



Public Water System Annual Report -2016-

Name of the Public Water System: **Cartier Regional Water Co-op (CRWC)**

Name of the legal owner: **Cartier Regional Water Co-op Inc.**

Contact person: **Danielle Vaillant, Manager CRWC Inc.**

Phone: **(204) 832-2555**

Email: **dvaillant@crwc.ca**

Website: **crwc.ca**

Water system's emergency number: **(204) 353-4055 or (204) 832-2555**

Name of Operator: **Danielle Vaillant, Manager of CRWC**

Phone during business hours: **(204) 353-4055 or (204) 832-3555**

Emergency number: **(204) 353-4055 or (204) 832-3555**

Date prepared: **April 27, 2017**

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

Danielle Vaillant
Manager CRWC Inc.

Table of Contents

2016

Public Water System Annual Report	1
Table of Contents	2
Introduction	3
1. Description of the Water System	3
1.1. Water supply source	3
1.2. Intake structures:	3
1.3. Water treatment process:	4
1.4. Distribution system:	6
1.5. Storage reservoirs:	7
1.6. Number of connections, population served and types of water users:	8
1.7. Classification and Certification:	9
2. Disinfection System in Use:	10
2.1. Type of disinfection system used:	10
2.2. Equipment redundancy and monitoring requirements:	10
2.3. Disinfectant residual overall performance / results:	11
3. List of Water Quality Standards:	11
3.1. Result Improvement	13
4. Water System Incidents and Corrective Actions	13
5. Additional records required	13
6. Drinking Water Safety Orders on your System and Actions Taken in Response	13
7. Boil Water Advisories Issued and Actions Taken in Response	13
8. Warnings Issued or Charges Laid on the System in Accordance with The Drinking Water Safety Act:	13
9. Major Expenses Incurred	14
10. Future System Expansion and/or Increased Production	14
Appendix A: Cartier WTP 36.00 Bacteriological Results	14
Appendix B: Headingley WTP 89.40 Bacteriological Results	19
Appendix C: RM of Headingley 89.50 Bacteriological results	22
Appendix D: RM of St Francois Xavier 211.50 Bacteriological Results	23
Appendix E: Peony Farm Reservoir 188.25 Bacteriological Results	24
Appendix F: Cartier Regional Water System THM Results	25
Appendix G: Cartier Regional Audits 2016	26

Introduction

The Cartier Regional Water Co-op has 2 main water treatment facilities, one is located in St. Eustache, MB and the other is located in Headingley, MB. Both facilities strive to provide high quality drinking water in sufficient quantity to meet public demand. It is our goal to do so in a safe, cost effective manner while remaining in compliance with the regulatory requirements governing the provision of drinking water.

It is our belief that the public has a right to easily access information related to the drinking water they consume and the system through which it is provided. To that end the Cartier Regional Water Co-op has prepared the following report.

1. *Description of the Water System*

The Cartier Regional Water System provides potable drinking water to a population of approximately 13,100 residents. Treated water produced from the Cartier Regional Water Treatment Plant meets all health and aesthetic objectives as stated in the Guidelines for Canadian Drinking Water Quality.

1.1. Water supply source

The Cartier Regional Water Treatment Plant (WTP) and Headingley Regional Water Treatment Plant (WTP) receive surface water from the Assiniboine River.

1.2. Intake structures:

The Cartier WTP has a stainless steel intake structure that is specially designed to prevent injury to fish. It is located immediately east of the Baie St. Paul bridge and flows through a 400 mm pipe into a concrete wetwell on the south shore of the river. Two submersible pumps are available to pump the raw water through a 300 mm to the WTP. Raw water can be pumped either to the aerated raw water storage pond, or directly to the WTP raw water wetwell located beneath the water plant. Normal operational strategy is to pump to the storage pond for pre-settling, and pre-treatment in the summer season when required with potassium permanganate. The pond provides a buffer when river water quality may not be optimal. Currently, the intake is flushed using gravity flow, and does not provide a sufficient flow of water to adequately flush the intake screens of silt build up. When needed, we contract out to have the intake screen cleared of silt and debris.

The Headingley WTP utilizes the existing Headingley Correctional Centre River Intake Building that is located on the grounds. The CRWC has a memorandum of understanding (MOU) with Manitoba Infrastructure (MIT) to own, operate and maintain the

intake channel, wetwell, pumps and gate valves. The intake channel is made of concrete and directs the flow of the river into the pump house and passing through screens before entering two pumping chambers. Both chambers are equipped with sluice gate valves that stay open during normal operation. The wetwell maintains a static water level and there are two 60 hp pumps that operate on lead and lag operation and pump water when the raw water storage ponds call for them to fill. As the water is being pumped from the wetwell into the service line to the ponds, a low dose of algicide is added to control algae growth and to lower the organic level in the ponds. The river water is pumped through a 400 mm service line into our two raw water storage ponds. The raw water storage ponds currently operate in parallel but also have the ability to operate in series. There is the ability to isolate one storage pond for maintenance and still supply the WTP with raw water. Both raw water storage ponds are equipped with aeration lines that are fed from blowers that are housed in the Raw Water Pump House (RWPH) located next to the storage ponds. The RWPH also contains a wetwell with level controllers that indicate the level in the raw ponds and provide the controls back to the RWPH pumps. During normal river conditions, the ponds fill regularly. During high flows and turbidity in the river, we are able to cease filling of the ponds and have plenty of storage to operate the facility until normal conditions return to the river. Also contained in the wetwell are three 100hp raw water pumps that are called to operate when the WTP is producing water.

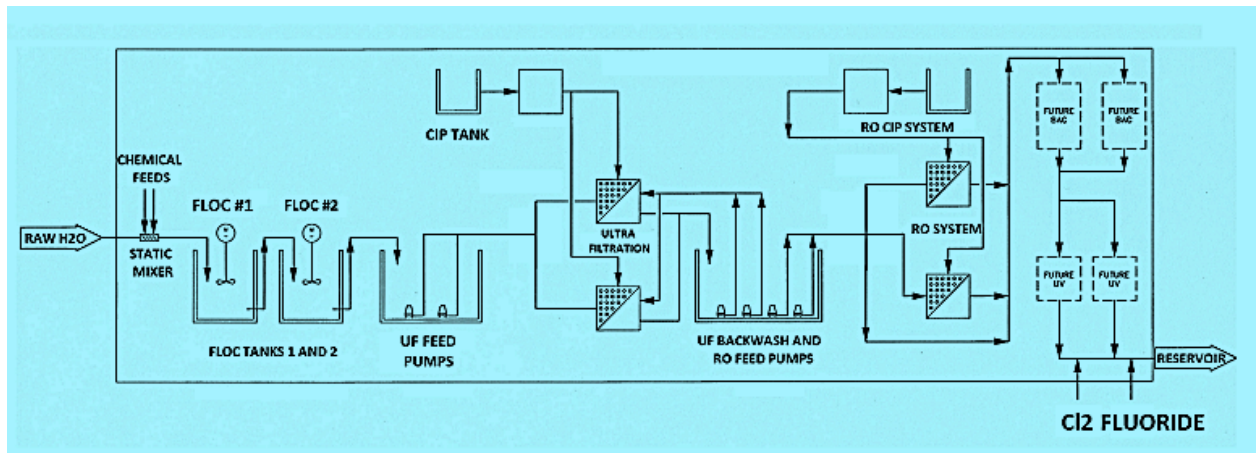
1.3. Water treatment process:

Cartier WTP:

A powerful oxidant, potassium permanganate (KMnO_4), *can* be fed at the river intake or the raw storage pond inlet, or in any combination required, but is only being fed during periods of high manganese and organics. The KMnO_4 breaks down organic substances which contribute to taste and odour problems and which can lead to the formation of chlorinated organic compounds known as trihalomethanes.

Raw water flows from the storage pond into the WTP raw wet well. The water is pumped through a magnetic flow meter & a rate control valve into a three-stage break tank process (advanced coagulation). Coagulant and pH control chemicals are added upstream of the initial break tank where it is pumped through two in-line static mixers. The three break tanks provide added mixing and coagulation before the raw water enters the ultra-filtration (UF) process. A pre-filter to the UF skids remove bigger floc (debris) created in the three-stage coagulation process. The UF provides 0.04-micron filtration and removes virtually all particulate matter before reaching the reverse osmosis (RO) process. Sodium Hypochlorite is added to the UF/RO break tanks to control biogrowth and prevent bio fouling of the RO membranes. The UF effluent serves two purposes. It is used to feed the RO process for finishing and to backwash the UF system from a UF break tank. RO treated water is so pure that an RO by-pass line was installed to “add” hardness to the finished water from the UF process and to stabilize water chemistry.

