



**Lake Erie Region Source Protection Committee
Agenda**

Thursday, December 6, 2018

1:00 pm

Auditorium

Grand River Conservation Authority

400 Clyde Road, Box 729

Cambridge, ON N1R 5W6

Pages

1. Call to Order
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
 - a. RE: Clarification on Policy Approaches for Consumptive Water Taking using Prescribed Instruments under ARA/OWRA

1

Correspondence from Martin Keller, Source Protection Program Manager, Lake Erie Source Protection Region, to Heather Malcolmson, Director, Source Protection Programs Branch

- b. RE: clarification on policy approaches for consumptive water taking using Prescribed Instruments under ARA/OWRA. 3

Correspondence from Heather Malcolmson, Director, Source Protection Programs Branch, to Martin Keller, Program Manager, Lake Erie Source Protection Region

10. Reports

- a. SPC-18-12-01 Source Protection Program Update 7
- b. SPC-18-12-02 Progress Report Grand River 11
- c. SPC-18-12-03 Rockwood/Hamilton Drive Water Quality Technical Study 15
- d. SPC-18-12-04 Centre Wellington Water Quality Technical Study 21
- e. SPC-18-12-05 Guelph-Guelph/Eramosa Draft Water Quantity Policy Approaches 29
- f. SPC-18-12-06 Draft Updated Grand River Assessment Report and Source Protection Plan: City of Hamilton, Brant County, Grey County 43
- g. SPC-18-12-07 Draft Updated Grand River Assessment Report and Source Protection Plan: Municipal and Non-municipal Sections 45

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

February 7, 2019 at 1:00pm, Grand River Conservation Authority, 400 Clyde Rd., Cambridge.

15. Adjourn

Ilona Feldmann

From: Martin Keller
Sent: October 18, 2018 1:12 PM
To: Heather Malcolmson (heather.malcolmson@ontario.ca)
Cc: Kathryn Baker (Kathryn.Baker@ontario.ca); Yudina, Olga (MOECC); Danielle De Fields (danielled@wellington.ca); Dave Belanger (Dave.Belanger@guelph.ca); Emily Hayman; Emily Stahl (Emily.Stahl@guelph.ca); Harry Niemi; Ilona Feldmann; Kyle Davis (kdavis@centrewellington.ca); Peter Rider (peter.rider@guelph.ca); Pierre Chauvin (pchauvin@mhbcplan.com); Ruth Victor (ruth@rvassociates.ca)
Subject: Clarification on Policy Approaches for Consumptive Water Taking using Prescribed Instruments under ARA/OWRA
Attachments: MNRF Briefing Document Sept 24 18 Final.pdf

Dear Heather,

I write to you on behalf of the Guelph-Guelph/Eramosa water quantity policy development project team (GGET Project Team) to formally request clarification on the use of prescribed instruments to address water quantity threats resulting from aggregate operations sites, specifically where extraction occurs in or near aquifers that are a source of municipal drinking water.

The GGET Project Team is comprised of staff from the City of Guelph, Wellington County, Township of Guelph/Eramosa, Ministry of Environment, Conservation and Parks, and Grand River Conservation Authority and is developing source protection plan policies to address water quantity threats in the Guelph-Guelph/Eramosa water quantity vulnerable area for the Lake Erie Region Source Protection Committee.

The completion of the GGET Tier 3 Water Budget and Risk Assessment assigned the water quantity vulnerable area (WHPA-Q) around Guelph-Guelph/Eramosa a significant risk level, meaning significant threat policies addressing consumptive water takings and recharge reduction are mandatory.

Sections of the Aggregate Resources Act (ARA) and Ontario Water Resources Act (OWRA) are listed as prescribed instruments under the Clean Water Act (CWA). This means that source protection plan policies can be developed to address significant drinking water threats that require the Province to amend these instruments to conform with the source protection plan significant threat policies (CWA S.43(1)). The CWA also states that source protection plan policies cannot require amendments to instruments that the Province does not otherwise have authority to make (CWA S.43(3)).

The GGET Project Team was pleased to meet with Ministry of Natural Resources and Forestry (MNRF) staff via teleconference on September 24, 2018 with the purpose to receive clarification and discuss options on the use of ARA prescribed instruments to protect municipal drinking water sources, specifically on aggregate operations sites. As part of the meeting, the GGET Project Team presented "Options for Considerations" for the development of source protection plan policies (see Slides 30-34 of the September 24 meeting presentation attached).

On behalf of the GGET Project Team, I am requesting clarification on the use of the identified policy options as part of developing significant threat policies under the CWA using the ARA and / or OWRA prescribed instruments. Specifically, I am requesting clarification on how the identified policy options, i.e., "enhanced water resources assessment", "geological controls", "operational controls", "rehabilitation plans", "request updates to aggregate policy" or any other PI policy options can be incorporated into source protection plan policies to ensure the policies meet the objectives of the CWA and are achievable, defensible, and implementable by MNRF and / or MECP.

I also ask that the Province confirm when this clarification is likely to be provided to the GGET Project Team. The GGET Project Team has started developing water quantity policies with policy approaches that will be presented to the Lake Erie Region Source Protection Committee in early December, draft policies in early February 2019, and a complete set of revised water quantity policies in early April 2019.

I look forward to the Ministry's response. As has been communicated at the September 24, 2018 teleconference with MNRF staff, the GGET Project Team is open to engaging in an ongoing dialogue with MNRF as we move forward with source protection plan policy development.

Regards,

Martin Keller, M.Sc.

Source Protection Program Manager | Grand River Conservation Authority

400 Clyde Road | PO Box 729 | Cambridge, Ontario N1R 5W6 | Phone: (519) 620-7595 | Fax: (519) 621-4945 | www.sourcewater.ca



Ministry of the Environment,
Conservation and Parks

Source Protection Programs
Branch

14th Floor
40 St. Clair Ave. West
Toronto ON M4V 1M2

Ministère de l'Environnement, de la
Protection de la nature et des Parcs

Direction des programmes de protection
des sources

14^e étage
40, avenue St. Clair Ouest
Toronto (Ontario) M4V 1M2



November 28, 2018

Martin Keller, Program Manager
Lake Erie Source Protection Region
400 Clyde Road, PO Box 729
Cambridge, ON N1R 5W6

Dear Mr. Keller,

**RE: Clarification on Policy Approaches for Consumptive Water Taking
using Prescribed Instruments under ARA/OWRA**

Thank you for your October 18, 2018 email on behalf of the Lake Erie Source Protection Region's Guelph-Guelph/Eramosa Township water quantity policy development project team (GGET Project Team) seeking clarification about how prescribed instrument policies could be used to address water quantity threats at aggregates sites. We appreciate the opportunity to provide additional clarification and have been working closely with colleagues within the Ministry of the Environment, Conservation and Parks (MECP) and at the Ministry of Natural Resources and Forestry (MNRF) to prepare our response.

Your email asked us to provide direction on how instruments prescribed under the *Clean Water Act* (CWA), *Aggregate Resources Act* (ARA) licence and site plan and Permit to Take Water (PTTW), can be used to address water quantity threats to the City of Guelph's municipal wells. You specifically asked if these instruments could be used within source protection plans policies to require "enhanced water resource assessment", add "geological controls", further enhance "operational controls" and amend "rehabilitation plans" at ARA sites.

As you are aware, activities within pits and quarries may be subject to requirements under multiple pieces of legislation including the ARA, *Ontario Water Resources Act* (OWRA) and *Environmental Protection Act* (EPA). Given you are asking us for this advice specifically to inform the development of policies, it is important to consider the following factors: 1) source protection plan policies must clearly set out how a policy action will create an outcome that will address the significant water quantity threat; and, 2) the policies must consider the purposes of the legislation and recognise any existing legislative limitations/barriers, which we have outlined below.

Aggregate Resources Act

The ARA (s. 7 & 8) requires that a licence and site plan be in place to operate a pit or quarry on private land within designated areas of Ontario (areas subject are listed in O. Reg. 244/97). Licensees must operate the pit or quarry in accordance with the ARA, the regulations, the site plan and the conditions of the licence (s. 15).

The licence and the site plan combined are the approval documents to operate the site under the ARA. The site plan is the principal tool which governs the operation and rehabilitation of the site (e.g., the depth of extraction, how slopes will be established, progressive and final rehabilitation requirements). Licence conditions and site plans reflect the culmination of considerable consultation and review through the approval process. The licence conditions and site plan provisions remain in effect while there is an existing licence in place (i.e. not in effect once the licence is surrendered after rehabilitation). Licence conditions and site plans must be enforceable under the ARA and be consistent with the purposes of the ARA (s. 2) and MNR's regulatory mandate.

The licence conditions and site plan can be amended to reflect changes at the site; the amendment can be requested by the licensee or can be forced by the Minister. For forced amendments, the Minister's direction must be clear, free of ambiguity and direct the licensee regarding the specific solution/change that is required (e.g., change the depth of extraction from 200 to 230 metres above sea level).

If the Minister proposes to add, rescind or vary a licence condition after the licence has been issued or force an amendment to their site plan, the licensee is entitled to a hearing before the Local Planning Appeal Tribunal (LPAT). The LPAT may direct the Minister to carry out, vary or rescind the proposal. Alteration of a site plan or licence requires careful review of the implications that may result from the change. Consequently, it is essential that the Minister's decision to force an amendment is supported by sound, scientific evidence. Any forced amendments proposed by MNR must also be posted on the Environmental Registry for public comment and are subject to consultation with the municipality.

In the case of a licence condition amendment and/or site plan amendment request by the licensee (voluntary amendment), there is no provision for a hearing or appeal. But significant changes proposed by the licensee must be posted on the Environmental Registry for public comment. There are also additional consultation requirements as guided by policy (e.g., consulting with municipalities).

Currently, there is no ability under the ARA for MNR to require a licensee of an existing site to provide information or undertake studies to address emerging issues. However, should new information become available regarding a site (e.g. a study by a third party identifies a potential impact), MNR would consider its relevance in the context of the ARA regulatory framework.

Permit to Take Water

The regulatory framework for managing water takings in Ontario is provided by the Ontario Water Resource Act (OWRA) s. 34 and the Water Taking and Transfer Regulation O. Reg 387/04. Broad powers are given to the s. 34 Director to require pertinent information. OWRA s. 34.1 (4) & (5) allow the Director to request “any information that is required”, in particular, tests or studies specified by the Director relating to the water taking, a condition to which the PTTW may be subject to or “any other matter that the Director considers advisable” for the purposes of assessing or managing the water taking. The Director may impose terms and conditions on the permit to specify the location, volume, rate and duration of the water taking, and require the permit holder to monitor the water taking to prevent unacceptable interference with other water users and uses including the natural environment. If the water taking is impacting other users/uses, the Director has the authority to require the permit holder to remedy the situation.

Discussion of Options for Policy Approaches

With respect to the GGET Project Team’s desired policy outcomes for significant water quantity threats at ARA sites, the PTTW would be the best tool to address the policy outcome of “enhanced water resource assessment” given the authority and latitude the Director has to request information relevant to the water taking.

We interpret the policy outcomes of “geological controls” and “operational controls” to be seeking the addition of geologically determined controls and/or limitations on extraction, and other site activities. Changes may be required to the approvals for the site to align those controls and/or limitations. If MNRF and MECP have misinterpreted these terms, we hope future discussions will further clarify these terms.

Policy outcomes related to desired changes to rehabilitation plans would be best addressed through a site plan amendment approved under the ARA. However, as described above, MNRF would likely face some challenges implementing these policy options under the current regulatory framework because the technical studies to inform such a change are not available and the licensee cannot be directed to provide information/studies under the ARA.

For example, at the GGET Project Team’s example site the geological and technical information to support a forced amendment to implement enhanced geological and operational controls is not available. MNRF’s first approach to achieving such a policy outcome would be through discussion with the licensee. If a site plan amendment was not voluntarily submitted, a possible approach to obtaining the technical information needed would be for the OWRA s. 34 Director to request the needed studies to provide additional information. However, historically, the province has not taken such an approach at ARA sites and there is some uncertainty whether such a request would be deemed relevant to the existing PTTW should it be appealed to the Environmental Review Tribunal.

Another factor you will need to consider when developing policies is that there are limitations to what can be done after the license is surrendered. Given that, we recommend that your policies focus on outcomes that can be implemented during the life of the aggregate operation while there is oversight under the ARA. Post-closure activities extending beyond the surrender of the licence present a challenge for the province as there would need to be a long-term responsible party and the means to ensure oversight and appropriateness of any mitigation measures.

As you are aware, MNRF is exploring what policy changes may need to be considered in the future to better assess and manage water resource concerns related to aggregate resources in Ontario under the ARA. MNRF welcomes any additional feedback the GGET Team can provide through the policy development process, and, like all provincial ministries, will consider any recommendations to the regulatory framework or guidance to better address significant water quantity threats at ARA sites.

MECP and MNRF are committed to supporting the GGET Project Team's policy development process related to significant water quantity threats at quarry sites within the GGET water quantity vulnerable area. Please continue to identify concerns and challenges to Kathryn Baker, who will coordinate responses on behalf of our ministries.

Regards,



Heather Malcolmson
Director, Source Protection Programs Branch

Cc: Pauline Desroches, Manager, Resource Development Section, MNRF
Dan Dobrin, Manager, WCR Technical Support Section, MECP
Wendy Lavender, Manager, Source Protection Planning, SPPB, MECP
Olga Yudina, Liaison Officer, SPPB, MECP
Kathryn Baker, Hydrogeologist, SPPB, MECP

LAKE ERIE REGION SOURCE PROTECTION COMMITTEE

REPORT NO. SPC-18-12-01

DATE: December 6, 2018

TO: Members of the Lake Erie Region Source Protection Committee

SUBJECT: Source Protection Program Update

RECOMMENDATION:

THAT the Lake Erie Region Source Protection Committee receives report SPC-18-12-01 – Source Protection Program Update – for information.

