> <li>(See 22.4.2 Risk Assessment Summary)</li> </ul> <p><i>‘... A set of Risk Assessment scenarios were developed to assess the impact of municipal wells pumping at Existing and Future rates, while considering land use change, drought conditions and impacts to other water uses (e.g., coldwater streams). The Tier 3 Assessment assessed existing permitted municipal water supply wells and nonpermitted municipal water supply wells that have been tested and evaluated under the EA process. <b>In this study, average annual pumping rates for the 2018 calendar year were considered as the Existing demand.....</b></i></p> <p>Question: Based on the following collective evidence about annual system capacity, should references in the above 2 documents (Matrix 2020 and the Draft SWPP) to pumping rates for the <b>‘2018 calendar year’ be changed to ‘2017 calendar year’?</b></p> <p><i>*see “Evidence” included in original comments</i></p>	<p>Matrix (2020) reports that the existing demand values provided in Table 6 of the Risk Assessment Report are from 2018.</p> <p>The existing demand refers to the amount of water required to be currently taken from each well during the study period. The municipal pumping rates for the 2018 calendar year were considered as existing demand and were provided by Centre Wellington for each municipal well in Fergus and Elora.</p> <p>The current configured system of wells and pumps can achieve an average daily rate of 9,060 m<sup>3</sup> /day based on AECOM's well capacity assessment (AECOM2019) and this number is calculated differently than existing demand. The methodology for the calculation of the 9,060 m<sup>3</sup>/day is outlined in AECOM 2019 and includes analysis of multiple years of pumping data ending in December 2017.</p> <p>Based on the above response, references in Matrix (2020) and the draft Source Protection Plan to existing demand as the 2018 calendar year are correct.</p>
11	Public Member	S22, CW Tier 3	<p><i>For further content and information, see original comments attached.</i></p> <p><b>Table 22-9, municipal pumping rates...</b></p> <p>In Table 22-9, the column heading for column 5 doesn't match the details in column 5.</p>	<p>The heading in column 5 of Table 22-9 of the assessment report refers to the calculated municipal well pumping capacity with current infrastructure. In other words, 9,060 m<sup>3</sup>/day is the largest average pumping rate that could be achieved with the current well infrastructure. The values in column 5 were</p>

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#	Comment Source	AR Section	Comment	How Comment is Addressed
			<p>The heading of column 5 is 'Well Capacity/Future (Allocated) Rate (m3/day)' but the details in column 5 are 'existing capacity' not 'future capacity'. For example, the total future well capacity listed for the Elora and Fergus (9,060 m3/day) is 'existing demand' (2017 or 2018?) as described in SECTION 3 of this letter.</p> <p>Water demand by the 'serviced population' will likely reach well capacity of the current Municipal wells (9,060 m3/day) by 2032 per AECOM 2019 (see item 3.4). Similarly, Matrix 2020 item 9.2 indicates that current well capacity will be reached in 2031-2036.</p> <p>Future water demands of the total serviced population 2011 through 2041 are described in AECOM 2019 Table 1, 3.1, 3.2, 5.2 (Note Table 1 and 5.2 are the same). Table 7 in Matrix 2020 is excerpts from Table 1 (or Table 5.2) in AECOM 2019. Table 22-8 of the Draft SWPP replicates Table 7 Matrix 2020. Thus <b>Table 22-9 in the Draft SWPP doesn't need to include 'future capacity'. Table 22-8 in the Draft SWPP and the next few paragraphs there already convey that demand will exceed capacity in 2031-2036.</b></p> <p>Recommendations regarding Table 22-9 for clarity:</p> <ul style="list-style-type: none"> <li>Footnote 1 reads 'Existing Rate is for 2018 calendar year'. Please verify whether or not '2018 calendar year' should read as '<b>2017 calendar year</b>' as suggested in SECTION 3 of this letter.</li> <li>Change the heading for column 4 from '<b>existing rate m3/day</b>' TO '<b>existing demand m3/day</b>' to add clarity.</li> <li>Change the heading for column 5 from '<b>Well Capacity/Future (Allocated) Rate (m3/day)</b>' TO '<b>Existing Well Capacity (m3/day)</b>'.</li> </ul> <p>Change any description of Table 22-9 accordingly e.g., in the paragraph prior to Table 22-9.</p>	<p>calculated as a part of the well capacity assessment completed by AECOM. These well capacity rates were applied in the Tier 3 study as a part of the future scenarios to evaluate at what point into the future the current municipal system could no longer meet average water supply demands because of population growth and land use changes (i.e., increasing impervious surface which reduced groundwater recharge)</p> <p>The Well Capacity is a calculated average rate which estimates what could potentially be pumped from the municipal wells with their current infrastructure.</p> <p>Existing Rate (column 4 of Table 22-9) refers to the water demand for the 2018 calendar year for the Centre Wellington municipal wells.</p> <p>For the recommendations provided in this comment:</p> <ul style="list-style-type: none"> <li>- For footnote 1, the Existing Rate is confirmed to be 2018.</li> <li>- It is proposed to not change the title of column 4 from Existing Rate to Existing Demand. Using the term Existing Rate ties in with column 3 which refers to Maximum Permitted Rates.</li> <li>- It is proposed to not change the title of column 5 as the term 'Future (Allocated) Rate' is intended to provide information as to what rates was applied to the Risk Assessment scenarios which evaluate future pumping scenarios.</li> </ul>
12	Public Member	S22, CW Tier 3	<p><i>For further content and information, see original comments attached.</i></p> <p><b>Alma aquaculture research station (PTTW 3347-84VQV5)</b></p> <p>About the Alma Aquaculture Research Station (PTTW 3347-84VQV5):</p> <ul style="list-style-type: none"> <li>Is 5 km from Alma (as the crow flies).</li> </ul>	<p>Data from the provincial Water Taking Reporting System was provided to the project team in 2017, which included the 2015 data for the Aquaculture Research Station. The 2015 data was the most current data available in 2017. This is what was used for the Tier 3 Study. Under provincial legislation, water takers are required to report annually to the Water Taking and</p>

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			<ul style="list-style-type: none"> <li>• Matrix 2017b Appendix C (and Matrix 2020 Table 8) reports the ‘Consumptive Rate’ for 4 wells at the ‘Commercial Aquaculture’ site.</li> <li>• Matrix 2017b Appendix C reports the <b>‘Consumptive Rate’ for 2 of the 6 wells to be zero.</b></li> <li>• Table 22-5 Draft SWPP reports (so does Matrix 2017b) that the <b>‘Maximum Permitted Average Annual Rate’ is 10,143 m3/day (= 10,143,000 litres/day*) and the ‘Consumptive Rate’ is 4,799 m3/day (= 4,799,000 litres per day).</b></li> <li>• The ‘Water Services Annual Report and Summary for Guelph Drinking Water System Corporation of the City of Guelph’ (dated Feb 1, 2021) reports <b>a request on Sept 2, 2020 to renew the PTTW (3347-84VQV5).</b> <a href="https://guelph.ca/wp-content/uploads/2020-Water-Services-Annual-Summary-Report.pdf">https://guelph.ca/wp-content/uploads/2020-Water-Services-Annual-Summary-Report.pdf</a></li> </ul> <p>Further, it is unknown whether or not the ‘consumptive rate’ at the Aquaculture Station will reach the ‘daily permitted water taking rate’.</p> <p>On March 6, 2021, I checked the <b>‘Environmental Registry for Ontario’ (ERO) for details about the renewal of the PTTW for the Aquaculture Research Station (3347-84VQV5).</b> The ERO indicates:</p> <ul style="list-style-type: none"> <li>• the comment period for the application for the PTTW renewal (ERO 019-2311) was Sept 2, 2020 to Oct 2, 2020,</li> <li>• the application stage <b>for the PTTW renewal is listed as ‘proposal’,</b></li> <li>• the request is for a maximum total daily water taking for 6 wells is 10,143,360 litres/day (meaning no change from current) for a 10-year period.</li> </ul> <p><a href="https://ero.ontario.ca/notice/019-2311">https://ero.ontario.ca/notice/019-2311</a></p> <p>Question: Both Matrix 2017b and Matrix 2020 indicate that the data source for the ‘consumptive rate’ (4,799 m3/day) was ‘2015 WTRS’ (Water Taking and Reporting System). Does that mean that the last update for the consumptive rate for the Aquaculture Research Station was in 2015? <i>(I couldn’t access the WTRS because a password is required.)</i></p>	<p>Reporting System. Under recent changes to the <a href="https://ero.ontario.ca/notice/019-1340">provincial Water Quantity Framework</a> (https://ero.ontario.ca/notice/019-1340), the province is proposing to make water taking data available to the public to increase transparency of how Ontario manages water resources.</p>
13	Public Member	S22, CW Tier 3	<p><i>For further content and information, see original comments attached.</i></p> <p><b>Alma aquaculture research station (PTTW 3347-84VQV5)</b></p>	<p>It is proposed to revise paragraph two of Non-Municipal Water Demand to: “Average consumptive demand was estimated for non-agricultural permitted water takers using data from the Ministry of the Environment’s (MECP) Permit To Take Water</p>

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			<p>Recommendation:                      Given the significant amount of permitted water taking for ‘Aquaculture’ (10,413 m<sup>3</sup>/day) in comparison to the existing PTTW for the Municipal wells (15,031 m<sup>3</sup>/day) and uncertainties regarding whether the ‘consumptive rate’ for ‘Aquaculture’ has changed (since 2015?) or will be changing, <b>recommend the following footnote</b> be added to Table 22-5 in the Draft SWPP:                      The reported daily ‘consumptive rate’ for ‘Aquaculture’ is based on water taking at 4 of 6 wells on site, and water taking overall is approximately 46% of the maximum permitted daily water taking rate allowed by the PTTW (see Appendix C Matrix 2017b for details). It is currently unknown whether or not the ‘consumptive rate’ will eventually reach the maximum permitted daily water taking rate.</p>	<p>database and Water Taking Reporting System (current to 2015). Refer to Table 8 of Centre Wellington Tier 3 Risk Assessment Report Agricultural water use (i.e. livestock watering) was estimated by a GIS analysis of aerial photography” and using typical livestock watering rates.</p> <p>It is recommended to not provide an additional footnote, as the comment recommends, because the intent of the Assessment Report is to provide an overall summary of the Tier 3 results. Details of the study can be found in the original technical reports on the Centre Wellington Tier 3 project webpage <a href="https://www.sourcewater.ca/en/source-protection-areas/Grand-River-Centre-Wellington-Scoped-Tier-3.aspx">https://www.sourcewater.ca/en/source-protection-areas/Grand-River-Centre-Wellington-Scoped-Tier-3.aspx</a></p>
14	Public Member	S22, CW Tier 3	<p><i>For further content and information, see original comments attached.</i></p> <p><b>Surrogate wells representing a cluster of domestic wells</b></p> <p>According to Matrix 2019 and Matrix 2020, 4 of the 18 ‘surrogate wells’ in the study represent ‘domestic demands in the communities surrounding Belwood Reservoir and Inverhaugh’.</p> <p>Question:                      Why was Belwood represented in the study of ‘surrogate wells’ and not Alma?</p> <p>I ask because both Belwood and Alma are further than 1 km from the Municipal wells, and Alma is closer than Belwood to:</p> <ul style="list-style-type: none"> <li>• Municipal wells E1, E3, E4, F6, F7,</li> <li>• the 4 new municipal wells proposed in areas 3, 5, 7, 8 (see AECOM 2019 for locations).</li> <li>• the largest of the non-municipal PTTW within the Centre Wellington WHPA-Q i.e., Alma Aquaculture Research Station and the two ‘Industrial Aggregate Washing’.</li> <li>• the Middlebrook well (recently sold by Nestle; no PTTW yet).</li> </ul> <p>See SECTION 16.1 for details about the size of the population at Alma and the number</p>	<p>Alma is within the WHPA-Q, however the surrogate well locations were selected prior to the WHPA-Q delineation.</p> <p>At the time the surrogate well locations were chosen, the groundwater model was in development and the size and orientation of the WHPA-Q was unknown.</p> <p>The surrogate wells placed in the groundwater model were simulated to be open hole bedrock wells open from the overburden/bedrock contact zone aquifer to the Upper Goat Island Formation. In the Alma area, many domestic wells are completed in the overburden, as shown on the cross-section in Figure 11 from the Physical Characterization Report (eastern portion of the section) (see Appendix C). It would not be an accurate representation of water takings to have placed bedrock surrogate wells in the Alma area.</p>

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			<p>of wells.</p> <p><i>*see “Background about surrogate wells for Mapleton readers” included in original comments</i></p>	
15	Public Member	S22, CW Tier 3	<p><i>For further content and information, see original comments attached.</i></p> <p><b>Figure 7, Matrix 2020...groundwater vulnerable area</b></p> <p>The word ‘drawdown’ only appears once in the Draft SWPP compared to 22 times in Matrix 2020 and 176 times in AECOM 2019.</p> <p><b>Figure 7 in Matrix 2020 titled ‘WHPA-Q1/WHPA-Q2/Groundwater Vulnerable Area’</b> includes the:</p> <ul style="list-style-type: none"> <li>• boundary for the Centre Wellington WHPA-Q,</li> <li>• estimated ‘groundwater drawdown’ e.g., <ul style="list-style-type: none"> <li>○ 2-3 metres at Alma,</li> <li>○ the south end of Alma is close to the boundary of the area estimated at 3-4 metres of groundwater drawdown.</li> </ul> </li> <li>• locations for non-municipal Permits to Take Water (PTTW) including PTTW 3347-84VQV5 (Alma Aquaculture Research Station) which is 5 km from Alma (as the crow flies),</li> <li>• locations of the current Municipal wells for Centre Wellington.</li> </ul> <p>Questions:</p> <ul style="list-style-type: none"> <li>• Because there isn’t currently a diagram about groundwater drawdown in Chapter 22 of Draft SWPP (or in Chapter 7), <b>could Figure 7 Matrix 2020 (or similar) be included in the Draft SWPP?</b> This diagram is particularly informative for the general public as well as for Mapleton Council/Administration. <ul style="list-style-type: none"> <li>○ <b>If so, could a ‘note’ be added</b> to that Figure (or to the text describing the Figure) indicating the pumping year (2017 or 2018?) that the groundwater drawdown estimates represent?</li> </ul> </li> <li>• <b>How much seasonal fluctuation of water levels is typical for private/domestic wells</b> that aren’t in limestone and bedrock (e.g., at Alma)?</li> <li>• <b>Is it anticipated that new Municipal wells for Centre Wellington will extend</b></li> </ul>	<p>Recommended to replace Map 22-7 with Figure 7 from the Tier 3 Risk Assessment Report (Matrix 2020) and revise the text in Section 22.3.2 paragraph 2 to the following: “The WHPA-Q, as shown in Map 22-7 encompasses the Centre Wellington municipal wells and many of the non-municipal takings simulated in the Study Area. The drawdown contours shown on Map 22-7 represent drawdown at the municipal wells when the municipal wells are pumped at their future (or allocated) rate and other permitted water takers in the study area are pumping at their current estimated rate compared to no municipal or non-municipal pumping. Data sources for the estimated rates for non-municipal water users are provided in Tier 3 Risk Assessment Report under Table 8. The WHPA-Q extends toward the west, encompassing non-municipal PTTWs in the west including a relatively larger aquaculture taking (PTTW 3347-84VQV5) that contributes to the extension of the area into parts of the Township of Mapleton and Township of Woolwich. The WHPA-Q does not extend into the vicinity of the communities of Arthur or Marsville or their municipal wells.”</p> <p>To include a map showing drawdown contours within the WHPA-Q, it’s proposed to replace Map 227 in the assessment report with Figure 7 Matrix (2020) and revised the text in paragraph 2, Wellhead Protection Area for Quantity to ‘The WHPA-Q, as shown in Map 22-7 encompasses the Centre Wellington municipal wells and many of the non-municipal takings simulated in the Study Area based on municipal pumping from 2018.’</p> <p>Based on a GRCA overburden monitoring well near Ennotville, average seasonal fluctuations in the overburden are approximately 2m for a monitoring period spanning from 2010 to present. Whether or not a revised WHPA-Q would extend further</p>

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			<p>the WHPA-Q further into Mapleton, and thereby increase the amount of anticipated groundwater drawdown at Alma beyond what is currently observed with seasonal fluctuations?</p> <p><i>*see “Background for Mapleton readers” included in original comments</i></p>	<p>into Mapleton depends on a number of factors that are currently unknown and therefore estimating the extent of a revised WHPA-Q would be purely speculative. Factors that affect the extent of the WHPA-Q include the location and pumping rate of new municipal wells through the Environmental Assessment process, changes to non-municipal water takings, and any significant updates to the groundwater model such as newer monitoring data or revisions to the local geology. The WHPA-Q can be updated once those factors are addressed.</p>
16	Public Member	S22, CW Tier 3	<p><i>For further content and information, see original comments attached.</i></p> <p><b>Table 22-10, count of significant water quantity threats...</b></p> <p>Table 22-10 Draft SWPP indicates that there are 269 ‘non-municipal non-permitted’ wells within Mapleton that fall within the WHPA-Q.</p> <p>Question: For transparency/information, could the following 3 footnotes be added to Table 22-10?</p> <ul style="list-style-type: none"> <li>• Average residential water usage per person per day in Canada was 342 litres/day in 1991 compared to 251 litres/day (= .251 m3/day) in 2011 (see CESI reference below).</li> <li>• Approximately 71% of the Mapleton wells within the WHPA-Q are located in Alma.</li> <li>• 95% of groundwater demands comes from water taking for Municipal wells (PTTW = 10,513 m3/day), ‘Aquaculture’ (PTTW = 10,413 m3/day), and 2 ‘Industrial-Aggregate Washing’ (PTTW = 3000 m3/day each). The remaining 5% includes domestic and agriculture uses, etc. See Appendix C Matrix 2017b for further details.</li> </ul> <p><i>*see “Background for those suggested footnotes” included in original comments</i></p>	<p>It is proposed to include the following two footnotes to Table 22-10 of the assessment report:</p> <p><sup>5</sup>Average residential water usage per person per day in Canada was 251 litres/day in 2011 (CESI).</p> <p><sup>6</sup>Majority of domestic wells within the WHPA-Q are located in Centre Wellington (i.e. Fergus, Salem, Elora, Aboyne, and the Mapleton wells are located in Elora.’</p> <p>It is recommended to not include proposed footnote 3 as it refers to Table 22-10; this is a threat enumeration table that is consistent across all assessment report chapters. The threats are a numerical count of the number of physical municipal and permitted, non-municipal wells within the WHPA-Q.</p>
17	Public Member	S22, CW Tier 3	<p><i>For further content and information, see original comments attached.</i></p> <p><b>Table 22-3, Centre Wellington water supply wells</b></p> <p>The References list for the Draft SWPP <b>doesn’t include ‘Matrix 2017’</b> but does</p>	<p>Proposed to change the reference for Table 22-3 and Table 22-5 from ‘Matrix 2017’ to ‘Matrix 2017b’ to match the Reference List in the draft Updated Grand River Source Protection Plan.</p>

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#	Comment Source	AR Section	Comment	How Comment is Addressed
			<p>includes both 'Matrix 2017a' (<i>about the city of Guelph and the Township of Guelph/Eramosa</i>) and 'Matrix 2017b (<i>about Centre Wellington</i>)</p> <p>Recommendation: Change the reference for Table 22-3 (and Table 22-5) from 'Matrix 2017' to 'Matrix 2017b' to match the Reference List in the Draft SWPP.</p>	
18	Public Member	S22, CW Tier 3	<p><i>For further content and information, see original comments attached.</i></p> <p><b>Table 22-5, permitted rates and consumptive non-municipal demands in the study area</b></p> <p>Table 22-5 draws on details from Table 11 of Matrix 2017b (the Dec 2017 report) which summarizes details from Appendix C Matrix 2017b.</p> <p>Note the following discrepancies in Table 11 of Matrix 2017b:</p> <ul style="list-style-type: none"> <li>• For '<b>aggregate washing</b>' groundwater takings, the 'reported demand (m<sup>3</sup>/day)' should be '902' not blank.</li> <li>• For '<b>Industrial</b>' surface water taking, the 'maximum permitted average annual rate (m<sup>3</sup>/day)' should be '578,888' instead of '588,888'.</li> <li>• For '<b>Wetlands/Wildlife Conservation</b>' surface water taking, the 'maximum permitted average annual rate (m<sup>3</sup>/day)' should be '222,494' instead of '<b>801,581</b>'. Looks as though '801,581' mistakenly includes the values for 'agriculture-field/pasture crops' (199) and 'Industrial Other' (578,888).</li> </ul> <p><b>Recommended corrections to Table 22-5:</b></p> <ul style="list-style-type: none"> <li>• Change the reference for Table 22-5 from '<b>Matrix 2017</b>' to '<b>Matrix 2017b</b>' to match the Reference List in the Draft SWPP.</li> <li>• Add a row to Table 22-5 for '<b>Aggregate Washing</b>' with cell values left to right of 2, 4010, 902, 436 respectively as given in Table 11 and Appendix C Matrix 2017b.</li> <li>• For row '<b>Industrial</b>' surface water taking (PTTW 5587-9Y2QMX):             <ul style="list-style-type: none"> <li>○ change the 'maximum permitted average annual rate (m<sup>3</sup>/day)' from '578,888' to '588,888' as reported in Appendix C Matrix 2017b.</li> </ul> </li> </ul>	<p>Thank you for the comment. It is proposed the following revisions be made to the assessment report:</p> <ul style="list-style-type: none"> <li>• Change the reference for Table 22-5 from '<b>Matrix 2017</b>' to '<b>Matrix 2017b</b>' to match the Reference List in the draft updated Grand River Source Protection Plan.</li> <li>• Add a row for aggregate washings with a total of 2 wells, municipal permitted average annual rate of 4, 010 m<sup>3</sup>/day, a reported demand of 902 m<sup>3</sup>/day, and a consumptive rate of 436 m<sup>3</sup>/day.</li> <li>• For row '<b>Industrial</b>' surface water taking (PTTW 5587-9Y2QMX): change the 'maximum permitted average annual rate (m<sup>3</sup>/day)' from '578,888' to '588,888' m<sup>3</sup>/day</li> <li>• For Table 22-5: change "Industrial" to "Industrial (power generation)"</li> </ul> <p>For row '<b>Wetlands/Wildlife Conservation</b>' surface water taking change the 'maximum permitted average annual rate (m<sup>3</sup>/day)' from '<b>801,581</b>' to '<b>222,494</b>' m<sup>3</sup>/day and update surface water total</p>

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			<ul style="list-style-type: none"> <li>o Would it be possible to change 'Industrial' to '<b>Industrial (power generation)</b>' so that the general public won't think that a 'consumptive rate' higher than zero is looming?</li> <li>• For row '<b>Wetlands/Wildlife Conservation</b>' surface water taking change the 'maximum permitted average annual rate (m<sup>3</sup>/day)' <b>from '801,581' to '222,494'</b> because it appears that '801,581' mistakenly includes the values for 'agriculture-field/pasture crops' (199) and 'Industrial Other' (578,888) from Appendix C Matrix 2017b.</li> </ul> <p>Revise the totals for the Table accordingly.</p>	
19	Public Member	S22, CW Tier 3	<p><i>For further content and information, see original comments attached.</i></p> <p><b>Table 22-5, permitted rates and consumptive non-municipal demands in the study area</b></p> <p>Questions:</p> <ul style="list-style-type: none"> <li>• Why does Table 22-5 Draft SWPP (and Table 11 Matrix 2017b) report '<b>maximum permitted average annual rate</b>' instead of '<b>maximum permitted taking</b>' which is the maximum daily permitted water taking rate allowed by the PTTW? The two values aren't the same in all cases. For example, referring to Appendix C Matrix 2017b, the values in both of those 2 columns are the same some (e.g., Commercial Aquaculture) but not others (e.g., Industrial Aggregate Washing).</li> </ul> <p>If estimated groundwater drawdown in Figure 7 of Matrix 2020 was based on the maximum daily permitted water taking rate allowed by the PTTW (true?), shouldn't Table 22-5 also report those details either as an addition to Table 22-5, or instead of 'maximum permitted average annual rate'?</p>	<p>Maximum permitted average annual rates are reported in Table 11 Matrix 2017b and Table 22-5 of the assessment report because they average out pumping across 365 days of the year. For example, a permitted taker may have a maximum permitted rate of 214 m<sup>3</sup>/day but only pump 100 days per year, whereas another permitted taker with the same daily rate may pump at greater or fewer days of the year. Averaging out the daily takings on an annual basis provides a clearer comparison between the permitted takings.</p>
20	Public Member	S22, CW Tier 3	<p><i>For further content and information, see original comments attached.</i></p> <p><b>Table 22-5, permitted rates and consumptive non-municipal demands in the study area</b></p> <p>Questions about Table 14 Matrix 2020 (compared to Appendix C Matrix 2017b):</p> <ul style="list-style-type: none"> <li>• Why was the fourth '<b>Wildlife Conservation</b>' surface water taking (PTTW 5765-A2UJ9Q) and the 3 PTTW (groundwater takings) for '<b>Commercial Golf Course Irrigation</b>' excluded from Table 14? Because they were in the Study Area but</li> </ul>	<p>The Wildlife Conservation and Commercial Golf Course Irrigation Permits To Take Water are located outside the WHPA-Q and therefore not included in Table 14, Matrix 2020.</p> <p>The Wetlands referred to in this comment were not included in Table 14, Matrix 2020 because they are located outside the WHPA-Q.</p> <p>Table 14 was developed by the project consultants who chose</p>

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#	Comment Source	AR Section	Comment	How Comment is Addressed
			<p>outside the WHPA-Q?</p> <ul style="list-style-type: none"> <li>Why wasn't <b>'Wetlands'</b> included in Table 14 given the inclusion of <b>'Wildlife Conservation'</b> and <b>'Industrial Other'</b> in Table 14? All 3 of these surface water takings have a consumptive rate of zero. <p>Why didn't Table 14 Matrix 2020 (or the description thereof) note which of the 'non-municipal permitted consumptive water uses' had a consumptive rate of zero?</p> </li></ul>	<p>not to include consumptive rates in this table at the time the report was developed. Table 22-5 in the assessment report does however list consumptive demands.</p>
21	Public Member	S22, CW Tier 3	<p><i>For further content and information, see original comments attached.</i></p> <p><b>Map 22-2, Centre Wellington surface water...</b></p> <p>Recommendation:</p> <ul style="list-style-type: none"> <li>Add the location of 'Alma' to Map 22-2 because other Hamlets and smaller rural settlements are included in Map.</li> </ul> <p><b>For Mapleton readers:</b> To see a better representation of the Alma Wetland Complex than Map 22-2 in the Draft Updated SWPP, see Matrix 2020 Figure 9 (<i>titled 'Locations of Provincially Significant Wetlands Evaluated for Groundwater Discharge reductions'</i>).</p>	<p>It is proposed to add Alma to Map 22-2 of the assessment report.</p>
22	Public Member	S22, CW Tier 3	<p><i>For further content and information, see original comments attached.</i></p> <p><b>Map 22-7 and Map 22-8 (...WHPA-Q and...water quantity threats)</b></p> <p>Item 22.3.2 Draft SWPP reads:</p> <ul style="list-style-type: none"> <li>'...The WHPA-Q, as shown in <b>Map 22-7</b> encompasses the Centre Wellington municipal wells and many of the <b>non-municipal takings</b> simulated in the Study Area. The WHPA-Q extends toward the west, encompassing non-municipal PTTWs in the west <b>including a relatively larger aquaculture taking (PTTW 3347-84VQV5)</b> that contributes to the extension of the area into parts of the Township of Mapleton and Township of Woolwich. The WHPA-Q does not extend into the vicinity of the communities of Arthur or Marsville or their municipal wells.'</li> </ul> <p>Recommendations:</p> <ul style="list-style-type: none"> <li>The above paragraph suggests that the reader (general public) will find the locations of the PTTW on Map 22-7 which is not the case. The locations of the PTTW (<i>particularly the Alma Aquaculture Research Station</i>) should be added to</li> </ul>	<p>It is proposed to update the text in Section 22.3.2 to include a reference to Map 22-8 as follows: The WHPA-Q extends toward the west, encompassing non-municipal Permits To Take Water (PTTWs) in the west including a relatively larger aquaculture taking (PTTW 3347-84VQV5) (<u>as shown on Map 22-8</u>) that contributes to the extension of the area into parts of the Township of Mapleton and Township of Woolwich.</p> <p>It is proposed that Map 22-8 include: names of settlement areas and the Alma Aquaculture Research Station.</p>

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#	Comment Source	AR Section	Comment	How Comment is Addressed
			<p>Map 22-7.</p> <ul style="list-style-type: none"> <li>o Alternatively, the paragraph should be reworded so that the reader is referred to Map 22-8 to see the locations of the PTTW.</li> </ul> <p>Given the magnitude of the PTTW for ‘Aquaculture’ (10,143 m3/day) compared to the current PTTW for Centre Wellington wells (15,031 m3/day), Map 22-8 should have a separate legend item/colour to distinguish the location of the Aquaculture Research Station from the other PTTW. Seems prudent to do so for transparency.</p>	
23	Public Member	S22, CW Tier 3	<p><i>For further content and information, see original comments attached.</i></p> <p><b>Table 22-4, Arthur and Marsville water supply wells</b></p> <p>The following documents all list the <b>PTTW for the operating Municipal well at Marsville as 0601-88MKJ7</b>:</p> <ul style="list-style-type: none"> <li>• Table 22-4 in Chapter 22.0 (Centre Wellington) Draft Updated Assessment Report (Jan 21, 2021)</li> <li>• Appendix C Matrix 2017b (about Centre Wellington)</li> <li>• Table 5-18 in Chapter 5.0 (Dufferin) of the Approved Assessment Report (Feb 2, 2021)</li> </ul> <p>The only PTTW for Marsville that I found on the Ontario ‘Maps: Permits to Take Water’ <a href="https://www.ontario.ca/environment-and-energy/map-permits-take-water">https://www.ontario.ca/environment-and-energy/map-permits-take-water</a> was <b>8328-BQNRXE</b>. The Permit holder for <b>8328-BQNRXE</b> is the Corporation of the Township of East Garafraxa, and the maximum permitted daily water taking is 182 m3/day (=182,000 litres/day) which is the same permitted rate for the Marsville well (<b>0601-88MKJ7</b>) indicated in Chapters 5 and 22 in the Source Protection Plan and Appendix C Matrix 2017b.</p> <p>Question: Why the discrepancy regarding the PTTW number for the Marsville well?</p>	<p>The permit 0601-88MKJ7 has expired since the time of the Matrix 2017b report. The new permit (8328-BQNRXE) was issued July 3, 2020. The rate and pumping volumes have not changed with the new permit.</p>
24	Public Member	S22, CW Tier 3	<p><i>For further content and information, see original comments attached.</i></p> <p><b>Uncertainties</b></p> <p>Matrix 2020 describes extensively ‘uncertainties’ regarding modelling (<i>particularly</i></p>	<p>Propose to add the following sentence to the end of Section 22.4.1 paragraph 3 as follows: The model was ultimately applied to evaluate a groundwater budget for the Study Area and to carry out a number of uncertainty scenarios as part of the Risk Assessment phase. Details regarding the uncertainty</p>

**Table 1: Revised Updated Grand River Assessment Report – Public consultation comments received that address the amendments proposed in this update**

#	Comment Source	AR Section	Comment	How Comment is Addressed
			<p><i>beyond 1 km from Municipal wells</i>), risk assessment, groundwater recharge, future water taking at the Middlebrook well (<i>recently sold by Nestle</i>), etc.</p> <p>AECOM 2019 (see 3.3.2) describes uncertainties regarding the percentage of the urban population of Centre Wellington that will be ‘serviced population through to 2041.</p> <p>The only mention of uncertainties in the Draft SWPP is the following:</p> <ul style="list-style-type: none"> <li>(see 22.4.1 paragraph 3) ‘...<i>The model was ultimately applied to evaluate a groundwater budget for the Study Area and to carry out a number of uncertainty scenarios as part of the Risk Assessment phase.</i>’</li> </ul> <p>Recommendation for 22.4.1 in the Draft SWPP (Summary of the Water Budget Tools and Results): Add a sentence to the end of paragraph 3 referring readers (general public) to Matrix 2020 and AECOM 2019 for further details about uncertainties.</p>	<p>assessment are provided in Matrix 2020.</p> <p>The AECOM 2019 uncertainty analysis is not proposed to be included because it is not referenced in the sentence from 22.4.1, paragraph 3.</p>
25	Public Member	S22, CW Tier 3	<p><i>For further content and information, see original comments attached.</i></p> <p><b>Long-range planning for Alma</b> <i>*see “Alma population and wells (for information)” included in original comments</i></p> <p><u>Testing water level at Alma</u></p> <p>Recommendations:</p> <ul style="list-style-type: none"> <li>It would be prudent <b>for planning purposes for both Centre Wellington and Mapleton for there to be a longitudinal assessment of water levels for a sample of private/domestic wells at Alma</b>. This information is needed so that both municipalities can assess groundwater threats, and plan for future water resource demands as well as minimizing and/or mitigating threats to water quantity.</li> </ul> <p><i>*see “Background” included in original comments</i></p>	<p>Comment noted and Centre Wellington will take this into consideration during the design of future monitoring programs. Long range planning for Alma is a municipal responsibility and is outside the source protection program mandate under the <i>Clean Water Act, 2006</i>. However, the working group policy provides a forum for both municipalities (Centre Wellington and Mapleton) plus other agencies to coordinate and discuss water related issues including monitoring.</p>
26	Public Member	S22, CW Tier 3	<p><i>For further content and information, see original comments attached.</i></p> <p><b>Long-range planning for Alma</b> <i>*see “Alma population and wells (for information)” included in original comments</i></p>	<p>Whether or not a revised WHPA-Q would extend further into Mapleton depends on a number of factors that are currently unknown; therefore estimating the extent of a revised WHPA-Q would be purely speculative. Factors that affect the extent of the</p>

**Table 1: Revised Updated Grand River Assessment Report – Public consultation comments received that address the amendments proposed in this update**

#	Comment Source	AR Section	Comment	How Comment is Addressed
			<p><u>Threats to water quantity in Alma</u></p> <p>According to Figure 7 Matrix 2020, the <b>estimated ‘groundwater drawdown’ at Alma (2-3 metres)</b>. Also that the south end of Alma is close to the boundary of the area estimated at 3-4 metres of groundwater drawdown. I assume that those estimates are based on 2017 data not 2041 projections (see SECTION 3 and 7 of this letter). <b>Further, that the following factors will potentially contribute to the estimated ground water drawdown at Alma and the immediate surrounding area, and any observed reductions in well water levels:</b></p> <ul style="list-style-type: none"> <li>• Seasonal fluctuations in water levels.</li> <li>• <b>planned growth of the ‘serviced population’ for Elora/Salem and Fergus –</b> serviced population more than doubling from 2016 to 2041.</li> <li>• construction of 4 new Municipal wells for Centre Wellington to meet water demands <b>including 3 that are closer to Alma than current Municipal wells</b> (see Figure 1 Potential Future Well Area Locations, AECOM 2019),</li> <li>• <b>growth/intensification within the Alma boundary</b> - note 4 parcels of land are currently listed as ‘future development’ within the Alma boundary - one of the 4 sold recently.</li> <li>• Permits to take Water (PTTW) near Alma:             <ul style="list-style-type: none"> <li>○ Permit 3347-84VQV5 – Alma Aquaculture Research Station, University of Guelph - the water taking rate is <b>10,143 m3/day</b> (see Table 14 Matrix 2020); <b>5 km from Alma.</b></li> <li>○ Permit 4348-9NYNX3 – Industrial Aggregate Washing - the water taking rate is <b>3000 m3/day</b> (see Table 14 Matrix 2020); <b>6.5 km from Alma.</b></li> <li>○ Permit 8813-9NYQXV –Industrial Aggregate Washing - the water taking rate is <b>3000 m3/day</b> (see Table 14 Matrix 2020); <b>9.0 km from Alma.</b></li> </ul> </li> <li>• <b>Middlebrook Well is 8 km from Alma</b> (currently no PTTW) (recently sold by Nestle)             <ul style="list-style-type: none"> <li>○ Matrix 2020 (see 5.2.2.1) <i>‘Simulated pumping from the Middlebrook Well is not included in the calibrated base case model (Appendix B), nor is it included in the Risk Assessment scenarios (Section 4.2). The Middlebrook Well is not currently pumping because it does not have a Permit To Take Water (PTTW). Only known municipal and non-municipal groundwater</i></li> </ul> </li> </ul>	<p>WHPA-Q include the location and pumping rate of new municipal wells (which must be field tested), changes to non-municipal water takings, and any significant updates to the groundwater model such as newer monitoring data or revisions to the local geology. Until further work towards addressing these factors is complete, it is not possible to anticipate the extent of a future WHPA-Q.</p>