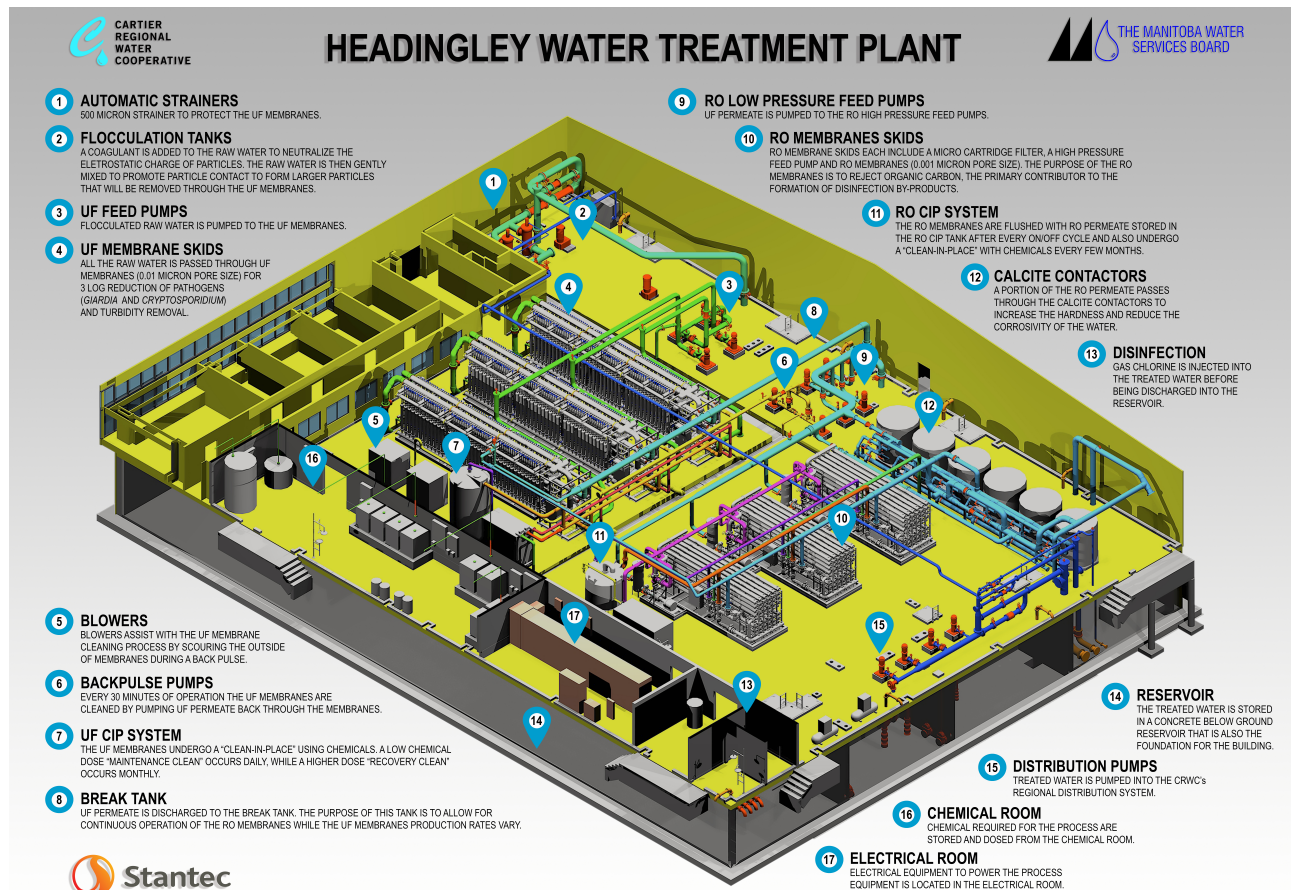
Turbidity is a measure of the clarity of water, and there is 24 hour online monitoring of the UF treated water and final plant effluent going to the distribution system. After the RO process the water pH is adjusted with sodium hydroxide and a small dosage of chlorine is added to kill pathogenic organisms (bacteria, viruses, etc.). The free chlorine residual in our treated water entering the distribution system is also monitored continuously. Fluoride is added to a 0.70 PPM concentration for dental health purposes.



Headingley WTP:

The Headingley WTP operates similarly to the Cartier WTP. They both draw from the same water source and both contain GE membrane equipment for water treatment. The main difference between the facilities in regards to treatment is the finished treated water is not a blend of UF and RO permeate, the Headingley WTP uses calcite contactors that contain calcite media to add hardness back into the finished water. The main reason for this is to eliminate reintroducing organics and metals, such as manganese and iron, into the finished water. The raw water flows into the facility and passes through 500-micron filters, pre-treated with KMnO_4 , coagulant and pH depressed with carbon dioxide. It travels through two chambers that contain mixers. The mixers promote the reaction of coagulation; raw water particles bind together to form a pin floc. The pre-treated raw water flows into the UF feed chamber and UF feed pumps send the water to UF membranes. The UF provides 0.04-micron filtration and removes virtually all particulate matter before reaching the RO membranes. Each membrane skid is equipped with a raw and UF permeate turbidimeter. The permeate turbidimeters are set alarm and shutdown at 0.1 NTU. The turbidity is monitored continuously and a value is captured every 5 minutes and reported on monthly. The UF Permeate is sent to the UF/RO breaktank chambers, where the water is used to feed the RO membranes and as backwash water for the UF membranes. The UF permeate is treated with a low dose of chlorine to eliminate the potential for biogrowth in the RO feed chambers. The RO feed pumps supply the RO membranes during operation. SBS is added upstream of the RO membranes to neutralize the chlorine. The RO permeate is produced and pH depressed before 50% of it passes through calcite contactors. The calcite and RO permeate blend to achieve a final water of 80-120 mg/L of hardness (CaCO_3). The Final treated water is pH corrected and disinfected with chlorine before entering the clearwell. The water flows through the clearwell to achieve contact time

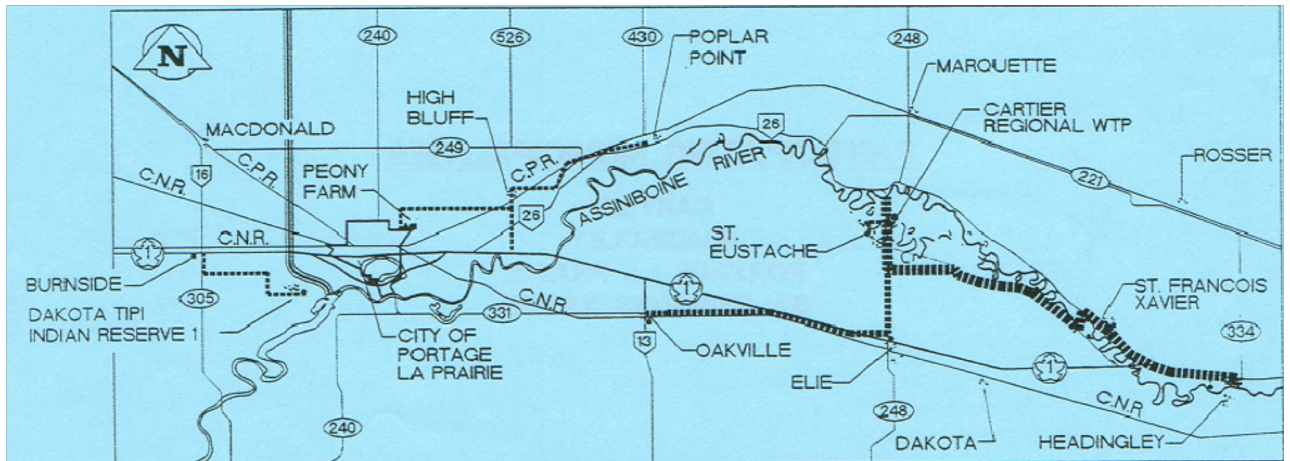
between the treated water and the chlorine for sufficient disinfection prior to reaching the pump chamber.



1.4. Distribution system:

Cartier WTP:

Treated water from the reservoir is pumped throughout the Cartier regional distribution system via one 5 horsepower jockey pump, two 25 horsepower duty pumps, one 30 horsepower duty pump, & one stand-by, 75 horsepower stand-by pump. These pumps are controlled with variable frequency drives. The distribution system is partially looped and has an approximate piped length of 580 kilometres. Piping is comprised of a mix of polyethylene (PE) & polyvinylchloride (PVC) pipe.



Headingley WTP:

There are (4) distribution pumps that services three main headers that leave the facility into distribution. The Centreport distribution line services the Rosser Reservoir and RM of Rosser. The RM of Headingley line services the Headingley Reservoir, RM of Headingley, St. Francois Xavier, RM of St. Francois Xavier, RM of Rosser and Grosse Isle Reservoir. The HCC/ WWTP lines service the Headingley Correctional Centre and the RM of Headingley Wastewater Treatment Plant.

Link to Distribution Map:

<https://www.dropbox.com/s/mlb1fe8yhefqjev/CARTIER REGIONAL SCHEMATIC DEC 2012.pdf?dl=0>

1.5. Storage reservoirs:

Cartier Regional WTP:	Raw Storage Reservoir Capacity:	60,000 M ³
Cartier Regional WTP:	Treated Reservoir Capacity:	3000 M ³
Elie Reservoir:	Treated Reservoir Capacity:	230 M ³
St. Eustache Reservoir:	Treated Reservoir Capacity:	76 M ³
Oakville Reservoir:	Treated Reservoir Capacity:	670 M ³
Fannystelle Reservoir:	Treated Reservoir Capacity:	150 M ³
Headingley Regional WTP:	Raw Storage Reservoir Capacity	135,107 M ³
Headingley Regional WTP:	Treated Reservoir Capacity:	4400 M ³
Headingley Reservoir:	Treated Reservoir Capacity:	2400 M ³
SFX Reservoir:	Treated Reservoir Capacity:	400 M ³
Grosse Isle Reservoir:	Treated Reservoir Capacity:	400 M ³
Rosser Reservoir:	Treated Reservoir Capacity:	7600 M ³

1.6. Number of connections, population served and types of water users:

The Cartier regional distribution system is comprised of 4477 service connections (all metered). We serve a population of greater than 13,100 people in 8 different rural municipalities; the RM of Cartier, RM of Portage la Prairie, RM of St. François Xavier, RM of Headingley, RM of Grey, R.M. of Rockwood, and the RM of Rosser and RM of West St. Paul.