REPORT:

Section 36 Workplans for Long Point Region and Grand River Source Protection Areas

At the time of approval for each Lake Erie Region Source Protection Plan, the Minister specified the timeline and process for the comprehensive review and update of the respective Assessment Report and Source Protection Plan under Section 36 of the Act.

A Section 36 workplan must be developed for each assessment report and plan in consultation with the Source Protection Committee, Source Protection Authorities, municipalities and the Ministry of the Environment, Conservation and Parks (MECP) as part of the review process. The workplan sets out what aspects of the assessment report and plan should be reviewed. The Kettle Creek and Catfish Creek workplans were submitted to the MECP on October 24 and November 2, 2018 respectively; Grand River and Long Point Region will follow in November 2019.

A section 36 workplan development timeline for Long Point Region and Grand River has been established and workplan discussions have begun in consultation with the Lake Erie Region Implementation Working Group (IWG). It is anticipated that the Source Protection Committee will receive draft Long Point Region and Grand River workplans in early fall 2019 with submission to the MECP in November 2019.

2018/19 Financial Update

An Interim Financial and Progress Report for the 2018/19 Grant Funding Agreement were submitted to the MECP on October 31, 2018 which included actual expenditures from April 1, 2018 to September 30, 2018.

The MECP has not yet released or shared any information regarding the 2019/2020 Grant Funding Application or eligible activities. It is expected that the grant funding application process will be managed through the Grants Ontario Portal.

Annual Reporting

Lake Erie Region staff have received the final annual progress reporting questions from the MECP for the 2018 annual reporting year; the Ministry has yet to finalize the annual reporting supplemental form questions. Lake Erie Region is working with Upper Thames River Conservation Authority staff to join their Electronic Annual Reporting (EAR) system.

SPC Meeting Outlook

Lake Erie Region is planning to complete three S.34 updates of the Grand River Source Protection Plan in the coming year.

The first update is for the County of Grey, Township of Southgate (Dundalk), City of Hamilton (Lynden), and County of Brant (Airport, St. George, Bethel, and Mt. Pleasant) municipal water supply systems. These updates are accelerated to support earlier approval of the Grand River Source Protection Plan and Assessment Report that includes these updates. See report SPC-18-06 for details.

The second larger “bundled” update to the Grand River Source Protection Plan and Assessment Report will include updates for all other municipal water supply systems, with the exclusion of Wellington County.

The third update will be for Wellington County Grand River Source Protection Plan and Assessment Report sections. The separation of Wellington County sections from the “bundled” update will provide County and Lake Erie Region staff additional time to incorporate water quality technical study results into the assessment report and update source protection plan water quality policies.

Technical studies and updates to the Grand River Assessment Report and Source Protection Plan sections are on track and will continue to be presented to the Source Protection Committee (SPC) as work is completed over the next three (3) committee meetings. The next committee meetings are scheduled for February 7, April 4 and June 20, 2019.

For the Grey/Hamilton/Brant update, a complete draft updated Assessment Report and Source Protection Plan is scheduled for release for pre-consultation on December 10, 2018. Public consultation follows in February/March 2019 and any comments with additional proposed revisions will be brought back to the SPC on April 4, 2019. The Grand River Source Protection Authority is expected to submit the amended Grand River Assessment Report and Source Protection Plan with updates for Grey/Hamilton/Brant to the MECP at its meeting on April 26, 2019.

Pre-consultation for the “bundled” update is scheduled to start February 11, 2019. The anticipated timeline for presenting the complete updated Assessment Report and Source Protection Plan to the SPC remains unchanged and is scheduled for April 4, 2019, at which time the draft updated Assessment Report and Plan would be released for formal public consultation on April 8, 2019. Any comments will be brought back to the SPC on June 20, 2019 with additional proposed revisions, as necessary. The Grand River Source Protection Authority is expected to submit the amended Assessment Report and Source Protection Plan to the MECP at its meeting on June 28, 2019.

The complete updated Wellington sections of the assessment report and source protection plan

is likely to be presented to the SPC on June 20, 2019 as a S.34 update, separate from the Grey/Hamilton/Brant and “bundled” Grand River updates. Pre-consultation may begin in the summer and public consultation in the fall 2019. A detailed timeline is still to be determined.

The following table provides an overview of the next few SPC meetings and anticipated agenda items related to the S.34 Grey/Hamilton/Brant, S.34 “bundled” Grand River and S.34 Wellington updates. The timeline includes an additional SPC meeting on April 25, 2018 in case additional time is needed to complete the water quantity policies for the Guelph-Guelph/Eramosa area.

SPC Meeting Date	Agenda Items		
	S. 34 Grey/Hamilton/Brant Update	S.34 “bundled” Grand River Update (all other sections)	S. 34 Wellington Update (tentative)
December 6, 2018	<ul style="list-style-type: none"> • Draft updated AR and SPP sections: Brant • Complete draft updated AR and SPP (Grey, Hamilton, Brant): release for pre-consultation and public consultation process 	<ul style="list-style-type: none"> • Draft water quantity policy approaches (Guelph-Guelph/Eramosa) • Water quality technical reports • Draft updated AR and SPP sections 	
December 10, 2018 – February 5, 2019	Municipal and ministry pre-consultation period (8 weeks)		
February 7, 2019		<ul style="list-style-type: none"> • Draft water quantity policies (Guelph-Guelph/Eramosa) • Draft updated AR and SPP sections; release for pre-consultation process 	
February 11 – March 25, 2019		Municipal and ministry pre-consultation period (6 weeks)	
February 12 – March 18, 2019	Formal public consultation period (36 days)		

SPC Meeting Date	Agenda Items		
	S. 34 Grey/Hamilton/Brant Update	S.34 “bundled” Grand River Update (all other sections)	S. 34 Wellington Update (tentative)
April 4, 2019	<ul style="list-style-type: none"> Revised draft updated AR and SPP (Grey, Hamilton, Brant): receive public comments for consideration; release the document to the Grand River Source Protection Authority for submission to the Ministry 	<ul style="list-style-type: none"> Revised water quantity policies and updated municipal SPP sections (Guelph-Guelph/Eramosa) Complete draft updated “bundled” AR and SPP 	<ul style="list-style-type: none"> Progress report on AR and SPP updates
April 8 – May 21, 2019		Formal public consultation period (44 days)	
April 25, 2019 (if needed *)		<ul style="list-style-type: none"> Further revised water quantity policies and updated municipal SPP sections (Guelph-Guelph/Eramosa) 	
April 29 – June 3, 2019 (if needed *)		Formal public consultation period (35 days)	
June 20, 2019		<ul style="list-style-type: none"> Revised draft updated AR and SPP: receive public comments for consideration; release the document to the Grand River Source Protection Authority for submission to the Ministry 	<ul style="list-style-type: none"> Updated AR and SPP sections; release for pre-consultation

* The April 25, 2018 SPC meeting is scheduled in case an additional SPC meeting is needed to complete the water quantity policies and release them for public consultation.

Prepared by:



Ilona Feldmann
Source Protection Program Assistant

Approved by:



Martin Keller, M. Sc.
Source Protection Program Manager

LAKE ERIE REGION SOURCE PROTECTION COMMITTEE

REPORT NO. SPC-18-12-02

DATE: December 6, 2018

TO: Members of the Lake Erie Region Source Protection Committee

SUBJECT: Progress Report Grand River Assessment Report and Source Protection Plan Update

RECOMMENDATION:

THAT the Lake Erie Region Source Protection Committee receives report SPC-18-12-02 – Progress Report Grand River Assessment Report and Source Protection Plan Update – for information.

REPORT:

This report provides an update on progress of technical studies in the Grand River watershed. Progress reports and results of technical studies will be presented to the Source Protection Committee as they are completed with recommendations to update the Grand River Assessment Report and Source Protection Plan. Once the technical studies are presented, complete municipal sections of the Assessment Report and Plan will be presented to the Source Protection Committee.

Technical Studies

Centre Wellington Scoped Tier 3 Water Budget study

The Centre Wellington Scoped Tier 3 Water Budget Study began in August 2016 to assess potential water quantity risks to the Centre Wellington municipal drinking water system. The project is managed by the GRCA on behalf of the Township of Centre Wellington. The study is being completed in coordination with the Township's Water Supply Master Plan which began earlier this year.

The project consultants have completed the draft Groundwater Flow Model Development and Calibration Report, which has been reviewed by the Provincial peer review team and presented to the Community Liaison Group (CLG) on May 15, 2018. A project update was provided to Township council on May 22, 2018. Stakeholder meetings with members from the CLG (Nestle Waters and Save Our Water) were held this fall to discuss comments provided on the draft modelling report. Comments provided by the CLG and meeting summaries will be posted on the project web page.

Currently, the project consultants are finalizing the groundwater modelling report. The risk assessment phase of the project will begin in early winter 2018 with input provided by the Township's draft Water Supply Master Plan.

Information about the Centre Wellington study including reports, CLG presentations, and meeting summaries are available at www.sourcewater.ca/CW-Scoped-Tier3

Guelph-Guelph/Eramosa Water Quantity Policy Development Study: Assessment of Climate Change and Assessment of Water Quantity Threats in the IPZ-Q

In June 2018, the City of Guelph and Township of Guelph/Eramosa (GGET) Risk Management Measures Evaluation Process (RMMEP) and Threats Management Strategy (TMS) was completed. The aim of the RMMEP/TMS was to identify the impacts of water quantity threats on water levels in municipal wells and to assess whether they can still be pumped under existing, future and drought conditions. The RMMEP/TMS also ranked the water quantity threats, and selected preliminary Risk Management Measures (RMM) that could address the risk. The RMMEP focused on the assessment of the significant threats to groundwater water quantity within the Wellhead Protection Area for Quantity (WHPA-Q); however, significant threats also exist to surface water quantity within the Intake Protection Zone for Quantity (IPZ-Q). Water takings in the IPZ-Q are small compared to the natural variability of flow in the Eramosa River, and the threats impact on municipal wells from these takings was expected to be limited by comparison. The potential impact of climate change as a threat to the quantity of municipal water supplies in GGET was also not evaluated as part of the initial components of the RMMEP.

A separate assessment from the initial RMMEP has been completed to assess the relative impact of climate change as a possible threat to water quantity and provide an evaluation of significant threats within the IPZ-Q.

A total of 11 different future climate scenarios were evaluated: 10 global climate models and one regional climate model scenario. The evaluated future time period was the 2050s and scenarios used the highest emission scenario RCP 8.5 (i.e. worst case). All 11 scenarios were input to hydrologic models to evaluate the variability of water budget parameters, in particular stream flow and recharge. Then recharge from four of the scenarios was incorporated into the groundwater flow model to evaluate the effects of climate change on municipal pumping wells and the Eramosa River intake.

Future climate scenarios predicted more precipitation and warmer temperatures than present; resulting in higher stream flows during the winter, due to higher precipitation and less snow accumulation, and slightly lower streamflow during the summer. Recharge was considerably higher during the December to March period, the result of less frozen soil and increased precipitation. Pumping well water levels were higher in each of the four groundwater scenarios likely due to increased recharge and as such climate change does not pose an additional threat. Stream flows were predicted to increase in 3 of the 4 scenarios and to be virtually the same as present in the fourth scenario, resulting in minimal to no additional risk to the Eramosa River intake. Climate change was determined to likely not pose an additional risk to the Glen Collector due to increase recharge.

Due to the overlap of the WHPA-Q with the IPZ-Q and the interconnection of the Eramosa River intake with the municipal groundwater supply system consumptive water takings and recharge reduction activities within the IPZ-Q were also considered Significant Threats. The City of Guelph Arkell wells and Glen Collector ranked as the highest consumptive threat to the IPZ-Q followed by all other non-municipal takings and then the Rockwood municipal wells.

The implications these results have on the development of policies for IPZ-Q are presented in report SPC-18-12-05.

Next Steps

The results of the climate change and IPZ-Q threats assessment support the current direction of water quantity policy development. Over the next few months, the Project Team will be working on developing municipal-specific water quantity policy text.

Lake Erie Region is committed to a collaborative process for policy development, with municipal and stakeholder engagement through the Project Team, Implementing Municipalities Group (IMG), and CLG. Draft water quantity policy text will be presented to the Source Protection Committee on February 7, 2019. The CLG and IMG will receive the draft water quantity policy text on February 13, 2019.

Prepared by:



Ilona Feldmann
Source Protection Program Assistant

Approved by:



Martin Keller, M. Sc.
Source Protection Program Manager

Prepared by:



Stephanie Shifflett, P.Eng.
Water Resources Engineer

LAKE ERIE REGION SOURCE PROTECTION COMMITTEE

REPORT NO. SPC-18-12-03:

December 6, 2018

TO: Members of the Lake Erie Region Source Protection Committee

**SUBJECT: Township of Guelph-Eramosa Wellhead Protection Area Update
Technical Study**

RECOMMENDATION:

THAT the Lake Erie Region Source Protection Committee receives report SPC-18-12-03 Township of Guelph-Eramosa WHPA Update Technical Study - for information.

AND THAT the Lake Erie Region Source Protection Committee direct staff to incorporate the results of the Township of Guelph-Eramosa WHPA Update Technical Study into the Draft Updated Grand River Watershed Assessment Report and Source Protection Plan.

