



**Centre Wellington Scoped Tier 3 Water Budget and
Local Area Risk Assessment Study
Community Liaison Group Meeting #2**

Thursday, September 14, 2017 | 6:30 – 9:00 pm
Elora Community Centre
29 David Street West, Elora

Meeting Summary

Welcome

Martin Keller, Lake Erie Source Protection Region Program Manager, Grand River Conservation Authority (GRCA), welcomed Community Liaison Group (CLG) members and thanked them for attending the meeting. He recalled the benefit and value of the discussions from the CLG meeting in November 2016 to the project team. He explained that a great deal of work has been completed since the last meeting to prepare the draft Characterization Report and that he looked forward to receiving CLG comments.

Agenda Review, Introductions and Roles

Ms. Susan Hall, introduced herself as the neutral facilitator from Lura Consulting and also welcomed CLG members to the meeting. Ms. Hall led a round of introductions and reviewed the agenda. She explained that the purpose of the meeting was to present and discuss the results of the draft Characterization Report, as well as review the overall study objectives and process.

Ms. Hall provided a refresh of the CLG Terms of Reference, highlighting the CLG's role to offer feedback and observations within the scope of the Tier 3 Study process, and the project team roles. She welcomed members of the public as observers.

The meeting agenda is attached as Appendix A, while a list of the CLG and project team attendees is included as Appendix B. The CLG Terms of Reference is available on the project [website](#).

Presentations

Two overview presentations were given to orient CLG members with updates regarding the Township of Centre Wellington's Water Supply Master Plan and the draft Characterization Report.

(1) Long-term Water Supply Master Plan and Growth Management Strategy Update

Colin Baker, Township of Centre Wellington

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Mr. Baker explained that the purpose of the Water Supply Master Plan is to identify and refine additional sources of water in the context of provincial growth targets to the year 2041. He also explained that the master plan will be developed following the provincial Class Environmental Assessment process to outline future water supply alternatives, a preferred water supply strategy with timelines, and recommendations for implementation. Mr. Baker noted the master planning process will include technical work focusing on population and water demand projections and water supply capacity, incorporating modeling completed through the Tier 3 Water Budget, as well as opportunities for public consultation and engagement.

(2) Physical Characterization Report Overview

Patricia Meyer, Senior Hydrogeologist, Matrix Solutions Inc.

Physical Characterization Report

Ms. Meyer began by reviewing the Tier 3 Study objectives, which include: identifying whether Centre Wellington supply wells can meet current and future municipal demands, and estimating the impact of future demand from municipal groundwater pumping on other water users. She also reviewed the four key project components:

1. Data collection and review;
2. Characterization/conceptualization;
3. Groundwater flow model development/calibration; and
4. Risk assessment.

She noted that collecting data and characterizing the physical features of a groundwater system are the foundational steps to building the model that will be used to assess water supplies and identify the threats to the long-term water supplies. Ms. Meyer subsequently presented the process to develop the draft Characterization Report as well as the results, covering:

- The study area;
- Background review and data collection;
- Physical setting: ground surface topography;
- Surface water and ecological features;
- Geology;
- Groundwater flow;
- Water demands (municipal and non-municipal); and
- Water level data.

The key take aways from the draft Characterization Report, as presented by Ms. Meyer, are:

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- Revised overburden and bedrock geologic conceptual model developed in collaboration with staff at the Ontario Geological Survey, through the incorporation of all available high quality field data;
- Enhanced understanding of the regional and local geologic and hydrostratigraphic conditions within the study area; and
- Estimation of municipal and non-municipal consumptive water demands across the study area through use of the Province's Permit to Take Water and Water Taking Reporting System datasets, and other data sources.

A combined copy of the presentations is available on the Centre Wellington Scoped Tier 3 [web page](#) .

Facilitated Discussion

Questions of Clarification

A summary of the questions of clarification is provided below. Questions are noted with **Q**, responses are noted by **A**, and comments are noted by **C**. Responses with text in italics include further clarification provided by the project team after the meeting. Please note this is not a verbatim summary.

