

# **Laurentian Valley**

## **Water Works**

### **Water Quality**

# **Policies & Procedures**

# **Manual**



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WQP&P 2019

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## Introduction

Laurentian Valley Waterworks received its **Certificate** as a Water Distribution Plant, Level 1 (WD1) in November of 2000, # **2893**. The Drinking Water Protection Regulation 170/03 as amended introduced by the provincial government in 2003 requires that the Municipality sample and test the water distributed by the Municipality to ensure that clean, safe water is distributed to our customers.

On July 15, 2005 the system was reclassified as Water Distribution Subsystem Class 1 by the Ministry of Environment. The Drinking Water System Information number for Laurentian Valley Water Works is W260007465.

On June 2, 2011 the Corporation of the Township of Laurentian Valley was issued Municipal Drinking Water License # 192-101, Issue #1, as both the Owner and Operating Authority.

May 31, 2011 the Corporation of the Township of Laurentian Valley was issued a Drinking Water Works Permit Number 192-201, Issue #1 for the system described by the system maps as of February 2009 as amended from time to time by Form 1 - Record of Watermains.

Laurentian Valley Water Works purchases treated water from the City of Pembroke and distributes it to 645 homes and businesses through out 14 kilometers of distribution piping. The City of Pembroke owns and operates the Pembroke Drinking Water System (DWIS # 220000941), which consists of the Pembroke Water Purification Plant and distribution system. Sampling, testing and monitoring of the treated water provided to the Laurentian Valley Distribution System is conducted by the City of Pembroke. As owner and operating authority of the Pembroke Drinking Water System, Pembroke must ensure that the water supplied to the Laurentian Valley Distribution System meets the Ontario Drinking Water Quality Standards and has a minimum chlorine residual of at least 0.50 mg/l. Sampling and testing for the Laurentian Valley Distribution System is limited to the distribution system as required by Ontario Regulation 170/03.

Laurentian Valley Water Works is currently managed by the following staff;

- Mark Behm, Manager of Public Works, 613-735-6291, 613-401-3291
- Claus Trost, Water Quality Analyst, QMS Rep 735-6291, 613-639-3385
- Lorne Rathwell, Operations Foreman, 613-735-6291, 613-635-3241

## **Documentation & Communication**

The office for Laurentian Valley Water Works is at 460 Witt Road. All the required documentation is to be kept at this office and be made available to the public at this office. To this end, the Quarterly Water Reports are to be kept in a loose leaf binder complete with the analysis reports from the Laboratory, any correspondence from the Ministry of the Environment and any notes and files of the Analyst, ORO and the Public Works Manager. This binder, known as the yearly log, shall be kept in the WQA office and is available to the public at the front counter. The Annual Water System Report is also to be kept at the Municipal Office. There is a copy of the Laurentian Valley Water Works Distribution System Mapping, to be kept at the Water Works Office. The as built and detail drawings are also kept at the Water Works Office at 460 Witt Road.

The Policy and Procedures Manual, a copy of the regulations and the current quarters results are to be kept in the Analysts office at 460 Witt Road. These documents are available for review by the Ministry and the public at any time. A copy of the Policies and Procedures is also kept at the Operations Foreman Office at 460 Witt Road for the workers to review as required. (*Operators are to be given an up to date copy of the Drinking Water License, the Drinking Water Works Permit, the Policies and Procedures Manual and the Operational Plan each year at the review and training meeting*)

Quarterly Reports are to be completed by the analyst by the 20<sup>th</sup> of the month following the end of the Quarter, (March 31, June 30, Sept 31, and Dec 31.) The Quarterly Reports are available on the internet and at the front counter. The Quarterly Report is to be circulated to members of Council. The Quarterly Reports are also to be made available on the Internet at [www.lvtownship.ca](http://www.lvtownship.ca) .

The Annual Report is required to be completed and submitted to Council by February 28 of each year. A resolution from council, acknowledging the reports submission is required for the satisfaction of the MOE inspector and the accreditation auditor.

## **Emergency Contact Numbers & Addresses**

**Ministry of the Environment:**

- Spills Action Centre Phone: **1-800-268-6060** Fax: **1-800-268-6061**
- Karin Bourgon Phone: **1-800-860-2195** ext 230 Fax: **613-521-5437**

**Renfrew County & District Health Unit:**

- Office Phone: **613-735-8654** Fax: **613-735-3067**
- **after hours - 613-735-9926**
- David Tantalo Phone: **735-8654**, ext 1 569 # dtantalo@rcdhu.com

**Laurentian Valley Water Works:**

- Lorne Rathwell : Work Phone: 613-735-6291  
Cell Phone: 613-635-3241
- Claus Trost: Work Phone: **613-735-6291**  
Cell Phone: 613-639-3385

**Ontario One Call:** **1-800-400-8876** during regular office hours to schedule locates for service in three days. Call **1-800-400-2255** for emergency locates

**City of Pembroke:**

- Curtis Mick, Supervisor Water Distribution & Waste Water Collection  
Office Phone: **613-735-6816 ext 1403**  
Home Phone: 613-646-2964  
Cell Phone: 613-312-0098
- Water Purification Plant: Phone: 735-6821 ext 1491  
Standby #1 Phone: 613-281-2142

**Town of Petawawa:**

- Ontario Clean Water Agency - Sewage Plant 613-687-2141
- - Water Treatment Plant 613-687-7512

**Caduceon Environmental Laboratories Inc.**

- Greg Clarkin Manager Phone: **613-526-0123** Fax: 613-526-1244  
2378 Holly Lane  
Ottawa, Ontario  
K1V 7P1

**Staff:** Waterworks Phone 613-401-8269  
Mark Zadow home 613-735-5357 cell 613-585-7108 - Operator  
Andrew Warren home 613-628-5232 cell 613-635-2124 - Operator  
Todd Grahl home 613-735-6605 cell 613-633-1421 - Operator  
Dave Lewis home 613-735-4543 cell 613-635-3375 - Heavy Equipment  
Cole Hawkins home cell 613-433-0125 - Operator  
Shane Hebert home 613-635-7302 cell 613-585-1177 - Operator

**Critical Products & Services**

<b>Supply/Service</b>	<b>Vendor</b>	<b>Contact, Notes:</b>
Portable Testing Instruments & HACH Kit supplies can be obtained from;	Cleartech : Phone: 1-800-387-7503 Fax: 905-612-0575 7370 Bramalea Road Mississauga, Ontario L5S 1N6	Order DPD Free Chlorine Reagent for 10 ml sample, Cat.# 21055-69. Acct # 63183
HACH - Pocket Colorimeter HACH - pH Meter	Hach Sales & Service Canada Ltd. 3020 Gore Road, London ON N5V 4T7 Phone: 1-800-665-7635 Fax: 1-866-259-0984 infoCanada@hach.com	order online, see Claus for username & password <a href="http://www.hachco.ca">www.hachco.ca</a>  Acct # 40251351
Municipal Engineer	Jp2g Consultants Phone: 613-735-2507 Fax: 613-735-4327	Neil Caldwell P.Eng. Cell 613-282-0283
Water Analysis	Caduceon Laboratories Inc. Phone: 613-526-0123 Fax: 613-526-1244 2378 Holly Lane Ottawa ON K1V 7P1	Greg Clarkin, lab manager Tahir Yapici, lab supervisor Krystyna Pipin, lab supervisor
Emergency & After Hours Contact	The Security Company phone: 613-732-9009 Fax: 613-732-0038	Robert Watt
Water Meters	Neptune Phone: 1-800-667-4387 Fax: 7-905-858-0428	Dwayne McRae all meters are by Neptune, factory service
	Flowmetrix Technical Services Stacey Nichol Sr. Project Manager Flowmetrix Technical Services Inc. 2088 Jetstream Road London, Ontario N5V 3P6	Stacy Nichol, Sr. Project Manager Calibration & repair, of water meters, Hach kits, pH meter. Phone:1-519-870-3569 Fax: 1-519-268-3569
Valves & Hydrants Pipes & Fittings	Crane Supply 225 Paul Martin Drive Phone: 613-732-2857 Fax:	
	Wolseley Mechanical Group 1375 Pembroke Street West Phone: 613-732-1190	Robert Stanizewski Ph: 613-822-3444 Cell: 613-297-7647

	Boone Plumbing 20 Edgewater Street Kanata ON Phone: 1-613-831-6800	
Excavation/Installation & repair	W.W. Siegel Sand & Gravel  Phone: 613-732-8867 Fax: 613-735-6686	Jeff Siegel cell - 613-732-6653
	Splinter Forest Products Ltd. 39 Forest Valley Lane Laurentian Valley ON Phone: 613-732-3382	Don - 613-633-6190 Greg -
Hydro Vac Trucks	Crawl	613-646-7595 613-635-3854
	Exite Pembroke ON	613-621-0020
Municipal Contacts  for emergency supply of pipes & fittings	City of Pembroke Distribution  standby # 613-281-2140	Curtis Mick cell:613-312-0098
	White Water Region - OCWA Greg Davidson & Shane Severin common cell phones passed to duty operators	Greg - 613-633-6515 Shane - 613-633-0349 Ron - 613-633-0649
County Roads require permits to work on Pembroke Street West, Bruham Avenue & Jean Avenue.	County Road Occupancy Application is stored in A25/water email to - link on County Site	after hours emergency 1-866-353- 6374 Regular office hours 613-732-4353

## Water Sampling Schedule & Procedure

Laurentian Valley Water Works is required to take at least seven distribution samples each week for chlorine residual readings. We use the 4/3 option allowed under O.Reg. 170/03. The location of these readings are to be rotated through the four areas, twice each week;

Pembroke Street East Main  
Pembroke Street West Main  
Stafford Built up Area  
Willow Drive Main

At least four of the samples must be taken on Monday (*Tuesday, if Monday is a Holiday*) and the other three are to be taken on Thursday or Friday of the same week. (Care must be taken that the second set is taken, not less than 48 hours after the last of the first set of samples was taken, *so if Monday is a holiday, the second set cannot be taken before Friday*)

Laurentian Valley Water Works is required to take two samples weekly for microbiological testing, and collect a minimum 9 samples per month.

Week One: one sample from Brum's Dairy, either the Lab or the Dairy Bar

: one sample from Home Depot, *until the main is extended.*

Week Two: one sample from the Firehall and the other from Stafford Bingo Country.

In any month with only 4 Tuesdays the extra sample is to be taken from the Willow Drive Main, (*at the Hamilton Street Pumping Station*) on the Week Two schedule. The aim is to collect one sample each week from the Stafford Built-up Area and to alternate weeks on the East and West End Mains.

All the samples collected are to be analyzed for Total Coliforms and E. Coli. At minimum, the first three samples each month are also to be analyzed for general bacteria population expressed as colony counts on a heterotrophic plate count.

Please note, during the Christmas Holiday period, Laboratory and Courier services are reduced. The sampler may have to reschedule the sampling to suit the days available for delivery and analyses of the samples. The sampler is to call the Laboratory to confirm receipt of the samples the following afternoon. (*This will increase the time available to resample should there be a delivery problem or a problem with the samples submitted.*)

Once every quarter a sample for Trihalomethane and Haloacetic Acids is required. These samples are to be taken from the Home Depot sampling location. This location will take in water that has spent some time in the Bell Street Water Tower, and is therefore the longest in the distribution system. (*2018 - following guidance from the MOE, the HAA sampling site is to be relocated after 4 quarters, with results that are below the threshold, in response, we have moved the HAA sampling location to Brum's Dairy in the fourth quarter of 2018, if the 4/4 results at Brum's Dairy are below .004mg/l we will move to a third location; Bingo Country, in the fourth quarter of 2019. In 2021 we will choose the location with the highest 4/4 average as the permanent sampling location*)

In 2007 the Province of Ontario amended O.Reg 170/03 with O.Reg. 399/07 Community Drinking Water Lead Testing. Because of the complexity and timeliness of the lead sampling and reporting requirements and the fact that the law is fluid (*subject to amendments*) the Municipal Lead Sampling Protocol has been separated from this manual. Please refer to the Municipal Lead



Sampling Protocol Binder for this information. *The current Drinking Water License only required two rounds of plumbing & ICI samples until the License expires in 2021.*

The sampling equipment and forms are kept in the Analysts Office at 460 Witt Road. The equipment consists of a HACH Kit, Sampling Bottles, Coolers, Chlorine Residual Log and the Submission Forms.

Chlorine Residual Log Books are to be hard cover with bound spines and numbered pages.

The microbiological samples are normally taken on Tuesday mornings, after which the bottles are packed in the cooler with ice packs and the Submission Form, shipped via Purolator Courier to Caduceon in Ottawa. *(No ice packs in winter when the temperature is below minus 15 degrees Celsius, samples will freeze! The courier trucks are not heated.)*

When chlorine sampling, the chlorine residual reading is to be entered into the Log Book. If the residual is below 0.05 mg/l the bacterial sample should be taken and submitted. The **Standard Operating Procedure -1-** for Low Chlorine (page 10) should be followed.

When microbiological sampling, the tap is to be checked for cleanliness and turned on, medium flow for 5 to 10 minutes prior to taking the chlorine residual reading and the bacterial sample. This time can be used to label the sampling bottle, enter the required information in the Chlorine Residual Log and complete the Analysis Submission Form.

The chlorine residual reading is to be entered into the Log and on the Submission Form. If the residual is below 0.05 mg/l the bacterial sample should be taken and submitted. The **Standard Operating Procedure -1-** for Low Chlorine (page 12) should be followed.

The results of each weeks test are usually received by email the Friday of the week taken. This Certificate of Analysis is to be printed and placed in the current years "Log Book" binder, and the electronic copy is stored in E14, on the global drive, the email is stored in the waterworks folder for the current year.

The above sampling can only be conducted by a certified operator or the water quality analyst. Only the certified operator and the water quality analyst can make the log book entries. Any qualified person making an entry in the Log Book must have their name printed in the front of the Log Book next to their initial so that their entries can be identified.

### **Measurement and Recording Equipment Calibration and Maintenance**

HACH - Pocket Colorimeter factory calibrated, because there are two, they can be verified against each other quarterly and documented in the log book or they can also be tested by third parties using control samples, once per year. The documentation of the calibration is to be filed in the yearly log. The best before dates of the DPD pillows need to be checked before they are placed in the kits, each time they are restocked.

HACH - pH Meter, calibrated prior to each lead sampling schedule, by the method detailed in the owners manual, by the WQA. The Owners Manual and calibrating reagents are stored in the

Municipal storeroom. This meter can also be tested by third parties using control samples, once per year.

The reagents used for calibration are to be checked that they are not used after their best before dates prior to use and the third party contractor is to document the best before date of the reagents they use, on their forms submitted.

## Inventory

The following distribution system pipes & fittings are kept in stock for routine unplanned maintenance activities. Stock used in a repair is to be replaced as soon as possible, so that at minimum, there is always the stock as shown on the following table. Stock is to be ordered ahead for planned maintenance activities.

When purchasing stock, the operator is to ensure that all chemicals and materials used or that may come into contact with the water within the system shall meet all applicable standards set by both the AWWA and the ANSI safety criteria standards NSF/60 and NSF/61 (*this does not apply to water pipe and pipe fittings meeting AWWA specifications made from ductile iron, cast iron, PVC and HDPE. Nor to articles made from glass, HDPE or Teflon.*)

This is to be documented by getting the Technical Data Sheet and/or the Submittal Information from the supplier and attaching it to the Invoice. The Invoice is to also provide enough information (product code/id) to verify that they are the same as listed on the Technical Data Sheet and/or the Submittal Information. In the alternate, the required parts can be researched on the Internet and documented, and the required part purchased from a supplier, as long as the documentation is attached to the invoice and the invoice is detailed enough to verify that they are the same product. This requirement has been stipulated in person by the Operations Foreman to the Managers at Crane and Wolsley.

Item description	Minimum # in stock	comment
12" Royal PVC PR160 pipe	1	Only require that a length
10" Royal PVC PR160 pipe	1	greater than 4 feet, be kept in
8" Royal PVC PR160 pipe	1	stock,
6" Royal PVC PR160 pipe	1	"
4" Royal PVC PR160 pipe	1	"
property shut off box - 7' long	1	
1" X 1" coupler	1	
3/4" to 3/4" coupler	5	
3/4" to 1/2" coupler	3	
3/4" to 5/8" coupler	3	
5/8" to 1/2" coupler	2	
5/8" to 5/8" coupler	4	

<b>3/4" to 3/4" curb stop (property shut off valve)</b>	<b>4</b>	
<b>3/4" main stop valve</b>	<b>5</b>	
<b>4" to 3/4" saddle</b>	<b>1</b>	
<b>6" to 3/4" saddle</b>	<b>2</b>	
<b>8" to 3/4" saddle</b>	<b>1</b>	
<b>10" to 3/4 saddle</b>	<b>2</b>	
<b>12" to 3/4" saddle</b>	<b>1</b>	
<b>4" rubber clamp</b>	<b>2</b>	
<b>6" rubber clamp</b>	<b>2</b>	
<b>8" rubber clamp</b>	<b>2</b>	
<b>10" rubber clamp</b>	<b>2</b>	
<b>12" rubber clamp</b>	<b>2</b>	
<b>water main shut off box</b>	<b>1</b>	

**Laurentian Valley Water Works  
Standard Operating Procedure -1-  
Adverse Water Quality Notification**

**CHLORINE RESIDUAL BELOW 0.05 mg/l or UNTREATED WATER ENTERS THE  
DISTRIBUTION SYSTEM**

If a distribution system sample contains less than 0.05 mg/l or untreated water has entered the distribution system the following actions are required;

1. Immediately notify the Operations Foreman (Lorne Rathwell at **613- 635-3241**) to begin flushing.
2. Immediately notify the local Medical Officer of Health (Mike Grace at **613-735-8654** ext **551**) by speaking with the Medical Officer of Health. If he is not available speak, with a person at the Health Unit Office at **613- 735-8654** or if the office is closed, the person on call at **613-735-9926** (General Hospital)
3. Immediately notify the Ministry of Environment by speaking with a person at the Ministry's Spills Action Centre at **1-800-268-6060** (**In all the above, you must speak to that person, don't leave a message on a machine. Also record the time and name of the person you spoke to**)
4. Implement the required corrective action as follows;
  - A. Flush the mains in the affected area to bring the free chlorine residual to a minimum of 0.20 mg/l.
  - B. Resample & Analyze for chlorine residual. The resampling should consist of a minimum of 3 samples; one sample at the affected site, one sample upstream and one sample downstream of the affected site.
  - C. Advise the Medical Officer of Health of the results from the flushing and resampling and follow their directions.
5. Within 24 hours of the immediate oral notification of an adverse water quality incident, confirm the verbal notice by providing written notification to the local Medical Officer of Health and the MOE. Written notice is provided by completing **Section 2(a) - Written Notice by Drinking-Water System Owner** and faxing the form to the local Medical Officer of Health at **613-735-3067** and the Ministry's Spills Action Centre at **1-800-268-6061**
6. **Notice of issue resolution** - within 7 days of resolving the issue, a written notice shall be completed, using **Section 2(b) - Notice of Issue Resolution** and faxing the form to the local Medical Officer of Health at **613-735-3067** and the Ministry's Spills Action Centre at **1-800-268-6061**

**Laurentian Valley Water Works  
Standard Operating Procedure -2-  
Adverse Water Quality Notification  
DISTRIBUTION SYSTEM SAMPLE SHOWS A PRESENCE OF COLIFORM  
BACTERIA**

If a distribution system sample analysis tests positive for coliform bacteria the following actions are required;

1. Immediately notify the local Medical Officer of Health (Mike Grace at 613-735-8654 ext 551) by speaking with the Medical Officer of Health. If he is not available speak with a person at the Health Unit Office at 613- 735-8654 or if the office is closed, the person on call at 613-735-9926(General Hospital)
2. Immediately notify the Ministry of Environment by speaking with a person at the Ministry's Spills Action Centre at 1-800-268-6060. **(In all the above, you must speak to that person, don't leave a message on a machine. Also record the name of the person you spoke to)**
3. Implement the required corrective action as follows;
  - A. Resample & Analyze for microbiological parameters including P/A analysis for coliform bacteria.
  - B. The resampling should consist of a minimum of 3 samples; one sample at the affected site, one sample upstream and one sample downstream of the affected site.
  - C. As per sampling procedure, the chlorine residual and time of sampling should be noted at each sampling location.
  - D. Advise the Medical Officer of Health of the free chlorine residual results from the resampling and follow their directions.
4. Within 24 hours of the immediate oral notification of an adverse water quality incident, confirm the verbal notice by providing written notification to the local Medical Officer of Health and the MOE. Written notice is provided by completing **Section 2(a) - Written Notice by Drinking-Water System Owner** and faxing the form to the local Medical Officer of Health at 613-735-3067 and the Ministry's Spills Action Centre at 1-800-268-6061
5. Once the analytical results from the resamples are known, follow-up with the local Medical Officer of Health to confirm the presence or absence of coliform bacteria by P/A analysis or the presence or absence of any other contamination.

6. If the presence of coliform bacteria by P/A analysis is confirmed, steps 1, 2 & 4 are to be repeated. Flush the mains to maintain a minimum free chlorine residual of 0.20 mg/l in the affected parts of the distribution system, and continue to resample and test, until total coliforms are not detected in any of the samples from two consecutive sets of samples taken 24 to 48 hours apart or as otherwise directed by the medical officer of health.
7. **Notice of issue resolution** - within 7 days of resolving the issue, a written notice shall be completed, using **Section 2(b) - Notice of Issue Resolution** and faxing the form along with copies of the Analysis Reports to the local Medical Officer of Health at **613-735-3067** and the Ministry's Spills Action Centre at **1-800-268-6061**

**Standard Operating Procedure -3-  
Adverse Water Quality Notification  
HETEROTROPHIC PLATE COUNT ANALYSIS SHOWS THAT  
DISTRIBUTION SYSTEM SAMPLE CONTAINS MORE THAN 500 COLONIES  
PER ML**

If a distribution system sample contains more than 500 colonies per ml on a heterotrophic plate count (HPC) analysis (also known as Standard Plate Count) the following actions are required; *(It is no longer a requirement to report that a sample has more than 500 colonies per ml on a heterotrophic plate count (HPC) analysis, O.Reg 248/06 amending O.Reg 170/03.)*

1. Implement the required corrective action as follows;
  - A. Resample & Analyze for the HPC analysis at the original sampling location.
  - B. As per sampling procedure, the chlorine residual and time of sampling should be noted.
  
3.
  - A. If the presence of more than 500 colonies per ml on a HPC analysis is confirmed by the resamples, begin a flushing regimen and consult with the local Medical Officer of Health.
  - B. Resample and Analyse for the HPC analysis .The resampling should consist of a minimum of 3 samples; one sample at the affected site, one sample upstream and one sample downstream of the affected site.
  
4. Daily monitor and maintain the free chlorine residual at a minimum of 20 mg/l in the affected parts of the distribution system, and continue to resample and test, until less than 500 colony forming units (CFU) per millilitre are detected in all of the samples from two consecutive sets of samples taken 24 to 48 hours apart or as otherwise directed by the medical officer of health.

**Laurentian Valley Water Works**

**Standard Operating Procedure -4 -  
Adverse Water Quality Notification  
ESCHERICHIA COLI (E. Coli) DETECTED IN DISTRIBUTION SYSTEM  
SAMPLE**

If E. coli is detected in a distribution system sample the following actions are required;

1. Immediately notify the Operations Foreman (Lorne Rathwell at **613-635-3241**) to begin flushing.
2. Immediately notify the local Medical Officer of Health (Mike Grace at 613-735-8654 ext **551**) by speaking with the Medical Officer of Health. If he is not available speak with a person at the Health Unit Office at 613- **735-8654** or if the office is closed, the person on call at **613-735-9926** (General Hospital)
3. Immediately notify the Ministry of Environment by speaking with a person at the Ministry's Spills Action Centre at **1-800-268-6060**. **(In all the above, you must speak to that person, don't leave a message on a machine. Also record the name of the person you spoke to)**
4. Implement the following required corrective action and continue until *E. coli* and fecal coliforms are no longer detected in two consecutive sets of samples, or as instructed by the Medical Officer of Health;
  - A. Increase the chlorine dose and flush the mains to ensure that a free chlorine residual of at least 0.20 mg/l is achieved at all points in the affected part of the distribution system. This may require a call to Curtis Mick at the Water Purification Plant to advise them of the problem; to see if the problem originates in their end and for them to assist in raising the chlorine residual.
  - B. Resample & Analyze for microbiological parameters including the presence of *E. coli* and/or fecal coliform.
  - C. The resampling should consist of a minimum of 3 samples; one sample at the affected site, one sample upstream and one sample downstream of the affected site.
  - D. As per sampling procedure, the chlorine residual and time of sampling should be noted at each sampling location.
  - E. Advise the Medical Officer of Health of the free chlorine residual results from the resampling and follow their directions.
5. Within 24 hours of the immediate oral notification of an adverse water quality incident, confirm the verbal notice by providing written notification to the local Medical Officer of Health and the MOE. Written notice is provided by completing **Section 2(a) - Written Notice by Drinking-Water System Owner** and faxing the form to the local Medical Officer of Health at **613-735-3067** and the Ministry's Spills Action Centre at **1-800-268-6061**



6. Once the analytical results from the resampling are known, follow-up with the local Medical Officer of Health to confirm the presence or absence of *E. coli* and/or fecal coliform or the presence or absence of any other contamination.
7. If the presence of *E. coli* and/or fecal coliform is confirmed, consult with the local Medical Officer of Health. Steps 2,3,4, & 5 are to be repeated.
8. Maintain the free chlorine residual concentration at least 0.20 mg/l in the affected parts of the distribution system, and continue to resample and test, until *Escherichia coli* (*E. coli*) or fecal coliforms are not detected in any of the samples from two consecutive sets of samples taken 24 to 48 hours apart or as otherwise directed by the medical officer of health.
9. **Notice of issue resolution** - within 7 days of resolving the issue, a written notice shall be completed, using **Section 2(b) - Notice of Issue Resolution** and faxing the form to the local Medical Officer of Health at **613-735-3067** and the Ministry's Spills Action Centre at **1-800-268-6061**

**Standard Operating Procedure -5 -  
Adverse Water Quality Notification  
A DISTRIBUTION SYSTEM SAMPLE EXCEEDS 0.01 mg/l of LEAD**

Please refer to the Municipal Lead Sampling Protocol for this information.