SUMMARY:

The Township of Guelph- Eramosa contains two groundwater municipal water supply systems, Rockwood and Hamilton Drive. The Rockwood water supply system supplies the Town of Rockwood, which located approximately 7.5 km northeast of the City of Guelph along the Eramosa River. The Hamilton Drive water supply system supplies a rural subdivision (Hamilton Drive) with approximately 825 residents and is located adjacent to the northern City of Guelph boundary.

Wellhead Protection Areas (WHPAs) and vulnerability scoring for all wells have recently been delineated using the Guelph/Guelph-Eramosa Township (GGET) Tier 3 numerical groundwater flow model. As WHPA were last delineated in 2006, the Tier 3 model represents updates to the local geology and hydrogeology, and revised municipal pumping rates.

Results are recommended to be incorporated into the update to the Draft Updated Grand River Watershed Assessment Report and Source Protection Plan.

REPORT:

Municipal Systems

Drinking water for Rockwood is currently supplied from three bedrock wells: Well 1, Well 2, and Well 3. A fourth bedrock well, Well 4, is permitted and is scheduled to be into production by end of 2019. As the bedrock production aquifer outcrops along significant watercourses in the area, a hydraulic connection may exist between surface water and shallow bedrock groundwater. Previously, Rockwood Well 1 and 2 were designated as Groundwater Under the Direct Influence of surface water (GUDI). As of June 2, 2017, Rockwood Well 1 and 2 were deemed Provisional Groundwater subject to the terms and conditions in the Township's Municipal Drinking Water Licence.

Drinking water for the Hamilton Drive subdivision is supplied from two bedrock wells completed in a deep, semi-confined, lower bedrock aquifer. The two wells, referred to as the Huntington Estates Well and the Cross Creek Well, are not considered GUDI. Rockwood and Hamilton Drive municipal well locations are shown on **Figure 1**.

Wellhead Protection Areas

WHPAs were last delineated in 2006 using a preliminary version of the City of Guelph and Township of Guelph-Eramosa Tier 3 model. In 2017, the GGET Tier 3 Assessment model was revised and included the development, calibration, and application of a new FEFLOW groundwater flow model. This model was developed to evaluate the long-term sustainability of the water supply resources in the City of Guelph and Township of Guelph/Eramosa, while considering population growth, land use change, and drought conditions.

The objectives of the current project were to delineate WHPAs for the municipal wells using the GGET Tier 3 groundwater model, and assess the vulnerability of the municipal groundwater aquifer. A threats assessment within the updated WHPAs will be completed by the Risk Management Official over the coming months.

The Rockwood and Hamilton Drive pumping rates used to delineate the current WHPAs were developed in consultation with Guelph-Eramosa Township personnel. The WHPA pumping rates applied in the model are provided in Table 1 alongside pumping rates applied in the 2006 WHPA delineation study.

Table 1 – Municipal Well Pumping Rates used in WHPA Delineations

Well Name	2006 Original WHPA Pumping Rate (m3/day)	2018 Revised WHPA Pumping Rate (m3/day)
Rockwood 1	751	763
Rockwood 2		
Rockwood 3	451	572
Rockwood 4	300	572
Huntington Estates	171	185
Cross Creek	171	185
Total	1,844	2,277

The 2018 Rockwood and Hamilton Drive WHPAs are presented in **Figure 2 and Figure 3**, respectively, with a comparison to the 2006 WHPAs. The final WHPA shapes for the Hamilton Drive and Rockwood wells are somewhat different from their 2006 counterparts.

For the Hamilton Drive WHPAs, the new WHPAs are generally the same width as those delineated in 2006, but are elongated further upgradient. The result of using a lower effective porosity value in the production aquifer is much longer particle tracks (and capture zones) being delineated. The previous work did not directly assess the effect of varying the effective porosity.

For the Rockwood WHPAs, the new WHPAs are generally smaller and have slightly different orientations than their 2006 counterparts. The smaller new Rockwood WHPAs are generally a result of lower hydraulic conductivity values applied in the production aquifer and higher hydraulic conductivity values applied in the confining aquitard in this area than the values

applied in the 2006 model. The conceptual model has changed in the area around Rockwood Wells 3 and 4 where refined hydrogeologic characterization as part of the GGET Tier 3 Assessment suggests that the Vinemount aquitard is absent in this area. Finally, the shape of the WHPA from Rockwood Wells 1 and 2 is somewhat different than what was delineated in 2006. The “Y” shape of the current version is heavily influenced by the Eramosa River, where the pumping well captures groundwater flowing towards the well from both sides of the river.

A WHPA-E was not delineated for GUDI Rockwood Wells 1 and 2 as there is no permanent surface water feature located in the vicinity of the wells that has been associated with the GUDI status. In light of the absence of a surface water body with which the GUDI status is linked it is not possible to delineate a WHPE-E that is compliant with Rule 47 (5) of the Technical Rules (MOE, 2009b).

Final Rockwood and Hamilton Drive WHPAs with vulnerability scoring based on GRCA's SAAT vulnerability layer are presented in **Figure 4 and Figure 5**, respectively.

Next Steps

Wellington Source Water Risk Management Official is working to complete an updated threats inventory within the new WHPAs.

Prepared by:



Emily Hayman , P.Geo.
Source Water Hydrogeologist

Approved by:



Martin Keller, M. Sc.
Source Protection Program Manager

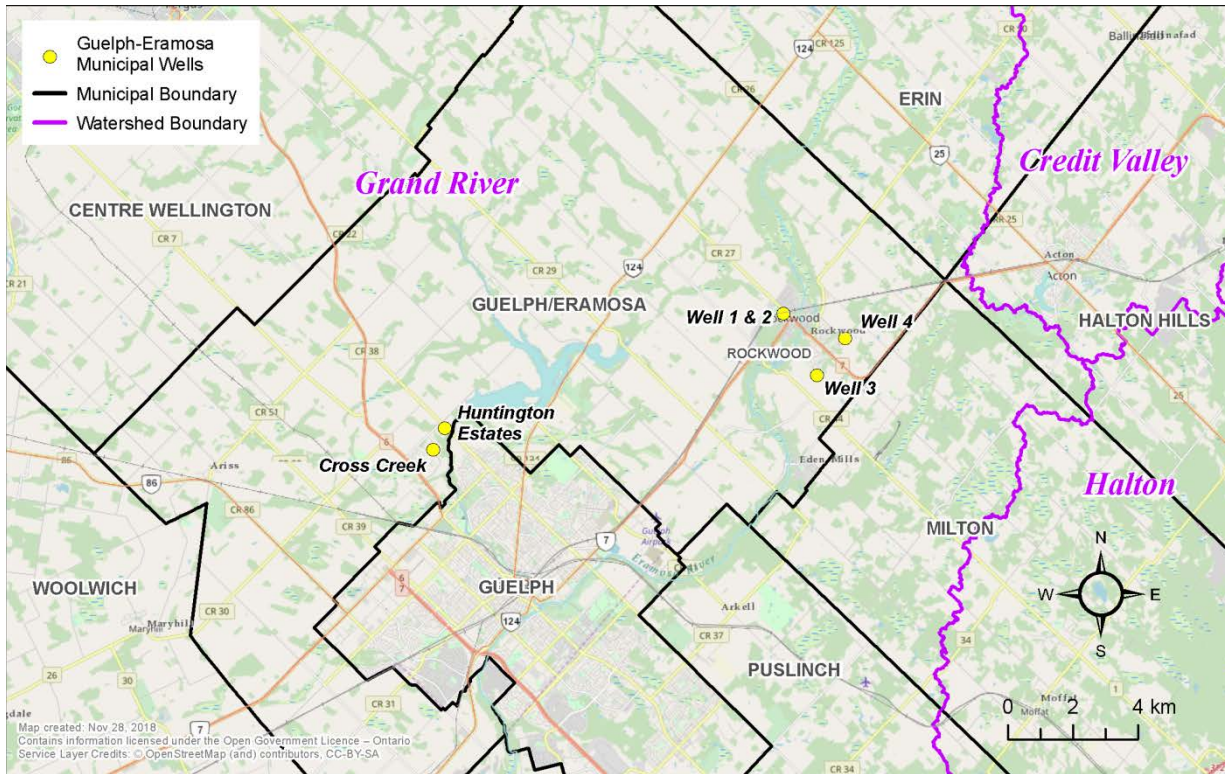


Figure 1: Rockwood and Hamilton Drive Municipal Well Locations

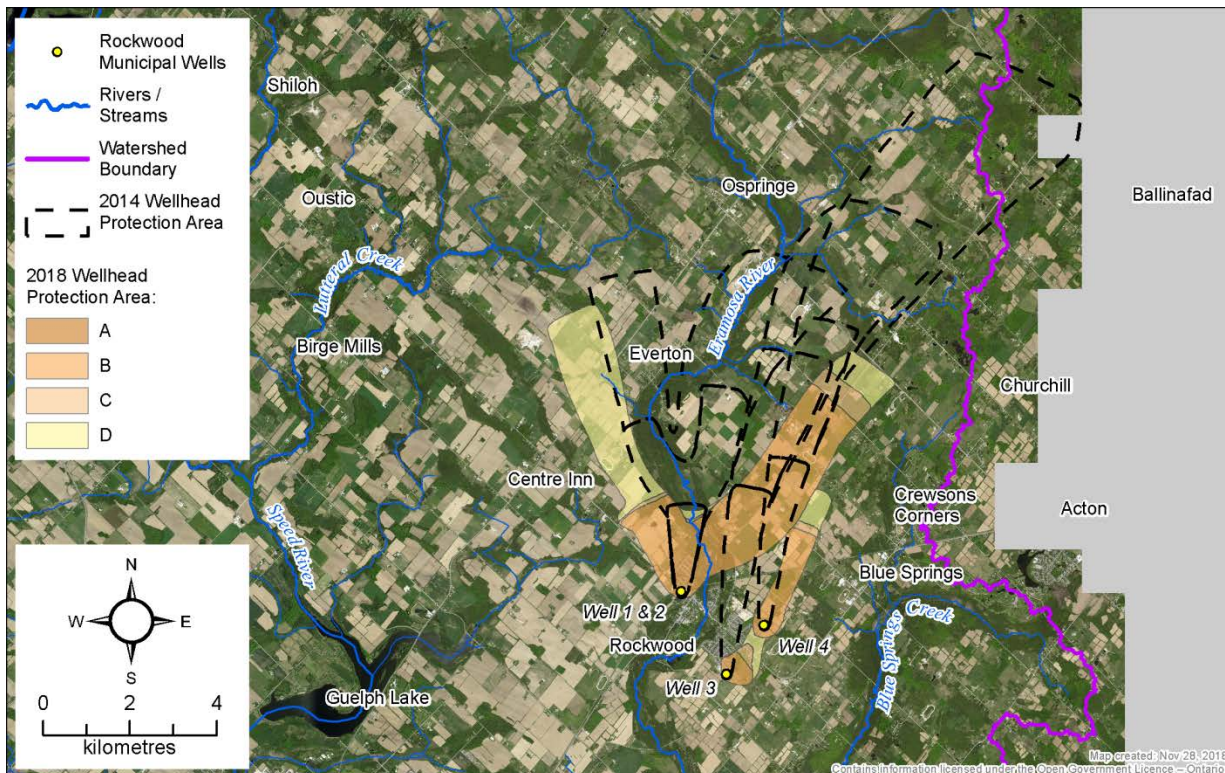


Figure 2: Comparison of Rockwood 2006 WHPAs to 2018 WHPAs

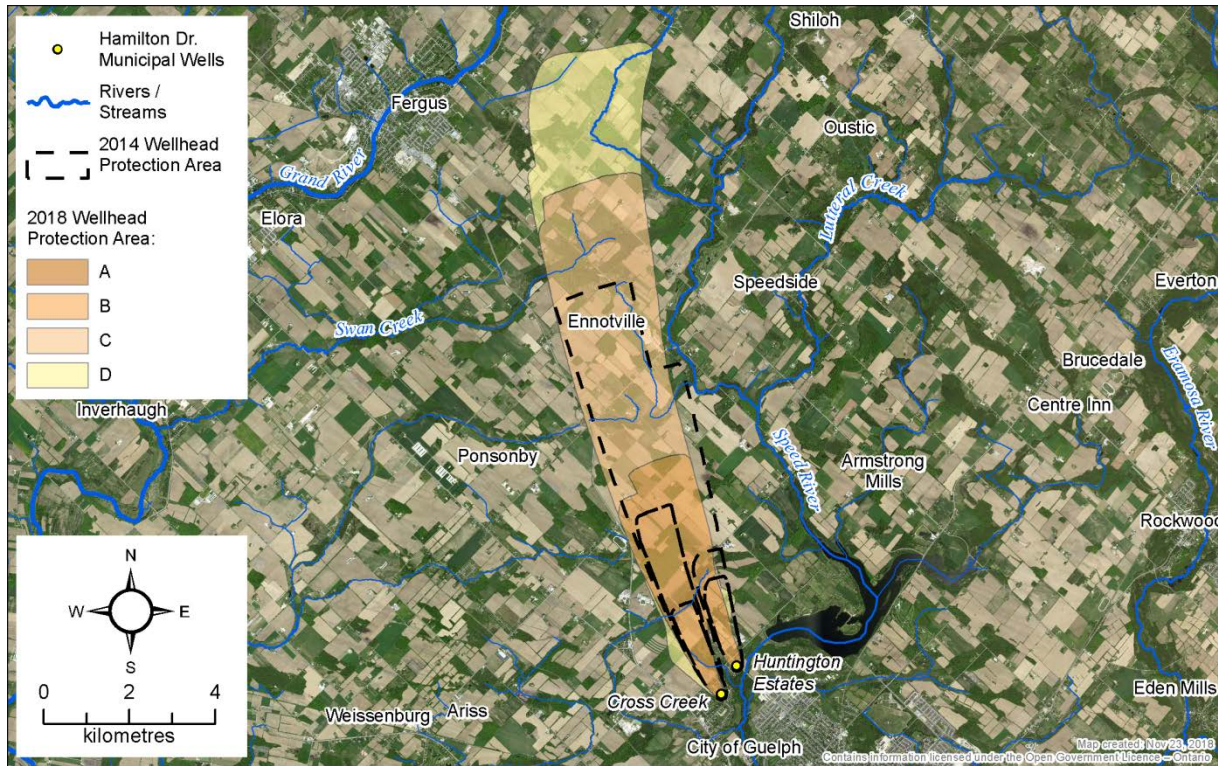


Figure 3: Comparison of Hamilton Drive 2006 WHPAs to 2018 WHPAs

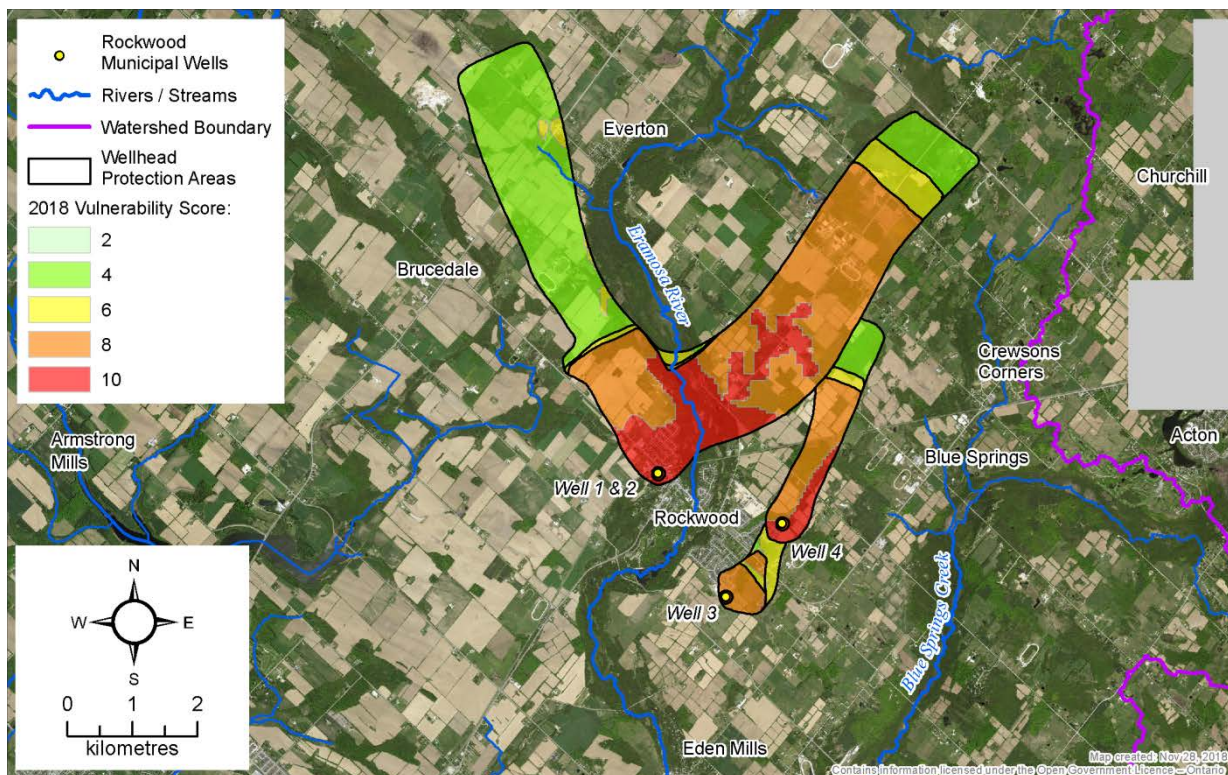


Figure 4: Rockwood 2018 WHPAs with vulnerability scoring

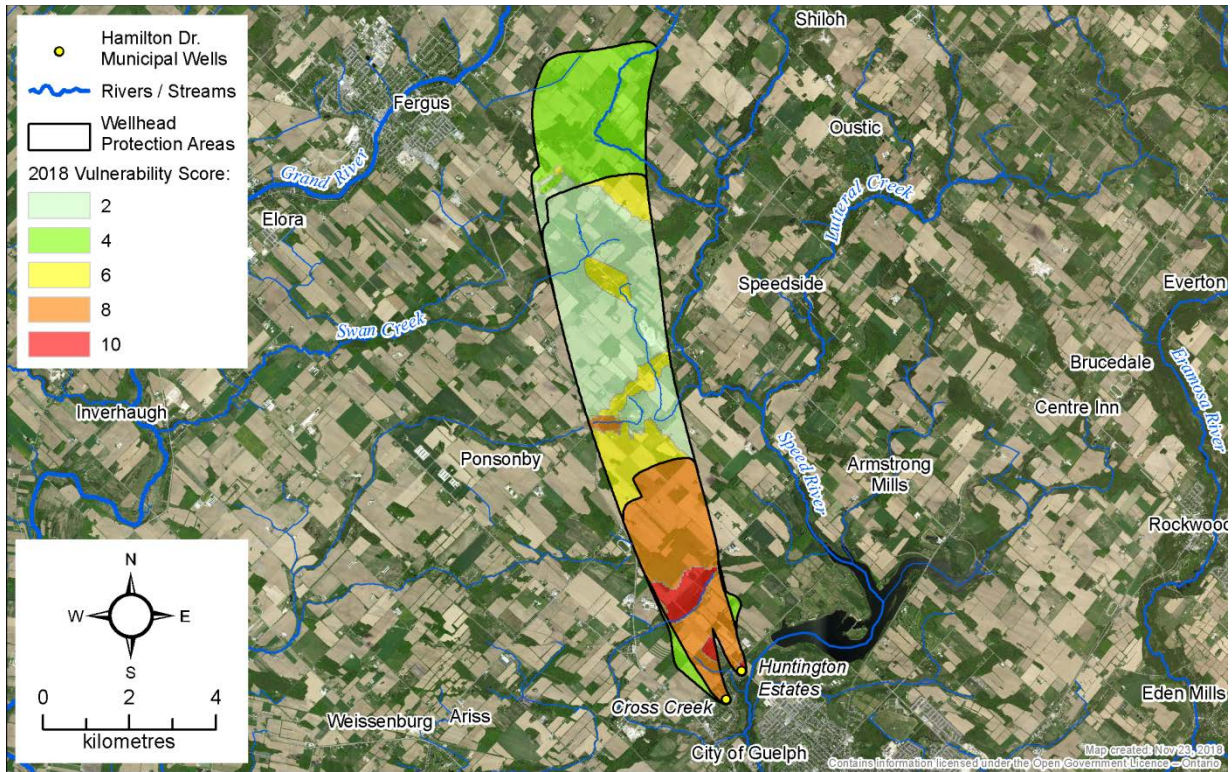


Figure 5: Hamilton Drive 2018 WHPAs with vulnerability scoring

LAKE ERIE REGION SOURCE PROTECTION COMMITTEE

REPORT NO. SPC-18-12-04

DATE: December 6, 2018

TO: Members of the Lake Erie Region Source Protection Committee

SUBJECT: Centre Wellington Wellhead Protection Area and ICA Update

RECOMMENDATION:

THAT the Lake Erie Region Source Protection Committee receives report SPC-18-12 – Centre Wellington WHPA Update and ICA Technical Study - for information.

AND THAT the Lake Erie Region Source Protection Committee direct staff to incorporate the results of the Centre Wellington WHPA Update and ICA Technical Study into the Draft Updated Grand River Watershed Assessment Report and Source Protection Plan.

SUMMARY:

Wellhead Protection Areas (WHPAs) and vulnerability scoring for all nine municipal wells in the Township of Centre Wellington plus three Issue Contributing Areas (ICAs) have recently been delineated using the numerical groundwater flow model developed as a part of the Centre Wellington Scoped Tier 3 Water Budget Study. As the last WHPA update was in 2010, the Tier 3 model represents updates to the local geology and hydrogeology and revised municipal pumping rates based on the Township's draft Water Supply Master Plan.

Results are recommended to be incorporated into the update to the Draft Updated Grand River Watershed Assessment Report and Source Protection Plan.

REPORT:

Municipal System

The Township of Centre Wellington's municipal water supply is entirely groundwater dependent. The communities of Elora and Fergus, both located within the Township, are municipally serviced through a single Centre Wellington distribution system.

Municipal water is sourced via nine municipal wells within Elora and Fergus. Three supply wells are located in Elora (Wells E1, E3, and E4) and six wells are located in Fergus (Wells F1, F2, F4, F5, F6, and F7). Well locations are shown on **Figure 1**. Fergus Well F2 is designated Groundwater Under Direct Influence of Surface Water (GUDI), but is currently inactive. All of the water supply wells are completed in bedrock. The current water supply system provides drinking water to approximately 19,330 residents in Elora and Fergus.

Wellhead Protection Areas

WHPAs were last delineated in 2010 using a numerical groundwater flow model developed in 2002 for the Township of Centre Wellington. More recently in 2018, a new groundwater flow model was developed and calibrated for the Centre Wellington Scoped Tier 3 Water Budget Study. Construction of this model has leveraged work completed by the Ontario Geological

Survey, which has included the latest characterization of bedrock and overburden geology across the area.

The objectives of the current project were to delineate WHPAs and ICAs for the municipal wells using the Tier 3 groundwater model and assess the vulnerability of the municipal groundwater aquifer. A threats assessment within the updated WHPAs will be completed by the Risk Management Official over the coming months.

Pumping rates applied to delineate the WHPAs are future-estimated rates based on the Township’s draft WSMP. A summary of pumping rates used to delineate the current WHPAs as compared to permitted rates and rates used to delineate 2010 WHPAs is provided in Table 1.

Table 1: Summary of Centre Wellington WHPA pumping rates

Well	PTTW (m3/day)	WHPA Rates from 2010 (m ³ /day)	Current WHPA Rates (Matrix, 2018) (m ³ /day)
E1	1,741	1,120	1,500
E3	1,964	981	900
E4	1,228	1,227	1,200
F1	1,833	974	1,300
F2	409	630	400
F4	1,964	1,113	1,200
F5	1,963	736	1,000
F6	1,964	870	1,300
F7	1,964	1,961	1,600
Total	15,030	9,612	10,400

The 2018 WHPAs are presented in **Figure 2** with a comparison to the 2010 WHPAs. For the Elora WHPAs, the 2018 WHPAs show similar trends as those delineated in 2006, with some WHPAs extending toward the north (i.e., Well E1) and portions of others (i.e., Well E3) extending to the east. The largest difference is for the 2018 WHPA-D, which extends further upgradient to the north than the earlier version. For the Fergus WHPAs, the 2018 WHPAs are not as elongated and do not extend as far to the north as their 2006 counterparts. The smaller, more radial-shaped 2018 Fergus WHPAs are generally a result of different hydraulic conductivity zones and values that were arrived at through the Tier 3 groundwater flow model calibration.

Final WHPAs with vulnerability scoring based on GRCA’s SAAT vulnerability layer are presented in **Figure 3**.

Issues Assessment

Chloride

The 2012 Grand River Assessment Report identified sodium and chloride in Elora Well E3 as requiring further study. This prompted the Township to review sodium and chloride in all municipal production wells. In the 2015 Approved Grand River Assessment Report, Well E3 was identified as an issue under the Clean Water Act, 2006 Section 15(2f), but not described as an Issue under Technical Rule 114. An ICA was not delineated for the well. Sodium and chloride concentrations have been monitored by the Township on a minimum quarterly basis since 2014

at municipal Wells F1, F6, and E3. Well F7 was added to the sampling program in 2017. Results of the sampling program identified that each well exhibited a unique and variable chloride trend.

Based on reviews of this water quality data for the municipal wells, chloride has now been identified as an Issue by the Township under Technical Rule 114 for Well E3 and Well F1 (report SPC-17-12-04).

Land use within the area surrounding Well E3 is generally agricultural to the south and southeast and industrial / residential to the north. There are some areas that are not municipally serviced for water and sewer, and there are at least four storm water management ponds in the area. Potential sources of chloride may include road salt from roads and parking lots, snow storage, the storm water management ponds, and private septic systems (Golder, 2018). There is approximately 13m of overburden at Well E3 and the well casing extends approximately 16m into the bedrock.

Groundwater at Well E3 is interpreted to be derived mainly from the bedrock aquifer and receives chloride from a surface source (Golder, 2018). Since chloride is from an anthropogenic source and concentrations have been greater than 50% of the Ontario Drinking Water Standards (ODWQS) Aesthetic Objective (AO) of 250 mg/L, and on an increasing trend as illustrated in **Figure 4**, it has been identified as an Issue under Technical Rule 114 by the Township.

Land use within the area of Well F1 is generally residential with some commercial in the downtown core located in the southwest part of the WHPA and institutional to the south. There are a few properties in the area that have private septic systems. The well is also located within 100m of the Grand River. Potential sources of chloride include road salt from roads, parking lots, and private septic systems in unserviced areas (Golder, 2018). There is less than 2m of overburden at Well F1, and the well casing extends approximately 19m into the bedrock.

Chloride concentrations at Well F1 have ranged from 21 to 128 mg/L from 1992 to 2017 with a general increasing trend as shown in **Figure 5**. Based on the monitoring data results, Well F1 likely receives chloride from a surface source, which results in increased chloride in the well when it is pumped at a high rate (Golder, 2018). Since the chloride is from an anthropogenic source and concentrations at the well have been greater than 50% of the ODWQS AO of 250 mg/L, and potentially on an increasing trend, chloride has been identified as an Issue under Technical Rule 114 for Well F1.