**Table 1: Revised Updated Grand River Assessment Report – Public consultation comments received that address the amendments proposed in this update**

#	Comment Source	AR Section	Comment	How Comment is Addressed
			<p><i>takings are considered for inclusion in the groundwater flow model. The location of the Middlebrook Well is found in Figure 21 of Appendix A.'</i></p> <ul style="list-style-type: none"> <li>• Etc.</li> </ul> <p>Question:  <b>Is it anticipated that new Municipal wells for Centre Wellington will extend the WHPA-Q further into Mapleton, and thereby increase the amount of anticipated groundwater drawdown at Alma beyond what is currently observed with seasonal fluctuations?</b></p>	
27	Public Member	S22, CW Tier 3	<p><i>For further content and information, see original comments attached.</i></p> <p>Further to my recent communications (see email chain), I am enclosing Table 1 "Fergus / Elora Individual Production Well Average Annual Water Taking Budget Years 2026 and 2041" as a basis for a Tier 3 update modelling scenario to guide future water supply planning in Centre Wellington.</p> <p>Average Water Takings for Year 2026 and Year 2041 are based on my June 10, 2020 Fig A.1 Water Demand Forecast (enclosed). Actual 2019 Average Water Takings for Fergus / Elora Production Wells are shown for comparison. Of course 2020 may result in a permanent COVID spike due to curtailment of commuting and working from home.</p> <p>The 2026 Average Water Takings are assigned to the Existing Wellfield infrastructure guided by the 2019 average water takings. The forecast 2041 Average Water Takings are assigned to the 2041 Wellfield Infrastructure expansion scenario as shown on my June 10, 2020 Fig A.3 enclosed. The 2041 average well water taking scenario recognizes longer term Wellfield water level declines, reduced available drawdown and related decreased yields. Fergus Well F6 due to adverse water quality (very high dissolved solids) is not included in this 2041 scenario.</p> <p>As indicated by recent well investigations and water quality analysis, Fergus Well F5 draws its water from the overburden / bedrock contact aquifer and should be treated differently in the model than the other deeper aquifer wells. Historical operating interference experience with decommissioned Wells Elora E2 (between E1 and E3) and Fergus F3 (near F1) indicate that Fergus Well F2 at higher pumping rates may be expected to interfere with Fergus F1 and F4. Therefore Well F2 replacement as proposed by others is not included in the modelling scenario. The current Tier 3 Model,</p>	<p>Thank you for comment. Additional model runs are not needed at this time as the current versions of the WSMP and the Tier 3 study are final and have met the provincial requirements for Class EAs and Tier 3 studies respectively. The Provincial Peer Review team consisting of Professional Geoscientist (P.Geo) and Professional Engineer (P.Eng) local experts reviewed and signed off on the defensibility of the Tier 3 study. The February 2, 2021 Minister approved Source Protection Plan update for quality WHPAs for Centre Wellington were based on Ministry technical review (ministry P.Geo and P. Eng) of the Tier 3 study.</p> <p>The Tier 3 Study and source protection process are designed to be a continuous improvement cycle with regular updates to the technical and policy work including the Tier 3 studies. This correspondence will be kept on file for consideration during future Tier 3 updates. Please note that the Tier 3 model is owned by the GRCA; however, is licensed to the Township of Centre Wellington for use.</p> <p>The comment about the appropriateness of using average water takings has previously been responded to in the document 'Community Liaison Group Comments and Responses August 14, 2020', which states: "The Tier 3 study used average annual demand to complete a higher level analysis to determine whether the existing municipal system was at risk of not being able to meet existing and future average annual demands. Average annual demand is the recognized provincial approach</p>

Table 1: Revised Updated Grand River Assessment Report – Public consultation comments received that address the amendments proposed in this update				
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			<p>based on average water takings, is not appropriate to estimate local production well interference at peak pumping rates.</p> <p>Although five (5) new wells as shown in Table 1 and Fig A.3 are not anticipated to be required prior to 2041 due to continuing conservation reduction resulting from per capita decreases in water consumption, potential underestimate of average water takings from new developed wells and perhaps a municipal decision not to decommission Fergus Well F6, I have chosen to distribute average water takings over the anticipated future water taking aquifer domain.</p> <p>The Conservation Authority in past earlier communications with Centre Wellington and ratepayers often stated that alternative Tier 3 Modelling Scenarios may be easily run to test various water taking scenarios. These average water taking scenarios should be incorporated into new Tier 3 model runs to guide Centre Wellington future water supply planning. The GRCA presumably owns the Tier 3 Groundwater model. It is apparently not easily accessible to others. Running these model scenarios together with updated Drawdown and Wellhead Protection Mapping are the logical conclusion of the current Tier 3 process in Centre Wellington. The current Tier 3 proposed Drawdown and Wellhead Protection Maps are not defensible from either a scientific or a regulatory point of view.</p>	<p>to calculating Risk Assessments in Tier 3 studies (<a href="http://www.waterbudget.ca/waterbudgetguide">http://www.waterbudget.ca/waterbudgetguide</a>; page 98). Average annual demand is used for modelling purposes as peak or permitted rates are often not a rate that a well can sustain on a continuous basis but are required for short-term variations in demand. The average annual demand of 9,060 cubic metres used for the Tier 3 analysis is taken directly from the Water Supply Master Plan (2019).”</p>

Table 2: Revised Updated Grand River Assessment Report – Other public consultation comments received not related to the amendments proposed in this update				
#	Comment Source	SPP Section	Comment	How Comment is Addressed
1	Public Member	S22, CW Tier 3	<p><i>For further content and information, see original comments attached.</i></p> <p><b>Long-range planning for Alma</b>  <i>*see “Alma population and wells (for information)” included in original comments</i></p> <p><u>Testing water level at Alma</u></p>	<p>Comment noted and Centre Wellington will take this into consideration during the design of future monitoring programs.</p> <p>Based on a GRCA overburden monitoring well near Ennotville, average seasonal fluctuations in the overburden are approximately 2m for a monitoring period spanning from 2010 to present.</p>

**Table 2: Revised Updated Grand River Assessment Report – Other public consultation comments received not related to the amendments proposed in this update**

#	Comment Source	SPP Section	Comment	How Comment is Addressed
			<p>Questions:</p> <ul style="list-style-type: none"> <li>• About the two monitored wells by Nestle between Salem and Alma: According to my search on 'Well Records', the geological components at monitoring well 'Private Well 1' are more similar to wells within Alma than to monitoring 'Well 20'. Given that Nestle recently sold their Canadian water businesses (see Wellington Advertiser Feb 25, 2021), <b>will Centre Wellington, Mapleton, or the GRCA arrange for well monitoring at Alma?</b></li> <li>• <b>How much seasonal fluctuation of water levels is typical for private/domestic wells</b> that aren't in limestone and bedrock (e.g., at Alma)?</li> </ul> <p><i>*see "Background" included in original comments</i></p>	
2	Public Member	S22, CW Tier 3	<p><i>For further content and information, see original comments attached.</i></p> <p><b>Long-range planning for Alma</b>  <i>*see "Alma population and wells (for information)" included in original comments</i></p> <p><b>Municipal water service at Alma in the future?</b></p> <p>According to the following policies in the Wellington County Official Plan (Jan 8, 2021), <b>Hamlets are part of the urban system, population growth in Hamlets will be limited, and Municipal services for water and sewage is not anticipated:</b>  <a href="https://www.wellington.ca/en/resident-services/resources/Planning/Official-Plan/Wellington-County-Official-Plan---January-8-2021.pdf">https://www.wellington.ca/en/resident-services/resources/Planning/Official-Plan/Wellington-County-Official-Plan---January-8-2021.pdf</a></p> <ul style="list-style-type: none"> <li>• <b>3.5 Allocating Growth:</b> <i>'Hamlets are part of the Urban System in this plan; however, due to the difficulty in forecasting growth for small areas, hamlets are not assigned specific forecasts but are part of the residual municipal forecasts after urban centres are calculated.'</i></li> <li>• <b>4.4.3 Housing - Residential Intensification item h:</b> <i>'This Plan contains policies encouraging intensification primarily in urban centres but also, to a much lesser extent in hamlets. The strategic approach to intensification intends to retain small town character and revitalize downtown areas which includes: h) encouraging small scale intensification in hamlets consistent with their character and servicing including accessory or second residences, limited severances and conversions; and...'</i></li> </ul>	<p>Long range planning and municipal servicing of Alma are a municipal responsibility and are outside the source protection program mandate under the Clean Water Act, 2006. The Township of Mapleton is contacting the commenter directly to discuss these questions.</p>

**Table 2: Revised Updated Grand River Assessment Report – Other public consultation comments received not related to the amendments proposed in this update**

#	Comment Source	SPP Section	Comment	How Comment is Addressed
			<ul style="list-style-type: none"> <li>• <b>4.8.1 Urban Expansion – General:</b> ‘The County wishes to encourage growth to occur in urban centres and hamlets. The build out and eventual expansion of urban centres is therefore a logical outcome of this policy direction. Hamlets are expected to be built out with only modest expansions allowed.’</li> <li>• <b>4.8.3 Urban Expansion - Hamlet Expansion:</b> ‘None of the hamlets in Wellington are on municipal services and it is the policy of this Plan to limit growth in areas without municipal services. Hamlet expansions of more than 5 residential lots or units will not be allowed. The expansion must be based on a municipal comprehensive review as set out in Section 4.8.2.’</li> <li>• <b>7.4.4 Hamlets - Impact Assessment:</b> ‘Hamlets will normally accommodate low density development on individual on-site services.’</li> <li>• <b>11.2.5 Water and Sewage - Hamlet Servicing:</b> ‘Municipal sewer and water services are not anticipated in hamlets.’</li> </ul> <p>Questions:</p> <ul style="list-style-type: none"> <li>• Will Alma continue to be unserved indefinitely or not?</li> <li>• <b>Is it foreseeable that Alma will require municipal water service in the future</b> (maybe not in my lifetime)?</li> <li>• <b>If so, preliminary discussions between interest groups</b> (e.g., County, Centre Wellington, Mapleton, and GRCA) would seem prudent e.g., <ul style="list-style-type: none"> <li>○ How many years in the future might water service (and sewage?) in Alma be necessary (25-50 years?)?</li> <li>○ Should Alma have a municipal well or be part of the Fergus-Elora Water Supply System (FEWSS)?</li> <li>○ How much growth/intensification (population and/or business) could be allowed at Alma in the interim? [Note: Alma currently has 4 parcels of land classified as ‘future development’ and 1 of those 4 PD properties was sold recently.]</li> <li>○ <b>If Alma will eventually be part of the Fergus-Elora Water Supply System (FEWSS), would a new proposed Municipal well for Centre Wellington in Area 5 or 8 (see Figure 1 Potential Future Well Area Locations, AECOM 2019) be close enough to Alma for that purpose?</b> Any elevation change issues with supplying water to Alma?</li> <li>○ Would a municipal well at Alma be feasible?</li> </ul> </li> </ul>	

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#	Comment Source	SPP Section	Comment	How Comment is Addressed
			<ul style="list-style-type: none"> <li>▪ What about ‘cones of influence’ between the wells for the Alma Aquaculture Research Station, a potential municipal well at Alma, and the proposed new Centre Wellington Municipal wells?</li> <li>▪ Any issues regarding the proximity of the Alma Wetland Complex to a Municipal well at Alma?</li> </ul> <p><b>Private/domestic wells (and septic systems) are costly.</b> How much lead time would current owners and potential buyers and/or builders of new houses or businesses in Alma typically be given regarding the potential need for Municipal servicing at Alma?</p>	
3	Schlegel Urban Developments	S8, ROW	<p>Schlegel Urban Developments own a property to the south of Bleams Road located at 236 Gehl Place in the City of Kitchener, referred to as the BSF2 property. According to the <b>Draft</b> Updated Grand River Source Protection Plan (SPP), the BSF2 property is located within the well head protection areas (WHPAs) for the Mannheim Well Field operated by the Regional Municipality of Waterloo (RMOW). As described further below, the WHPAs for the Mannheim Well Field are incorrect and not appropriate to be adopted.</p> <p>In 2019, Schlegel initiated a comprehensive hydrogeological assessment focused on the BSF2 property. Please find attached two detailed submissions from our consultant experts who have overseen and carried out our extensive on-site investigations.</p> <ol style="list-style-type: none"> <li>1) March 8, 2021 Letter Report authored by ARL Groundwater Resources Ltd.</li> <li>2) March 8, 2021 Letter Report authored by GHD</li> </ol> <p>To summarize the findings of our experts, we have concerns related to the WHPAs for the Mannheim Well Field, including those wells associated with the Mannheim Aquifer Storage and Recovery System. These concerns relate to both existing Mannheim WHPAs and any modifications to the WHPAs as proposed for the SPP update. Our reasons for these concerns are provided as follows.</p> <p>The proposed updated WPHAs for the Mannheim Well Field are incorrect as has been confirmed through extensive and costly characterization investigations where hydrogeologic data collected and assessed during five separate groundwater elevation monitoring events points to an observed groundwater flow direction to the southeast – whereas the RMOW’s Tier 3 Water Budget Model incorrectly simulates groundwater</p>	Response is provided to revised Schlegel Urban Developments comments in row 4 below.

**Table 2: Revised Updated Grand River Assessment Report – Other public consultation comments received not related to the amendments proposed in this update**

#	Comment Source	SPP Section	Comment	How Comment is Addressed
			<p>flow to the north – and further the Tier 3 Water Budget Model has formed the basis for developing the WHPAs. (It should be noted the 2003 measured groundwater elevation data used as calibration targets for the Tier 3 Water Budget Model also show a southeastern groundwater flow direction.)</p> <p><b><u>Schlegel believes there is a very real consequence of this mapping error on our private property value and future land use decisions.</u></b></p> <p>It is clear from this information that <u>the BSF2 property and other properties in the area are not within the capture zone, or WHPA, for the municipal wells within the Mannheim Well Field as shown in the Draft Updated Grand River SPP mapping consultation package.</u> Furthermore, it follows by extension that <u>the WHPAs as presently proposed do not provide the intended protection of the municipal aquifer which actually supplies the groundwater to the Mannheim Well Field.</u></p> <p>The public notification of the Lake Erie Source Protection Region indicates: “The Source Protection Program is designed with continuous improvements in mind”. In our view, addressing the errors in the Tier 3 Water Budget Model that produced the WHPAs for the Mannheim Well Field should be a priority for action <u>now</u> by the source protection authority as part of this public consultation on the <u>Draft Updated Grand River SPP.</u></p> <p>Identifying corrected WHPAs that fit the original calibration data and the new data should be done before any new updates are made to the Grand River SPP with respect to the Mannheim Well Field. Allowing the WHPA mapping error to remain, despite the extensive data to the contrary, including on- site drilling and monitoring data demonstrating that WHPAs are incorrect casts doubt as to the efficacy of the source water protection policies.</p> <p>In summary, Schlegel are concerned that the existing Mannheim WHPA delineation is misleading to the approval agencies and public concerning the potential risk to groundwater at the BSF2 property and surrounding area. We would like the opportunity to address the Source Water Protection Committee regarding this matter, either virtually or in person, before the proposed updates are adopted.</p>	

**Table 2: Revised Updated Grand River Assessment Report – Other public consultation comments received not related to the amendments proposed in this update**

#	Comment Source	SPP Section	Comment	How Comment is Addressed
4	Schlegel Urban Developments	S8, ROW	<p>We provide this additional material to our March 8, 2021 submission made with respect to the above public consultation process and, more particularly in follow up to a March 16, 2021 video conference meeting that took place with Source Protection Manager Martin Keller, Mr. Eric Hodgins of the Regional Municipality of Waterloo (RMOW) and other GRCA and Source Protection program officials. I would ask that this material be circulated to all Committee Members and be appended to our March 8th submission.</p> <p>During our productive exchange of information on March 16th, a discrepancy in pumping rates was identified by Mr. Hodgins. That discrepancy has been rectified as a result of further helpful discussion and information exchange between GHD and Mr. Hodgins. Mr. Hodgins has recently been briefed by GHD of the conclusions from the revised assessment – which conclusions remain unchanged – and this correspondence is intended to document the findings which have been discussed with the RMOW.</p> <p>Two letters are attached:</p> <ol style="list-style-type: none"> <li>1) <b>April 21, 2021</b> letter authored by GHD providing a <b>Revision to March 8 2021 letter</b></li> <li>2) <b>April 21, 2021</b> letter report authored by GHD <b>Revised</b> which provides tracked adjustments to the original March 8th letter report to aid the Committee Members in understanding there is <u>no change to the conclusions as a result of pumping rate adjustment</u></li> </ol> <p>The key takeaways from the BSF2 lands remain unchanged as follows:</p> <ol style="list-style-type: none"> <li>a) Observed groundwater flow is to the southeast</li> <li>b) WPHAs for the Mannheim Well Field are incorrect</li> <li>c) Public confidence is not strengthened by allowing incorrect mapping to stand when mapping errors and mapping ‘gaps’ of such significance are identified</li> <li>d) <b><u>Schlegel believes there is a very real consequence of this mapping error on our private property value and future land use decisions.</u></b></li> </ol>	<p>The Project Team met with Schlegel Urban Developments to discuss their comments and concerns.</p> <p>The comments provided by Schlegel Urban Developments (Schlegel) and their hydrogeologic consultants regarding the delineation of well head protection areas (WHPA) on the Big Springs Farm 2 (BSF2) property raise a number of issues. The following response is provided:</p> <ul style="list-style-type: none"> <li>• The assertion that the delineation of the WHPA overlying the BSF2 property in the draft Updated Grand River Source Protection Plan (SPP) is incorrect. The WHPAs overlying the BSF2 property are in the current approved SPP (effective as of October 1, 2020) and not in the proposed update to the SPP.</li> <li>• The proposed SPP identifies new protection areas for two new recovery wells and conversion of a recovery well to an injection/recovery well associated with the Aquifer Storage and Recovery (ASR) system, which is a component of the Mannheim system. The delineation of WHPAs for the ASR system were not delineated using the Tier 3 Water Budget Model as noted in the Schlegel comments. Rather they were delineated using an unrelated groundwater model designed specifically to address the unique nature of the ASR system, which cannot be assessed using a standard steady-state groundwater model because the ASR system operates on a water neutral basis with no net water taking over a given year. A fulsome description of the ASR model is included in the approved Grand River Assessment Report (<a href="https://www.sourcewater.ca/en/source-protection-areas/resources/Documents/Grand/GRSPA_AR_not_updated_S8_Waterloo_cleanred.pdf">https://www.sourcewater.ca/en/source-protection-areas/resources/Documents/Grand/GRSPA_AR_not_updated_S8_Waterloo_cleanred.pdf</a>)</li> <li>• The WHPA for the ASR system do not extend significantly outside of the Region’s Mannheim Water Treatment Plant and do not extend to nor overlay the BSF2 property.</li> </ul>

Table 2: Revised Updated Grand River Assessment Report – Other public consultation comments received not related to the amendments proposed in this update				
#	Comment Source	SPP Section	Comment	How Comment is Addressed
			<p>To reiterate, Schlegel are concerned that the existing Mannheim WHPA delineation is misleading to the approval agencies and public concerning the potential risk to groundwater at the BSF2 property and surrounding area.</p> <p>We continue to request the opportunity to address the Source Water Protection Committee regarding this matter, either virtually or in person, before the proposed updates are adopted.</p>	<ul style="list-style-type: none"> <li>The existing approved WHPA that overlay the BSF2 property have a vulnerability of six or less. The scoring means that none of the current policies in the approved Grand River SPP apply to the BSF2 property and the SPP does not restrict or constrain any existing or future activities on this property.</li> <li>Schlegel has previously informed Waterloo Region staff that new hydrogeologic information from the BSF2 property is available. Waterloo Region staff have initiated the process for updating the Tier 3 model to add this new data as well as other new Regional data from the Mannheim area. An update to the model for this area, for several other well field areas in Waterloo Region, and any necessary updates to water demand and related protection areas to address new growth targets established as part of the Places to Grow Act will be included in a future update to the SPP.</li> </ul> <p>Given the above, the comments are unrelated to the proposed updates to the SPP and do not need to be considered further as part of the proposed SPP update.</p>

Table 3: Revised Updated Grand River Source Protection Plan – Public consultation comments received that address the amendments proposed in this update				
#	Comment Source	SPP Section	Comment	How Comment is Addressed
1	Community Liaison Group	S7, Wellington	I would like to suggest that some policies need to allow for even more planning regarding long-term needs and consumptive water taking. One possibility is to add the Ministry of Agriculture and Agri-food to the co-operating organizations for assessing impacts in Policy 19. This addition is important in making certain that the policies protect all users in the entire municipality. Agricultural businesses and owners should be involved in decisions about long- term water taking, for water supplies at both the overburden and deep aquifer levels, especially as these supplies interact with recharge and drawdown changes under growth plans.	The Ontario Ministry of Agriculture, Food and Rural Affairs (OMAFRA) and the Ministry of Natural Resources and Forestry (MNRF) are members of the Low Water Response Group and are included in policy WC-CW-21.2. Further explanation will be included in the Explanatory Document.

**Table 3: Revised Updated Grand River Source Protection Plan – Public consultation comments received that address the amendments proposed in this update**

#	Comment Source	SPP Section	Comment	How Comment is Addressed
2	Community Liaison Group	S7, Wellington	I also would suggest the policies be more inclusive of quality threats. There are other industrial contaminants in the policy area that are known and potentially others yet to be recognized. Such threats could alter the availability of new or expanded wells. There should be recognition of the need to have policies dealing with the complete range of threats.	<p>Potential threats that may impact municipal drinking water quality are addressed through approved water quality policies in the current approved Grand River Source Protection Plan.</p> <p>Examples include approved policies for Trichloroethylene (TCE) and Chloride Issue Contributing Areas.</p> <p>The new policies being proposed as part of this Grand River Source Protection Plan update are to address potential water quantity threats.</p>
3	Community Liaison Group	S7, Wellington	Finally, I believe that, although some major aspects of climate change are being considered in policy formulation, wording of policies for ongoing assessments should be inclusive of new information about climate effects. New information could include changing precipitation patterns resulting in more flooding, and potentially less recharge than expected. Demands for water from consumers and agricultural businesses in the recharge area may also increase with increased temperatures.	<p>To evaluate potential water quantity impacts on the Centre Wellington municipal supply wells as a result of future climate change, an assessment utilizing future municipal water demand was completed. The study concluded that climate change may not pose an additional threat to the quantity of the Centre Wellington municipal water supply wells due to predicted increase in groundwater recharge. The Global Climate Models and hydrologic model that were applied in this study suggest that groundwater recharge rates will increase over time.</p> <p>Assessing impacts to the quantity of municipal water supply is an ongoing continual improvement process that will be updated as new information comes available. Additionally, the County of Wellington recently approved a Climate Change Mitigation Plan entitled Future Focused. See <a href="http://www.wellington.ca">www.wellington.ca</a> for more information.</p>
4	Community Liaison Group	S7, Wellington	<p>The Tier 3 study identified future municipal water taking as the most significant risk to Centre Wellington's water supply. Therefore, it would follow that the most significant policy would be policy g) on page 36, which addresses future municipal water needs of a growing population, and states:</p> <p>The County of Wellington, in consultation with the municipalities, should take into consideration water quantity constraints identified through the Tier 3 water budget results when allocating projected growth as part of a municipal comprehensive review.</p> <p>Unfortunately, this seems to be a case where a policy can be at odds with</p>	As noted in the comment, the County of Wellington is in the process of completing an Official Plan review with multiple public and Council meetings planned for 2021 and beyond. Growth forecasts and allocations to 2051 are part of this process. It is recognized that this source protection process and the Official Plan process are happening concurrently and each informs the other. Despite these processes running concurrently, both the Source Protection Plan and the County Official Plan are able to be updated on an ongoing basis so there will be future opportunities for updates if needed.

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			<p>circumstances. The Ministry of Municipal Affairs and Housing has now issued its target growth numbers to 2051, and the County has to allocate this growth among the seven municipalities. For practical purposes, criteria for this growth allocation would include existing water and wastewater service. It is reasonable to assume that additional growth will be allocated to Fergus and Elora, with the additional water supply requirements, despite the risk to the municipal water system.</p> <p>We cannot reliably plan for more development in the short term without more wells online, according to the Water Supply Master Plan. We also cannot determine a rate with which to bring on more development for the long term, beyond 2031 to 2036, because after that is uncertainty. We will not know our future growth rate until potential new wells sites have been investigated and tested. Therefore, the County is in a predicament with respect to allocating growth to Centre Wellington. This predicament will not be resolved by late 2021, the deadline the province has given the County for a competed O. P. amendment, under which long-term numbers are allocated to 2051.</p> <p>It has to be acknowledged that this puts both the County and municipality in a problematic situation.</p>	
5	Community Liaison Group	S7, Wellington	<p>Section 19, on pages 33 to 37, lists policies under which the MECP reviews and amends Permits to Take Water, to ensure no adverse impacts to the municipal supply. This process is entirely Ministry-driven. It would be helpful to have a formal policy by which the municipality can reach out and talk to the Ministry. Such a method of municipally initiated discussion could be formalized and strengthened in a policy. Such an approach would be supported in principle by the proposed water management framework.</p> <p>Although Kyle mentioned municipal - provincial collaboration in his presentation, the policy list does not appear to identify a policy that documents a direction for increased coordination, opportunity to discuss water supply considerations, and improved information sharing between the municipality and the province beyond what exists at the present time.</p>	<p>There are a number of proposed water quantity policies that intend to strengthen collaboration and sharing of information among implementing bodies and stakeholders. Policy examples include:</p> <ul style="list-style-type: none"> <li>WC-CW-21.1</li> <li>WC-CW-21.2</li> <li>WC-NB-21.3</li> <li>WC-MC-22.1</li> <li>WC-MC-22.2</li> <li>WC-MC-22.3</li> <li>WC-MC-22.7</li> <li>WC-MC-22.8</li> <li>WC-NB-22.11</li> <li>WC-MC-23.3</li> </ul>
6	Community Liaison Group	S7, Wellington	<p>We support the policy a) on page 32 that states:</p> <p>The Township of Centre Wellington shall develop, maintain and implement a long-term</p>	<p>a) Comment noted</p> <p>b) The County and Centre Wellington recognize the challenges</p>

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			<p>monitoring program of groundwater and surface water systems to assess potential groundwater and / or surface water impacts from consumptive water takings and / or recharge reduction within the Centre Wellington WHPA-Q.</p> <p>a) This policy fits with the recently proposed provincial policy which ranks environmental needs as a top priority in ground and surface water management.</p> <p>b) Here again, the approach sounds excellent, but for practical purposes may be challenging to implement. As stated in d) on page 33, this policy is dependent on the Ministry of the Environment, Conservation and Parks providing funding to maintain the long-term monitoring program. Otherwise, it is difficult to see who would be developing, maintaining and implementing this monitoring project, which would be in addition to regular municipal staff or GRCA workloads.</p> <p>c) Matrix’s modelling for water taking at proposed new well site areas (WSMP, Tech memo 3) predicted impacts of 12% to 15% reduction in groundwater discharge to the Salem South and Irvine Creek Wetland Complexes with future municipal water taking. These wetlands will require monitoring for possible significant impacts, especially as the Tier 3 identified the Irvine Creek Wetland area as a high future groundwater recharge area for our municipal water supply. (Risk Assessment fig. 5)</p> <p>d) In the spirit of the proposed provincial water quantity management policy on transparency and data sharing, we would recommend that all monitoring information be shared with the public.</p>	<p>identified and propose to address these challenges by separating the different tasks in different policies with different implementing bodies and different legal effects. Respective agencies must report on status of legally and non-legally binding policies every year through annual reporting. The long term monitoring policy is legally binding on the Township of Centre Wellington and will be addressed through the continuation of existing and future monitoring related to the operation of the current and expanded municipal well field.</p> <p>c) Comment noted and will be taken into consideration for future monitoring programs.</p> <p>d) GRCA currently posts monitoring data at <a href="https://www.grandriver.ca/en/our-watershed/Water.aspx">https://www.grandriver.ca/en/our-watershed/Water.aspx</a> Centre Wellington posts regulatory monitoring data related to the municipal drinking water systems at <a href="http://www.centrewellington.ca">www.centrewellington.ca</a></p>
7	Community Liaison Group	S7, Wellington	<p>We support the policy e) on page 35, which states:</p> <p>The Township of Centre Wellington shall promote water conservation and demand management to all township of Centre Wellington municipal water users within the Centre Wellington WHPA-Q as outlined in the Township of Centre Wellington Water Supply Master Plan.</p> <p>This policy promotes efficient and effective water use, with residents and industries doing their part to minimize water loss.</p>	<p>In the 2021 budget, Centre Wellington approved a Water Conservation Coordinator to be hired to assist in the implementation of the water conservation and efficiency strategies outlined in the Water Supply Master Plan.</p> <p>Regarding inflow and infiltration, Centre Wellington is implementing improvements to reduce inflow and infiltration. This includes completion of an inflow and infiltration study in 2020 to identify the locations of inflow and infiltration in the sanitary sewer collection system. In the 2021 budget, Centre Wellington approved focused investigations of the locations</p>

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			<p>The following policy f) on page 35 refers to the township conserving water by optimizing its water supply system. We suggest that the township could further demonstrate leadership in conservation and recharge enhancement by implementing an inflow and infiltration reduction strategy to reduce the high volume of groundwater currently entering the Fergus wastewater system. This volume is now at 1,000 m<sup>3</sup> / day on average, or 25% of the total water flow entering the system. This volume of water is lost to recharge of the deep aquifer. Perhaps some wording could address this additional water management opportunity at the municipal level.</p>	<p>identified through the inflow and infiltration study. Following the focused investigations, a remedial plan will be prepared and implemented.</p>
8	Community Liaison Group	S7, Wellington	<p>Policy c) on page 38 deals with expansion of the urban boundary, stating:</p> <p>The County of Wellington, in consultation with the municipalities, shall only approve municipally serviced settlement area expansions within a WHPA-Q as part of a municipal comprehensive review or as otherwise provided by the provincial Growth Plan for the Greater Golden Horseshoe (A Place to Grow), where it can be adequately demonstrated that recharge functions can be maintained or improved on lands designated Significant Recharge Areas within a WHPA-Q.</p> <p>Notably, the long-term protection of those Significant Recharge Areas and preservation of needed farmland is necessary. Approval of settlement area boundary expansion should only happen after reasonable attempts at higher density growth within the urban boundary are satisfied.</p>	<p>The Provincial Growth Plan lays out the policies for settlement area boundary expansions including consideration of water resources. Any decisions under the County or local Official Plans must conform to the Provincial Growth Plan and the approved Source Protection Plans. Therefore, this policy, once approved, will be a consideration in future settlement area expansions.</p>
9	Community Liaison Group	S7, Wellington	<p>We support policy d) on page 33 requesting the MECP to provide ongoing funding to the GRCA and to the municipalities. The grants will maintain and update Tier 3 water budgets, Tier 3 climate change assessment models, updates to Tier 3 Risk Assessments and associated studies, and long-term monitoring of groundwater and surface water systems. The proposed list for continued provincial funding does not identify Environmental Assessments. Could this be added to this list? These assessments are necessary for ongoing infrastructure development.</p>	<p>Environmental Assessments are a municipal responsibility, required for infrastructure projects such as roads and highways, waste management, water and wastewater. Water and wastewater projects to service new development are generally funded by development charges.</p>
10	Community Liaison Group	S7, Wellington	<p><b>Consideration of uncertainties in the Tier 3 water budget studies</b>            Policy 19a includes:  <i>For any existing consumptive water taking, the Ministry of the Environment, Conservation and Parks shall review and, if necessary, amend Permits to Take Water</i></p>	<p>The selection of the policy text “to consider the Tier 3 water budget results” includes the context within which the results were generated, including uncertainties and data gaps, and provides the necessary flexibility for the Ministry. The Tier 3</p>

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			<p><i>(PTTW) and/or Drinking Water Works Permits to ensure that the municipal supply will not be adversely impacted, and to consider the Tier 3 water budget results including consideration of water supply requirements for planned growth and prolonged drought.</i></p> <p>Policy 19b includes:  <i>For any future consumptive water taking, the Ministry of the Environment, Conservation and Parks shall issue Permits to Take Water (PTTW) and/or Drinking Water Works Permits to ensure that the municipal supply will not be adversely impacted. The Ministry of the Environment, Conservation and Parks, where appropriate, should ensure that use of the Tier 3 model, reports and data in its evaluation of these takings include consideration of water supply requirements for planned growth and prolonged drought.</i></p> <p>Comment:                      We concur with the recommendation that the assessment of existing and proposed consumptive water takings include consideration of the Tier 3 water budget results. We recommend that the policy include explicit indications that the consideration include references to uncertainties in the water budget analyses. The consideration should include identification of important data gaps and monitoring required to fill the data gaps.</p>	<p>water budget technical reports capture the details and are available to the Ministry in implementing the policies.</p>
11	Community Liaison Group	S7, Wellington	<p><b>Due regard for comments regarding new or revised conditions of approvals</b></p> <p>Policy 19b includes:  <i>The Ministry of the Environment, Conservation and Parks should circulate Environmental Registry notices to the municipalities and Grand River Conservation Authority and have due regard for comments from the Grand River Conservation Authority and municipalities regarding new or revised conditions of approvals.</i></p> <p>Comment:                      We recommend that “due regard” be defined explicitly in the policies. In particular, we recommend that the final version of the policies address the following questions:</p> <ol style="list-style-type: none"> <li>1. Are municipalities anticipated to have an effective veto in the issuing of Permits to Take Water?;</li> <li>2. Will the commenting process for permitted non-municipal water takings be based on data and best practices for the application of groundwater modelling techniques?; and</li> </ol>	<p>Due regard definition - Legal counsel for Wellington Source Water Protection was asked to review this comment and has advised that while statutes and policy documents frequently utilized this phrase, they could find no examples of statutes or policies that include a definition for the phrase. There are also very few examples of court decisions where it has been found necessary to define the term other than ascribing the normal common usage meaning. One court decision adopted a very general definition of the term from <i>Black's Law Dictionary 6th ed.</i> as follows: <i>"consideration to a degree appropriate to demands of the particular case"</i>. Given that examples/ precedents of laws, policies or regulatory instruments which established a definition of this phrase could <u>not</u> be found, and that caselaw indicates that a general common-usage understanding of the phrase has provided a sufficient level of clarity, we see no need to include a</p>