**Adverse Water Quality Notification**  
**TRIHALOMETHANES EXCEED 0.10 mg/l IN DISTRIBUTION SYSTEM**  
**SAMPLE**

If Trihalomethane exceeding 0.10 mg/l is detected in a distribution system sample the following actions are required;

1. Immediately calculate the last four quarter average. If the four quarter average is below 0.10 mg/l notify the Pembroke Waterworks by calling the City of Pembroke Water Purification Plant at 613-735-0309, or emailing Curtis Mick. *(The plant needs to be notified because they can alter their procedures to reduce the level of THM's)*
2. If the last four quarter average is greater than 0.10 mg/l do the following;
  - A. At the end of the quarter, notify the local Medical Officer of Health, by written notice *(within 7 days of the end of the quarter)*, Written notice is provided by completing **Section 2(a) - Written Notice by Drinking-Water System Owner** and faxing the form to the Ministry's Spills Action Centre at **1-800-268-6061**, **email a copy to the Health Unit and the MOE Drinking Water Inspector assigned to our system.** (There is no requirement to phone SAC or local Medical Officer of Health)
  - B. Have the watermain flushed, *(THM's are caused by long retention times and increased water temperature)*
3. Resample at the next scheduled date;
  - A. and if the concentration of THM is greater than 0.10 mg/l consult with the Purification Plant and the Medical Officer of Health on the appropriate corrective action and continue as instructed. *(Will usually be to continue a flushing regimen.)*
  - B. If the concentration of THM falls below 0.10 mg/l, and the 4/4 average falls below 0.10 mg/l, issue a **Notice of issue resolution** - within 7 days of resolving the issue, a written notice shall be completed, using **Section 2(b) - Notice of Issue Resolution** and faxing the form to the local Medical Officer of Health at **613-735-3067** and the Ministry's Spills Action Centre at **1-800-268-6061**

Note: Small municipal residential systems and non-municipal year round residential systems that serve designated facilities also must report to the operator of each designated facility served by the system. *(Laurentian Valley currently has no designated facilities - schools, old age homes etc.)*

**Laurentian Valley Water Works**  
**Standard Operating Procedure -6A -**  
**Adverse Water Quality Notification**  
**HALOACETIC ACIDS EXCEED 0.08 mg/l IN DISTRIBUTION SYSTEM**  
**SAMPLE**

**Before January 1, 2020** - The *O.Reg. 169/03* standard (80 µg/L) and the *O.Reg. 170/03* reporting requirements for HAAs come into effect on **January 1, 2020**, as such drinking water system owners/operating authorities are not required to perform the RAA calculation for HAAs until 2020. Owners/operating authorities may wish to perform the calculation to determine if there are elevated levels of HAAs in the drinking water system.

**After January 1, 2020** - If Haloacetic Acids exceeding 0.08 mg/l is detected in a distribution system sample the following actions are required;

1. Immediately calculate the last four quarter average. If the four quarter average is below 0.08 mg/l notify the Pembroke Waterworks by calling the City of Pembroke Water Purification Plant at 613-735-0309, or emailing Curtis Mick. (*The plant needs to be notified because they can alter their procedures to reduce the level of HAA's*)
2. If the last four quarter average is greater than 0.08 mg/l do the following;
  - A. At the end of the quarter, notify the local Medical Officer of Health, by written notice (*within 7 days of the end of the quarter*), Written notice is provided by completing **Section 2(a) - Written Notice by Drinking-Water System Owner** and faxing the form to the Ministry's Spills Action Centre at **1-800-268-6061**, **email a copy to the Health Unit and the MOE Drinking Water Inspector assigned to our system.** (There is no requirement to phone SAC or local Medical Officer of Health)
  - B. Have the watermain flushed, (*HAA's become elevated by long retention times and increased water temperature*)
3. Resample at the next scheduled date;
  - A. and if the concentration of HAA's is greater than 0.08 mg/l consult with the Purification Plant and the Medical Officer of Health on the appropriate corrective action and continue as instructed. (*Will usually be to continue a flushing regimen.*)
  - B. If the concentration of HAA's falls below 0.08 mg/l, and the 4/4 average falls below 0.08 mg/l, issue a **Notice of issue resolution** - within 7 days of resolving the issue, a written notice shall be completed, using **Section 2(b) - Notice of Issue Resolution** and faxing the form to the local Medical Officer of Health at **613-735-3067** and the Ministry's Spills Action Centre at **1-800-268-6061**

Note: Small municipal residential systems and non-municipal year round residential systems that serve designated facilities also must report to the operator of each designated facility served by the system.

**Laurentian Valley Water Works  
Standard Operating Procedure -7 -  
Hydrants, Dead-End & Blow-Off Flushing Procedure**

The fire hydrants, dead-ends and blow-offs are to be flushed twice yearly unless otherwise or elsewhere stated. It is preferable to flush in the spring and the fall when water usage is at its lowest. The homeowners are notified of the flushing dates by inserting a flyer in the water bills indicating the time period the flushing is to occur. Or in the alternate, on the day prior to the scheduled flushing, the homeowners and businesses in the immediate vicinity are to be notified verbally if available or a flyer is to be left indicating that there will be flushing, at what times and precautions the homeowners can take to minimize the disruption. See Flushing Notice in Appendix.

1. Isolate the section to be flushed from the rest of the system. Mark or record any valves closed on a map.
2. Install the gate valve and open the fire hydrant or blow-off valve slowly.
3. Direct the water being flushed with the diffuser and/or hoses away from private property and persons. (Ensure that the flushed water does not enter a surface water source unless there is no chlorine.)
4. The hydrant is to be run fully open for a minimum of 5 minutes to stir up as much loose material in the main as possible. The main should then be flushed for a minimum 15 minutes.
5. The operator is to record the required information in the Flushing Record for each hydrant or blow-off flushed. (*Copy in appendix*) A minimum 2 samples should be taken to determine the clarity of the water and the chlorine residual. The first should be taken immediately after the water clears (*2-3 minutes after the hydrant is opened*) and the second just prior to closing the valve.
6. When the flushing water is clear, slowly close the hydrant or blow-off valve. If the water does not clear, the operator is to contact the Operations Foreman or the Water Quality Analyst for instructions. Leave the hydrant cap off to allow the water to drain back, in the winter months pour (bio)antifreeze into the bowl. Return later to close the cap and mark as such in the report.
7. When a segment of main is completely flushed, open any valves that were closed for the flushing and record or remove the marks on the maps indicating that the valves are closed before moving on to the next section to be flushed.
8. The flushing log is to be completed, indicating whether any follow up service is required.

### **Flushing Sequence**

1. Sequence for flushing the Stafford Built-up Area, south of the Indian River;
  - a) Start at Hydrant 1 on Elgin Street, in order to,
  - b) Hydrant #15, on Roy Street,
  - b) then to blow-off valve at the end of Lark Street
  - c) then at Hydrant #18 on Hamilton Street
  
2. Sequence for flushing the Stafford Built-up Area North of the Indian River;  
WQP&P 2019

- a) Start at hydrant #20 on Hamilton Street
  - b) then at hydrant #19 on Hamilton Street
  - c) then at hydrant #21 on Hamilton Street
  - d) then at the blow-off valve at the end of the main on Hamilton Street
  - e) then to hydrants #39 and #68 at Indian Court, notify management at Brum's Dairy - 735-2325
  - f) then at hydrant #47 on Lorne Street
  - g) then at hydrant #57 on Stafford Street
  - h) then at hydrant #48 at the Recreation Center
  - i) then at hydrant #63 on Allen Street
  - j) then at hydrant #67 on Bruham Avenue
  - k) then at the blow-off valve on Bruham Avenue across from hydrant #67 in front of 711 Bruham Avenue
  - l) then at hydrant #31 on Jean Avenue
3. Sequence for flushing the West End Area;
- a) Start at hydrant #221 on Pembroke Street West
  - b) then at hydrant #210 on Butler Chev Olds parking lot, private property - notify management
  - c) then continue up Pembroke Street West to hydrant # 222 at Clouthier Storage.
4. Sequence for flushing the East End Area;
- a) Start at hydrant #102 on Pembroke Street East
  - b) then at hydrant #105 in the Boston Pizza parking lot, private property - notify management
  - c) then at hydrant # 104 in front of Wal-Mart, private property - notify management
  - d) then at hydrant # 103 in front of Canadian Tire, private property - notify management
  - e) then continue up to Home Depot, Hydrant # 112

## **Standard Operating Procedure -8 - Water Main Breaks**

1. **CLASSIFICATION** Shortly after the Operator in Charge is advised that there is a water main break or a suspected leak, he is to attend the site to determine the type and scope of the break. Classification of the break is to be in accordance with the MOE Watermain Disinfection Procedure.

Category 1 - watermain breaks with no evident or suspected contamination; contamination is typically not suspected for circumferential breaks or small leaks, where flow is maintained from the break until an air gap is established, and where the air gap can be maintained during the repair procedure. *(If at any time during the repair, the air gap is lost, positive pressure is lost or contamination is suspected, or evident, the break shall be reclassified to Category 2)*

Category 2 - are large watermain breaks, in which it is suspected or evident that contamination is present in the main, and/or is being directed to our customers. This includes breaks in which there has been a loss in pressure, *(below 20 psi, because there can be backflow from other higher pressure sources)*

2. **NOTIFICATION;** **Category 1** breaks do not require any official notification.

**Category 2** breaks - Immediately notify the local Medical Officer of Health (Mike Grace at 613-735-8654 ext 551) by speaking with the Medical Officer of Health. If he is not available speak with a person at the Health Unit Office at 613- 735-8654 or if the office is closed, the person on call at 613-735-9926 *(General Hospital, leave them your contact information, and wait for the on call person to call you back)*

**If the Health Unit declares a water advisory;** Immediately notify the Ministry of Environment by speaking with a person at the Ministry's Spills Action Centre at 1-800-268-6060. **(In all the above, you must speak to that person, don't leave a message on a machine. Also record the name of the person you spoke to)**

## **Laurentian Valley Water Works Standard Operating Procedure -8A - Category 1 - Water Main Breaks**

3. **NOTIFICATION;** Category 1 breaks do not require any official notification, however, notify homeowners in the vicinity of the break/repair. Use a flyer similar to the one in the Appendix.
4. **DOCUMENTATION;** The Operator in Charge is to begin recording the required information on a Water Distribution System Service & Repair Form *(see appendix)*. It is also requested that the OIC take some pictures of the break when it is exposed, this will assist in the documentation, to show why the break was classified as it was.
5. **SCHEDULING;** a) small category 1 breaks and/or leaks, can be scheduled to repair during regular work hours.  
b) if it is a large category 1 break, the valves on either side are to be shut, one fully and the other by 95% (to keep positive pressure on the pipe), and the repair is to commence as soon as possible. *(The decision on when to complete the repair shall be based on the risk*

*to operators, public safety and the danger of property damage and/or environmental damage.)*

Arrange for the required equipment, material and labour to be on site at the scheduled time.

6. **LOCATES;** Call for locates:  
Ontario One Call - 1-800-400-8876 during regular office hours to schedule locates for service in three days. Call 1-800-400-2255 to request emergency service for immediate locates. **Contractor ID = 03727**
7. **TRAFFIC CONTROL;** Complete and document a traffic control plan, copy in Appendix. Have the appropriate barricades and signage installed. The County requires Occupancy Permits for work undertaken on County Roads that impacts traffic flow (*Bruham Avenue, Jean Avenue and Pembroke Street West*). The Application form is stored in A25/water and copies are kept with the foreman, in his office. Complete the Application, scan & email to the County through their website link.
8. **THE REPAIR;** On-Site;
  - a) Excavate & locate the break
  - b) Excavate & install a sump & pump, to keep piping above standing water (*air gap*)
  - c) complete the repair, continually cleaning the piping with the chlorine cleaning solution, (1% sodium hypochlorite solution)
  - e) alternative procedure is to have a hydro-vac truck on-site, to do the final excavation with high pressure water & vacuum.
  - f) when repairs are complete, prior to backfill, open partially closed valve and flush to other valve as practical,
  - g) shut valve and open other to flush in the other direction if practical
  - h) flush into the consumers building
  - i) backfill & compact over repair area
9. Complete the Water Distribution System Service & Repair Form. Copy form and forward to analysts office and notify analyst that he has the option to include the area for sampling on the next rotation. (Sampling is not required, but is a best/recommended practice)
10. Review inventory of spare parts, order to replace what was utilized, if required.

**Please Note:** if there is a loss of pressure during the break, and/or the free chlorine residual tested below 0.05 mg/l and/or bacterial contamination is detected in a distribution sample taken at the site of the leak/break, that this is reportable as an adverse water quality incident to SAC and RCDHU as per **Standard Operating Procedure -1-**

**Laurentian Valley Water Works  
Standard Operating Procedure -8B -**



## Category 2 - Water Main Breaks

1. **NOTIFICATION;** Category 2 breaks - Immediately notify the local Medical Officer of Health (Mike Grace at 613-735-8654 ext 551) by speaking with the Medical Officer of Health. If he is not available speak with a person at the Health Unit Office at 613- 735-8654 or if the office is closed, the person on call at 613-735-9926 (*General Hospital, leave them your contact information, and wait for the on call person to call you back*)  
**If the Health Unit declares a water advisory;** Immediately notify the Ministry of Environment by speaking with a person at the Ministry's Spills Action Centre at 1-800-268-6060. **(In all the above, you must speak to that person, don't leave a message on a machine. Also record the name of the person you spoke to)**  
Notify homeowners in the vicinity of the break/repair. Use a flyer similar to the one in the Appendix.
2. **DOCUMENTATION;** The Operator in Charge is to begin recording the required information on a Water Distribution System Service & Repair Form (*see appendix*). It is also requested that the OIC take some pictures of the break when it is exposed, this will assist in the documentation, to show why the break was classified as it was.
3. **SCHEDULING;** the repair is to commence as soon as possible. (*The decision on when to complete the repair shall be based on the risk to operator and public safety and the danger of property damage and/or environmental damage.*)  
Arrange for the required equipment, material and labour to be on site at the scheduled time.
4. **LOCATES;** Call for locates:  
Ontario One Call - 1-800-400-8876 during regular office hours to schedule locates for service in three days. Call 1-800-400-2255 to request emergency service for immediate locates. **Contractor ID = 03727**
5. **TRAFFIC CONTROL;** Complete and document a traffic control plan, copy in Appendix. Have the appropriate barricades and signage installed. The County requires Occupancy Permits for work undertaken on County Roads that impacts traffic flow (*Bruham Avenue, Jean Avenue and Pembroke Street West*). The Application form is stored in A25/water and copies are kept with the foreman, in his office. Complete the Application, scan & email to the County through their website link.
6. **THE REPAIR;** On-Site;
  - a) Excavate & locate the break
  - b) Excavate & install a sump & pump, to keep piping above standing water (*air gap*)
  - c) remove any contaminants that may have entered the watermain, either by flushing or swabbing.
  - d) complete the repair, continually cleaning the piping with the chlorine cleaning solution, (1% sodium hypochlorite solution)
  - d) all the surfaces of the pipe and repair parts which will come into contact with drinking water shall be disinfected with the chlorine cleaning solution; if you have to cut out a section of pipe, the interior surfaces of the cut ends shall also be

cleaned, by swabbing or spraying the cleaning solution as far as can be practically reached. (Depending on the nature or severity of the contamination, site specific disinfection procedures may be required, these are to be discussed and agreed upon by the ORO, the QMS Representative and or may be dictated by the RCDHU, these steps may include the disinfection procedures for new watermains as per ANSI/AWWA Standard C 651

- f) when repairs are complete, prior to backfill, open the partially closed valve and flush to other valve through the nearest fire hydrant as practical,
- g) shut valve and open other to flush in the other direction if practical,
- h) flush into the consumers building,
- i) backfill & compact over repair area.

7. Complete the Water Distribution System Service & Repair Form. Copy form and forward to analysts office and notify analyst to include the area for sampling on the next rotation, a minimum of one microbiological sample is required, it is preferable to collect one upstream and one downstream from the break.
8. Review inventory of spare parts, order to replace what was utilized, if required.

**Laurentian Valley Water Works  
Standard Operating Procedure -9 -  
Service Pipe or Connection Leaks or Breaks**

1. Shortly after the Operator in Charge is advised that there is a break or a suspected leak, he is to attend the site to determine the type and scope of the break.
  - a) the location of the leak or break is to be determined first, if the leak is on the Municipal portion (before the curb stop) then SOP -8- is to be followed. The location of the leak can usually be determined by closing the curb stop to the consumer and listening to the pipes.
  - b) if it is a large break to the consumer, the service connection valve is to be immediately shut.
  - c) if it is a small break/leak, the repair can be scheduled during regular hours in conjunction with the consumers plumbers schedule.
2. The Operator in Charge is to begin recording the required information on a Water Distribution System Service & Repair Form (*see appendix*). It is also requested that the OIC take some pictures of the break/leak when it is exposed, this will assist in the documentation, to show why the break was classified as it was.
3. After the consumers plumber has completed the repairs the Operator in Charge shall inspect the connections, confirm the required backflow protection devices are installed and that the water valve in the building is turned off. Then the curb stop valve can be opened and the plumbing system in the building flushed.
4. Complete the Water Distribution System Service & Repair Form. Copy form and forward to analysts office.

**Laurentian Valley Water Works  
Standard Operating Procedure -10-  
Cross Connection**

Laurentian Valley Water Works has a policy that requires dual check valves on all residential connections to the distribution system and double check valves on all ICI connections. The water is not initially turned on until an inspection has been conducted by either the Operations Foreman or the Chief Building Official. However, there are some residential and commercial connections that have been in place before this policy was put in place, they are to be corrected as they are detected by the Building Department.

Cross Connections will be discovered in one of two ways; either it is found during an inspection or there has been a customer complaint received. If the potential for back flow is detected in the plumbing system of the customer during an inspection, the curb stop at the street is to be immediately turned off until the required repairs have been made and/or a proper back flow prevention device has been installed.

Shortly after the Operator in Charge is advised that there is a possible cross contamination of the distribution system he is to attend the site to determine the type and scope of the contamination.

**Laurentian Valley Water Works  
Standard Operating Procedure -11-  
Loss of Service**

Laurentian Valley Water Works receives the drinking water supply from the City of Pembroke under contract. If there is an emergency at the Water Treatment Plant or in their distribution system that puts them in a situation of being unable to continue to supply drinking water they are required to notify us directly.

There will be very little that the Water Works can do in the response phase, other than ensuring that the City's communications to the public include affected Laurentian Valley Water Works customers and that our communication reinforce the City's and the Renfrew County District Health Units message.

### **Recovery Phase**

It can be assumed that there will be a loss of pressure during the loss of service and therefore there will be a chance of a free chlorine residual below 0.05 mg/l and/or that untreated water and/or contaminated water has entered the distribution system, this is reportable as an adverse water quality incident to SAC and RCDHU

1. Immediately notify the local Medical Officer of Health (Mike Grace at 613-735-8654 ext 535) by speaking with the Medical Officer of Health. If he is not available speak, with a person at the Health Unit Office at 613- 735-8654 ext. 555 or if the office is closed, the person on call at 613-735-9926(General Hospital)
2. Immediately notify the Ministry of Environment by speaking with a person at the Ministry's Spills Action Centre at 1-800-268-6060 **(In all the above, you must speak to that person, don't leave a message on a machine. Also record the time and name of the person you spoke to)**
3. Implement the required corrective actions as instructed by the Renfrew County Health Unit and/or the City of Pembroke. (The corrective actions will all depend on the nature of the original emergency. Flushing can only begin when the City has restored service and has advised the Water Works that they have the capacity for us to begin flushing. The sampling parameters will also be tied to the nature of the original service interruption and the RCDHU will advise what, where and how many they would like done.)
4. When given clearance to begin flushing, follow Standard Operating Procedure -7- for the affected area to maintain a minimum free chlorine residual of 0.20 mg/l in the affected parts of the distribution system, or as otherwise directed by the medical officer of health.
5. Within 24 hours of the immediate oral notification of an adverse water quality incident, confirm the verbal notice by providing written notification to the local Medical Officer of Health and the MOE. Written notice is provided by completing **Section 2(a) - Written Notice by Drinking-Water System Owner** and faxing the form to the local Medical

Officer of Health at **613-735-3067** and the Ministry's Spills Action Centre at **1-800-268-6061**

6. Continue the sampling and resampling until the required parameters sampled conform to the Drinking Water Quality Standard or as otherwise instructed by the Renfrew County District Health Unit.
7. **Notice of issue resolution** - within 7 days of resolving the issue, a written notice shall be completed, using **Section 2(b) - Notice of Issue Resolution** and faxing the form to the local Medical Officer of Health at **613-735-3067** and the Ministry's Spills Action Centre at **1-800-268-6061**

**Laurentian Valley Water Works  
Standard Operating Procedure -12-  
Fire Hydrant Maintenance**

The fire hydrants are to be inspected twice yearly. It is acceptable to inspect the hydrants in the spring and the fall when the dead ends and blow-offs are being flushed. The hydrants should also be inspected after each use, especially in the winter to ensure that the barrel has drained.

1. Inspect for leakage and make necessary repairs.
2. Instal the gate valve and open hydrant fully, checking for ease of operation.
3. Flush hydrant following SOP #7.
4. Remove all nozzle caps and inspect threads for impact damage or cross threading. Clean and lubricate outlet nozzle threads with a dry graphite-base lubricant, and check for ease of operation. Ensure that the outlet nozzle cap gaskets are in good condition and that the chains are in place.
5. Replace caps, tighten with a spanner wrench, then back of the threads slightly so the caps are not excessively tight, but are still tight enough to prevent hand removal.
6. Check for any exterior obstruction that could interfere with hydrant operation during an emergency. (Brush, hedges, fences etc.)
7. Check the dry barrel for proper drainage.
8. Clean and make note if repainting the exterior of hydrant is required. Ensure that the hydrant number is in place.
9. Be sure the auxiliary valve is in the fully opened position.
10. Should the hydrant be inoperable, tag and bag the hydrant and notify the Operations Foreman, who will advise the Fire Department that the hydrant is not in service.
11. Complete the Hydrant Maintenance Report and file with the Operations Foreman and/or the Water Quality Analyst.
12. The Master Hydrant Record will then be completed by the Water Quality Analysts office.

**Everyone working with the fire hydrants is to be aware that when operating a dry-barrel hydrant, it must be fully open so that the drain becomes fully closed. If the hydrant is not fully opened the drain will remain partially open and the water seeping through will saturate the drain field. This could result in the hydrant freezing.**

Further reference material: [AWWA Manual M17, Installation, Field Testing and Maintenance of Fire Hydrants](#)

## **Standard Operating Procedure -13- Dechlorination**

To ensure that any water used in the disinfection of new or repaired water mains, as well as, chlorinated water discharged as the result of flow testing or flushing fire hydrants is not directed to a storm sewer, drain, or any other location that may allow the discharge to enter a water course without prior de chlorination, the operator will ensure that the de chlorination has occurred , or that the water has been redirected to the sanitary sewer.

- 1 The chlorinated water used for hydrant flushing or flow testing which contains the same content of chlorine as the distribution system may be flushed into the waste water collection system, with prior permission of the senior plant operator. This will be accomplished by using proper hoses and connections ,and the use of a proper traffic plan, signs (cone , traffic barrels and or barricades) and competent personal.
- 2 The chlorinated water used for hydrant flushing or flow testing which contains the same content of chlorine as the distribution system and were there is no sewer system available, the water may be discharged into the storm sewer or an open ditch, providing the following conditions exist.
  - (a)The ditch does not empty directly in to a natural habitat
  - (b)The chlorine has time to naturally dissipate before the water could reach a natural habitat.
- 3 In the event that water with a high content of chlorine is to be flushed from the fire hydrants, following the disinfection of repaired water mains or the installation of new water mains, the water shall be de chlorinated, before entering sewers, ditches or storm drains. Using the AWA Standards For Disinfecting Water Mains (ANSI/AWWA C651-05) Appendix C Disposal of Heavily Chlorinated Water as a guide .
- 4 Should chlorinated water accidentally be discharged to the storm sewer and/or water course without being dechlorinated, it is to be verbally reported to SAC and the local MNR office.