As a part of on-going follow-up to the elevated chloride concentrations, the Township plans to continue monitoring for sodium and chloride at Wells F1, F6, E3, and F7 with the frequency reviewed periodically by the Township hydrogeologist. In addition to sampling the production wells, sampling of the storm water management ponds, private wells, and municipal multi-level monitoring wells will also be completed.

ICAs have been delineated for Wells E3 and F1 as shown in **Figure 6**. The ICAs were delineated using the same method for delineating the WHPAs, except that both existing (an average of 2016 and 2017) and future pumping rates were considered to capture the range of anticipated pumping conditions. The pumping rates were developed in consultation with Township staff.

TCE

The occurrence of TCE (trichloroethylene) at Well F1 was first investigated in 1990 after TCE was discovered in two private wells in September 1989. Reports indicated that the source of TCE contamination could not be verified, and to date, a definitive source has not been identified.

Well F1 has been operating with an air stripper since 1991 to remove TCE present in the raw water. Treatment was also added to two bedrock wells at a private site in 1993 where water is pumped, treated, and discharged to surface water. The Township submits annual water quality and pumping reports to MECP for Well F1 consistent with the Drinking Water Regulations.

All available data indicates that the TCE treatment system is performing as designed. As the treatment system has been effective in reducing the concentrations to below the ODWQS Maximum Acceptable Concentration (MAC) for TCE, it was historically viewed by the Township that the treatment system was sufficient in addressing this concern and no additional management plan under the Clean Water Act, 2006, was warranted.

TCE concentrations have been declining and are occasionally below the MAC of 5 µg/L, however as shown in **Figure 7**, the overall TCE concentrations remain above the MAC. Based on these exceedances and the absence of a known TCE source, the Township has now identified TCE at Well F1 as an Issue under Technical Rule 114, such that TCE management policies under the Clean Water Act, 2006 can be implemented. An ICA for TCE has been delineated for Well F1 which is equivalent to the F1 chloride ICA presented in Figure 6.

Next Steps

The Township is continuing to monitor chloride and sodium at the municipal wells in Fergus and Elora, and continuing with the treatment system for TCE at Well F1 in Fergus. The Wellington Source Water Risk Management Official is working to complete an updated threats inventory within the new WHPAs and ICAs and policies will be developed in conjunction with Lake Erie Region staff to address threat activities in the ICA.

Prepared by:



Sonja Strynatka , P.Geo.
Senior Hydrogeologist

Approved by:



Martin Keller, M. Sc.
Source Protection Program Manager

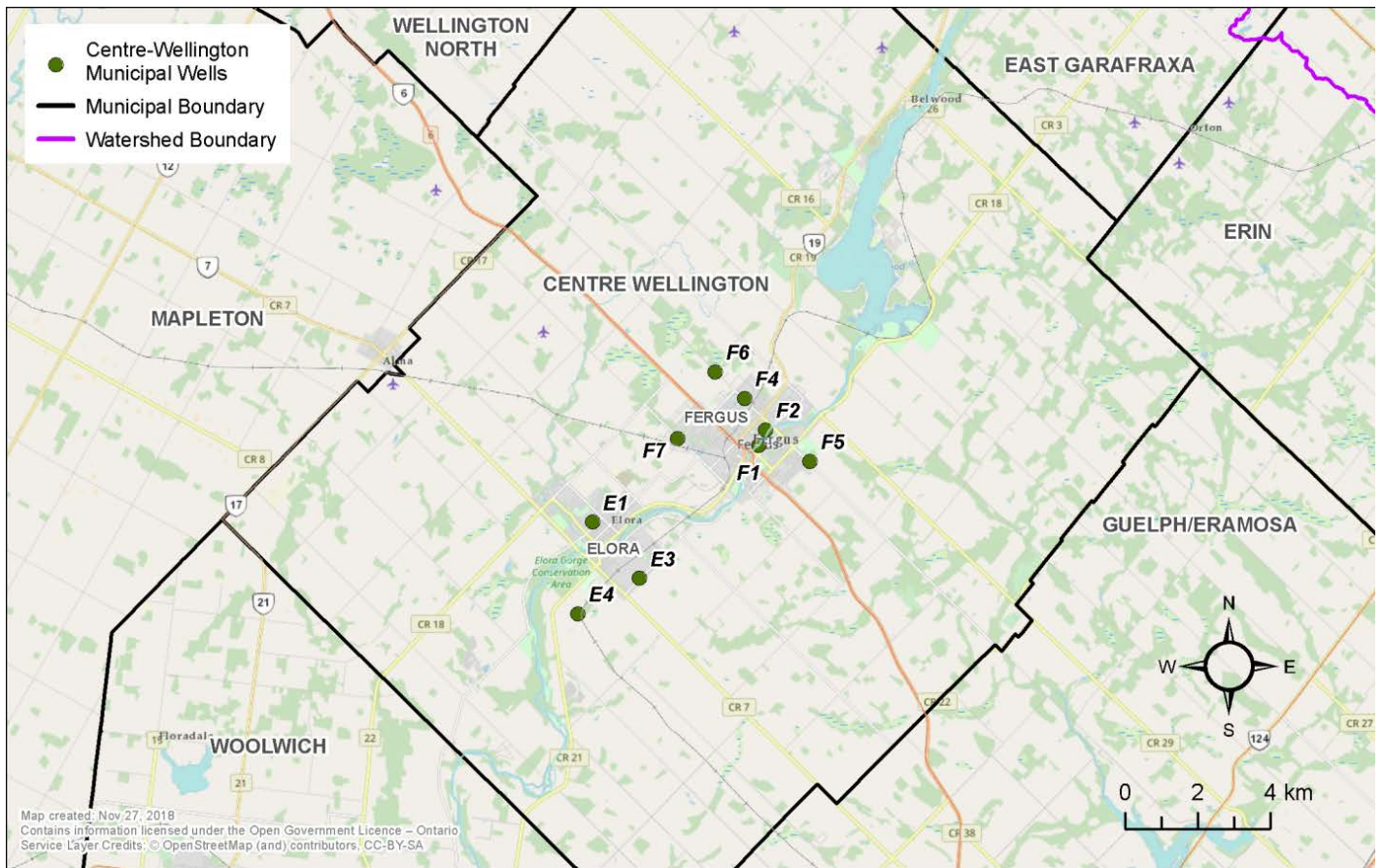


Figure 1: Township of Centre Wellington municipal well locations

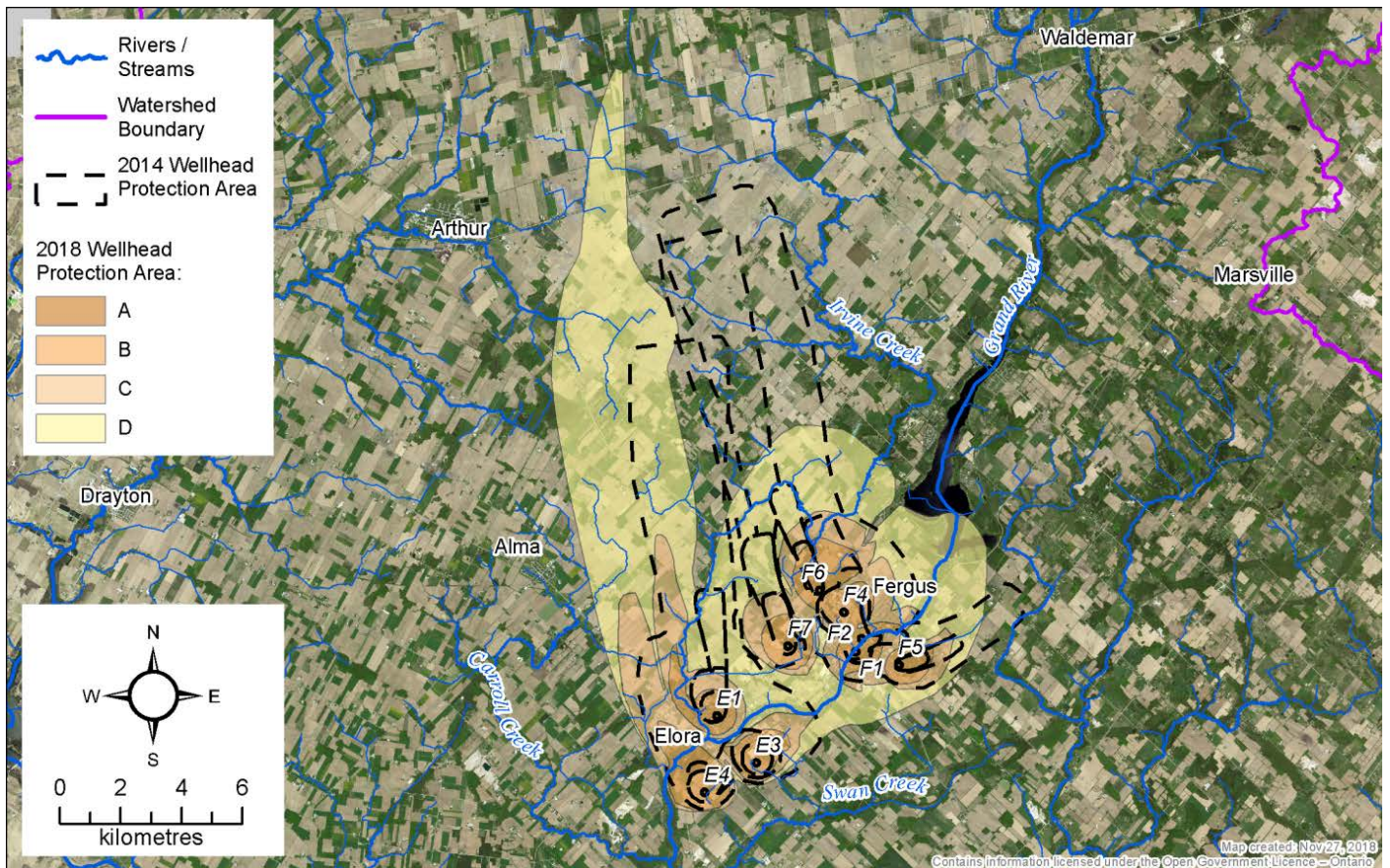


Figure 2: Comparison of Centre Wellington 2010 WHPAs to 2018 WHPAs

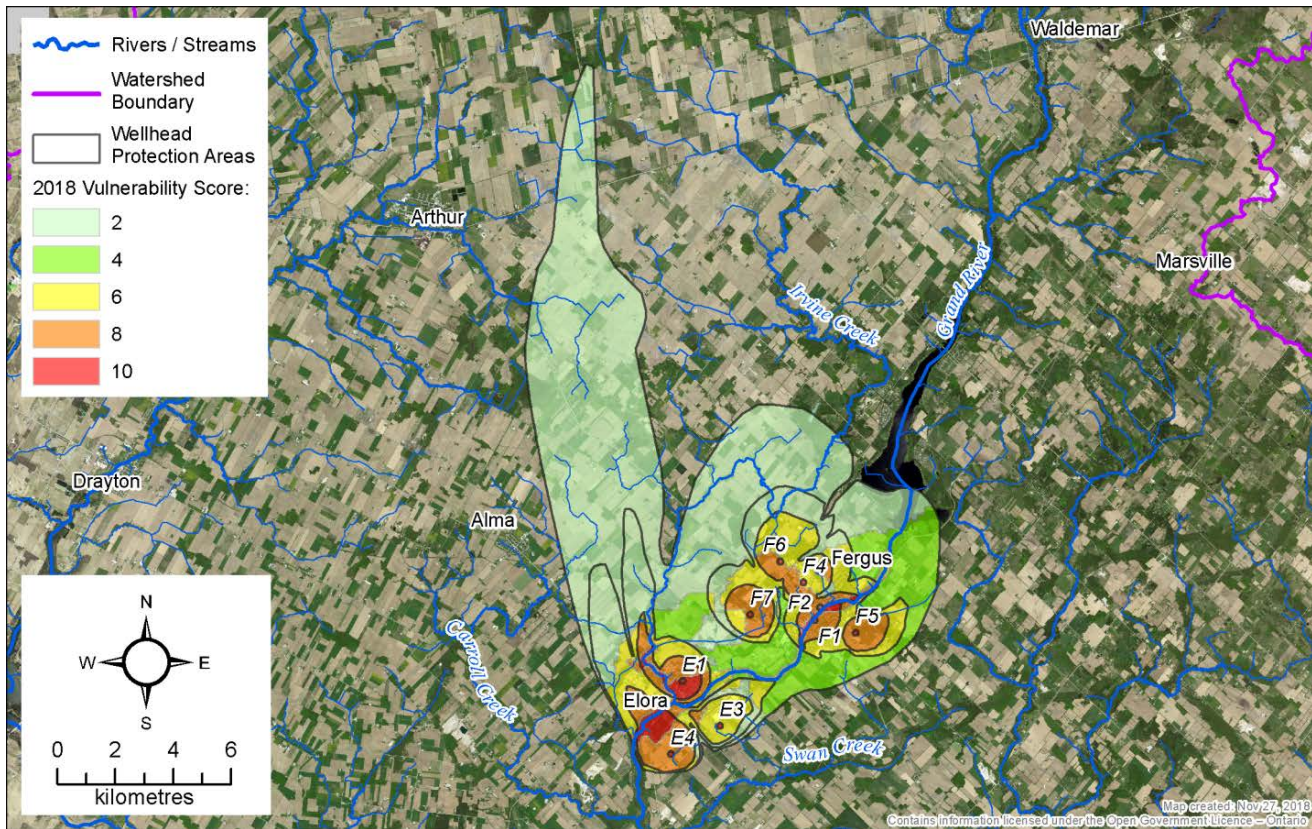


Figure 3: Centre Wellington 2018 WHPAs with vulnerability scoring

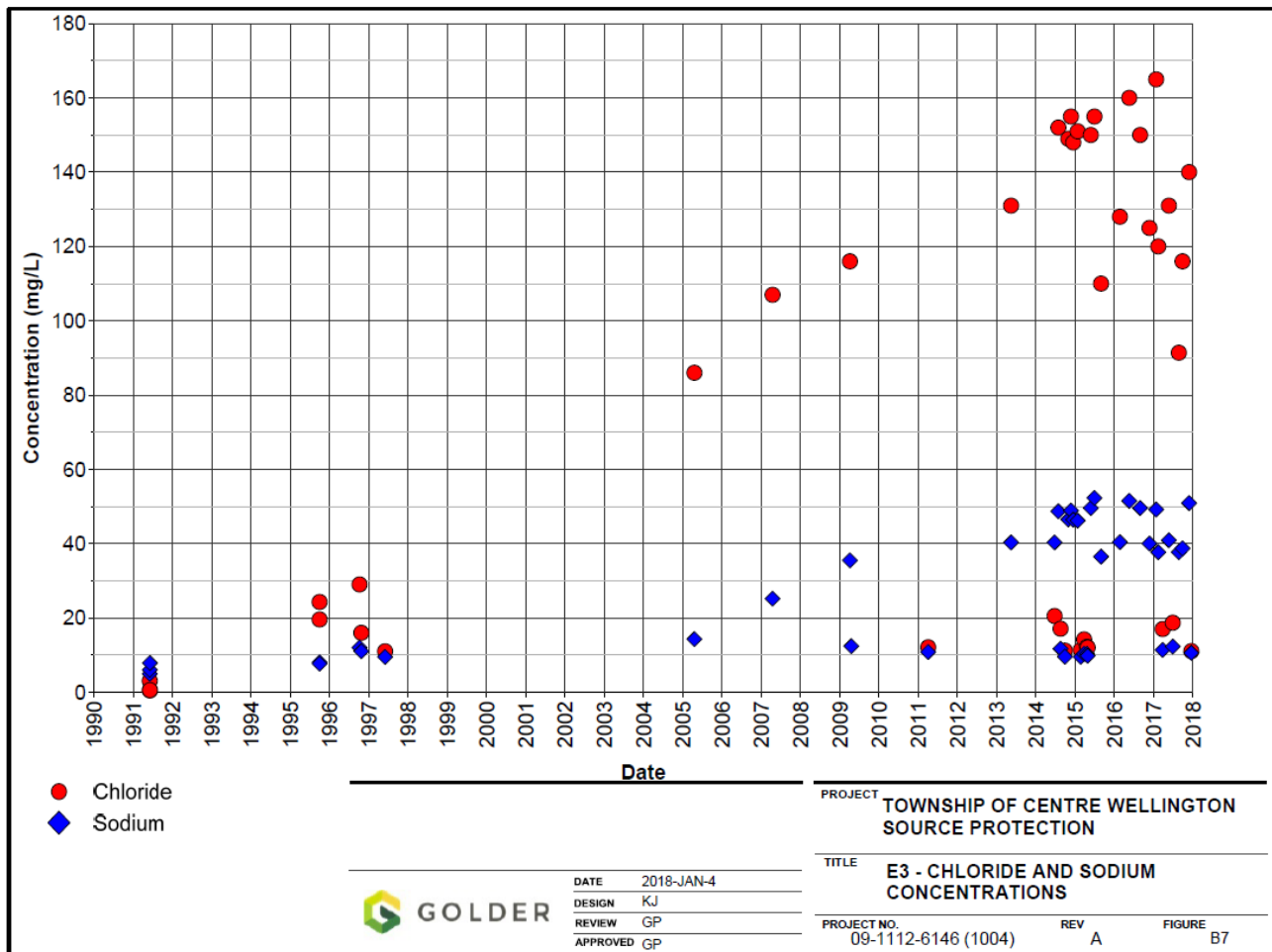


Figure 4: Well E3 - Chloride and sodium concentrations from 1991 to 2018

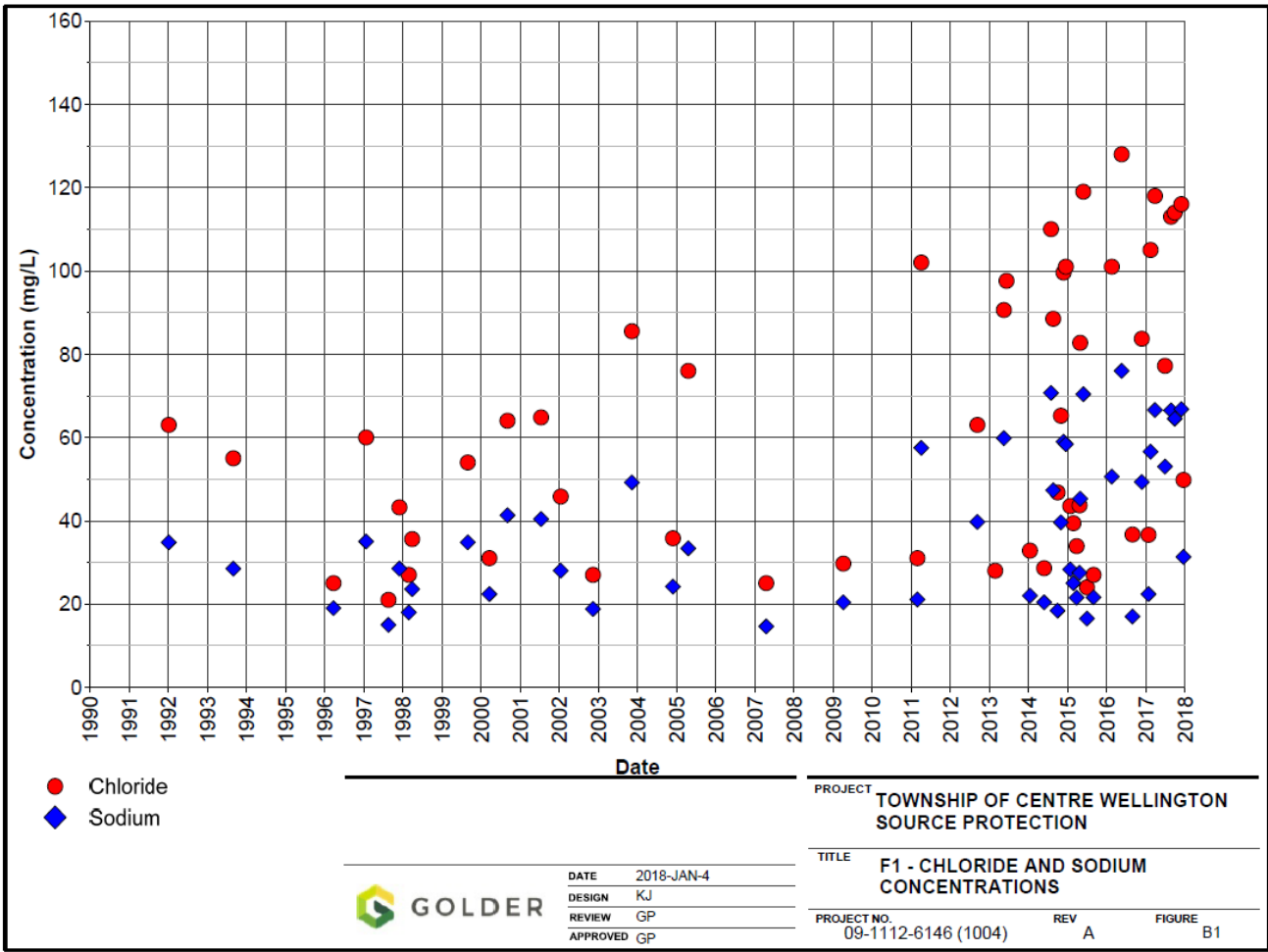


Figure 5: Well F1 - Chloride and sodium concentrations from 1991 to 2017

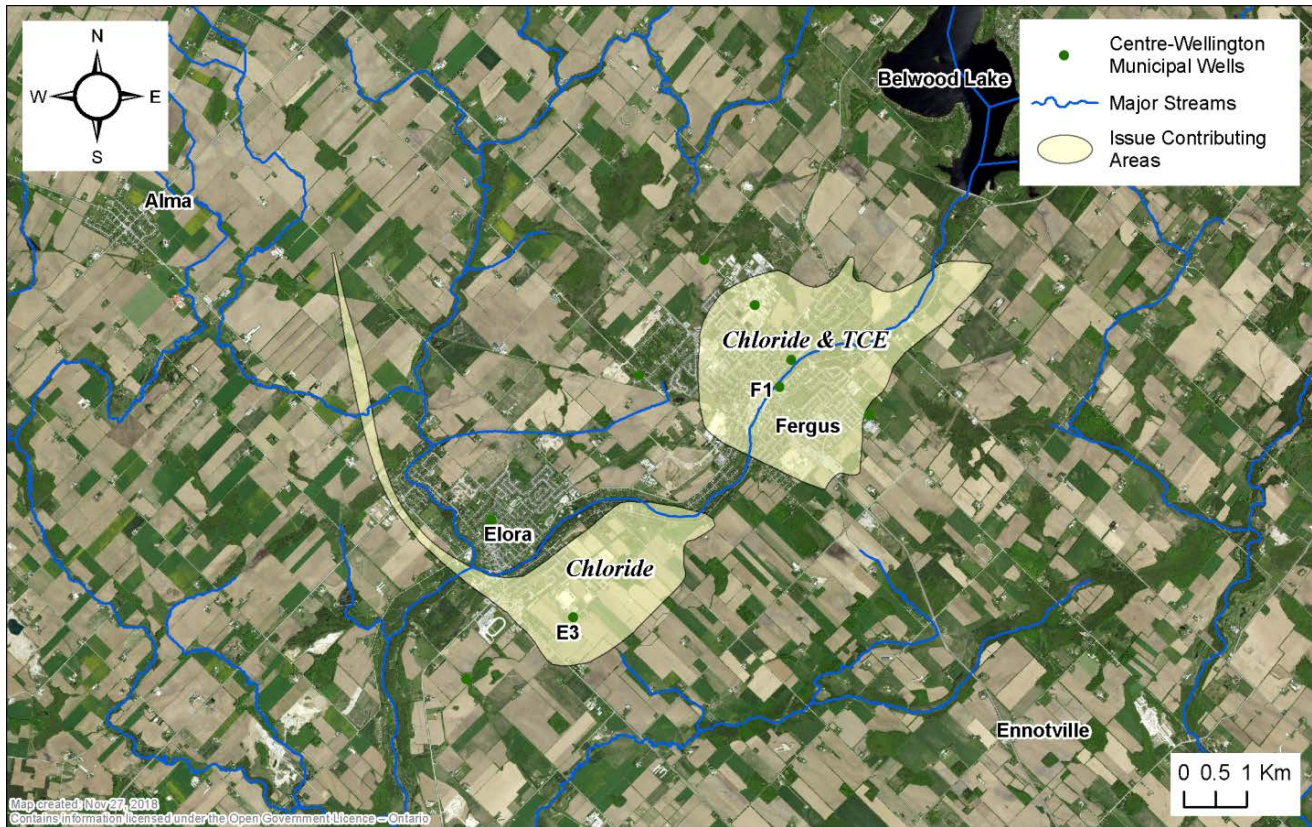


Figure 6: Issue Contributing Areas for Well E3 and F1

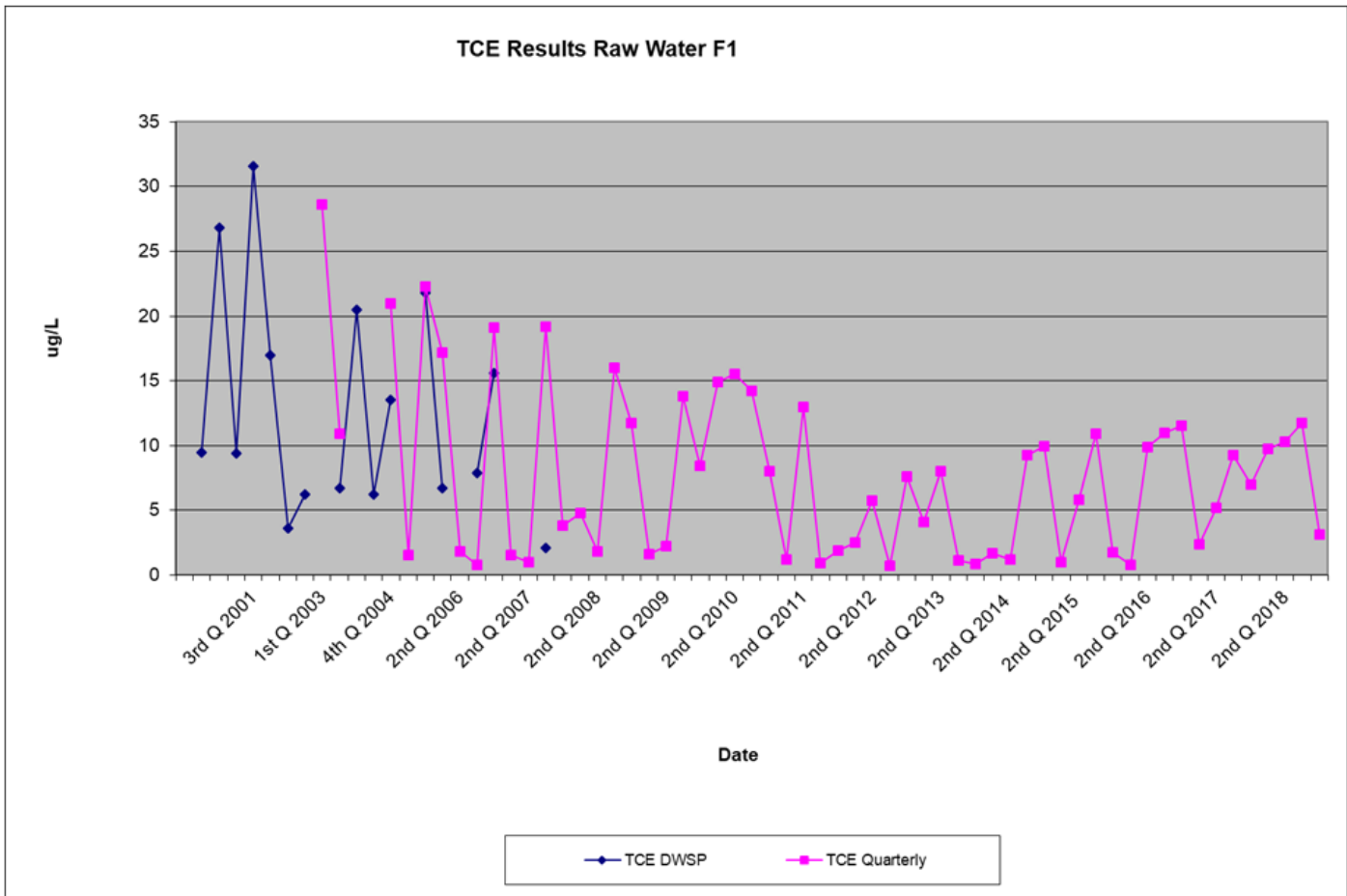


Figure 7: Well F1 – TCE concentrations from 2001 to 2018

LAKE ERIE REGION SOURCE PROTECTION COMMITTEE

REPORT NO. SPC-18-12-05

DATE: December 6, 2018

TO: Members of the Lake Erie Region Source Protection Committee

SUBJECT: Guelph-Guelph/Eramosa Draft Water Quantity Policy Approaches

RECOMMENDATION:

THAT the Lake Erie Region Source Protection Committee receives report SPC-18-12-05 – Guelph-Guelph/Eramosa Draft Water Quantity Policy Approaches– for information.

AND THAT the Lake Erie Region Source Protection Committee direct Lake Erie Region staff to continue to work with the Guelph-Guelph/Eramosa Water Quantity Policy Development Project Team to develop draft water quantity policies for the Guelph-Guelph/Eramosa area.

REPORT:

Background

On June 21, 2018 (report SPC-18-06-03), staff presented the Risk Management Measures Evaluation Process (RMMEP) and the results captured in the Threats Management Strategy (TMS). These were technical studies undertaken following the completion of the Guelph-Guelph/Eramosa Tier 3 Water Budget and Risk Assessment and aimed at identifying the greatest impacts on municipal wells, ranking the water quantity threats, and identifying measures to address the threats.

Results showed that municipal wells rank high and can have an impact on themselves. Individually, non-municipal takings have little influence on municipal wells, with the dewatering for the Dolime Quarry (River Valley Developments) the one exception. Recommended Risk Management Measures include well optimization, water conservation and efficiency, addition of new water supplies, maintaining pre-development aquifer recharge rates, and mitigating impacts from non-municipal consumptive water takings.

Also included in the report SPC-18-06-03 was the Water Quantity Policy Discussion Paper. The Discussion Paper provides an overview of the technical studies and drinking water quantity threats, a brief summary of the existing legislation, policies and programs at the federal, provincial and municipal level, lays out the policy tools and options available, reviews them, and provides a list of promising policy tools that could be used to protect water quantity sources of drinking water.

The Threats Management Strategy (TMS) and policy Discussion Paper provide the foundation for water quantity policy development.

Policy Development Process

Although overall responsibility to develop water quantity policies lies with the Lake Erie Region Source Protection Committee, a Project Team has been established to lead the technical studies (e.g., RMMEP) and policy development components. To better engage municipal and community stakeholder, an Implementing Municipalities Group (IMG) and Community Liaison Group (CLG) was also established. The Project Outline for the Guelph-Guelph/Eramosa Water Quantity Policy Development Study that details the composition, roles and responsibilities of the Project Team, IMG, and CLG, and outlines the policy development process was presented to the SPC on September 7, 2017 (report SPC-17-09-07) and is available at www.sourcewater.ca/GGET-Tier3. An updated timeline for the policy development process is presented in **Table 1**.

Table 1: Guelph-Guelph/Eramosa Water Quantity Policy Development Process Timeline

Task	Date
RMMEP and TMS presented to SPC	June 21, 2018
RMMEP and TMS presented to CLG	June 26, 2018
Project Team developing draft policy approaches	July to October 2018
Draft policy approaches presented to IMG/CLG	November 7/8, 2018
Draft policy approaches presented to SPC	December 6, 2018
Draft policy text presented to SPC	February 7, 2019
Draft policy pre-consultation with agencies and municipalities - Draft policy text presented to CLG	February 11 - March 25, 2019 - February 13, 2019
