



TRANSPORTATION AND  
ENVIRONMENTAL SERVICES  
Water Services

150 Frederick Street  
Kitchener ON Canada N2G 4J3  
Telephone: (519) 575-4426  
Fax: (519) 575-4452  
www.region.waterloo.on.ca

**March 6, 2012**  
**File #:E03-20/4015-40**

Louissette Lanteigne  
700 Star Flower Avenue  
Waterloo, Ontario, N2V 2L2

Dear Ms. Lanteigne:

**Re: Waterloo North Water Supply EA Part II Order Request**

I thank you for taking the time to meet with us last week to discuss the Waterloo North Water Supply EA. I feel that we made a lot of progress during the meeting and found quite a bit of common ground.

You asked at the meeting about how to get a copy of our Groundwater Monitoring Report. Since the meeting I have been told that we don't typically put it on our website due to its size. You can obtain the information for your area by contacting Rachel Vaillancourt (Hydrogeologist) at 519-575-4540.

I am attaching two documents for your information. The first is a summary of our meeting of February 29<sup>th</sup> where we discussed your Part II Order request. The second is our official response to the questions outlined in the Part II Order dated February 23<sup>rd</sup>.

Yours truly,

A handwritten signature in black ink, appearing to read "Amy Domaratzki", with a long horizontal line extending to the right.

Amy Domaratzki  
Senior Hydrogeologist

**Regional Municipality of Waterloo  
Water Services**

**Waterloo North Water Supply EA  
Part II Order Request**

**MEETING NOTES**

DATE: February 29, 2012

TIME: 1pm

PLACE: 150 Frederick Street, Room 718

ATTENDEES: Louissette Lanteigne, requestor  
Amy Domaratzki, Region of Waterloo  
Jorge Cavalcante, Region of Waterloo  
John Petrie, Golder Associates

---

Jorge Cavalcante opened the meeting by explaining the water supply planning process which starts with a Region-wide look at growth and demand in a Master Plan. Following the Master Plan, individual projects are further detailed under an Environmental Assessment (EA) Study (the stage we are currently completing). After the EA approval, projects proceed to detailed design, permit acquisition, and construction.

Ms. Lanteigne's concerns fall into three categories as follows:

1. Fish and rare species habitats within study area;
2. Proven need for the new well; and
3. Impact of future development on current predictions.

Items 1 and 3 are related to the hydrogeology and the study methods. Item 2 is related to growth and demand predictions. Items 1 and 3 were dealt with first.

Ms. Lanteigne lives in the area and has done her own research on the hydrogeology and ecology of the Waterloo moraine. She has worked with Stan Denhoed (independent consultant) and Andy Bajc (of the Ontario Geologic Survey). Ms. Lanteigne understands that the shallow and deep systems are connected through windows in the aquitard. She also stressed that data from developers is unreliable.

Amy Domaratzki and John Petrie presented the current understanding of the hydrogeology of the Waterloo moraine based on previous independent studies such as that of Andy Bajc, extensive test drilling and monitoring well installation to depths of more than 75 m, and the 40 day pumping test. A comprehensive monitoring program

was set up for this test that included the collection of continuous water level records at more than 100 monitoring wells screened in shallow, intermediate and deep aquifers, private water supply wells and also stream flows in Laurel Creek. It was stressed that no data from 3<sup>rd</sup> parties, such as developers, were relied upon. The conclusion that pumping in the deep aquifer does not impact the shallow aquifer in the area of Ms. Lanteigne's concern was explained and the confirmatory monitoring plan outlined. The difference in test results when pumping from an intermediate depth aquifer in Erbsville vs. pumping from a deep aquifer at the Laurel tank were clarified by reviewing hydrographs developed during the testing program (contained in the Hydrogeology Report).

Jorge Cavalcante discussed the recent trend of lower water demand in the Region due to water efficiency measures (industrial and residential), increased maintenance of water pipes to reduce leaking, and the loss of some large industry. He explained the Water Supply Master Plan is being updated to reflect the new demand numbers and that the pumping rate selection and the timing of implementation in Waterloo North will be dependent on the recommendations in this Plan. This Master Plan is expected to be completed in the late Fall of 2012.

At the conclusion of the meeting, Amy Domaratzki agreed to confirm the following in writing with Ms. Lanteigne:

1. The detailed design of the Waterloo North treatment plant will not commence until the completion of the Water Supply Master Plan Update.
2. The Region and its consultants did not rely on any developer data or reporting to support the conclusions and recommendations in the EA.
3. The Region and its consultants did not use predictive computer models to come to conclusions. All data is from field observations during the long term pumping test.
4. The Region will rely on an on-going monitoring plan to confirm the accuracy of the data and the reliability of the conclusions made in this study.