## **REHABILITATION, EXPANSION and MODIFICATION OF WATERMAINS AND COMPONENTS OF THE DRINKING WATER SYSTEM**

The condition of the Drinking Water System is assessed annually. Scheduling of upgrades and rehabilitation is co-ordinated with the Works Department road maintenance schedule. Expansion of the distribution system is overseen by the CAO and Planning Department staff. Generally, the developer supplies and installs the infrastructure under the supervision of the Municipal Engineer of Record. The Water Works accepts the installed works after confirmation that the system has been installed as per approved plan and bacteriological samples have been taken and analysed by the WQA.

All parts of the drinking water system in contact with drinking water which are; Added, modified, replaced, extended, or taken out of service for inspection, repair, or other activities that may lead to contamination, shall be disinfected before being put into service in accordance with the provisions of MOE Water Main Disinfection Procedure (*replaced AWWA C651 - Standard for Disinfecting Water Mains in January 2015*).

The design of any watermain addition, modification, replacement or extension shall be:

- A. prepared by a Professional Engineer,
- B. designed only to transmit water and not to treat water,
- C. Satisfy the design criteria set out in the Ministry of the Environment publication “Watermain Design Criteria for Future Alterations Authorized under a Drinking Water Works Permit – March 2009”, as amended from time to time; and
- D. be consistent with or otherwise address, the design objectives contained within the Ministry of the Environment publication “Design Guidelines for Drinking Water Systems, 2008”, as amended from time to time.
- E. all chemicals and materials used or that may come into contact with the water within the system shall meet all applicable standards set by both the AWWA and the ANSI safety criteria standards, NSF/60 and NSF/61 (*this does not apply to water pipe and pipe fittings meeting AWWA specifications made from ductile iron, cast iron, PVC and HDPE. Nor to articles made from glass, HDPE or Teflon.*)

For greater certainty, Sections 2, 3 & 4 of the Drinking Water Works Permit shall be reviewed when considering any additions, modifications or rehabilitation of the distribution system or any of the components of the system.



## UTILITY LOCATING POLICY

We are required to have locates completed by the various utilities we may encounter, when we excavate to expand, repair and or modify our water infrastructure. The Public Works Manager or the Works Foreman are responsible for having the required locates completed. They will complete the Utility Locate Request Form 1 and submit to Ontario One Call by email or by phoning. Ontario One Call - 1-800-400-8876 during regular office hours to schedule locates for service in three days. Call 1-800-400-2255 to request emergency service for immediate locates. **Contractor ID = 03727**

A copy of the locate documents shall be kept with the excavator working onsite, until the work is completed. After which they should be filed with the Operations Foreman. A copy of the locate documents shall be attached to the Water Distribution System Service & Repair Form, which is filed in the Yearly Log Binder, in the QMS office.

Contractors and other Utilities doing work in Laurentian Valley will also be contacting Ontario One Call for underground locates. Ontario One Call emails these requests to the Public Works Manager and the Operations Foreman. They will print these requests and forward to the Operator assigned to complete the locate, along with a Locate Request Form 2

The Operator assigned to complete the locate will review the documents provided, and using the System Maps, in the Operations Foreman's office, determine if there are water mains, hydrants or service connections in the area designated as the Location of Proposed Work. If there is no water infrastructure shown in the area of the proposed works, the forms provided are to be completed and given to the Operation Foreman or in his absence the Public Works Manager, to be forwarded to the contractor or Ontario One Call.

If there is water infrastructure in the area of the proposed works, the Operator is to locate the area on the Detail Maps and either photocopy the details or transfer the information to the Locate Request Form Provided. *(This step should give the operator enough information to locate the infrastructure in the field.)* Out in the field, the operator is to actually locate and mark the infrastructure in and adjacent to the area of the proposed works. This can be accomplished with the magnetic locator, handheld GPS or the radio detection tool, whichever the operator requires to accomplish the task for the particular locate. Marking is to be completed using blue spray paint to mark the location of the water main, service connection, curb stops etc. **(Just on Municipal Property)** When completed, the forms provided are to be completed and given to the Operations Foreman or in his absence the Public Works Manager, to be forwarded to the contractor and/or Ontario One Call.

## WATER METERS

Laurentian Valley Water Works owns 6 large water meters which measure the water we purchase from the City of Pembroke, and a seventh that measures the water that travels through our west-end main to the Town of Petawawa.

- ME1 Located on Elgin Street, near Boundary Road, 10 inch and a 2" Neptune trident meter
- ME2 Located on Willow Drive, near Boundary Road, 4 inch Neptune compound meter
- ME3 Located on Karen Street, near Boundary Road, 4 inch Neptune compound meter
- ME4 Located on Bruham Avenue, near Boundary Road, 10 inch Neptune meter, & 2" Trident 10
- ME10 Located on Pembroke Street East at City limits, near Angus Campbell Drive, 8 inch Schlumberger meter,
- ME20 Located on Pembroke Street West at City limits, 6 inch Neptune compound meter,
- ME22 Located on Pembroke Street West at MacGregors Hill, 10 inch Neptune meter and a 2" Neptune Trident 10

There are also 38 commercial water meters that are read, the same day as the large water meters.

The water meters are read quarterly, timing is up to the reader, but needs to be as close as possible to the 1<sup>st</sup> of each quarter - because the Municipal software uses the 1<sup>st</sup> day of each quarter for the billing. *(Can be a problem to schedule with stat holidays on January 1, July 1 and end of quarters occasionally ending on weekends)*

Prior to reading the meters the spreadsheets are prepared to enter the information, the last reading is also indicated, this lets the reader know that the meter is working when he is on-site, and any problems can usually be determined quickly with the property owner.

Most of the water meters have remote read buttons, and we currently use a Sensus AR4090 remote reader. It needs to be plugged in to charge for 24hrs before using. The operators have all been around on the meter reading trip at least once and should be somewhat familiar with the location of the buttons and meters. They have also been cautioned about reading the number twice - double checking the number they write down before leaving the property, avoids having to go back if a discrepancy is found later.

At the office, the numbers are inputted into the spreadsheet, I use QuatroPro, but it can be converted to Excel for those who feel more comfortable with that style. You then check for obvious discrepancies - large increases or decreases in consumption. If required, you contact the customer to find out if there is logical reason for the differences, usually was a break or leak at the facility, but could be toilets leaking that are undetected.

The spreadsheet is then passed on to the Accounts Receivable Clerk, they use the Municipal software to calculate and distribute the invoices.

The large (City) meter readings are then scanned and emailed to the City of Pembroke, currently Robin McGregor, at [rmcgregor@pembroke.ca](mailto:rmcgregor@pembroke.ca)

When the invoices come from the City, they are checked/verified, and coded for our Accounts Payable Clerk, and a copy of the West End Invoice is given to the Accounts Receivable Clerk to Invoice the Town of Petawawa.

There are paper files kept in the WQA/QMS Rep's office of the current year on the desk, and past years in the filing cabinet. The electronic files are kept in J:\E - ENVIRONMENTAL SERVICES\E08 - Water Works\Water Meters

With regards to Water Meter Maintenance, they are calibrated every second year, and the remote readers require constant monitoring and repairs when required.

Policy Manual  
Created May 2003  
Claus Trost, WQA

## CONTINUAL IMPROVEMENT REGISTER

Revision Date: January 2009 (Regulation 170 as amended by 248/06 & 399/07)  
February 2009 (DWQMS required sections added; Critical Suppliers Contact Info, Inventory list)  
February 2009 (added SOP's for Service Connection breaks or leaks, Cross Connections, Service Interruption (loss of City supply) also updated flushing sequence for new serviced areas & added hydrants)  
May 2009 - amended & corrected Flushing Sequence  
February 2011 (updated stats, infrastructure, contacts, phone numbers,)  
June 2011 - amended SOP-14 to include documentation requirements of the new Drinking Water Works Permit  
August 2011 - amended to include Drinking Water License information and Drinking Water Works Permit information; #'s and description,  
August 2011 - Morris retired, amended contacts and other required information, to either David or Mark  
August 2011 - amended for CGSB CAR's; System description and the fact that the City of Pembroke samples & tests the water we purchase.  
June 2012 - amended, to add in Mark Behm and Lorne Rathwell, to replace M Schneider and D Saunders.  
Jan 2013 - amended, Valley Spring building closed, alternate sampling location.  
March 2014 - amended, added where to store the documentation of the third party calibration.  
January 2015 - reviewed and updated contacts and phone numbers, change of call service provider, CAR JO5857-2, added text to Measurement & Calibration section, CAR JO5857-1, added footer, MOE change from AWWA document to their new document,  
March 2015 - SOP 14 added a bullet regards NSF/61, developed a Utility Locating Policy SOP 15,  
April 2015 - edited typos, and minor errors found during the Annual Operators Training Meeting  
June 2015 - amended Inventory, to include documentation required.  
December 2015 - amended THM sampling location, expanded/detailed record keeping of the analysis reports, amended SOP #8 to conform to the newly released MOR document Watermain Disinfection Procedure, will now be an SOP 8, 8A & 8B  
April 2016 - amended Utility Locate SOP 15  
August 2016 - amended the THM SOP, to conform to the new reporting requirements of MOE.  
November 2016 - amended the THM SOP again, only report at end of quarter, and start a flushing regimen.

- added a request to take photos of watermain breaks when they are exposed. Will assist in proving classification and be useful for future training.
- January 2018 - added a SOP for HAA's, edited, adjusted Table of Contents, - reviewed & edited the contact lists
- April 26, 2018 Added Approval signature line, documentation that the Public Works Manager approved the changes & updates becomes part of the official document.
- November 2018 edited text on Page 11, sampling schedule, to clarify that the second set of samples must be more than 48 hours after the last of the first set of weekly samples was taken.  
Also noted the change in HAA sampling location following the MOE guidance document received on/or about May 9<sup>th</sup>, 2018
- April 2019 Added page for water meters, to list all the documents, details, procedures and contacts to make it easier for someone to follow me!
- Jan 2020 Reviewed phone numbers & contacts, updated, added County Road Occupancy Permit requirements

\_\_\_\_February 5, 2020\_\_\_\_  
Date

\_\_\_\_*original signed by M Behm*\_\_\_\_  
Public Works Manager

NOTE: This document is not the final authority. The Ministry of Environment and the Medical Officer of Health have the final say in all decisions made after they are advised of the problem. This document is to be reviewed and updated yearly or sooner as regulations are amended or personnel changes are known. Please advise the author (Claus Trost, QMS Rep) when any errors or omissions are detected.

# **Laurentian Valley**

## **Water Works**

### **Water Quality**

# **Policies & Procedures**

# **Manual**



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O. Reg 128/04 - Certification of Drinking-Water system Operators and Water Quality Analysts		Schedule E - office copy
Laboratories, Practices for the Collection and Handling of Drinking Water Samples		Schedule F - office copy

## Introduction

Laurentian Valley Waterworks received its **Certificate** as a Water Distribution Plant, Level 1 (WD1) in November of 2000, # **2893**. The Drinking Water Protection Regulation 170/03 as amended introduced by the provincial government in 2003 requires that the Municipality sample and test the water distributed by the Municipality to ensure that clean, safe water is distributed to our customers.

On July 15, 2005 the system was reclassified as Water Distribution Subsystem Class 1 by the Ministry of Environment. The Drinking Water System Information number for Laurentian Valley Water Works is W260007465.

On June 2, 2011 the Corporation of the Township of Laurentian Valley was issued Municipal Drinking Water License # 192-101, Issue #1, as both the Owner and Operating Authority.

May 31, 2011 the Corporation of the Township of Laurentian Valley was issued a Drinking Water Works Permit Number 192-201, Issue #1 for the system described by the system maps as of February 2009 as amended from time to time by Form 1 - Record of Watermains.

Laurentian Valley Water Works purchases treated water from the City of Pembroke and distributes it to 645 homes and businesses through out 14 kilometers of distribution piping. The City of Pembroke owns and operates the Pembroke Drinking Water System (DWIS # 220000941), which consists of the Pembroke Water Purification Plant and distribution system. Sampling, testing and monitoring of the treated water provided to the Laurentian Valley Distribution System is conducted by the City of Pembroke. As owner and operating authority of the Pembroke Drinking Water System, Pembroke must ensure that the water supplied to the Laurentian Valley Distribution System meets the Ontario Drinking Water Quality Standards and has a minimum chlorine residual of at least 0.50 mg/l. Sampling and testing for the Laurentian Valley Distribution System is limited to the distribution system as required by Ontario Regulation 170/03.

Laurentian Valley Water Works is currently managed by the following staff;

- Mark Behm, Manager of Public Works, 613-735-6291, 613-401-3291
- Claus Trost, Water Quality Analyst, QMS Rep 735-6291, 613-639-3385
- Lorne Rathwell, Operations Foreman, 613-735-6291, 613-635-3241

## **Documentation & Communication**

The office for Laurentian Valley Water Works is at 460 Witt Road. All the required documentation is to be kept at this office and be made available to the public at this office. To this end, the Quarterly Water Reports are to be kept in a loose leaf binder complete with the analysis reports from the Laboratory, any correspondence from the Ministry of the Environment and any notes and files of the Analyst, ORO and the Public Works Manager. This binder, known as the yearly log, shall be kept in the WQA office and is available to the public at the front counter. The Annual Water System Report is also to be kept at the Municipal Office. There is a copy of the Laurentian Valley Water Works Distribution System Mapping, to be kept at the Water Works Office. The as built and detail drawings are also kept at the Water Works Office at 460 Witt Road.

The Policy and Procedures Manual, a copy of the regulations and the current quarters results are to be kept in the Analysts office at 460 Witt Road. These documents are available for review by the Ministry and the public at any time. A copy of the Policies and Procedures is also kept at the Operations Foreman Office at 460 Witt Road for the workers to review as required. (*Operators are to be given an up to date copy of the Drinking Water License, the Drinking Water Works Permit, the Policies and Procedures Manual and the Operational Plan each year at the review and training meeting*)

Quarterly Reports are to be completed by the analyst by the 20<sup>th</sup> of the month following the end of the Quarter, (March 31, June 30, Sept 31, and Dec 31.) The Quarterly Reports are available on the internet and at the front counter. The Quarterly Report is to be circulated to members of Council. The Quarterly Reports are also to be made available on the Internet at [www.lvtownship.ca](http://www.lvtownship.ca) .

The Annual Report is required to be completed and submitted to Council by February 28 of each year. A resolution from council, acknowledging the reports submission is required for the satisfaction of the MOE inspector and the accreditation auditor.

## **Emergency Contact Numbers & Addresses**



**Ministry of the Environment:**

- Spills Action Centre Phone: **1-800-268-6060** Fax: **1-800-268-6061**
- Karin Bourgon Phone: **1-800-860-2195** ext 230 Fax: **613-521-5437**

**Renfrew County & District Health Unit:**

- Office Phone: **613-735-8654** Fax: **613-735-3067**
- **after hours - 613-735-9926**
- David Tantalo Phone: **735-8654**, ext 1 569 # dtantalo@rcdhu.com

**Laurentian Valley Water Works:**

- Lorne Rathwell : Work Phone: 613-735-6291  
Cell Phone: 613-635-3241
- Claus Trost: Work Phone: **613-735-6291**  
Cell Phone: 613-639-3385

**Ontario One Call:** **1-800-400-8876** during regular office hours to schedule locates for service in three days. Call **1-800-400-2255** for emergency locates

**City of Pembroke:**

- Curtis Mick, Supervisor Water Distribution & Waste Water Collection  
Office Phone: **613-735-6816 ext 1403**  
Home Phone: 613-646-2964  
Cell Phone: 613-312-0098
- Water Purification Plant: Phone: 735-6821 ext 1491  
Standby #1 Phone: 613-281-2142

**Town of Petawawa:**

- Ontario Clean Water Agency - Sewage Plant 613-687-2141
- - Water Treatment Plant 613-687-7512

**Caduceon Environmental Laboratories Inc.**

- Greg Clarkin Manager Phone: **613-526-0123** Fax: 613-526-1244  
2378 Holly Lane  
Ottawa, Ontario  
K1V 7P1

**Staff:** Waterworks Phone 613-401-8269  
Mark Zadow home 613-735-5357 cell 613-585-7108 - Operator  
Andrew Warren home 613-628-5232 cell 613-635-2124 - Operator  
Todd Grahl home 613-735-6605 cell 613-633-1421 - Operator  
Dave Lewis home 613-735-4543 cell 613-635-3375 - Heavy Equipment  
Cole Hawkins home cell 613-433-0125 - Operator  
Shane Hebert home 613-635-7302 cell 613-585-1177 - Operator

**Critical Products & Services**

<b>Supply/Service</b>	<b>Vendor</b>	<b>Contact, Notes:</b>
Portable Testing Instruments & HACH Kit supplies can be obtained from;	Cleartech : Phone: 1-800-387-7503 Fax: 905-612-0575 7370 Bramalea Road Mississauga, Ontario L5S 1N6	Order DPD Free Chlorine Reagent for 10 ml sample, Cat.# 21055-69. Acct # 63183
HACH - Pocket Colorimeter HACH - pH Meter	Hach Sales & Service Canada Ltd. 3020 Gore Road, London ON N5V 4T7 Phone: 1-800-665-7635 Fax: 1-866-259-0984 infoCanada@hach.com	order online, see Claus for username & password <a href="http://www.hachco.ca">www.hachco.ca</a>  Acct # 40251351
Municipal Engineer	Jp2g Consultants Phone: 613-735-2507 Fax: 613-735-4327	Neil Caldwell P.Eng. Cell 613-282-0283
Water Analysis	Caduceon Laboratories Inc. Phone: 613-526-0123 Fax: 613-526-1244 2378 Holly Lane Ottawa ON K1V 7P1	Greg Clarkin, lab manager Tahir Yapici, lab supervisor Krystyna Pipin, lab supervisor
Emergency & After Hours Contact	The Security Company phone: 613-732-9009 Fax: 613-732-0038	Robert Watt
Water Meters	Neptune Phone: 1-800-667-4387 Fax: 7-905-858-0428	Dwayne McRae all meters are by Neptune, factory service
	Flowmetrix Technical Services Stacey Nichol Sr. Project Manager Flowmetrix Technical Services Inc. 2088 Jetstream Road London, Ontario N5V 3P6	Stacy Nichol, Sr. Project Manager Calibration & repair, of water meters, Hach kits, pH meter. Phone:1-519-870-3569 Fax: 1-519-268-3569
Valves & Hydrants Pipes & Fittings	Crane Supply 225 Paul Martin Drive Phone: 613-732-2857 Fax:	
	Wolseley Mechanical Group 1375 Pembroke Street West Phone: 613-732-1190	Robert Stanizewski Ph: 613-822-3444 Cell: 613-297-7647

	Boone Plumbing 20 Edgewater Street Kanata ON Phone: 1-613-831-6800	
Excavation/Installation & repair	W.W. Siegel Sand & Gravel  Phone: 613-732-8867 Fax: 613-735-6686	Jeff Siegel cell - 613-732-6653
	Splinter Forest Products Ltd. 39 Forest Valley Lane Laurentian Valley ON Phone: 613-732-3382	Don - 613-633-6190 Greg -
Hydro Vac Trucks	Crawl	613-646-7595 613-635-3854
	Exite Pembroke ON	613-621-0020
Municipal Contacts  for emergency supply of pipes & fittings	City of Pembroke Distribution  standby # 613-281-2140	Curtis Mick cell:613-312-0098
	White Water Region - OCWA Greg Davidson & Shane Severin common cell phones passed to duty operators	Greg - 613-633-6515 Shane - 613-633-0349 Ron - 613-633-0649
County Roads require permits to work on Pembroke Street West, Bruham Avenue & Jean Avenue.	County Road Occupancy Application is stored in A25/water email to - link on County Site	after hours emergency 1-866-353- 6374 Regular office hours 613-732-4353

## Water Sampling Schedule & Procedure

Laurentian Valley Water Works is required to take at least seven distribution samples each week for chlorine residual readings. We use the 4/3 option allowed under O.Reg. 170/03. The location of these readings are to be rotated through the four areas, twice each week;

Pembroke Street East Main  
Pembroke Street West Main  
Stafford Built up Area  
Willow Drive Main

At least four of the samples must be taken on Monday (*Tuesday, if Monday is a Holiday*) and the other three are to be taken on Thursday or Friday of the same week. (Care must be taken that the second set is taken, not less than 48 hours after the last of the first set of samples was taken, *so if Monday is a holiday, the second set cannot be taken before Friday*)

Laurentian Valley Water Works is required to take two samples weekly for microbiological testing, and collect a minimum 9 samples per month.

Week One: one sample from Brum's Dairy, either the Lab or the Dairy Bar

: one sample from Home Depot, *until the main is extended.*

Week Two: one sample from the Firehall and the other from Stafford Bingo Country.

In any month with only 4 Tuesdays the extra sample is to be taken from the Willow Drive Main, (*at the Hamilton Street Pumping Station*) on the Week Two schedule. The aim is to collect one sample each week from the Stafford Built-up Area and to alternate weeks on the East and West End Mains.

All the samples collected are to be analyzed for Total Coliforms and E. Coli. At minimum, the first three samples each month are also to be analyzed for general bacteria population expressed as colony counts on a heterotrophic plate count.

Please note, during the Christmas Holiday period, Laboratory and Courier services are reduced. The sampler may have to reschedule the sampling to suit the days available for delivery and analyses of the samples. The sampler is to call the Laboratory to confirm receipt of the samples the following afternoon. (*This will increase the time available to resample should there be a delivery problem or a problem with the samples submitted.*)

Once every quarter a sample for Trihalomethane and Haloacetic Acids is required. These samples are to be taken from the Home Depot sampling location. This location will take in water that has spent some time in the Bell Street Water Tower, and is therefore the longest in the distribution system. (*2018 - following guidance from the MOE, the HAA sampling site is to be relocated after 4 quarters, with results that are below the threshold, in response, we have moved the HAA sampling location to Brum's Dairy in the fourth quarter of 2018, if the 4/4 results at Brum's Dairy are below .004mg/l we will move to a third location; Bingo Country, in the fourth quarter of 2019. In 2021 we will choose the location with the highest 4/4 average as the permanent sampling location*)

In 2007 the Province of Ontario amended O.Reg 170/03 with O.Reg. 399/07 Community Drinking Water Lead Testing. Because of the complexity and timeliness of the lead sampling and reporting requirements and the fact that the law is fluid (*subject to amendments*) the Municipal Lead Sampling Protocol has been separated from this manual. Please refer to the Municipal Lead

Sampling Protocol Binder for this information. *The current Drinking Water License only required two rounds of plumbing & ICI samples until the License expires in 2021.*

The sampling equipment and forms are kept in the Analysts Office at 460 Witt Road. The equipment consists of a HACH Kit, Sampling Bottles, Coolers, Chlorine Residual Log and the Submission Forms.

Chlorine Residual Log Books are to be hard cover with bound spines and numbered pages.

The microbiological samples are normally taken on Tuesday mornings, after which the bottles are packed in the cooler with ice packs and the Submission Form, shipped via Purolator Courier to Caduceon in Ottawa. *(No ice packs in winter when the temperature is below minus 15 degrees Celsius, samples will freeze! The courier trucks are not heated.)*

When chlorine sampling, the chlorine residual reading is to be entered into the Log Book. If the residual is below 0.05 mg/l the bacterial sample should be taken and submitted. The **Standard Operating Procedure -1-** for Low Chlorine (page 10) should be followed.

When microbiological sampling, the tap is to be checked for cleanliness and turned on, medium flow for 5 to 10 minutes prior to taking the chlorine residual reading and the bacterial sample. This time can be used to label the sampling bottle, enter the required information in the Chlorine Residual Log and complete the Analysis Submission Form.

The chlorine residual reading is to be entered into the Log and on the Submission Form. If the residual is below 0.05 mg/l the bacterial sample should be taken and submitted. The **Standard Operating Procedure -1-** for Low Chlorine (page 12) should be followed.

The results of each weeks test are usually received by email the Friday of the week taken. This Certificate of Analysis is to be printed and placed in the current years "Log Book" binder, and the electronic copy is stored in E14, on the global drive, the email is stored in the waterworks folder for the current year.

The above sampling can only be conducted by a certified operator or the water quality analyst. Only the certified operator and the water quality analyst can make the log book entries. Any qualified person making an entry in the Log Book must have their name printed in the front of the Log Book next to their initial so that their entries can be identified.

### **Measurement and Recording Equipment Calibration and Maintenance**

HACH - Pocket Colorimeter factory calibrated, because there are two, they can be verified against each other quarterly and documented in the log book or they can also be tested by third parties using control samples, once per year. The documentation of the calibration is to be filed in the yearly log. The best before dates of the DPD pillows need to be checked before they are placed in the kits, each time they are restocked.

HACH - pH Meter, calibrated prior to each lead sampling schedule, by the method detailed in the owners manual, by the WQA. The Owners Manual and calibrating reagents are stored in the

Municipal storeroom. This meter can also be tested by third parties using control samples, once per year.

The reagents used for calibration are to be checked that they are not used after their best before dates prior to use and the third party contractor is to document the best before date of the reagents they use, on their forms submitted.

## Inventory

The following distribution system pipes & fittings are kept in stock for routine unplanned maintenance activities. Stock used in a repair is to be replaced as soon as possible, so that at minimum, there is always the stock as shown on the following table. Stock is to be ordered ahead for planned maintenance activities.