Q. Why does the study area include the Marsville Well if the water from that well runs toward Guelph and not Fergus?

A. *The study area is large to ensure the area where we are making predictions in our future modelling efforts are not influenced by the boundary conditions that may be applied around the perimeter of the model. Previous modelling efforts identified the water quality capture zone for Well F5 extended towards the Marsville area, so we wanted to ensure the model included this area.*

Q. How are gravel pits taken into account?

A. *Any gravel pit that is extracting sand and gravel above the water table will not be considered in the study; however, any gravel pit that is extracting sand and gravel from below the water table, and has a permit to take water (PTTW) will be considered in the study. We are considering them from a water use perspective and evaluating how much water they are taking from the groundwater flow system.*

Q. The poultry farmer should be able to tell you exactly how much water they are taking as they would have those records under Hazard Analysis and Critical Control Point (HACCP); the estimate seems too low.

A. *Staff from the Ministry of the Environment and Climate Change (MOECC) Guelph District Office contacted that particular poultry farmer to request his water demand information. The farmer provided data to the MOECC, which they believe was from the flow meters in the barns and this information was then passed on to the consultant team and entered into the report.*

C. I think it is low. We need to consider seasonal impacts on the water supply.

A. *The study examines water takings on an average annual basis as well as a seasonal basis. We will be running drought simulations where we assess the various water takings on a seasonal basis, and climate change scenarios are forecasted to be run later in the study.*

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Q. Where does the recharge to the Gasport formation come from?

A. *The study will evaluate how groundwater flows from the areas to the north towards and into the Guelph, Goat Island and Gasport Formations within the study area. To identify the exact location requires us to build a groundwater flow model of the area. Identifying the recharge area of the Gasport is not yet known; we are still early in the study process and working to answer questions like these.*

Q. Does this report determine future demand?

A. *This report focused on establishing the existing water demands across the study area; future demands (i.e., the water demands for municipal wells in 2041) will be developed in consultation with the Township of Centre Wellington in the coming months, and documented under the Water Supply Master Plan*

A. *We are characterizing the existing conditions within the study area using all available current and historic water level data. This information is used to build the model which will be applied later in the study to answer the “what if” questions about how the groundwater flow system will respond to future stresses like future municipal pumping rates, or seasonal drought conditions. We need to build the model (i.e., the tool) to answer questions about the future conditions.*

Q. Are private wells included?

A. *The amount of water used for domestic water supply in the area around Fergus and Elora was estimated and will be taken into consideration in the study; however, comments on impacts on individual wells is not part of the study. There may be lessons learned that come out of the study (e.g., maps of predicted draw down in the future) that individuals could use to inform themselves.*

Facilitated Discussion #1 – Physical Characterization Report

CLG members were given the opportunity to identify which sections of the draft Characterization Report they wished to focus on as part of this facilitated discussion. A summary of the discussion is provided below and organized by the selected report section. Questions are noted with **Q**, responses are noted by **A**, and comments are noted by **C**. Please note this is not a verbatim summary.

3.1 Municipal Supply Systems

Q. Why is Well F2 included as part of the water supply system given that it has not been used since 2003 (due to surface water getting in) and may not be used again? Why is it considered a municipal supply well? My concern is that it skews perceptions about the available supply of water.

A. *The Township of Centre Wellington has a PTTW issued by the MOECC for ongoing water taking from the well. Well F2 is listed on the permit even though it is currently offline. It is being included in the Scoped Tier Three Assessment because it is a potential municipal water supply well that could be used in the future if treatment were put in place. There are practical reasons why the well is currently not being used; however, the Water Supply Master Plan will assess all wells, including Well F2, in developing long term potential water supply solutions for the Township, and they may, or may not, recommend that the well should be brought back online as a water supply well. The Township wishes to include all potential wells within the study area as options, and not close any doors.*

A. Matrix Solutions Inc. is working closely with the Township and will evaluate the wells that are identified in the Water Supply Master Plan as options.

A. It is not unusual for a Tier 3 Study to assess wells that are currently offline, but could be brought online in the future to help the municipality meet their future demands. As long as there's a permit for the well, the well is included in the Tier Three Study.

Q. Page three of the report states that Centre Wellington pumps 36% of its permitted rate. This implies that 64% is left, which is not correct. That 36% looks at average, but how many days are

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actually average? What are the highs and lows? If you look at high-demand days then only 37% of your available water is left. It would be helpful for the general reader to clarify how much water capacity is actually left.