CRWC Population Served. Estimate as of 1 Dec 16

	RM Residential	CRWC Residential	RM Comm/Institut.	CRWC Comm/Institut.
Portage la Prairie	1647	504	35	
Cartier	559	42	61	
Grey	229		23	
SFX	284	86	3	1
Headingley	957	6	83	
Rosser (incl Woodlands)	96	23	8	2
Rockwood	44			
TOTAL	3816	661	213	3
Total Residential	4477			
Total Comm/Institut.	216			RM = municipal line
				CRWC = regional line
Population Served				
Residential	12312	4477 x 2.75		
Truck Fill	447	estimate: 670,000 gallons sold in Nov @ 50 god per person		
2 x prisons	350	estimate: 300 at HCC, 50 at women's prison		
	13,100			

1.7. Classification and Certification:

<i>Cartier WTP</i>		
	Water Treatment	Class 4
	Water Distribution	Class 2
<i>Headingley WTP</i>		
	Water Treatment	Class 3
	Water Distribution	Class 2
<i>Current Operators</i>		
Danielle Vaillant	Water Treatment	Class 4
Manager-CRWC	Water Distribution	Class 2
	Wastewater Treatment	Class 2
	Wastewater Collection	Class 2
Grant McGorman	Water Treatment	Class 4
Lead Operator – Cartier	Water Distribution	Class 2
	Wastewater Treatment	Class 2
	Wastewater Collection	Class 2
Matthew Lemoine	Water Treatment	O-I-T
Jason Tanguay	Water Treatment	Class 2
	Water Distribution	Class 2
	Wastewater Treatment	Class 1
	Wastewater Collection	Class 1
David Epler	Water Treatment	Class 4
Lead Operator-Headingley	Water Distribution	Class 2
	Wastewater Treatment	Class 2
	Wastewater Collection	Class 2
Colter Milne	Water Treatment	Class 1
Tyler Hay	Water Treatment	O-I-T

Past Operators

Joel Adesina <i>June 2015-Jan 20, 2016</i>	Water Treatment	O-I-T
Phillip Connolly <i>April-May 2016</i>	Water Treatment	O-I-T
Kaylan Rae <i>Until Oct 2016</i>	Water Treatment Water Distribution	Class 4 Class 2

2. *Disinfection System in Use:*

The final step in the treatment of safe water is disinfection. Disinfection is the selective destruction or inactivation of potential disease causing organisms in water. As per the licence issued under the *Drinking Water Safety Act* the Cartier regional water Co-op must ensure that the water has a measureable free chlorine residual of at least:

- 0.5 mg/L in water entering the distribution system following a minimum contact time of 20 minutes
- 0.1 mg/L at all times at any point in the water distribution system

2.1. Type of disinfection system used:

The Cartier and Headingley Regional WTPs disinfects by adding chlorine gas to the treated water via a Regal gas chlorinator. Sodium hypochlorite can also be added at all of the reservoirs.

2.2. Equipment redundancy and monitoring requirements:

As required by the *Drinking Water Safety Act*, the Cartier and Headingley Regional WTP ensures continuous disinfection is maintained at the plant by keeping in stock all spare parts required for the chlorinator. As additional backup, a complete spare chlorinator is also kept at the plant. At the Cartier WTP, two identical trains of UF and RO membranes are now in place, each RO with a capacity of 30 litres per second. At the Headingley WTP, 3 identical trains of UF and RO membranes are in place, each RO with a capacity of 50 l/s

Disinfectant residuals are monitored continuously, capturing readings every 5 minutes at the water treatment plant and at the reservoirs. Residuals are also monitored on a regular basis when water samples are taken for bacterial analysis in the distribution system

and recorded on the appropriate monitoring forms. Monthly chlorination report forms are sent to the regional Drinking Water Officer at the end of each month.

2.3. Disinfectant residual overall performance / results:

The Cartier Regional Water System has met all regulatory requirements in 2016 for monitoring and reporting disinfection residuals leaving the water treatment plants and in the distribution system.

3. List of Water Quality Standards:

The Province of Manitoba has adopted a number of water quality standards from the *Guidelines for Canadian Drinking Water Quality* developed by Health Canada. The health-based parameters express the maximum acceptable concentration. Concentration values in excess constitute a health-related issue and require corrective actions. The 2015 results for the Cartier Regional Water System are summarized in the following tables:

Cartier WTP Sample #1 – Fall 2016

Parameter	Standard	Frequency	Test Results
Bacterial; TC & EC **	0 TC, 0 EC	Weekly	100 % passed
Disinfectant Residual	WTP (> 0.5 mg/L)	Continuously	100 % compliance
“ “	Distribution (> 0.1 mg/L)	Continuously	100 % compliance
Turbidity	0.30 NTU *	Continuously	100 % compliance
Lead	0.01 mg/L	Bi-annual	< 0.0000900 mg/L
Fluoride	1.5 mg/L	“	0.564 mg/L
Arsenic	0.01 mg/L	“	0.00251 mg/L
Iron	0.30 mg/L	“	<0.10 mg/L
Nitrate	As Nitrogen; 10 mg/L	“	0.0384 mg/L
Uranium	0.02 mg/L	“	0.00082 mg/L
Trihalomethane (THM) ***	0.100 mg/L	Quarterly	See appendix D

Cartier Water Sample #2 – Winter - 2016

Parameter	Standard	Frequency	Test Results
Bacterial; TC & EC **	0 TC, 0 EC	Weekly	100 % passed
Disinfectant Residual	WTP (> 0.5 mg/L)	Continuously	100 % compliance
“ “	Distribution (> 0.1	Continuously	100 % compliance

	mg/L)		
Turbidity	0.30 NTU *	Continuously	100 % compliance
Lead	0.01 mg/L	Bi-annual	<0.00009 mg/L
Fluoride	1.50 mg/L	“	0.552 mg/L
Arsenic	0.01 mg/L	“	0.00039 mg/L
Iron	0.30 mg/L	“	<0.10 mg/L
Nitrate	As Nitrogen; 10 mg/L	“	0.0819 mg/L
Uranium	0.02 mg/L	“	0.00019 mg/L
Trihalomethane (THM) ***	0.100 mg/L	Quarterly	See appendix D

Headingley WTP Sample #1 – Summer 2016

Parameter	Standard	Frequency	Test Results
Bacterial; TC & EC **	0 TC, 0 EC	Weekly	100 % passed
Disinfectant Residual	WTP (> 0.5 mg/L)	Continuously	100 % compliance
“ “	Distribution (> 0.1 mg/L)	Continuously	100 % compliance
Turbidity	0.30 NTU *	Continuously	100 % compliance
Lead	0.01 mg/L	Bi-annual	0.000824 mg/L
Fluoride	1.5 mg/L	“	<0.020 mg/L
Arsenic	0.01 mg/L	“	<0.00020 mg/L
Iron	0.30 mg/L	“	<0.10 mg/L
Nitrate	As Nitrogen; 10 mg/L	“	0.0149 mg/L
Uranium	0.02 mg/L	“	<0.00010 mg/L
Trihalomethane (THM) ***	0.100 mg/L	Quarterly	See appendix D

* NTU (Nephelometric turbidity unit)

** Bacterial testing: The raw water (untreated surface water), the treated water (leaving the water treatment facility) and the water in the distribution system is tested weekly (bi-weekly) for the presence of Total Coliform (TC) and *E. coli* (EC) bacteria. If these bacteria are present in the water it is an indication that disease-causing organisms may also be present. Please see Appendix A, B, C, D, & E for a summary of results.

*** THM: Trihalomethanes are formed when chlorine reacts with naturally occurring organic matter in the water. Studies have shown a link between high levels of THM's and cancer. For that reason, the province has set a health based standard for THM's of 0.100 mg/L. The THM standard is based on an average of four samples per year. THM levels in four locations in the distribution system are tested on a quarterly basis every year. Please see Appendix F for a summary of results.

3.1. Result Improvement

The Cartier Regional Water Co-op has been monitoring Trihalomethanes (THM) for the past several years and has met the Provincial and Federal guidelines on an intermittent basis. This past year is an improvement from the past years. The THM standard of 0.1 mg/L is based on a running average of quarterly samples and the health risks associated with elevated THM's are based on a life time exposure. The average THM result for 2016 was below the 0.100 mg/L regulation, which is an improvement from previous years. We continue to work towards optimizing our new treatment system and the quality of water that is delivered to our customers.

4. *Water System Incidents and Corrective Actions*

There were no major water system incidents in 2016. Corrective actions were taken and reported as required for normal minor variations during the course of routine operations.

5. *Additional records required*

As part of Manitoba Health's fluoridation program, water samples are collected on a daily basis from the treated water reservoir and tested on site. Daily fluoride results are recorded and a 14 day composite sample is submitted bi-weekly for analysis. The recommended level of fluoride in drinking water is 0.70 mg/L and the operating range set by Manitoba Health is 0.50-0.90 mg/L.

6. *Drinking Water Safety Orders on your System and Actions Taken in Response*

In 2016, no Drinking Water Safety Orders were issued for the Cartier Regional Water System.

7. *Boil Water Advisories Issued and Actions Taken in Response*

In 2016, no Boil Water Advisories were issued for the Cartier Regional Water System.

8. *Warnings Issued or Charges Laid on the System in Accordance with The Drinking Water Safety Act:*

In accordance with the Drinking Water Safety Act, no warnings or charges were issued for the Cartier Regional Water System in 2016.

9. **Major Expenses Incurred**

Build of a new Headingley WTP, Rosser Reservoir and Distribution lines, and Oakville Reservoir. The CRWC also upgraded their obsolete Truckfill stations to a new and improved technology.

10. **Future System Expansion and/or Increased Production**

A new storage pond at the Cartier WTP is due to constructed late fall of 2017.