Revised policies presented to SPC	April 4, 2019
Revised policies presented to SPC (if needed)	April 25, 2019
Formal Public consultation of updated AR/SPP	April – May 2019
Revised AR/SPP presented to SPC and release to SPA	June 20, 2019
SPA submits updated AR/SPP to MECP	June 28, 2019

Policy Development

Over the summer and early fall, the Project Team has been working on developing a policy framework and a list of policy approaches.

Under the Clean Water Act, 2006 (CWA), policies need to be developed for areas where activities are identified as significant threat activities. For water quantity, the prescribed drinking

water threats are consumptive water takings and recharge reduction. Source protection policies must protect current and future drinking water supplies, i.e., policies must ensure that an existing activity identified as a significant drinking water threat ceases to be a significant threat, and future activities never become a significant drinking water threat.

The policy framework (**Figure 1**) and list of policy approaches developed have been informed by the Risk Management Measures (RMMs) in the TMS and the insights from the Policy Discussion Paper. Policy approaches identify the intent, i.e., what is aimed to be achieved with the policy. Additional information such as policy tool and implementing body may also be included. The policy approaches presented are high-level, draft, and subject to change. The Project Team may consider additional approaches. Policy approaches inform the development of detailed policy text and these may differ among municipalities.

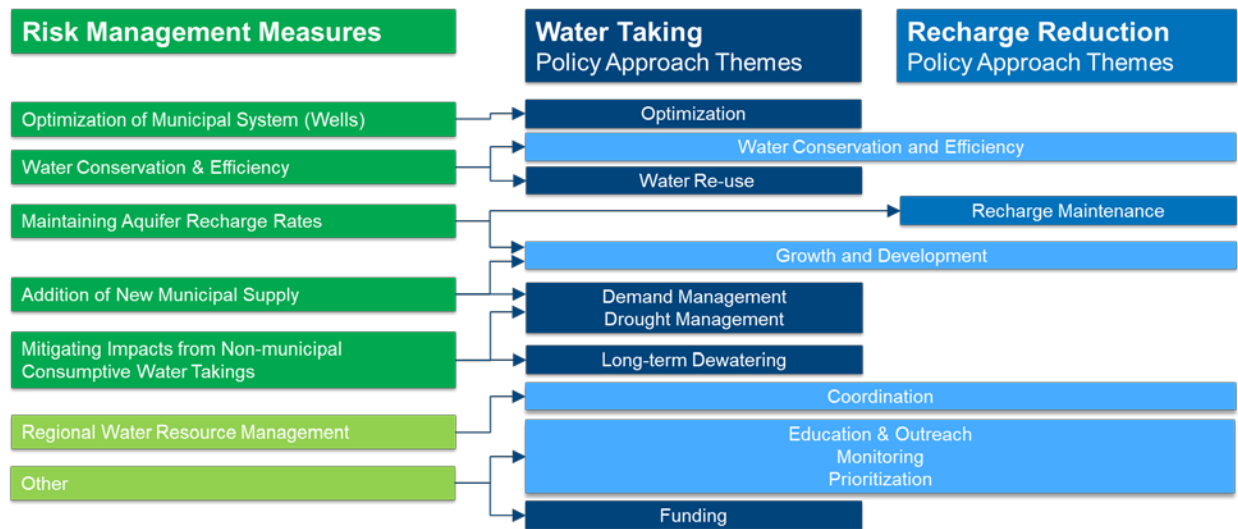


Figure 1: Water Quantity Policy Framework for Guelph-Guelph/Eramosa area

At its meetings with the IMG and CLG on November 7 and 8, 2018, respectively, the Project Team received feedback on the draft policy approaches. These included:

- considering training opportunities for the Local Planning Appeal Tribunal (LPAT), the successor of the Ontario Municipal Board (OMB);
- addressing permanent dewatering (e.g., drainage required for deep footings for underground parking garages);
- addressing institutional and commercial lawn watering, specifically where the source is non-municipal and non-permitted; and
- addressing individual and communal infiltration infrastructure, to address maintenance.

All comments and feedback received from the IMG and CLG will be considered by the Project Team in developing draft policy text.

Policies in the Grand River Source Protection Plan are organized by municipal sections. For water quantity policies in the Guelph-Guelph/Eramosa area, this means that these policies will be included in four municipal sections; City of Guelph, Wellington County, Halton Region, and Region of Waterloo (see **Figure 2**). To reflect local needs and capacity, water quantity policies may differ between these municipal sections.

Following a discussion at the most recent IMG meeting in November, Halton Region and Region of Waterloo staff were invited to participate in future Project Team meetings to better integrate their needs into the policy development process.

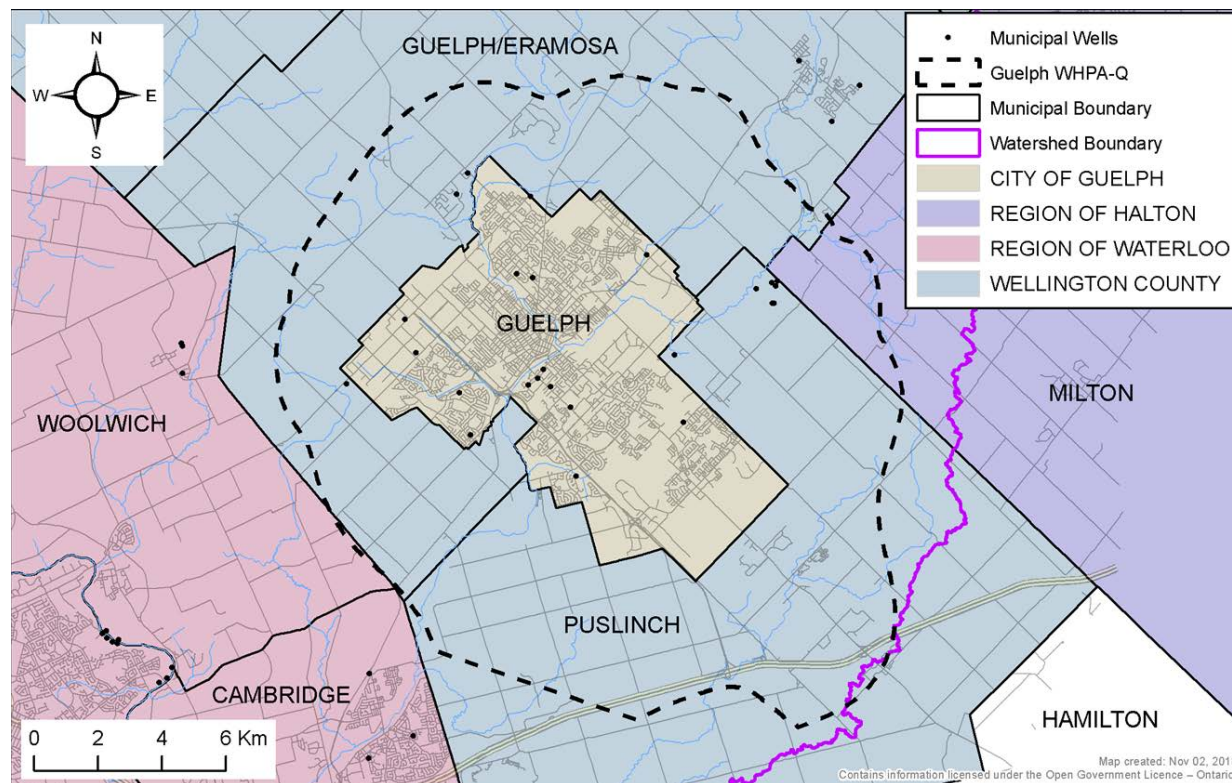


Figure 2: Municipalities in the Guelph-Guelph/Eramosa WHPA-Q

Climate Change Assessment for IPZ-Q

Report SPC-18-12-02 presents the results of the Assessment of Climate Change and Assessment of Water Quantity Threats in the IPZ-Q, a technical study undertaken in support of the Guelph-Guelph/Eramosa Water Quantity Policy Development study.

The study concludes that climate change does not pose an additional threat to the Guelph-Guelph/Eramosa water supply wells due to predicted increase in groundwater recharge. The study also shows that climate change may result in minimal to no additional risk to the City of Guelph’s Eramosa River intake due to predictions that streamflow is likely to increase in the future.

These results support the current direction of the policy approaches. Some policy approaches developed for the WHPA-Q, such as education and outreach, and considering Tier 3 results when undertaking subwatershed studies, may be considered for the IPZ-Q by the Project Team, based on the results of the study.

Draft Policy Approaches

Draft policy approaches for the Guelph-Guelph/Eramosa WHPA-Q are presented in

Appendix A for prescribed threat activity #19 (consumptive water taking) and **Appendix B** for prescribed threat activity #20 (recharge reduction).