A. *The intent of this study is to determine what you are asking – we want to know how much water can the wells pump over time and will that volume of water impact other water uses such as streams and creeks. It is a cumulative effect study that aims to find out what happens if all the municipal wells and other permitted wells are pumped at a high rate (i.e., what is the impact on other users, future demand, etc.) The line in the executive summary that discusses the permitted rates will be updated to clarify and avoid future misinterpretation of the permitted rates.*

C. Are averages being used to build the model which will then be used to calculate extremes?

A. *The model will look at water demands on an average annual basis as well as a monthly basis when we evaluate seasonal fluctuations. Looking forward, we will also anticipate how much the Township is expected to use on an annual basis. We will also look at peak demands on a monthly basis. For example, in the summer the monthly pumping rates are usually higher and these higher rates will be applied in the model as part of a long-term drought assessment.*

4.2.3. Pathogens and Viruses

C. The report references a study that documents the presence of pathogens and viruses in local water supplies until 2012.

A. The report cites an academic paper by Amy Allen and summarizes the results of her study for information purposes only.

A. The Township received the report in the summer; it is not clear what the study's conclusions mean for the Township. The Township forwarded the study to the MOECC for clarification and will share more information when it is available.

Following the meeting a response to the CLG was provided by C. Baker as included in Appendix C.

Q. Is there not usually a monthly or weekly report about local water quality?

A. Yes, the Township samples and monitors local supplies continuously. The study has raised questions for the Township which is why we referred it to the Safe Drinking Water Branch at the MOECC.

C. Pathogens are the reason that drinking water in Ontario is monitored extensively.

A. *No immediate health issue was identified. The results were reported on raw water and the Township treats their water to remove viruses and pathogens. If there was an immediate health issue it would be dealt with. We want MOECC's clarification about the results of the academic paper.*

C. Water is being drawn from local wells on a large scale; it's an issue and should be addressed one way or another.

A. Please note that the Tier Three study focuses on evaluating the long term water quantity of the Centre Wellington area. The Characterization Report will be updated to note that the Allen paper examined raw water, which is a concern primarily for private wells.

C. Raw water is tested on a continual basis (i.e., every two weeks). I rely on a private well; nothing has been detected in my system or water.

Q. Does that mean the data here is wrong? Should it be deleted?

A. Pathogens and viruses are different from E. coli and total coliforms, which are tested on an ongoing basis. The project team will revisit this section of the report to clarify.

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Q. This community is unusual because there are so many private wells within the urban boundary (i.e., approximately 1 in 8 households are on a private well). That is an awful lot of raw water being taken within the urban boundary.

A. Section 3.3.6.1. of the report discusses domestic water takings in the Township of Centre Wellington. We looked at the number of domestic water supply wells within 1 km of a municipal well including the Salem area. We calculated the total number of wells in that area, and used an estimated pumping rate of 251 L/day/house. That equals 230m³ per day and Salem had another 70m³. This represents about 2% of the total water permitted use within the study area.

Q. Is there any figure that estimates the amount of water that comes from the deep aquifer versus shallow sources?

A. No, that has not been determined yet.

Q. Will the percentage of water coming from deep aquifers increase over time to 2041?

A. We have not built the model yet to determine the connections between the various hydrostratigraphic units.

Q. Have you determined where the water from the Gasport formation is coming from?

A. We have laid the foundations for the development of the groundwater flow model. We will be looking at the interactions between shallow and deep aquifer using the model as part of the next phase of work.

Q. Where is the water coming from that's in the Gasport formation?

A. Our initial interpretation is that it is coming from the north.

Q. Will the Township need to protect that area? I'm trying to establish if that water source is going to become more important.

A. *Water that is pumped from the municipal wells comes from the Guelph Formation, Goat Island as well as the Gasport Formation. Water flows through fractures in both the shallow and deep aquifers, not just the base of the municipal open hole well in the Gasport formation. Together with Ontario Geological Survey staff, we have characterized the extent and spatial distribution of the Gasport, and the overlying and underlying bedrock formations. We have summarized and compiled the aquifer testing data across the area and we are working to figure out how these pieces fit together.*

Q. I understand you are working with the Ontario Ministry of Agriculture, Food and Rural Affairs (OMAFRA) to determine water takings for agricultural use. The pie graph presented shows 2% from agriculture. Can you speak to this?

A. That value was from a large poultry operation, which will be refined as more livestock data becomes available. It also includes water takings for crop and irrigation that have PTTWs.

C. I imagine that 2% will increase when you take livestock into consideration.

A. Yes.

Q. We have a dairy farm and often hear about how much water agriculture uses. How did you quantify the consumptive versus non-consumptive numbers, especially how water reuse/recycling is factored?