Distribution lines are due to be installed and completed in 2017 within the RM of Rosser.

Appendix A: Cartier WTP 36.00 Bacteriological Results

Date	Sample Identification	TC	EC	HPC
29-Dec-15	CARTIER REGIONAL 3 - DIST - ELIE - OUTGOING	0	0	
29-Dec-15	CARTIER REGIONAL 1 - RAW	27	0	
29-Dec-15	CARTIER REGIONAL 2 - TREATED	0	0	
29-Dec-15	CARTIER REGIONAL 3 - DIST - ST.EUSTACHE - OUT	0	0	
29-Dec-15	CARTIER REGIONAL 3 - DIST - ST FX - OUTGOING	0	0	
29-Dec-15	CARTIER REGIONAL 3 - DIST @ HDLY RES IN	0	0	
29-Dec-15	CARTIER REGIONAL 3 - DIST - HEADINGLEY - OUTGOING	0	0	
05-Jan-16	CARTIER REGIONAL 1 - RAW	34	1	
05-Jan-16	CARTIER REGIONAL 2 - TREATED	0	0	
05-Jan-16	CARTIER REGIONAL 3 - DIST @ ELIE RES IN	0	0	
11-Jan-16	CARTIER REGIONAL 3 - DIST - ELIE - OUTGOING	0	0	
11-Jan-16	CARTIER REGIONAL 3 - DIST @ OAKVILLE RES IN	0	0	
11-Jan-16	CARTIER REGIONAL 3 - DIST - OAKVILLE - OUTGOING	0	0	
11-Jan-16	CARTIER REGIONAL 3 - DIST - ST.EUSTACHE - OUT	0	0	
12-Jan-16	CARTIER REGIONAL 1 - RAW	53	1	
12-Jan-16	CARTIER REGIONAL 2 - TREATED	0	0	
12-Jan-16	CARTIER REGIONAL 3 - DIST - ST FX - OUTGOING	0	0	
12-Jan-16	CARTIER REGIONAL 3 - DIST - HEADINGLEY - OUTGOING	0	0	
19-Jan-16	CARTIER REGIONAL 3 - DIST @ ST. EUSTACHE RES IN	0	0	
19-Jan-16	CARTIER REGIONAL 1 - RAW	89	2	
19-Jan-16	CARTIER REGIONAL 2 - TREATED	0	0	
19-Jan-16	CARTIER REGIONAL 1 - RAW - UF BREAK-TANK - HPC	0	0	<10
25-Jan-16	CARTIER REGIONAL 3 - DIST - OAKVILLE - OUTGOING	0	0	
25-Jan-16	CARTIER REGIONAL 3 - DIST - ST.EUSTACHE - OUT	0	0	
25-Jan-16	CARTIER REGIONAL 3 - DIST - ELIE - OUTGOING	0	0	
26-Jan-16	CARTIER REGIONAL 1 - RAW	43	2	
26-Jan-16	CARTIER REGIONAL 2 - TREATED	0	0	

26-Jan-16	CARTIER REGIONAL 3 - DIST - ST FX - OUTGOING	0	0	
26-Jan-16	CARTIER REGIONAL 3 - DIST @ SFX RES IN	0	0	
26-Jan-16	CARTIER REGIONAL 3 - DIST - HEADINGLEY - OUTGOING	0	0	
02-Feb-16	CARTIER REGIONAL 1 - RAW	59	1	
02-Feb-16	CARTIER REGIONAL 2 - TREATED	0	0	
02-Feb-16	CARTIER REGIONAL 3 - DIST @ HDLY RES IN	0	0	
08-Feb-16	CARTIER REGIONAL 3 - DIST - ELIE - OUTGOING	0	0	
08-Feb-16	CARTIER REGIONAL 3 - DIST @ ELIE RES IN	0	0	
08-Feb-16	CARTIER REGIONAL 3 - DIST - ST.EUSTACHE - OUT	0	0	
09-Feb-16	CARTIER REGIONAL 3 - DIST - OAKVILLE - OUTGOING	0	0	
09-Feb-16	CARTIER REGIONAL 1 - RAW	59	3	
09-Feb-16	CARTIER REGIONAL 2 - TREATED	0	0	
09-Feb-16	CARTIER REGIONAL 3 - DIST - HEADINGLEY - OUTGOING	0	0	
09-Feb-16	CARTIER REGIONAL 3 - DIST - ST FX - OUTGOING	0	0	
16-Feb-16	CARTIER REGIONAL 3 - DIST @ OAKVILLE RES IN	0	0	
16-Feb-16	CARTIER REGIONAL 1 - RAW	45	3	
16-Feb-16	CARTIER REGIONAL 2 - TREATED	0	0	
22-Feb-16	CARTIER REGIONAL 3 - DIST - ELIE - OUTGOING	0	0	
22-Feb-16	CARTIER REGIONAL 3 - DIST - OAKVILLE - OUTGOING	0	0	
22-Feb-16	CARTIER REGIONAL 3 - DIST - ST.EUSTACHE - OUT	0	0	
22-Feb-16	CARTIER REGIONAL 3 - DIST @ ST. EUSTACHE RES IN	0	0	
23-Feb-16	CARTIER REGIONAL 2 - TREATED	0	0	
23-Feb-16	CARTIER REGIONAL 1 - RAW - UF BREAK-TANK	0	0	<10
23-Feb-16	CARTIER REGIONAL 1 - RAW	18	1	
23-Feb-16	CARTIER REGIONAL 3 - DIST - HEADINGLEY - OUTGOING	0	0	
23-Feb-16	CARTIER REGIONAL 3 - DIST - ST FX - OUTGOING	0	0	
01-Mar-16	CARTIER REGIONAL 1 - RAW	14	1	
01-Mar-16	CARTIER REGIONAL 2 - TREATED	0	0	
01-Mar-16	CARTIER REGIONAL 3 - DIST @ SFX RES IN	0	0	
07-Mar-16	CARTIER REGIONAL 3 - DIST - OAKVILLE - OUTGOING	0	0	
07-Mar-16	CARTIER REGIONAL 3 - DIST - ELIE - OUTGOING	0	0	
07-Mar-16	CARTIER REGIONAL 3 - DIST - ST.EUSTACHE - OUT	0	0	
08-Mar-16	CARTIER REGIONAL 1 - RAW	22	2	
08-Mar-16	CARTIER REGIONAL 2 - TREATED	0	0	
08-Mar-16	CARTIER REGIONAL 3 - DIST - ST FX - OUTGOING	0	0	
08-Mar-16	CARTIER REGIONAL 3 - DIST - HEADINGLEY - OUTGOING	0	0	
08-Mar-16	CARTIER REGIONAL 3 - DIST @ HEADINGLEY RES IN	0	0	
14-Mar-16	GI CELL 2 - POST CLEANING	0	0	
14-Mar-16	GL CELL 2 - POST CLEANING	0	0	
15-Mar-16	CARTIER REGIONAL 1 - RAW	45	0	
15-Mar-16	CARTIER REGIONAL 2 - TREATED	0	0	
15-Mar-16	GI CELL 2	0	0	
15-Mar-16	GI CELL 2	0	0	
15-Mar-16	CARTIER REGIONAL 3 - DIST @ ELIE RES IN	0	0	
21-Mar-16	CARTIER REGIONAL 3 - DIST - ELIE - OUTGOING	0	0	
21-Mar-16	CARTIER REGIONAL 3 - DIST @ OAKVILLE RES IN	0	0	