When purchasing stock, the operator is to ensure that all chemicals and materials used or that may come into contact with the water within the system shall meet all applicable standards set by both the AWWA and the ANSI safety criteria standards NSF/60 and NSF/61 (*this does not apply to water pipe and pipe fittings meeting AWWA specifications made from ductile iron, cast iron, PVC and HDPE. Nor to articles made from glass, HDPE or Teflon.*)

This is to be documented by getting the Technical Data Sheet and/or the Submittal Information from the supplier and attaching it to the Invoice. The Invoice is to also provide enough information (product code/id) to verify that they are the same as listed on the Technical Data Sheet and/or the Submittal Information. In the alternate, the required parts can be researched on the Internet and documented, and the required part purchased from a supplier, as long as the documentation is attached to the invoice and the invoice is detailed enough to verify that they are the same product. This requirement has been stipulated in person by the Operations Foreman to the Managers at Crane and Wolsley.

Item description	Minimum # in stock	comment
12" Royal PVC PR160 pipe	1	Only require that a length
10" Royal PVC PR160 pipe	1	greater than 4 feet, be kept in
8" Royal PVC PR160 pipe	1	stock,
6" Royal PVC PR160 pipe	1	"
4" Royal PVC PR160 pipe	1	"
property shut off box - 7' long	1	
1" X 1" coupler	1	
3/4" to 3/4" coupler	5	
3/4" to 1/2" coupler	3	
3/4" to 5/8" coupler	3	
5/8" to 1/2" coupler	2	
5/8" to 5/8" coupler	4	

<b>3/4" to 3/4" curb stop (property shut off valve)</b>	<b>4</b>	
<b>3/4" main stop valve</b>	<b>5</b>	
<b>4" to 3/4" saddle</b>	<b>1</b>	
<b>6" to 3/4" saddle</b>	<b>2</b>	
<b>8" to 3/4" saddle</b>	<b>1</b>	
<b>10" to 3/4 saddle</b>	<b>2</b>	
<b>12" to 3/4" saddle</b>	<b>1</b>	
<b>4" rubber clamp</b>	<b>2</b>	
<b>6" rubber clamp</b>	<b>2</b>	
<b>8" rubber clamp</b>	<b>2</b>	
<b>10" rubber clamp</b>	<b>2</b>	
<b>12" rubber clamp</b>	<b>2</b>	
<b>water main shut off box</b>	<b>1</b>	

**Laurentian Valley Water Works**  
**Standard Operating Procedure -1-**  
**Adverse Water Quality Notification**

**CHLORINE RESIDUAL BELOW 0.05 mg/l or UNTREATED WATER ENTERS THE DISTRIBUTION SYSTEM**

If a distribution system sample contains less than 0.05 mg/l or untreated water has entered the distribution system the following actions are required;

1. Immediately notify the Operations Foreman (Lorne Rathwell at **613- 635-3241**) to begin flushing.
2. Immediately notify the local Medical Officer of Health (Mike Grace at **613-735-8654** ext **551**) by speaking with the Medical Officer of Health. If he is not available speak, with a person at the Health Unit Office at **613- 735-8654** or if the office is closed, the person on call at **613-735-9926** (General Hospital)
3. Immediately notify the Ministry of Environment by speaking with a person at the Ministry's Spills Action Centre at **1-800-268-6060** (**In all the above, you must speak to that person, don't leave a message on a machine. Also record the time and name of the person you spoke to**)
4. Implement the required corrective action as follows;
  - A. Flush the mains in the affected area to bring the free chlorine residual to a minimum of 0.20 mg/l.
  - B. Resample & Analyze for chlorine residual. The resampling should consist of a minimum of 3 samples; one sample at the affected site, one sample upstream and one sample downstream of the affected site.
  - C. Advise the Medical Officer of Health of the results from the flushing and resampling and follow their directions.
5. Within 24 hours of the immediate oral notification of an adverse water quality incident, confirm the verbal notice by providing written notification to the local Medical Officer of Health and the MOE. Written notice is provided by completing **Section 2(a) - Written Notice by Drinking-Water System Owner** and faxing the form to the local Medical Officer of Health at **613-735-3067** and the Ministry's Spills Action Centre at **1-800-268-6061**
6. **Notice of issue resolution** - within 7 days of resolving the issue, a written notice shall be completed, using **Section 2(b) - Notice of Issue Resolution** and faxing the form to the local Medical Officer of Health at **613-735-3067** and the Ministry's Spills Action Centre at **1-800-268-6061**



**Laurentian Valley Water Works  
Standard Operating Procedure -2-  
Adverse Water Quality Notification  
DISTRIBUTION SYSTEM SAMPLE SHOWS A PRESENCE OF COLIFORM  
BACTERIA**

If a distribution system sample analysis tests positive for coliform bacteria the following actions are required;

1. Immediately notify the local Medical Officer of Health (Mike Grace at 613-735-8654 ext 551) by speaking with the Medical Officer of Health. If he is not available speak with a person at the Health Unit Office at 613- 735-8654 or if the office is closed, the person on call at 613-735-9926(General Hospital)
2. Immediately notify the Ministry of Environment by speaking with a person at the Ministry's Spills Action Centre at 1-800-268-6060. **(In all the above, you must speak to that person, don't leave a message on a machine. Also record the name of the person you spoke to)**
3. Implement the required corrective action as follows;
  - A. Resample & Analyze for microbiological parameters including P/A analysis for coliform bacteria.
  - B. The resampling should consist of a minimum of 3 samples; one sample at the affected site, one sample upstream and one sample downstream of the affected site.
  - C. As per sampling procedure, the chlorine residual and time of sampling should be noted at each sampling location.
  - D. Advise the Medical Officer of Health of the free chlorine residual results from the resampling and follow their directions.
4. Within 24 hours of the immediate oral notification of an adverse water quality incident, confirm the verbal notice by providing written notification to the local Medical Officer of Health and the MOE. Written notice is provided by completing **Section 2(a) - Written Notice by Drinking-Water System Owner** and faxing the form to the local Medical Officer of Health at 613-735-3067 and the Ministry's Spills Action Centre at 1-800-268-6061
5. Once the analytical results from the resamples are known, follow-up with the local Medical Officer of Health to confirm the presence or absence of coliform bacteria by P/A analysis or the presence or absence of any other contamination.

6. If the presence of coliform bacteria by P/A analysis is confirmed, steps 1, 2 & 4 are to be repeated. Flush the mains to maintain a minimum free chlorine residual of 0.20 mg/l in the affected parts of the distribution system, and continue to resample and test, until total coliforms are not detected in any of the samples from two consecutive sets of samples taken 24 to 48 hours apart or as otherwise directed by the medical officer of health.
7. **Notice of issue resolution** - within 7 days of resolving the issue, a written notice shall be completed, using **Section 2(b) - Notice of Issue Resolution** and faxing the form along with copies of the Analysis Reports to the local Medical Officer of Health at **613-735-3067** and the Ministry's Spills Action Centre at **1-800-268-6061**

**Standard Operating Procedure -3-  
Adverse Water Quality Notification  
HETEROTROPHIC PLATE COUNT ANALYSIS SHOWS THAT  
DISTRIBUTION SYSTEM SAMPLE CONTAINS MORE THAN 500 COLONIES  
PER ML**

If a distribution system sample contains more than 500 colonies per ml on a heterotrophic plate count (HPC) analysis (also known as Standard Plate Count) the following actions are required; *(It is no longer a requirement to report that a sample has more than 500 colonies per ml on a heterotrophic plate count (HPC) analysis, O.Reg 248/06 amending O.Reg 170/03.)*

1. Implement the required corrective action as follows;
  - A. Resample & Analyze for the HPC analysis at the original sampling location.
  - B. As per sampling procedure, the chlorine residual and time of sampling should be noted.
  
3.
  - A. If the presence of more than 500 colonies per ml on a HPC analysis is confirmed by the resamples, begin a flushing regimen and consult with the local Medical Officer of Health.
  - B. Resample and Analyse for the HPC analysis .The resampling should consist of a minimum of 3 samples; one sample at the affected site, one sample upstream and one sample downstream of the affected site.
  
4. Daily monitor and maintain the free chlorine residual at a minimum of 20 mg/l in the affected parts of the distribution system, and continue to resample and test, until less than 500 colony forming units (CFU) per millilitre are detected in all of the samples from two consecutive sets of samples taken 24 to 48 hours apart or as otherwise directed by the medical officer of health.

**Laurentian Valley Water Works**

**Standard Operating Procedure -4 -  
Adverse Water Quality Notification  
ESCHERICHIA COLI (E. Coli) DETECTED IN DISTRIBUTION SYSTEM  
SAMPLE**

If E. coli is detected in a distribution system sample the following actions are required;

1. Immediately notify the Operations Foreman (Lorne Rathwell at **613-635-3241**) to begin flushing.
2. Immediately notify the local Medical Officer of Health (Mike Grace at 613-735-8654 ext **551**) by speaking with the Medical Officer of Health. If he is not available speak with a person at the Health Unit Office at 613- **735-8654** or if the office is closed, the person on call at **613-735-9926** (General Hospital)
3. Immediately notify the Ministry of Environment by speaking with a person at the Ministry's Spills Action Centre at **1-800-268-6060**. **(In all the above, you must speak to that person, don't leave a message on a machine. Also record the name of the person you spoke to)**
4. Implement the following required corrective action and continue until *E. coli* and fecal coliforms are no longer detected in two consecutive sets of samples, or as instructed by the Medical Officer of Health;
  - A. Increase the chlorine dose and flush the mains to ensure that a free chlorine residual of at least 0.20 mg/l is achieved at all points in the affected part of the distribution system. This may require a call to Curtis Mick at the Water Purification Plant to advise them of the problem; to see if the problem originates in their end and for them to assist in raising the chlorine residual.
  - B. Resample & Analyze for microbiological parameters including the presence of *E. coli* and/or fecal coliform.
  - C. The resampling should consist of a minimum of 3 samples; one sample at the affected site, one sample upstream and one sample downstream of the affected site.
  - D. As per sampling procedure, the chlorine residual and time of sampling should be noted at each sampling location.
  - E. Advise the Medical Officer of Health of the free chlorine residual results from the resampling and follow their directions.
5. Within 24 hours of the immediate oral notification of an adverse water quality incident, confirm the verbal notice by providing written notification to the local Medical Officer of Health and the MOE. Written notice is provided by completing **Section 2(a) - Written Notice by Drinking-Water System Owner** and faxing the form to the local Medical Officer of Health at **613-735-3067** and the Ministry's Spills Action Centre at **1-800-268-6061**

6. Once the analytical results from the resampling are known, follow-up with the local Medical Officer of Health to confirm the presence or absence of *E. coli* and/or fecal coliform or the presence or absence of any other contamination.
7. If the presence of *E. coli* and/or fecal coliform is confirmed, consult with the local Medical Officer of Health. Steps 2,3,4, & 5 are to be repeated.
8. Maintain the free chlorine residual concentration at least 0.20 mg/l in the affected parts of the distribution system, and continue to resample and test, until *Escherichia coli* (*E. coli*) or fecal coliforms are not detected in any of the samples from two consecutive sets of samples taken 24 to 48 hours apart or as otherwise directed by the medical officer of health.
9. **Notice of issue resolution** - within 7 days of resolving the issue, a written notice shall be completed, using **Section 2(b) - Notice of Issue Resolution** and faxing the form to the local Medical Officer of Health at **613-735-3067** and the Ministry's Spills Action Centre at **1-800-268-6061**

**Standard Operating Procedure -5 -  
Adverse Water Quality Notification  
A DISTRIBUTION SYSTEM SAMPLE EXCEEDS 0.01 mg/l of LEAD**

Please refer to the Municipal Lead Sampling Protocol for this information.

**Adverse Water Quality Notification**  
**TRIHALOMETHANES EXCEED 0.10 mg/l IN DISTRIBUTION SYSTEM**  
**SAMPLE**

If Trihalomethane exceeding 0.10 mg/l is detected in a distribution system sample the following actions are required;

1. Immediately calculate the last four quarter average. If the four quarter average is below 0.10 mg/l notify the Pembroke Waterworks by calling the City of Pembroke Water Purification Plant at 613-735-0309, or emailing Curtis Mick. *(The plant needs to be notified because they can alter their procedures to reduce the level of THM's)*
2. If the last four quarter average is greater than 0.10 mg/l do the following;
  - A. At the end of the quarter, notify the local Medical Officer of Health, by written notice *(within 7 days of the end of the quarter)*, Written notice is provided by completing **Section 2(a) - Written Notice by Drinking-Water System Owner** and faxing the form to the Ministry's Spills Action Centre at **1-800-268-6061**, **email a copy to the Health Unit and the MOE Drinking Water Inspector assigned to our system.** (There is no requirement to phone SAC or local Medical Officer of Health)
  - B. Have the watermain flushed, *(THM's are caused by long retention times and increased water temperature)*
3. Resample at the next scheduled date;
  - A. and if the concentration of THM is greater than 0.10 mg/l consult with the Purification Plant and the Medical Officer of Health on the appropriate corrective action and continue as instructed. *(Will usually be to continue a flushing regimen.)*
  - B. If the concentration of THM falls below 0.10 mg/l, and the 4/4 average falls below 0.10 mg/l, issue a **Notice of issue resolution** - within 7 days of resolving the issue, a written notice shall be completed, using **Section 2(b) - Notice of Issue Resolution** and faxing the form to the local Medical Officer of Health at **613-735-3067** and the Ministry's Spills Action Centre at **1-800-268-6061**

Note: Small municipal residential systems and non-municipal year round residential systems that serve designated facilities also must report to the operator of each designated facility served by the system. *(Laurentian Valley currently has no designated facilities - schools, old age homes etc.)*

**Laurentian Valley Water Works**  
**Standard Operating Procedure -6A -**  
**Adverse Water Quality Notification**  
**HALOACETIC ACIDS EXCEED 0.08 mg/l IN DISTRIBUTION SYSTEM**  
**SAMPLE**

**Before January 1, 2020** - The *O.Reg. 169/03* standard (80 µg/L) and the *O.Reg. 170/03* reporting requirements for HAAs come into effect on **January 1, 2020**, as such drinking water system owners/operating authorities are not required to perform the RAA calculation for HAAs until 2020. Owners/operating authorities may wish to perform the calculation to determine if there are elevated levels of HAAs in the drinking water system.

**After January 1, 2020** - If Haloacetic Acids exceeding 0.08 mg/l is detected in a distribution system sample the following actions are required;

1. Immediately calculate the last four quarter average. If the four quarter average is below 0.08 mg/l notify the Pembroke Waterworks by calling the City of Pembroke Water Purification Plant at 613-735-0309, or emailing Curtis Mick. (*The plant needs to be notified because they can alter their procedures to reduce the level of HAA's*)
2. If the last four quarter average is greater than 0.08 mg/l do the following;
  - A. At the end of the quarter, notify the local Medical Officer of Health, by written notice (*within 7 days of the end of the quarter*), Written notice is provided by completing **Section 2(a) - Written Notice by Drinking-Water System Owner** and faxing the form to the Ministry's Spills Action Centre at **1-800-268-6061**, **email a copy to the Health Unit and the MOE Drinking Water Inspector assigned to our system.** (There is no requirement to phone SAC or local Medical Officer of Health)
  - B. Have the watermain flushed, (*HAA's become elevated by long retention times and increased water temperature*)
3. Resample at the next scheduled date;
  - A. and if the concentration of HAA's is greater than 0.08 mg/l consult with the Purification Plant and the Medical Officer of Health on the appropriate corrective action and continue as instructed. (*Will usually be to continue a flushing regimen.*)
  - B. If the concentration of HAA's falls below 0.08 mg/l, and the 4/4 average falls below 0.08 mg/l, issue a **Notice of issue resolution** - within 7 days of resolving the issue, a written notice shall be completed, using **Section 2(b) - Notice of Issue Resolution** and faxing the form to the local Medical Officer of Health at **613-735-3067** and the Ministry's Spills Action Centre at **1-800-268-6061**

Note: Small municipal residential systems and non-municipal year round residential systems that serve designated facilities also must report to the operator of each designated facility served by the system.



**Laurentian Valley Water Works  
Standard Operating Procedure -7 -  
Hydrants, Dead-End & Blow-Off Flushing Procedure**

The fire hydrants, dead-ends and blow-offs are to be flushed twice yearly unless otherwise or elsewhere stated. It is preferable to flush in the spring and the fall when water usage is at its lowest. The homeowners are notified of the flushing dates by inserting a flyer in the water bills indicating the time period the flushing is to occur. Or in the alternate, on the day prior to the scheduled flushing, the homeowners and businesses in the immediate vicinity are to be notified verbally if available or a flyer is to be left indicating that there will be flushing, at what times and precautions the homeowners can take to minimize the disruption. See Flushing Notice in Appendix.

1. Isolate the section to be flushed from the rest of the system. Mark or record any valves closed on a map.
2. Install the gate valve and open the fire hydrant or blow-off valve slowly.
3. Direct the water being flushed with the diffuser and/or hoses away from private property and persons. (Ensure that the flushed water does not enter a surface water source unless there is no chlorine.)
4. The hydrant is to be run fully open for a minimum of 5 minutes to stir up as much loose material in the main as possible. The main should then be flushed for a minimum 15 minutes.
5. The operator is to record the required information in the Flushing Record for each hydrant or blow-off flushed. (*Copy in appendix*) A minimum 2 samples should be taken to determine the clarity of the water and the chlorine residual. The first should be taken immediately after the water clears (*2-3 minutes after the hydrant is opened*) and the second just prior to closing the valve.
6. When the flushing water is clear, slowly close the hydrant or blow-off valve. If the water does not clear, the operator is to contact the Operations Foreman or the Water Quality Analyst for instructions. Leave the hydrant cap off to allow the water to drain back, in the winter months pour (bio)antifreeze into the bowl. Return later to close the cap and mark as such in the report.
7. When a segment of main is completely flushed, open any valves that were closed for the flushing and record or remove the marks on the maps indicating that the valves are closed before moving on to the next section to be flushed.
8. The flushing log is to be completed, indicating whether any follow up service is required.

### **Flushing Sequence**

1. Sequence for flushing the Stafford Built-up Area, south of the Indian River;
  - a) Start at Hydrant 1 on Elgin Street, in order to,
  - b) Hydrant #15, on Roy Street,
  - b) then to blow-off valve at the end of Lark Street
  - c) then at Hydrant #18 on Hamilton Street
  
2. Sequence for flushing the Stafford Built-up Area North of the Indian River;  
WQP&P 2019

- a) Start at hydrant #20 on Hamilton Street
  - b) then at hydrant #19 on Hamilton Street
  - c) then at hydrant #21 on Hamilton Street
  - d) then at the blow-off valve at the end of the main on Hamilton Street
  - e) then to hydrants #39 and #68 at Indian Court, notify management at Brum's Dairy - 735-2325
  - f) then at hydrant #47 on Lorne Street
  - g) then at hydrant #57 on Stafford Street
  - h) then at hydrant #48 at the Recreation Center
  - i) then at hydrant #63 on Allen Street
  - j) then at hydrant #67 on Bruham Avenue
  - k) then at the blow-off valve on Bruham Avenue across from hydrant #67 in front of 711 Bruham Avenue
  - l) then at hydrant #31 on Jean Avenue
3. Sequence for flushing the West End Area;
- a) Start at hydrant #221 on Pembroke Street West
  - b) then at hydrant #210 on Butler Chev Olds parking lot, private property - notify management
  - c) then continue up Pembroke Street West to hydrant # 222 at Clouthier Storage.
4. Sequence for flushing the East End Area;
- a) Start at hydrant #102 on Pembroke Street East
  - b) then at hydrant #105 in the Boston Pizza parking lot, private property - notify management
  - c) then at hydrant # 104 in front of Wal-Mart, private property - notify management
  - d) then at hydrant # 103 in front of Canadian Tire, private property - notify management
  - e) then continue up to Home Depot, Hydrant # 112

## **Standard Operating Procedure -8 - Water Main Breaks**

1. **CLASSIFICATION** Shortly after the Operator in Charge is advised that there is a water main break or a suspected leak, he is to attend the site to determine the type and scope of the break. Classification of the break is to be in accordance with the MOE Watermain Disinfection Procedure.

Category 1 - watermain breaks with no evident or suspected contamination; contamination is typically not suspected for circumferential breaks or small leaks, where flow is maintained from the break until an air gap is established, and where the air gap can be maintained during the repair procedure. *(If at any time during the repair, the air gap is lost, positive pressure is lost or contamination is suspected, or evident, the break shall be reclassified to Category 2)*

Category 2 - are large watermain breaks, in which it is suspected or evident that contamination is present in the main, and/or is being directed to our customers. This includes breaks in which there has been a loss in pressure, *(below 20 psi, because there can be backflow from other higher pressure sources)*

2. **NOTIFICATION;** **Category 1** breaks do not require any official notification.

**Category 2** breaks - Immediately notify the local Medical Officer of Health (Mike Grace at 613-735-8654 ext 551) by speaking with the Medical Officer of Health. If he is not available speak with a person at the Health Unit Office at 613- 735-8654 or if the office is closed, the person on call at 613-735-9926 *(General Hospital, leave them your contact information, and wait for the on call person to call you back)*

**If the Health Unit declares a water advisory;** Immediately notify the Ministry of Environment by speaking with a person at the Ministry's Spills Action Centre at 1-800-268-6060. **(In all the above, you must speak to that person, don't leave a message on a machine. Also record the name of the person you spoke to)**

## **Laurentian Valley Water Works Standard Operating Procedure -8A - Category 1 - Water Main Breaks**

3. **NOTIFICATION;** Category 1 breaks do not require any official notification, however, notify homeowners in the vicinity of the break/repair. Use a flyer similar to the one in the Appendix.
4. **DOCUMENTATION;** The Operator in Charge is to begin recording the required information on a Water Distribution System Service & Repair Form *(see appendix)*. It is also requested that the OIC take some pictures of the break when it is exposed, this will assist in the documentation, to show why the break was classified as it was.
5. **SCHEDULING;** a) small category 1 breaks and/or leaks, can be scheduled to repair during regular work hours.  
b) if it is a large category 1 break, the valves on either side are to be shut, one fully and the other by 95% (to keep positive pressure on the pipe), and the repair is to commence as soon as possible. *(The decision on when to complete the repair shall be based on the risk*

*to operators, public safety and the danger of property damage and/or environmental damage.)*

Arrange for the required equipment, material and labour to be on site at the scheduled time.

6. **LOCATES;** Call for locates:  
Ontario One Call - 1-800-400-8876 during regular office hours to schedule locates for service in three days. Call 1-800-400-2255 to request emergency service for immediate locates. **Contractor ID = 03727**
7. **TRAFFIC CONTROL;** Complete and document a traffic control plan, copy in Appendix. Have the appropriate barricades and signage installed. The County requires Occupancy Permits for work undertaken on County Roads that impacts traffic flow (*Bruham Avenue, Jean Avenue and Pembroke Street West*). The Application form is stored in A25/water and copies are kept with the foreman, in his office. Complete the Application, scan & email to the County through their website link.
8. **THE REPAIR;** On-Site;
  - a) Excavate & locate the break
  - b) Excavate & install a sump & pump, to keep piping above standing water (*air gap*)
  - c) complete the repair, continually cleaning the piping with the chlorine cleaning solution, (1% sodium hypochlorite solution)
  - e) alternative procedure is to have a hydro-vac truck on-site, to do the final excavation with high pressure water & vacuum.
  - f) when repairs are complete, prior to backfill, open partially closed valve and flush to other valve as practical,
  - g) shut valve and open other to flush in the other direction if practical
  - h) flush into the consumers building
  - i) backfill & compact over repair area
9. Complete the Water Distribution System Service & Repair Form. Copy form and forward to analysts office and notify analyst that he has the option to include the area for sampling on the next rotation. (Sampling is not required, but is a best/recommended practice)
10. Review inventory of spare parts, order to replace what was utilized, if required.