A. That slide was included because we want feedback like yours. We're open to hearing how water demand should be or could be evaluated within the study area.

A. Is water use/recycling part of your nutrient management plan?

C. No. We do not have water meters. We know average consumption by animal, but that gets reused and applied back into the land so how do you quantify that? OMAFRA may have some numbers but each farm is different. There is no reporting back to OMAFRA.

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A. *If water was taken from the shallow overburden and returned back to the land, that taking would be non-consumptive for that land area. However, as groundwater moves so slowly it takes significant time for water to get back into the bedrock flow system. We are trying to err on the conservative side with our estimates so may assume water use is fully consumptive.*

A. Township staff would be happy to talk about these demands in more detail. The Township is still doing analysis on these agricultural water demands; it's a work in progress so feedback is welcome.

Q. The report timeline references 2031, but significant growth will occur between 2031 and 2041.

A. That is a typo and should be 2041. The project team will address that typo.

Q. What is the timeline for the Water Supply Master Plan? Should we looking beyond 2041?

A. The timeline is to 2041. We do not have employment or population projections beyond 2041 from the Province; we would be guessing.

C. Water plans for the City of Guelph or City of Waterloo have longer timelines (e.g., 35 years).

A. The Township of Centre Wellington staff cannot speak to those plans. They could have longer timelines if they are for water or wastewater treatment plants.

Facilitated Discussion #2 – Tier 3 Water Budget Process Overall

CLG members were given the opportunity to discuss or clarify the Tier 3 Process overall. Ms. Meyer provided a brief overview of the process as no questions were raised.

The next step in the study process will be to build the model and begin simulating water levels and discharges. We still have time to refine or add to the foundation of the model. The focus will be on Centre Wellington wells and the areas around those wells. All of this will be documented in the next report.

Q. When does the public get to comment? Are comments to be directed through the CLG?

A. You can speak to members of the CLG who will bring comments forward to us, or you can speak to members of the Source Protection Committee once the study is presented to them. There will also be an opportunity for formal public consultation before the Tier 3 Study is submitted to the MOECC.

Next Steps

Mr. Keller explained the meeting minutes will be circulated to CLG members for review and posted to the project website in approximately two weeks. He clarified that CLG members may provide separate comments on the draft Characterization Report until October 5, 2017. Mr. Keller also informed CLG members the project team will begin building the model and calibrating it to assess future water demand, as well as answer other questions posed by the group. The model and results will be assessed by the peer review team, and subsequently presented at the next CLG meeting, likely in spring 2018.

Ms. Hall thanked CLG members for contributing to the discussion and adjourned the meeting.

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Appendix A – Agenda

Centre Wellington Scoped Tier 3 Water Budget and Local Area Risk Assessment Study

Community Liaison Group Meeting #2

Thursday, September 14, 2017

6:30 – 9:00 pm

Elora Community Centre

29 David Street, Elora

Meeting Purpose:

- 1) Provide a refresh of the study process, scope and key participants;
- 2) Review and receive feedback on the Physical Characterization Report; and
- 3) Address any questions about the process overall.

AGENDA

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|---------|--|
| 6:30 pm | Welcome
Martin Keller, Project Team & CLG Point of Contact |
| 6:40 pm | Agenda Review, Introductions and Roles
Susan Hall, Facilitator, Lura Consulting |
| 6:50 pm | Presentations:
Long-term Water Supply Master Plan and Growth Management Strategy Update
Colin Baker, Township of Centre Wellington

Physical Characterization Report Overview
Martin Keller, Lake Erie Region Source Protection Program Manager
Patricia Meyer, Matrix Solutions Inc.

Questions of Clarification |
| 7:35 pm | Discussion #1 – Physical Characterization Report |
| 8:35 pm | Discussion #2 – Tier 3 Water Budget Process Overall |
| 8:50 pm | Wrap up and Next CLG Meeting |
| 9:00 pm | Adjourn |

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Appendix B – List of Attendees

A. Community Liaison Group Members

Member	Organization
Andreanne Simard	Nestlé Waters Canada
Chad Hurell	Fergus Golf Club
Colin Richardson	Public Representative
Dave Blacklock	Wellington Water Watchers
David Parker	Public Representative
Derek Graham	Chamber of Commerce
Don Vallery	Highland Pines Campground
Eric Clarkson	Murray Group
Jan Beveridge	Save Our Water
Janet Harrop	Wellington Federation of Agriculture