21-Mar-16	CARTIER REGIONAL 3 - DIST - OAKVILLE - OUTGOING	0	0	
21-Mar-16	GI CELL #1 (BOTTLE 1)	0	0	
21-Mar-16	GI CELL #1 (BOTTLE 2)	0	0	
21-Mar-16	CARTIER REGIONAL 3 - DIST - ST.EUSTACHE - OUT	0	0	
21-Mar-16	GI CELL 1	0	0	
21-Mar-16	GI CELL 1	0	0	
22-Mar-16	CARTIER REGIONAL 1 - RAW	>200	0	
22-Mar-16	CARTIER REGIONAL 2 - TREATED	0	0	
22-Mar-16	CARTIER REGIONAL 3 - DIST - ST FX - OUTGOING	0	0	
22-Mar-16	CARTIER REGIONAL 3 - DIST - HEADINGLEY - OUTGOING	0	0	
29-Mar-16	CARTIER REGIONAL 1 - RAW	41	0	
29-Mar-16	CARTIER REGIONAL 2 - TREATED	0	0	
29-Mar-16	CARTIER REGIONAL 3 - DIST @ ST. EUSTACHE RES IN	0	0	
04-Apr-16	CARTIER REGIONAL 3 - DIST - ELIE - OUTGOING	0	0	
04-Apr-16	CARTIER REGIONAL 3 - DIST - OAKVILLE - OUTGOING	0	0	
04-Apr-16	CARTIER REGIONAL 3 - DIST - ST.EUSTACHE - OUT	0	0	
05-Apr-16	CARTIER REGIONAL 1 - RAW	>200	5	
05-Apr-16	CARTIER REGIONAL 2 - TREATED	0	0	
05-Apr-16	CARTIER REGIONAL 3 - DIST - ST FX - OUTGOING	0	0	
05-Apr-16	CARTIER REGIONAL 3 - DIST @ ST. FX RES IN	0	0	
05-Apr-16	CARTIER REGIONAL 3 - DIST - HEADINGLEY - OUTGOING	0	0	
12-Apr-16	CARTIER REGIONAL 1 - RAW	109	5	
12-Apr-16	CARTIER REGIONAL 2 - TREATED	0	0	
13-Apr-16	CARTIER REGIONAL 3 - DIST @ HOLY RES IN	0	0	
18-Apr-16	CARTIER REGIONAL 3 - DIST - ELIE - OUTGOING	0	0	
18-Apr-16	CARTIER REGIONAL 3 - DIST @ ELIE RES IN	0	0	
18-Apr-16	CARTIER REGIONAL 3 - DIST - OAKVILLE - OUTGOING	0	0	
18-Apr-16	CARTIER REGIONAL 3 - DIST - ST.EUSTACHE - OUT	0	0	
19-Apr-16	CARTIER REGIONAL 1 - RAW	>200	29	
19-Apr-16	CARTIER REGIONAL 2 - TREATED	0	0	
19-Apr-16	CARTIER REGIONAL 3 - DIST - ST FX - OUTGOING	0	0	
19-Apr-16	CARTIER REGIONAL 3 - DIST - HEADINGLEY - OUTGOING	0	0	
25-Apr-16	CARTIER REGIONAL 3 - DIST @ OAKVILLE RES IN	0	0	
26-Apr-16	ST EUSTACHE RESERVOIR CELL #1 - POST CLEANING	0	0	
26-Apr-16	ST EUSTACHE RESERVOIR CELL #2 - POST CLEANING	0	0	
26-Apr-16	CARTIER REGIONAL 1 - RAW	45	0	
26-Apr-16	CARTIER REGIONAL 2 - TREATED	0	0	
29-Apr-16	ST. EUSTACHE RESERVOIR CELL # 1	0	0	
29-Apr-16	ST. EUSTACHE RESERVOIR CELL # 2	0	0	
02-May-16	CARTIER REGIONAL 3 - DIST - OAKVILLE - OUTGOING	0	0	
03-May-16	CARTIER REGIONAL 1 - RAW	41	5	
03-May-16	CARTIER REGIONAL 2 - TREATED	0	0	
03-May-16	CARTIER REGIONAL 1 - RAW - UF BREAK-TANK	0	0	<10
03-May-16	CARTIER REGIONAL 3 - DIST - ELIE - OUTGOING	0	0	
03-May-16	CARTIER REGIONAL 3 - DIST - ST FX - OUTGOING	0	0	
03-May-16	CARTIER REGIONAL 3 - DIST - ST.EUSTACHE - OUT	0	0	

03-May-16	CARTIER REGIONAL 3 - DIST @ ST. EUSTACHE RES IN	0	0	
16-May-16	CARTIER REGIONAL 3 - DIST - ELIE - OUTGOING	0	0	
16-May-16	CARTIER REGIONAL 3 - DIST - OAKVILLE - OUTGOING	0	0	
16-May-16	CARTIER REGIONAL 3 - DIST - ST.EUSTACHE - OUT	0	0	
17-May-16	CARTIER REGIONAL 3 - DIST - ST FX - OUTGOING	0	0	
17-May-16	CARTIER REGIONAL 3 - DIST @ SFX RES IN	0	0	
17-May-16	CARTIER REGIONAL 1 - RAW	25	1	
17-May-16	CARTIER REGIONAL 2 - TREATED	0	0	
30-May-16	CARTIER REGIONAL 3 - DIST - ELIE - OUTGOING	0	0	
30-May-16	CARTIER REGIONAL 3 - DIST @ ELIE RES IN	0	0	
30-May-16	CARTIER REGIONAL 3 - DIST @ OAKVILLE RES IN	0	0	
30-May-16	CARTIER REGIONAL 3 - DIST - OAKVILLE - OUTGOING	0	0	
30-May-16	CARTIER REGIONAL 3 - DIST - ST.EUSTACHE - OUT	0	0	
31-May-16	CARTIER REGIONAL 1 - RAW	>200	101	
31-May-16	CARTIER REGIONAL 2 - TREATED	0	0	
31-May-16	CARTIER REGIONAL 3 - DIST - ST FX - OUTGOING	0	0	<10
13-Jun-16	CARTIER REGIONAL 3 - DIST - ELIE OUT	0	0	<10
13-Jun-16	CARTIER REGIONAL 3 - DIST - OAKVILLE OUT	0	0	<10
13-Jun-16	CARTIER REGIONAL 3 - DIST - ST. EUSTACHE RES IN	0	0	
13-Jun-16	CARTIER REGIONAL 3 - DIST - ST.EUSTACHE OUT	0	0	
14-Jun-16	CARTIER REGIONAL 1 - RAW	>200	22	
14-Jun-16	CARTIER REGIONAL 2 - TREATED	0	0	
27-Jun-16	CARTIER REGIONAL 3 - DIST - ELIE OUT	0	0	
27-Jun-16	CARTIER REGIONAL 3 - DIST - OAKVILLE OUT	0	0	
27-Jun-16	CARTIER REGIONAL 3 - DIST - ST. EUSTACHE OUT	0	0	
28-Jun-16	CARTIER REGIONAL 2 - TREATED	0	0	
28-Jun-16	CARTIER REGIONAL 1 - RAW	165	3	
28-Jun-16	CARTIER REGIONAL 3 - DIST @ ELMBANK BOOSTER	0	0	
04-Jul-16	CARTIER REGIONAL 3 - DIST - OAKVILLE RES IN	0	0	
11-Jul-16	CARTIER REGIONAL 3 - DIST - ELIE OUT	0	0	
11-Jul-16	CARTIER REGIONAL 3 - DIST - OAKVILLE OUT	0	0	
11-Jul-16	CARTIER REGIONAL 3 - DIST - ST. EUSTACHE OUT	0	0	
12-Jul-16	CARTIER REGIONAL 1 - RAW	>200	3	
12-Jul-16	CARTIER REGIONAL 1 - RAW - UF BREAK TANK	0	0	40
12-Jul-16	CARTIER REGIONAL 2 - TREATED	0	0	
18-Jul-16	CARTIER REGIONAL 3 - DIST - OAKVILLE RES IN	0	0	
25-Jul-16	CARTIER REGIONAL 3 - DIST - ELIE OUT	0	0	
25-Jul-16	CARTIER REGIONAL 3 - DIST - OAKVILLE OUT	0	0	
25-Jul-16	CARTIER REGIONAL 3 - DIST - ST. EUSTACHE OUT	0	0	<10
26-Jul-16	CARTIER REGIONAL 1 - RAW	>200	4	
26-Jul-16	CARTIER REGIONAL 2 - TREATED	0	0	
08-Aug-16	CARTIER REGIONAL 3 - DIST - ELIE RES IN	0	0	
08-Aug-16	CARTIER REGIONAL 3 - DIST - ELIE OUT	0	0	
08-Aug-16	CARTIER REGIONAL 3 - DIST - OAKVILLE RES IN	0	0	
08-Aug-16	CARTIER REGIONAL 3 - DIST - ST. EUSTACHE OUT	0	0	
08-Aug-16	CARTIER REGIONAL 3 - DIST - OAKVILLE OUT	0	0	

09-Aug-16	CARTIER REGIONAL 1 - RAW	>200	22	
09-Aug-16	CARTIER REGIONAL 2 - TREATED	0	0	
10-Aug-16	CARTIER REGIONAL 3 - DIST - FANNYSTELLE RES IN	0	0	
22-Aug-16	CARTIER REGIONAL 3 - DIST - ELIE OUT	0	0	
22-Aug-16	CARTIER REGIONAL 3 - DIST - OAKVILLE OUT	0	0	
22-Aug-16	CARTIER REGIONAL 3 - DIST - ST EUSTACHE RES IN	0	0	
22-Aug-16	CARTIER REGIONAL 3 - DIST - ST. EUSTACHE OUT	0	0	
23-Aug-16	CARTIER REGIONAL 1 - RAW	>200	48	
23-Aug-16	CARTIER REGIONAL 2 - TREATED	0	0	
06-Sep-16	CARTIER REGIONAL 1 - RAW	>200	32	
06-Sep-16	CARTIER REGIONAL 2 - TREATED	0	0	
06-Sep-16	CARTIER REGIONAL 3 - DIST @ FORTIA BOOSTER	0	0	
06-Sep-16	CARTIER REGIONAL 3 - DIST - ELIE OUT	0	0	
06-Sep-16	CARTIER REGIONAL 3 - DIST - OAKVILLE OUT	0	0	
06-Sep-16	CARTIER REGIONAL 3 - DIST - ST. EUSTACHE OUT	0	0	
19-Sep-16	CARTIER REGIONAL 3 - DIST - ELIE OUT	0	0	
19-Sep-16	CARTIER REGIONAL 3 - DIST - OAKVILLE OUT	0	0	
19-Sep-16	CARTIER REGIONAL 3 - DIST - OAKVILLE RES IN	0	0	
19-Sep-16	CARTIER REGIONAL 3 - DIST - ST. EUSTACHE OUT	0	0	
20-Sep-16	CARTIER REGIONAL 1 - RAW	>200	41	
20-Sep-16	CARTIER REGIONAL 2 - TREATED	0	0	
20-Sep-16	CARTIER REGIONAL 1 - RAW - UF BREAK TANK	0	0	<10
03-Oct-16	CARTIER REGIONAL 3 - DIST - ELIE OUT	0	0	
03-Oct-16	CARTIER REGIONAL 3 - DIST - OAKVILLE OUT	0	0	
03-Oct-16	CARTIER REGIONAL 3 - DIST - ST. EUSTACHE OUT	0	0	
04-Oct-16	CARTIER REGIONAL 1 - RAW	>200	9	
04-Oct-16	CARTIER REGIONAL 2 - TREATED	0	0	
05-Oct-16	CARTIER REGIONAL 3 - DIST - FANNYSTELLE RES IN	0	0	
17-Oct-16	CARTIER REGIONAL 3 - DIST - OAKVILLE OUT	0	0	
17-Oct-16	CARTIER REGIONAL 3 - DIST - ELIE RES IN	0	0	
17-Oct-16	CARTIER REGIONAL 3 - DIST - ELIE OUT	0	0	
17-Oct-16	CARTIER REGIONAL 3 - DIST - ST. EUSTACHE OUT	0	0	
18-Oct-16	CARTIER REGIONAL 1 - RAW	>200	6	
18-Oct-16	CARTIER REGIONAL 2 - TREATED	0	0	
21-Oct-16	CARTIER REGIONAL 3 - DIST @ #1 TRACKS FLUSH WTP TIE IN	0	0	
21-Oct-16	CARTIER REGIONAL 3 - DIST @ #2 TRACKS FLUSH WTP TIE IN	0	0	
31-Oct-16	CARTIER REGIONAL 3 - DIST - OAKVILLE OUT	0	0	
31-Oct-16	CARTIER REGIONAL 3 - DIST - ELIE OUT	0	0	
31-Oct-16	CARTIER REGIONAL 3 - DIST - ST. EUSTACHE RES IN	0	0	
31-Oct-16	CARTIER REGIONAL 3 - DIST - ST. EUSTACHE OUT	0	0	
01-Nov-16	CARTIER REGIONAL 1 - RAW	56	0	
01-Nov-16	CARTIER REGIONAL 2 - TREATED	0	0	
14-Nov-16	CARTIER REGIONAL 3 - DIST - ELIE OUT	0	0	
14-Nov-16	CARTIER REGIONAL 3 - DIST - ST. EUSTACHE OUT	0	0	
14-Nov-16	CARTIER REGIONAL 3 - DIST - OAKVILLE OUT	0	0	
15-Nov-16	CARTIER REGIONAL 1 - RAW	165	0	