TRANSCRIPT OF PART II ORDER REQUEST FROM MS. LANTEIGNE FEBRUARY 24, 2012		REGION RESPONSE
<b><i>Fish, rare species &amp; habitats within projected drawdown area.</i></b>		
1a	How will vernal ponds and fish habitats be reasonably protected from adverse impacts of drawdown?	Surface water features that rely on groundwater inflow will be protected by the thick clay till which separates the deep pumping aquifer from the shallow aquifer system. This will be confirmed through the monitoring program outlined in Table 7 of the Hydrogeology Report.
1b	Which ponds will be monitored and when?	Shallow and deep groundwater levels will be monitored on an ongoing basis. Changes in shallow water levels are a predictor of potential surface water impacts.
1c	Will creek studies be done at the optimal time to view the fish populations?	Refer to answer to question 1b, above.
1d	What is the frequency for monitoring and for how many years will it continue?	Continuous groundwater levels will be collected electronically with semi annual manual measurements used as confirmation. The monitoring program will be modified as required and will continue for the life of the pumping wells. Details are presented on Table 7 of the Hydrogeology report.
1e	There are numerous reports, emails, EIS reports, OMB data citing the fact that rare species are in the area of study yet AECOM appears to not acknowledge this information. Why is that?	The discussion of species at risk was focussed on the area in which shallow water table impacts from the Laurel Tank well are expected (as presented on Figure 31 of the Hydrogeology report). There is no interference between the deeper and lower aquifer in other areas.
1f	Will there be species recovery strategies implemented in accordance with the Species at Risk Act and the Ontario Endangered Species Act?	By not interfering with shallow groundwater levels in sensitive areas, the proposed system has no impact on wildlife. This will be confirmed by ongoing monitoring.
1g	Are permits being sought using the Endangered Species Action section 17 2c)?	Refer to answer to question 1f, above.
1h	Who is responsible for compliance to assure protocols to protect rare species are being properly implemented?	Refer to answer to question 1f, above.
1i	Will the public have access to the monitoring data without having to use Freedom of Information? If so, how do we access the information?	A biannual report containing the data will be placed on the Region's (Water Services) website.
1j	What kinds of tests will be conducted on the creeks and ponds and will it include benthic data, amphibian and mollusk monitoring?	Potential changes in groundwater discharge to surface water will be detected through the monitoring program.
1k	What remediation will take place should water volumes drop?	Potential changes in water levels in the shallow system related to pumping will be monitored. Should the Region conclude that pumping in the deep system is impacting the shallow, the pumping rate at W5A and/or the Tank Well will be reviewed accordingly.
1l	Who is responsible for doing the studies?	The Region.
1m	How much money is allocated for the monitoring programs and who pays for it?	The monitoring program will be assimilated in to the existing Groundwater Monitoring Program which is funded by development

		charges and water rates.
	<b><i>Do we need this well?</i></b>	
2a	Why are we proceeding with the approval process on a new well prior to gathering the most recent data regarding Regional water use and supply?	The new well will not be approved under the EA process. The Class EA process is a planning tool to identify the feasibility of the proposed project. The implementation schedule and pumping rate for the Laurel Tank well will be recommended in the ongoing update of the Water Supply Master Plan. Final approvals are only obtained during the detailed design and implementation stages of the project.
2b	Can we defer final decision regarding this well until after the completion of the Water Management Strategy update? If no, please explain the reason.	Refer to answer to question 2a, above.
2c	How much more money will taxpayers have to pay to cover the running costs of this new facility and will user fees cover those costs? If not, how much of a deficit annually are we planning to create by opening this well	Operating costs are covered by water rates, not property taxes. Capital and operating costs are based on a long term forecast, and no deficits are envisioned.
2d	Is it reasonable for us to establish a debt based venture at a time when the province is asking municipalities to save money?	This is not a debt-based venture. Construction costs are covered by development charges and water rates, and have already been accounted for in the Region's current Capital Forecast and Program.
2e	How much water have corporations in Waterloo Region saved by implementing water efficiency strategies over the last 5 years?	The Region does not collect statistics on every business in the Region. The companies who are enrolled in the commercial, industrial, institutional water efficiency program saved approximately 415 m <sup>3</sup> of water per day over the period of 2007 to 2010.
2f	How much water surplus does the Region have with the closure of Schneider's in Kitchener and Ayr, Frame, BF Goodrich and MTD products?	The Region does not collect statistics on the water use of individual businesses.
2g	Have citizen, corporate efforts and the closure of manufacturers resulted in enough water savings to offset the need for this new well?	Over the period of 2007 to 2010, Water conservation efforts are estimated to have saved 6,900 m <sup>3</sup> per day. Currently, these conservation efforts and declining industrial use are offsetting population growth. The Water Supply Master Plan Update, currently in progress, will analyze these trends and confirm the implementation schedule and pumping rate for the Waterloo North project.
2h	Isn't it cheaper to simply invest in improvements for managing municipal water resources with a strong focus on conservation than it is to build new wells?	The Region of Waterloo is a leader in water conservation efforts. The Water Supply Master Plan Update is evaluating the impact of these initiatives and other water use trends. The Update will optimize water supply and the implementation of future Capital Projects.
2i	Do we need this well to keep taps running?	The Water Supply Master Plan Update will recommend the optimum schedule for implementation of future water supply capital

