Submission
from

WINTER RIVER - TRACADIE BAY WATERSHED ASSOCIATION

Date: January 15, 2016

This document is in addition to the presentation made on November 5, 2015 which focused on Water quantity issues that are somewhat specific to our watershed.

Everyone knows that there are serious problems in the Winter River, but the level of effort to remediate these problems has been sadly low.

We know that when the Brackley well field was established in 1930 that people weren't too worried about environmental flow rates or long term effects of pumping water. However, now that we know better, we must do better. The cumulative effect of 85 years of water extraction within the watershed has created a very bad situation. Reducing extraction to levels that would be considered appropriate in another area will not be enough. To remediate the effects of years of over extraction, the amount of water removed from the area must be drastically reduced, to allow the system to recover sufficiently.

Well known problems

We are happy to see other presenters mentioning the problems in Winter River due to overextraction of water, including the following:

- Darcie Lanthier
- Daryl Guignion
- Don Mazer
- Gary Schneider
- John te Raa
- Teresa Doyle
- Yefang Jiang
- Atlantic Salmon Federation - PEI Regional Council
- Souris and Area Branch of the PEI Wildlife Federation
- Watershed Alliance

However, the City of Charlottetown did not mention Winter River!

Current water extraction permit

Prince Edward Island CANADA

Environment, Energy and Forestry

Environnement, Énergie et Forêts

Île-du-Prince-Édouard CANADA

Environment Division
PO Box 2000, Charlottetown
Prince Edward Island
Canada C1A 7N8

Permit NO: 2007-05

PRINCE EDWARD ISLAND
GROUNDWATER EXTRACTION PERMIT

Division de l'environnement
C.P. 2000, Charlottetown
Île-du-Prince-Édouard
Canada C1A 7N8

In accordance with the authority provided by Section 7, *Environmental Protection Act*, WATER WELL REGULATIONS, permission is granted to:

Name: Charlottetown Water and Sewer Utility
Address: P.O. Box 98, 199 Queen Street, Charlottetown, Prince Edward Island
Postal Code: C1A 7K2

to engage in the extraction of groundwater for the purposes of central water supply servicing from the Coles Creek Well field (PID#283309), at average daily pumping rate not to exceed 1050 imperial gallons per minute.

In addition, as no formal Groundwater Extraction Permit was previously issued for well fields located in the Winter River watershed, also owned and operated by the Charlottetown Water and Sewer Utility, this same permit grants permission to withdraw groundwater rates not to exceed the following average daily pumping rates from:

the Brackley Well field	(PID# 133769)	1000 imperial gallons per minute,
the Union Well field	(PID#192583)	1250imperial gallons per minute, and
the Suffolk Well field	(PID#449611 & 572776)	800 imperial gallons per minute

This permit is, by order of the Minster, effective on October 19, 2010, subject to the full implementation of and compliance with the following terms and conditions:

1. A program for continuous monitoring of stream flow and groundwater levels in the Coles Creek watershed be developed and submitted to this Department prior to commissioning of the well field.
2. That the Charlottetown Water and Sewer utility develop and implement a water conservation plan within a five-year period.
3. That the Charlottetown Water and Sewer utility develop and implement a leak detection program within a five-year period.
4. That within a five year period, the Charlottetown Water and Sewer utility develop a water management plan for the well fields in the Winter River Basin, that will result in a more favorable balance between groundwater extraction rates and the areal extent of the relevant catchment areas for each well field, with the overall aim of reducing the impact of groundwater withdrawals on the stream flow regime of the Winter River.
5. The issuance of this Groundwater Extraction Permit does not relieve The Charlottetown Water and Sewer Utility from any other obligations under Provincial Acts or Regulations.

Date issued: October 19, 2010
Signed:

George Somers
Manager, Drinking Water Protection Section

For too long the province has been complicit in allowing the City of Charlottetown to continue extracting water at an unsustainable rate. The City didn't feel compelled to spend large amounts of money to fix the problem since the province's actions didn't indicate that there was a problem.

The Government of Prince Edward Island permits the City of Charlottetown to extract water from the Winter River Watershed at an unsustainable rate. In the City's permit from the province, effective October 2010, it was stated that as

no previous permit had been in place, the current permit would be based on average daily pumping rates that approximately match the usage in 2009.