**Please Note:** if there is a loss of pressure during the break, and/or the free chlorine residual tested below 0.05 mg/l and/or bacterial contamination is detected in a distribution sample taken at the site of the leak/break, that this is reportable as an adverse water quality incident to SAC and RCDHU as per **Standard Operating Procedure -1-**

**Laurentian Valley Water Works  
Standard Operating Procedure -8B -**

## Category 2 - Water Main Breaks

1. **NOTIFICATION;** Category 2 breaks - Immediately notify the local Medical Officer of Health (Mike Grace at 613-735-8654 ext 551) by speaking with the Medical Officer of Health. If he is not available speak with a person at the Health Unit Office at 613- 735-8654 or if the office is closed, the person on call at 613-735-9926 (*General Hospital, leave them your contact information, and wait for the on call person to call you back*)  
**If the Health Unit declares a water advisory;** Immediately notify the Ministry of Environment by speaking with a person at the Ministry's Spills Action Centre at 1-800-268-6060. **(In all the above, you must speak to that person, don't leave a message on a machine. Also record the name of the person you spoke to)**  
Notify homeowners in the vicinity of the break/repair. Use a flyer similar to the one in the Appendix.
2. **DOCUMENTATION;** The Operator in Charge is to begin recording the required information on a Water Distribution System Service & Repair Form (*see appendix*). It is also requested that the OIC take some pictures of the break when it is exposed, this will assist in the documentation, to show why the break was classified as it was.
3. **SCHEDULING;** the repair is to commence as soon as possible. (*The decision on when to complete the repair shall be based on the risk to operator and public safety and the danger of property damage and/or environmental damage.*)  
Arrange for the required equipment, material and labour to be on site at the scheduled time.
4. **LOCATES;** Call for locates:  
Ontario One Call - 1-800-400-8876 during regular office hours to schedule locates for service in three days. Call 1-800-400-2255 to request emergency service for immediate locates. **Contractor ID = 03727**
5. **TRAFFIC CONTROL;** Complete and document a traffic control plan, copy in Appendix. Have the appropriate barricades and signage installed. The County requires Occupancy Permits for work undertaken on County Roads that impacts traffic flow (*Bruham Avenue, Jean Avenue and Pembroke Street West*). The Application form is stored in A25/water and copies are kept with the foreman, in his office. Complete the Application, scan & email to the County through their website link.
6. **THE REPAIR;** On-Site;
  - a) Excavate & locate the break
  - b) Excavate & install a sump & pump, to keep piping above standing water (*air gap*)
  - c) remove any contaminants that may have entered the watermain, either by flushing or swabbing.
  - d) complete the repair, continually cleaning the piping with the chlorine cleaning solution, (1% sodium hypochlorite solution)
  - d) all the surfaces of the pipe and repair parts which will come into contact with drinking water shall be disinfected with the chlorine cleaning solution; if you have to cut out a section of pipe, the interior surfaces of the cut ends shall also be

cleaned, by swabbing or spraying the cleaning solution as far as can be practically reached. (Depending on the nature or severity of the contamination, site specific disinfection procedures may be required, these are to be discussed and agreed upon by the ORO, the QMS Representative and or may be dictated by the RCDHU, these steps may include the disinfection procedures for new watermains as per ANSI/AWWA Standard C 651

f) when repairs are complete, prior to backfill, open the partially closed valve and flush to other valve through the nearest fire hydrant as practical,

g) shut valve and open other to flush in the other direction if practical,

h) flush into the consumers building,

i) backfill & compact over repair area.

7. Complete the Water Distribution System Service & Repair Form. Copy form and forward to analysts office and notify analyst to include the area for sampling on the next rotation, a minimum of one microbiological sample is required, it is preferable to collect one upstream and one downstream from the break.

8. Review inventory of spare parts, order to replace what was utilized, if required.

**Laurentian Valley Water Works  
Standard Operating Procedure -9 -  
Service Pipe or Connection Leaks or Breaks**

1. Shortly after the Operator in Charge is advised that there is a break or a suspected leak, he is to attend the site to determine the type and scope of the break.
  - a) the location of the leak or break is to be determined first, if the leak is on the Municipal portion (before the curb stop) then SOP -8- is to be followed. The location of the leak can usually be determined by closing the curb stop to the consumer and listening to the pipes.
  - b) if it is a large break to the consumer, the service connection valve is to be immediately shut.
  - c) if it is a small break/leak, the repair can be scheduled during regular hours in conjunction with the consumers plumbers schedule.
2. The Operator in Charge is to begin recording the required information on a Water Distribution System Service & Repair Form (*see appendix*). It is also requested that the OIC take some pictures of the break/leak when it is exposed, this will assist in the documentation, to show why the break was classified as it was.
3. After the consumers plumber has completed the repairs the Operator in Charge shall inspect the connections, confirm the required backflow protection devices are installed and that the water valve in the building is turned off. Then the curb stop valve can be opened and the plumbing system in the building flushed.
4. Complete the Water Distribution System Service & Repair Form. Copy form and forward to analysts office.

**Laurentian Valley Water Works  
Standard Operating Procedure -10-  
Cross Connection**

Laurentian Valley Water Works has a policy that requires dual check valves on all residential connections to the distribution system and double check valves on all ICI connections. The water is not initially turned on until an inspection has been conducted by either the Operations Foreman or the Chief Building Official. However, there are some residential and commercial connections that have been in place before this policy was put in place, they are to be corrected as they are detected by the Building Department.

Cross Connections will be discovered in one of two ways; either it is found during an inspection or there has been a customer complaint received. If the potential for back flow is detected in the plumbing system of the customer during an inspection, the curb stop at the street is to be immediately turned off until the required repairs have been made and/or a proper back flow prevention device has been installed.

Shortly after the Operator in Charge is advised that there is a possible cross contamination of the distribution system he is to attend the site to determine the type and scope of the contamination.

**Laurentian Valley Water Works  
Standard Operating Procedure -11-  
Loss of Service**

Laurentian Valley Water Works receives the drinking water supply from the City of Pembroke under contract. If there is an emergency at the Water Treatment Plant or in their distribution system that puts them in a situation of being unable to continue to supply drinking water they are required to notify us directly.

There will be very little that the Water Works can do in the response phase, other than ensuring that the City's communications to the public include affected Laurentian Valley Water Works customers and that our communication reinforce the City's and the Renfrew County District Health Units message.

### **Recovery Phase**

It can be assumed that there will be a loss of pressure during the loss of service and therefore there will be a chance of a free chlorine residual below 0.05 mg/l and/or that untreated water and/or contaminated water has entered the distribution system, this is reportable as an adverse water quality incident to SAC and RCDHU

1. Immediately notify the local Medical Officer of Health (Mike Grace at 613-735-8654 ext 535) by speaking with the Medical Officer of Health. If he is not available speak, with a person at the Health Unit Office at 613- 735-8654 ext. 555 or if the office is closed, the person on call at 613-735-9926(General Hospital)
2. Immediately notify the Ministry of Environment by speaking with a person at the Ministry's Spills Action Centre at 1-800-268-6060 **(In all the above, you must speak to that person, don't leave a message on a machine. Also record the time and name of the person you spoke to)**
3. Implement the required corrective actions as instructed by the Renfrew County Health Unit and/or the City of Pembroke. (The corrective actions will all depend on the nature of the original emergency. Flushing can only begin when the City has restored service and has advised the Water Works that they have the capacity for us to begin flushing. The sampling parameters will also be tied to the nature of the original service interruption and the RCDHU will advise what, where and how many they would like done.)
4. When given clearance to begin flushing, follow Standard Operating Procedure -7- for the affected area to maintain a minimum free chlorine residual of 0.20 mg/l in the affected parts of the distribution system, or as otherwise directed by the medical officer of health.
5. Within 24 hours of the immediate oral notification of an adverse water quality incident, confirm the verbal notice by providing written notification to the local Medical Officer of Health and the MOE. Written notice is provided by completing **Section 2(a) - Written Notice by Drinking-Water System Owner** and faxing the form to the local Medical



Officer of Health at **613-735-3067** and the Ministry's Spills Action Centre at **1-800-268-6061**

6. Continue the sampling and resampling until the required parameters sampled conform to the Drinking Water Quality Standard or as otherwise instructed by the Renfrew County District Health Unit.
7. **Notice of issue resolution** - within 7 days of resolving the issue, a written notice shall be completed, using **Section 2(b) - Notice of Issue Resolution** and faxing the form to the local Medical Officer of Health at **613-735-3067** and the Ministry's Spills Action Centre at **1-800-268-6061**

**Laurentian Valley Water Works  
Standard Operating Procedure -12-  
Fire Hydrant Maintenance**

The fire hydrants are to be inspected twice yearly. It is acceptable to inspect the hydrants in the spring and the fall when the dead ends and blow-offs are being flushed. The hydrants should also be inspected after each use, especially in the winter to ensure that the barrel has drained.

1. Inspect for leakage and make necessary repairs.
2. Instal the gate valve and open hydrant fully, checking for ease of operation.
3. Flush hydrant following SOP #7.
4. Remove all nozzle caps and inspect threads for impact damage or cross threading. Clean and lubricate outlet nozzle threads with a dry graphite-base lubricant, and check for ease of operation. Ensure that the outlet nozzle cap gaskets are in good condition and that the chains are in place.
5. Replace caps, tighten with a spanner wrench, then back of the threads slightly so the caps are not excessively tight, but are still tight enough to prevent hand removal.
6. Check for any exterior obstruction that could interfere with hydrant operation during an emergency. (Brush, hedges, fences etc.)
7. Check the dry barrel for proper drainage.
8. Clean and make note if repainting the exterior of hydrant is required. Ensure that the hydrant number is in place.
9. Be sure the auxiliary valve is in the fully opened position.
10. Should the hydrant be inoperable, tag and bag the hydrant and notify the Operations Foreman, who will advise the Fire Department that the hydrant is not in service.
11. Complete the Hydrant Maintenance Report and file with the Operations Foreman and/or the Water Quality Analyst.
12. The Master Hydrant Record will then be completed by the Water Quality Analysts office.

**Everyone working with the fire hydrants is to be aware that when operating a dry-barrel hydrant, it must be fully open so that the drain becomes fully closed. If the hydrant is not fully opened the drain will remain partially open and the water seeping through will saturate the drain field. This could result in the hydrant freezing.**

Further reference material: [AWWA Manual M17, Installation, Field Testing and Maintenance of Fire Hydrants](#)

## **Standard Operating Procedure -13- Dechlorination**

To ensure that any water used in the disinfection of new or repaired water mains, as well as, chlorinated water discharged as the result of flow testing or flushing fire hydrants is not directed to a storm sewer, drain, or any other location that may allow the discharge to enter a water course without prior de chlorination, the operator will ensure that the de chlorination has occurred , or that the water has been redirected to the sanitary sewer.

- 1 The chlorinated water used for hydrant flushing or flow testing which contains the same content of chlorine as the distribution system may be flushed into the waste water collection system, with prior permission of the senior plant operator. This will be accomplished by using proper hoses and connections ,and the use of a proper traffic plan, signs (cone , traffic barrels and or barricades) and competent personal.
- 2 The chlorinated water used for hydrant flushing or flow testing which contains the same content of chlorine as the distribution system and were there is no sewer system available, the water may be discharged into the storm sewer or an open ditch, providing the following conditions exist.
  - (a)The ditch does not empty directly in to a natural habitat
  - (b)The chlorine has time to naturally dissipate before the water could reach a natural habitat.
- 3 In the event that water with a high content of chlorine is to be flushed from the fire hydrants, following the disinfection of repaired water mains or the installation of new water mains, the water shall be de chlorinated, before entering sewers, ditches or storm drains. Using the AWA Standards For Disinfecting Water Mains (ANSI/AWWA C651-05) Appendix C Disposal of Heavily Chlorinated Water as a guide .
- 4 Should chlorinated water accidentally be discharged to the storm sewer and/or water course without being dechlorinated, it is to be verbally reported to SAC and the local MNR office.

## **REHABILITATION, EXPANSION and MODIFICATION OF WATERMAINS AND COMPONENTS OF THE DRINKING WATER SYSTEM**

The condition of the Drinking Water System is assessed annually. Scheduling of upgrades and rehabilitation is co-ordinated with the Works Department road maintenance schedule. Expansion of the distribution system is overseen by the CAO and Planning Department staff. Generally, the developer supplies and installs the infrastructure under the supervision of the Municipal Engineer of Record. The Water Works accepts the installed works after confirmation that the system has been installed as per approved plan and bacteriological samples have been taken and analysed by the WQA.

All parts of the drinking water system in contact with drinking water which are; Added, modified, replaced, extended, or taken out of service for inspection, repair, or other activities that may lead to contamination, shall be disinfected before being put into service in accordance with the provisions of MOE Water Main Disinfection Procedure (*replaced AWWA C651 - Standard for Disinfecting Water Mains in January 2015*).

The design of any watermain addition, modification, replacement or extension shall be:

- A. prepared by a Professional Engineer,
- B. designed only to transmit water and not to treat water,
- C. Satisfy the design criteria set out in the Ministry of the Environment publication “Watermain Design Criteria for Future Alterations Authorized under a Drinking Water Works Permit – March 2009”, as amended from time to time; and
- D. be consistent with or otherwise address, the design objectives contained within the Ministry of the Environment publication “Design Guidelines for Drinking Water Systems, 2008”, as amended from time to time.
- E. all chemicals and materials used or that may come into contact with the water within the system shall meet all applicable standards set by both the AWWA and the ANSI safety criteria standards, NSF/60 and NSF/61 (*this does not apply to water pipe and pipe fittings meeting AWWA specifications made from ductile iron, cast iron, PVC and HDPE. Nor to articles made from glass, HDPE or Teflon.*)

For greater certainty, Sections 2, 3 & 4 of the Drinking Water Works Permit shall be reviewed when considering any additions, modifications or rehabilitation of the distribution system or any of the components of the system.

## UTILITY LOCATING POLICY

We are required to have locates completed by the various utilities we may encounter, when we excavate to expand, repair and or modify our water infrastructure. The Public Works Manager or the Works Foreman are responsible for having the required locates completed. They will complete the Utility Locate Request Form 1 and submit to Ontario One Call by email or by phoning. Ontario One Call - 1-800-400-8876 during regular office hours to schedule locates for service in three days. Call 1-800-400-2255 to request emergency service for immediate locates. **Contractor ID = 03727**

A copy of the locate documents shall be kept with the excavator working onsite, until the work is completed. After which they should be filed with the Operations Foreman. A copy of the locate documents shall be attached to the Water Distribution System Service & Repair Form, which is filed in the Yearly Log Binder, in the QMS office.

Contractors and other Utilities doing work in Laurentian Valley will also be contacting Ontario One Call for underground locates. Ontario One Call emails these requests to the Public Works Manager and the Operations Foreman. They will print these requests and forward to the Operator assigned to complete the locate, along with a Locate Request Form 2

The Operator assigned to complete the locate will review the documents provided, and using the System Maps, in the Operations Foreman's office, determine if there are water mains, hydrants or service connections in the area designated as the Location of Proposed Work. If there is no water infrastructure shown in the area of the proposed works, the forms provided are to be completed and given to the Operation Foreman or in his absence the Public Works Manager, to be forwarded to the contractor or Ontario One Call.

If there is water infrastructure in the area of the proposed works, the Operator is to locate the area on the Detail Maps and either photocopy the details or transfer the information to the Locate Request Form Provided. *(This step should give the operator enough information to locate the infrastructure in the field.)* Out in the field, the operator is to actually locate and mark the infrastructure in and adjacent to the area of the proposed works. This can be accomplished with the magnetic locator, handheld GPS or the radio detection tool, whichever the operator requires to accomplish the task for the particular locate. Marking is to be completed using blue spray paint to mark the location of the water main, service connection, curb stops etc. **(Just on Municipal Property)** When completed, the forms provided are to be completed and given to the Operations Foreman or in his absence the Public Works Manager, to be forwarded to the contractor and/or Ontario One Call.

## WATER METERS

Laurentian Valley Water Works owns 6 large water meters which measure the water we purchase from the City of Pembroke, and a seventh that measures the water that travels through our west-end main to the Town of Petawawa.

- ME1 Located on Elgin Street, near Boundary Road, 10 inch and a 2" Neptune trident meter
- ME2 Located on Willow Drive, near Boundary Road, 4 inch Neptune compound meter
- ME3 Located on Karen Street, near Boundary Road, 4 inch Neptune compound meter
- ME4 Located on Bruham Avenue, near Boundary Road, 10 inch Neptune meter, & 2" Trident 10
- ME10 Located on Pembroke Street East at City limits, near Angus Campbell Drive, 8 inch Schlumberger meter,
- ME20 Located on Pembroke Street West at City limits, 6 inch Neptune compound meter,
- ME22 Located on Pembroke Street West at MacGregors Hill, 10 inch Neptune meter and a 2" Neptune Trident 10

There are also 38 commercial water meters that are read, the same day as the large water meters.

The water meters are read quarterly, timing is up to the reader, but needs to be as close as possible to the 1<sup>st</sup> of each quarter - because the Municipal software uses the 1<sup>st</sup> day of each quarter for the billing. *(Can be a problem to schedule with stat holidays on January 1, July 1 and end of quarters occasionally ending on weekends)*

Prior to reading the meters the spreadsheets are prepared to enter the information, the last reading is also indicated, this lets the reader know that the meter is working when he is on-site, and any problems can usually be determined quickly with the property owner.

Most of the water meters have remote read buttons, and we currently use a Sensus AR4090 remote reader. It needs to be plugged in to charge for 24hrs before using. The operators have all been around on the meter reading trip at least once and should be somewhat familiar with the location of the buttons and meters. They have also been cautioned about reading the number twice - double checking the number they write down before leaving the property, avoids having to go back if a discrepancy is found later.

At the office, the numbers are inputted into the spreadsheet, I use QuatroPro, but it can be converted to Excel for those who feel more comfortable with that style. You then check for obvious discrepancies - large increases or decreases in consumption. If required, you contact the customer to find out if there is logical reason for the differences, usually was a break or leak at the facility, but could be toilets leaking that are undetected.

The spreadsheet is then passed on to the Accounts Receivable Clerk, they use the Municipal software to calculate and distribute the invoices.

The large (City) meter readings are then scanned and emailed to the City of Pembroke, currently Robin McGregor, at [rmcgregor@pembroke.ca](mailto:rmcgregor@pembroke.ca)

When the invoices come from the City, they are checked/verified, and coded for our Accounts Payable Clerk, and a copy of the West End Invoice is given to the Accounts Receivable Clerk to Invoice the Town of Petawawa.

There are paper files kept in the WQA/QMS Rep's office of the current year on the desk, and past years in the filing cabinet. The electronic files are kept in J:\E - ENVIRONMENTAL SERVICES\E08 - Water Works\Water Meters

With regards to Water Meter Maintenance, they are calibrated every second year, and the remote readers require constant monitoring and repairs when required.

Policy Manual  
Created May 2003  
Claus Trost, WQA

## CONTINUAL IMPROVEMENT REGISTER

Revision Date: January 2009 (Regulation 170 as amended by 248/06 & 399/07)  
February 2009 (DWQMS required sections added; Critical Suppliers Contact Info, Inventory list)  
February 2009 (added SOP's for Service Connection breaks or leaks, Cross Connections, Service Interruption (loss of City supply) also updated flushing sequence for new serviced areas & added hydrants)  
May 2009 - amended & corrected Flushing Sequence  
February 2011 (updated stats, infrastructure, contacts, phone numbers,)  
June 2011 - amended SOP-14 to include documentation requirements of the new Drinking Water Works Permit  
August 2011 - amended to include Drinking Water License information and Drinking Water Works Permit information; #'s and description,  
August 2011 - Morris retired, amended contacts and other required information, to either David or Mark  
August 2011 - amended for CGSB CAR's; System description and the fact that the City of Pembroke samples & tests the water we purchase.  
June 2012 - amended, to add in Mark Behm and Lorne Rathwell, to replace M Schneider and D Saunders.  
Jan 2013 - amended, Valley Spring building closed, alternate sampling location.  
March 2014 - amended, added where to store the documentation of the third party calibration.  
January 2015 - reviewed and updated contacts and phone numbers, change of call service provider, CAR JO5857-2, added text to Measurement & Calibration section, CAR JO5857-1, added footer, MOE change from AWWA document to their new document,  
March 2015 - SOP 14 added a bullet regards NSF/61, developed a Utility Locating Policy SOP 15,  
April 2015 - edited typos, and minor errors found during the Annual Operators Training Meeting  
June 2015 - amended Inventory, to include documentation required.  
December 2015 - amended THM sampling location, expanded/detailed record keeping of the analysis reports, amended SOP #8 to conform to the newly released MOR document Watermain Disinfection Procedure, will now be an SOP 8, 8A & 8B  
April 2016 - amended Utility Locate SOP 15  
August 2016 - amended the THM SOP, to conform to the new reporting requirements of MOE.  
November 2016 - amended the THM SOP again, only report at end of quarter, and start a flushing regimen.

- added a request to take photos of watermain breaks when they are exposed. Will assist in proving classification and be useful for future training.
- January 2018 - added a SOP for HAA's, edited, adjusted Table of Contents, - reviewed & edited the contact lists
- April 26, 2018 Added Approval signature line, documentation that the Public Works Manager approved the changes & updates becomes part of the official document.
- November 2018 edited text on Page 11, sampling schedule, to clarify that the second set of samples must be more than 48 hours after the last of the first set of weekly samples was taken.  
Also noted the change in HAA sampling location following the MOE guidance document received on/or about May 9<sup>th</sup>, 2018
- April 2019 Added page for water meters, to list all the documents, details, procedures and contacts to make it easier for someone to follow me!
- Jan 2020 Reviewed phone numbers & contacts, updated, added County Road Occupancy Permit requirements

\_\_\_\_February 5, 2020\_\_\_\_  
Date

\_\_\_\_*original signed by M Behm*\_\_\_\_  
Public Works Manager

NOTE: This document is not the final authority. The Ministry of Environment and the Medical Officer of Health have the final say in all decisions made after they are advised of the problem. This document is to be reviewed and updated yearly or sooner as regulations are amended or personnel changes are known. Please advise the author (Claus Trost, QMS Rep) when any errors or omissions are detected.



# **Laurentian Valley**

## **Water Works**

### **Water Quality**

# **Policies & Procedures**

# **Manual**



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Laboratories, Practices for the Collection and Handling of Drinking Water Samples		Schedule F - office copy

## Introduction

Laurentian Valley Waterworks received its **Certificate** as a Water Distribution Plant, Level 1 (WD1) in November of 2000, # **2893**. The Drinking Water Protection Regulation 170/03 as amended introduced by the provincial government in 2003 requires that the Municipality sample and test the water distributed by the Municipality to ensure that clean, safe water is distributed to our customers.

On July 15, 2005 the system was reclassified as Water Distribution Subsystem Class 1 by the Ministry of Environment. The Drinking Water System Information number for Laurentian Valley Water Works is W260007465.

On June 2, 2011 the Corporation of the Township of Laurentian Valley was issued Municipal Drinking Water License # 192-101, Issue #1, as both the Owner and Operating Authority.

May 31, 2011 the Corporation of the Township of Laurentian Valley was issued a Drinking Water Works Permit Number 192-201, Issue #1 for the system described by the system maps as of February 2009 as amended from time to time by Form 1 - Record of Watermains.

Laurentian Valley Water Works purchases treated water from the City of Pembroke and distributes it to 645 homes and businesses through out 14 kilometers of distribution piping. The City of Pembroke owns and operates the Pembroke Drinking Water System (DWIS # 220000941), which consists of the Pembroke Water Purification Plant and distribution system. Sampling, testing and monitoring of the treated water provided to the Laurentian Valley Distribution System is conducted by the City of Pembroke. As owner and operating authority of the Pembroke Drinking Water System, Pembroke must ensure that the water supplied to the Laurentian Valley Distribution System meets the Ontario Drinking Water Quality Standards and has a minimum chlorine residual of at least 0.50 mg/l. Sampling and testing for the Laurentian Valley Distribution System is limited to the distribution system as required by Ontario Regulation 170/03.

Laurentian Valley Water Works is currently managed by the following staff;

- Mark Behm, Manager of Public Works, 613-735-6291, 613-401-3291
- Claus Trost, Water Quality Analyst, QMS Rep 735-6291, 613-639-3385
- Lorne Rathwell, Operations Foreman, 613-735-6291, 613-635-3241

## **Documentation & Communication**

The office for Laurentian Valley Water Works is at 460 Witt Road. All the required documentation is to be kept at this office and be made available to the public at this office. To this end, the Quarterly Water Reports are to be kept in a loose leaf binder complete with the analysis reports from the Laboratory, any correspondence from the Ministry of the Environment and any notes and files of the Analyst, ORO and the Public Works Manager. This binder, known as the yearly log, shall be kept in the WQA office and is available to the public at the front counter. The Annual Water System Report is also to be kept at the Municipal Office. There is a copy of the Laurentian Valley Water Works Distribution System Mapping, to be kept at the Water Works Office. The as built and detail drawings are also kept at the Water Works Office at 460 Witt Road.

The Policy and Procedures Manual, a copy of the regulations and the current quarters results are to be kept in the Analysts office at 460 Witt Road. These documents are available for review by the Ministry and the public at any time. A copy of the Policies and Procedures is also kept at the Operations Foreman Office at 460 Witt Road for the workers to review as required. (*Operators are to be given an up to date copy of the Drinking Water License, the Drinking Water Works Permit, the Policies and Procedures Manual and the Operational Plan each year at the review and training meeting*)

Quarterly Reports are to be completed by the analyst by the 20<sup>th</sup> of the month following the end of the Quarter, (March 31, June 30, Sept 31, and Dec 31.) The Quarterly Reports are available on the internet and at the front counter. The Quarterly Report is to be circulated to members of Council. The Quarterly Reports are also to be made available on the Internet at [www.lvtownship.ca](http://www.lvtownship.ca) .

The Annual Report is required to be completed and submitted to Council by February 28 of each year. A resolution from council, acknowledging the reports submission is required for the satisfaction of the MOE inspector and the accreditation auditor.