B. Project Team Members

Core Team	Support Team	Organization
Martin Keller Sonja Strynatka		Grand River Conservation Authority
Patricia Meyer	Jeff Melchin	Matrix Solutions Inc.
Kyle Davis	Emily Vandermeulen	Wellington Source Water Protection
Colin Baker		Township of Centre Wellington
Beth Forrest		Ministry of the Environment and Climate Change
Susan Hall	Lily D'Souza	Lura Consulting

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Appendix C – Correspondence

From: Colin Baker [mailto:CBaker@centrewellington.ca]

Sent: Wednesday, September 27, 2017 4:57 PM

To: Sonja Strynatka; Andreeanne Simard; Chad Hurrell; Colin Richardson; Dave Blacklock; David Parker; Derek Graham; Don Vallery; Eric Clarkson; Fred Gordon; Jan Beveridge; Janet Harrop; Jim Wilton; Larry McGratton; Lynne Bard; Pete Graham; Richard Moccia; Tom Nudds; Vic Shantora

Cc: Martin Keller; Ilona Feldmann; Emily Hayman; Kyle Davis; Andrew Goldie; Patricia Meyer; pmartin@matrix-solutions.com; Jeffrey Melchin (jmelchin@matrix-solutions.com); Susan Hall (shall@lura.ca); Lily-Ann D'Souza (ldsouza@lura.ca); Ray Blackport (blackport_hydrogeology@rogers.com); Lisa Stocco; Kendra Martin

Subject: RE: Centre Wellington Scoped Tier 3 Water Budget Study - Physical Characterization Report

Good afternoon Scoped Tier 3 Water Budget Community Liaison Group Members,

Further to the September 14, 2017 discussion at the Scoped Tier 3 Water Budget CLG meeting, I promised to follow-up on the Allen et al. Masters thesis, Ministry of the Environment and Climate Change response, and the effectiveness Township's ability to remove pathogens and viruses at each Township water supply well through the chlorine disinfection process. I offer the following response:

All of the groundwater pumped from the Township's water supply wells and the water in the municipal distribution system are treated with chlorine in accordance with Provincial legislation and regulations. Chlorine is the recognized treatment in Ontario for bacteria, viruses and pathogens. The Allen et al. 2017 paper identified detections of viruses in the raw untreated water from certain Township municipal wells. Township of Centre Wellington staff have reviewed the results of the Allen et al. 2017 paper and have consulted with the Ontario Ministry of the Environment and Climate Change's Safe Drinking Water Branch (MOECC). The MOECC's Safe Drinking Water Branch is the provincial regulator for municipal drinking water systems.

As per the Township's current MOECC drinking water license and Provincial regulations, the Township must meet minimum chlorine contact times and minimum free chlorine residual to meet standard treatment of 2 log inactivation or 99% removal for viruses. Following MOECC staff guidance regarding the Allen et al. 2017 results, Township staff reviewed and confirmed the minimum free chlorine residual required for enhanced treatment of 4 log inactivation or 99.99% removal for viruses. 4 log virus removal is an increased level of virus removal, over and above the current standard provincial requirement of 2 log removal. The Township's drinking water disinfection program meets the current MOECC standard for treatment (2 log inactivation or 99% removal) of viruses, and based on our calculations, it also already meets the MOECC's preliminary guidance for the enhanced treatment (4 log inactivation or 99.99% removal) that may be required in response to the findings of the Allen et al. 2017 paper.

It is very important to emphasize that the levels of chlorine used to treat Centre Wellington's drinking water are continuously monitored to ensure both a safe drinking water supply and compliance with Provincial Drinking Water Regulations. The Township's automated alarm level is 0.7 milligrams per litre

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(mg/L) for chlorine residual. Any level of chlorine residual below the 0.7 mg/L operating level results in the municipal well being shut down automatically until the chlorine residual is higher than the threshold. This means that untreated or inadequately treated water does not go to the municipal distribution system. This alarm level is termed a “set point” and has been in place for many years.

In summary, the Township’s chlorine disinfection treatment meets both the current treatment regulations and enhanced treatment guidance for viruses as recommended by the MOECC. The Township will continue to work closely with the MOECC to ensure the safety of Centre Wellington’s municipal water.

Should you have any questions on this issue, please feel free to contact me.

Regards,
Colin

Colin Baker, P.Eng. | Managing Director of Infrastructure Services

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