A new extraction policy was released in 2013 which is based on reductions in nearby stream flows. Since the City pumps water from the Winter River constantly, computer modelling is required to determine what the stream flow would be naturally. However, a clause in the new provincial water extraction guidelines allows existing permit holders to continue their level of extraction until it is “reasonably practical” to meet the new guidelines. We are also now beyond the five year period which the city had to develop a new water management plan for Winter River, and no plan has been made public.

What is a sustainable level of water extraction?

50% Recharge rule: looks at recharge of the entire watershed, regardless of where in the watershed that the extraction is taking place. Since extraction is focussed toward the headwaters, these areas are highly impacted.

New water extraction policy based on summer stream base flows: First we must determine what a natural base flow would look like in Winter River. Then determine the impact of reduced flows. What does a 15% reduction do? What does a 35% reduction do? As well are there particular locations, perhaps nursery areas or spawning areas where generally lower extraction levels should be permitted.

Qing Li explained to our staff that the new streamflow policy would look at the streamflow as measured at the point on the stream closest to a high capacity well. So Union pumping station and Brackley pumping station together can’t reduce the streamflow at the Union station (for example where Environment Canada monitors) by more that 35% below the summer base flow. Provincial officials were unable to tell us how much extraction would be permitted with this newer policy. The City of Charlottetown would make a proposal of what they want to do, then the province will examine that plan, compare it with their model, and see if they think it will match the new policy. They said that it is not their job to tell the City where to get water and how much, just to evaluate what the City proposes to do.

Moving Forward

We don’t recommend “streamlining” the permitting process too much. We have experienced the effects of permits that were issued many years ago without much thought.

Conservation

Included within the permitting process should be a requirement for efficient use of our shared water “resource.” In an area with abundant water supply, it is still poor policy to permit a large user to have a permit for an exorbitant rate of pumping.

Extraction permits should be for an amount that is consistent with efficient use of water. For irrigation, this would involve using methods that reduce evaporation of water. Municipal applications for water extraction must include data on per capita usage, and water conservation plans or programs. For industrial water users, water extraction applications should include information on water saving infrastructure that has been or will be installed.

Municipalities must not be motivated by short term financial considerations of keeping usage high to keep user fees and thus income higher. As usage decreases, per litre costs will gradually increase to keep the system revenue neutral. In the longer term, however, encouraging conservation is financially smart, as it will mean lower infrastructure costs (rather than developing new wellfields and piping water from longer distances away every few years to keep up with increasing demands).

The City’s 2011 Water Conservation Survey indicated that people were motivated by saving money on their water bills.
(p.15 of “Water Conservation Plan 2014-2020 http://www.city.charlottetown.pe.ca/pdfs2015/WC%20PLAN%202014.pdf)

Municipalities should have wide ranging seasonal water restrictions. Cities like Vancouver for example, alter the level of water restrictions in place frequently, and have recently increased the time frame that “summer conservation” practices are in place.
Reference: http://www.theglobeandmail.com/news/british-columbia/metro-vancouver-to-extend-water-restriction-period/article28069287/

Industries and businesses should also be required to conserve water in summer during the restricted periods. There should be fewer exceptions for lawn watering. For example, if golf courses want to maintain their greens to their desired shade of green during a drought, they might need to find alternate sources of water. A greywater system or large cistern system to keep spring rainwater until it is needed might be effective.

Is Charlottetown losing a lot more water to leaks??

See the following table for water consumption statistics over the past 5 years.

Water Consumption Statistics 2009-2013										
Water Consumption	2009	% of Total	2010	% of Total	2011	% of Total	2012	% of Total	2013	% of Total
Total water extracted	7,069,371		6,703,744		6,477,489		6,905,929		6,707,986	
Metered consumption	4,727,781	66.9	4,044,630	60.3	3,975,621	61.4	3,747,802	54.3	3,647,369	54.4
Unmetered consumption	2,007,986	28.4	1,989,540	29.7	1,970,212	30.4	1,829,268	26.5	1,799,784	26.8
Nonrevenue water	333,604	4.7	669,574	10.0	531,656	8.2	1,328,859	19.2	1,260,833	18.8

Metered consumption: Water sold and recorded in billing records
Unmetered consumption: Estimation of flat-rate customer use (single–family homes)
Total water extracted: The total amount of water extracted from the Winter River watershed
Non-revenue water: Total consumption subtracted from total water extracted

Source: Water conservation plan 2014-2020, page 21 of 55. http://www.city.charlottetown.pe.ca/pdfs2015/WC%20PLAN%202014.pdf

Unmetered water jumped from 300,000 to 1,260,000 in five years. Or maybe flat rate users are increasing their use. The City has only estimated the “unmetered consumption” by multiplying the number of households on flat rate fees by 690 litres per day.