## **Emergency Contact Numbers & Addresses**

**Ministry of the Environment:**

- Spills Action Centre Phone: **1-800-268-6060** Fax: **1-800-268-6061**
- Karin Bourgon Phone: **1-800-860-2195** ext 230 Fax: **613-521-5437**

**Renfrew County & District Health Unit:**

- Office Phone: **613-735-8654** Fax: **613-735-3067**
- **after hours - 613-735-9926**
- David Tantalo Phone: **735-8654**, ext 1 569 # dtantalo@rcdhu.com

**Laurentian Valley Water Works:**

- Lorne Rathwell : Work Phone: 613-735-6291  
Cell Phone: 613-635-3241
- Claus Trost: Work Phone: **613-735-6291**  
Cell Phone: 613-639-3385

**Ontario One Call:** **1-800-400-8876** during regular office hours to schedule locates for service in three days. Call **1-800-400-2255** for emergency locates

**City of Pembroke:**

- Curtis Mick, Supervisor Water Distribution & Waste Water Collection  
Office Phone: **613-735-6816 ext 1403**  
Home Phone: 613-646-2964  
Cell Phone: 613-312-0098
- Water Purification Plant: Phone: 735-6821 ext 1491  
Standby #1 Phone: 613-281-2142

**Town of Petawawa:**

- Ontario Clean Water Agency - Sewage Plant 613-687-2141
- - Water Treatment Plant 613-687-7512

**Caduceon Environmental Laboratories Inc.**

- Greg Clarkin Manager Phone: **613-526-0123** Fax: 613-526-1244  
2378 Holly Lane  
Ottawa, Ontario  
K1V 7P1

**Staff:** Waterworks Phone 613-401-8269  
Mark Zadow home 613-735-5357 cell 613-585-7108 - Operator  
Andrew Warren home 613-628-5232 cell 613-635-2124 - Operator  
Todd Grahl home 613-735-6605 cell 613-633-1421 - Operator  
Dave Lewis home 613-735-4543 cell 613-635-3375 - Heavy Equipment  
Cole Hawkins home cell 613-433-0125 - Operator  
Shane Hebert home 613-635-7302 cell 613-585-1177 - Operator

**Critical Products & Services**

<b>Supply/Service</b>	<b>Vendor</b>	<b>Contact, Notes:</b>
Portable Testing Instruments & HACH Kit supplies can be obtained from;	Cleartech : Phone: 1-800-387-7503 Fax: 905-612-0575 7370 Bramalea Road Mississauga, Ontario L5S 1N6	Order DPD Free Chlorine Reagent for 10 ml sample, Cat.# 21055-69. Acct # 63183
HACH - Pocket Colorimeter HACH - pH Meter	Hach Sales & Service Canada Ltd. 3020 Gore Road, London ON N5V 4T7 Phone: 1-800-665-7635 Fax: 1-866-259-0984 infoCanada@hach.com	order online, see Claus for username & password <a href="http://www.hachco.ca">www.hachco.ca</a>  Acct # 40251351
Municipal Engineer	Jp2g Consultants Phone: 613-735-2507 Fax: 613-735-4327	Neil Caldwell P.Eng. Cell 613-282-0283
Water Analysis	Caduceon Laboratories Inc. Phone: 613-526-0123 Fax: 613-526-1244 2378 Holly Lane Ottawa ON K1V 7P1	Greg Clarkin, lab manager Tahir Yapici, lab supervisor Krystyna Pipin, lab supervisor
Emergency & After Hours Contact	The Security Company phone: 613-732-9009 Fax: 613-732-0038	Robert Watt
Water Meters	Neptune Phone: 1-800-667-4387 Fax: 7-905-858-0428	Dwayne McRae all meters are by Neptune, factory service
	Flowmetrix Technical Services Stacey Nichol Sr. Project Manager Flowmetrix Technical Services Inc. 2088 Jetstream Road London, Ontario N5V 3P6	Stacy Nichol, Sr. Project Manager Calibration & repair, of water meters, Hach kits, pH meter. Phone:1-519-870-3569 Fax: 1-519-268-3569
Valves & Hydrants Pipes & Fittings	Crane Supply 225 Paul Martin Drive Phone: 613-732-2857 Fax:	
	Wolseley Mechanical Group 1375 Pembroke Street West Phone: 613-732-1190	Robert Stanizewski Ph: 613-822-3444 Cell: 613-297-7647

	Boone Plumbing 20 Edgewater Street Kanata ON Phone: 1-613-831-6800	
Excavation/Installation & repair	W.W. Siegel Sand & Gravel  Phone: 613-732-8867 Fax: 613-735-6686	Jeff Siegel cell - 613-732-6653
	Splinter Forest Products Ltd. 39 Forest Valley Lane Laurentian Valley ON Phone: 613-732-3382	Don - 613-633-6190 Greg -
Hydro Vac Trucks	Crawl	613-646-7595 613-635-3854
	Exite Pembroke ON	613-621-0020
Municipal Contacts  for emergency supply of pipes & fittings	City of Pembroke Distribution  standby # 613-281-2140	Curtis Mick cell:613-312-0098
	White Water Region - OCWA Greg Davidson & Shane Severin common cell phones passed to duty operators	Greg - 613-633-6515 Shane - 613-633-0349 Ron - 613-633-0649
County Roads require permits to work on Pembroke Street West, Bruham Avenue & Jean Avenue.	County Road Occupancy Application is stored in A25/water email to - link on County Site	after hours emergency 1-866-353- 6374 Regular office hours 613-732-4353

## Water Sampling Schedule & Procedure

Laurentian Valley Water Works is required to take at least seven distribution samples each week for chlorine residual readings. We use the 4/3 option allowed under O.Reg. 170/03. The location of these readings are to be rotated through the four areas, twice each week;

Pembroke Street East Main  
Pembroke Street West Main  
Stafford Built up Area  
Willow Drive Main

At least four of the samples must be taken on Monday (*Tuesday, if Monday is a Holiday*) and the other three are to be taken on Thursday or Friday of the same week. (Care must be taken that the second set is taken, not less than 48 hours after the last of the first set of samples was taken, *so if Monday is a holiday, the second set cannot be taken before Friday*)

Laurentian Valley Water Works is required to take two samples weekly for microbiological testing, and collect a minimum 9 samples per month.

Week One: one sample from Brum's Dairy, either the Lab or the Dairy Bar

: one sample from Home Depot, *until the main is extended.*

Week Two: one sample from the Firehall and the other from Stafford Bingo Country.

In any month with only 4 Tuesdays the extra sample is to be taken from the Willow Drive Main, (*at the Hamilton Street Pumping Station*) on the Week Two schedule. The aim is to collect one sample each week from the Stafford Built-up Area and to alternate weeks on the East and West End Mains.

All the samples collected are to be analyzed for Total Coliforms and E. Coli. At minimum, the first three samples each month are also to be analyzed for general bacteria population expressed as colony counts on a heterotrophic plate count.

Please note, during the Christmas Holiday period, Laboratory and Courier services are reduced. The sampler may have to reschedule the sampling to suit the days available for delivery and analyses of the samples. The sampler is to call the Laboratory to confirm receipt of the samples the following afternoon. (*This will increase the time available to resample should there be a delivery problem or a problem with the samples submitted.*)

Once every quarter a sample for Trihalomethane and Haloacetic Acids is required. These samples are to be taken from the Home Depot sampling location. This location will take in water that has spent some time in the Bell Street Water Tower, and is therefore the longest in the distribution system. (*2018 - following guidance from the MOE, the HAA sampling site is to be relocated after 4 quarters, with results that are below the threshold, in response, we have moved the HAA sampling location to Brum's Dairy in the fourth quarter of 2018, if the 4/4 results at Brum's Dairy are below .004mg/l we will move to a third location; Bingo Country, in the fourth quarter of 2019. In 2021 we will choose the location with the highest 4/4 average as the permanent sampling location*)

In 2007 the Province of Ontario amended O.Reg 170/03 with O.Reg. 399/07 Community Drinking Water Lead Testing. Because of the complexity and timeliness of the lead sampling and reporting requirements and the fact that the law is fluid (*subject to amendments*) the Municipal Lead Sampling Protocol has been separated from this manual. Please refer to the Municipal Lead



Sampling Protocol Binder for this information. *The current Drinking Water License only required two rounds of plumbing & ICI samples until the License expires in 2021.*

The sampling equipment and forms are kept in the Analysts Office at 460 Witt Road. The equipment consists of a HACH Kit, Sampling Bottles, Coolers, Chlorine Residual Log and the Submission Forms.

Chlorine Residual Log Books are to be hard cover with bound spines and numbered pages.

The microbiological samples are normally taken on Tuesday mornings, after which the bottles are packed in the cooler with ice packs and the Submission Form, shipped via Purolator Courier to Caduceon in Ottawa. *(No ice packs in winter when the temperature is below minus 15 degrees Celsius, samples will freeze! The courier trucks are not heated.)*

When chlorine sampling, the chlorine residual reading is to be entered into the Log Book. If the residual is below 0.05 mg/l the bacterial sample should be taken and submitted. The **Standard Operating Procedure -1-** for Low Chlorine (page 10) should be followed.

When microbiological sampling, the tap is to be checked for cleanliness and turned on, medium flow for 5 to 10 minutes prior to taking the chlorine residual reading and the bacterial sample. This time can be used to label the sampling bottle, enter the required information in the Chlorine Residual Log and complete the Analysis Submission Form.

The chlorine residual reading is to be entered into the Log and on the Submission Form. If the residual is below 0.05 mg/l the bacterial sample should be taken and submitted. The **Standard Operating Procedure -1-** for Low Chlorine (page 12) should be followed.

The results of each weeks test are usually received by email the Friday of the week taken. This Certificate of Analysis is to be printed and placed in the current years "Log Book" binder, and the electronic copy is stored in E14, on the global drive, the email is stored in the waterworks folder for the current year.

The above sampling can only be conducted by a certified operator or the water quality analyst. Only the certified operator and the water quality analyst can make the log book entries. Any qualified person making an entry in the Log Book must have their name printed in the front of the Log Book next to their initial so that their entries can be identified.

### **Measurement and Recording Equipment Calibration and Maintenance**

HACH - Pocket Colorimeter factory calibrated, because there are two, they can be verified against each other quarterly and documented in the log book or they can also be tested by third parties using control samples, once per year. The documentation of the calibration is to be filed in the yearly log. The best before dates of the DPD pillows need to be checked before they are placed in the kits, each time they are restocked.

HACH - pH Meter, calibrated prior to each lead sampling schedule, by the method detailed in the owners manual, by the WQA. The Owners Manual and calibrating reagents are stored in the

Municipal storeroom. This meter can also be tested by third parties using control samples, once per year.

The reagents used for calibration are to be checked that they are not used after their best before dates prior to use and the third party contractor is to document the best before date of the reagents they use, on their forms submitted.

## Inventory

The following distribution system pipes & fittings are kept in stock for routine unplanned maintenance activities. Stock used in a repair is to be replaced as soon as possible, so that at minimum, there is always the stock as shown on the following table. Stock is to be ordered ahead for planned maintenance activities.

When purchasing stock, the operator is to ensure that all chemicals and materials used or that may come into contact with the water within the system shall meet all applicable standards set by both the AWWA and the ANSI safety criteria standards NSF/60 and NSF/61 (*this does not apply to water pipe and pipe fittings meeting AWWA specifications made from ductile iron, cast iron, PVC and HDPE. Nor to articles made from glass, HDPE or Teflon.*)

This is to be documented by getting the Technical Data Sheet and/or the Submittal Information from the supplier and attaching it to the Invoice. The Invoice is to also provide enough information (product code/id) to verify that they are the same as listed on the Technical Data Sheet and/or the Submittal Information. In the alternate, the required parts can be researched on the Internet and documented, and the required part purchased from a supplier, as long as the documentation is attached to the invoice and the invoice is detailed enough to verify that they are the same product. This requirement has been stipulated in person by the Operations Foreman to the Managers at Crane and Wolsley.

Item description	Minimum # in stock	comment
12" Royal PVC PR160 pipe	1	Only require that a length
10" Royal PVC PR160 pipe	1	greater than 4 feet, be kept in
8" Royal PVC PR160 pipe	1	stock,
6" Royal PVC PR160 pipe	1	"
4" Royal PVC PR160 pipe	1	"
property shut off box - 7' long	1	
1" X 1" coupler	1	
3/4" to 3/4" coupler	5	
3/4" to 1/2" coupler	3	
3/4" to 5/8" coupler	3	
5/8" to 1/2" coupler	2	
5/8" to 5/8" coupler	4	

<b>3/4" to 3/4" curb stop (property shut off valve)</b>	<b>4</b>	
<b>3/4" main stop valve</b>	<b>5</b>	
<b>4" to 3/4" saddle</b>	<b>1</b>	
<b>6" to 3/4" saddle</b>	<b>2</b>	
<b>8" to 3/4" saddle</b>	<b>1</b>	
<b>10" to 3/4 saddle</b>	<b>2</b>	
<b>12" to 3/4" saddle</b>	<b>1</b>	
<b>4" rubber clamp</b>	<b>2</b>	
<b>6" rubber clamp</b>	<b>2</b>	
<b>8" rubber clamp</b>	<b>2</b>	
<b>10" rubber clamp</b>	<b>2</b>	
<b>12" rubber clamp</b>	<b>2</b>	
<b>water main shut off box</b>	<b>1</b>	

**Laurentian Valley Water Works  
Standard Operating Procedure -1-  
Adverse Water Quality Notification**

**CHLORINE RESIDUAL BELOW 0.05 mg/l or UNTREATED WATER ENTERS THE  
DISTRIBUTION SYSTEM**

If a distribution system sample contains less than 0.05 mg/l or untreated water has entered the distribution system the following actions are required;

1. Immediately notify the Operations Foreman (Lorne Rathwell at **613- 635-3241**) to begin flushing.
2. Immediately notify the local Medical Officer of Health (Mike Grace at **613-735-8654** ext **551**) by speaking with the Medical Officer of Health. If he is not available speak, with a person at the Health Unit Office at **613- 735-8654** or if the office is closed, the person on call at **613-735-9926** (General Hospital)
3. Immediately notify the Ministry of Environment by speaking with a person at the Ministry's Spills Action Centre at **1-800-268-6060** (**In all the above, you must speak to that person, don't leave a message on a machine. Also record the time and name of the person you spoke to**)
4. Implement the required corrective action as follows;
  - A. Flush the mains in the affected area to bring the free chlorine residual to a minimum of 0.20 mg/l.
  - B. Resample & Analyze for chlorine residual. The resampling should consist of a minimum of 3 samples; one sample at the affected site, one sample upstream and one sample downstream of the affected site.
  - C. Advise the Medical Officer of Health of the results from the flushing and resampling and follow their directions.
5. Within 24 hours of the immediate oral notification of an adverse water quality incident, confirm the verbal notice by providing written notification to the local Medical Officer of Health and the MOE. Written notice is provided by completing **Section 2(a) - Written Notice by Drinking-Water System Owner** and faxing the form to the local Medical Officer of Health at **613-735-3067** and the Ministry's Spills Action Centre at **1-800-268-6061**
6. **Notice of issue resolution** - within 7 days of resolving the issue, a written notice shall be completed, using **Section 2(b) - Notice of Issue Resolution** and faxing the form to the local Medical Officer of Health at **613-735-3067** and the Ministry's Spills Action Centre at **1-800-268-6061**

**Laurentian Valley Water Works  
Standard Operating Procedure -2-  
Adverse Water Quality Notification  
DISTRIBUTION SYSTEM SAMPLE SHOWS A PRESENCE OF COLIFORM  
BACTERIA**

If a distribution system sample analysis tests positive for coliform bacteria the following actions are required;

1. Immediately notify the local Medical Officer of Health (Mike Grace at 613-735-8654 ext 551) by speaking with the Medical Officer of Health. If he is not available speak with a person at the Health Unit Office at 613- 735-8654 or if the office is closed, the person on call at 613-735-9926(General Hospital)
2. Immediately notify the Ministry of Environment by speaking with a person at the Ministry's Spills Action Centre at 1-800-268-6060. **(In all the above, you must speak to that person, don't leave a message on a machine. Also record the name of the person you spoke to)**
3. Implement the required corrective action as follows;
  - A. Resample & Analyze for microbiological parameters including P/A analysis for coliform bacteria.
  - B. The resampling should consist of a minimum of 3 samples; one sample at the affected site, one sample upstream and one sample downstream of the affected site.
  - C. As per sampling procedure, the chlorine residual and time of sampling should be noted at each sampling location.
  - D. Advise the Medical Officer of Health of the free chlorine residual results from the resampling and follow their directions.
4. Within 24 hours of the immediate oral notification of an adverse water quality incident, confirm the verbal notice by providing written notification to the local Medical Officer of Health and the MOE. Written notice is provided by completing **Section 2(a) - Written Notice by Drinking-Water System Owner** and faxing the form to the local Medical Officer of Health at 613-735-3067 and the Ministry's Spills Action Centre at 1-800-268-6061
5. Once the analytical results from the resamples are known, follow-up with the local Medical Officer of Health to confirm the presence or absence of coliform bacteria by P/A analysis or the presence or absence of any other contamination.

6. If the presence of coliform bacteria by P/A analysis is confirmed, steps 1, 2 & 4 are to be repeated. Flush the mains to maintain a minimum free chlorine residual of 0.20 mg/l in the affected parts of the distribution system, and continue to resample and test, until total coliforms are not detected in any of the samples from two consecutive sets of samples taken 24 to 48 hours apart or as otherwise directed by the medical officer of health.
7. **Notice of issue resolution** - within 7 days of resolving the issue, a written notice shall be completed, using **Section 2(b) - Notice of Issue Resolution** and faxing the form along with copies of the Analysis Reports to the local Medical Officer of Health at **613-735-3067** and the Ministry's Spills Action Centre at **1-800-268-6061**

**Standard Operating Procedure -3-  
Adverse Water Quality Notification  
HETEROTROPHIC PLATE COUNT ANALYSIS SHOWS THAT  
DISTRIBUTION SYSTEM SAMPLE CONTAINS MORE THAN 500 COLONIES  
PER ML**

If a distribution system sample contains more than 500 colonies per ml on a heterotrophic plate count (HPC) analysis (also known as Standard Plate Count) the following actions are required; *(It is no longer a requirement to report that a sample has more than 500 colonies per ml on a heterotrophic plate count (HPC) analysis, O.Reg 248/06 amending O.Reg 170/03.)*

1. Implement the required corrective action as follows;
  - A. Resample & Analyze for the HPC analysis at the original sampling location.
  - B. As per sampling procedure, the chlorine residual and time of sampling should be noted.
  
3.
  - A. If the presence of more than 500 colonies per ml on a HPC analysis is confirmed by the resamples, begin a flushing regimen and consult with the local Medical Officer of Health.
  - B. Resample and Analyse for the HPC analysis .The resampling should consist of a minimum of 3 samples; one sample at the affected site, one sample upstream and one sample downstream of the affected site.
  
4. Daily monitor and maintain the free chlorine residual at a minimum of 20 mg/l in the affected parts of the distribution system, and continue to resample and test, until less than 500 colony forming units (CFU) per millilitre are detected in all of the samples from two consecutive sets of samples taken 24 to 48 hours apart or as otherwise directed by the medical officer of health.

**Laurentian Valley Water Works**

**Standard Operating Procedure -4 -  
Adverse Water Quality Notification  
ESCHERICHIA COLI (E. Coli) DETECTED IN DISTRIBUTION SYSTEM  
SAMPLE**

If E. coli is detected in a distribution system sample the following actions are required;

1. Immediately notify the Operations Foreman (Lorne Rathwell at **613-635-3241**) to begin flushing.
2. Immediately notify the local Medical Officer of Health (Mike Grace at 613-735-8654 ext **551**) by speaking with the Medical Officer of Health. If he is not available speak with a person at the Health Unit Office at 613- **735-8654** or if the office is closed, the person on call at **613-735-9926** (General Hospital)
3. Immediately notify the Ministry of Environment by speaking with a person at the Ministry's Spills Action Centre at **1-800-268-6060**. **(In all the above, you must speak to that person, don't leave a message on a machine. Also record the name of the person you spoke to)**
4. Implement the following required corrective action and continue until *E. coli* and fecal coliforms are no longer detected in two consecutive sets of samples, or as instructed by the Medical Officer of Health;
  - A. Increase the chlorine dose and flush the mains to ensure that a free chlorine residual of at least 0.20 mg/l is achieved at all points in the affected part of the distribution system. This may require a call to Curtis Mick at the Water Purification Plant to advise them of the problem; to see if the problem originates in their end and for them to assist in raising the chlorine residual.
  - B. Resample & Analyze for microbiological parameters including the presence of *E. coli* and/or fecal coliform.
  - C. The resampling should consist of a minimum of 3 samples; one sample at the affected site, one sample upstream and one sample downstream of the affected site.
  - D. As per sampling procedure, the chlorine residual and time of sampling should be noted at each sampling location.
  - E. Advise the Medical Officer of Health of the free chlorine residual results from the resampling and follow their directions.
5. Within 24 hours of the immediate oral notification of an adverse water quality incident, confirm the verbal notice by providing written notification to the local Medical Officer of Health and the MOE. Written notice is provided by completing **Section 2(a) - Written Notice by Drinking-Water System Owner** and faxing the form to the local Medical Officer of Health at **613-735-3067** and the Ministry's Spills Action Centre at **1-800-268-6061**



6. Once the analytical results from the resampling are known, follow-up with the local Medical Officer of Health to confirm the presence or absence of *E. coli* and/or fecal coliform or the presence or absence of any other contamination.
7. If the presence of *E. coli* and/or fecal coliform is confirmed, consult with the local Medical Officer of Health. Steps 2,3,4, & 5 are to be repeated.
8. Maintain the free chlorine residual concentration at least 0.20 mg/l in the affected parts of the distribution system, and continue to resample and test, until *Escherichia coli* (*E. coli*) or fecal coliforms are not detected in any of the samples from two consecutive sets of samples taken 24 to 48 hours apart or as otherwise directed by the medical officer of health.
9. **Notice of issue resolution** - within 7 days of resolving the issue, a written notice shall be completed, using **Section 2(b) - Notice of Issue Resolution** and faxing the form to the local Medical Officer of Health at **613-735-3067** and the Ministry's Spills Action Centre at **1-800-268-6061**

**Standard Operating Procedure -5 -  
Adverse Water Quality Notification  
A DISTRIBUTION SYSTEM SAMPLE EXCEEDS 0.01 mg/l of LEAD**

Please refer to the Municipal Lead Sampling Protocol for this information.

**Adverse Water Quality Notification**  
**TRIHALOMETHANES EXCEED 0.10 mg/l IN DISTRIBUTION SYSTEM**  
**SAMPLE**

If Trihalomethane exceeding 0.10 mg/l is detected in a distribution system sample the following actions are required;

1. Immediately calculate the last four quarter average. If the four quarter average is below 0.10 mg/l notify the Pembroke Waterworks by calling the City of Pembroke Water Purification Plant at 613-735-0309, or emailing Curtis Mick. *(The plant needs to be notified because they can alter their procedures to reduce the level of THM's)*
2. If the last four quarter average is greater than 0.10 mg/l do the following;
  - A. At the end of the quarter, notify the local Medical Officer of Health, by written notice *(within 7 days of the end of the quarter)*, Written notice is provided by completing **Section 2(a) - Written Notice by Drinking-Water System Owner** and faxing the form to the Ministry's Spills Action Centre at **1-800-268-6061**, **email a copy to the Health Unit and the MOE Drinking Water Inspector assigned to our system.** (There is no requirement to phone SAC or local Medical Officer of Health)
  - B. Have the watermain flushed, *(THM's are caused by long retention times and increased water temperature)*
3. Resample at the next scheduled date;
  - A. and if the concentration of THM is greater than 0.10 mg/l consult with the Purification Plant and the Medical Officer of Health on the appropriate corrective action and continue as instructed. *(Will usually be to continue a flushing regimen.)*
  - B. If the concentration of THM falls below 0.10 mg/l, and the 4/4 average falls below 0.10 mg/l, issue a **Notice of issue resolution** - within 7 days of resolving the issue, a written notice shall be completed, using **Section 2(b) - Notice of Issue Resolution** and faxing the form to the local Medical Officer of Health at **613-735-3067** and the Ministry's Spills Action Centre at **1-800-268-6061**

Note: Small municipal residential systems and non-municipal year round residential systems that serve designated facilities also must report to the operator of each designated facility served by the system. *(Laurentian Valley currently has no designated facilities - schools, old age homes etc.)*

**Laurentian Valley Water Works**  
**Standard Operating Procedure -6A -**  
**Adverse Water Quality Notification**  
**HALOACETIC ACIDS EXCEED 0.08 mg/l IN DISTRIBUTION SYSTEM**  
**SAMPLE**

**Before January 1, 2020** - The *O.Reg. 169/03* standard (80 µg/L) and the *O.Reg. 170/03* reporting requirements for HAAs come into effect on **January 1, 2020**, as such drinking water system owners/operating authorities are not required to perform the RAA calculation for HAAs until 2020. Owners/operating authorities may wish to perform the calculation to determine if there are elevated levels of HAAs in the drinking water system.