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			<p>3. Where model results are not constrained by high-quality data will any analyses be identified clearly as being highly uncertain?</p>	<p>definition for this phrase in the Source Protection Plan.</p> <p>The decision notice on Ontario’s Water Quantity Management Framework has laid out the council resolution process for municipalities related to water bottling permit above 379,000L/day (<a href="https://ero.ontario.ca/notice/019-1340">https://ero.ontario.ca/notice/019-1340</a>)</p> <p>It is anticipated that the Ministry of the Environment, Conservation and Parks will consider all comments received related to permitted non-municipal water takings. Municipalities and / or the Grand River Conservation Authority may provide technical and / or non-technical comments.</p> <p>Any analyses or model use will be directed by the professional judgement of the appropriate qualified person as licensed in Ontario.</p>
12	Community Liaison Group	S7, Wellington	<p><b>Assigned risk level for a WHPA-Q</b>                      Policy 19k includes:  <i>... should use the Tier 3 model, reports and data in its evaluation of new or expanded municipal takings through the Permit to Take Water (PTTW) and/or Class Environmental Assessment processes, where those new or expanded consumptive takings could affect a reduction in the assigned risk level for a WHPA-Q.</i></p> <p>Comment:                      Should “reduction” here be interpreted as an increase in the risk that new or expanded municipal supplies will cause existing supplies to no longer meet required demands?                      Or is Clause 19k included to allow the possibility that the designation of a significant risk levels could be removed in the future?</p>	<p>This policy references the results of the Centre Wellington Tier 3 Study that shows the significant risk designation is largely driven by an insufficient number of municipal wells to service the anticipated growth in population. Therefore, the phrase “reduction in the assigned risk level for a WHPA-Q” means that new or expanded municipal wells may result in the removal of a significant risk level for this WHPA-Q in the future. For further clarity, the word “reduction” has been replaced with “improve” and “approval and / or review processes” have been replaced with “PTTW processes” in policy 22.4.</p>
13	Community Liaison Group	S7, Wellington	<p><b>New consumptive policy related to priority of use or allocation</b>                      Policy 19n reads:  <i>Placeholder for a new consumptive policy, related to priority of use or allocation, to be considered once Province releases water quantity framework related to water bottle moratorium and provincial water management review.</i></p> <p>Comment:                      We recommend that the completed policy include an indication of who will establish</p>	<p>Placeholder policy 19n was removed in response to the Ministry of the Environment, Conservation and Parks’ proposed regulatory changes to Ontario’s Water Quantity Management Framework (<a href="https://ero.ontario.ca/notice/019-1340">https://ero.ontario.ca/notice/019-1340</a>)</p>

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			<p>priorities of use, and the principles that will guide the setting of priorities. It is important to note that there are no “water rights” in Ontario; rather, water management is guided by the principle of Reasonable Use. We recommend that the final policy include an indication that if scientific investigations confirm a proposed non-municipal water taking will not affect municipal water supplies, priority of use will not be invoked to prohibit that taking.</p>	
14	Community Liaison Group	S7, Wellington	<p>I was dismayed to get confirmation at the last ZOOM meeting that the announcement of new growth targets has us on the brink of watching the horse bolt even as we are trying to close the barn door. Technically speaking, I suppose, ‘what’s next’ is beyond the scope of comments on the policies per se. However, it would indeed be a shame if these policies, once approved, were not able to be applied until yet another round of official planning by the County comes around in another 5+ years or so. Especially if, as we heard, the province has been approached and so far rejected hitting pause while time is taken to get this right, it will be even more important to secure the resources for the further modelling that is required to understand how best to “optimize” the water system with respect to growth, even as neighbouring communities bring infrastructure online too. One can certainly imagine cynics surmising that the inopportune push to implement new growth targets is an attempt to get ahead of these new policies.</p>	<p>The Official Plan, Growth Plan and water quantity policy processes are all separate provincial / local processes. Although separate, the processes do inform each other at the municipal or local watershed level but not provincially. The timeline for the water quantity policies was decided locally and mostly driven by when the technical work was completed. Meanwhile, the decisions on the timelines for updating the Official Plan through the Municipal Comprehensive Review and the Growth Plan targets are determined provincially and most likely did not know or consider the water quantity policy timeline.</p>
15	Public Member	S7, Wellington	<p>Some concerns:</p> <ol style="list-style-type: none"> <li>1) First, who does the monitoring, how often and who pays for it?</li> <li>2) Water must remain in a watershed and not removed without effective mitigation. Removing water from a watershed is a threat to water security and the local environment. Returning polluted water to the watershed cannot be allowed either.</li> <li>3) No permits can go to an aggregate company that is working below the water table.</li> <li>4) The Fergus/Elora area is not a typical area. The drinking water is at significant risk according to the Tier 3 study there. The municipality requires at least 4 new municipal wells to supply the present and rapidly growing community.</li> <li>5) Water conservation is key for industry, agriculture, municipalities and all water takers.</li> </ol>	<ol style="list-style-type: none"> <li>1) Monitoring is conducted by a combination of government and private corporations. Municipalities, conservation authorities, provincial ministries and private corporations pay for and are responsible for their respective water monitoring programs. Monitoring frequency is determined through the monitoring program design and provincial approvals.</li> <li>2) 4) and 6) Through the Permit To Take Water Program (PTTW), the Ministry of the Environment, Conservation and Parks manages water quantity, ensuring that new water takings do not have an adverse impact on existing water takings and the environment. Proposed policies WC-MC-22.1, WC-MC-22.2, WC-MC-22.12, WC-NB-22.12 direct the ministry to consider factors, including taking into consideration Tier 3 study results / recommendations when reviewing, amending and issuing a PTTW. Proposed policies WC-MC-22.7, 22.8, 22.9, 22.10, 23.3, 23.4 and 23.5 ensure</li> </ol>

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			<p>6) Policies must bear in mind future demands from growing municipalities, agriculture, business, industry, and local ecosystems and watersheds.</p> <p>Thank you for all the work that goes into Source Water Protection</p>	<p>municipal decisions regarding growth and development take into account the Tier 3 study result.</p> <p>3) Aggregate extraction is regulated by the Ministry of Natural Resources and Forestry (MNRF) through their licensing and approvals under the <i>Aggregate Resources Act, 1990 (ARA)</i>. Proposed policies aim to ensure MNRF decisions include source protection considerations.</p> <p>Additionally, in 2015 the Lake Erie Region Source Protection Committee (SPC) provided comments on the “Blueprint for Change – A proposal to modernize and strengthen the Aggregate Resources Act policy framework”. Two of the key recommendations included the prohibition of extraction activities within the 2-year time of travel (WHPA-A and B) of municipal drinking water wells and the prohibition of extraction below the water table where a breach of the aquitard could impact municipal drinking water sources. These comments were reiterated in 2016 as part of commenting on Bill 39 that proposed changes to the ARA and in comments on the provincial proposal to amend O.Reg. 244/97 and the Aggregate Resources of Ontario Provincial Standards under the ARA in April 2020.</p> <p>Water conservation is a key part in managing and ensuring sustainable drinking water sources. Proposed policies require the municipalities to implement water conservation initiatives. Water conservation is considered as part of the provincial water approval process.</p>
16	MECP	S7, Wellington	In 2017, the Ontario Municipal Board (OMB) ceased to exist and a new dispute body, the Local Planning Appeal Tribunal (LPAT) was created. Please consider updating these references for accuracy, such as monitoring policy WC-CW-1.10.	“Ontario Municipal Board” proposed to be changed to “Local Planning Appeal Tribunal” in policy WC-CW-1.11.
17	MNRF	S7, Wellington	The Ministry of Natural Resources and Forestry appreciates the wording changes that Lake Erie Region Source Protection Committee have made (i.e., ‘if necessary’, ‘shall consider’); however, MNRF continues to have concerns that most of the proposed policies duplicate requirements, processes, and considerations that are already	Following further discussion with the Ministry of Natural Resources and Forestry (MNRF) and municipal legal review, it is proposed that existing prescribed instrument policy WC-MC-22.3 be removed at this time as it pertains to Centre Wellington and

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			<p>addressed under existing provincial policy framework for a PTTW and under the <i>Aggregate Resources Act</i>. As well, under the notification and consultation process for new aggregate sites and existing sites proposing to lower the depth to extract below the water table, municipalities and MECP are circulated the complete application package for review and comments. If objections are outstanding, they may be referred to the Local Planning Appeal Tribunal for a hearing. These provisions enable the municipality and MECP to raise concerns regarding source water protection on a site-specific basis before an approval is issued/denied.</p> <p>Please consider the above when revising the proposed policies.</p>	<p>Acton WHPA-Qs as there are no existing aggregate extraction sites below the water table. Policy 22.3 is now changed to the future prescribed instrument policy. Further discussions on existing Prescribed Instrument policy WC-MC-22.3 are deferred until the s.34 Guelph-Guelph/Eramosa Grand River Source Protection Plan update.</p> <p>In response to the discussions with MNRF, revisions have been made to future Prescribed Instrument policy WC-MC-22.3. These revisions include:</p> <ul style="list-style-type: none"> <li>- adding, as a future activity, amendments to existing sites proposing to lower the depth of extraction from above to below the water table</li> <li>- clearly identifying that new <i>Aggregate Resources Act, 1990</i> (ARA) licenses are included as a future activity</li> <li>- other revisions related to terms and conditions in ARA approvals</li> </ul> <p>Policies WC-NB-22.11 and WC-NB-22.12 are proposed to remain in the Source Protection Plan.</p>
18	MECP/ MNRF	General	Both the Wellington County and Region of Waterloo contain policies which refer to the Guelph District Office. While that may be accurate for MECP, this is not the case for MNRF. Please consider including the corresponding MNRF local office or deleting the specific District Office reference within the policies directed to both MECP and MNRF.	“Guelph District Office” proposed to be changed to “ministry local office” for applicable policies in the Wellington County and Region of Waterloo source protection plans sections.
19	MECP	S7, Wellington	<p>Policy WC-CW-21.2 (SA, existing/future)</p> <p>This information-sharing policy has been updated to be legally binding for the municipality. The Risk Management Official (RMO) is included in the list of cooperative bodies to develop information-sharing documents; however, this is not a Part IV policy so you may wish to consider if the RMO is appropriate to include and would have the support of the municipality(ies) for which the RMO is responsible.</p>	“RMO” proposed to be changed to “Municipalities” in policy WC-CW-21.2.
20	MECP	S7, Wellington	<p>Policy WC-MC-22.3 (PI-ARA, existing)</p> <ul style="list-style-type: none"> <li>- This policy directs MNRF, in consultation with MECP, to review and revise all existing ARA licences in consideration of the long-term sustainability of the municipal water supplies and consider establishing conditions in ARA licences.</li> <li>- MNRF has noted that it would be helpful if the policy wording explicitly</li> </ul>	Following further discussion with the Ministry of Natural Resources and Forestry (MNRF) and municipal legal review, it is proposed that existing prescribed instrument policy WC-MC-22.3 be removed at this time as it pertains to Centre Wellington and Acton WHPA-Qs as there are no existing aggregate extraction

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			<p>referenced quantity and WHPA-Q, for example: "...shall review, and if necessary, amend existing ARA licenses, to ensure that the Municipal Supply (<b>quantity</b>) will not be adversely impacted..." and "...to achieve this, where appropriate, the Ministry of Natural Resources and Forestry shall consider establishing conditions in ARA licenses <b>within the WHPA-Q area</b> including but not limited to conditions which require..." for greater clarity.</p> <p>MNRF would like to reiterate that this policy is redundant with MECP's PTTW process and is not necessary. Please consider all previous comments regarding existing sites (pre-consultation comments are reattached for your convenience).</p>	<p>sites below the water table. Further discussions on existing Prescribed Instrument policy WC-MC-22.3 are deferred until the s.34 Guelph-Guelph/Eramosa" Grand River Source Protection Plan update.</p>
21	MECP	S7, Wellington	<p>Policy WC-MC-22.4 (PI-ARA, future)</p> <ul style="list-style-type: none"> <li>- This policy directs MNRF, in consultation with MECP, to consider the long-term sustainability of the municipal water supplies using the results of the Tier 3 Study and other water supply requirements for planned growth by establishing approval conditions in new ARA licenses.</li> <li>- MNRF has noted that it would be helpful if the policy explicitly referenced quantity and WHPA-Q, for example: "...shall review, and if necessary, amend existing ARA licenses, to ensure that the Municipal Supply (<b>quantity</b>) will not be adversely impacted..." for greater clarity.</li> </ul> <p>As previously provided in pre-consultation, new sites proposing to extract below the water table are required to identify if they are in a WHPA-Q area and identify applicable policies and mitigation measures that will be implemented on the site. While the intent of the policy is that it would apply, regardless of whether a PTTW is required on an ARA site, MNRF sees this policy as redundant, and suggests removing.</p>	<p>In response to the discussions, Ministry of Natural Resources and Forestry (MNRF) revisions have been made to future Prescribed Instrument policy WC-MC-22.3. These revisions include:</p> <ul style="list-style-type: none"> <li>- adding "quantity" as recommended</li> <li>- adding, as a future activity, amendments to existing sites proposing to lower the depth of extraction from above to below the water table</li> <li>- clearly identifying that new <i>Aggregate Resources Act, 1990</i> (ARA) licenses are included as a future activity</li> <li>- other revisions related to terms and conditions in ARA approvals</li> </ul>
22	MECP	S7, Wellington	<p>Policy WC-NB-22.12 (SA, existing/future)</p> <ul style="list-style-type: none"> <li>- This policy requests MNRF to consider integrating source protection water quantity technical work into the aggregate policy framework and provincial standards, and enhance engagement with other water managers.</li> <li>- Please review MNRF's comment provided during pre-consultation. As noted, recent changes to the ARA framework under the <i>Aggregate Resources Act</i> has already been updated to include the details in the policy. This includes: <ul style="list-style-type: none"> <li>o If the proposed site is in a source protection area under the <i>Clean Water Act</i>, applicants must identify activities proposed at the site that are drinking water threats set out in applicable source water protection plans and provide details on how relevant source</li> </ul> </li> </ul>	<p>After further discussions with the Ministry of Natural Resources (MNRF), the project team acknowledges that changes have been made to the <i>Aggregate Resources Act, 1990</i> (ARA) framework; however, as part of continuous improvement and to ensure that source protection continues to be integrated into to the ARA framework, this policy, now WC-NB-22.11, has been retained.</p>

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			<p>protection policies will be followed and associated mitigation measures that will be implemented.</p> <ul style="list-style-type: none"> <li>○ Applicants proposing a new site must retain a QP to monitor for a minimum of 1 year to determine the maximum predicted water table</li> <li>○ For new applications proposing below the water table extraction, the applicant must identify if they are in a WHPA-Q area and set out applicable source water protection policies and mitigation measures that will be implemented at the site.</li> <li>○ The consultation process under the ARA includes review and comments from municipalities and other provincial ministries.</li> </ul> <p>Given this, MNRF feels the policy has already been addressed under provincial requirements and should be removed.</p>	
23	MECP	S7, Wellington	<p>Policy WC-NB-22.13 (SA, existing/future)</p> <ul style="list-style-type: none"> <li>- This policy asks MNRF to consider integrating source protection water quantity technical work into the aggregate policy framework and provincial standards.</li> <li>- MNRF notes that details of this policy, and policy WC-NB-22.14 (i.e. ensure source protection is included as a risk factor of sites with PTTW and / or Aggregate Resources Act, 1990 Licenses in WHPA-Q Areas) were deleted in the Region of Waterloo policy RW-NB-69.</li> <li>- MNRF requests this policy for Wellington County (and WC-NB-22.14) be similarly deleted as it utilizes comprehensive risk-based planning to ensure compliance and enforcement efforts are directed where they will have the greatest impact, and the recent changes under the <i>Aggregate Resources Act</i> already include source protection considerations. This includes: <ul style="list-style-type: none"> <li>○ If the proposed site is in a source protection area under the <i>Clean Water Act</i>, applicants must identify activities proposed at the site that are drinking water threats set out in applicable source water protection plans and provide details on how relevant source protection policies will be followed and associated mitigation measures that will be implemented.</li> <li>○ For new applications proposing below the water table extraction, level 1 of the water study requires (among other things) the applicant to identify if they are in a WHPA-Q area and set out</li> </ul> </li> </ul>	<p>Propose to revise policy WC-NB-22.11 to read, “should continue to integrate”.</p> <p>After further discussions with the Ministry of Natural Resources (MNRF), the project team acknowledges that changes have been made to the <i>Aggregate Resources Act, 1990</i> (ARA) framework; however, as part of continuous improvement and to ensure that source protection continues to be integrated into to the ARA framework, policies WC-NB-22.11 and WC-NB-22.12 have been retained.</p> <p>It is important to clarify that policy RW-NB-69 was withdrawn from the Region of Waterloo section of the Grand River SPP because it applies to only a small sliver of land within Waterloo Region and does not provide any protection to the Region of Waterloo’s supply sources. Region of Waterloo staff support the inclusion of this policy in the Wellington section of the Grand River SPP.</p>

**Table 3: Revised Updated Grand River Source Protection Plan – Public consultation comments received that address the amendments proposed in this update**

#	Comment Source	SPP Section	Comment	How Comment is Addressed
			<p>applicable source water protection policies and mitigation measures that will be implemented at the site.</p> <p>Given the above, the policy is already addressed under provincial requirements therefore rendering it unnecessary.</p>	
24	MECP	S7, Wellington	<p>Policy WC-MC-22.5 (PI-PTTW, future)</p> <ul style="list-style-type: none"> <li>- This is a new policy as part of public consultation, which directs MECP and relevant municipalities to use the Tier 3 model and study results associated with developing new/expanded water takings "...where those new or expanded municipal takings could affect a <i>reduction in the assigned risk level</i> for the Centre Wellington WHPA-Q...".</li> <li>- Decisions on where to place a new water supply are made at the EA stage where the ministry may be a reviewer/commenter, but not an approver. While MECP supports new supplies that would reduce the assigned risk level, MECP does not have the ability to influence this decision at the permit stage of a PTTW; by this stage, the location of a taking and source has already been determined and MECP can only comment on the specifics of the proposed taking.</li> </ul> <p>Given this, please either remove the policy or revise for MECP and relevant municipalities to 'encourage through its review of Class EAs to consider, where appropriate, locations where new or expanded municipal takings could improve the assigned risk level for the Centre Wellington WHPA-Q'.</p>	<p>Propose to add the following sentence to policies WC-MC-22.1 and WC-MC-22.2:</p> <p>For new or expanded municipal takings that could improve the assigned risk level for the Centre Wellington WHPA-Q, the MECP shall ensure pre-consultation, engagement and information sharing with any relevant Municipalities and the GRCA and shall include use of the Tier 3 Model, Tier 3 Study results / recommendations and Water Supply Master Plan results / recommendations to ensure the provision and distribution of municipal water supply to support County population and growth forecasts.</p>
25	MECP	S7, Wellington	<p>Policy WC-CW-22.6 (SA, future)</p> <ul style="list-style-type: none"> <li>- This is a new policy as part of public consultation, which directs the municipality to use the Tier 3 model and study results in developing new/expanded water takings where new or expanded municipal takings could affect a reduction in the assigned risk level for the Centre Wellington WHPA-Q.</li> <li>- The policy is meant to provide support to MECP's review / approvals. Please remove the word "approved" for accuracy as MECP does not approve Class EAs.</li> </ul> <p>MECP also suggests replacing "affect a reduction in" with "improve" for ease of understanding.</p>	<p>For further clarity, the word "reduction" has been replaced with "improve" and "approval and / or review processes" have been replaced with "PTTW processes" in policies WC-CW-22.4.</p>
26	MECP	S7, Wellington	<p>Policy WC-MC-22.10 (LUP, future)</p> <ul style="list-style-type: none"> <li>- This policy (formally WC-MC-22.8) directs municipalities to only approve</li> </ul>	<p>Propose to add sentence to end of policy WC-MC-22.8: "This</p>

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#	Comment Source	SPP Section	Comment	How Comment is Addressed
			<p>municipally serviced settlement area expansions within a WHPA-Q as part of a municipal comprehensive review or as otherwise provided by the Provincial Growth Plan for the Greater Golden Horseshoe where it has been demonstrated through the use of the Tier 3 Model or other equivalent means, and that the expansion will not adversely impact the aquifer’s ability to meet the municipal water supply requirements for current and planned service capacity.</p> <p>Please consider if revisions may be appropriate to include to reflect a scenario where settlement areas may be using or connecting to water supplied outside the WHPA-Q.</p>	<p>policy does not apply to settlement area expansions with water supply sources outside of the WHPA-Q”.</p>
27	MECP	S7, Wellington	<p>Policy WC-MC-23.2 (PI, future)</p> <ul style="list-style-type: none"> <li>This policy directs MECP for future approvals for stormwater management facilities to ensure terms and conditions include groundwater recharge considerations where appropriate. We appreciate that this policy has been revised to consider our previous comments. There appears to be a remaining grammatical issue at the end of the policy with some repetition (i.e. protect water quality/water quality protected appears 3 times); please review the suggested strikeout below.</li> </ul> <p>For Stormwater Management Facilities, located within the WHPA-Q in a Chloride, Sodium or Nitrate ICA, the Ministry of the Environment, Conservation and Parks shall consider conditions which require best management practices to protect water quality and which address how recharge will be maintained <del>and water quality will be protected</del> including consideration of how water quality will be protected from <del>the</del> application and storage of winter maintenance materials including Salt.</p>	<p>Policy text revised to correct grammatical error and remove duplication.</p>
28	MECP	S10, ROW	<p>Policy RW-MC-66 (PI, future)</p> <ul style="list-style-type: none"> <li>We note that the Region of Waterloo has been removed from the policy (formally RW-MC-67), which now directs the province to work with Wellington County and their municipalities. This approach does not align with the structure of the Grand River plan.</li> <li>The Grand River source protection area has municipal leads for policy development and separate chapters of policies, and the actions set out in any given chapter are applicable to the vulnerable areas and municipalities that exist in that geographic area. If there is a desire for actions to be taken by adjacent municipalities, we recommend discussing this with them and</li> </ul>	<p>Policy RW-MC-66 applies within the Region of Waterloo portion of the WHPA-Q and is designed to protect the municipal drinking water system that the WHPA-Q is delineated for (Centre Wellington). The policy is directed at the Ministry and includes consultation with Wellington County municipalities, but is not directed at Wellington County municipalities.</p> <p>Recommend to retain this policy with the following revisions:</p> <ul style="list-style-type: none"> <li>replace “Wellington County municipalities” with “owner of the</li> </ul>

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#	Comment Source	SPP Section	Comment	How Comment is Addressed
			<p>exploring if they would include those policy actions within their chapter. In addition, a complementary “encourage” type policy recommending actions in the adjacent municipality may be considered for inclusion in the Region of Waterloo chapter. If a cooperative approach does not result in the desired policies by one or the other municipality, the source protection authority and committee may consider revising the draft policies accordingly prior to finalizing the plan for consultation and/or include recommendations for further revisions within their comments to the Minister for consideration in the approval of the Plan.</p> <p>Given the above, if Wellington County is supportive of the actions set out in this policy, it would be more appropriate for them to include that policy within <i>their</i> chapter. RW-MC-66 should only include Region of Waterloo when referencing a municipality in the policy text.</p>	<p>municipal drinking water system for the respective WHPA-Q”</p> <ul style="list-style-type: none"> <li>- revise last phrase of policy to read “... to ensure the sustainability of the applicable municipal water sources identified in the WHPA-Q”</li> </ul>
29	BlueTriton Brands	S7, Wellington	<p><b>Consideration of uncertainties in the Tier 3 water budget studies</b></p> <p>Draft Policy Number WC-MC-22.1 reads in part:</p> <p>To ensure that any Consumptive Water Taking ceases to be a significant drinking water threat, where this activity is a significant drinking water threat as prescribed by the CWA, the MECP shall review and, if necessary, amend existing PTTWs and / or Drinking Water Works Permits to ensure that the Municipal Supply will not be adversely impacted, taking into consideration Tier 3 Study results / recommendations...</p> <p>Draft Policy Number WC-MC-22.2 reads in part:</p> <p>To ensure that any Consumptive Water Taking never becomes a significant drinking water threat, where this activity would be a significant drinking water threat as prescribed by the CWA, the MECP shall issue PTTWs and / or Drinking Water Works Permits which ensure that the Municipal Supply will not be adversely impacted. To achieve this, the MECP, where appropriate, shall consider the following in its evaluation of PTTW and / or Drinking Water Works Permit applications:</p> <ol style="list-style-type: none"> <li>i. requiring permit applicants to use the Tier 3 Model,</li> <li>ii. Tier 3 Study results / recommendations;</li> </ol>	<p>The selection of the policy text “to consider the Tier 3 water budget results” includes the context within which the results were generated, including uncertainties and data gaps, and provides the necessary flexibility for the Ministry. The Tier 3 water budget technical reports capture the details and are available to the Ministry in implementing the policies.</p>

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#	Comment Source	SPP Section	Comment	How Comment is Addressed
			<p><b>Comment:</b>                      We concur with the recommendation that the assessment of existing and proposed consumptive water takings include consideration of the Tier 3 water budget results. We recommend that the policy include explicit indications that the consideration include references to uncertainties in the water budget analyses. The consideration should include identification of important data gaps and monitoring required to fill the data gaps.</p>	
30	BlueTriton Brands	S7, Wellington	<p><b>Due regard for comments regarding new or revised conditions of approvals</b>                      The final paragraph of Policy number WC-MC-22.1 reads:</p> <p>The MECP shall circulate Environmental Registry notices for proposed new or amended PTTWs and Drinking Water Works Permits to the Municipalities and GRCA and have due regard for comments from the GRCA and the Municipalities regarding proposed new or amended PTTWs and Drinking Water Works Permits and new or revised conditions of approvals related thereto.</p> <p><b>Comment:</b>                      We recommend that “due regard” be defined explicitly in the policies. In particular, we recommend that the final version of the policies address the following questions.</p> <ul style="list-style-type: none"> <li>• Are municipalities anticipated to have an effective veto in the issuing of Permits to Take Water?</li> <li>• Will the commenting process for permitted non-municipal water takings be based on data and best practices for the application of groundwater modelling techniques?</li> </ul> <p>Where model results are not constrained by high-quality data, will any analyses be identified clearly as being highly uncertain?</p>	<p>Due regard definition - Legal counsel for Wellington Source Water Protection was asked to review this comment and has advised that while statutes and policy documents frequently utilized this phrase, they could find no examples of statutes or policies that include a definition for the phrase. There are also very few examples of court decisions where it has been found necessary to define the term other than ascribing the normal common usage meaning. One court decision adopted a very general definition of the term from Black’s Law Dictionary 6th ed. as follows: "consideration to a degree appropriate to demands of the particular case". Given that examples/ precedents of laws, policies or regulatory instruments which established a definition of this phrase could not be found, and that caselaw indicates that a general common-usage understanding of the phrase has provided a sufficient level of clarity, we see no need to include a definition for this phrase in the Source Protection Plan.</p> <p>The decision notice on Ontario’s Water Quantity Management Framework has laid out the council resolution process for municipalities related to water bottling permit above 379,000L/day (<a href="https://ero.ontario.ca/notice/019-1340">https://ero.ontario.ca/notice/019-1340</a>)</p> <p>It is anticipated that the Ministry of the Environment, Conservation and Parks will consider all comments received related to permitted non-municipal water takings. Municipalities and / or the Grand River Conservation Authority may provide technical and / or non-technical comments.</p> <p>Any analyses or model use will be directed by the professional</p>

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#	Comment Source	SPP Section	Comment	How Comment is Addressed
				judgement of the appropriate qualified person as licensed in Ontario.
31	BlueTriton Brands	S7, Wellington	<p><b>Assigned risk level for a WHPA-Q</b></p> <p>Draft Policy Number WC-MC-22.5 reads:</p> <p>To ensure that any Consumptive Water Taking never becomes a significant drinking water threat, where this activity would be a significant drinking water threat as prescribed by the CWA, the MECP, in consultation with any relevant Municipalities and the GRCA, shall use the Tier 3 Model, Tier 3 Study results / recommendations and Water Supply Master Plan results / recommendations in its evaluation of New or expanded municipal takings through the PTTW process where those New or expanded municipal takings could affect a reduction in the assigned risk level for the Centre Wellington WHPA-Q. For context, this policy is meant to provide support, through the MECP approval and / or review processes to ensure the provision and distribution of municipal water supply to support County population and growth forecasts.</p> <p><b>Comments:</b> In our opinion, this draft policy requires clarification.</p> <p>Is Policy Number WC-MC-22.5 intended to prohibit any consumptive uses within the WHPA-Q, since a Significant Risk Level has already been assigned to the municipal water supplies? A portion of the Draft Updated Assessment Report is reproduced below:</p> <p>Meeting the Future water demand however falls short of the Tier 3 goal of having a reliable water supply until 2041. As a result, Centre Wellington's water supply source and its associated WHPA-Q is assigned a Water Quantity Risk Level of Significant. With this classification, all consumptive water uses and reductions to groundwater recharge through land use change within this area are considered Significant drinking water quantity threats. In total, 2,741 consumptive water uses and 4.3 km<sup>2</sup> of recharge reduction areas were identified as Significant threats in this Vulnerable Area.</p> <p>If instead of a blanket prohibition the policy is intended to be science-based, the "reduction" referred to in the policy must be defined explicitly. Is "reduction" interpreted</p>	<p>This policy references the results of the Centre Wellington Tier 3 Study that shows the significant risk designation is largely driven by an insufficient number of municipal wells to service the anticipated growth in population. Therefore, the phrase "reduction in the assigned risk level for a WHPA-Q" means that new or expanded municipal wells may result in the removal of a significant risk level for this WHPA-Q in the future. For further clarity, the word "reduction" has been replaced with "improve" and "approval and / or review processes" have been replaced with "PTTW processes" in policy 22.4.</p>

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			as an increase in the risk that new or expanded municipal supplies will cause existing supplies to no longer meet required demands? Or is Draft Policy Number WC-MC-22.5 included to allow the possibility that the designation of a significant risk level could be removed in the future?	
32	Ontario Stone, Sand & Gravel Assoc.	General	<p>OSSGA is a not-for-profit association representing over 280 sand, gravel and crushed stone producers and suppliers of valuable industry products and services. Collectively, our members supply the majority of the 164 million tonnes of aggregate consumed, on average, annually in the province to build and maintain Ontario's infrastructure needs. OSSGA continues to support the protection of drinking water sources for the citizens of Ontario and believes that aggregate extraction is compatible with the purpose of the <i>Clean Water Act</i> (CWA) and Source Protection Plans (SPPs), however we do have some comments on the recent proposed updates and policy changes in the Grand River Source Protection Plan (GRSPP).</p> <p><b>OSSGA is concerned with how the GRSPP is proposing to address water quantity issues.</b> Wellington County in their virtual open house on water quantity issues in February 2021 stated that one of the main ways Wellington County has chosen to address significant drinking water threats for water quantity is through prescribed instruments. The GRSPP is proposing to mandate how the technical studies for these provincial instruments (i.e. Permit to Take Water and license under the <i>Aggregate Resources Act</i> (ARA)) are to be conducted. This consideration would be contrary to the provincial process for the application of such prescribed instruments and is discussed below in greater detail.</p>	<p>After further discussions with the Ministry of Natural Resources (MNRF), the project team acknowledges that changes have been made to the <i>Aggregate Resources Act, 1990</i> (ARA) framework; however, as part of continuous improvement and to ensure that source protection continues to be integrated into to the ARA framework, most policies relating to the ARA have been retained.</p> <p>The proposed policies relating to the ARA are not intended to be duplicative but rather ensure integration of source protection into the ARA framework.</p>
33	Ontario Stone, Sand & Gravel Assoc.	General	<p><b>OSSGA is also concerned with the GRSPP's updated definition of Consumptive Water Taking.</b> The update identifies Consumptive Water Taking as "any activity that takes water from an aquifer or a surface water body without returning the water taken to the same aquifer or surface water body, an activity which is prescribed as a drinking water threat pursuant to Regulation 287//07 under the Clean Drinking Water Act, 2006".</p> <p>Whereas some water takers physically relocate water out of the watershed, aggregate producers largely move ground water and surface water around their site. Storm water/precipitation typically comprises at least 50% - 60% of the water pumped during dewatering activities. The storm water removed during dewatering ends up in a receiving watercourse, where most of it would have ended up in any event.</p>	<p>Under the <i>Clean Water Act, 2006</i> (CWA), Consumptive Water Taking is legally defined as, "any activity that takes water from an aquifer or a surface water body without returning the water taken to the same aquifer or surface water body." According to this definition, water that is taken from an aquifer or surface water body must be returned to the <i>same</i> aquifer or surface water body, otherwise that activity is considered a prescribed drinking water threat. The Wellington County Source Protection Plan chapter repeated this definition for ease of the reader.</p> <p>For example, a quarry dewatering operation that removes water from one aquifer and returns it to another is considered to be engaging in a Consumptive Water Taking activity, even if the</p>

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#	Comment Source	SPP Section	Comment	How Comment is Addressed
			<p>Aggregate producers are water handlers; although the ground water removed during dewatering may be returned to a nearby surface water body, more than 90% of the water remains within the watershed. (The remaining 10% can be accounted for by water either remaining on the product or evaporating). <b>However, by the definition in the updated GRSP, quarry dewatering is considered a Consumptive Water Taking and this could have significant implications for the aggregate industry.</b></p>	<p>aquifers are both within the same watershed.</p>
34	Ontario Stone, Sand & Gravel Assoc.	General	<p>The <i>Ontario Clean Water Act, 2006</i> defines a Drinking Water Threat as “an activity or condition that adversely affects or has the potential to adversely affect the quality of any water that is or may be used as a source of drinking water...”. The updated plan requires MECP to amend existing and future PTTW to ensure there is no Consumptive Water Use or adverse impact. However, it is not clearly delineated what is meant by these terms. Water taking at pits and quarries may result in a minor modification to the flow system or water balance but that does not necessarily mean there will be an adverse impact. In fact, the MECP in approving a PTTW and an ECA for a licensed aggregate operation already assesses any and all potential adverse influence(s) that the operation might pose on the surrounding environment. This technical assessment also includes Source Water Protection considerations.</p> <p><b>Consequently, OSSGA is also concerned with a number of proposed policies addressing drinking water threats that pertain to Consumptive Water Takings and adverse impact. The result of these proposed policies, if implemented, have the potential to result in yet another approval process for the aggregate industry, introduce the requirement for new reports (the scope of which is unclear), and restrict the aggregate industry from meeting the basic requirements for a Permit to Take Water. The aggregate industry carefully and effectively handles water, and the updated plan could subject the industry to extensive and potentially unreasonable terms/ conditions.</b></p> <p>While the GRSP is advocating water quantity controls through the prescribed instrument process, it would also appear that they are seeking to control how this is performed and impose additional input(s) into this process. The inference is that the current provincial process is somehow "lacking" or inadequate to those standards being advocated by the GRSP.</p> <p>Water taking in pits and quarries is already thoroughly and well-regulated through a stringent permitting and monitoring process. Together, the MNRF, local and provincial</p>	<p>After further discussions with the Ministry of Natural Resources (MNRF), the project team acknowledges that changes have been made to the <i>Aggregate Resources Act, 1990</i> (ARA) framework; however, as part of continuous improvement and to ensure that source protection continues to be integrated into to the ARA framework, most policies relating to the ARA have been retained.</p> <p>The proposed policies relating to the ARA are not intended to be duplicative but rather ensure integration of source protection into the ARA framework.</p>