15-Nov-16	CARTIER REGIONAL 2 - TREATED	0	0	
15-Nov-16	CARTIER REGIONAL 3 - DIST @ ELM BANK BOOSTER	0	0	
21-Nov-16	CARTIER REGIONAL 3 - DIST - OAKVILLE RES IN	0	0	
28-Nov-16	CARTIER REGIONAL 3 - DIST - OAKVILLE OUT	0	0	
28-Nov-16	CARTIER REGIONAL 3 - DIST - ELIE OUT	0	0	
28-Nov-16	CARTIER REGIONAL 3 - DIST - ST. EUSTACHE OUT	0	0	
29-Nov-16	CARTIER REGIONAL 2 - TREATED	0	0	
29-Nov-16	CARTIER REGIONAL 1 - RAW	200	1	
12-Dec-16	CARTIER REGIONAL 3 - DIST - ELIE OUT	0	0	
12-Dec-16	CARTIER REGIONAL 3 - DIST - ST. EUSTACHE OUT	0	0	
13-Dec-16	CARTIER REGIONAL 3 - DIST - OAKVILLE OUT	0	0	
13-Dec-16	CARTIER REGIONAL 1 - RAW	41	0	
13-Dec-16	CARTIER REGIONAL 1 - RAW - UF BREAK TANK	0	0	<10
13-Dec-16	CARTIER REGIONAL 2 - TREATED	0	0	
13-Dec-16	CARTIER REGIONAL 3 - DIST - PLANT RES IN FLOW	0	0	
13-Dec-16	CARTIER REGIONAL 3 - DIST - FANNYSTELLE OUT TAP	0	0	
19-Dec-16	CARTIER REGIONAL 3 - DIST - OAKVILLE RES IN	0	0	
19-Dec-16	CARTIER REGIONAL 3 - DIST - OAKVILLE OUT	0	0	
28-Dec-16	CARTIER REGIONAL 1 - RAW	18	0	
28-Dec-16	CARTIER REGIONAL 2 - TREATED	0	0	
28-Dec-16	CARTIER REGIONAL 3 - DIST - ST. EUSTACHE OUT	0	0	
28-Dec-16	CARTIER REGIONAL 3 - DIST - ELIE RES IN	0	0	
28-Dec-16	CARTIER REGIONAL 3 - DIST - ELIE OUT	0	0	

Appendix B: Headingley WTP 89.40 Bacteriological Results

28-Apr-16	HEADINGLEY REGIONAL 1 - RAW	10	0
28-Apr-16	HEADINGLEY REGIONAL 2 - TREATED	0	0
28-Apr-16	HEADINGLEY REGIONAL 3 - DIST - HDLY RES IN	0	0
28-Apr-16	HEADINGLEY REGIONAL 3 - DIST - HDLY OUT	0	0
17-May-16	HEADINGLEY REGIONAL 3 - DIST - HDLY OUT	0	0
17-May-16	HEADINGLEY REGIONAL 3 - DIST @ WWTP IN	0	0
17-May-16	HEADINGLEY REGIONAL 2 - TREATED	0	0
17-May-16	HEADINGLEY REGIONAL 1 - RAW	53	3
17-May-16	HEADINGLEY REGIONAL 1 - RAW - UF BREAK TANK	0	0
24-May-16	HEADINGLEY REGIONAL 1 - RAW	38	9
24-May-16	HEADINGLEY REGIONAL 2 - TREATED	0	0
24-May-16	HEADINGLEY REGIONAL 3 - DIST - HDLY OUT	0	0
24-May-16	HEADINGLEY REGIONAL 3 - DIST - HDLY RES IN	0	0
07-Jun-16	HEADINGLEY REGIONAL 2 - TREATED	0	0
07-Jun-16	HEADINGLEY REGIONAL 1 - RAW	29	0
07-Jun-16	HEADINGLEY REGIONAL 3 - DIST - HDLY OUT	0	0
07-Jun-16	HEADINGLEY REGIONAL 3 - DIST @ CO-OP IN	0	0
14-Jun-16	HEADINGLEY REGIONAL 3 - DIST - ST. FX OUT (36.00)	0	0

20-Jun-16	HEADINGLEY REGIONAL 3 - DIST - GI OUT	0	0
21-Jun-16	HEADINGLEY REGIONAL 2 - TREATED	0	0
21-Jun-16	HEADINGLEY REGIONAL 1 - RAW	>200	31
21-Jun-16	HEADINGLEY REGIONAL 3 - DIST - HDLY OUT	0	0
21-Jun-16	HEADINGLEY REGIONAL 3 - DIST - HDLY RES IN	0	0
28-Jun-16	HEADINGLEY REGIONAL 3 - DIST - ST. FX OUT	0	0
04-Jul-16	HEADINGLEY REGIONAL 3 - DIST - GI RES IN	0	0
04-Jul-16	HEADINGLEY REGIONAL 3 - DIST - GI OUT	0	0
05-Jul-16	HEADINGLEY REGIONAL 1 - RAW	>200	>200
05-Jul-16	HEADINGLEY REGIONAL 2 - TREATED	0	0
05-Jul-16	HEADINGLEY REGIONAL 3 - DIST - HDLY OUT	0	0
12-Jul-16	HEADINGLEY REGIONAL 3 - DIST - ST. FX OUT	0	0
18-Jul-16	HEADINGLEY REGIONAL 3 - DIST - GI OUT	0	0
19-Jul-16	HEADINGLEY REGIONAL 1 - RAW	>200	48
19-Jul-16	HEADINGLEY REGIONAL 2 - TREATED	0	0
19-Jul-16	HEADINGLEY REGIONAL 3 - DIST - HDLY RES IN	0	0
19-Jul-16	HEADINGLEY REGIONAL 3 - DIST - HDLY OUT	0	0
26-Jul-16	HEADINGLEY REGIONAL 3 - DIST - ST. FX OUT	0	0
02-Aug-16	HEADINGLEY REGIONAL 3 - DIST - GI OUT	0	0
02-Aug-16	HEADINGLEY REGIONAL 1 - RAW	>200	109
02-Aug-16	HEADINGLEY REGIONAL 1 - RAW - UF BREAK TANK HPCS	0	0
02-Aug-16	HEADINGLEY REGIONAL 2 - TREATED	0	0
02-Aug-16	HEADINGLEY REGIONAL 3 - DIST @ WWTP	0	0
02-Aug-16	HEADINGLEY REGIONAL 3 - DIST - HDLY OUT	0	0
09-Aug-16	HEADINGLEY REGIONAL 3 - DIST - ST. FX OUT (36.00 SOURCE)	0	0
15-Aug-16	HEADINGLEY REGIONAL 3 - DIST - GI OUT	0	0
16-Aug-16	HEADINGLEY REGIONAL 1 - RAW	>200	>200
16-Aug-16	HEADINGLEY REGIONAL 2 - TREATED	0	0
16-Aug-16	HEADINGLEY REGIONAL 3 - DIST @ HCC IN	0	0
16-Aug-16	HEADINGLEY REGIONAL 3 - DIST - HDLY RES OUT	0	0
23-Aug-16	HEADINGLEY REGIONAL 3 - DIST - ST. FX OUT	0	0
29-Aug-16	HEADINGLEY REGIONAL 3 - DIST - GI OUT	0	0
30-Aug-16	HEADINGLEY REGIONAL 1 - RAW	>200	>200
30-Aug-16	HEADINGLEY REGIONAL 2 - TREATED	0	0
30-Aug-16	HEADINGLEY REGIONAL 3 - DIST - HDLY RES IN	0	0
30-Aug-16	HEADINGLEY REGIONAL 3 - DIST - HDLY OUT	0	0
06-Sep-16	HEADINGLEY REGIONAL 3 - DIST - ST. FX OUT (36.00 SOURCE)	0	0
13-Sep-16	HEADINGLEY REGIONAL 3 - DIST - GI OUT	0	0
13-Sep-16	HEADINGLEY REGIONAL 1 - RAW	>200	>200
13-Sep-16	HEADINGLEY REGIONAL 2 - TREATED	0	0
13-Sep-16	HEADINGLEY REGIONAL 3 - DIST - HDLY OUT	0	0
13-Sep-16	HEADINGLEY REGIONAL 3 - DIST @ FAST ENT	0	0
20-Sep-16	HEADINGLEY REGIONAL 3 - DIST - ST. FX OUT	0	0