There should be a maximum acceptable limit for leakage within the water system. If almost one fifth of the water extracted from Winter River is indeed lost through leakage, that

Some parts of the water infrastructure actually date back to 1888 - p.20 of 55.

Municipal water metering and pricing

Some people need an incentive to conserve water, beyond the social responsibility to do so. Financial incentives to conserve will promote more conservation. The knowledge of their level of water usage will also help them track their reductions.

Other ideas - seasonal changes in water pricing? Time of day discounts to encourage use during off-peak hours like electrical utilities sometimes do?

How much should municipal water cost?

We did a small comparison of annual water costs in Halifax, Moncton, and Charlottetown, as recommended by an attendant at our Water Act presentation in November. This showed that Charlottetown had the lowest water costs in three of four scenarios, often by a significant amount.

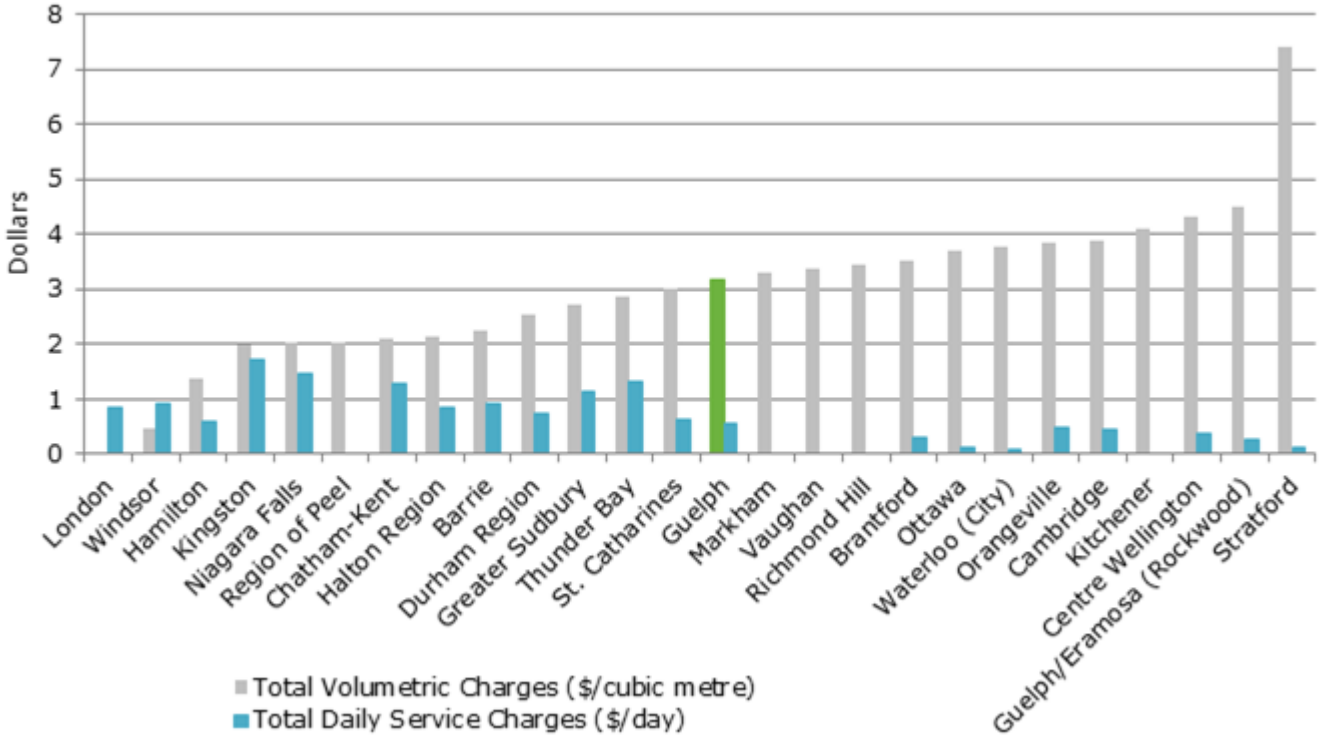
Kitchener Ontario was selected for comparison since much of southern Ontario uses groundwater as a source, and it has a favorable model: no base fee, only a set usage fee for all customers. Which we believe more fairly increases the burden on very high users, and decreases the burden on very low users.