**After January 1, 2020** - If Haloacetic Acids exceeding 0.08 mg/l is detected in a distribution system sample the following actions are required;

1. Immediately calculate the last four quarter average. If the four quarter average is below 0.08 mg/l notify the Pembroke Waterworks by calling the City of Pembroke Water Purification Plant at 613-735-0309, or emailing Curtis Mick. (*The plant needs to be notified because they can alter their procedures to reduce the level of HAA's*)
2. If the last four quarter average is greater than 0.08 mg/l do the following;
  - A. At the end of the quarter, notify the local Medical Officer of Health, by written notice (*within 7 days of the end of the quarter*), Written notice is provided by completing **Section 2(a) - Written Notice by Drinking-Water System Owner** and faxing the form to the Ministry's Spills Action Centre at **1-800-268-6061**, **email a copy to the Health Unit and the MOE Drinking Water Inspector assigned to our system.** (There is no requirement to phone SAC or local Medical Officer of Health)
  - B. Have the watermain flushed, (*HAA's become elevated by long retention times and increased water temperature*)
3. Resample at the next scheduled date;
  - A. and if the concentration of HAA's is greater than 0.08 mg/l consult with the Purification Plant and the Medical Officer of Health on the appropriate corrective action and continue as instructed. (*Will usually be to continue a flushing regimen.*)
  - B. If the concentration of HAA's falls below 0.08 mg/l, and the 4/4 average falls below 0.08 mg/l, issue a **Notice of issue resolution** - within 7 days of resolving the issue, a written notice shall be completed, using **Section 2(b) - Notice of Issue Resolution** and faxing the form to the local Medical Officer of Health at **613-735-3067** and the Ministry's Spills Action Centre at **1-800-268-6061**

Note: Small municipal residential systems and non-municipal year round residential systems that serve designated facilities also must report to the operator of each designated facility served by the system.

**Laurentian Valley Water Works  
Standard Operating Procedure -7 -  
Hydrants, Dead-End & Blow-Off Flushing Procedure**

The fire hydrants, dead-ends and blow-offs are to be flushed twice yearly unless otherwise or elsewhere stated. It is preferable to flush in the spring and the fall when water usage is at its lowest. The homeowners are notified of the flushing dates by inserting a flyer in the water bills indicating the time period the flushing is to occur. Or in the alternate, on the day prior to the scheduled flushing, the homeowners and businesses in the immediate vicinity are to be notified verbally if available or a flyer is to be left indicating that there will be flushing, at what times and precautions the homeowners can take to minimize the disruption. See Flushing Notice in Appendix.

1. Isolate the section to be flushed from the rest of the system. Mark or record any valves closed on a map.
2. Install the gate valve and open the fire hydrant or blow-off valve slowly.
3. Direct the water being flushed with the diffuser and/or hoses away from private property and persons. (Ensure that the flushed water does not enter a surface water source unless there is no chlorine.)
4. The hydrant is to be run fully open for a minimum of 5 minutes to stir up as much loose material in the main as possible. The main should then be flushed for a minimum 15 minutes.
5. The operator is to record the required information in the Flushing Record for each hydrant or blow-off flushed. (*Copy in appendix*) A minimum 2 samples should be taken to determine the clarity of the water and the chlorine residual. The first should be taken immediately after the water clears (*2-3 minutes after the hydrant is opened*) and the second just prior to closing the valve.
6. When the flushing water is clear, slowly close the hydrant or blow-off valve. If the water does not clear, the operator is to contact the Operations Foreman or the Water Quality Analyst for instructions. Leave the hydrant cap off to allow the water to drain back, in the winter months pour (bio)antifreeze into the bowl. Return later to close the cap and mark as such in the report.
7. When a segment of main is completely flushed, open any valves that were closed for the flushing and record or remove the marks on the maps indicating that the valves are closed before moving on to the next section to be flushed.
8. The flushing log is to be completed, indicating whether any follow up service is required.

### **Flushing Sequence**

1. Sequence for flushing the Stafford Built-up Area, south of the Indian River;
  - a) Start at Hydrant 1 on Elgin Street, in order to,
  - b) Hydrant #15, on Roy Street,
  - b) then to blow-off valve at the end of Lark Street
  - c) then at Hydrant #18 on Hamilton Street
  
2. Sequence for flushing the Stafford Built-up Area North of the Indian River;  
WQP&P 2019

- a) Start at hydrant #20 on Hamilton Street
  - b) then at hydrant #19 on Hamilton Street
  - c) then at hydrant #21 on Hamilton Street
  - d) then at the blow-off valve at the end of the main on Hamilton Street
  - e) then to hydrants #39 and #68 at Indian Court, notify management at Brum's Dairy - 735-2325
  - f) then at hydrant #47 on Lorne Street
  - g) then at hydrant #57 on Stafford Street
  - h) then at hydrant #48 at the Recreation Center
  - i) then at hydrant #63 on Allen Street
  - j) then at hydrant #67 on Bruham Avenue
  - k) then at the blow-off valve on Bruham Avenue across from hydrant #67 in front of 711 Bruham Avenue
  - l) then at hydrant #31 on Jean Avenue
3. Sequence for flushing the West End Area;
- a) Start at hydrant #221 on Pembroke Street West
  - b) then at hydrant #210 on Butler Chev Olds parking lot, private property - notify management
  - c) then continue up Pembroke Street West to hydrant # 222 at Clouthier Storage.
4. Sequence for flushing the East End Area;
- a) Start at hydrant #102 on Pembroke Street East
  - b) then at hydrant #105 in the Boston Pizza parking lot, private property - notify management
  - c) then at hydrant # 104 in front of Wal-Mart, private property - notify management
  - d) then at hydrant # 103 in front of Canadian Tire, private property - notify management
  - e) then continue up to Home Depot, Hydrant # 112

## **Standard Operating Procedure -8 - Water Main Breaks**

1. **CLASSIFICATION** Shortly after the Operator in Charge is advised that there is a water main break or a suspected leak, he is to attend the site to determine the type and scope of the break. Classification of the break is to be in accordance with the MOE Watermain Disinfection Procedure.

Category 1 - watermain breaks with no evident or suspected contamination; contamination is typically not suspected for circumferential breaks or small leaks, where flow is maintained from the break until an air gap is established, and where the air gap can be maintained during the repair procedure. *(If at any time during the repair, the air gap is lost, positive pressure is lost or contamination is suspected, or evident, the break shall be reclassified to Category 2)*

Category 2 - are large watermain breaks, in which it is suspected or evident that contamination is present in the main, and/or is being directed to our customers. This includes breaks in which there has been a loss in pressure, *(below 20 psi, because there can be backflow from other higher pressure sources)*

2. **NOTIFICATION;** **Category 1** breaks do not require any official notification.

**Category 2** breaks - Immediately notify the local Medical Officer of Health (Mike Grace at 613-735-8654 ext 551) by speaking with the Medical Officer of Health. If he is not available speak with a person at the Health Unit Office at 613- 735-8654 or if the office is closed, the person on call at 613-735-9926 *(General Hospital, leave them your contact information, and wait for the on call person to call you back)*

**If the Health Unit declares a water advisory;** Immediately notify the Ministry of Environment by speaking with a person at the Ministry's Spills Action Centre at 1-800-268-6060. **(In all the above, you must speak to that person, don't leave a message on a machine. Also record the name of the person you spoke to)**

## **Laurentian Valley Water Works Standard Operating Procedure -8A - Category 1 - Water Main Breaks**

3. **NOTIFICATION;** Category 1 breaks do not require any official notification, however, notify homeowners in the vicinity of the break/repair. Use a flyer similar to the one in the Appendix.
4. **DOCUMENTATION;** The Operator in Charge is to begin recording the required information on a Water Distribution System Service & Repair Form *(see appendix)*. It is also requested that the OIC take some pictures of the break when it is exposed, this will assist in the documentation, to show why the break was classified as it was.
5. **SCHEDULING;** a) small category 1 breaks and/or leaks, can be scheduled to repair during regular work hours.  
b) if it is a large category 1 break, the valves on either side are to be shut, one fully and the other by 95% (to keep positive pressure on the pipe), and the repair is to commence as soon as possible. *(The decision on when to complete the repair shall be based on the risk*

*to operators, public safety and the danger of property damage and/or environmental damage.)*

Arrange for the required equipment, material and labour to be on site at the scheduled time.

6. **LOCATES;** Call for locates:  
Ontario One Call - 1-800-400-8876 during regular office hours to schedule locates for service in three days. Call 1-800-400-2255 to request emergency service for immediate locates. **Contractor ID = 03727**
7. **TRAFFIC CONTROL;** Complete and document a traffic control plan, copy in Appendix. Have the appropriate barricades and signage installed. The County requires Occupancy Permits for work undertaken on County Roads that impacts traffic flow (*Bruham Avenue, Jean Avenue and Pembroke Street West*). The Application form is stored in A25/water and copies are kept with the foreman, in his office. Complete the Application, scan & email to the County through their website link.
8. **THE REPAIR;** On-Site;
  - a) Excavate & locate the break
  - b) Excavate & install a sump & pump, to keep piping above standing water (*air gap*)
  - c) complete the repair, continually cleaning the piping with the chlorine cleaning solution, (1% sodium hypochlorite solution)
  - e) alternative procedure is to have a hydro-vac truck on-site, to do the final excavation with high pressure water & vacuum.
  - f) when repairs are complete, prior to backfill, open partially closed valve and flush to other valve as practical,
  - g) shut valve and open other to flush in the other direction if practical
  - h) flush into the consumers building
  - i) backfill & compact over repair area
9. Complete the Water Distribution System Service & Repair Form. Copy form and forward to analysts office and notify analyst that he has the option to include the area for sampling on the next rotation. (Sampling is not required, but is a best/recommended practice)
10. Review inventory of spare parts, order to replace what was utilized, if required.

**Please Note:** if there is a loss of pressure during the break, and/or the free chlorine residual tested below 0.05 mg/l and/or bacterial contamination is detected in a distribution sample taken at the site of the leak/break, that this is reportable as an adverse water quality incident to SAC and RCDHU as per **Standard Operating Procedure -1-**

**Laurentian Valley Water Works  
Standard Operating Procedure -8B -**



## Category 2 - Water Main Breaks

1. **NOTIFICATION;** Category 2 breaks - Immediately notify the local Medical Officer of Health (Mike Grace at 613-735-8654 ext 551) by speaking with the Medical Officer of Health. If he is not available speak with a person at the Health Unit Office at 613- 735-8654 or if the office is closed, the person on call at 613-735-9926 (*General Hospital, leave them your contact information, and wait for the on call person to call you back*) **If the Health Unit declares a water advisory;** Immediately notify the Ministry of Environment by speaking with a person at the Ministry's Spills Action Centre at 1-800-268-6060. **(In all the above, you must speak to that person, don't leave a message on a machine. Also record the name of the person you spoke to)**  
Notify homeowners in the vicinity of the break/repair. Use a flyer similar to the one in the Appendix.
2. **DOCUMENTATION;** The Operator in Charge is to begin recording the required information on a Water Distribution System Service & Repair Form (*see appendix*). It is also requested that the OIC take some pictures of the break when it is exposed, this will assist in the documentation, to show why the break was classified as it was.
3. **SCHEDULING;** the repair is to commence as soon as possible. (*The decision on when to complete the repair shall be based on the risk to operator and public safety and the danger of property damage and/or environmental damage.*)  
Arrange for the required equipment, material and labour to be on site at the scheduled time.
4. **LOCATES;** Call for locates:  
Ontario One Call - 1-800-400-8876 during regular office hours to schedule locates for service in three days. Call 1-800-400-2255 to request emergency service for immediate locates. **Contractor ID = 03727**
5. **TRAFFIC CONTROL;** Complete and document a traffic control plan, copy in Appendix. Have the appropriate barricades and signage installed. The County requires Occupancy Permits for work undertaken on County Roads that impacts traffic flow (*Bruham Avenue, Jean Avenue and Pembroke Street West*). The Application form is stored in A25/water and copies are kept with the foreman, in his office. Complete the Application, scan & email to the County through their website link.
6. **THE REPAIR;** On-Site;
  - a) Excavate & locate the break
  - b) Excavate & install a sump & pump, to keep piping above standing water (*air gap*)
  - c) remove any contaminants that may have entered the watermain, either by flushing or swabbing.
  - d) complete the repair, continually cleaning the piping with the chlorine cleaning solution, (1% sodium hypochlorite solution)
  - d) all the surfaces of the pipe and repair parts which will come into contact with drinking water shall be disinfected with the chlorine cleaning solution; if you have to cut out a section of pipe, the interior surfaces of the cut ends shall also be

cleaned, by swabbing or spraying the cleaning solution as far as can be practically reached. (Depending on the nature or severity of the contamination, site specific disinfection procedures may be required, these are to be discussed and agreed upon by the ORO, the QMS Representative and or may be dictated by the RCDHU, these steps may include the disinfection procedures for new watermains as per ANSI/AWWA Standard C 651

- f) when repairs are complete, prior to backfill, open the partially closed valve and flush to other valve through the nearest fire hydrant as practical,
- g) shut valve and open other to flush in the other direction if practical,
- h) flush into the consumers building,
- i) backfill & compact over repair area.

7. Complete the Water Distribution System Service & Repair Form. Copy form and forward to analysts office and notify analyst to include the area for sampling on the next rotation, a minimum of one microbiological sample is required, it is preferable to collect one upstream and one downstream from the break.
8. Review inventory of spare parts, order to replace what was utilized, if required.

**Laurentian Valley Water Works  
Standard Operating Procedure -9 -  
Service Pipe or Connection Leaks or Breaks**

1. Shortly after the Operator in Charge is advised that there is a break or a suspected leak, he is to attend the site to determine the type and scope of the break.
  - a) the location of the leak or break is to be determined first, if the leak is on the Municipal portion (before the curb stop) then SOP -8- is to be followed. The location of the leak can usually be determined by closing the curb stop to the consumer and listening to the pipes.
  - b) if it is a large break to the consumer, the service connection valve is to be immediately shut.
  - c) if it is a small break/leak, the repair can be scheduled during regular hours in conjunction with the consumers plumbers schedule.
2. The Operator in Charge is to begin recording the required information on a Water Distribution System Service & Repair Form (*see appendix*). It is also requested that the OIC take some pictures of the break/leak when it is exposed, this will assist in the documentation, to show why the break was classified as it was.
3. After the consumers plumber has completed the repairs the Operator in Charge shall inspect the connections, confirm the required backflow protection devices are installed and that the water valve in the building is turned off. Then the curb stop valve can be opened and the plumbing system in the building flushed.
4. Complete the Water Distribution System Service & Repair Form. Copy form and forward to analysts office.

**Laurentian Valley Water Works  
Standard Operating Procedure -10-  
Cross Connection**

Laurentian Valley Water Works has a policy that requires dual check valves on all residential connections to the distribution system and double check valves on all ICI connections. The water is not initially turned on until an inspection has been conducted by either the Operations Foreman or the Chief Building Official. However, there are some residential and commercial connections that have been in place before this policy was put in place, they are to be corrected as they are detected by the Building Department.

Cross Connections will be discovered in one of two ways; either it is found during an inspection or there has been a customer complaint received. If the potential for back flow is detected in the plumbing system of the customer during an inspection, the curb stop at the street is to be immediately turned off until the required repairs have been made and/or a proper back flow prevention device has been installed.

Shortly after the Operator in Charge is advised that there is a possible cross contamination of the distribution system he is to attend the site to determine the type and scope of the contamination.

**Laurentian Valley Water Works  
Standard Operating Procedure -11-  
Loss of Service**

Laurentian Valley Water Works receives the drinking water supply from the City of Pembroke under contract. If there is an emergency at the Water Treatment Plant or in their distribution system that puts them in a situation of being unable to continue to supply drinking water they are required to notify us directly.

There will be very little that the Water Works can do in the response phase, other than ensuring that the City's communications to the public include affected Laurentian Valley Water Works customers and that our communication reinforce the City's and the Renfrew County District Health Units message.

### **Recovery Phase**

It can be assumed that there will be a loss of pressure during the loss of service and therefore there will be a chance of a free chlorine residual below 0.05 mg/l and/or that untreated water and/or contaminated water has entered the distribution system, this is reportable as an adverse water quality incident to SAC and RCDHU

1. Immediately notify the local Medical Officer of Health (Mike Grace at 613-735-8654 ext 535) by speaking with the Medical Officer of Health. If he is not available speak, with a person at the Health Unit Office at 613- 735-8654 ext. 555 or if the office is closed, the person on call at 613-735-9926(General Hospital)
2. Immediately notify the Ministry of Environment by speaking with a person at the Ministry's Spills Action Centre at 1-800-268-6060 **(In all the above, you must speak to that person, don't leave a message on a machine. Also record the time and name of the person you spoke to)**
3. Implement the required corrective actions as instructed by the Renfrew County Health Unit and/or the City of Pembroke. (The corrective actions will all depend on the nature of the original emergency. Flushing can only begin when the City has restored service and has advised the Water Works that they have the capacity for us to begin flushing. The sampling parameters will also be tied to the nature of the original service interruption and the RCDHU will advise what, where and how many they would like done.)
4. When given clearance to begin flushing, follow Standard Operating Procedure -7- for the affected area to maintain a minimum free chlorine residual of 0.20 mg/l in the affected parts of the distribution system, or as otherwise directed by the medical officer of health.
5. Within 24 hours of the immediate oral notification of an adverse water quality incident, confirm the verbal notice by providing written notification to the local Medical Officer of Health and the MOE. Written notice is provided by completing **Section 2(a) - Written Notice by Drinking-Water System Owner** and faxing the form to the local Medical

Officer of Health at **613-735-3067** and the Ministry's Spills Action Centre at **1-800-268-6061**

6. Continue the sampling and resampling until the required parameters sampled conform to the Drinking Water Quality Standard or as otherwise instructed by the Renfrew County District Health Unit.
7. **Notice of issue resolution** - within 7 days of resolving the issue, a written notice shall be completed, using **Section 2(b) - Notice of Issue Resolution** and faxing the form to the local Medical Officer of Health at **613-735-3067** and the Ministry's Spills Action Centre at **1-800-268-6061**

**Laurentian Valley Water Works  
Standard Operating Procedure -12-  
Fire Hydrant Maintenance**

The fire hydrants are to be inspected twice yearly. It is acceptable to inspect the hydrants in the spring and the fall when the dead ends and blow-offs are being flushed. The hydrants should also be inspected after each use, especially in the winter to ensure that the barrel has drained.

1. Inspect for leakage and make necessary repairs.
2. Instal the gate valve and open hydrant fully, checking for ease of operation.
3. Flush hydrant following SOP #7.
4. Remove all nozzle caps and inspect threads for impact damage or cross threading. Clean and lubricate outlet nozzle threads with a dry graphite-base lubricant, and check for ease of operation. Ensure that the outlet nozzle cap gaskets are in good condition and that the chains are in place.
5. Replace caps, tighten with a spanner wrench, then back of the threads slightly so the caps are not excessively tight, but are still tight enough to prevent hand removal.
6. Check for any exterior obstruction that could interfere with hydrant operation during an emergency. (Brush, hedges, fences etc.)
7. Check the dry barrel for proper drainage.
8. Clean and make note if repainting the exterior of hydrant is required. Ensure that the hydrant number is in place.
9. Be sure the auxiliary valve is in the fully opened position.
10. Should the hydrant be inoperable, tag and bag the hydrant and notify the Operations Foreman, who will advise the Fire Department that the hydrant is not in service.
11. Complete the Hydrant Maintenance Report and file with the Operations Foreman and/or the Water Quality Analyst.
12. The Master Hydrant Record will then be completed by the Water Quality Analysts office.

**Everyone working with the fire hydrants is to be aware that when operating a dry-barrel hydrant, it must be fully open so that the drain becomes fully closed. If the hydrant is not fully opened the drain will remain partially open and the water seeping through will saturate the drain field. This could result in the hydrant freezing.**

Further reference material: [AWWA Manual M17, Installation, Field Testing and Maintenance of Fire Hydrants](#)

## **Standard Operating Procedure -13- Dechlorination**

To ensure that any water used in the disinfection of new or repaired water mains, as well as, chlorinated water discharged as the result of flow testing or flushing fire hydrants is not directed to a storm sewer, drain, or any other location that may allow the discharge to enter a water course without prior de chlorination, the operator will ensure that the de chlorination has occurred , or that the water has been redirected to the sanitary sewer.

- 1 The chlorinated water used for hydrant flushing or flow testing which contains the same content of chlorine as the distribution system may be flushed into the waste water collection system, with prior permission of the senior plant operator. This will be accomplished by using proper hoses and connections ,and the use of a proper traffic plan, signs (cone , traffic barrels and or barricades) and competent personal.
- 2 The chlorinated water used for hydrant flushing or flow testing which contains the same content of chlorine as the distribution system and were there is no sewer system available, the water may be discharged into the storm sewer or an open ditch, providing the following conditions exist.
  - (a)The ditch does not empty directly in to a natural habitat
  - (b)The chlorine has time to naturally dissipate before the water could reach a natural habitat.
- 3 In the event that water with a high content of chlorine is to be flushed from the fire hydrants, following the disinfection of repaired water mains or the installation of new water mains, the water shall be de chlorinated, before entering sewers, ditches or storm drains. Using the AWA Standards For Disinfecting Water Mains (ANSI/AWWA C651-05) Appendix C Disposal of Heavily Chlorinated Water as a guide .
- 4 Should chlorinated water accidentally be discharged to the storm sewer and/or water course without being dechlorinated, it is to be verbally reported to SAC and the local MNR office.

## **REHABILITATION, EXPANSION and MODIFICATION OF WATERMAINS AND COMPONENTS OF THE DRINKING WATER SYSTEM**

The condition of the Drinking Water System is assessed annually. Scheduling of upgrades and rehabilitation is co-ordinated with the Works Department road maintenance schedule. Expansion of the distribution system is overseen by the CAO and Planning Department staff. Generally, the developer supplies and installs the infrastructure under the supervision of the Municipal Engineer of Record. The Water Works accepts the installed works after confirmation that the system has been installed as per approved plan and bacteriological samples have been taken and analysed by the WQA.

All parts of the drinking water system in contact with drinking water which are; Added, modified, replaced, extended, or taken out of service for inspection, repair, or other activities that may lead to contamination, shall be disinfected before being put into service in accordance with the provisions of MOE Water Main Disinfection Procedure (*replaced AWWA C651 - Standard for Disinfecting Water Mains in January 2015*).

The design of any watermain addition, modification, replacement or extension shall be:

- A. prepared by a Professional Engineer,
- B. designed only to transmit water and not to treat water,
- C. Satisfy the design criteria set out in the Ministry of the Environment publication “Watermain Design Criteria for Future Alterations Authorized under a Drinking Water Works Permit – March 2009”, as amended from time to time; and
- D. be consistent with or otherwise address, the design objectives contained within the Ministry of the Environment publication “Design Guidelines for Drinking Water Systems, 2008”, as amended from time to time.
- E. all chemicals and materials used or that may come into contact with the water within the system shall meet all applicable standards set by both the AWWA and the ANSI safety criteria standards, NSF/60 and NSF/61 (*this does not apply to water pipe and pipe fittings meeting AWWA specifications made from ductile iron, cast iron, PVC and HDPE. Nor to articles made from glass, HDPE or Teflon.*)

For greater certainty, Sections 2, 3 & 4 of the Drinking Water Works Permit shall be reviewed when considering any additions, modifications or rehabilitation of the distribution system or any of the components of the system.



## UTILITY LOCATING POLICY

We are required to have locates completed by the various utilities we may encounter, when we excavate to expand, repair and or modify our water infrastructure. The Public Works Manager or the Works Foreman are responsible for having the required locates completed. They will complete the Utility Locate Request Form 1 and submit to Ontario One Call by email or by phoning. Ontario One Call - 1-800-400-8876 during regular office hours to schedule locates for service in three days. Call 1-800-400-2255 to request emergency service for immediate locates. **Contractor ID = 03727**

A copy of the locate documents shall be kept with the excavator working onsite, until the work is completed. After which they should be filed with the Operations Foreman. A copy of the locate documents shall be attached to the Water Distribution System Service & Repair Form, which is filed in the Yearly Log Binder, in the QMS office.

Contractors and other Utilities doing work in Laurentian Valley will also be contacting Ontario One Call for underground locates. Ontario One Call emails these requests to the Public Works Manager and the Operations Foreman. They will print these requests and forward to the Operator assigned to complete the locate, along with a Locate Request Form 2

The Operator assigned to complete the locate will review the documents provided, and using the System Maps, in the Operations Foreman's office, determine if there are water mains, hydrants or service connections in the area designated as the Location of Proposed Work. If there is no water infrastructure shown in the area of the proposed works, the forms provided are to be completed and given to the Operation Foreman or in his absence the Public Works Manager, to be forwarded to the contractor or Ontario One Call.

If there is water infrastructure in the area of the proposed works, the Operator is to locate the area on the Detail Maps and either photocopy the details or transfer the information to the Locate Request Form Provided. *(This step should give the operator enough information to locate the infrastructure in the field.)* Out in the field, the operator is to actually locate and mark the infrastructure in and adjacent to the area of the proposed works. This can be accomplished with the magnetic locator, handheld GPS or the radio detection tool, whichever the operator requires to accomplish the task for the particular locate. Marking is to be completed using blue spray paint to mark the location of the water main, service connection, curb stops etc. **(Just on Municipal Property)** When completed, the forms provided are to be completed and given to the Operations Foreman or in his absence the Public Works Manager, to be forwarded to the contractor and/or Ontario One Call.

## WATER METERS

Laurentian Valley Water Works owns 6 large water meters which measure the water we purchase from the City of Pembroke, and a seventh that measures the water that travels through our west-end main to the Town of Petawawa.