	(36.00 SOURCE)		
27-Sep-16	HEADINGLEY REGIONAL 3 - DIST - GI OUT	0	0
27-Sep-16	HEADINGLEY REGIONAL 3 - DIST - HDLY RES IN	0	0
27-Sep-16	HEADINGLEY REGIONAL 3 - DIST - HDLY OUT	0	0
27-Sep-16	HEADINGLEY REGIONAL 1 - RAW	>200	>200
27-Sep-16	HEADINGLEY REGIONAL 2 - TREATED	0	0
04-Oct-16	HEADINGLEY REGIONAL 3 - DIST - ST. FX OUT	0	0
06-Oct-16	#1 CELL	0	0
06-Oct-16	#1 CELL	0	0
06-Oct-16	#2	0	0
06-Oct-16	#2 CELL	0	0
11-Oct-16	HEADINGLEY REGIONAL 3 - DIST - GI OUT (36.00 SOURCE)	0	0
11-Oct-16	HEADINGLEY REGIONAL 1 - RAW	>200	>200
11-Oct-16	HEADINGLEY REGIONAL 1 - RAW - UF BREAK TANK	0	0
11-Oct-16	HEADINGLEY REGIONAL 3 - DIST - SFX RES IN	0	0
11-Oct-16	HEADINGLEY REGIONAL 3 - DIST - ST. FX OUT	0	0
11-Oct-16	HEADINGLEY REGIONAL 2 - TREATED	0	0
11-Oct-16	HEADINGLEY REGIONAL 3 - DIST - HDLY OUT	0	0
24-Oct-16	HEADINGLEY REGIONAL 1 - RAW	>200	>200
24-Oct-16	HEADINGLEY REGIONAL 2 - TREATED	0	0
24-Oct-16	HEADINGLEY REGIONAL 3 - DIST @ HCC	0	0
24-Oct-16	HEADINGLEY REGIONAL 3 - DIST - ST. FX OUT	0	0
24-Oct-16	HEADINGLEY REGIONAL 3 - DIST - HDLY OUT	0	0
25-Oct-16	HEADINGLEY REGIONAL 3 - DIST - GI OUT	0	0
25-Oct-16	HEADINGLEY REGIONAL 3 - DIST - GI RES IN	0	0
08-Nov-16	HEADINGLEY REGIONAL 3 - DIST @ WWTP IN	0	0
08-Nov-16	HEADINGLEY REGIONAL 3 - DIST - GI OUT	0	0
08-Nov-16	HEADINGLEY REGIONAL 1 - RAW	>200	109
08-Nov-16	HEADINGLEY REGIONAL 2 - TREATED	0	0
08-Nov-16	HEADINGLEY REGIONAL 3 - DIST - HDLY OUT	0	0
08-Nov-16	HEADINGLEY REGIONAL 3 - DIST - ST. FX OUT	0	0
22-Nov-16	HEADINGLEY REGIONAL 2 - TREATED	0	0
22-Nov-16	HEADINGLEY REGIONAL 1 - RAW	130	8
22-Nov-16	HEADINGLEY REGIONAL 3 - DIST - HDLY OUT	0	0
22-Nov-16	HEADINGLEY REGIONAL 3 - DIST - GI OUT PUMPHOUSE	0	0
22-Nov-16	HEADINGLEY REGIONAL 3 - DIST @ CO-OP	0	0
06-Dec-16	HEADINGLEY REGIONAL 3 - DIST - GI OUT - PUMPHOUSE	0	0
09-Dec-16	HEADINGLEY REGIONAL 3 - DIST - ST. FX OUT	0	0
09-Dec-16	HEADINGLEY REGIONAL 3 - DIST - HDLY RES IN	0	0
09-Dec-16	HEADINGLEY REGIONAL 3 - DIST - HDLY OUT	0	0
09-Dec-16	HEADINGLEY REGIONAL 1 - RAW	50	2
09-Dec-16	HEADINGLEY REGIONAL 2 - TREATED	0	0

20-Dec-16	HEADINGLEY REGIONAL 1 - RAW - UF BREAK TANK	0	0
20-Dec-16	HEADINGLEY REGIONAL 2 - TREATED	0	0
20-Dec-16	HEADINGLEY REGIONAL 1 - RAW	16	0
20-Dec-16	HEADINGLEY REGIONAL 3 - DIST - SFX RES IN	0	0
20-Dec-16	HEADINGLEY REGIONAL 3 - DIST - ST. FX OUT	0	0
20-Dec-16	HEADINGLEY REGIONAL 3 - DIST - GI OUT	0	0
20-Dec-16	HEADINGLEY REGIONAL 3 - DIST - HDLY OUT	0	0
03-Jan-17	HEADINGLEY REGIONAL 3 - DIST - GI OUT	0	0
04-Jan-17	HEADINGLEY REGIONAL 1 - RAW - UF BREAK TANK/ HRC	0	0
04-Jan-17	HEADINGLEY REGIONAL 1 - RAW	15	0
04-Jan-17	HEADINGLEY REGIONAL 2 - TREATED	0	0
04-Jan-17	HEADINGLEY REGIONAL 3 - DIST - SFX RES IN	0	0
04-Jan-17	HEADINGLEY REGIONAL 3 - DIST - ST. FX OUT	0	0
04-Jan-17	HEADINGLEY REGIONAL 3 - DIST - HDLY OUT	0	0

Appendix C: RM of Headingley 89.50 Bacteriological results

Collection Date	Sample Identification	TC	EC
05-Jan-16	HEADINGLEY 3 - DIST @ CANAM RV	0	0
19-Jan-16	HEADINGLEY 3 - DIST @ THE GATES	0	0
02-Feb-16	HEADINGLEY 3 - DIST @	0	0
16-Feb-16	HEADINGLEY 3 - DIST @ LIBRARY	0	0
01-Mar-16	HEADINGLEY 3 - DIST @ FLYING J	0	0
15-Mar-16	HEADINGLEY 3 - DIST @ SPORTS SHOP	0	0
29-Mar-16	HEADINGLEY 3 - DIST @ LIBRARY	0	0
12-Apr-16	HEADINGLEY 3 - DIST @ RURAL MUNICIPALITY OFFICE	0	0
28-Apr-16	HEADINGLEY 3 - DIST @ HEADINGLEY LIBRARY	0	0
17-May-16	HEADINGLEY 3 - DIST @ RM OFFICE	0	0
24-May-16	HEADINGLEY 3 - DIST @	0	0
07-Jun-16	HEADINGLEY 3 - DIST @ SPORTS SHOP	0	0
21-Jun-16	HEADINGLEY 3 - DIST @ PHOENIX SCHOOL	0	0
05-Jul-16	HEADINGLEY 3 - DIST @	0	0
19-Jul-16	HEADINGLEY 3 - DIST @ FLYING J	0	0
02-Aug-16	HEADINGLEY 3 - DIST @ BIRCHWOOD	0	0
16-Aug-16	HEADINGLEY 3 - DIST @ TAILLIEU	0	0
30-Aug-16	HEADINGLEY 3 - DIST @ PHOENIX SCHOOL	0	0
13-Sep-16	HEADINGLEY 3 - DIST @ BIRCHWOOD	0	0
27-Sep-16	HEADINGLEY 3 - DIST @ HEADINGLEY SPORT SHOP	0	0
11-Oct-16	HEADINGLEY 3 - DIST @ FLYING J	0	0
24-Oct-16	HEADINGLEY 3 - DIST @ RM OFFICE	0	0
08-Nov-16	HEADINGLEY 3 - DIST @ TALLIEU	0	0

22-Nov-16	HEADINGLEY 3 - DIST @ COLUMBIA INSURANCE	0	0
09-Dec-16	HEADINGLEY 3 - DIST @ FLYING J	0	0
20-Dec-16	HEADINGLEY 3 - DIST @ MOTEL 6	0	0
04-Jan-17	HEADINGLEY 3 - DIST @ MATRIX LUMBER	0	0