Our example scenarios and annual costs for comparison:

Situation	Ch'town	Halifax	Moncton	Kitchener
One individual using 50L of water per day, such as a senior.	$314	$491	$430	$75
Four individuals each using 185L (total: 740L) per day. Moncton considers this an "average family"	$526	$2938	$941	$1,110
Medium sized business, with 50mm water line using 10,000 L per day.	$5,425	$11,398	$7,858	$15,009
Very large business with 200 mm water line and using 100,000 L per day. Moncton's tiered water usage fees have a third tier which starts at 42,000 Litres per day.	$57,125	$116,714	$46,408	$150,091

References:
http://www.halifax.ca/hrwc/RatesAndFees.php
http://www.moncton.ca/Residents/Water_and_Sewer/Rates.htm
http://www.city.charlottetown.pe.ca/pdfs/Water-and-Sewer-Rates.pdf
http://www.kitchenerutilities.ca/en/ratesoffers/Water---Sewer-Rates.asp

Guelph Ontario was also examined because it too relies on groundwater. The utility helpfully provides a graph for customers to show how their water costs compare to other cities in the southern Ontario region. We think Charlottetown should similarly aim to have water costs more comparable to other areas, rather than charging rock bottom prices.



http://guelph.ca/living/environment/water/water-rates/
In the extensive FAQ section, the graph is found under "Why do other communities have higher or lower water/wastewater rates and how does Guelph compare?"

Planning for future

The city should not be waiting around for possible federal infrastructure funding every time they need to make upgrades to the water utility. User fees should be set at rates that will support the necessary activities of the water and sewer utility, including periodic upgrades and expansion.

Ongoing monitoring

There should be ongoing research to monitor the effects of large volume water extraction on surrounding areas. This research should be conducted by an outside party or agency than the holder of the extraction permit. Self monitoring is not strong enough.

We have been trying to conduct research on water quality issues in our watershed, and it is challenging to find any publicly available information about water quality. Our own efforts to increase our monitoring are limited by the types of funds and grants that we receive, which often do not allow for purchase of capital assets (like water monitoring equipment), or for conducting scientific.

Water fees to Province?

There is also the idea that the province should charging all users, or perhaps just all large volume users (including municipalities), a per litre fee for a water extraction permit - thus larger users have to pay more for their license. The City of Charlottetown would then have to pass this cost onto their users. Perhaps this fee would also be on an increasing block rate design. These fees could be used by the province to fund research and monitoring of our groundwater, or other water related projects.

Rental Units & Water bills

With the increasing number of apartment buildings and condominium developments, it is becoming even more important to address these water users specifically.

We have heard concerns from landlords that they would like to have the option of monthly water bills instead of quarterly (perhaps for an additional small monthly fee). This way tenants would be responsible for water bills, just as most pay their own electricity bills. Quarterly water bills and monthly rental tenants would cause too many headaches. Tenants would be encouraged to conserve more water if they were paying their own bill, compared to having their water costs be incorporated into their rent.

Effects of land use on water

Farming clearly has the greatest impact on water quality on PEI. But since it is a large industry in a financially struggling problem, the environmental impacts often get minimized and/or ignored. However, the actions that financially benefit perhaps 10% of Islanders, have an impact on most of the Islanders who drink water that has measureable levels of pesticides and nitrate levels that were increasing each year until just recently.

Buffer zones

We have seen many times that even when farmers leave 15m buffer zones around waterways, this is not enough. A zone of 15 m at the end of a very long field just can’t cope with the power of water.

We also recently learned that farmers are allowed to request permission to plow the land within their buffer zone and reseed it every few years.

Silt from other sources

Runoff and siltation from construction projects and dirt roads should be addressed more. It is not just farmers who are contributing to the silt levels in our streams. We have started working with Transportation, Infrastructure and Energy regarding public roadways, but there are many small private roads and lanes that need to be addressed.

Crop rotation rules

Need to be enforced and have fewer exclusions. More crops need to be considered as row crops, because they cause similar amounts of erosion as potatoes. Crop rotation rules can protect against excessive siltation and eutrophication of watercourses, but only if

Water Quality

We have held several events where people can bring a sample of the water from their well at home and have it tested for nitrates. Within our watershed, the measured nitrate levels varied considerably, from one sample that was below the detection limit of 0.2 mg/L up to 16 mg/L.