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			<p>agencies/bodies ensure that any meaningful impact is measured with risk management strategies. The application process for an existing or new pit/quarry to extract below the water table or change the extraction from above to below the water table requires a major Site Plan Amendment (SPA). This includes requirements for operators to complete a public information session, public consultation, preparation and review of supporting studies/reports (i.e., full Hydrogeological Assessment), and updated site plan. Additionally, the new changes to the ARA operational and compliance standards state that aggregate applications proposing the extraction of material from within or near the water table (i.e., within 1.5m for pit or within 2m for quarry) require a full Hydrogeological Assessment prepared by a qualified individual to support the application.</p> <p>The new ARA operational and compliance standards set out rules/guidelines for producers/ operators that propose work both above and below the water table. This is specific to each application and includes standards for site plans, studies/reports, prescribed terms for notification and consultation. These new changes ensure that the MNRF directs sufficient attention to existing and new aggregate applications within a WHPA-Q.</p> <p>That being said, the updated source water policies will effectively take value away from the ARA process. There is extensive overlap between the standards and framework of regulatory agencies/ bodies and the updated GRSP. Ultimately, this will cause interference with the MNRF and impact the greater understanding of the magnitude of problems or issues related to source water protection and aggregate extraction.</p>	
35	Ontario Stone, Sand & Gravel Assoc.	General	Finally, with respect to the use of the Tier 3 Model, the scale is important. The Tier 3 Model is a regional ground water model, and it is important that the model is calibrated to evaluate site-specific data.	The Matrix 2020 Risk Assessment acknowledges the limitations of the groundwater model. The groundwater flow model was designed to address water budget questions in the Fergus and Elora area; however, additional characterization and refinement of the groundwater flow model may be necessary before it is applied to help address site-specific questions regarding changes in water levels or contaminant fate and transport.
36	Ontario Stone, Sand & Gravel	General	There are other references to items; but they lack context and a supplemental rationale document is required to full understand what is being advocated. For example, the GRSP makes reference to Geologic Controls without fully justifying how these might be used and hence why they are important (or trivial) to the	In response to the discussions with the Ministry of Natural Resources and Forestry (MNRF), revisions have been made to future Prescribed Instrument policy WC-MC-22.3. These revisions include:

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	Assoc.		discussion.	<ul style="list-style-type: none"> <li>- adding, as a future activity, amendments to existing sites proposing to lower the depth of extraction from above to below the water table</li> <li>- clearly identifying that new <i>Aggregate Resources Act, 1990</i> (ARA) licenses are included as a future activity</li> <li>- other revisions related to terms and conditions in ARA approvals</li> </ul> <p>These revisions include the removal of Geological Controls as a defined term. Further information can be found in the Explanatory Document.</p>
37	Ontario Stone, Sand & Gravel Assoc.	General	<p>Similarly, the updated plan vaguely describes a Recharge Reducing Activity as any activity that reduces recharge of an aquifer. In Ontario, most pits and some quarry sites are excavated above the water table. This type of work has little to no impact on the underlying flow system, water balance or recharge function because there is no direct alteration of the aquifer or water source. As for any pit and quarry sites excavated below the water table, operators/producers use draglines or pumps to dredge material from the pond. This type of work does not have significant impacts on the ground and surface water because the water is drained back into the aquifer or water source. With the use of monitoring and mitigation programs, both above and below water sites are confirmed to leave water sources unaffected away from the operational site. These types of aggregate sites pay close attention to the hydrogeological and hydrological setting to ensure that minor losses only occur due to evaporation or moisture in the resource.</p> <p><b>OSSGA is also seeking clarification on what constitutes a Recharge Reducing Activity among other items. Because the recharge ability depends on the scale, size and location of an aggregate operation, the updated GRSPP must determine specific conditions that qualify as recharge reducing.</b></p>	<p>Under the <i>Clean Water Act, 2006</i> (CWA), Recharge Reducing Activity is legally defined as, “an activity that reduces the recharge of an aquifer.” According to this definition, it is any amount of recharge reduction. The Wellington County Source Protection Plan chapter repeated this definition for ease of the reader. The definition is purposely broad so that significant drinking water threats can be identified for site-specific assessment. The planning policies propose criteria that further define the level of assessment that may be required.</p>
38	Ontario Stone, Sand & Gravel Assoc.	General	<p>As mentioned, there are a number of proposed policies that OSSGA is concerned with and OSSGA looks forward to discussing the specific proposed policies in more detail with the Lake Erie Source Protection Plan Committee and MECP. If you have any questions or require further information, please feel free to contact the undersigned.</p>	<p>The project team met with OSSGA to discuss their comments and concerns.</p>
39	Lafarge Canada Inc.	General	<p>Lafarge Canada Inc. (Lafarge) would like to thank the Lake Erie Source Protection Region and the Grand River Conservation Authority for the opportunity to comment on the Grand River Source Protection Plan.</p>	<p>Under the <i>Clean Water Act, 2006</i> (CWA), Consumptive Water Taking is legally defined as, “any activity that takes water from an aquifer or a surface water body without returning the water</p>

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			<p>By way of background, Lafarge is the largest construction materials company in Ontario, producing aggregate, cement, and ready mix concrete for the construction industry. By itself, the aggregate industry is known to be an essential economic sector within the province employing approximately 7,000 people directly and another 34,000 people indirectly and generating in excess of \$1 billion of annual revenue. Without a reliable and affordable supply of aggregate, much of the growth and infrastructure development in the province would grind to a halt.</p> <p>Lafarge continues to support the protection of drinking water sources for the citizens of Ontario and believes that aggregate extraction is compatible with the purpose of the <i>Clean Water Act</i> (CWA) and Source Protection Plans (SPPs), however we do have some comments on the recent proposed updates and policy changes in the Grand River Source Protection Plan (GRSPP).</p> <p>Lafarge is concerned with the GRSPP’s updated definition of Consumptive Water Taking. The update identifies Consumptive Water Taking as “any activity that takes water from an aquifer or a surface water body without returning the water taken to the same aquifer or surface water body, an activity which prescribed as a drinking water threat pursuant to Regulation 287/07 under the <i>Clean Drinking Water Act, 2006</i>”.</p> <p>Whereas some water takers physically remove water (i.e. water bottling) from the watershed, aggregate producers largely move groundwater and surface water around their site. The water pumped for quarry dewatering is typically a combination of storm water and groundwater. Storm water typically comprises about 50% - 60% of the water pumped during dewatering activities (depending on the permeability of the rock formations being extracted). Groundwater makes up the balance. The storm water removed during dewatering ends up in a receiving watercourse, where most of it would have ended up in any event (recognizing some storm water infiltrates into the ground and would end up recharging the local aquifer).</p> <p>Aggregate producers are water managers; although the groundwater removed during dewatering may be returned to a nearby surface water body, more than 90 % of the water (the remainder accounting for water retained on product and evaporation) remains within the watershed. However, by the definition in the updated GRSPP,</p>	<p>taken to the same aquifer or surface water body.” According to this definition, water that is taken from an aquifer or surface water body must be returned to the same aquifer or surface water body, otherwise that activity is considered a prescribed drinking water threat. The Wellington County Source Protection Plan chapter repeated this definition for ease of the reader.</p> <p>For example, a quarry dewatering operation that removes water from one aquifer and returns it to another is considered to be engaging in a Consumptive Water Taking activity, even if the aquifers are both within the same watershed.</p>

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#	Comment Source	SPP Section	Comment	How Comment is Addressed
			<p>quarry dewatering to some extent is considered a Consumptive Water Taking and this could have significant implications for Lafarge and the aggregate industry as a whole.</p> <p>The <i>Ontario Clean Water Act</i>, 2006 defines a Drinking Water Threat as “an activity or condition that adversely affects or has the potential to adversely affect the quality of any water that is or may be used as a source of drinking water...” The updated GRSPP requires MECP to amend existing and future PTTW to ensure there is no Consumptive Water Use or adverse impact.</p> <p>However, what is meant by these terms is not clearly defined. Water taking at pits and quarries may result in a minor modification to the local flow regime or water balance but that does not necessarily mean there will be an adverse impact.</p>	
40	Lafarge Canada Inc.	General	<p>Lafarge is also concerned with a number of proposed policies (WC-MC-22.1, WC-MC-22.3, WC-MC-22.4, WC-MC-22.11, WC-CW-21.1 and WC-NB-22.13) addressing drinking water threats that pertain to Consumptive Water Takings and adverse impact. The result of these proposed policies, if implemented, have the potential to result in yet another approval process for the aggregate industry, introduce the requirement for new reports (the scope of which is unclear), and restrict the aggregate industry from meeting the basic requirements for a Permit to Take Water. The aggregate industry carefully and effectively handles water, and the updated plan could subject the industry to extensive and potentially unreasonable terms/conditions.</p> <p>Water taking in pits and quarries is already well-regulated through a stringent permitting and monitoring process. Together, the MNRF, local and provincial agencies/bodies ensure that a sudden and catastrophic impact is measured with risk management strategies. The application process for an existing or new pit/quarry to extract below the water table or change the extraction from above to below the water table requires a major site plan amendment (SPA).</p> <p>This includes requirements for operators to complete public consultation, preparation and review of supporting studies/reports (i.e. full Hydrogeological Assessment), and updated site plan. Additionally, the new changes to the ARA operational and compliance standards state that aggregate applications proposing the extraction of material from within or near the water table (i.e. within 1.5m for pit or within 2m for quarry) require a full Hydrogeological Assessment prepared by a qualified individual to support the application.</p>	<p>After further discussions with the Ministry of Natural Resources (MNRF), the project team acknowledges that changes have been made to the Aggregate Resources Act, 1990 (ARA) framework; however, as part of continuous improvement and to ensure that source protection continues to be integrated into to the ARA framework, most policies relating to the ARA have been retained.</p> <p>The proposed policies relating to the ARA are not intended to be duplicative but rather ensure integration of source protection into the ARA framework.</p>

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#	Comment Source	SPP Section	Comment	How Comment is Addressed
			<p>The new ARA operational and compliance standards set out rules/guidelines for producers/operators that propose work both above and below the water table. This is specific to each application and includes standards for site plans, studies/reports, prescribed terms for notification and consultation. These new changes ensure that the MNRF directs sufficient attention to existing and new aggregate applications within a WHPA-Q. That being said, the updated plan will effectively take value away from the ARA process. There is extensive overlap between the standards and framework of regulatory agencies/bodies and the updated GRSP. Ultimately, this will cause interference with the MNRF and impact the greater understanding of the magnitude of problems or issues related to source water protection and aggregate extraction.</p>	
41	Lafarge Canada Inc.	General	<p>The updated GRSP also describes a Recharge Reducing Activity as any activity that reduces recharge of an aquifer. In Ontario, most pits and some quarry sites are excavated above the water table. This type of work has little to no impact on the flow regime, water balance or recharge function because there is no direct alteration of the aquifer or water source. For pits and quarry sites excavated below the water table, aggregate producers use draglines or pumps to dredge material from the pond. This type of work does not have significant impacts on the ground and surface water because the water is drained back into the aquifer or water source. With the use of monitoring and mitigation programs, both above and below water sites are confirmed to leave water sources mostly unaffected. These types of aggregate sites pay close attention to the hydrogeological and hydrological setting to ensure that minor losses only occur due to evaporation or moisture in the resource.</p> <p>Lafarge is also seeking clarification on what constitutes a Recharge Reducing Activity. Because the recharge ability depends on the scale, size and location of an aggregate operation, the updated GRSP must determine specific conditions that qualify as recharge reducing.</p>	<p>Under the <i>Clean Water Act, 2006 (CWA)</i>, Recharge Reducing Activity is legally defined as, “an activity that reduces the recharge of an aquifer.” According to this definition, it is any amount of recharge reduction. The Wellington County Source Protection Plan chapter repeated this definition for ease of the reader. The definition is purposely broad so that significant drinking water threats can be identified for site-specific assessment. The planning policies propose criteria that further define the level of assessment that may be required.</p>
42	Lafarge Canada Inc.	General	<p>As mentioned, there are a number of proposed policies that Lafarge is concerned with and we look forward to discussing the specific proposed policies in more detail with the Lake Erie Source Protection Plan Committee and the MECP. We would again like to express our appreciation for the opportunity to comment on the updated GRSP. If you have any questions regarding our comments, or would like further clarification please do not hesitate to contact us.</p>	<p>The project team met with Lafarge Canada Inc. to discuss their comments and concerns.</p>
43	Public Member	S7, Wellington	<p><i>For further content and information, see original comments attached.</i></p>	<p>The clean copy of Volume II Approved Grand River Source Protection Plan Chapter 7 County of Wellington dated February</p>

**Table 3: Revised Updated Grand River Source Protection Plan – Public consultation comments received that address the amendments proposed in this update**

#	Comment Source	SPP Section	Comment	How Comment is Addressed		
			<p><b>Chapter 7 of the Source Protection Plan, Wellington County</b></p> <p>The website for the <b>Source Protection Plan Update</b> reads:  <a href="https://www.sourcewater.ca/en/source-protection-areas/source-protection-plan-update.aspx">https://www.sourcewater.ca/en/source-protection-areas/source-protection-plan-update.aspx</a></p> <ul style="list-style-type: none"> <li>Chapter 7 (Wellington County): <u>highlighted</u> (PDF); <u>clean</u> (PDF)</li> </ul> <p>The 'highlighted' copy is:</p> <ul style="list-style-type: none"> <li><b>Volume II - Draft Updated</b> Grand River Source Protection Plan Chapter 7 County of Wellington (dated Jan 21, 2021)  <a href="https://www.sourcewater.ca/en/source-protection-areas/resources/Documents/Grand/GRSPA_SPP_updated_S7-Wellington_highlighted.pdf">https://www.sourcewater.ca/en/source-protection-areas/resources/Documents/Grand/GRSPA_SPP_updated_S7-Wellington_highlighted.pdf</a></li> </ul> <p>The 'clean copy' is:</p> <ul style="list-style-type: none"> <li><b>Volume II Approved</b> Grand River Source Protection Plan Chapter 7 County of Wellington (dated Feb 2, 2021)  <a href="https://www.sourcewater.ca/en/source-protection-areas/resources/Documents/Grand/GRSPA_SPP_updated_S7-Wellington_clean.pdf">https://www.sourcewater.ca/en/source-protection-areas/resources/Documents/Grand/GRSPA_SPP_updated_S7-Wellington_clean.pdf</a></li> </ul> <p><b>Those two versions are not the same.</b> One example is that the 'clean copy' no longer contains the following policy:</p> <table border="1"> <tr> <td> <p>WC-CW-21.1 Existing/Future Specify Action Centre Wellington WHPA-Q Monitoring</p> </td> <td> <p><i>To ensure that any Consumptive Water Taking and/or any Recharge Reducing Activity cease to be or never become significant drinking water threats, where these activities are or would be significant drinking water threats as prescribed in the Clean Water Act, 2006CWA, the Township of Centre Wellington shall: design, maintain and implement a long-term monitoring program of groundwater and surface water systems to assess potential groundwater and/or surface water quality impacts from Consumptive Water Takings and/or Recharge Reducing Activities within the Centre Wellington WHPA-Q. The design and implementation of the monitoring program shall consider the recommendations from the Centre Wellington Tier 3 Study, the Centre Wellington Water Supply Master Plan, and municipal exploratory drilling programs, Class Environmental Assessments</i></p> </td> </tr> </table>	<p>WC-CW-21.1 Existing/Future Specify Action Centre Wellington WHPA-Q Monitoring</p>	<p><i>To ensure that any Consumptive Water Taking and/or any Recharge Reducing Activity cease to be or never become significant drinking water threats, where these activities are or would be significant drinking water threats as prescribed in the Clean Water Act, 2006CWA, the Township of Centre Wellington shall: design, maintain and implement a long-term monitoring program of groundwater and surface water systems to assess potential groundwater and/or surface water quality impacts from Consumptive Water Takings and/or Recharge Reducing Activities within the Centre Wellington WHPA-Q. The design and implementation of the monitoring program shall consider the recommendations from the Centre Wellington Tier 3 Study, the Centre Wellington Water Supply Master Plan, and municipal exploratory drilling programs, Class Environmental Assessments</i></p>	<p>2, 2021, was posted on the Source Protection Plan Update webpage in error. The error was noted during the public consultation period and corrected by removing the February 2, 2021 clean copy and posting the January 21, 2021 clean copy in its place.</p>
<p>WC-CW-21.1 Existing/Future Specify Action Centre Wellington WHPA-Q Monitoring</p>	<p><i>To ensure that any Consumptive Water Taking and/or any Recharge Reducing Activity cease to be or never become significant drinking water threats, where these activities are or would be significant drinking water threats as prescribed in the Clean Water Act, 2006CWA, the Township of Centre Wellington shall: design, maintain and implement a long-term monitoring program of groundwater and surface water systems to assess potential groundwater and/or surface water quality impacts from Consumptive Water Takings and/or Recharge Reducing Activities within the Centre Wellington WHPA-Q. The design and implementation of the monitoring program shall consider the recommendations from the Centre Wellington Tier 3 Study, the Centre Wellington Water Supply Master Plan, and municipal exploratory drilling programs, Class Environmental Assessments</i></p>					

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#	Comment Source	SPP Section	Comment	How Comment is Addressed		
			<p><i>municipal wells, municipal wellfield capacity studies and / or other studies required through the Centre Wellington PTTW / Drinking Water Works Permit. The development, maintenance and implementation of this program, where possible shall be carried out by the Township of Centre Wellington in collaboration with the County, other potentially affected Municipalities, the Ministry of the Environment, Conservation and Parks MECP and the Grand River Conservation Authority GRCA.</i></p> <p>Questions:</p> <ul style="list-style-type: none"> <li>Was the intent of showing both versions (<i>i.e., highlighted versus clean</i>) to give readers a choice of style (<i>i.e., see edits or not</i>) when reading the document? <ul style="list-style-type: none"> <li>If yes, why is the 'clean' version' not the same as the 'highlighted' version minus the deletions?</li> </ul> </li> </ul> <p>If no, then the ambiguity should be resolved because it was a fluke that I opened the clean copy and discovered that I should be reading the 'clean' copy not the 'highlighted' copy for the most up-to-date information.</p>			
44	Public Member	S7, Wellington	<p><i>For further content and information, see original comments attached.</i></p> <p><b>Chapter 7 of the Source Protection Plan, Wellington County</b></p> <p>'Volume II Approved - <b>Grand River Source Protection Plan Chapter 7 County of Wellington</b> (dated Feb 2, 2021)' <b>outlines the need for information sharing and the plans for the types of information to be shared.</b></p> <p><a href="https://www.sourcewater.ca/en/source-protection-areas/resources/Documents/Grand/GRSPA_SPP_updated_S7-Wellington_clean.pdf">https://www.sourcewater.ca/en/source-protection-areas/resources/Documents/Grand/GRSPA_SPP_updated_S7-Wellington_clean.pdf</a></p> <table border="1"> <tr> <td><i>Policy Number</i></td> <td><i>Source Protection Policies Within the County of Wellington</i></td> </tr> </table>	<i>Policy Number</i>	<i>Source Protection Policies Within the County of Wellington</i>	<p>Policy text proposed to be amended to capitalize "Municipality" and to include both singular and plural forms.</p>
<i>Policy Number</i>	<i>Source Protection Policies Within the County of Wellington</i>					

**Table 3: Revised Updated Grand River Source Protection Plan – Public consultation comments received that address the amendments proposed in this update**

#	Comment Source	SPP Section	Comment	How Comment is Addressed
			<p>WC-NB-1.18 <i>Existing Specify Action Condition Sites Identified Monitoring</i></p> <p><i>'To address Conditions resulting from past activities that are significant drinking water threats the Ministry of Environment, Conservation and Parks and the County <b>and/or municipality</b>:</i></p> <ul style="list-style-type: none"> <li><i>a. Shall meet at a minimum frequency of once a calendar year for the purpose of <b>mutually sharing information</b> on Condition sites;</i></li> <li><i>b. Should mutually share information related, as appropriate, to technical investigations or remediation, technical data, actions taken by Ministry of Environment, Conservation and Parks or by the County <b>and/or municipality</b>, inspections, other relevant information on Condition sites;</i></li> <li><i>c. <b>Should develop an Information-Sharing Process document including requirements, if any, for meeting agendas, participants, the nature and format for the types of information to be mutually shared, and the Information Sharing Process document should be developed within six months from the date the Source Protection Plan takes effect; and</b></i></li> <li><i>d. <b>Should mutually share available documentation, as appropriate, for potential significant drinking water threats / Condition sites.'</b></i></li> </ul> <p><b>Question:</b> Does the wording of Policy WC-NB-1.18 ensure that information will be shared with ALL municipalities that are affected by a particular Wellhead Protection Area? I ask because 'municipality' in Policy WC-NB-1.18 isn't shown in both the singular and plural form.</p>	
45	Public Member	S7, Wellington	<p><i>For further content and information, see original comments in attached.</i></p> <p><b>Chapter 7 of the Source Protection Plan, Wellington County</b></p> <p>Comments:</p> <ul style="list-style-type: none"> <li>• I understand that the mandate of the Draft SWPP is to protect municipal wells (not private/domestic wells).</li> <li>• It is my <b>hope that the Source Protection Plan will ensure that information will be shared with all Municipalities affected by a specific WHPA-Q</b>, and that those affected Municipalities will be consulted on the types of information needed for long-range planning and decision-making (e.g., will Alma continue to be unserved indefinitely or not?).</li> <li>• Both the Wellington County Official Plan and the Provincial Policy Statement</li> </ul>	<p>The <i>Clean Water Act, 2006</i> (CWA) has been scoped by the Province to only apply to municipal residential supply wells.</p> <p>Municipalities is a defined term and includes all Wellington County local municipalities including the Townships of Centre Wellington and Mapleton. The information sharing policy that pertains to the Centre Wellington WHPA-Q would therefore apply to both Centre Wellington and Mapleton. Regarding long range planning and servicing of Alma, the proposed source protection plan changes do not relate to provision of municipal water or sewage to Alma. This would be a municipal decision outside of the CWA.</p>

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#	Comment Source	SPP Section	Comment	How Comment is Addressed
			<p><b>support evaluating impacts on groundwater resources including impacts on private/domestic wells.</b> Excerpts provided below.</p> <p><b>Wellington County Official Plan (Jan 8, 2021) 4.6.3 Environmental Impact Assessment (item f):</b>  <i>‘Environmental impact assessments prepared by a qualified person may be required to evaluate the impacts a proposed development may have on the natural environment and the means by which negative impacts may be reduced or eliminated. An environmental impact assessment may include some or all of the following...’</i></p> <ul style="list-style-type: none"> <li>• <i>f) an assessment of the impact on groundwater resources and in particular existing private wells and municipal supply wells in the area....’</i></li> <li>• <i>h) an assessment of the impact on groundwater resources and in particular existing private wells and municipal supply wells in the area...</i></li> <li>• <i>n) a proposal for monitoring, where needed....</i></li> <li>• <i>o) such additional concerns as a Council may consider relevant....’;</i></li> </ul> <p><b>The Provincial Policy Statement (May 1, 2020)</b></p> <ul style="list-style-type: none"> <li>• <b>(Part 1 Preamble)</b> <i>‘...Official plans should also coordinate cross-boundary matters to complement the actions of other planning authorities and promote mutually beneficial solutions. Official plans shall provide clear, reasonable and attainable policies to protect provincial interests and direct development to suitable areas. In order to protect provincial interests, planning authorities shall keep their official plans up-to-date with this Provincial Policy Statement....’</i></li> <li>• <b>(item 1.6.6.4)</b> <i>‘...Where planning is conducted by an upper-tier municipality, the upper-tier municipality should work with lower-tier municipalities at the time of the official plan review or update to assess the long-term impacts of individual on-site sewage services and individual on-site water services on the environmental health and the desired character of rural settlement areas and the feasibility of other forms of servicing set out in policies 1.6.6.2 and 1.6.6.3. ’</i></li> </ul> <p><b>Matrix 2020 also recommends additional study</b> (including private/domestic wells) particularly <b>beyond 1 km of municipal wells</b> to better understand groundwater</p>	<p>Section 4.6.3 of the County Official Plan is applicable to development applications.</p> <p>The Provincial Policy Statement requires the County to work with the local municipalities during the Official Plan review process to assess water and sewage servicing. This process is ongoing with multiple public and Council meetings planned for 2021 and beyond.</p> <p>Regarding, the analysis recommended in the Matrix 2020 report, this analysis was completed and is available at:  <a href="https://www.sourcewater.ca/en/source-protection-areas/resources/Documents/Grand/23876-527-R-2020-08-19-final-V1.0.pdf">https://www.sourcewater.ca/en/source-protection-areas/resources/Documents/Grand/23876-527-R-2020-08-19-final-V1.0.pdf</a></p>

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#	Comment Source	SPP Section	Comment	How Comment is Addressed
			<p>demands and threats:</p> <ul style="list-style-type: none"> <li>• (see 3.2.3) <b><i>‘There is minimal quality data at distances farther away from the municipal pumping wells and as a result there is greater uncertainty with respect to groundwater flow including hydraulic connections within the water supply aquifer and between deep and shallow systems...’</i></b></li> <li>• (see Recommendation 2) <b><i>‘...The Tier Three Assessment scenarios should be repeated as new data becomes available through the results of the study to assess new sources regarding their sustainability in meeting future municipal demands.’</i></b></li> <li>• (see Recommendation 3) <b><i>‘Use of the Tier Three model in assessing water taking applications: If new permitted water takings are proposed within the Groundwater Vulnerable Area, the Tier Three model may be applied to determine the impact of the proposed water taking on municipal water supply reliability...’</i></b></li> </ul> <p>(See Recommendations 9.3) <b><i>‘Consider conducting a partial or full Risk Management Measures Evaluation Process (RMMEP): As a Significant Risk Level was assigned to the Groundwater Vulnerable Area and as all consumptive water uses and areas of groundwater recharge reductions within this Vulnerable Area are classified as Significant Drinking Water Threats, a RMMEP may be initiated. A RMMEP involves using the Tier Three model to rank the relative impact of individual or groups of water quantity threats on the municipal wells and then evaluate possible measures that may be implemented to reduce the Water Quantity Risk Level in the Vulnerable Area. The RMMEP may expand on the recommended risk management measure and provide recommendations to the municipality, conservation authority and Province for maximizing the benefits of each measure. It is recommended that an RMMEP include an evaluation of the relative significance of the simulated non-municipal, non-permitted domestic and agricultural takings on water levels in the municipal wells. This is because the boundary of the Groundwater Vulnerable Area was predicted to extend past the subset of wells simulated to represent non-municipal, non-permitted takings within a 1 km (i.e., domestic wells) and 3 km (i.e., agricultural wells) buffer of the Centre Wellington municipal wells.’</i></b></p>	

**Table 4: Revised Updated Grand River Source Protection Plan – Other public consultation comments received not related to the amendments proposed in this update**

#	Comment Source	SPP Section	Comment	How Comment is Addressed
1	Public Member	General	My suggestion is that the plan be amended to include a feasibility study of building aqueducts to Lake Erie and/or Lake Huron. It would solve the issue and also eliminate the need for domestic water softeners.	Municipal drinking water infrastructure decisions are guided by Water Supply Master Planning and Class Environmental Assessment processes and are outside of what can be addressed through the <i>Clean Water Act, 2006</i> .
2	Public Members* *Comment received 96 times from public members	General	<p>1. Research - Cumulative impacts (CI) We need a clear definition of cumulative impacts. What is the "tipping point" in any given area when no more above and below the water table gravel pit and/or quarries are acceptable for the safety of the water? Could considering the 'increased vulnerability' (as defined by professional hydrogeologist Emil Frind) created by each operation within set parameters of significant sources of drinking water be a route to define this? The risks imposed by open water sitting in gravel pits identified by GRCA must also be accounted for in this calculated risk.</p>	<p>The Ministry of Natural Resources and Forestry (MNRF) regulates aggregate operations, including overseeing the rules governing aggregate management, issues licenses, permits and changes to existing approvals. The Ministry of the Environment Conservation and Parks (MECP) regulates the Permits To Take Water (PTTW) process. Together, these ministries are responsible for assessing and addressing cumulative impacts to municipal drinking water sources. The role of source protection plan policies is to ensure that Source Water Protection is considered in the decisions that are under the jurisdiction of the ministries.</p> <p>Potential impacts from quarrying activities on sources of municipal drinking water have been a longstanding concern of the Lake Erie Region Source Protection Committee (SPC). In 2011, the SPC requested that the Province identify rehabilitation activities at an aggregate operation within a vulnerable area of a municipal drinking water system where fill material is placed, or that allows ponding of water, as a local drinking water threat under Technical Rule 119. The latter request currently remains outstanding; however, the MECP has indicated that the MNRF has now completed their review of the aggregate resources policy framework and any updates to the Aggregate Resource Act, and that the Ministry is now in a position to revisit this discussion.</p> <p>It is also important to clarify that there are no source protection policies related to cumulative impacts resulting from aggregate extraction because it is not a Prescribed Activity as regulated by MECP. There is a policy in the Region of Waterloo's Regional Official Plan (ROP) that requires cumulative impact assessments associated with applications to amend the ROP.</p>

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#	Comment Source	SPP Section	Comment	How Comment is Addressed
				Accordingly, it is determined that this comment does not apply to the current update to the Grand River Source Protection Plan and further comment is not warranted.
3	Public Members* *Comment received 96 times from public members	General	2. Land use planning - We prefer no prime farmland loss to gravel pits and offer the following high-level concerns. The rehabilitation plan to rezone prime farmland to aggregate extraction in areas under SPP must be carefully considered by professional hydrogeologists who represent the municipality to identify the risks to our drinking water. We cannot risk losing prime farmland and water to aggregate extraction.	The establishment and operation of aggregate extractions, including rehabilitation plans, are regulated under the <i>Aggregate Resources Act, 1990 (ARA)</i> by the Ministry of Natural Resources and Forestry (MNRF), and is not governed under the <i>Clean Water Act, 2006</i> . It is up to the municipality to determine whether or not professional hydrogeologists need to review ARA applications, including rehabilitation plans.
4	Public Members* *Comment received 96 times from public members	General	3. Regulation and Research - How can the SPP protect private well owners from risks to their access to safe groundwater? Because private wells are often in shallow aquifers, they are arguably more susceptible to contamination and overuse. Water quality and quantity must be secured for private and agricultural use before industrial use may be permitted.	The provincial government has scoped the <i>Clean Water Act, 2006 (CWA)</i> to protect water sources that supply municipal residential drinking water systems, although private wells located in Wellhead Protection Areas (WHPAs) identified for municipal drinking water systems may be afforded some level of protection. In order for the source protection plan to apply more widely to private wells, the CWA and associated regulations would need to be amended. Currently, the CWA does allow for municipal councils to pass a resolution to include non-municipal drinking water systems, including clusters of six or more private wells or intakes.  In April 2021, the Ministry of the Environment, Conservation and Parks (MECP) released guidance to manage and make decisions regarding Permits To Take Water (PTTW) in stressed areas and for priority of water use ( <a href="https://ero.ontario.ca/notice/019-2017">https://ero.ontario.ca/notice/019-2017</a> ).
5	Public Member	General	We have read through the updates to the SPP and do not see any direct updates to impact the Wilmot wells.  However, we do see room for improved SPP policy to protect our water. Here are our top 4 concerns in regional recharge areas:  1. <b>Research - Cumulative impacts</b> (CI) of aggregate extraction. How do we quantify	This source protection plan update proposes changes to the Mannheim (City of Kitchener) and Cambridge East (City of Cambridge) Well Fields within the Region of Waterloo.  <b>Comment 1, 2 and 3:</b> The Ministry of Natural Resources and Forestry (MNRF) regulates aggregate operations, including overseeing the rules

**Table 4: Revised Updated Grand River Source Protection Plan – Other public consultation comments received not related to the amendments proposed in this update**

#	Comment Source	SPP Section	Comment	How Comment is Addressed
			<p>and qualify this for new aggregate extraction applications in areas under SPP? What is the "tipping point" in any given area when no more pits are acceptable for the safety of the water?</p> <p>2. <i>Restricted land use - <b>Extraction ONLY</b></i>. No auxiliary activities. Particularly wash ponds and bringing in materials (fill and recycling). We would also suggest (new) fuel storage should be restricted in all WSPA areas and regional recharge areas.</p> <p>3. <i>Regulation - Increased natural capital</i> (sand and gravel) must be left above the water table. 1.5 is not enough. Especially with climate change in mind. And no extraction below the water table is unacceptable in areas under SPP.</p> <p>4. <i>Land use planning</i> - the <b>rehabilitation</b> plan to rezone <b>prime farmland</b> to aggregate extraction in areas under SPP must be carefully considered by hydrogeologists to identify the risks to our drinking water. We can not risk losing prime farmland and water to aggregate extraction.</p> <p>5. <i>Research</i> - These considerations must be made in light of our current <b>climate crisis</b>. How will the changing climate affect the sensitive recharge areas and potential impacts of aggregate extraction on these regional recharge areas?</p>	<p>governing aggregate management, issues licenses, permits and changes to existing approvals. The Ministry of the Environment Conservation and Parks (MECP) regulates the Permits To Take Water (PTTW) process. Together, these ministries are responsible for assessing and addressing cumulative impacts to municipal drinking water sources. The role of source protection plan policies is to ensure that Source Water Protection is considered in the decisions that are under the jurisdiction of the ministries.</p> <p>Potential impacts from quarrying activities on sources of municipal drinking water have been a longstanding concern of the Lake Erie Region Source Protection Committee (SPC). In 2011, the SPC requested that the Province identify rehabilitation activities at an aggregate operation within a vulnerable area of a municipal drinking water system where fill material is placed, or that allows ponding of water, as a local drinking water threat under Technical Rule 119. The latter request currently remains outstanding; however, the MECP has indicated that the MNRF has now completed their review of the aggregate resources policy framework and any updates to the Aggregate Resource Act, and that the Ministry is now in a position to revisit this discussion.</p> <p>It is also important to clarify that there are no source protection policies related to cumulative impacts resulting from aggregate extraction because it is not a Prescribed Activity as regulated by MECP. There is a policy in the Region of Waterloo's Regional Official Plan (ROP) that requires cumulative impact assessments associated with applications to amend the ROP. Accordingly, it is determined that this comment does not apply to the current update to the Grand River Source Protection Plan and further comment is not warranted.</p> <p><b>Comment 2:</b> Auxiliary activities such as wash ponds, fill, and recycling are</p>

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				<p>addressed as part of the provincial licenses and permits. Fuel storage activities are addressed in source protection plan policies if the activities are / will be taking place within a Wellhead Protection Area (WHPA) and are identified as a Significant Drinking Water Threat (SDWT). In Waterloo’s Regional Official Plan (ROP), wash ponds fill and recycling are considered secondary uses and integral to the operation of an aggregate pit. An amendment to the ROP to allow for aggregate extraction will automatically include these secondary activities.</p> <p><b>Comment 3:</b> Aggregate extraction operations are managed by the Province. In 2015 the Lake Erie Region Source Protection Committee (SPC) provided comments on the “Blueprint for Change – A proposal to modernize and strengthen the Aggregate Resources Act policy framework”. Two of the key recommendations included the prohibition of extraction activities within the 2-year time of travel (WHPA-A and B) of municipal drinking water wells and the prohibition of extraction below the water table where a breach of the aquitard could impact municipal drinking water sources. These comments were reiterated in 2016 as part of commenting on Bill 39 that proposed changes to the <i>Aggregate Resources Act, 1990 (ARA)</i> and in comments on the provincial proposal to amend O.Reg. 244/97 and the Aggregate Resources of Ontario Provincial Standards under the ARA in April 2020.</p> <p><b>Comment 4:</b> The establishment and operation of aggregate extractions, including rehabilitation plans, are regulated under the <i>Aggregate Resources Act, 1990 (ARA)</i> by the Ministry of Natural Resources and Forestry (MNRF), and is not governed under the <i>Clean Water Act, 2006</i>. It is up to the municipality to determine whether or not professional hydrogeologists need to review ARA applications, including rehabilitation plans.</p> <p>Also, Waterloo’s Regional Official Plan (ROP) stipulates the</p>