		projects.
2j	If we don't need the water, why build the well?	The Water Supply Master Plan Update will optimize water supply and the implementation of future Capital Projects. One alternative being evaluated is to make Waterloo more self-sufficient and by reducing the costlier practice of pumping water from distant sources in Kitchener.
<b><i>The weakness of predicting post development impacts using pres-development data.</i></b>		
3a	Are salt mitigation strategies currently working to keep road salt off Wideman Road and sensitive recharge areas?	The Region is working with local stakeholders to reduce salt application on paved areas through the "Smart about Salt" program. Details specific to Wideman Road can be obtained from the City of Waterloo.
3b	Does the current "predicted" impacts regarding the Laurel Trunk Well have regard that salt mitigation strategies might not actually work and that we might be facing much higher chloride levels than previously predicted?	The Laurel Tank Well is located in the deep aquifer and is protected from surface impacts by a thick layer of clay till. Salt management in the area of influence of the well will be addressed under the Clean Water Act programs currently being developed.
3c	What are the projected chloride loadings for all the subdivisions still under construction within the drawdown area and how is this predicted to impact the water quality heading to the well?	Refer to answer to question 3b, above.
3d	Is it reasonable to predict salt impacts in the absence of actual post development data?	Development related salt impacts are not in the scope of this study. The Laurel Tank Well is located in the deep aquifer and is protected from surface impacts by a thick layer of clay till. Testing indicated that pumping in the deep aquifer would have no effect on shallow surface water systems and recharge. Long term monitoring as outlined in Table 7 of the Hydrogeology report will confirm this.
3e	What happens if chloride levels heading to the new well, exceed MOE recommended levels? Would we have to find a new well again?	Chlorides are considered an aesthetic parameter. If a production well were to exceed any health-based Drinking Water Standard, the well would require treatment or replacement. The Laurel Tank Well was specifically selected because it is located in the deep aquifer and is protected from surface impacts by a thick layer of clay till.
3f	Are roof infiltrations systems currently an effective way to assure that there is no net loss to water resources or water quality?	This question does not relate to the current EA.
3g	Are the current data projections relying on the functionality of roof runoff water volumes as part of the overall water budget predictions?	This study did not include projections of future water budgets. It relied strictly on observations from the long-term pumping test during which steady-state conditions were reached.
3h	Is it reasonable for developers and municipalities to use impervious surface limits to justify building over top primary recharge area when they have no legal jurisdictional authority over such matters?	This question does not relate to the current EA.
3i	Do smaller driveways work to reduce the number	This question does not relate to the current

	of cars in a neighbourhood? Are they reducing or increasing risk to water quality?	EA.
3j	If a private wells or farmland goes dry as a result of the draw down from the Laurel Tank, who is liable?	Once a Permit to Take Water is issued, the Region as the well owner is responsible for ensuring that all current users of water are not unduly impacted by the new water taking.
3k	I live over top primary recharge in Columbia Forest and and experts have told me my home is literally floating over top the water table. Should drawdown deplete the pressure under our homes and they start to shift or we get sinkholes, what measure are in place to address and mitigate harm to person or property? Can we even monitor for such events or is it simply a matter of wait and see?	<p>Surface structures such as houses and roads cannot “float” on groundwater, an aquifer or the water table. They are situated on solid soil and rock. The water in the aquifer is contained in the spaces between the soil grains or in rock fractures. Your house could exist in the recharge area but in no way floats.</p> <p>The soils in southern Ontario are over consolidated which means that when water pressure diminishes the soil particles around the water do not shift.</p> <p>Our long term testing does not indicate any impact to shallow water table water levels. The ongoing monitoring program outlined in Table 7 of the Hydrogeology report will ensure this is the case.</p>
3l	Who's liable should homes face structural issues as a result of the drawdown? Will we be forced to live in unsafe structures or will the city buy our houses back?	Our long term testing does not indicate any impact to shallow water table water levels. The ongoing monitoring program outlined in Table 7 of the Hydrogeology report will ensure this is the case.
3m	Can we wait until development in the area is fully completed until we assess the risks and give approval for this well system? If not, please explain why it's reasonable to not wait until we have that data.	<p>Recharge of the deeper aquifer comes from an area much larger than the development proposed on the west side of Waterloo. The impact of this development in the larger recharge area is expected to be low.</p> <p>Any potential long term change in shallow and deep aquifer behaviour will be identified in the monitoring program outlined in Table 7 of the Hydrogeology Report.</p>