Appendix D: RM of St Francois Xavier 211.50 Bacteriological Results

Collection Date	Sample Identification	TC	EC
05-Jan-16	ST. FRANCOIS XAVIER 3 - DIST @ VET CLINIC	0	0
19-Jan-16	ST. FRANCOIS XAVIER 3 - DIST @ CAISSE	0	0
02-Feb-16	ST. FRANCOIS XAVIER 3 - DIST @ RM OFFICE	0	0
16-Feb-16	ST. FRANCOIS XAVIER 3 - DIST @ VET	0	0
01-Mar-16	ST. FRANCOIS XAVIER 3 - DIST @ KOA	0	0
15-Mar-16	ST. FRANCOIS XAVIER 3 - DIST @ COUNTRY STORE	0	0
29-Mar-16	ST. FRANCOIS XAVIER 3 - DIST @ KOA	0	0
12-Apr-16	ST. FRANCOIS XAVIER 3 - DIST @ ANIMAL HOSPITAL	0	0
26-Apr-16	ST. FRANCOIS XAVIER 3 - DIST @ COUNTRY STORE	0	0
17-May-16	ST. FRANCOIS XAVIER 3 - DIST @ RM OFFICE	0	0
24-May-16	ST. FRANCOIS XAVIER 3 - DIST @ S.F.X. VET CLINIC	0	0
07-Jun-16	ST. FRANCOIS XAVIER 3 - DIST @ COUNTRY STORE	0	0
21-Jun-16	ST. FRANCOIS XAVIER 3 - DIST @ KOA	0	0
05-Jul-16	ST. FRANCOIS XAVIER 3 - DIST @ RM OFFICE	0	0
19-Jul-16	ST. FRANCOIS XAVIER 3 - DIST @ RM OFFICE	0	0
02-Aug-16	ST. FRANCOIS XAVIER 3 - DIST @ VET CLINIC	0	0
16-Aug-16	ST. FRANCOIS XAVIER 3 - DIST @ K.O.A	0	0
30-Aug-16	ST. FRANCOIS XAVIER 3 - DIST @ COUNTRY STORE	0	0
13-Sep-16	ST. FRANCOIS XAVIER 3 - DIST @ RM OFFICE	0	0
27-Sep-16	ST. FRANCOIS XAVIER 3 - DIST @ KOA	0	0
11-Oct-16	ST. FRANCOIS XAVIER 3 - DIST @ RM OFFICE	0	0
24-Oct-16	ST. FRANCOIS XAVIER 3 - DIST @ VET CLINIC	0	0
08-Nov-16	ST. FRANCOIS XAVIER 3 - DIST @ KOA	0	0
22-Nov-16	ST. FRANCOIS XAVIER 3 - DIST @ COUNTRY STORE	0	0
09-Dec-16	ST. FRANCOIS XAVIER 3 - DIST @ RM OFFICE	0	0
20-Dec-16	ST. FRANCOIS XAVIER 3 - DIST @ CREDIT UNION	0	0
04-Jan-17	ST. FRANCOIS XAVIER 3 - DIST @ KOA	0	0

Appendix E: Peony Farm Reservoir 188.25 Bacteriological Results

Collection Date	Sample Identification	TC	EC	HPC
04-Jan-16	PEONY FARM 3 - DIST - PF OUTGOING	0	0	
18-Jan-16	PEONY FARM 3 - DIST - PF OUTGOING	0	0	
01-Feb-16	PEONY FARM 3 - DIST - PF OUTGOING	0	0	
16-Feb-16	PEONY FARM 3 - DIST - PF OUTGOING -	0	0	
01-Mar-16	PEONY FARM 3 - DIST - PF OUTGOING	0	0	
14-Mar-16	PEONY FARM 3 - DIST - PF OUTGOING	0	0	
28-Mar-16	PEONY FARM 3 - DIST - PF OUTGOING	0	0	
11-Apr-16	PEONY FARM 3 - DIST - PF OUTGOING	0	0	
25-Apr-16	PEONY FARM 3 - DIST - PF OUTGOING	0	0	
16-May-16	PEONY FARM 3 - DIST - PF OUTGOING	0	0	
24-May-16	PEONY FARM 3 - DIST - PF OUTGOING	0	0	
06-Jun-16	PEONY FARM 3 - DIST - PF OUTGOING	0	0	
13-Jun-16	PEONY FARM 3 - DIST - PP @ RINK	0	0	<10
20-Jun-16	PEONY FARM 3 - DIST - PF OUTGOING	0	0	<10
27-Jun-16	PEONY FARM 3 - DIST - PP @ RINK	0	0	
04-Jul-16	PEONY FARM 3 - DIST - PF OUTGOING	0	0	
11-Jul-16	PEONY FARM 3 - DIST - PP @ RINK	0	0	
18-Jul-16	PEONY FARM 3 - DIST - PF OUTGOING	0	0	
25-Jul-16	PEONY FARM 3 - DIST - PF OUTGOING	0	0	
26-Jul-16	PEONY FARM 3 - DIST - PP @ RINK	0	0	
08-Aug-16	PEONY FARM 3 - DIST - PP @ RINK	0	0	
08-Aug-16	PEONY FARM 3 - DIST - PF REIL DR HYDRANT	0	0	
15-Aug-16	PEONY FARM 3 - DIST - PF OUTGOING	0	0	
22-Aug-16	PEONY FARM 3 - DIST - PP @ RINK	0	0	
29-Aug-16	PEONY FARM 3 - DIST - PF OUTGOING	0	0	
06-Sep-16	PEONY FARM 3 - DIST - PP @ RINK	0	0	<10
12-Sep-16	PEONY FARM 3 - DIST - PF OUTGOING	0	0	
19-Sep-16	PEONY FARM 3 - DIST - PP @ RINK	0	0	
26-Sep-16	PEONY FARM 3 - DIST - PF OUTGOING	0	0	
03-Oct-16	PEONY FARM 3 - DIST - PP @ RINK	0	0	
11-Oct-16	PEONY FARM 3 - DIST - PF OUTGOING	0	0	
17-Oct-16	PEONY FARM 3 - DIST - PP @ RINK	0	0	
24-Oct-16	PEONY FARM 3 - DIST - PF OUTGOING	0	0	
31-Oct-16	PEONY FARM 3 - DIST - PP @ RINK	0	0	
07-Nov-16	PEONY FARM 3 - DIST - PP @	0	0	
14-Nov-16	PEONY FARM 3 - DIST - PP @ RINK	0	0	
21-Nov-16	PEONY FARM 3 - DIST - PF OUTGOING	0	0	
28-Nov-16	PEONY FARM 3 - DIST - PP @ RINK	0	0	

05-Dec-16	PEONY FARM 3 - DIST - PF OUTGOING	0	0	
13-Dec-16	PEONY FARM 3 - DIST - PP @ RINK	0	0	
19-Dec-16	PEONY FARM 3 - DIST - PP @ RINK	0	0	<10
19-Dec-16	PEONY FARM 3 - DIST - PF OUTGOING	0	0	
03-Jan-17	PEONY FARM 3 - DIST - PF OUTGOING	0	0	

Appendix F: Cartier Regional Water System THM Results

Cartier Regional WTP 36.00

2016 - THM sampling location	FEB	MAY	AUG	NOV	AVG THM (mg/L)	AVG THM (µg/L)
cartier rwtp - grosse isle IN - 1	0.0986				0.099	see 89.40
cartier rwtp - gaol IN - 2	0.0559				0.056	see 89.40
cartier rwtp - oakville IN - 3	0.0521	0.0875	0.1570	0.0237	0.080	80
cartier rwtp - fannystelle IN - 4	0.0672	0.0866	0.1650	0.0243	0.086	86

Cartier Regional WTP 36.00

2016 - HAA sampling location	FEB	MAY	AUG	NOV	AVG HAA (mg/L)	AVG HAA (µg/L)
cartier rwtp - rosier meter - 1	0.0402				0.040	see 89.40
cartier rwtp - st. fx IN - 2	0.0374				0.037	see 89.40
cartier rwtp - fortier booster - 3	0.0344	0.0868	0.0734	0.0127	0.052	52
cartier rwtp - elm bank booster - 4	0.0360	0.0912	0.0752	0.0128	0.054	54

Headingley Regional WTP 89.40

2016 - THM sampling location	FEB	MAY	AUG	NOV	AVG THM (mg/L)	AVG THM (µg/L)
headingley rwtp - headingley IN - 1			0.0203	0.0026	0.011	11
headingley rwtp - grosse isle IN - 2			n/a	0.0035	0.004	4

Headingley Regional WTP 89.40

2016 - HAA sampling location	FEB	MAY	AUG	NOV	AVG HAA (mg/L)	AVG HAA (µg/L)
headingley rwtp - gaol IN - 1			<.00054	<.00054	<.00054	<0.54
headingley rwtp - st. fx IN - 2				<.00054	<.00054	<0.54

RM of Headingley 89.50

2016 - THM sampling location	FEB	MAY	AUG	NOV	AVG THM (mg/L)	AVG THM (µg/L)
firehall	0.0697	0.0129	0.0164	0.0027	0.025	25

RM of Headingley 89.50

2016 - HAA sampling location	FEB	MAY	AUG	NOV	AVG HAA (mg/L)	AVG HAA (µg/L)
tailleau construction	0.0653	0.0050	0.0050	0.0050	0.020	20
note: <0.0054 = 0.0050					#DIV/0!	

RM of SFX 211.50

2016 - THM sampling location	FEB	MAY	AUG	NOV	AVG THM (mg/L)	AVG THM (µg/L)
at KOA esso	0.0820	n/a	0.1630	0.0031	0.083	83

RM of SFX 211.50

2016 - HAA sampling location	FEB	MAY	AUG	NOV	AVG HAA (mg/L)	AVG HAA (µg/L)
rm office	0.0450	n/a	0.0951	0.0050	0.048	48
note: <0.0054 = 0.0050					#DIV/0!	

Peony Farms 188.25

2016 - THM sampling location	FEB	MAY	AUG	NOV	AVG THM (mg/L)	AVG THM (µg/L)
poplar point - rink	0.1290	0.1050	0.1140	0.1380	0.122	122

Peony Farms 188.25

2016 - HAA sampling location	FEB	MAY	AUG	NOV	AVG HAA (mg/L)	AVG HAA (µg/L)
high bluff hall	0.0274	0.0360	0.0882	0.0605	0.053	53

Appendix G: Cartier Regional Audits 2016

For all CRWC DWO Audits please use the following link:

<https://www.dropbox.com/sh/3edc62w4clb03av/AAD1pHoal5smFOLgR16Cqlwsa?dl=0>