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#	Comment Source	SPP Section	Comment	How Comment is Addressed
				<p>conditions under which prime farmland is to be preserved.</p> <p><b>Comment 5:</b>  Water quantity climate change assessments have been completed for the <a href="#">Guelph-Guelph/Eramosa Tier 3</a> and <a href="#">Centre Wellington Tier 3</a> studies. The Ministry of the Environment, Conservation and Parks is proposing changes to the <a href="#">Source Water Protection Director's Technical Rules</a> regarding how climate change impact assessments are documented in the assessment report. Lake Erie Source Protection Region and local municipalities will consider the proposed changes and possible assessment report and source protection plan implications.</p>
6	Public Member	General	<p>The Grand River Source Protection Plan needs to do just that - protect water at the source. This protection happens on the land and the following factors should be deeply integrated into the Plan:</p> <ol style="list-style-type: none"> <li>1. Research on Cumulative impacts (CI): There is no clear definition of cumulative impacts at present. This is problematic because of the immense development pressure lands are under along the Grand River. Specifically, we'd like you to consider, "What is the 'tipping point' in any given area when no more above and below the water table gravel pit and/or quarries are acceptable for the safety of the water? For me, considering the current health of the Grand River, the answer is ZERO more quarries &amp; pits. We propose considering the 'increased vulnerability' term (as defined by professional hydrogeologist Emil Frind) that would be created by each operation within set parameters of significant sources of drinking water as a route to define cumulative impacts. This definition will show the existing vulnerability &amp; the risks of allowing more land to be used for pits &amp; quarries. The risks imposed by open water sitting in gravel pits identified by GRCA must also be accounted for in this calculated risk.</li> <li>2. Land use planning - We demand no prime farmland loss to gravel pits. This is an absolutely inappropriate use of prime farmland and irresponsible to convert these lands which create buffers for water quality, slow discharge, and allow</li> </ol>	<p><b>Comment 1:</b>  The Ministry of Natural Resources and Forestry (MNRF) regulates aggregate operations, including overseeing the rules governing aggregate management, issues licenses, permits and changes to existing approvals. The Ministry of the Environment Conservation and Parks (MECP) regulates the Permits To Take Water (PTTW) process. Together, these ministries are responsible for assessing and addressing cumulative impacts to municipal drinking water sources. The role of source protection plan policies is to ensure that Source Water Protection is considered in the decisions that are under the jurisdiction of the ministries.</p> <p>Potential impacts from quarrying activities on sources of municipal drinking water have been a longstanding concern of the Lake Erie Region Source Protection Committee (SPC). In 2011, the SPC requested that the Province identify rehabilitation activities at an aggregate operation within a vulnerable area of a municipal drinking water system where fill material is placed, or that allows ponding of water, as a local drinking water threat under Technical Rule 119. The latter request currently remains outstanding; however, the MECP has indicated that the MNRF has now completed their review of the aggregate resources</p>

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#	Comment Source	SPP Section	Comment	How Comment is Addressed
			<p>permeation filtration of rain &amp; snow to groundwater. There are too many risks to source &amp; drinking water to allow the rehabilitation plan to rezone prime farmland to aggregate extraction in areas under SPP. We also cannot risk losing prime farmland and water to aggregate extraction, an industry that is over saturated in Ontario and has little-to-no accountability for rehabilitation of the land or accidents that may occur.</p> <p>3. Regulation and Research - How can the SPP protect private well owners from risks to their access to safe groundwater? The answer is simple - protect the land. Because private wells are often in shallow aquifers, they are generally more susceptible to contamination and overuse, making it inappropriate to allow land uses or operations with high water-demand and create pathways for contamination. Water quality and quantity must be secured for private and agricultural sustainability before frivolous industrial uses may be permitted.</p>	<p>policy framework and any updates to the Aggregate Resource Act, and that the Ministry is now in a position to revisit this discussion.</p> <p>It is also important to clarify that there are no source protection policies related to cumulative impacts resulting from aggregate extraction because it is not a Prescribed Activity as regulated by MECP. There is a policy in the Region of Waterloo’s Regional Official Plan (ROP) that requires cumulative impact assessments associated with applications to amend the ROP. Accordingly, it is determined that this comment does not apply to the current update to the Grand River Source Protection Plan and further comment is not warranted.</p> <p><b>Comment 2:</b> The establishment and operation of aggregate extractions, including rehabilitation plans, are regulated under the <i>Aggregate Resources Act, 1990 (ARA)</i> by the Ministry of Natural Resources and Forestry (MNR), and is not governed under the <i>Clean Water Act, 2006</i>. It is up to the municipality to determine whether or not professional hydrogeologists need to review ARA applications, including rehabilitation plans.</p> <p><b>Comment 3:</b> The provincial government has scoped the <i>Clean Water Act, 2006 (CWA)</i> to protect water sources that supply municipal residential drinking water systems, although private wells located in Wellhead Protection Areas (WHPAs) identified for municipal drinking water systems may be afforded some level of protection. In order for the source protection plan to apply more widely to private wells, the CWA and associated regulations would need to be amended. Currently, the CWA does allow for municipal councils to pass a resolution to include non-municipal drinking water systems, including clusters of six or more private wells or intakes.</p>

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#	Comment Source	SPP Section	Comment	How Comment is Addressed
				<p>In April 2021, the Ministry of the Environment, Conservation and Parks (MECP) released guidance to manage and make decisions regarding Permits To Take Water (PTTW) in stressed areas and for priority of water use (<a href="https://ero.ontario.ca/notice/019-2017">https://ero.ontario.ca/notice/019-2017</a>).</p>
7	Public Member	General	<p>The Source Protection Plan is a Joke. Gravel pits can strip of any amount of protective filtration layer they want. This filtration material is the only thing protecting our ground water from harmful contamination. It is quite obvious that the Plan have no control over these harmful actions.to our ground water. This type of action must be stoped and prohibited.</p> <p>Please consider these concerns as you review updates to the Grand River Source Protection Plan.</p> <p>1. Research - Cumulative impacts (CI) We need a clear definition of cumulative impacts. What is the "tipping point" in any given area when no more above and below the water table gravel pit and/or quarries are acceptable for the safety of the water? Could considering the 'increased vulnerability' (as defined by professional hydrogeologist Emil Frind) created by each operation within set parameters of significant sources of drinking water be a route to define this? The risks imposed by open water sitting in gravel pits identified by GRCA must also be accounted for in this calculated risk.</p> <p>2. Land use planning - We prefer no prime farmland loss to gravel pits and offer the following high-level concerns. The rehabilitation plan to rezone prime farmland to aggregate extraction in areas under SPP must be carefully considered by professional hydrogeologists who represent the municipality to identify the risks to our drinking water. We can not risk losing prime farmland and water to aggregate extraction.</p> <p>3. Regulation and Research - How can the SPP protect private well owners from risks to their access to safe groundwater? Because private wells are often in shallow aquifers, they are arguably more susceptible to contamination and</p>	<p><b>Comment 1:</b> The Ministry of Natural Resources and Forestry (MNR) regulates aggregate operations, including overseeing the rules governing aggregate management, issues licenses, permits and changes to existing approvals. The Ministry of the Environment Conservation and Parks (MECP) regulates the Permits To Take Water (PTTW) process. Together, these ministries are responsible for assessing and addressing cumulative impacts to municipal drinking water sources. The role of source protection plan policies is to ensure that Source Water Protection is considered in the decisions that are under the jurisdiction of the ministries.</p> <p>Potential impacts from quarrying activities on sources of municipal drinking water have been a longstanding concern of the Lake Erie Region Source Protection Committee (SPC). In 2011, the SPC requested that the Province identify rehabilitation activities at an aggregate operation within a vulnerable area of a municipal drinking water system where fill material is placed, or that allows ponding of water, as a local drinking water threat under Technical Rule 119. The latter request currently remains outstanding; however, the MECP has indicated that the MNR has now completed their review of the aggregate resources policy framework and any updates to the Aggregate Resource Act, and that the Ministry is now in a position to revisit this discussion.</p> <p>It is also important to clarify that there are no source protection policies related to cumulative impacts resulting from aggregate extraction because it is not a Prescribed Activity as regulated by</p>

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#	Comment Source	SPP Section	Comment	How Comment is Addressed
			overuse. Water quality and quantity must be secured for private and agricultural use before industrial use may be permitted.	<p>MECP. There is a policy in the Region of Waterloo’s Regional Official Plan (ROP) that requires cumulative impact assessments associated with applications to amend the ROP. Accordingly, it is determined that this comment does not apply to the current update to the Grand River Source Protection Plan and further comment is not warranted.</p> <p><b>Comment 2:</b> The establishment and operation of aggregate extractions, including rehabilitation plans, are regulated under the <i>Aggregate Resources Act, 1990</i> (ARA) by the Ministry of Natural Resources and Forestry (MNRF), and is not governed under the <i>Clean Water Act, 2006</i>. It is up to the municipality to determine whether or not professional hydrogeologists need to review ARA applications, including rehabilitation plans.</p> <p><b>Comment 3:</b> The provincial government has scoped the <i>Clean Water Act, 2006</i> (CWA) to protect water sources that supply municipal residential drinking water systems, although private wells located in Wellhead Protection Areas (WHPAs) identified for municipal drinking water systems may be afforded some level of protection. In order for the source protection plan to apply more widely to private wells, the CWA and associated regulations would need to be amended. Currently, the CWA does allow for municipal councils to pass a resolution to include non-municipal drinking water systems, including clusters of six or more private wells or intakes.</p> <p>In April 2021, the Ministry of the Environment, Conservation and Parks (MECP) released guidance to manage and make decisions regarding Permits To Take Water (PTTW) in stressed areas and for priority of water use (<a href="https://ero.ontario.ca/notice/019-2017">https://ero.ontario.ca/notice/019-2017</a>).</p>
8	Public Member	General	We appreciate the work done by the Grand River Conservation Authority across the province to prevent identified risks to our water systems. Please consider these	<p><b>Comments 1 and 2:</b> The Ministry of Natural Resources and Forestry (MNRF)</p>

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#	Comment Source	SPP Section	Comment	How Comment is Addressed
	(Citizens for Safe Ground Water Inc.)		<p>concerns as you review your updates to the SPP. appreciate the work done by the Grand River Conservation Authority across the province to prevent identified risks to our water systems. Please consider these concerns as you review your updates to the SPP.</p> <ol style="list-style-type: none"> <li>1. Research - Cumulative impacts (CI) of aggregate extraction in regional recharge areas under the SPP must be better understood. We need a clear definition of what cumulative impacts are (as referenced in the aggregate chapter of the Region of Waterloo Official Plan 7.2.4.3). How do we quantify and qualify this for new aggregate extraction applications in areas under SPP? What is the "tipping point" in any given area when no more above and below the water table gravel pit and/or quarries are acceptable for the safety of the water? The risks imposed by open water sitting in gravel pits must be accounted for in this calculated risk.</li> <li>2. Restricted land use - Extraction ONLY. No auxiliary/ancillary activities. Particularly wash ponds and bringing in materials (fill and recycling). Could there be triggers for a second SPP review of pit risk assessment, especially for wash ponds and recycling to ensure appropriate safeguards are in place. The history of the property must also be fully considered in order to assess the risk of such activities.</li> <li>3. Regulation - Increased natural capital (sand and gravel) must be left above the water table. Is 1.5 meters enough? Especially with climate change in mind. And extraction below the water table is unacceptable in areas identified as regional recharge areas under SPP.</li> <li>4. Land use planning - We prefer no prime farmland loss to pits and offer the following high-level concerns. The rehabilitation plan to rezone prime farmland to aggregate extraction in areas under SPP must be carefully considered by professional hydrogeologists who represent the Region to identify the risks to our drinking water. We cannot risk losing prime farmland and water to aggregate extraction.</li> <li>5. Research - These considerations must be made in light of our current climate emergency. How will the changing climate affect these sensitive recharge areas? What is the severity of the potential impacts of aggregate extraction on these regional recharge areas? Are map layers readily available that show aggregate operations in conjunction with recharge areas and infiltration zones. Maybe we need to broach cumulative mapping as part of the permitting exercise?</li> </ol>	<p>regulates aggregate operations, including overseeing the rules governing aggregate management, issues licenses, permits and changes to existing approvals. The Ministry of the Environment Conservation and Parks (MECP) regulates the Permits To Take Water (PTTW) process. Together, these ministries are responsible for assessing and addressing cumulative impacts to municipal drinking water sources. The role of source protection plan policies is to ensure that Source Water Protection is considered in the decisions that are under the jurisdiction of the ministries.</p> <p>Potential impacts from quarrying activities on sources of municipal drinking water have been a longstanding concern of the Lake Erie Region Source Protection Committee (SPC). In 2011, the SPC requested that the Province identify rehabilitation activities at an aggregate operation within a vulnerable area of a municipal drinking water system where fill material is placed, or that allows ponding of water, as a local drinking water threat under Technical Rule 119. The latter request currently remains outstanding; however, the MECP has indicated that the MNRF has now completed their review of the aggregate resources policy framework and any updates to the Aggregate Resource Act, and that the Ministry is now in a position to revisit this discussion.</p> <p>It is also important to clarify that there are no source protection policies related to cumulative impacts resulting from aggregate extraction because it is not a Prescribed Activity as regulated by MECP. There is a policy in the Region of Waterloo's Regional Official Plan (ROP) that requires cumulative impact assessments associated with applications to amend the ROP. Accordingly, it is determined that this comment does not apply to the current update to the Grand River Source Protection Plan and further comment is not warranted.</p> <p><b>Comment 3:</b> Aggregate extraction operations are managed by the Province.</p>

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			<p><i>* See responses to issues raised by Citizens for Safe Ground Water Inc. from Michael and Emil Frind in comment rows 9 to 13</i></p>	<p>In 2015 the Lake Erie Region Source Protection Committee (SPC) provided comments on the “Blueprint for Change – A proposal to modernize and strengthen the Aggregate Resources Act policy framework”. Two of the key recommendations included the prohibition of extraction activities within the 2-year time of travel (WHPA-A and B) of municipal drinking water wells and the prohibition of extraction below the water table where a breach of the aquitard could impact municipal drinking water sources. These comments were reiterated in 2016 as part of commenting on Bill 39 that proposed changes to the <i>Aggregate Resources Act, 1990</i> (ARA) and in comments on the provincial proposal to amend O.Reg. 244/97 and the Aggregate Resources of Ontario Provincial Standards under the ARA in April 2020</p> <p><b>Comment 4:</b> The establishment and operation of aggregate extractions, including rehabilitation plans, are regulated under the <i>Aggregate Resources Act, 1990</i> (ARA) by the Ministry of Natural Resources and Forestry (MNRF), and is not governed under the <i>Clean Water Act, 2006</i>. It is up to the municipality to determine whether or not professional hydrogeologists need to review ARA applications, including rehabilitation plans.</p> <p><b>Comment 5:</b> Water quantity climate change assessments have been completed for the <a href="#">Guelph-Guelph/Eramosa Tier 3</a> and <a href="#">Centre Wellington Tier 3</a> studies. The Ministry of the Environment, Conservation and Parks is proposing changes to the <a href="#">Source Water Protection Director’s Technical Rules</a> regarding how climate change impact assessments are documented in the assessment report. Lake Erie Source Protection Region and local municipalities will consider the proposed changes and possible assessment report and source protection plan implications.</p>
9	Michael and Emil	General	<p><i>1) Research - <b>Cumulative impacts</b> (CI) of aggregate extraction. We need a clear definition of what cumulative impacts are (as referenced in the aggregate chapter of the</i></p>	<p>The Ministry of Natural Resources and Forestry (MNRF) regulates aggregate operations, including overseeing the rules</p>

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	Frind		<p><i>Region of Waterloo Official Plan). How do we quantify and qualify this for new aggregate extraction applications in areas under SPP? What is the "tipping point" in any given area when no more pits are acceptable for the safety of the water?</i></p> <p>Yes, we do need a clear definition of what CI is. Impact involves both a threat and a target that would be impacted by that threat. The CI concept first arose in wildlife management (where impacts on wildlife or threatened species may involve habitat loss/degradation, hunting or poaching, diseases, etc., and where the final outcome could be extinction). When assessing CI, the past, present, and future activities should all be taken into account—together rather than one- by-one. Impacts may be additive or synergistic<sup>1</sup>.</p> <p>For the case at hand, the situation is more complex. Threats applying to the Wilmot Centre wellfield are listed in the SPP (Table 8-42). The target being threatened can be seen as the water, being essential to life. Some of the threats also involve non-water issues, such as noise, dust, and traffic, so the target could in a broader sense be the general well-being of the people. Focusing on water, the SPP expresses the impact of a threat in two ways: first, as the wellhead protection area (WHPA) defined in terms of travel time in the aquifer to reach a well,<sup>2</sup> and second, in terms of vulnerability of the aquifer with respect to threats posed on the surface, expressed in terms of a vulnerability index (Map 8-101). There is also a WHPA for groundwater quantity.</p> <p>As far as we can see, aggregate extraction is not listed as a threat in the SPP. Map 8-102 shows existing excavations in the Wilmot area (the current status of these pits—planned, in operation, inactive, or undergoing some form of rehabilitation—is not shown<sup>3</sup>); however, none of these are shown as having any impact on the mapped vulnerability. This can be interpreted as meaning that aggregate extraction has no significant impact on an underlying aquifer, or alternatively, that the method used to express the impact is not sensitive enough to show the impact.</p> <p>Either way, on the basis of the existing methodology, a new aggregate extraction application will not affect any CI on the water. In our opinion, this cannot mean that we can keep on adding new pits forever, because in the limit, the entire area will become one large pit, and that clearly will have an impact on both groundwater and surface water.<sup>4</sup></p>	<p>governing aggregate management, issues licenses, permits and changes to existing approvals. The Ministry of the Environment Conservation and Parks (MECP) regulates the Permits To Take Water (PTTW) process. Together, these ministries are responsible for assessing and addressing cumulative impacts to municipal drinking water sources. The role of source protection plan policies is to ensure that Source Water Protection is considered in the decisions that are under the jurisdiction of the ministries.</p> <p>Potential impacts from quarrying activities on sources of municipal drinking water have been a longstanding concern of the Lake Erie Region Source Protection Committee (SPC). In 2011, the SPC requested that the Province identify rehabilitation activities at an aggregate operation within a vulnerable area of a municipal drinking water system where fill material is placed, or that allows ponding of water, as a local drinking water threat under Technical Rule 119. The latter request currently remains outstanding; however, the MECP has indicated that the MNRF has now completed their review of the aggregate resources policy framework and any updates to the Aggregate Resource Act, 1990 (ARA), and that the Ministry is now in a position to revisit this discussion.</p> <p>It is also important to note that the update to the Grand River Source Protection Plan does not contain any policies related to aggregate extraction as it is not a Prescribed Activity as identified in regulation under the <i>Clean Water Act, 2006</i>. It is possible that this comment would be applicable to a cumulative impact assessment for aggregate applications in Waterloo's Regional Official Plan.</p> <p>With respect to the vulnerability in the wellhead protection area around the Wilmot Centre wellfield, the sequence of maps (Map 8-100 to Map 8-104) shows that the vulnerability has been adjusted in two areas, one of them as a result of an existing</p>

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			<p>The concept of a “tipping point” may come in here. In climate science, the tipping point<sup>5</sup> concept is easy to understand. In a simple example, greenhouse gases (mostly carbon dioxide) released by the burning of fossil fuel heat up the atmosphere, thereby leading to permafrost melting, which releases large amounts of methane, which accelerates melting, and so on—and at some point, the process becomes irreversible and beyond human control.</p> <p>So to apply the tipping-point concept to aggregate extraction would be interesting and would make sense theoretically. But nailing down this tipping point would be very difficult and would probably require a new generation of computer models and methodologies, applied to a series of scenario analyses.</p> <p>On a more practical level, we also have to factor in the needs of a growing population, both in terms of water and in terms of the aggregate needed to house them (plus also the farmland for food). So it is ultimately a question of where the resources to support a growing population should come from.</p> <p>For the present, as a practical guideline, we recommend that any new proposal for aggregate extraction should be assessed within the context of existing pits or excavations, whether planned, in operation, mined out, or rehabilitated. The assessment should be done on a subwatershed basis.</p> <p><sup>1</sup> Synergistic means that the impacts of multiple developments together are greater than their sum.  <sup>2</sup> The removal of overburden, as part of any aggregate extraction, removes the natural filtering function of those geologic layers.  <sup>3</sup> However, aerial photos (Google Maps/Earth) can be used to estimate the stage of extraction of approved pits.  <sup>4</sup> Although SPPs (source protection plans) are only prepared for municipal wells, all types of wells can be affected by aggregate extraction. Whether or not a given well will be affected depends on a multitude of factors, including well depth, proximity to the pit, depth of the pit (especially if it is below the water table), and the geology (i.e. stratigraphy, properties of the geologic layers and whether they are continuous and how they communicate, etc.). Also, geologic uncertainty plays a role: there is no guarantee that a geologic layer that appears in one borehole might be continuous with a similar layer that appears in a borehole a kilometre away.  <sup>5</sup> Tipping points refer to positive feedback loops.</p>	<p>aggregate operation. Because the vulnerability adjustments are reactive once an aggregate operation is established, the SPC has continued to request for proactive changes to consider source protection in the ARA framework.</p>

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10	Michael and Emil Frind	General	<p>2) <i>Restricted land use - <b>Extraction ONLY</b>. No auxiliary activities. Particularly wash ponds and bringing in materials (fill and recycling). We would also suggest (new) fuel storage should be restricted in all WSPA areas and regional recharge areas. Does this suggest that any washing take place elsewhere? Could there be triggers for a second SPP review of pit risk assessment, especially for wash ponds and recycling.</i></p> <p>Gravel must be washed to make it useable in construction. It makes no sense, neither environmentally nor economically, to move the gravel elsewhere for washing, so the washing should be considered as an integral part of extraction. Fuel needs to be stored near the machinery using it, in appropriate amounts. Fuel storage has its own regulation for safe storage<sup>6</sup>. Bringing in other materials should be regulated. We have not seen any mention of this in the SPP.<sup>7</sup></p> <p><sup>6</sup>Examples include double-walled tanks with remote monitoring, spill-catch trays, and so on.  <sup>7</sup>An ancillary topic is that of elimination of diesel fuel by electrification of heavy machinery. Electrification would avert concerns of fuel spillage as well as noise, but we will leave these topics for others to delve into.</p>	<p>Aggregate washing is under the jurisdiction of the Ministry of the Environment, Conservation and Parks (MECP) and may be managed either through an Environmental Compliance Approval (ECA) and / or a Permit To Take Water (PTTW).</p> <p>Fuel storage is a prescribed drinking water threat under the <i>Clean Water Act, 2006</i> (CWA). Fuel storage activities are addressed in Lake Erie Source Protection if they are / will be taking place within a Wellhead Protection Area (WHPA) and are identified as a Significant Drinking Water Threat (SDWT). Examples of fuel storage policies in Wellington County and Region of Waterloo sections of the Grand River Source Protection Plan include:</p> <p><u>Wellington County – WC-MC-15.4</u></p> <p>To ensure any existing or future handling and storage of fuel on properties licensed under the Aggregate Resources Act ceases to be or never becomes a significant drinking water threat, where this activity is or would be a significant drinking water threat,</p> <p>a. The Ministry of Natural Resources and Forestry shall review all licenses, permits and site plans issued under the Aggregate Resources Act and/or related regulations, standards and policies and, if necessary, include measures that, when implemented, will manage the risk so that these activities do not become or cease to be a significant drinking water threat. b. The Ministry of Natural Resources and Forestry shall not issue new or amended licenses or permits and approve site plans under the Aggregate Resources Act and/or related regulations, standards and policies unless measures that, when implemented, will manage the risk so that these activities do not become or cease to be a significant drinking water threat.</p> <p><u>Region of Waterloo – RW-MC-49</u></p>

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#	Comment Source	SPP Section	Comment	How Comment is Addressed
				<p>Where existing and/or new handling and storage of fuel is or would be a significant drinking water threat within a vulnerable area for activities regulated under the Aggregate Resources Act within vulnerable areas, the Ministry of Natural Resources and Forestry, should ensure that licenses, permits and site plans issued under the Aggregate Resources Act and related regulations, standards and policies include terms and conditions, as appropriate, to ensure the activity does not become or ceases to be a significant drinking water threat.</p> <p>In addition, approved Part IV Risk Management Plan policies could supplement the above Prescribed Instrument policies.</p>
11	Michael and Emil Frind	General	<p><i>3) Regulation - <b>Increased natural capital</b> (sand and gravel) must be left above the water table. 1.5m is not enough. Especially with climate change in mind. And extraction below the water table is unacceptable in areas identified as regional recharge areas under SPP.</i></p> <p>In our first review (June 2020), we raised the issue of uncertainty in the water table on account of climate change, and the possibility of pit flooding if the excavation goes down to 1.5 m above the water table. Wilf Ruland felt that water in the pit would not be a serious problem because there would always be enough warning to move the equipment out, and the water could either be pumped out or allowed to drain once the water table returns to normal.</p> <p>Another point to consider is that if the pit floor were raised, the total amount of aggregate recovered from the site would decrease. Then the need for another pit would arise. So there is an incentive to retrieve the maximum amount possible from a given site.</p> <p>On balance, while the potential of a pit flooding may be considered manageable, the risk of aquifer contamination still remains. So it will be important to promptly remove all potential threats from the pit and surrounding subwatershed areas if there is a risk of flooding.</p>	<p>Potential impacts from quarrying activities on sources of municipal drinking water have been a longstanding concern of the Lake Erie Region Source Protection Committee (SPC). The SPC has requested that the Province identify rehabilitation activities at an aggregate operation within a vulnerable area of a municipal drinking water system where fill material is placed, or that allows ponding of water, as a local drinking water threat. The latter request currently remains outstanding; however, the Ministry of the Environment, Conservation and Parks (MECP) has indicated that the Ministry of Natural Resources and Forestry (MNRF) has now completed their review of the aggregate resources policy framework and any updates to the <i>Aggregate Resource Act, 1990</i> (ARA) and that the Ministry is now in a position to revisit this discussion.</p> <p>Additionally, in 2015 the SPC provided comments on the “Blueprint for Change – A proposal to modernize and strengthen the Aggregate Resources Act policy framework”. Two of the key recommendations included the prohibition of extraction activities within the 2-year time of travel (WHPA-A and B) of municipal drinking water wells and the prohibition of extraction below the water table where a breach of the aquitard could impact municipal drinking water sources. These comments were reiterated in 2016 as part of commenting on Bill 39 that</p>

**Table 4: Revised Updated Grand River Source Protection Plan – Other public consultation comments received not related to the amendments proposed in this update**

#	Comment Source	SPP Section	Comment	How Comment is Addressed
				<p>proposed changes to the ARA and in comments on the provincial proposal to amend O.Reg. 244/97 and the Aggregate Resources of Ontario Provincial Standards under the ARA in April 2020.</p> <p>Finally, the Region’s hydrogeologic study requirements for aggregate extraction applications require collection of water levels for a two-year period to determine the water table location. This requirement is one year longer than that required under the ARA specifically to provide a longer time period to establish the water table location.</p>
12	Michael and Emil Frind	General	<p>4) <i>Land use planning - We prefer <b>no prime farmland</b> loss to pits and offer the following high- level concerns. The rehabilitation plan to rezone prime farmland to aggregate extraction in areas under SPP must be carefully considered by professional hydrogeologists who represent the Region to identify the risks to our drinking water. We can not risk losing prime farmland and water to aggregate extraction.</i></p> <p>We agree. Unfortunately, there is no reference to farmland in the SPP as far as we can see. The only reference that comes close is to “Managed Land”<sup>8</sup> (Map 8-105). So this would entail an additional level of assessment.</p> <p>When productive farmland is used for aggregate extraction,<sup>9</sup> the major changes to the site will make it very difficult to restore the land to the pre-extraction level of agricultural productivity. However, alternative uses may be viable. Due to differences in geology and topography, these would need to be assessed on a site-by-site basis.</p> <p><sup>8</sup>The term “managed land”, as found in the SPP documentation, specifically refers to farmland that happens to fall within a WHPA. Thus any increases in WHPAs (due to new regional wells, increases in pumping rates) would increase the “managed lands”.</p> <p><sup>9</sup>A map of all the cultivated land (i.e. farmland) can be found on the GRCA website: <a href="https://maps.grandriver.ca/web-gis/public/">https://maps.grandriver.ca/web-gis/public/</a> and select Land Base, Land Use, Land Cover. If this is turned on in conjunction with the Aggregate Site Authorized Active layer, the interrelationships between the two can be seen.</p>	<p>Aggregate operations are regulated under the <i>Aggregate Resources Act, 1990</i> by the Ministry of Natural Resources and Forestry (MNRF).</p> <p>Under the <i>Clean Water Act, 2006</i> (CWA), and Director’s Technical Rules, “Managed Land” means land to which agricultural source material, commercial fertilizer or non-agricultural source material is applied. Managed lands are categorized into two groups: agricultural managed lands and non-agricultural managed lands. Agricultural managed lands include areas of cropland, fallow and improved pasture that may receive nutrients. Non-agricultural managed land includes golf courses (turf), sports fields, lawns (turf) and other built-up grassed areas that may receive nutrients, primarily commercial fertilizer. Managed land calculations determine where specific agricultural-related prescribed drinking water threat activities are considered Significant Drinking Water Threats (SDWTs).</p>
13	Michael and Emil	General	<p>5) <i>Research - These considerations must be made in light of our current <b>climate emergency</b>. How will the changing climate affect the sensitive recharge areas and</i></p>	<p>To evaluate potential water quantity impacts on the Centre</p>

**Table 4: Revised Updated Grand River Source Protection Plan – Other public consultation comments received not related to the amendments proposed in this update**

#	Comment Source	SPP Section	Comment	How Comment is Addressed
	Frind		<p><i>potential impacts of aggregate extraction on these regional recharge areas? Are map layers readily available that show aggregate operations in conjunction with recharge areas and infiltration zones. Maybe we need to broach cumulative mapping as part of the permitting exercise?</i></p> <p>Climate change is underway, and it is occurring amidst a series of other trends, one of which is population growth. This is a complex topic beyond the scope of this document.<sup>10</sup></p> <p>The key take-home message with climate change is that it will mean more extreme weather events. For example, summertime droughts could become longer and hotter, which could easily result in farmers needing to irrigate crops that today do not require irrigation (e.g. corn and soy). In many locations, that irrigation water would need to come from deep wells. So, water levels could be drawn down. Wells that are not very deep could run dry. Conversely, climate change could also bring flooding in some years. This would serve to build up water levels in aquifers, but flooding in low-lying areas would also be expected.</p> <p>The GRCA web mapping tool at <a href="https://maps.grandriver.ca/web-gis/public/">https://maps.grandriver.ca/web-gis/public/</a> shows multiple layers, and if one expands the Land Base/Land Use/Aggregate Site layers, one can see authorized gravel (aggregate) pits. However, the state of extraction is not discernible.<sup>11</sup> Agricultural land can also be seen under Land Base/Land Use/Land Cover. This also shows forests, wetlands, settled areas, and all other land uses. Recharge can be seen under the Hydrogeology heading, in the same mapping tool. WHPAs for Regional wells can be seen, under the Source Water Protection heading. Layers can be combined for viewing and cross-correlation purposes.</p> <p>The latest SPP updates mention climate change, but this is limited to general statements about timing of precipitation events and changes in precipitation amounts. These documents do not delve into extreme-event scenarios in any level of depth, nor into potential preparatory measures for such events.<sup>12</sup></p>	<p>Wellington and Guelph-Guelph/Eramosa municipal supply wells as a result of future climate change, assessments utilizing future municipal water demand were completed. The studies concluded that climate change may not pose an additional threat to the quantity of the Centre Wellington and Guelph-Guelph/Eramosa municipal water supply wells due to predicted increase in groundwater recharge. The Global Climate Models and hydrologic model that were applied in these studies suggest that groundwater recharge rates will increase over time.</p> <p>Assessing impacts to the quantity of municipal water supply is an ongoing continual improvement process that will be updated as new information comes available.</p> <p>The Ministry of the Environment, Conservation and Parks is proposing changes to the <a href="#">Director's Technical Rules</a> regarding how climate change impact assessments are documented in the assessment report. Lake Erie Source Protection Region and local municipalities will consider the proposed changes and possible assessment report and source protection plan implications.</p>

**Table 4: Revised Updated Grand River Source Protection Plan – Other public consultation comments received not related to the amendments proposed in this update**

#	Comment Source	SPP Section	Comment	How Comment is Addressed
			<p>10 For example, the shift towards renewable energy sources is helpful, but it is important to remember that this shift will take time to complete, and that the climate warming trend will continue for decades to come as well.</p> <p>Renewable energy sources will not eliminate problems such as deforestation and the positive feedback loops in the Arctic that are already underway (e.g. permafrost melting). Nor will renewables reverse the already done damages of ocean acidification, biodiversity loss, habitat loss, and other issues traceable to or engendered by the global growth in human population.</p> <p>11 The areas authorized for active extraction can be compared to aerial photos (on the map layers on the GRCA mapping tool, or via Google Maps/Earth, or via date-indexed images from online tools such as Planet Explorer).</p> <p>12 To predict the long-term impacts of climate change on water resources would require in-depth modelling of not only groundwater, but also ancillary topics such as water demand. Multiple scenarios would need to be modelled. For example, extended periods of hot, dry weather could trigger a demand for widespread agricultural irrigation fed by groundwater wells. Although the trend towards increasingly extreme weather has already begun, whether the long-term average annual precipitation will change significantly in the future is uncertain.</p>	
14	Public Member	General	<p>Every resource we have is under pressure by many hands and needs - because they are valuable. Valuable to industry and commerce, farming and recreation, and for drinking. All completely valid, absolutely.</p> <p>But water is not just valuable - it is essential. There must be an hierarchical value of any resource so essential. If I was hungry would I turn my corn into a thanksgiving display, or ethanol fuel, or trade for tickets to a concert? Of course I would eat the corn.</p> <p>Obviously this Grand River plan must be done carefully, with integrity, and if possible protect all the core needs and groups, but not in a vacuum. If the water is of poor drinking quality, the rest are weak second tier needs.</p>	<p>Source water protection is the first barrier of the multi-barrier approach to providing clean and abundant municipal water supplies. The <i>Clean Water Act, 2006</i>, (CWA) is one of a series of legislations and regulations that together provide the safety net for providing clean municipal drinking water. The CWA ensures communities protect their drinking water supplies through prevention - by developing collaborative, watershed-based source protection plans that are locally driven and based on science.</p> <p>In April 2021, the Ministry of the Environment, Conservation and Parks (MECP) released guidance to manage and make decisions regarding Permits To Take Water (PTTW) in stressed areas and for priority of water use. Further information can be found at <a href="https://ero.ontario.ca/notice/019-2017">https://ero.ontario.ca/notice/019-2017</a>.</p>
15	Public Member	S7, Wellington	<p>My summary of this complex study suggests that the Alma residents may become participants in receiving water from a municipal source and the use of a sewage system as a means to ensure safe water for all. If that is the case I support it.</p>	<p>The proposed changes do not relate to provision of municipal water or sewage to Alma. This would be a municipal decision outside of the <i>Clean Water Act, 2006</i>.</p>
16	Public	S7,	<p>Please don't allow anymore permits for water bottling - our fast growing community will</p>	<p>Public member's objection to Permits To Take Water (PTTW) for</p>

**Table 4: Revised Updated Grand River Source Protection Plan – Other public consultation comments received not related to the amendments proposed in this update**

#	Comment Source	SPP Section	Comment	How Comment is Addressed
	Member	Wellington	need every drop. Water should never be privatized!	<p>water bottling is noted. All public consultation comments will be included in the Grand River Source Protection Plan update submission package to the Ministry of the Environment, Conservation and Parks (MECP).</p> <p>The MECP is responsible for issuing Permits To Take Water (PTTW). Individual PTTW are subject to posting on the <a href="https://ero.ontario.ca">Environmental Registry of Ontario (ERO)</a>. On April 1, 2021 the Province of Ontario rescinded the water bottle moratorium and the interim technical guidance and replaced it with the Ontario Water Quantity Framework. Further details can be found at <a href="https://ero.ontario.ca/notice/019-1340">https://ero.ontario.ca/notice/019-1340</a>. This includes a requirement for municipal council support for any new or expanded consumptive water taking above 379,000L/day or more.</p> <p>The proposed water quantity policies aim to protect municipal sources of drinking water by ensuring that the ministry consider a number of factors when reviewing, amending and issuing a PTTW, including taking into consideration Tier 3 study results / recommendations, municipal water supply master plans, other reports and recommendations from municipal monitoring programs.</p>
17	Public Member	S7, Wellington	<p>I live in Elora with my husband and 4 sons.</p> <p>I would like to submit our objection to the taking of water from Elora’s aquifers for commercial bottling and other commercial, non-local purposes.</p> <p>Ontario’s Clean Water Act states that removing water from an aquifer without returning it to the same aquifer is a drinking water threat. This threat is the primary risk to the Fergus and Elora wells where it is proposed that water be taken for commercial bottling.</p> <p>I note that most of my neighbours, and the residential community generally in Elora are opposed to the selling of our water for commercial bottling. It is a short sighted policy in our view and must be opposed for the future of our drinking water and for the future of our ever growing community in Elora.</p>	<p>Public member’s objection to Permits To Take Water (PTTW) for water bottling is noted. All public consultation comments will be included in the Grand River Source Protection Plan update submission package to the Ministry of the Environment, Conservation and Parks (MECP).</p> <p>The MECP is responsible for issuing Permits To Take Water (PTTW). Individual PTTW are subject to posting on the <a href="https://ero.ontario.ca">Environmental Registry of Ontario (ERO)</a>. On April 1, 2021 the Province of Ontario rescinded the water bottle moratorium and the interim technical guidance and replaced it with the Ontario Water Quantity Framework. Further details can be found at <a href="https://ero.ontario.ca/notice/019-1340">https://ero.ontario.ca/notice/019-1340</a>. This includes</p>

Table 4: Revised Updated Grand River Source Protection Plan – Other public consultation comments received not related to the amendments proposed in this update				
#	Comment Source	SPP Section	Comment	How Comment is Addressed
				<p>a requirement for municipal council support for any new or expanded consumptive water taking above 379,000L/day or more.</p> <p>The proposed water quantity policies aim to protect municipal sources of drinking water by ensuring that the ministry consider a number of factors when reviewing, amending and issuing a PTTW, including taking into consideration Tier 3 study results / recommendations, municipal water supply master plans, other reports and recommendations from municipal monitoring programs.</p>
18	Public Member	S7, Wellington	<p>As Ontario residents, we believe that clean water is a right that must be guaranteed under international law by every level of government. We must preserve and conserve Ontario's water supply better. We have to be vigilant water keepers, ensuring our aquifers are not polluted from invasive activities that would remove groundwater and destroy clean water supplies along the Grand River. Thank you for your attention to this urgent environmental issue and we await your response.</p>	<p>Thank you for the comment. Under the <i>Ontario Water Resources Act, 1990</i> (OWRA) and O. Reg. 387/04, large water takings in Ontario (50,000L or more of water per day from the environment), are generally required to have a Permit To Take Water (PTTW). The PTTW program is under the jurisdiction of the Ministry of the Environment, Conservation and Parks (MECP). The information generated through the Source Water Protection Program will help to inform decisions on PTTW applications. The PTTW program is Ontario's primary tool to ensure water takings are sustainable and that the source protection water budget results are being considered in water taking management decisions. In some cases, the MECP will post a PTTW application on the Environmental Registry of Ontario (<a href="https://ero.ontario.ca/">https://ero.ontario.ca/</a>) for a 30-day public consultation period to help come to a decision.</p> <p>More broadly, water is managed through a variety of federal, provincial and local legislation, policies and programs, including but not limited to: the Great Lakes Water Quality Agreement, OWRA, <i>Clean Water Act, 2006</i>, <i>Safe Drinking Water Act, 1990</i>, <i>Planning Act, 1990</i>, and <i>Environmental Protection Act, 1990</i>.</p>

## TECHNICAL MEMORANDUM

**DATE** March 22, 2021

**Project No.** 19119487

**TO** Eric Hodgins, M.Sc., P.Geo., Manager Hydrogeology and Source Water  
Region of Waterloo

**CC** Eric Thuss

**FROM** Jennifer Hancox and John Piersol

**EMAIL** [jennifer\\_hancox@golder.com](mailto:jennifer_hancox@golder.com)

### **ASSESSMENT OF RESIDENTIAL LAWNS AND PERCENT MANAGED LANDS CAMBRIDGE EAST AND MANNHEIM ASR WELL FIELDS**

#### **Introduction**

Golder Associates Limited (Golder) was retained by the Region of Waterloo (Region) to update the source water protection mapping in the Pinebush and Clemens Mill well fields in the City of Cambridge and the ASR Mannheim well field in the City of Kitchener. This mapping included: vulnerability scoring, percent managed lands, livestock density and percent impervious areas for the updated Wellhead Protection Areas (WHPAs) in these well fields.