The policy approaches are organized by theme, linking them back to the policy framework (see **Figure 1**). Beside the intent, a high level description of what the policy approach is aiming to achieve, the policy approaches tables identify the policy tools, whether the policy approach is addressing existing and/or future threat activities, whether the policy proposes to manage or prohibit the activity, and whether the policy is legally binding or not.

Next step

With the direction and input from the committee, and following the feedback received from the IMG and CLG, the Project Team will be working to develop draft policy text to be presented to the SPC on February 7, 2019.

Prepared and approved by:



Martin Keller, M. Sc.
Source Protection Program Manager

Appendix A

Draft Policy Approaches for the Guelph-Guelph/Eramosa WHPA-Q Prescribed Threat Activity #19

T19

GGET: Draft Water Quantity Policy Approaches Threat #19: Consumptive Water Takings

Policy Approach #	Theme	Policy Tool	Intent	Existing / Future	Manage / Prohibit	Legal Effect
1	Optimization	Specify Action	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	Manage	comply / legally binding
2	Water Efficiency	Incentive programs	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	Manage	comply / legally binding
3	Re-use	Specify Action	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	Manage	strategic action/non-legally binding
4	Growth/ Development	Specify Action	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	Manage	strategic action/non-legally binding
5	Growth/ Development	Specify Action	Update of 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's terms of reference and monitoring program.	Existing/Future	Manage	comply (municipality) and strategic action (GRCA)
6	Growth/ Development	Specify Action	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	Manage	comply / legally binding
7	Growth/ Development	Land Use Planning	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	Manage	must conform / legally binding

T19

GGET: Draft Water Quantity Policy Approaches Threat #19: Consumptive Water Takings

Policy Approach #	Theme	Policy Tool	Intent	Existing / Future	Manage / Prohibit	Legal Effect
8	Growth/ Development	Specify Action	Water takings in areas of municipal servicing: Wellington County municipalities consider a municipal by-law to manage private water takings where municipal services are available.	Existing/Future	Manage	comply / legally binding
9	Growth/ Development	Land Use Planning	Water takings in areas of municipal servicing: City of Guelph prohibit 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	Prohibit	must conform / legally binding
10	Coordination	Specify Action	Water Resource Technical Working Group: 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	Manage	comply (municipality) and strategic action (MECP, GRCA)
11	Demand	Prescribed Instrument	<p>Permits to Take Water (PTTW) Review: Ministry of the Environment, Conservation and Parks (MECP) review and amend, where appropriate, existing and issue new Permits To Take Water (PTTW) to ensure the long-term sustainability of the municipal water supplies using the results of the Tier 3 water budget including consideration of planned growth and prolonged drought. To achieve this MECP may need to include requirements in PTTWs to enhance:</p> <ul style="list-style-type: none"> • Groundwater and surface water monitoring; • Demand management: water needs assessment (review of permitted maximum takings) and water efficiency measures; • Information sharing with MECP, municipalities and CAs; • Measures to increase the optimization of the municipal water supply system; and • Drought management planning. 	Existing/Future	Manage	must conform / legally binding

T19

GGET: Draft Water Quantity Policy Approaches Threat #19: Consumptive Water Takings

Policy Approach #	Theme	Policy Tool	Intent	Existing / Future	Manage / Prohibit	Legal Effect
12	Demand	Prescribed Instrument	Water takings in areas of municipal servicing: MECP not issue PTTW for new non-municipal water takings within the City of Guelph where municipal services are available, except for construction dewatering, site assessment, and site remediation, or similar water taking activities.	Future	Prohibit	must conform / legally binding
13	Drought	Specify Action	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	Manage	comply / legally binding
14	E&O	Education and Outreach	Education and outreach initiatives: The municipalities implement and maintain public education and outreach initiatives for water conservation. Where possible, these education and outreach initiatives should be coordinated.	Existing/Future	Manage	comply / legally binding
15	E&O	Specify Action	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	Manage	comply / legally binding
16	Monitoring	Specify Action	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	Manage	comply / legally binding
17	Monitoring	Specify Action	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	Manage	comply / legally binding
18	Monitoring	Specify Action	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	Manage	comply (municipality) and strategic action (MECP, GRCA)
19	Prioritization	Specify Action	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	Manage	strategic action/non-legally binding

T19

GGET: Draft Water Quantity Policy Approaches Threat #19: Consumptive Water Takings

Policy Approach #	Theme	Policy Tool	Intent	Existing / Future	Manage / Prohibit	Legal Effect
20	Prioritization	Specify Action	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	Manage	strategic action/non-legally binding
21	Funding	Specify Action	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	Manage	strategic action/non-legally binding
22	Funding	Specify Action	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	Manage	strategic action/non-legally binding
23	Funding	Specify Action	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	Manage	strategic action/non-legally binding
24	Long-term Dewatering	Prescribed Instrument	Aggregate Resources Act (ARA): MNRF, in consultation with MECP, municipalities and conservation authorities, review and amend, where appropriate, existing and issue new approvals to include terms and conditions addressing operational and geological controls and rehabilitation to ensure that any activity below the water table breaching the confining layer protecting an aquifer that is the source of municipal drinking water is not a significant drinking water quantity threat for consumptive water taking. ("under discussion")	Existing/Future	Manage	must conform / legally binding
25	Long-term Dewatering	Specify Action	Aggregate Resources Act (ARA) – MNRF integrate source protection water quantity technical work, where appropriate, into aggregate policy framework and enhance engagement with other water managers (e.g., municipalities, conservation authorities, MECP). ("under discussion")	Existing/Future	Manage	strategic action / non-legally binding

T19 GGET: Draft Water Quantity Policy Approaches Threat #19: Consumptive Water Takings

Policy Approach #	Theme	Policy Tool	Intent	Existing / Future	Manage / Prohibit	Legal Effect
26	Long-term Dewatering	PART IV - RMP	<p>Part IV - Risk Management Plan: City of Guelph manage water takings associated with an activity below the water table breaching the confining layer protecting an aquifer that is the source of municipal drinking water through Risk Management Plan where policy outcomes are not achieved through provincial instruments .</p> <p>("under discussion")</p>	Existing/Future	Manage	comply / legally binding

Appendix B

Draft Policy Approaches for the Guelph-Guelph/Eramosa WHPA-Q Prescribed Threat Activity #20

Policy Approach #	Theme	Policy Tool	Intent	Existing / Future	Manage / Prohibit	Legal Effect
1	Water Efficiency	Incentive programs	Incentive programs for recharge: The municipalities are encouraged to establish, maintain and implement incentive programs for recharge where funding is available.	Existing/Future	Manage	comply / legally binding
2	Recharge Maintenance	Land Use Planning	Groundwater recharge maintenance: the municipalities maintain or enhance pre-development recharge where appropriate.	Future	Manage	must conform / legally binding
3	Recharge Maintenance	Specify Action	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	Manage	comply /legally binding
4	Recharge Maintenance	Prescribed Instrument	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/Future	Manage	must conform / legally binding
5	Growth and Development	Specify Action	Update of 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.	Existing/Future	Manage	comply (municipality) and strategic action (GRCA)
6	Coordination	Specify Action	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	Manage	comply (municipality) and strategic action (MECP, GRCA)

T20 GGET: Draft Water Quantity Policy Approaches Threat #20: Recharge Reduction

Policy Approach #	Theme	Policy Tool	Intent	Existing / Future	Manage / Prohibit	Legal Effect
7	E&O	Education and Outreach	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	Manage	comply / legally binding
8	E&O	Specify Action	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	Manage	comply / legally binding
9	Monitoring	Specify Action	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	Manage	comply (municipality) and strategic action (MECP, GRCA)
10	Prioritization	Specify Action	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	Manage	strategic action / non legally binding

LAKE ERIE REGION SOURCE PROTECTION COMMITTEE

REPORT NO. SPC-18-12-06

DATE: December 6, 2018

TO: Members of the Lake Erie Region Source Protection Committee

SUBJECT: S.34 Draft Updated Grand River Assessment Report and Source Protection Plan: City of Hamilton, Brant County, Grey County

RECOMMENDATION:

THAT the Lake Erie Region Source Protection Committee receives report SPC-18-12-06 – S.34 Draft Updated Grand River Assessment Report and Source Protection Plan: City of Hamilton, Brant County, Grey County – for information.

AND THAT the Lake Erie Region Source Protection Committee release the Draft Updated Grand River Assessment Report and Source Protection Plan for pre-consultation and direct staff to commence a 58-day pre-consultation period.

REPORT:

Updates to the Assessment Report

A number of water quality technical studies have been completed since the plan was approved in November 2015. The Draft Updated Grand River Assessment Report includes the following updates:

Section 12 - City of Hamilton:

- new well FLD-03 added to the supply
- Lynden groundwater supply system Wellhead Protection Areas (WHPA), vulnerability scoring, threats and issues assessment

Section 13 - Brant County:

- new well W2 added to the Airport Well Supply
- Airport WHPAs, vulnerability scoring, threats and issue assessment
- Mount Pleasant WHPAs, vulnerability scoring, threats and issues assessment
- New wells TW 1/16 and TW 2/16 added to the St. George Well Supply
- St. George WHPAs, vulnerability scoring, threats and issues assessment
- Bethel Road Wellfield WHPAs, vulnerability scoring, threats and issues assessment

Section 4 - Grey County:

- new well D5 added to the supply
- Dundalk Well Supply WHPAs, vulnerability scoring and threats

City of Hamilton, Brant County and Grey County assessment report sections have also been updated for brevity and added clarity.

In addition to updated technical work, two non-municipal sections have been updated:

- Section 1 – Introduction
- Section 3 – Water Quality Threats Assessment Methodology. Water quality methodology has been removed from the municipal sections and combined into a new section three (3) methodology section. This section outlines the methods used to map WHPAs, and enumerate and classify quality-related threats to the municipal supply, replacing the previous Section 3 – Water Quantity Risk Assessment. Water Quantity Risk Assessment content will be moved to later sections (17-23) in the assessment report and will be presented to the SPC as part of the Draft Updated “bundled” Grand River Assessment Report and Source Protection Plan.

Updates to the Source Protection Plan

As a result of the technical updates in the assessment report, the Grand River Source Protection Plan was amended as follows:

Municipal-specific

- Minor revision to City of Hamilton policy related to Establishment, Operation or Maintenance of a System That Collects, Stores, Transmits, Treats or Disposes of Sewage
- Revision to Brant County policies related to the Storage of Snow

General

- Minor revision to Implementation and Timing Policies
- Local threat: The Conveyance of Oil by way of Underground Pipelines changed to Prescribed Drinking Water Threat #22: The Establishment and Operation of a Liquid Hydrocarbon Pipeline
- Prescribed Drinking Water Threats short form names amended to reflect 2017 Tables of Drinking Water Threats

Content revisions first presented to the SPC at the June 21 or October 4, 2018 meetings are highlighted yellow; additional revisions made since those meetings are highlighted green. Section three: Water Quality Threats Assessment Methodology, has been completely re-written but has not been highlighted. The S.34 Draft Updated Grand River Assessment Report and Source Protection Plan is available in its entirety on the December 6, 2018 eScribe meeting site.

Prepared by:



Ilona Feldmann
Source Protection Program Assistant

Approved by:



Martin Keller, M. Sc.
Source Protection Program Manager

LAKE ERIE REGION SOURCE PROTECTION COMMITTEE

REPORT NO. SPC-18-12-07

DATE: December 6, 2018

TO: Members of the Lake Erie Region Source Protection Committee

SUBJECT: S.34 Bundled Draft Updated Grand River Assessment Report and Source Protection Plan: Municipal and Non-municipal Sections

RECOMMENDATION:

THAT the Lake Erie Region Source Protection Committee receives report SPC-18-12-07 – S.34 Bundled Draft Updated Grand River Assessment Report and Source Protection Plan: Municipal and Non-municipal Sections – for information.

REPORT:

Updates to the Assessment Report

Section 9 – Halton Region:

- new back-up well Fourth Line B added to the Action Water Supply; delineation of new WHPA not required
- Acton Water Supply issues data and information

Section 17 – Water Budget Framework and Methodologies:

- A new section that provides an overview of the water budget framework and the general Tier 3 water budget methodology

Section 19 – City of Guelph and Township of Guelph/Eramosa Tier 3 Water Budget and Risk Assessment:

- A new section that describes the Tier 3 Water Budget and Risk Assessment completed for the municipal drinking water systems of the City of Guelph and the Township of Guelph/Eramosa, including the delineation of a new WHPA-Q

Section 21 – Whitemans Creek Tier 3 Water Budget and Risk Assessment:

- A new section that describes the Tier 3 Water Budget and Risk Assessment completed for the municipal drinking water systems of the Whitemans Creek Subwatershed, including the delineation of a new WHPA-Q

Updates to the Source Protection Plan

The Halton Region section of the Grand River Source Protection Plan was amended as follows:

- Minor revision to Implementation Timing and Transition policy
- Local threat: The Conveyance of Oil by way of Underground Pipelines changed to Prescribed Drinking Water Threat #22: The Establishment and Operation of a Liquid

Hydrocarbon Pipeline

- Prescribed Drinking Water Threats short form names amended to reflect 2017 Tables of Drinking Water Threats

Section 17, 19 and 21 of the assessment report are completely new sections but have not been highlighted. All S.34 bundled Draft Updated Grand River Assessment Report and Source Protection Plan sections listed above are available on the December 6, 2018 eScribe meeting site.

Prepared by:



Ilona Feldmann
Source Protection Program Assistant

Approved by:



Martin Keller, M. Sc.
Source Protection Program Manager