Similarly, we have been monitoring springs and streams for nitrate levels during 2013 through 2015. One spring in a very forested area averaged 1.1 mg/L over a two year period of heavy sampling, but one spring in an area used for potato production averaged 5.9 mg/L in 2013 through 2014. One spring measured over 8 mg/L on two occasions in September 2013. This is getting close to the maximum allowable limit for drinking water, currently set at 10 mg/L.

Conflicting usage

Where the water use behaviours of various water users conflict, how should these be resolved?

When land use practices or policies create financial burdens for others how should that be addressed? For example, if a homeowner's well water is found to have higher than acceptable limits for nitrates, they must install a treatment system or install a new well in an attempt to access an uncontaminated source of water. If a pattern of high levels throughout the area is found, then it is hard to pin the blame on any individual. But if there is a distinct pattern indicating the source of the nitrates, how can that be addressed? Long term and large scale land use planning would be needed to prevent this from happening (subdivisions in agricultural areas lead to more of these conflicts), but how do we address the existing problems?

When farmers in the watershed are told that they are not allowed to irrigate their crops, but must watch city residents watering their manicured lawns, does that seem fair? We are not advocating that farmers should start irrigating extensively in the watershed, but that all sectors should work together to reduce water use.

Stormwater management

Ditch infilling is a bad policy. It reduces the flow of water into the groundwater system, and increases the volume of water that must undergo expensive processing at the sewage treatment plant. Cities elsewhere in Canada are adding grassed swales (basically ditches) back into their stormwater plans. Infilling also costs a lot of money, that could be used by the City of Charlottetown for more positive activities, such as building new wellfields and replacing aging pipelines.

Other cities, such as Halifax, have stormwater fees based on the area of non-porous surface on properties within the city. Thus the owner of a shopping mall which may use quite low amounts drinking water in it's operation (and would have a low water use bill), would need to make a fair contribution to the water and sewer utility to pay for the cost of managing all the stormwater that flows off its extensive parking lot.

Properly sized culvert to accommodate changing weather patterns - if a storm produces so much water that a culvert can't handle the water resulting in roadway flooding and culvert damage, then it is ridiculous to replace that culvert with one of the same size, which has been proven to be ineffective already.

The Role of watershed groups

Community based watershed groups are largely based on committee volunteers who care about their environment and community. However, it is not fair that volunteers have to shoulder so much of the burden for protecting our shared environment.

Funding for watershed groups:
Many groups, including WRTBWA, use funds from the PEI Watershed Management Fund as leverage to get federal funding so that even more work can be accomplished. Multi-year federal funding programs are available, but matching funds need to be confirmed for multiple years as well. This is not possible when provincial funding sources are up in the air from one year to the next.

Legislation in other areas

The following pieces of legislation from other areas may be helpful for the creation of our own Water Act.

Water extracted from one watershed, then used and discharged into another watershed.

- Section 34.6.2 Ontario Water Resources Act, R.S.O. 1990, c. O.40
- Section 6.1 BC Water Protection Act [RSBC 1996] Chapter 484

Environmental flow needs

- Sections 15-17 of BC BILL 18 — 2014 Water Sustainability Act

Effects on the Aquatic environment

- Section 38 Water Act: Revised Statutes of Alberta 2000 Chapter W-3

Water Shortages

- Section 11 of Manitoba C.C.S.M. c. W65 The Water Protection Act
- Section 9 of Fish Protection Act, SBC 1997, c 21

Royalties on water use

- Section 29 of Newfoundland's SNL2002 Chapter W-4.01: Water Resources Act

Protection of water quality

- Section 39 of Newfoundland's SNL2002 Chapter W-4.01: Water Resources Act
- Nova Scotia - Halifax
- Ontario Clean Water Act
- Section 31 and 32 of Drinking Water Protection Act, SBC 2001, c 9
- Section 14.1 of New Brunswick's Chapter C-6.1 Clean Water Act
- Manitoba's C.C.S.M. c. C175: The Conservation Districts Act

Effects of public water use on homeowners

- Section 42 of Newfoundland's SNL2002 Chapter W-4.01: Water Resources Act

Monitoring

- Section 30, 31 & 62 of Newfoundland's SNL2002 Chapter W-4.01: Water Resources Act.

Community participation

- Ontario Clean Water Act

Thank you for reviewing this information and we look forward to reviewing the draft Water Act.