This updated mapping was included in the draft updated Source Protection Plan. As part of their review of the updated Source Protection Plan, the Ontario Ministry of the Environment, Conservation and Parks (MECP) provided the following comment:

*Region of Waterloo Section 8.1.7 of the assessment report states that the delineation of non-agricultural managed lands does not include residential lawns citing the area likely does not represent a significant nutrient loading to municipal aquifers. As per the 2009 managed land technical bulletin, residential areas are to be included in the calculation. Please provide additional information to support this decision, as the Ministry cannot estimate by looking at the maps if adding the percent of residential grassed areas would change the total percent of managed lands significantly (i.e., a certainty that adding residential lawns would not increase the percentage of managed lands above the 80% threshold).*

Following email requests from the Region, dated February 23, 2021 and March 11, 2021, this technical memorandum provides additional information to support that residential grassed areas do not change the total percent of managed lands significantly in these areas.

#### **Methodology and Results**

For the purpose of this assessment, WHPA-Bs were chosen for the Pinebush (P10, P10A, P10B, P11, P19 and P9, P15, P15A), Clemens Mill (G6, G16, G18, G19) and Mannheim ASR (ASR1, ASR2, ASR3, ASR4, ASR5, RCW2, RCW3, RCW4) well fields as these WHPAs have the highest percentage of urban residential properties and were considered to be the worst-case scenarios in terms of coverage of residential lawns.

For the portion of the Pinebush and Clemens Mill WHPA-Bs within the City of Cambridge, MPAC data from the Region of Waterloo was used to identify residential properties in Cambridge (i.e., 300 series property codes). For

properties located within the Township of Puslinch, rural residences are located on properties zoned as prime agricultural and secondary agricultural (County of Wellington, 1998). Properties identified as being used for agricultural or livestock purposes were included in the agricultural managed land calculations (Golder, 2020). As MPAC data was not available for the Township of Puslinch, lawns on rural residential properties, not previously identified as managed lands, were digitized using GIS tools.

For the Mannheim ASR well field, residential properties within the WHPA-B were digitized based on Land Use Mapping from the City of Kitchener’s Official Plan (City of Kitchener, 2014) and review of air photos.

Figures 1A through 1D are maps of the Pinebush, Clemens Mill and Mannheim ASR WHPA-Bs showing residential properties in the urban areas and digitized rural residential lawns in the Township of Puslinch (i.e., Pinebush (P10, P10A, P10B, P11, P17, P19) and Clemens Mill (G6, G16, G18, G19).

For urban residential properties, based on the Ministry of Transportation Ontario (MTO) Drainage Management Manual Design Chart 1.07 (MTO, 1997), an approximate factor of 0.5 was applied to the residential property areas to estimate the area with lawns. For rural properties, the area of lawns was estimated by digitizing lawns from air photos. Based on the assessment, Table 1 shows the percentage of residential lawns relative to the area of each of the WHPAs. The additional percentage of managed land in these example WHPA-Bs ranged from 3% in the Clemens Mill well field to 10% in the Pinebush (P9, P15A) well field. The other WHPAs in these well fields have fewer residential areas and would have lower percentages of residential lawns than these examples.

If the additional percentage of residential lawns were to be included in the percent managed lands this would not significantly increase the percentage of managed lands in these well fields. As shown in Table 2, for the WHPA-B examples, the percent managed land category does not change and remains in the low category. The areas with the highest percent managed land are the Clemens Mill G16 (56%) and G18 (97%) WHPA-As and there are no residential lawns in these areas.

There are no cases where the addition of residential lawns would change the percentage of managed lands above the 80% threshold.

**Table 1: Area of Residential Lawns - Example Calculations in WHPA Zones**

Well Field	Municipal Wells	WHPA Zone	Total WHPA Area (km <sup>2</sup> )	Urban Residential Property Area (km <sup>2</sup> )	Rural Lawn Area (km <sup>2</sup> )	Percent Residential Lawns (%)
Clemens Mill	G6, G16, G17, G18, G19	WHPA-B	8.70	0.29	0.15	3%
Pinebush	P9, P15A	WHPA-B	6.56	1.32	0.00	10%
	P10A, P10B, P11, P17, P19	WHPA-B	4.27	0.26	0.07	5%
ASR Mannheim	ASR1, ASR2, ASR3, ASR4, ASR5, RCW2, RCW3, RCW4	WHPA-B	0.69	0.08	0.00	6%

**Table 2: Revised Percent Managed Lands - Example WHPA Zones**

Well Field	Municipal Wells	WHPA Zone	Total WHPA Area (km <sup>2</sup> )	Managed Lands Area Including Residential Lawns (km <sup>2</sup> )	Revised Percent Managed Land	Range	Category
Clemens Mill	G6, G16, G17, G18, G19	WHPA-B	8.70	1.29	16%	0 to 40%	Low
Pinebush	P9, P15A	WHPA-B	6.56	0.33	15%	0 to 40%	Low
	P10A, P10B, P11, P17, P19	WHPA-B	4.27	0.27	9%	0 to 40%	Low
ASR Mannheim	ASR1, ASR2, ASR3, ASR4, ASR5, RCW2, RCW3, RCW4	WHPA-B	0.69	0.19	33%	0 to 40%	Low

**Closure**

We trust that this technical memorandum meets your requirements. If you have any questions regarding the content of this technical memorandum, please do not hesitate to contact the undersigned.

**Golder Associates Ltd.**

Jennifer Hancox, M.Sc., P.Geo.  
 Hydrogeologist  
 JLH/JAP/jlh

John Piersol, M.Sc., P.Geo.  
 Associate, Senior Hydrogeologist

- Attachments: Figure 1A: Pinebush Well Field (P10, P10A, P10B, P11, P19) WHPA B – Residential Properties
- Figure 1B: Pinebush Well Field (P9, P15A) WHPA B – Residential Properties
- Figure 1C Clemens Mill Well Field WHPA B – Residential Properties
- Figure 1D: Mannheim ASR Well Field WHPA B – Residential Properties

[https://golderassociates.sharepoint.com/sites/105935/project files/6 deliverables/percent managed land assessment/19119485\\_fnl\\_tm\\_percent mged land assessment\\_2021mar22.docx](https://golderassociates.sharepoint.com/sites/105935/project%20files/6%20deliverables/percent%20managed%20land%20assessment/19119485_fnl_tm_percent%20mged%20land%20assessment_2021mar22.docx)

## References

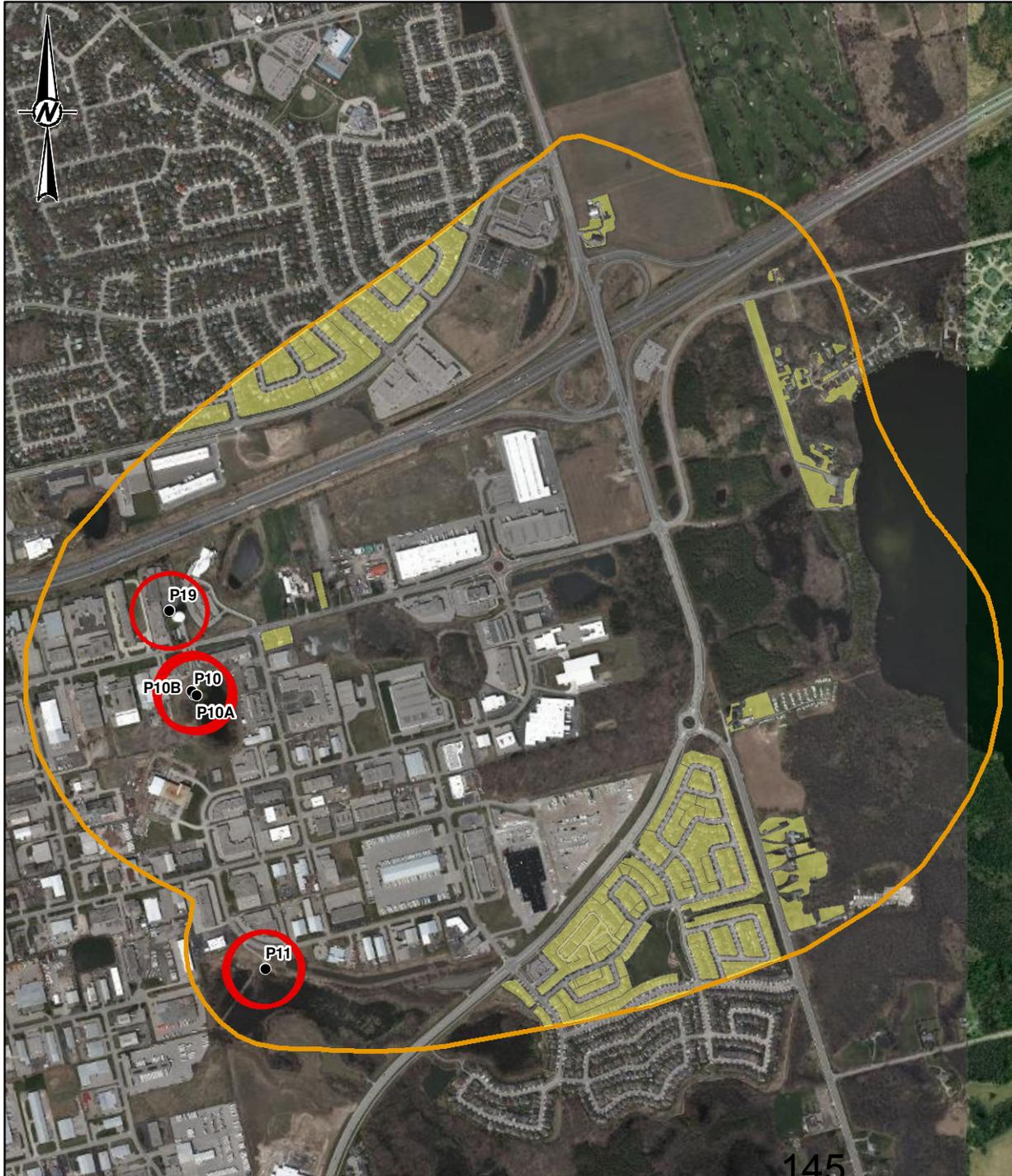
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## Figures



**LEGEND**

- Municipal Supply Well
- 100 m Zone of Prohibition (WHPA-A)
- WHPA-B (2-year)
- Residential Property



**REFERENCE(S)**

1. BASE DATA - MNRF LIO OBTAINED 2019, ROW 2020
2. SOURCE: ESRI, MAXAR, GEOEYE, EARTHSTAR GEOGRAPHICS, CNES/AIRBUS DS, USDA, USGS, AEROGRIID, IGN, AND THE GIS USER COMMUNITY
3. PROJECTION: TRANSVERSE MERCATOR DATUM: NAD 83 COORDINATE SYSTEM: UTM ZONE 17N

CLIENT  
REGION OF WATERLOO

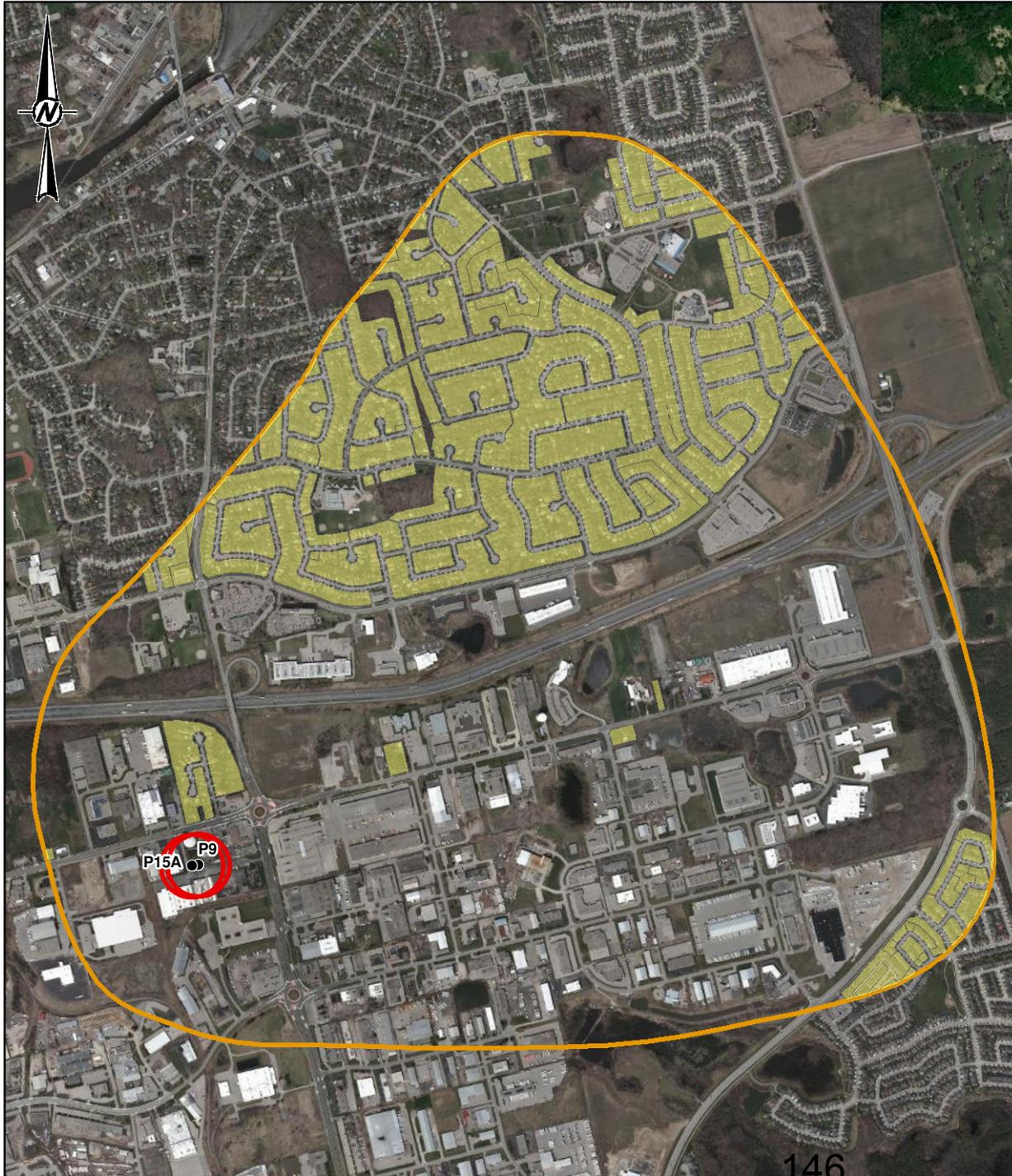
PROJECT  
CAMBRIDGE EAST WATER SUPPLY  
CLASS ENVIRONMENTAL ASSESSMENT

TITLE  
**PINEBUSH WELL FIELD (P10, P10A, P10B, P11, P19) WHPA B – RESIDENTIAL PROPERTIES**

CONSULTANT	YYYY-MM-DD	2021-03-19
	DESIGNED	PR
	PREPARED	CGE
	REVIEWED	JH
	APPROVED	JAP



PROJECT NO. 19119485	CONTROL 0002	REV. 0	FIGURE 1A
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**LEGEND**

- Municipal Supply Well
- 100 m Zone of Prohibition (WHPA-A)
- WHPA-B (2-year)
- Residential Property



**REFERENCE(S)**

1. BASE DATA - MNRF LIO OBTAINED 2019, ROW 2020
2. SOURCE: ESRI, MAXAR, GEOEYE, EARTHSTAR GEOGRAPHICS, CNES/AIRBUS DS, USDA, USGS, AEROGRIID, IGN, AND THE GIS USER COMMUNITY
3. PROJECTION: TRANSVERSE MERCATOR DATUM: NAD 83 COORDINATE SYSTEM: UTM ZONE 17N

CLIENT  
REGION OF WATERLOO

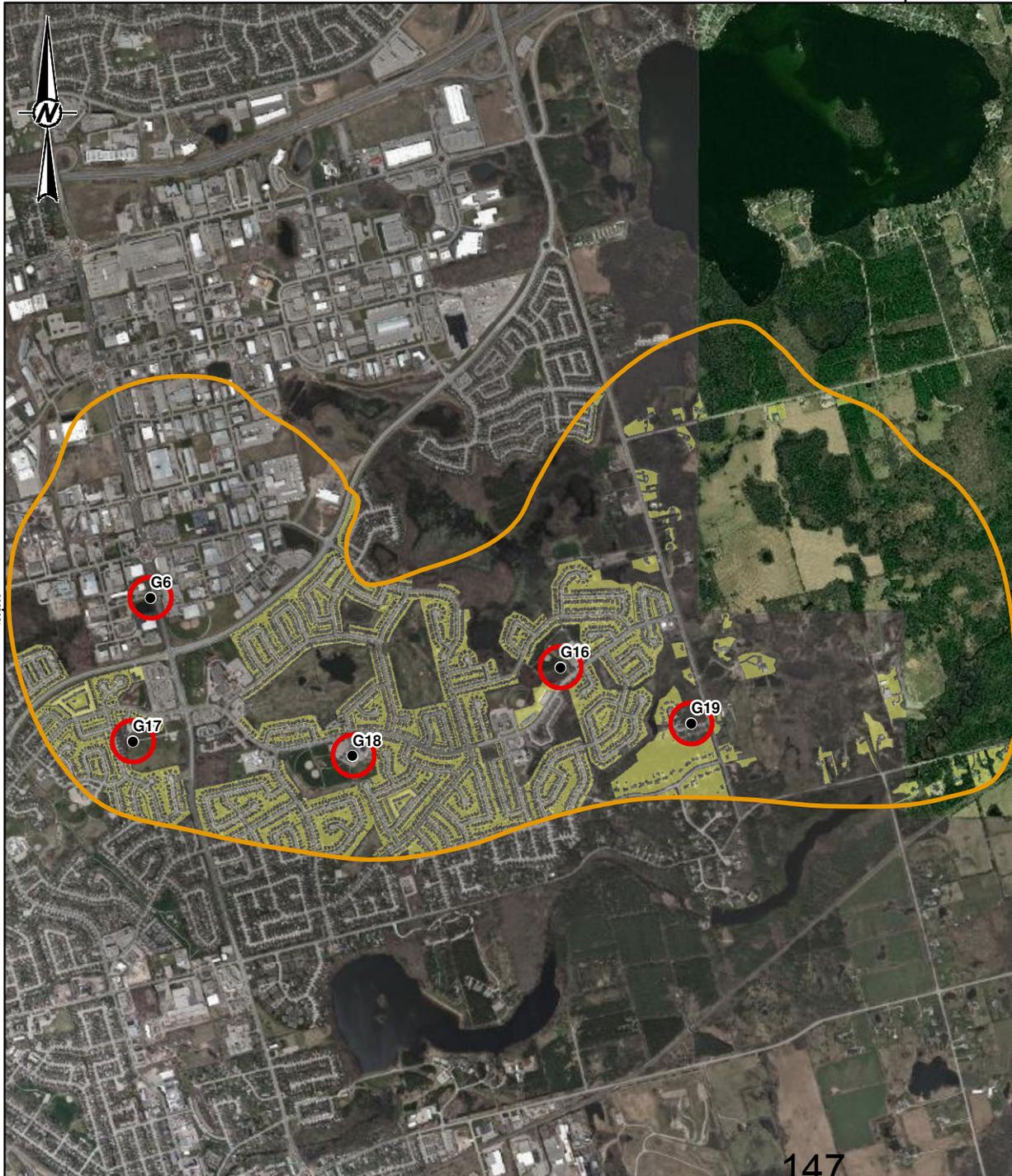
PROJECT  
ASSESSMENT OF RESIDENTIAL LAWNS AND PERCENT  
MANAGED LANDS, CAMBRIDGE EAST AND ASR WELL FIELDS

TITLE  
**PINEBUSH WELL FIELD (P9, P15A) WHPA B – RESIDENTIAL  
PROPERTIES**

CONSULTANT	YYYY-MM-DD	2021-03-19
	DESIGNED	PR
	PREPARED	CGE
	REVIEWED	JH
	APPROVED	JAP



PROJECT NO. 19119485	CONTROL 0002	REV. 0	FIGURE 1B
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**LEGEND**

- Municipal Supply Well
- 100 m Zone of Prohibition (WHPA-A)
- WHPA-B (2-year)
- Residential Property



**REFERENCE(S)**

1. BASE DATA - MNRF LIO OBTAINED 2019, ROW 2020
2. SOURCE: ESRI, MAXAR, GEOEYE, EARTHSTAR GEOGRAPHICS, CNES/AIRBUS DS, USDA, USGS, AEROGRIID, IGN, AND THE GIS USER COMMUNITY
3. PROJECTION: TRANSVERSE MERCATOR DATUM: NAD 83 COORDINATE SYSTEM: UTM ZONE 17N

CLIENT  
REGION OF WATERLOO

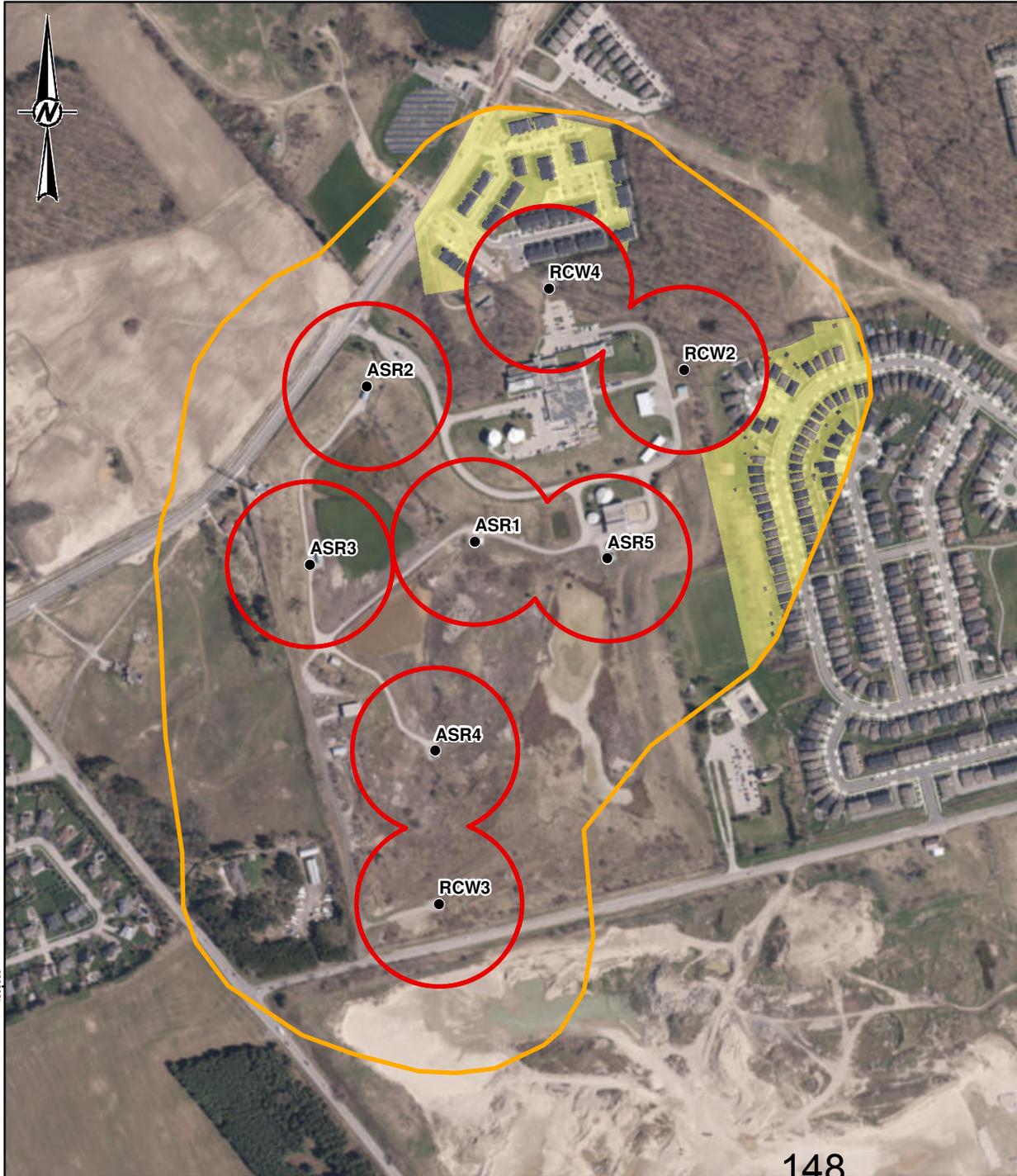
PROJECT  
ASSESSMENT OF RESIDENTIAL LAWNS AND PERCENT  
MANAGED LANDS, CAMBRIDGE EAST AND ASR WELL FIELDS

TITLE  
**CLEMENS MILL WELL FIELD WHPA B – RESIDENTIAL  
PROPERTIES**

CONSULTANT	YYYY-MM-DD	2021-03-19
	DESIGNED	PR
	PREPARED	CGE
	REVIEWED	JH
	APPROVED	JAP

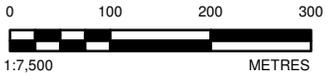


PROJECT NO. 19119485	CONTROL 0002	REV. 0	FIGURE 1C
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**LEGEND**

- ASR System Well
- 100 m Zone of Prohibition (WHPA-A)
- WHPA-B (2-year)
- Residential Property



**REFERENCE(S)**

1. BASE DATA - MNRF LIO OBTAINED 2019, ROW 2020
2. SOURCE: ESRI, MAXAR, GEOEYE, EARTHSTAR GEOGRAPHICS, CNES/AIRBUS DS, USDA, USGS, AEROGRIID, IGN, AND THE GIS USER COMMUNITY
3. PROJECTION: TRANSVERSE MERCATOR DATUM: NAD 83 COORDINATE SYSTEM: UTM ZONE 17N

CLIENT  
REGION OF WATERLOO

PROJECT  
ASSESSMENT OF RESIDENTIAL LAWNS AND PERCENT  
MANAGED LANDS, CAMBRIDGE EAST AND ASR WELL FIELDS

TITLE  
**MANNHEIM ASR WELL FIELD WHPA B – RESIDENTIAL  
PROPERTIES**

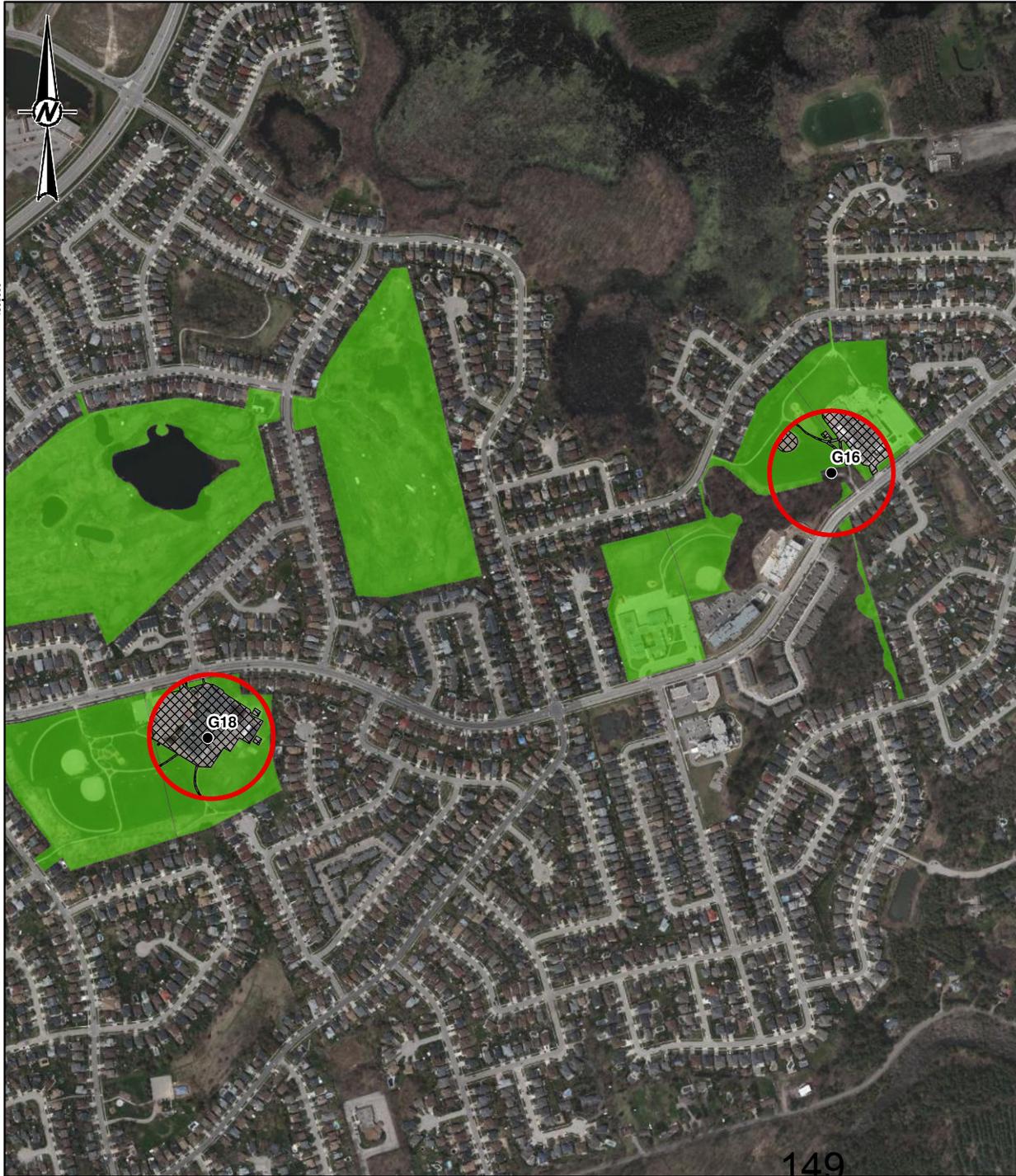
CONSULTANT	YYYY-MM-DD	2021-03-19
DESIGNED		PR
PREPARED		CGE
REVIEWED		JH
APPROVED		JAP



PROJECT NO. 19119485	CONTROL 0002	REV. 0	FIGURE 1D
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4815000

25mm IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET HAS BEEN MODIFIED FROM ANS/A



**LEGEND**

- Municipal Supply Well
- 100 m Zone of Prohibition (WHPA-A)
- ▨ Area to Exclude from Managed Lands
- Existing Managed Lands

**DRAFT**



**REFERENCE(S)**

1. BASE DATA - MNRF LIO OBTAINED 2019, ROW 2020
2. SOURCE: ESRI, MAXAR, GEOEYE, EARTHSTAR GEOGRAPHICS, CNES/AIRBUS DS, USDA, USGS, AEROGRIID, IGN, AND THE GIS USER COMMUNITY
3. PROJECTION: TRANSVERSE MERCATOR DATUM: NAD 83 COORDINATE SYSTEM: UTM ZONE 17N

CLIENT  
REGION OF WATERLOO

PROJECT  
ASSESSMENT OF RESIDENTIAL LAWNS AND PERCENT  
MANAGED LANDS, CAMBRIDGE EAST AND ASR WELL FIELDS

TITLE  
**G16 AND G18 WHPA A – MANAGED LANDS  
(CLEMENS MILL WELL FIELD)**

CONSULTANT	YYYY-MM-DD	2021-03-19
	DESIGNED	PR
	PREPARED	CGE
	REVIEWED	JH
	APPROVED	JAP



PROJECT NO. 19119485	CONTROL 0002	REV. 0	FIGURE 2
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March 8, 2021

TO: **Iiona Feldmann** (Source Protection Program Assistant, Lake Erie Region, GRCA)  
 FROM: [REDACTED]  
 CC: **Gregg Davidson** (Mayor, Township of Mapleton)  
**Dennis Craven, Paul Douglas, Michael Martin, Marlene Ottens** (Township of Mapleton Councillors)  
**Larry Wheeler** (Clerk, Township of Mapleton)  
**Manny Barron** (CAO, Township of Mapleton)  
**Kyle Davis** (Risk Management Official, Wellington Source Water Protection)  
**Kelly Linton** (Mayor, Township of Centre Wellington)  
 RE: **Chapter 22 (Township of Centre Wellington) and Chapter 7 (County of Wellington)** of the Source Protection Plan for the Grand River Watershed.

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This letter includes comments, recommendations, and questions about the **Draft Updated Source Water Protection Plan for the Grand River Watershed, Chapter 22 Centre Wellington Tier 3 Budget and Risk Assessment (dated Jan 21, 2021)**

Hereafter I refer to the:

- report above as ‘Draft SWPP’,
- Township of Centre Wellington as ‘Centre Wellington’,
- Township of Mapleton as ‘Mapleton’
- Wellhead Protection Area for quantity of water for Centre Wellington as ‘WHPA-Q’

I also included a few **comments and questions about Chapter 7 (County of Wellington)** of the Source Protection Plan in SECTION 15 of this letter.

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## (SECTION 1): SALEM in the Municipal Groundwater Supply System

I found it confusing that the Draft SWPP doesn’t mention Salem.

The ‘Draft Water Supply Master Plan’ (WSPP) for Centre Wellington by AECOM 2019 reports the following about Salem:

- (see 1. Introduction) *‘The Township of Centre Wellington (Township) owns and operates the **municipal groundwater supply system located in the urban areas of Elora/Salem and Fergus, referred to as the Fergus-Elora Water Supply System (FEWSS)**. The municipal wells are located within the village and town and the systems are connected. A continued reliable supply of potable water is necessary for the social, economic and environmental wellbeing of the Township.’*

### Recommendations for the Draft SWPP:

- item 22.2.5 subsection ‘Municipal Supply System and Demand’:
  - add the above quote from AECOM 2019 about the FEWSS for clarity.
  - change ‘**19,330 residents in Elora**’ to ‘**19,331 residents in Elora/Salem**’.  
(Note: ‘19,331’ to match details in Table 22-8).
- paragraph preceding Table 22-8, change ‘**Elora**’ to ‘**Elora/Salem**’.
- paragraph 1 of 22.2.6, change ‘**Elora**’ to ‘**Elora/Salem**’.
- if groundwater recharge also applies to Salem (see Matrix 2020 Figure 5 and Figure 11):
  - Change ‘**Elora**’ to ‘**Elora/Salem**’ in footnote 2 and 4 for Table 22-10.

## (SECTION 2) Totals for Population, Urban Population, Serviced Population

I was confused about population details when reading the Draft SWPP because:

- total population wasn't included,
- 'serviced population' was sometimes described only as 'population', and
- an explanation wasn't given for the difference between 'urban population' and 'serviced population',

I compiled the following table for Centre Wellington taking:

- 'total population' from Table 5 of the Wellington County Official Plan,
- 'total urban population' (Elora/Salem/Fergus) and 'total serviced population' (Elora/Salem/Fergus) from Table 3.2 AECOM 2019:

Township of Centre Wellington	2016	2036	2041
<b>Total Population</b>	29,885	48,520	52,310
<b>Total Urban Population</b>	22,850*	40,860	44,690
<b>Total Serviced Population</b>	19,331	37,429	41,698

\*Total Urban Population for 2016 reported in Table 5 of the Wellington County Official Plan = 22,540.

### Recommendations for the Draft SWPP for context and clarity:

- Add the above Table about population to page 22-1.
- Following that Table add these excerpts from AECOM 2019:
  - (see 3.1.1) *'Not all persons living in Fergus and Elora are serviced by the Township's water distribution system. Some homes have access to municipal water but have not yet opted to connect, while other homes do not (and will not) have access to municipal water servicing...'*
  - (see 3.3.2) *'... The proportion of residents unserved is assumed to decrease over time from 15% currently to only 7% in year 2041. However, should circumstances change such that there is an increase in home owners that choose to connect or are mandated to connect to the municipal distribution system, the projected municipal water demands would increase proportionately to the population serviced. This could occur over a short period of time, as in the case of a policy change to possibly address water quality or well interference issues, or over a longer period as indicated in Table 3.2.'*
- Table 22-8, change 'Projected Population' to 'Projected Service Population'.
- Sentence preceding Table 22-8, change 'projected population' to 'projected service population'
- In each of the two paragraphs following Table 22-8, change the 2 occurrences of 'projected population' to 'projected service population'.
- In paragraph 3 of 22.4.2, change '2041 population demand' TO '2041 serviced population demand'.

### Question:

- The 'Growth Plan for the Greater Golden Horseshoe' (dated Aug 28, 2020) is showing a population of 160,000 for the County of Wellington as 2051 (*compared to 140,000 in 2041*). How much of that 20,000 total population growth for the County from 2041 to 2051 will be allocated to Elora/Salem/Fergus?

## (SECTION 3) Average Annual Capacity for Municipal Wells – ‘Existing Well Capacity’

Matrix 2020 items 5.2.1.1 and 9.2 plus Table 6 all report that the pumping rates for the **2018 calendar year** were considered the ‘existing demand’ for the Elora and Fergus wells.

The same information is included in the Draft SWPP:

- (See 22.4.2 Risk Assessment Summary)  
*‘... A set of Risk Assessment scenarios were developed to assess the impact of municipal wells pumping at Existing and Future rates, while considering land use change, drought conditions and impacts to other water uses (e.g., coldwater streams). The Tier 3 Assessment assessed existing permitted municipal water supply wells and nonpermitted municipal water supply wells that have been tested and evaluated under the EA process. **In this study, average annual pumping rates for the 2018 calendar year were considered as the Existing demand....’***

**Question:** Based on the following collective evidence about annual system capacity, should references in the above 2 documents (Matrix 2020 and the Draft SWPP) to pumping rates for the ‘**2018 calendar year**’ be changed to ‘**2017 calendar year**’?

### Evidence:

- Draft SWPP, footnotes for Table 22-8 reads
  - ‘Current estimated average annual system capacity = **9,060 m3/day**’
- AECOM 2019 reads:
  - (see 3.4) ‘Therefore it is projected that such a significant growth in population will result in the Township exceeding its current available water supply capacity (with reference to the existing Permit to Take Water (PTTW) prior to 2032.’
  - (see 4.4) ‘The result of this assessment, presented in Table 4.12 is that the current average annual system capacity is **9,060 m3/day**. A number of scenarios were evaluated to estimate the capacity available under each condition discussed in the following sections.’
- AECOM 2019 Table 4.12 and Table 5.1 report total ‘average annual capacity’ for the Fergus and Elora wells to be **9,060 m3/day**.
- AECOM 2019 Table 4.12 (title ‘FEWSS Average Annual Capacity Assessment’) reports **only 2017 dates for the ‘pumping period’ for the Fergus and Elora wells.**
- Matrix 2020 Table 6 indicates total ‘well capacity allocated rate (m3/day)’ for the Fergus and Elora wells to be **9,060 m3/day**.
- Slide 5 from the presentation made to Mapleton Council on Oct 27, 2020 by the Lake Erie Source Protection delegate (Slide 5 is on page 34 of the meeting agenda)  
[https://mapleton.ca/content/township-services/council/agendas-minutes-archive/council/agenda-2020\\_10\\_27.pdf](https://mapleton.ca/content/township-services/council/agendas-minutes-archive/council/agenda-2020_10_27.pdf)  
 shows a figure with groundwater drawdown estimates (same drawdown estimates as Figure 7 from Matrix 2020) with the caption
  - ‘Water Supply Master Plan Pumping Rate used to delineate WHPA-Q. Average Annual Demand of **9,060 m3/day**’.

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## (SECTION 4) Table 22-9, Municipal Pumping Rates....

In Table 22-9, the column heading for column 5 doesn’t match the details in column 5.

The heading of column 5 is ‘Well Capacity/Future (Allocated) Rate (m3/day)’ but the details in column 5 are ‘existing capacity’ not ‘future capacity’. For example, the total future well capacity listed for the Elora and Fergus (9,060 m3/day) is ‘existing demand’ (2017 or 2018?) as described in SECTION 3 of this letter.

Water demand by the ‘serviced population’ will likely reach well capacity of the current Municipal wells (9,060 m<sup>3</sup>/day) by 2032 per AECOM 2019 (see item 3.4). Similarly, Matrix 2020 item 9.2 indicates that current well capacity will be reached in 2031-2036.

Future water demands of the total serviced population 2011 through 2041 are described in AECOM 2019 Table 1, 3.1, 3.2, 5.2 (Note Table 1 and 5.2 are the same). Table 7 in Matrix 2020 is excerpts from Table 1 (or Table 5.2) in AECOM 2019. Table 22-8 of the Draft SWPP replicates Table 7 Matrix 2020. Thus **Table 22-9 in the Draft SWPP doesn’t need to include ‘future capacity’**. **Table 22-8 in the Draft SWPP and the next few paragraphs there already convey that demand will exceed capacity in 2031-2036.**

**Recommendations regarding Table 22-9 for clarity:**

- Footnote 1 reads ‘Existing Rate is for 2018 calendar year’. Please verify whether or not ‘2018 calendar year’ should read as ‘**2017 calendar year**’ as suggested in SECTION 3 of this letter.
- Change the heading for column 4 from ‘**existing rate m<sup>3</sup>/day**’ TO ‘**existing demand m<sup>3</sup>/day**’ to add clarity.
- Change the heading for column 5 from ‘**Well Capacity/Future (Allocated) Rate (m<sup>3</sup>/day)**’ TO ‘**Existing Well Capacity (m<sup>3</sup>/day)**’.
- Change any description of Table 22-9 accordingly e.g., in the paragraph prior to Table 22-9.

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## (SECTION 5) Alma Aquaculture Research Station (PTTW 3347-84VQV5)

About the Alma Aquaculture Research Station (PTTW 3347-84VQV5):

- Is 5 km from Alma (as the crow flies).
- Matrix 2017b Appendix C (and Matrix 2020 Table 8) reports the ‘Consumptive Rate’ for 4 wells at the ‘Commercial Aquaculture’ site.
- Matrix 2017b Appendix C reports the ‘**Consumptive Rate**’ for 2 of the 6 wells to be zero.
- Table 22-5 Draft SWPP reports (so does Matrix 2017b) that the ‘**Maximum Permitted Average Annual Rate**’ is **10,143 m<sup>3</sup>/day** (= 10,143,000 litres/day\*) and the ‘**Consumptive Rate**’ is **4,799 m<sup>3</sup>/day** (= 4,799,000 litres per day).
- The ‘Water Services Annual Report and Summary for Guelph Drinking Water System Corporation of the City of Guelph’ (dated Feb 1, 2021) reports a request on Sept 2, 2020 to renew the PTTW (3347-84VQV5). <https://guelph.ca/wp-content/uploads/2020-Water-Services-Annual-Summary-Report.pdf>

Further, it is unknown whether or not the ‘consumptive rate’ at the Aquaculture Station will reach the ‘daily permitted water taking rate’.

On March 6, 2021, I checked the ‘**Environmental Registry for Ontario**’ (ERO) for details about the renewal of the **PTTW for the Aquaculture Research Station (3347-84VQV5)**. The ERO indicates:

- the comment period for the application for the PTTW renewal (ERO 019-2311) was Sept 2, 2020 to Oct 2, 2020,
  - the application stage for the PTTW renewal is listed as ‘**proposal**’,
  - the request is for a maximum total daily water taking for 6 wells is 10,143,360 litres/day (meaning no change from current) for a 10-year period.
- <https://ero.ontario.ca/notice/019-2311>

**Question about the Alma Aquaculture Research Station:**

- Both Matrix 2017b and Matrix 2020 indicate that the data source for the ‘consumptive rate’ (4,799 m<sup>3</sup>/day) was ‘2015 WTRS’ (Water Taking and Reporting System). Does that mean that the last update for the consumptive rate for the Aquaculture Research Station was in 2015?  
(I couldn’t access the WTRS because a password is required.)

**Recommendation:** Given the significant amount of permitted water taking for ‘Aquaculture’ (10,413 m<sup>3</sup>/day) in comparison to the existing PTTW for the Municipal wells (15,031 m<sup>3</sup>/day) and uncertainties regarding whether the ‘consumptive rate’ for ‘Aquaculture’ has changed (since 2015?) or will be changing, **recommend the following footnote** be added to Table 22-5 in the Draft SWPP:

- The reported daily ‘consumptive rate’ for ‘Aquaculture’ is based on water taking at 4 of 6 wells on site, and water taking overall is approximately 46% of the maximum permitted daily water taking rate allowed by the PTTW (see Appendix C Matrix 2017b for details). It is currently unknown whether or not the ‘consumptive rate’ will eventually reach the maximum permitted daily water taking rate.

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## (SECTION 6) Surrogate Wells Representing a Cluster of Domestic Wells

According to Matrix 2019 and Matrix 2020, 4 of the 18 ‘surrogate wells’ in the study represent ‘domestic demands in the communities surrounding Belwood Reservoir and Inverhaugh’.

**Question:** Why was Belwood represented in the study of ‘surrogate wells’ and not Alma?

I ask because both Belwood and Alma are further than 1 km from the Municipal wells, and Alma is closer than Belwood to:

- Municipal wells E1, E3, E4, F6, F7,
- the 4 new municipal wells proposed in areas 3, 5, 7, 8 (see AECOM 2019 for locations).
- the largest of the non-municipal PTTW within the Centre Wellington WHPA-Q i.e., Alma Aquaculture Research Station and the two ‘Industrial Aggregate Washing’.
- the Middlebrook well (recently sold by Nestle; no PTTW yet).

See SECTION 16.1 for details about the size of the population at Alma and the number of wells.

### **Background about Surrogate Wells for Mapleton Readers:**

**Matrix 2020 reads** (see 5.2.2.2 Non-Permitted Water Uses, Domestic Demands):

*‘The details for estimating domestic water demands in the areas surrounding Fergus and Elora are described in the model development and Calibration Report (Appendix B). Eighteen surrogate wells are included in the model to represent all domestic water wells with a total combined demand of 943 m<sup>3</sup> /day. **These wells represent the distribution of domestic well clusters within approximately 1 km of a municipal well, and the domestic demands in the communities surrounding Belwood Reservoir and Inverhaugh.**’*

Matrix 2019 (3.7.4.2) explained in greater detail than Matrix 2020 (see 5.2.2.2) about surrogate wells in the simulations.

**Matrix 2019 reads** (see 3.7.4.2 Non-Permitted Water Taking, Domestic Water Taking):

*‘Boundary conditions were also included in the model domain to account for domestic water takings within the Fergus, Elora, and Salem areas. As it is not feasible to simulate each domestic water taker as a unique pumping well in the model, domestic water demands in a clustered area were represented using a single surrogate pumping well in the numerical model. A total of 18 surrogate wells were included in the model domain representing the distribution of domestic well clusters within approximately 1 km of a municipal well, with reference to the Township’s privately-serviced GIS datasets. Fourteen wells were added to the model in the vicinity of the Fergus and Elora areas, and four wells represented domestic water demands in the communities surrounding the Belwood Reservoir and Inverhaugh in the southwest. The total demand simulated in the model from these 18 wells was 943 m<sup>3</sup> /d (see Figure 7 for locations). The demand value was derived by multiplying an average pumping rate of 0.251 m<sup>3</sup> /d per person (ECCC 2017) by the approximate number of*

people per household in Centre Wellington (2.6; Statistics Canada 2017) by the number of households (or equivalents) within a neighbourhood area. The number of households per neighbourhood was estimated by querying wells in un-serviced areas and the total water taking was estimated to be 829 m<sup>3</sup> /d. This value was refined and updated to 943 m<sup>3</sup> /d using input from Save Our Water, who conducted independent analyses of un-serviced households, businesses and institutions.’

**Comment about the formula in Matrix 2019 for arriving at the water taking rate represented by the ‘surrogate wells’:** Although not stated, to arrive at the original conclusion of 829 m<sup>3</sup>/day, the number of unserviced households in the formula must have been 1270.

**Matrix 2017b (see 3.3.6.1)** described domestic wells within 1 km of the Elora and Fergus wells. No mention in Matrix 2017b of ‘surrogate wells’ representing a cluster of wells.

- (see 3.3.6.1 Domestic Water Taking in the Centre Wellington Area)  
‘Matrix reviewed the MOECC WWIS to estimate the number of domestic water supply wells within 1 km of a Fergus or Elora Well (as well as the cluster of wells in the Salem area). Wells in the WWIS represent water takings for domestic water use, and in some cases agricultural water use. Some of these areas may predate municipal servicing and are no longer in use, or the wells may be used sporadically for lawn watering or similar purposes. There are approximately 940 water wells within 1 km of Fergus and Elora (including Salem) that may be actively used for domestic water use. If we estimate a pumping rate of 251 L/d per household (ECCC 2017), this equates to an estimated total demand of 230 m<sup>3</sup> /d from the Fergus, Elora and Salem area, with approximately 70 m<sup>3</sup> /d extracted from the Salem area. This water use represents approximately 4% of the total municipal water use within the Fergus and Elora area, and less than 2% of the total permitted water use within the Study Area. While these takings are considered low, these values will be considered (in aggregate) in future stages of the Scoped Tier Three Assessment.’

#### **AECOM 2019 reported:**

- (See 5.4.1.3 F2 and F5 Replacement Impact Assessment)  
‘Potential impacts to private water takings due to the re-drilling of F2 and F5 were also evaluated. As the Tier 3 Model domain contains 1,000+ domestic well locations, water levels were evaluated at the eighteen surrogate locations designed to represent clusters of domestic wells. The conclusion of this assessment was that water levels are simulated to remain 20 m to 79 m above the base of the eighteen wells, indicating that the addition of the new F2 and F5 wells to the system would not impede the ability of private well users to utilize these existing wells for water supply.’
- (See 5.4.3.1 Assessment of New Supply Wells to Meet 2041 Deficit)  
‘Potential impacts to private water takings were evaluated. The modelling results show that water levels at all eighteen surrogate wells remain 19 m to 76 m above the bottom elevation of the wells, indicating that the proposed pumping in this scenario will not impede the ability of private well users to utilize these existing wells for water supply. It is beyond the scope of this study to evaluate the specific configurations of all private wells potentially affected by municipal pumping. Interference with a given well is more complex than the simplified analysis described above and requires field work to be conducted on a property by property basis as part of a field program. For example, the eighteen wells simulated in the model are representative of average conditions in each area. In order to assess potential impacts at a specific well location, full details and assessment of the well and pumping system are required. This work will be required if/when the Township moves forward with an expanded well system.’

## (SECTION 7) Figure 7 Matrix 2020, ...Groundwater Vulnerable Area

The word ‘drawdown’ only appears once in the Draft SWPP compared to 22 times in Matrix 2020 and 176 times in AECOM 2019.

Figure 7 in Matrix 2020 titled ‘WHPA-Q1/WHPA-Q2/Groundwater Vulnerable Area’ includes the:

- boundary for the Centre Wellington WHPA-Q,
- **estimated ‘groundwater drawdown’** e.g.,
  - 2-3 metres at Alma,
  - the south end of Alma is close to the boundary of the area estimated at 3-4 metres of groundwater drawdown.
- locations for non-municipal Permits to Take Water (PTTW) including PTTW 3347-84VQV5 (Alma Aquaculture Research Station) which is 5 km from Alma (as the crow flies),
- locations of the current Municipal wells for Centre Wellington.

### Questions:

- Because there isn’t currently a diagram about groundwater drawdown in Chapter 22 of Draft SWPP (or in Chapter 7), **could Figure 7 Matrix 2020 (or similar) be included in the Draft SWPP?** This diagram is particularly informative for the general public as well as for Mapleton Council/Administration.
  - **If so, could a ‘note’ be added** to that Figure (or to the text describing the Figure) indicating the pumping year (2017 or 2018?) that the groundwater drawdown estimates represent?
- **How much seasonal fluctuation of water levels is typical for private/domestic wells** that aren’t in limestone and bedrock (e.g., at Alma)?
- **Is it anticipated that new Municipal wells for Centre Wellington will extend** the WHPA-Q further into Mapleton, and thereby increase the amount of anticipated groundwater drawdown at Alma beyond what is currently observed with seasonal fluctuations?

### Background for Mapleton Readers:

The Water Supply Master Plan for Centre Wellington (see AECOM 2019 5.4.2, 5.4.2.2, Table 3, Table 8.2) describes:

- 8 potential areas in Centre Wellington for new Municipal wells,
- the reasoning for selecting 4 preferred areas (areas 3, 5, 7, 8) for new Municipal wells,
- potential dates for well installation.

Figure 1 (Potential Future Well Area Locations) AECOM 2019 shows that 4 proposed wells at Areas 5, 7, 8 will be closer to Alma than the existing Municipal wells. Looks as though the locations for potential wells in Areas 5, 7, 8 are ‘approximately’ 4.2, 7, and 5.2 km (as the crow flies) respectively from Alma.

Matrix 2020 reported (see 7.1.1) ‘*The average seasonal water level fluctuation within regional bedrock monitoring wells is approximately  $\pm 2.0$  m...*’

Schedule D in Chapter 7 of the Source Protection Plan (County of Wellington) shows the ‘cones of influence’ of the existing Fergus and Elora Municipal wells.

## (SECTION 8) Table 22-10, Count of Significant Water Quantity Threats...

Table 22-10 Draft SWPP indicates that there are 269 ‘non-municipal non-permitted’ wells within Mapleton that fall within the WHPA-Q.

### Question: For transparency/information, could the following 3 footnotes be added to Table 22-10?

- Average residential water usage per person per day in Canada was 342 litres/day in 1991 compared to 251 litres/day (= .251 m<sup>3</sup>/day) in 2011 (see CESI reference below).
- Approximately 71% of the Mapleton wells within the WHPA-Q are located in Alma.
- 95% of groundwater demands comes from water taking for Municipal wells (PTTW = 10,513 m<sup>3</sup>/day), ‘Aquaculture’ (PTTW = 10,413 m<sup>3</sup>/day), and 2 ‘Industrial-Aggregate Washing’ (PTTW = 3000 m<sup>3</sup>/day each). The remaining 5% includes domestic and agriculture uses, etc. See Appendix C Matrix 2017b for further details.

### Background for those suggested footnotes:

I got the percentages for bullet 3 above from the diagram in Slide 26 of the following presentation:

- ‘Centre Wellington Scoped Tier Three Water Budget Assessment Community Liaison Group Meeting #2 (Sept 14, 2017)’  
[https://www.sourcewater.ca/en/source-protection-areas/resources/Documents/Grand/CLG\\_physical-characterization-report\\_-presentation\\_2017\\_09\\_14.pdf](https://www.sourcewater.ca/en/source-protection-areas/resources/Documents/Grand/CLG_physical-characterization-report_-presentation_2017_09_14.pdf)

Matrix 2019 reported (see 3.7.4.2) the per person consumptive water rate as:

- ‘...The demand value was derived by multiplying an average pumping rate of 0.251 m<sup>3</sup> /d per person (ECCC 2017)...’

From the Government of Canada website:

### ‘Residential water use – Households on metered water systems and per capita residential water use, Canada’

<https://open.canada.ca/data/en/dataset/6038f64d-329a-48e8-ac5c-1a8a87ea785d>

- *The Canadian Environmental Sustainability Indicators (CESI) program provides data and information to track Canada's performance on key environmental sustainability issues. The Residential water use indicator reports the percentage of Canadian households with water meters and per capita residential water use in Canada from 1991 to 2011.*

The Data Table (CSV; 703B) on that website indicates that the **residential water usage per person declined from 342 litres/day in 1991 to 251 litres/day in 2011.**

See SECTION 16.1 for details about population and number of wells in Alma.

### Sidebar:

- Based on water demand for the ‘serviced population’ in Centre Wellington shown in AECOM 2019 (see e.g., Table 1, 3.1, 3.2, 5.2), the daily consumptive rate per person in the urban areas of Centre Wellington might be a bit higher than 251 litres/day per person.
- The link in the Matrix 2019 Reference list for ECCC 2017 is broken.

## (SECTION 9) Table 22-3, Centre Wellington Water Supply Wells

The References list for the Draft SWPP **doesn't include 'Matrix 2017'** but does includes both 'Matrix 2017a' (*about the city of Guelph and the Township of Guelph/Eramosa*) and 'Matrix 2017b (*about Centre Wellington*)

**Recommendation:** Change the reference for Table 22-3 (and Table 22-5) from 'Matrix 2017' to 'Matrix 2017b' to match the Reference List in the Draft SWPP.

## (SECTION 10) Table 22-5, Permitted Rates and Consumptive Non-Municipal Demands in the Study Area

Table 22-5 draws on details from Table 11 of Matrix 2017b (the Dec 2017 report) which summarizes details from Appendix C Matrix 2017b.

**Note the following discrepancies in Table 11 of Matrix 2017b:**

- For '**aggregate washing**' groundwater takings, the 'reported demand (m3/day)' should be '902' not blank.
- For '**Industrial**' surface water taking, the 'maximum permitted average annual rate (m3/day)' should be '578,888' instead of '588,888'.
- For '**Wetlands/Wildlife Conservation**' surface water taking, the 'maximum permitted average annual rate (m3/day)' should be '222,494' instead of '**801,581** to '**222,494**'. Looks as though '801,581' mistakenly includes the values for 'agriculture-field/pasture crops' (199) and 'Industrial Other' (578,888).

**Recommended corrections to Table 22-5 of the Draft SWPP:**

- Change the reference for Table 22-5 from '**Matrix 2017**' to '**Matrix 2017b**' to match the Reference List in the Draft SWPP.
- Add a row to Table 22-5 for '**Aggregate Washing**' with cell values left to right of 2, 4010, 902, 436 respectively as given in Table 11 and Appendix C Matrix 2017b.
- For row '**Industrial**' surface water taking (PTTW 5587-9Y2QMX):
  - change the 'maximum permitted average annual rate (m3/day)' from '578,888' to '588,888' as reported in Appendix C Matrix 2017b.
  - Would it be possible to change 'Industrial' to '**Industrial (power generation)**' so that the general public won't think that a 'consumptive rate' higher than zero is looming?
- For row '**Wetlands/Wildlife Conservation**' surface water taking change the 'maximum permitted average annual rate (m3/day)' **from '801,581' to '222,494'** because it appears that '801,581' mistakenly includes the values for 'agriculture-field/pasture crops' (199) and 'Industrial Other' (578,888) from Appendix C Matrix 2017b.
- Revise the totals for the Table accordingly.

**Questions:**

- Why does Table 22-5 Draft SWPP (and Table 11 Matrix 2017b) report '**maximum permitted average annual rate**' instead of '**maximum permitted taking**' which is the maximum daily permitted water taking rate allowed by the PTTW? The two values aren't the same in all cases. For example, referring to Appendix C Matrix 2017b, the values in both of those 2 columns are the same some (e.g., Commercial Aquaculture) but not others (e.g., Industrial Aggregate Washing).
- If estimated groundwater drawdown in Figure 7 of Matrix 2020 was based on the maximum daily permitted water taking rate allowed by the PTTW (true?), shouldn't Table 22-5 also report those details either as an addition to Table 22-5, or instead of 'maximum permitted average annual rate'?

**Questions about Table 14 Matrix 2020 (compared to Appendix C Matrix 2017b):**

- Why was the fourth ‘**Wildlife Conservation**’ surface water taking (PTTW 5765-A2UJ9Q) and the 3 PTTW (groundwater takings) for ‘**Commercial Golf Course Irrigation**’ excluded from Table 14? Because they were in the Study Area but outside the WHPA-Q?
- Why wasn’t ‘**Wetlands**’ included in Table 14 given the inclusion of ‘**Wildlife Conservation**’ and ‘**Industrial Other**’ in Table 14? All 3 of these surface water takings have a consumptive rate of zero.
- Why didn’t Table 14 Matrix 2020 (or the description thereof) note which of the ‘non-municipal permitted consumptive water uses’ had a consumptive rate of zero?

**(SECTION 11) Map 22-2, Centre Wellington Surface Water...**

**Recommendation:**

- Add the location of ‘Alma’ to Map 22-2 because other Hamlets and smaller rural settlements are included in Map.

**For Mapleton readers:** To see a better representation of the Alma Wetland Complex than Map 22-2 in the Draft Updated SWPP, see Matrix 2020 Figure 9 (*titled ‘Locations of Provincially Significant Wetlands Evaluated for Groundwater Discharge reductions’*).

**(SECTION 12) Map 22-7 and Map 22-8 (.....WHPA-Q and ...Water Quantity Threats)**

Item 22.3.2 Draft SWPP reads:

- ‘...*The WHPA-Q, as shown in **Map 22-7** encompasses the Centre Wellington municipal wells and many of the **non-municipal takings** simulated in the Study Area. The WHPA-Q extends toward the west, encompassing non-municipal PTTWs in the west **including a relatively larger aquaculture taking (PTTW 3347-84VQV5)** that contributes to the extension of the area into parts of the Township of Mapleton and Township of Woolwich. The WHPA-Q does not extend into the vicinity of the communities of Arthur or Marsville or their municipal wells.*’

**Recommendations:**

- The above paragraph suggests that the reader (general public) will find the locations of the PTTW on Map 22-7 which is not the case. The locations of the PTTW (*particularly the Alma Aquaculture Research Station*) should be added to Map 22-7.
  - Alternatively, the paragraph should be reworded so that the reader is referred to Map 22-8 to see the locations of the PTTW.
- Given the magnitude of the PTTW for ‘Aquaculture’ (10,143 m<sup>3</sup>/day) compared to the current PTTW for Centre Wellington wells (15,031 m<sup>3</sup>/day), Map 22-8 should have a separate legend item/colour to distinguish the location of the Aquaculture Research Station from the other PTTW. Seems prudent to do so for transparency.

## (SECTION 13) Table 22-4, Arthur and Marsville Water Supply Wells

The following documents all list the **PTTW for the operating Municipal well at Marsville as 0601-88MKJ7**:

- Table 22-4 in Chapter 22.0 (Centre Wellington) Draft Updated Assessment Report (Jan 21, 2021)
- Appendix C Matrix 2017b (about Centre Wellington)
- Table 5-18 in Chapter 5.0 (Dufferin) of the Approved Assessment Report (Feb 2, 2021)

The only PTTW for Marsville that I found on the Ontario ‘Maps: Permits to Take Water’

<https://www.ontario.ca/environment-and-energy/map-permits-take-water>

was **8328-BQNRXE**. The Permit holder for **8328-BQNRXE** is the Corporation of the Township of East Garafraxa, and the maximum permitted daily water taking is 182 m<sup>3</sup>/day (=182,000 litres/day) which is the same permitted rate for the Marsville well (**0601-88MKJ7**) indicated in Chapters 5 and 22 in the Source Protection Plan and Appendix C Matrix 2017b.

**Question:** Why the discrepancy regarding the PTTW number for the Marsville well?

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## (SECTION 14) Uncertainties

Matrix 2020 describes extensively ‘uncertainties’ regarding modelling (*particularly beyond 1 km from Municipal wells*), risk assessment, groundwater recharge, future water taking at the Middlebrook well (*recently sold by Nestle*), etc.

AECOM 2019 (see 3.3.2) describes uncertainties regarding the percentage of the urban population of Centre Wellington that will be ‘serviced population through to 2041.

The only mention of uncertainties in the Draft SWPP is the following:

- (see 22.4.1 paragraph 3) ‘...*The model was ultimately applied to evaluate a groundwater budget for the Study Area and to carry out a number of uncertainty scenarios as part of the Risk Assessment phase.*’

**Recommendation for 22.4.1 in the Draft SWPP** (Summary of the Water Budget Tools and Results):

- Add a sentence to the end of paragraph 3 referring readers (general public) to Matrix 2020 and AECOM 2019 for further details about uncertainties.
-

## (SECTION 15) Chapter 7 of the Source Protection Plan, Wellington County

The website for the **Source Protection Plan Update** reads:

<https://www.sourcewater.ca/en/source-protection-areas/source-protection-plan-update.aspx>

- Chapter 7 (Wellington County): [highlighted](#) (PDF); [clean](#) (PDF)

The ‘highlighted’ copy is:

- **Volume II - Draft Updated** Grand River Source Protection Plan Chapter 7 County of Wellington (dated Jan 21, 2021)  
[https://www.sourcewater.ca/en/source-protection-areas/resources/Documents/Grand/GRSPA\\_SPP\\_updated\\_S7-Wellington\\_highlighted.pdf](https://www.sourcewater.ca/en/source-protection-areas/resources/Documents/Grand/GRSPA_SPP_updated_S7-Wellington_highlighted.pdf)

The ‘clean copy’ is:

- **Volume II Approved** Grand River Source Protection Plan Chapter 7 County of Wellington (dated Feb 2, 2021)  
[https://www.sourcewater.ca/en/source-protection-areas/resources/Documents/Grand/GRSPA\\_SPP\\_updated\\_S7-Wellington\\_clean.pdf](https://www.sourcewater.ca/en/source-protection-areas/resources/Documents/Grand/GRSPA_SPP_updated_S7-Wellington_clean.pdf)

**Those two versions are not the same.** One example is that the ‘clean copy’ no longer contains the following policy:

<p>WC-CW-21.1 Existing/Future Specify Action Centre Wellington WHPA-Q Monitoring</p>	<p><i>To ensure that any Consumptive Water Taking and/or any Recharge Reducing Activity cease to be or never become significant drinking water threats, where these activities are or would be significant drinking water threats as prescribed by the <del>Clean Water Act, 2006</del>CWA, the Township of Centre Wellington shall: develop, maintain and implement a long-term monitoring program of groundwater and surface water systems to assess potential groundwater and / or surface water impacts from Consumptive Water Takings and / or Recharge Reducing Activities within the Centre Wellington WHPA-Q. The design and implementation of this monitoring program shall consider the recommendations from the Centre Wellington Tier 3 Study, the Centre Wellington Water Supply Master Plan, future municipal exploratory drilling programs, Class Environmental Assessments for municipal wells, municipal wellfield capacity studies and / or other studies required through the Centre Wellington PTTW / Drinking Water Works Permit. The development, maintenance and implementation of this program, where possible shall be carried out by the Township of Centre Wellington in collaboration with the County, other potentially affected Municipalities, <del>the Ministry of the Environment, Conservation and Parks</del>MECP and the <del>Grand River Conservation Authority</del>GRCA.</i></p>
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### Questions:

- Was the intent of showing both versions (*i.e., highlighted versus clean*) to give readers a choice of style (*i.e., see edits or not*) when reading the document?
  - If yes, why is the ‘clean’ version’ not the same as the ‘highlighted’ version minus the deletions?
  - If no, then the ambiguity should be resolved because it was a fluke that I opened the clean copy and discovered that I should be reading the ‘clean’ copy not the ‘highlighted’ copy for the most up-to-date information.

‘Volume II Approved - **Grand River Source Protection Plan Chapter 7 County of Wellington** (dated Feb 2, 2021)’ outlines the need for information sharing and the plans for the types of information to be shared.

[https://www.sourcewater.ca/en/source-protection-areas/resources/Documents/Grand/GRSPA\\_SPP\\_updated\\_S7-Wellington\\_clean.pdf](https://www.sourcewater.ca/en/source-protection-areas/resources/Documents/Grand/GRSPA_SPP_updated_S7-Wellington_clean.pdf)

Policy Number	Source Protection Policies Within the County of Wellington
WC-NB-1.18  Existing Specify Action Condition Sites Identified  Monitoring	<p><i>‘To address Conditions resulting from past activities that are significant drinking water threats the Ministry of Environment, Conservation and Parks and the County <b>and/or municipality</b>:</i></p> <p><i>a. Shall meet at a minimum frequency of once a calendar year for the purpose of <b>mutually sharing information</b> on Condition sites;</i></p> <p><i>b. Should mutually share information related, as appropriate, to technical investigations or remediation, technical data, actions taken by Ministry of Environment, Conservation and Parks or by the County <b>and/or municipality</b>, inspections, other relevant information on Condition sites;</i></p> <p><i>c. Should develop an <b>Information-Sharing Process document including requirements, if any, for meeting agendas, participants, the nature and format for the types of information to be mutually shared, and the Information Sharing Process document should be developed within six months from the date the Source Protection Plan takes effect; and</b></i></p> <p><i>d. Should mutually share available documentation, as appropriate, for potential significant drinking water threats / Condition sites.’</i></p>

**Question:** Does the wording of Policy WC-NB-1.18 ensure that information will be shared with ALL municipalities that are affected by a particular Wellhead Protection Area? I ask because ‘municipality’ in Policy WC-NB-1.18 isn’t shown in both the singular and plural form.

**Comments:**

- I understand that the mandate of the Draft SWPP is to protect municipal wells (not private/domestic wells).
- It is my **hope that the Source Protection Plan will ensure that information will be shared with all Municipalities affected by a specific WHPA-Q**, and that those affected Municipalities will be consulted on the types of information needed for long-range planning and decision-making (e.g., will Alma continue to be unserved indefinitely or not?).
- Both the Wellington County Official Plan and the Provincial Policy Statement **support evaluating impacts on groundwater resources including impacts on private/domestic wells**. Excerpts provided below.

**Wellington County Official Plan (Jan 8, 2021) 4.6.3 Environmental Impact Assessment (item f):**

*‘Environmental impact assessments prepared by a qualified person may be required to evaluate the impacts a proposed development may have on the natural environment and the means by which negative impacts may be reduced or eliminated. An environmental impact assessment may include some or all of the following...*

- *f) an assessment of the impact on groundwater resources and in **particular existing private wells** and municipal supply wells in the area....’*
- *h) an assessment of the impact on groundwater resources and in **particular existing private wells** and municipal supply wells in the area...*
- *n) a **proposal for monitoring, where needed** ....*
- *o) such **additional concerns as a Council may consider relevant** ...’;*

**The Provincial Policy Statement (May 1, 2020)**

- **(Part 1 Preamble) ‘...Official plans should also coordinate cross-boundary matters to complement the actions of other planning authorities and promote mutually beneficial solutions. Official plans shall provide clear, reasonable and attainable policies to protect provincial interests and direct development to**

*suitable areas. In order to protect provincial interests, planning authorities shall keep their official plans up-to-date with this Provincial Policy Statement....'*

- **(item 1.6.6.4)** *'...Where planning is conducted by an upper-tier municipality, the upper-tier municipality should work with lower-tier municipalities **at the time of the official plan review or update to assess the long-term impacts of individual on-site sewage services and individual on-site water services** on the environmental health and the desired character of rural settlement areas and the feasibility of other forms of servicing set out in policies 1.6.6.2 and 1.6.6.3....'*

**Matrix 2020 also recommends additional study** (including private/domestic wells) particularly **beyond 1 km of municipal wells** to better understand groundwater demands and threats:

- (see 3.2.3) *'There is minimal quality data at distances farther away from the municipal pumping wells and as a result there is greater uncertainty with respect to groundwater flow including hydraulic connections within the water supply aquifer and between deep and shallow systems...'*
  - (see Recommendation 2) *'...The Tier Three Assessment scenarios should be repeated as new data becomes available through the results of the study to assess new sources regarding their sustainability in meeting future municipal demands.'*
  - (see Recommendation 3) *'Use of the Tier Three model in assessing water taking applications: If new permitted water takings are proposed within the Groundwater Vulnerable Area, the Tier Three model may be applied to determine the impact of the proposed water taking on municipal water supply reliability...'*
  - (See Recommendations 9.3) *'Consider conducting a partial or full Risk Management Measures Evaluation Process (RMMEP): As a Significant Risk Level was assigned to the Groundwater Vulnerable Area and as all consumptive water uses and areas of groundwater recharge reductions within this Vulnerable Area are classified as Significant Drinking Water Threats, a RMMEP may be initiated. A RMMEP involves using the Tier Three model to rank the relative impact of individual or groups of water quantity threats on the municipal wells and then evaluate possible measures that may be implemented to reduce the Water Quantity Risk Level in the Vulnerable Area. The RMMEP may expand on the recommended risk management measure and provide recommendations to the municipality, conservation authority and Province for maximizing the benefits of each measure. It is recommended that an RMMEP include an evaluation of the relative significance of the simulated non-municipal, non-permitted domestic and agricultural takings on water levels in the municipal wells. This is because the boundary of the Groundwater Vulnerable Area was predicted to extend past the subset of wells simulated to represent non-municipal, non-permitted takings within a 1 km (i.e., domestic wells) and 3 km (i.e., agricultural wells) buffer of the Centre Wellington municipal wells.'*
-

## (SECTION 16) Long-Range Planning for Alma

### 16.1 Alma Population and Wells (for information)

The Mapleton Township Clerk wasn't able to give me the number of households and population in Alma.

**I walked around Alma with the Alma map** (titled 'Township of Mapleton Schedule A-4 Alma Details') in hand and made the following tally about **potential well sites**:

# potential wells	Well location types in Alma	comments
211	<b>Households</b> (some include home businesses)	I counted the townhouse units as separate households. Unknown how many households share wells.
1	Convenience store/ <b>household</b>	
1	Antique store	Not counted as a household, but might also be a household.
1	Restaurant	
0	Fast Stop Fueling Station	No well there per Ontario 'Well Records'.
9	9 Primary businesses with Bldg	Some of these might share wells and/or have more than 1 well.
0	2 other businesses	These share addresses with those labelled 'primary businesses'
3	Churches	
1	Alma Public School	
1	Alma Community Centre	

If each of the above properties has a well, **there could be 228 wells** (and septic systems) in Alma. However, **a few properties share a well** and that number is unknown to me. Kyle Davis (*Risk Management Official, Wellington Source Water Protection*) checked the 'Ontario - Open Data Catalogue -Well Records' for me and found **191-196 wells in Alma**. <https://data.ontario.ca/dataset/well-records>

Assuming that the actual number of wells in Alma is 191+, **I conclude that at least 71% of the 269 'non-municipal non-permitted wells' in Mapleton within the WHPA-Q for Centre Wellington (see Table 22-10 of the Draft SWPP) are located in Alma.**

Based on the **2016 Census (Census Profiles), Statistics Canada reported** that the **average number of people per household** in the surrounding area in 2016 is:

- 2.5 in North Wellington Township
- 2.6 in Centre Wellington Township
- 2.6 in Wellington County
- 2.8 in Woolwich Township
- 3.0 in East Garafraxa Township
- 3.4 in Mapleton Township

If there are 212 households in Alma and the average number of people per household is between 2.5 and 2.8, **the population of Alma is 530-594.**

Assuming a consumptive rate of 251 litres/day per person, the approximate **consumptive water taking for all of Alma** is between 133,030 litres/day (133 m3/day) and 149,094 litres/day (149 m3/day).

## 16.2 Testing Water Levels at Alma

### Recommendations:

- It would be prudent for planning purposes for both Centre Wellington and Mapleton for there to be a longitudinal assessment of water levels for a sample of private/domestic wells at Alma. This information is needed so that both municipalities can assess groundwater threats, and plan for future water resource demands as well as minimizing and/or mitigating threats to water quantity.

### Questions:

- About the two monitored wells by Nestle between Salem and Alma: According to my search on ‘Well Records’, the geological components at monitoring well ‘Private Well 1’ are more similar to wells within Alma than to monitoring ‘Well 20’. Given that Nestle recently sold their Canadian water businesses (see Wellington Advertiser Feb 25, 2021), **will Centre Wellington, Mapleton, or the GRCA arrange for well monitoring at Alma?**
- **How much seasonal fluctuation of water levels is typical for private/domestic wells that aren’t in limestone and bedrock (e.g., at Alma)?**

### Background:

According to Appendix B of the Grand River Source Protection Area ‘Approved Source Protection Plan Volume 1’ (dated Feb 2, 2021)

[https://www.sourcewater.ca/en/source-protection-areas/resources/Documents/Grand/GRSPA\\_SPP\\_updated\\_V1\\_clean.pdf](https://www.sourcewater.ca/en/source-protection-areas/resources/Documents/Grand/GRSPA_SPP_updated_V1_clean.pdf)

- ***Threat 19: An activity that takes water from an aquifer or a surface water body without returning the water taken to the same aquifer or surface water body***  
*This threat occurs when water is taken and not returned and is no longer available for other users of the same water source. This is called consumptive use. The taking of water from a municipal aquifer or surface water body (without returning it to the same source) could result in a depletion of available supply that could impair the long-term viability of a water system. Unlike water quality threats, where the threat level is a product of the vulnerability score and the hazard score (of the activity), water quantity threats are a function of exposure and tolerance. Consumptive water taking is or would be a significant drinking water threat in areas assigned a significant risk level; water quantity vulnerable areas are delineated as part of a Tier 3 water budget and risk assessment study. There is currently no volume threshold for a consumptive taking to be identified as a significant threat, meaning that even small takings are considered a threat to drinking water under the Clean Water Act, 2006.*

Draft SWPP for Centre Wellington reads:

- (see 22.3.2 Risk Assessment Results) *‘Meeting the Future water demand however falls short of the Tier 3 goal of having a reliable water supply until 2041. As a result, Centre Wellington’s water supply source and its associated WHPA-Q is assigned a Water Quantity Risk Level of Significant. With this classification, all consumptive water uses and reductions to groundwater recharge through land use change within this area are considered Significant drinking water quantity threats. In total, 2,741 consumptive water uses and 4.3 km<sup>2</sup> of recharge reduction areas were identified as Significant threats in this Vulnerable Area.’*

Matrix 2020 reads:

- (see 2.2) *‘The overburden and bedrock within the Study Area were subdivided into hydrostratigraphic layers, each having unique geological and hydrogeological conditions. These layers sometimes behave as aquifers or aquitards depending on the location within the Study Area. Aquifers are layers of permeable rock, sand or gravel from which groundwater can be extracted. Aquitards, in contrast are layers of relatively impermeable rock or soil that restrict the flow of water from one area to another.’*
- (see 2.3) *‘Centre Wellington monitors water levels in both the municipal pumping wells and in nine municipal monitoring wells. Water levels generally decrease during the summer months and during periods of peak demand and increase in the spring/fall due to the decreased demand and higher seasonal groundwater recharge rates.’*

*Water levels are also monitored by non-municipal parties such as the GRCA, Highland Pines Campground, and Nestlé Waters Canada, who all contributed monitoring data to this project.'*

- (see 7.1.1) *'The average seasonal water level fluctuation within regional bedrock monitoring wells is approximately  $\pm 2.0$  m...'*

**My well, and others that I checked in Alma, are described in the Ontario 'Well Record' as being in layers consisting of clay, sand, and gravel.** When I check wells along County Road 7 south of Alma, wells further from Alma (e.g., those below Sideroad 10) included more limestone and rock than clay, sand, gravel.

**My understanding is that 2 private wells between Salem and Elora were being monitored for water levels by Nestlé:**

- **'Private Well 1'** located on the left side of County Road 7 between Sideroad 10 and Sideroad 5. See that location on Figure 21 Matrix 2017b.
  - That same well is shown in Figure 8 Matrix 2019 but is unnamed; this well is listed as a 'higher quality monitoring well'.
- **'Well 20'** is located on the right side of County Road 7 between CR 18 and Sideroad 10. See the location on Figure 9 Matrix 2019.

### 16.3 Threats to Water Quantity at Alma

According to Figure 7 Matrix 2020, the **estimated 'groundwater drawdown' at Alma (2-3 metres)**. Also that the south end of Alma is close to the boundary of the area estimated at 3-4 metres of groundwater drawdown. I assume that those estimates are based on 2017 data not 2041 projections (see SECTION 3 and 7 of this letter). **Further, that the following factors will potentially contribute to the estimated ground water drawdown at Alma and the immediate surrounding area, and any observed reductions in well water levels:**

- **Seasonal fluctuations in water levels.**
- **planned growth of the 'serviced population' for Elora/Salem and Fergus** – serviced population more than doubling from 2016 to 2041.
- construction of 4 new Municipal wells for Centre Wellington to meet water demands **including 3 that are closer to Alma than current Municipal wells** (see Figure 1 Potential Future Well Area Locations, AECOM 2019),
- **growth/intensification within the Alma boundary** - note 4 parcels of land are currently listed as 'future development' within the Alma boundary - one of the 4 sold recently.
- **Permits to take Water (PTTW) near Alma:**
  - Permit 3347-84VQV5 – Alma Aquaculture Research Station, University of Guelph - the water taking rate is **10,143 m<sup>3</sup>/day** (see Table 14 Matrix 2020); **5 km from Alma.**
  - Permit 4348-9NYNX3 – Industrial Aggregate Washing - the water taking rate is **3000 m<sup>3</sup>/day** (see Table 14 Matrix 2020); **6.5 km from Alma.**
  - Permit 8813-9NYQXV –Industrial Aggregate Washing - the water taking rate is **3000 m<sup>3</sup>/day** (see Table 14 Matrix 2020); **9.0 km from Alma.**
- **Middlebrook Well is 8 km from Alma** (currently no PTTW) (recently sold by Nestlé)
  - Matrix 2020 (see 5.2.2.1) *'Simulated pumping from the Middlebrook Well is not included in the calibrated base case model (Appendix B), nor is it included in the Risk Assessment scenarios (Section 4.2). The Middlebrook Well is not currently pumping because it does not have a Permit To Take Water (PTTW). Only known municipal and non-municipal groundwater takings are considered for inclusion in the groundwater flow model. The location of the Middlebrook Well is found in Figure 21 of Appendix A.'*
- Etc.

**Question: Is it anticipated that new Municipal wells for Centre Wellington will extend the WHPA-Q further into Mapleton, and thereby increase the amount of anticipated groundwater drawdown at Alma beyond what is currently observed with seasonal fluctuations?**

## 16.4 Municipal Water Service at Alma in the future?

According to the following policies in the Wellington County Official Plan (Jan 8, 2021), **Hamlets are part of the urban system, population growth in Hamlets will be limited, and Municipal services for water and sewage is not anticipated:**

<https://www.wellington.ca/en/resident-services/resources/Planning/Official-Plan/Wellington-County-Official-Plan---January-8-2021.pdf>

- **3.5 Allocating Growth:** ‘Hamlets are part of the Urban System in this plan; however, due to the difficulty in forecasting growth for small areas, hamlets are not assigned specific forecasts but are part of the residual municipal forecasts after urban centres are calculated.’
- **4.4.3 Housing - Residential Intensification item h:** ‘This Plan contains policies encouraging intensification primarily in urban centres but also, to a much lesser extent in hamlets. The strategic approach to intensification intends to retain small town character and revitalize downtown areas which includes:
  - h) encouraging small scale intensification in hamlets consistent with their character and servicing including accessory or second residences, limited severances and conversions; and...”
- **4.8.1 Urban Expansion – General:** ‘The County wishes to encourage growth to occur in urban centres and hamlets. The build out and eventual expansion of urban centres is therefore a logical outcome of this policy direction. Hamlets are expected to be built out with only modest expansions allowed.’
- **4.8.3 Urban Expansion - Hamlet Expansion:** ‘None of the hamlets in Wellington are on municipal services and it is the policy of this Plan to limit growth in areas without municipal services. Hamlet expansions of more than 5 residential lots or units will not be allowed. The expansion must be based on a municipal comprehensive review as set out in Section 4.8.2.’
- **7.4.4 Hamlets - Impact Assessment:** ‘Hamlets will normally accommodate low density development on individual on-site services.’
- **11.2.5 Water and Sewage - Hamlet Servicing:** ‘Municipal sewer and water services are not anticipated in hamlets.’

### Questions:

- Will Alma continue to be unserviced indefinitely or not?
- **Is it foreseeable that Alma will require municipal water service in the future** (maybe not in my lifetime)?
- **If so, preliminary discussions between interest groups** (e.g., County, Centre Wellington, Mapleton, and GRCA) would seem prudent e.g.,
  - How many years in the future might water service (and sewage?) in Alma be necessary (25-50 years?)?
  - Should Alma have a municipal well or be part of the Fergus-Elora Water Supply System (FEWSS)?
  - How much growth/intensification (population and/or business) could be allowed at Alma in the interim? [Note: Alma currently has 4 parcels of land classified as ‘future development’ and 1 of those 4 PD properties was sold recently.]
  - **If Alma will eventually be part of the Fergus-Elora Water Supply System (FEWSS), would a new proposed Municipal well for Centre Wellington in Area 5 or 8 (see Figure 1 Potential Future Well Area Locations, AECOM 2019) be close enough to Alma for that purpose?** Any elevation change issues with supplying water to Alma?
  - **Would a municipal well at Alma be feasible?**
    - What about ‘cones of influence’ between the wells for the Alma Aquaculture Research Station, a potential municipal well at Alma, and the proposed new Centre Wellington Municipal wells?
    - Any issues regarding the proximity of the Alma Wetland Complex to a Municipal well at Alma?
  - **Private/domestic wells (and septic systems) are costly.** How much lead time would current owners and potential buyers and/or builders of new houses or businesses in Alma typically be given regarding the potential need for Municipal servicing at Alma?

## REFERENCES AND ADDITIONAL SOURCES

**AECOM Canada Ltd. (AECOM). 2019. “Township of Centre Wellington, Water Supply Master Plan.” Draft prepared for The Township of Centre Wellington. Kitchener, Ontario. July 2019.**

<https://www.connectcw.ca/water-supply>

### **City of Guelph, Environmental Services**

- **Water Services Annual Report and Summary** ‘for Guelph Drinking Water System Corporation of the City of Guelph and Gazer Mooney Subdivision Distribution System Township of Guelph/Eramosa’. Feb 1, 2021.  
<https://guelph.ca/wp-content/uploads/2020-Water-Services-Annual-Summary-Report.pdf>

**Government of Canada - Residential water use – Households on metered water systems and per capita residential water use, Canada**

<https://open.canada.ca/data/en/dataset/6038f64d-329a-48e8-ac5c-1a8a87ea785d>

### **Mapping Tools:**

- **GRCA Wellhead Protection Area (WHPA) mapping tool**  
<https://maps.grandriver.ca/web-gis/public/?theme=General&bbox=541639,4835905,548234,4839475>
- ‘**Explore Wellington and Interactive Map**’ and the ‘**Source Water Protection Map**’  
<https://www.wellington.ca/en/discover/pl-maps.aspx>

**Matrix Solutions Inc. (Matrix). 2020. Centre Wellington Tier Three Water Budget Final Risk Assessment Report. Prepared for Grand River Conservation Authority. Guelph Ontario. March 2020.**

<https://www.sourcewater.ca/en/source-protection-areas/resources/Documents/Grand/23876-527-R-2020-03-11-final-V2.0.pdf>

**Matrix Solutions Inc. (Matrix). 2019. Centre Wellington Tier Three Water Budget Assessment Groundwater Flow Model Development and Calibration Report. Prepared for Grand River Conservation Authority. Guelph Ontario. April 2019.**

[https://www.sourcewater.ca/en/source-protection-areas/resources/Documents/Grand/2019-04-08\\_CW-Tier-3-GW-Model-Report\\_Final.pdf](https://www.sourcewater.ca/en/source-protection-areas/resources/Documents/Grand/2019-04-08_CW-Tier-3-GW-Model-Report_Final.pdf)

- Matrix 2019 refers to Matrix 2017a (about Centre Wellington) and Matrix 2017b (about Guelph and the Township of Guelph/Eramosa). Note the opposite is the case in Matrix 2020 and Chapter 22 of the SWPP where Matrix 2017b is about Centre Wellington.

**Matrix Solutions Inc. (Matrix). 2017b. ‘Centre Wellington Scoped Tier Three Water Budget Assessment Physical Characterization Report’. Prepared for Grand River Conservation Authority. Guelph Ontario, Dec 2017.**

<https://www.sourcewater.ca/en/source-protection-areas/resources/Documents/Grand/CW-Characterization-Report-2017-12-14-final.pdf>

- For consistency, I refer to this report as Matrix 2017b because Matrix 2020 and the Draft SWPP both refer to this report as Matrix 2017b. Note however, that Matrix 2019 refers to this report as Matrix 2017a.
- For the Sept 14, 2017 presentation to the Community Liaison Group and meeting summary leading up to the Characterization Report  
<https://www.sourcewater.ca/en/source-protection-areas/Centre-Wellington-Tier-3---Reports---Presentations.aspx>

### Ontario Provincial Government:

- **Environmental Registry of Ontario** <https://ero.ontario.ca/page/welcome>
- **Growth Plan for the Greater Golden Horseshoe**  
<https://www.ontario.ca/document/growth-plan-greater-golden-horseshoe/schedules>
- **Ontario - Open Data Catalogue - Well Records:** <https://data.ontario.ca/dataset/well-records>

### Provincial Policy Statement (May 1, 2020)

<https://files.ontario.ca/mmah-provincial-policy-statement-2020-accessible-final-en-2020-02-14.pdf>

### Source Water Protection – Grand River Conservation Authority

- **Source Protection Plan Update**  
<https://www.sourcewater.ca/en/source-protection-areas/source-protection-plan-update.aspx>
- **Grand River Source Protection Area ‘Approved Source Protection Plan Volume 1’ (dated Feb 2, 2021)**  
[https://www.sourcewater.ca/en/source-protection-areas/resources/Documents/Grand/GRSPA\\_SPP\\_updated\\_V1\\_clean.pdf](https://www.sourcewater.ca/en/source-protection-areas/resources/Documents/Grand/GRSPA_SPP_updated_V1_clean.pdf)
- **Township of Centre Wellington:**
  - **Centre Wellington Scoped Tier Three Water Budget Assessment Community Liaison Group Meeting #2 (Sept 14, 2017)**  
[https://www.sourcewater.ca/en/source-protection-areas/resources/Documents/Grand/CLG\\_physical-characterization-report\\_presentation\\_2017\\_09\\_14.pdf](https://www.sourcewater.ca/en/source-protection-areas/resources/Documents/Grand/CLG_physical-characterization-report_presentation_2017_09_14.pdf)
  - **Draft Updated Source Water Protection Plan for the Grand River watershed, Chapter 22 Centre Wellington Tier 3 Budget and Risk Assessment (dated Jan 21, 2021)**  
[https://www.sourcewater.ca/en/source-protection-areas/resources/Documents/Grand/GRSPA\\_AR\\_updated\\_S22\\_CWTier3\\_clean.pdf](https://www.sourcewater.ca/en/source-protection-areas/resources/Documents/Grand/GRSPA_AR_updated_S22_CWTier3_clean.pdf)
- **County of Wellington:**
  - **Volume II - Draft Updated Grand River Source Protection Plan Chapter 7 County of Wellington (dated Jan 21, 2021)**  
[https://www.sourcewater.ca/en/source-protection-areas/resources/Documents/Grand/GRSPA\\_SPP\\_updated\\_S7-Wellington\\_highlighted.pdf](https://www.sourcewater.ca/en/source-protection-areas/resources/Documents/Grand/GRSPA_SPP_updated_S7-Wellington_highlighted.pdf)
  - **Volume II Approved Grand River Source Protection Plan Chapter 7 County of Wellington (dated Feb 2, 2021)**  
[https://www.sourcewater.ca/en/source-protection-areas/resources/Documents/Grand/GRSPA\\_SPP\\_updated\\_S7-Wellington\\_clean.pdf](https://www.sourcewater.ca/en/source-protection-areas/resources/Documents/Grand/GRSPA_SPP_updated_S7-Wellington_clean.pdf)
  - **WARNING – those 2 documents are listed on the Source Protection Plan Update website as the ‘highlighted’ version and the ‘clean’ version but there are other differences. See SECTION 15 of this letter.**

### Statistics Canada

- **Census Profile 2016 – Township of Centre Wellington**  
<https://www12.statcan.gc.ca/census-recensement/2016/dp-pd/prof/details/page.cfm?B1=All&Code1=3523025&Code2=35&Data=Count&Geo1=CSD&Geo2=PR&Lang=E&SearchPR=01&SearchText=Centre+Wellington&SearchType=Begins&TABID=1>
- **Census Profile 2016 – Township of Mapleton**  
<https://www12.statcan.gc.ca/census-recensement/2016/dp-pd/prof/details/page.cfm?B1=All&Code1=3523033&Code2=35&Data=Count&Geo1=CSD&Geo2=PR&Lang=E&SearchPR=01&SearchText=Mapleton&SearchType=Begins&TABID=1>



November 23, 2020

Our File No.: 16-401

Mr. Martin Keller  
Source Protection Program Manager  
Lake Erie Source Protection Region  
c/o Grand River Conservation Authority  
Cambridge, ON N1R 5W6

E-MAIL  
mkeller@grandriver.ca

Re: Fergus / Elora Water Supply Master Plan and Recommended Tier 3 - 2026 and 2041  
Average Water Taking Scenarios

Dear Mr. Keller,

Further to my recent communications (see email chain), I am enclosing Table 1 "Fergus / Elora Individual Production Well Average Annual Water Taking Budget Years 2026 and 2041" as a basis for a Tier 3 update modelling scenario to guide future water supply planning in Centre Wellington.

Average Water Takings for Year 2026 and Year 2041 are based on my June 10, 2020 Fig A.1 Water Demand Forecast (enclosed). Actual 2019 Average Water Takings for Fergus / Elora Production Wells are shown for comparison. Of course 2020 may result in a permanent COVID spike due to curtailment of commuting and working from home.

The 2026 Average Water Takings are assigned to the Existing Wellfield infrastructure guided by the 2019 average water takings. The forecast 2041 Average Water Takings are assigned to the 2041 Wellfield Infrastructure expansion scenario as shown on my June 10, 2020 Fig A.3 enclosed. The 2041 average well water taking scenario recognizes longer term Wellfield water level declines, reduced available drawdown and related decreased yields. Fergus Well F6 due to adverse water quality (very high dissolved solids) is not included in this 2041 scenario.

As indicated by recent well investigations and water quality analysis, Fergus Well F5 draws its water from the overburden / bedrock contact aquifer and should be treated differently in the model than the other deeper aquifer wells. Historical operating interference experience with decommissioned Wells Elora E2 (between E1 and E3) and Fergus F3 (near F1) indicate that Fergus Well F2 at higher pumping rates may be expected to interfere with Fergus F1 and F4. Therefore Well F2 replacement as proposed by others is not included in the modelling scenario. The current Tier 3 Model, based on average water takings, is not appropriate to estimate local production well interference at peak pumping rates.

Mr. Martin Keller  
Source Protection Program Manager  
Lake Erie Source Protection Region  
c/o Grand River Conservation Authority  
November 23, 2020  
Page 2 of 2

Although five (5) new wells as shown in Table 1 and Fig A.3 are not anticipated to be required prior to 2041 due to continuing conservation reduction resulting from per capita decreases in water consumption, potential underestimate of average water takings from new developed wells and perhaps a municipal decision not to decommission Fergus Well F6, I have chosen to distribute average water takings over the anticipated future water taking aquifer domain.

The Conservation Authority in past earlier communications with Centre Wellington and ratepayers often stated that alternative Tier 3 Modelling Scenarios may be easily run to test various water taking scenarios. These average water taking scenarios should be incorporated into new Tier 3 model runs to guide Centre Wellington future water supply planning. The GRCA presumably owns the Tier 3 Groundwater model. It is apparently not easily accessible to others. Running these model scenarios together with updated Drawdown and Wellhead Protection Mapping are the logical conclusion of the current Tier 3 process in Centre Wellington. The current Tier 3 proposed Drawdown and Wellhead Protection Maps are not defensible from either a scientific or a regulatory point of view.

Thank you in advance for expediting this reasonable factual request on behalf of the ratepayers of Centre Wellington.

Yours truly,



Garry T. Hunter, M.A.Sc., P.Eng.  
President  
Hunter and Associates

Enclosures: Table 1: Fergus Elora Production Well Average Annual Water Taking Budgets 2026 and 2041  
Fig A.1: Fergus / Elora Conservation Water Demand Forecast (Revised)  
Fig A.3: Hunter Candidate New Well Sites for Fergus / Elora

cc:	Jan Beveridge	Dan Wilson	Belinda Koblik
	Kelly Linton	Kyle Davis	Abdul Quyum
	Ian MacRae	Sarah Wilhelm	Heather Brodie-Brown
	Andrew Goldie	Aldo Salis	Leo Luong
	Brett Salmon	Kathryn Baker	Samantha Lawson
	Colin Baker	Dan Dobrin	Helen Jowett

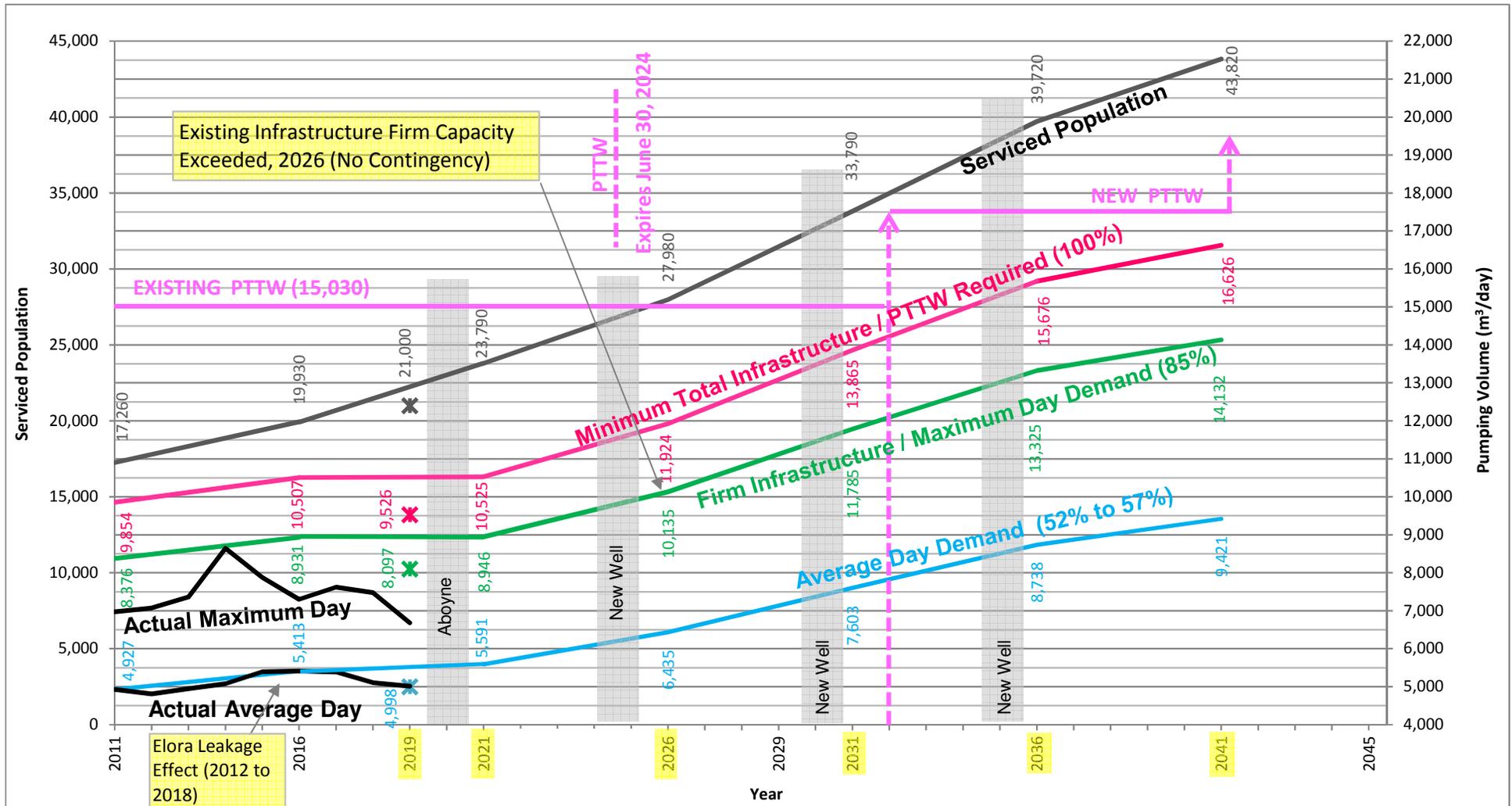
**Table 1**  
**Fergus Elora Production Well Average Annual Water Taking Budget 2026 and 2041**

Production Well	Average Annual Production Volume 2019 m <sup>3</sup> /day	Model 2026 Scenario m <sup>3</sup> /day	Model 2041 Scenario m <sup>3</sup> /day	Coordinates	
				Easting	Northing
<i>Notes</i>	(1)	(2)	(3)(4)(5)		
F1	958	900	800	550410.3	4839509.3
F4	1,021	1,000	900	549919.5	4840889.1
F5	360	500	400	551828.3	4839068.2
F6	474	600	-	549222.2	4841524.0
F7	449	800	700	548185.2	4839701.4
E1	864	1,000	900	545716.1	4837335.0
E3	667	700	600	547129.1	4835855.0
E4	219	900	700	545445.8	4834901.7
New 1			1,000	543655.8	4835304.0
New 2			1,000	543247.8	4837494.1
New 3			1,000	545030.7	4839889.2
New 4			700	552609.2	4841635.8
New 5			700	553030.2	4838780.5
<b>Actual Total</b>	<b>5,012</b>	<b>6,400</b>	<b>9,400</b>		
<b>Target Total</b>		<b>6,400</b>	<b>9,400</b>		

- Notes:*
- 1) Average Pumping Volume (2019) for Existing Wells based on Hunter Appendix B, Fig 2019.1 to 2019.3 inclusive. Well F5, unlike the other deep aquifer wells, obtains its water from the overburden/bedrock contact aquifer.
  - 2) Model 2026 based on estimated average water takings from existing but refurbished Wellfield infrastructure (E1, E4 and F7) and allocation of Hunter 2026 Forecast Demand Fig A.1, June 10, 2020 Letter Report.
  - 3) Model 2041 based on Hunter Candidate New Well Sites Fig A.3 June 10, 2020 Letter Report.
  - 4) Model 2041 adjusted existing Wellfield average yield and estimated allocation of Hunter Forecast Demand Fig A.1 June 10, 2020 Letter Report.
  - 5) Model 2041 includes decommissioning of Well F6.

## Fergus / Elora Conservation Water Demand Forecast (Revised)

### Maximum Day Demand and Minimum Water Supply Infrastructure Required (m<sup>3</sup>/day)



- Notes: 1) See Hunter Table A.3 Demand Forecasts and Total Infrastructure Required to 2041, Fergus/ Elora (May 2020)  
 2) Assume Aboyne Booster Station functional bidirectional transfer 2,000 m<sup>3</sup>/day demonstrated in year 2020.  
 3) 2019 Serviced Population (suspect underestimated?)  
 4) Actual Day - Township of Centre Wellington Pumping Records ( 2011 to 2019)

# Hunter Candidate New Well Sites