- ME1 Located on Elgin Street, near Boundary Road, 10 inch and a 2" Neptune trident meter
- ME2 Located on Willow Drive, near Boundary Road, 4 inch Neptune compound meter
- ME3 Located on Karen Street, near Boundary Road, 4 inch Neptune compound meter
- ME4 Located on Bruham Avenue, near Boundary Road, 10 inch Neptune meter, & 2" Trident 10
- ME10 Located on Pembroke Street East at City limits, near Angus Campbell Drive, 8 inch Schlumberger meter,
- ME20 Located on Pembroke Street West at City limits, 6 inch Neptune compound meter,
- ME22 Located on Pembroke Street West at MacGregors Hill, 10 inch Neptune meter and a 2" Neptune Trident 10

There are also 38 commercial water meters that are read, the same day as the large water meters.

The water meters are read quarterly, timing is up to the reader, but needs to be as close as possible to the 1<sup>st</sup> of each quarter - because the Municipal software uses the 1<sup>st</sup> day of each quarter for the billing. *(Can be a problem to schedule with stat holidays on January 1, July 1 and end of quarters occasionally ending on weekends)*

Prior to reading the meters the spreadsheets are prepared to enter the information, the last reading is also indicated, this lets the reader know that the meter is working when he is on-site, and any problems can usually be determined quickly with the property owner.

Most of the water meters have remote read buttons, and we currently use a Sensus AR4090 remote reader. It needs to be plugged in to charge for 24hrs before using. The operators have all been around on the meter reading trip at least once and should be somewhat familiar with the location of the buttons and meters. They have also been cautioned about reading the number twice - double checking the number they write down before leaving the property, avoids having to go back if a discrepancy is found later.

At the office, the numbers are inputted into the spreadsheet, I use QuatroPro, but it can be converted to Excel for those who feel more comfortable with that style. You then check for obvious discrepancies - large increases or decreases in consumption. If required, you contact the customer to find out if there is logical reason for the differences, usually was a break or leak at the facility, but could be toilets leaking that are undetected.

The spreadsheet is then passed on to the Accounts Receivable Clerk, they use the Municipal software to calculate and distribute the invoices.

The large (City) meter readings are then scanned and emailed to the City of Pembroke, currently Robin McGregor, at [rmcgregor@pembroke.ca](mailto:rmcgregor@pembroke.ca)

When the invoices come from the City, they are checked/verified, and coded for our Accounts Payable Clerk, and a copy of the West End Invoice is given to the Accounts Receivable Clerk to Invoice the Town of Petawawa.

There are paper files kept in the WQA/QMS Rep's office of the current year on the desk, and past years in the filing cabinet. The electronic files are kept in J:\E - ENVIRONMENTAL SERVICES\E08 - Water Works\Water Meters

With regards to Water Meter Maintenance, they are calibrated every second year, and the remote readers require constant monitoring and repairs when required.

Policy Manual  
Created May 2003  
Claus Trost, WQA

## CONTINUAL IMPROVEMENT REGISTER

Revision Date: January 2009 (Regulation 170 as amended by 248/06 & 399/07)  
February 2009 (DWQMS required sections added; Critical Suppliers Contact Info, Inventory list)  
February 2009 (added SOP's for Service Connection breaks or leaks, Cross Connections, Service Interruption (loss of City supply) also updated flushing sequence for new serviced areas & added hydrants)  
May 2009 - amended & corrected Flushing Sequence  
February 2011 (updated stats, infrastructure, contacts, phone numbers,)  
June 2011 - amended SOP-14 to include documentation requirements of the new Drinking Water Works Permit  
August 2011 - amended to include Drinking Water License information and Drinking Water Works Permit information; #'s and description,  
August 2011 - Morris retired, amended contacts and other required information, to either David or Mark  
August 2011 - amended for CGSB CAR's; System description and the fact that the City of Pembroke samples & tests the water we purchase.  
June 2012 - amended, to add in Mark Behm and Lorne Rathwell, to replace M Schneider and D Saunders.  
Jan 2013 - amended, Valley Spring building closed, alternate sampling location.  
March 2014 - amended, added where to store the documentation of the third party calibration.  
January 2015 - reviewed and updated contacts and phone numbers, change of call service provider, CAR JO5857-2, added text to Measurement & Calibration section, CAR JO5857-1, added footer, MOE change from AWWA document to their new document,  
March 2015 - SOP 14 added a bullet regards NSF/61, developed a Utility Locating Policy SOP 15,  
April 2015 - edited typos, and minor errors found during the Annual Operators Training Meeting  
June 2015 - amended Inventory, to include documentation required.  
December 2015 - amended THM sampling location, expanded/detailed record keeping of the analysis reports, amended SOP #8 to conform to the newly released MOR document Watermain Disinfection Procedure, will now be an SOP 8, 8A & 8B  
April 2016 - amended Utility Locate SOP 15  
August 2016 - amended the THM SOP, to conform to the new reporting requirements of MOE.  
November 2016 - amended the THM SOP again, only report at end of quarter, and start a flushing regimen.

- added a request to take photos of watermain breaks when they are exposed. Will assist in proving classification and be useful for future training.
- January 2018 - added a SOP for HAA's, edited, adjusted Table of Contents, - reviewed & edited the contact lists
- April 26, 2018 Added Approval signature line, documentation that the Public Works Manager approved the changes & updates becomes part of the official document.
- November 2018 edited text on Page 11, sampling schedule, to clarify that the second set of samples must be more than 48 hours after the last of the first set of weekly samples was taken.  
Also noted the change in HAA sampling location following the MOE guidance document received on/or about May 9<sup>th</sup>, 2018
- April 2019 Added page for water meters, to list all the documents, details, procedures and contacts to make it easier for someone to follow me!
- Jan 2020 Reviewed phone numbers & contacts, updated, added County Road Occupancy Permit requirements

\_\_\_\_February 5, 2020\_\_\_\_  
Date

\_\_\_\_*original signed by M Behm*\_\_\_\_  
Public Works Manager

NOTE: This document is not the final authority. The Ministry of Environment and the Medical Officer of Health have the final say in all decisions made after they are advised of the problem. This document is to be reviewed and updated yearly or sooner as regulations are amended or personnel changes are known. Please advise the author (Claus Trost, QMS Rep) when any errors or omissions are detected.

# **Laurentian Valley**

## **Water Works**

### **Water Quality**

# **Policies & Procedures**

# **Manual**



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## Introduction

Laurentian Valley Waterworks received its **Certificate** as a Water Distribution Plant, Level 1 (WD1) in November of 2000, # **2893**. The Drinking Water Protection Regulation 170/03 as amended introduced by the provincial government in 2003 requires that the Municipality sample and test the water distributed by the Municipality to ensure that clean, safe water is distributed to our customers.

On July 15, 2005 the system was reclassified as Water Distribution Subsystem Class 1 by the Ministry of Environment. The Drinking Water System Information number for Laurentian Valley Water Works is W260007465.

On June 2, 2011 the Corporation of the Township of Laurentian Valley was issued Municipal Drinking Water License # 192-101, Issue #1, as both the Owner and Operating Authority.

May 31, 2011 the Corporation of the Township of Laurentian Valley was issued a Drinking Water Works Permit Number 192-201, Issue #1 for the system described by the system maps as of February 2009 as amended from time to time by Form 1 - Record of Watermains.

Laurentian Valley Water Works purchases treated water from the City of Pembroke and distributes it to 645 homes and businesses through out 14 kilometers of distribution piping. The City of Pembroke owns and operates the Pembroke Drinking Water System (DWIS # 220000941), which consists of the Pembroke Water Purification Plant and distribution system. Sampling, testing and monitoring of the treated water provided to the Laurentian Valley Distribution System is conducted by the City of Pembroke. As owner and operating authority of the Pembroke Drinking Water System, Pembroke must ensure that the water supplied to the Laurentian Valley Distribution System meets the Ontario Drinking Water Quality Standards and has a minimum chlorine residual of at least 0.50 mg/l. Sampling and testing for the Laurentian Valley Distribution System is limited to the distribution system as required by Ontario Regulation 170/03.

Laurentian Valley Water Works is currently managed by the following staff;

- Mark Behm, Manager of Public Works, 613-735-6291, 613-401-3291
- Claus Trost, Water Quality Analyst, QMS Rep 735-6291, 613-639-3385
- Lorne Rathwell, Operations Foreman, 613-735-6291, 613-635-3241

## **Documentation & Communication**

The office for Laurentian Valley Water Works is at 460 Witt Road. All the required documentation is to be kept at this office and be made available to the public at this office. To this end, the Quarterly Water Reports are to be kept in a loose leaf binder complete with the analysis reports from the Laboratory, any correspondence from the Ministry of the Environment and any notes and files of the Analyst, ORO and the Public Works Manager. This binder, known as the yearly log, shall be kept in the WQA office and is available to the public at the front counter. The Annual Water System Report is also to be kept at the Municipal Office. There is a copy of the Laurentian Valley Water Works Distribution System Mapping, to be kept at the Water Works Office. The as built and detail drawings are also kept at the Water Works Office at 460 Witt Road.

The Policy and Procedures Manual, a copy of the regulations and the current quarters results are to be kept in the Analysts office at 460 Witt Road. These documents are available for review by the Ministry and the public at any time. A copy of the Policies and Procedures is also kept at the Operations Foreman Office at 460 Witt Road for the workers to review as required. (*Operators are to be given an up to date copy of the Drinking Water License, the Drinking Water Works Permit, the Policies and Procedures Manual and the Operational Plan each year at the review and training meeting*)

Quarterly Reports are to be completed by the analyst by the 20<sup>th</sup> of the month following the end of the Quarter, (March 31, June 30, Sept 31, and Dec 31.) The Quarterly Reports are available on the internet and at the front counter. The Quarterly Report is to be circulated to members of Council. The Quarterly Reports are also to be made available on the Internet at [www.lvtownship.ca](http://www.lvtownship.ca) .

The Annual Report is required to be completed and submitted to Council by February 28 of each year. A resolution from council, acknowledging the reports submission is required for the satisfaction of the MOE inspector and the accreditation auditor.

## **Emergency Contact Numbers & Addresses**



**Ministry of the Environment:**

- Spills Action Centre Phone: **1-800-268-6060** Fax: **1-800-268-6061**
- Karin Bourgon Phone: **1-800-860-2195** ext 230 Fax: **613-521-5437**

**Renfrew County & District Health Unit:**

- Office Phone: **613-735-8654** Fax: **613-735-3067**
- **after hours - 613-735-9926**
- David Tantalo Phone: **735-8654**, ext 1 569 # dtantalo@rcdhu.com

**Laurentian Valley Water Works:**

- Lorne Rathwell : Work Phone: 613-735-6291  
Cell Phone: 613-635-3241
- Claus Trost: Work Phone: **613-735-6291**  
Cell Phone: 613-639-3385

**Ontario One Call:** **1-800-400-8876** during regular office hours to schedule locates for service in three days. Call **1-800-400-2255** for emergency locates

**City of Pembroke:**

- Curtis Mick, Supervisor Water Distribution & Waste Water Collection  
Office Phone: **613-735-6816 ext 1403**  
Home Phone: 613-646-2964  
Cell Phone: 613-312-0098
- Water Purification Plant: Phone: 735-6821 ext 1491  
Standby #1 Phone: 613-281-2142

**Town of Petawawa:**

- Ontario Clean Water Agency - Sewage Plant 613-687-2141
- - Water Treatment Plant 613-687-7512

**Caduceon Environmental Laboratories Inc.**

- Greg Clarkin Manager Phone: **613-526-0123** Fax: 613-526-1244  
2378 Holly Lane  
Ottawa, Ontario  
K1V 7P1

**Staff:** Waterworks Phone 613-401-8269  
Mark Zadow home 613-735-5357 cell 613-585-7108 - Operator  
Andrew Warren home 613-628-5232 cell 613-635-2124 - Operator  
Todd Grahl home 613-735-6605 cell 613-633-1421 - Operator  
Dave Lewis home 613-735-4543 cell 613-635-3375 - Heavy Equipment  
Cole Hawkins home cell 613-433-0125 - Operator  
Shane Hebert home 613-635-7302 cell 613-585-1177 - Operator

**Critical Products & Services**

<b>Supply/Service</b>	<b>Vendor</b>	<b>Contact, Notes:</b>
Portable Testing Instruments & HACH Kit supplies can be obtained from;	Cleartech : Phone: 1-800-387-7503 Fax: 905-612-0575 7370 Bramalea Road Mississauga, Ontario L5S 1N6	Order DPD Free Chlorine Reagent for 10 ml sample, Cat.# 21055-69. Acct # 63183
HACH - Pocket Colorimeter HACH - pH Meter	Hach Sales & Service Canada Ltd. 3020 Gore Road, London ON N5V 4T7 Phone: 1-800-665-7635 Fax: 1-866-259-0984 infoCanada@hach.com	order online, see Claus for username & password <a href="http://www.hachco.ca">www.hachco.ca</a>  Acct # 40251351
Municipal Engineer	Jp2g Consultants Phone: 613-735-2507 Fax: 613-735-4327	Neil Caldwell P.Eng. Cell 613-282-0283
Water Analysis	Caduceon Laboratories Inc. Phone: 613-526-0123 Fax: 613-526-1244 2378 Holly Lane Ottawa ON K1V 7P1	Greg Clarkin, lab manager Tahir Yapici, lab supervisor Krystyna Pipin, lab supervisor
Emergency & After Hours Contact	The Security Company phone: 613-732-9009 Fax: 613-732-0038	Robert Watt
Water Meters	Neptune Phone: 1-800-667-4387 Fax: 7-905-858-0428	Dwayne McRae all meters are by Neptune, factory service
	Flowmetrix Technical Services Stacey Nichol Sr. Project Manager Flowmetrix Technical Services Inc. 2088 Jetstream Road London, Ontario N5V 3P6	Stacy Nichol, Sr. Project Manager Calibration & repair, of water meters, Hach kits, pH meter. Phone:1-519-870-3569 Fax: 1-519-268-3569
Valves & Hydrants Pipes & Fittings	Crane Supply 225 Paul Martin Drive Phone: 613-732-2857 Fax:	
	Wolseley Mechanical Group 1375 Pembroke Street West Phone: 613-732-1190	Robert Stanizewski Ph: 613-822-3444 Cell: 613-297-7647

	Boone Plumbing 20 Edgewater Street Kanata ON Phone: 1-613-831-6800	
Excavation/Installation & repair	W.W. Siegel Sand & Gravel  Phone: 613-732-8867 Fax: 613-735-6686	Jeff Siegel cell - 613-732-6653
	Splinter Forest Products Ltd. 39 Forest Valley Lane Laurentian Valley ON Phone: 613-732-3382	Don - 613-633-6190 Greg -
Hydro Vac Trucks	Crawl	613-646-7595 613-635-3854
	Exite Pembroke ON	613-621-0020
Municipal Contacts  for emergency supply of pipes & fittings	City of Pembroke Distribution  standby # 613-281-2140	Curtis Mick cell:613-312-0098
	White Water Region - OCWA Greg Davidson & Shane Severin common cell phones passed to duty operators	Greg - 613-633-6515 Shane - 613-633-0349 Ron - 613-633-0649
County Roads require permits to work on Pembroke Street West, Bruham Avenue & Jean Avenue.	County Road Occupancy Application is stored in A25/water email to - link on County Site	after hours emergency 1-866-353- 6374 Regular office hours 613-732-4353

## Water Sampling Schedule & Procedure

Laurentian Valley Water Works is required to take at least seven distribution samples each week for chlorine residual readings. We use the 4/3 option allowed under O.Reg. 170/03. The location of these readings are to be rotated through the four areas, twice each week;

Pembroke Street East Main  
Pembroke Street West Main  
Stafford Built up Area  
Willow Drive Main

At least four of the samples must be taken on Monday (*Tuesday, if Monday is a Holiday*) and the other three are to be taken on Thursday or Friday of the same week. (Care must be taken that the second set is taken, not less than 48 hours after the last of the first set of samples was taken, *so if Monday is a holiday, the second set cannot be taken before Friday*)

Laurentian Valley Water Works is required to take two samples weekly for microbiological testing, and collect a minimum 9 samples per month.

Week One: one sample from Brum's Dairy, either the Lab or the Dairy Bar

: one sample from Home Depot, *until the main is extended.*

Week Two: one sample from the Firehall and the other from Stafford Bingo Country.

In any month with only 4 Tuesdays the extra sample is to be taken from the Willow Drive Main, (*at the Hamilton Street Pumping Station*) on the Week Two schedule. The aim is to collect one sample each week from the Stafford Built-up Area and to alternate weeks on the East and West End Mains.

All the samples collected are to be analyzed for Total Coliforms and E. Coli. At minimum, the first three samples each month are also to be analyzed for general bacteria population expressed as colony counts on a heterotrophic plate count.

Please note, during the Christmas Holiday period, Laboratory and Courier services are reduced. The sampler may have to reschedule the sampling to suit the days available for delivery and analyses of the samples. The sampler is to call the Laboratory to confirm receipt of the samples the following afternoon. (*This will increase the time available to resample should there be a delivery problem or a problem with the samples submitted.*)

Once every quarter a sample for Trihalomethane and Haloacetic Acids is required. These samples are to be taken from the Home Depot sampling location. This location will take in water that has spent some time in the Bell Street Water Tower, and is therefore the longest in the distribution system. (*2018 - following guidance from the MOE, the HAA sampling site is to be relocated after 4 quarters, with results that are below the threshold, in response, we have moved the HAA sampling location to Brum's Dairy in the fourth quarter of 2018, if the 4/4 results at Brum's Dairy are below .004mg/l we will move to a third location; Bingo Country, in the fourth quarter of 2019. In 2021 we will choose the location with the highest 4/4 average as the permanent sampling location*)

In 2007 the Province of Ontario amended O.Reg 170/03 with O.Reg. 399/07 Community Drinking Water Lead Testing. Because of the complexity and timeliness of the lead sampling and reporting requirements and the fact that the law is fluid (*subject to amendments*) the Municipal Lead Sampling Protocol has been separated from this manual. Please refer to the Municipal Lead

Sampling Protocol Binder for this information. *The current Drinking Water License only required two rounds of plumbing & ICI samples until the License expires in 2021.*

The sampling equipment and forms are kept in the Analysts Office at 460 Witt Road. The equipment consists of a HACH Kit, Sampling Bottles, Coolers, Chlorine Residual Log and the Submission Forms.

Chlorine Residual Log Books are to be hard cover with bound spines and numbered pages.

The microbiological samples are normally taken on Tuesday mornings, after which the bottles are packed in the cooler with ice packs and the Submission Form, shipped via Purolator Courier to Caduceon in Ottawa. *(No ice packs in winter when the temperature is below minus 15 degrees Celsius, samples will freeze! The courier trucks are not heated.)*

When chlorine sampling, the chlorine residual reading is to be entered into the Log Book. If the residual is below 0.05 mg/l the bacterial sample should be taken and submitted. The **Standard Operating Procedure -1-** for Low Chlorine (page 10) should be followed.

When microbiological sampling, the tap is to be checked for cleanliness and turned on, medium flow for 5 to 10 minutes prior to taking the chlorine residual reading and the bacterial sample. This time can be used to label the sampling bottle, enter the required information in the Chlorine Residual Log and complete the Analysis Submission Form.

The chlorine residual reading is to be entered into the Log and on the Submission Form. If the residual is below 0.05 mg/l the bacterial sample should be taken and submitted. The **Standard Operating Procedure -1-** for Low Chlorine (page 12) should be followed.

The results of each weeks test are usually received by email the Friday of the week taken. This Certificate of Analysis is to be printed and placed in the current years "Log Book" binder, and the electronic copy is stored in E14, on the global drive, the email is stored in the waterworks folder for the current year.

The above sampling can only be conducted by a certified operator or the water quality analyst. Only the certified operator and the water quality analyst can make the log book entries. Any qualified person making an entry in the Log Book must have their name printed in the front of the Log Book next to their initial so that their entries can be identified.

### **Measurement and Recording Equipment Calibration and Maintenance**

HACH - Pocket Colorimeter factory calibrated, because there are two, they can be verified against each other quarterly and documented in the log book or they can also be tested by third parties using control samples, once per year. The documentation of the calibration is to be filed in the yearly log. The best before dates of the DPD pillows need to be checked before they are placed in the kits, each time they are restocked.

HACH - pH Meter, calibrated prior to each lead sampling schedule, by the method detailed in the owners manual, by the WQA. The Owners Manual and calibrating reagents are stored in the

Municipal storeroom. This meter can also be tested by third parties using control samples, once per year.

The reagents used for calibration are to be checked that they are not used after their best before dates prior to use and the third party contractor is to document the best before date of the reagents they use, on their forms submitted.

## Inventory

The following distribution system pipes & fittings are kept in stock for routine unplanned maintenance activities. Stock used in a repair is to be replaced as soon as possible, so that at minimum, there is always the stock as shown on the following table. Stock is to be ordered ahead for planned maintenance activities.

When purchasing stock, the operator is to ensure that all chemicals and materials used or that may come into contact with the water within the system shall meet all applicable standards set by both the AWWA and the ANSI safety criteria standards NSF/60 and NSF/61 (*this does not apply to water pipe and pipe fittings meeting AWWA specifications made from ductile iron, cast iron, PVC and HDPE. Nor to articles made from glass, HDPE or Teflon.*)

This is to be documented by getting the Technical Data Sheet and/or the Submittal Information from the supplier and attaching it to the Invoice. The Invoice is to also provide enough information (product code/id) to verify that they are the same as listed on the Technical Data Sheet and/or the Submittal Information. In the alternate, the required parts can be researched on the Internet and documented, and the required part purchased from a supplier, as long as the documentation is attached to the invoice and the invoice is detailed enough to verify that they are the same product. This requirement has been stipulated in person by the Operations Foreman to the Managers at Crane and Wolsley.

Item description	Minimum # in stock	comment
12" Royal PVC PR160 pipe	1	Only require that a length
10" Royal PVC PR160 pipe	1	greater than 4 feet, be kept in
8" Royal PVC PR160 pipe	1	stock,
6" Royal PVC PR160 pipe	1	"
4" Royal PVC PR160 pipe	1	"
property shut off box - 7' long	1	
1" X 1" coupler	1	
3/4" to 3/4" coupler	5	
3/4" to 1/2" coupler	3	
3/4" to 5/8" coupler	3	
5/8" to 1/2" coupler	2	
5/8" to 5/8" coupler	4	

<b>3/4" to 3/4" curb stop (property shut off valve)</b>	<b>4</b>	
<b>3/4" main stop valve</b>	<b>5</b>	
<b>4" to 3/4" saddle</b>	<b>1</b>	
<b>6" to 3/4" saddle</b>	<b>2</b>	
<b>8" to 3/4" saddle</b>	<b>1</b>	
<b>10" to 3/4 saddle</b>	<b>2</b>	
<b>12" to 3/4" saddle</b>	<b>1</b>	
<b>4" rubber clamp</b>	<b>2</b>	
<b>6" rubber clamp</b>	<b>2</b>	
<b>8" rubber clamp</b>	<b>2</b>	
<b>10" rubber clamp</b>	<b>2</b>	
<b>12" rubber clamp</b>	<b>2</b>	
<b>water main shut off box</b>	<b>1</b>	

**Laurentian Valley Water Works  
Standard Operating Procedure -1-  
Adverse Water Quality Notification**

**CHLORINE RESIDUAL BELOW 0.05 mg/l or UNTREATED WATER ENTERS THE  
DISTRIBUTION SYSTEM**

If a distribution system sample contains less than 0.05 mg/l or untreated water has entered the distribution system the following actions are required;

1. Immediately notify the Operations Foreman (Lorne Rathwell at **613- 635-3241**) to begin flushing.
2. Immediately notify the local Medical Officer of Health (Mike Grace at **613-735-8654** ext **551**) by speaking with the Medical Officer of Health. If he is not available speak, with a person at the Health Unit Office at **613- 735-8654** or if the office is closed, the person on call at **613-735-9926** (General Hospital)
3. Immediately notify the Ministry of Environment by speaking with a person at the Ministry's Spills Action Centre at **1-800-268-6060** (**In all the above, you must speak to that person, don't leave a message on a machine. Also record the time and name of the person you spoke to**)
4. Implement the required corrective action as follows;
  - A. Flush the mains in the affected area to bring the free chlorine residual to a minimum of 0.20 mg/l.
  - B. Resample & Analyze for chlorine residual. The resampling should consist of a minimum of 3 samples; one sample at the affected site, one sample upstream and one sample downstream of the affected site.
  - C. Advise the Medical Officer of Health of the results from the flushing and resampling and follow their directions.
5. Within 24 hours of the immediate oral notification of an adverse water quality incident, confirm the verbal notice by providing written notification to the local Medical Officer of Health and the MOE. Written notice is provided by completing **Section 2(a) - Written Notice by Drinking-Water System Owner** and faxing the form to the local Medical Officer of Health at **613-735-3067** and the Ministry's Spills Action Centre at **1-800-268-6061**
6. **Notice of issue resolution** - within 7 days of resolving the issue, a written notice shall be completed, using **Section 2(b) - Notice of Issue Resolution** and faxing the form to the local Medical Officer of Health at **613-735-3067** and the Ministry's Spills Action Centre at **1-800-268-6061**



**Laurentian Valley Water Works  
Standard Operating Procedure -2-  
Adverse Water Quality Notification  
DISTRIBUTION SYSTEM SAMPLE SHOWS A PRESENCE OF COLIFORM  
BACTERIA**

If a distribution system sample analysis tests positive for coliform bacteria the following actions are required;

1. Immediately notify the local Medical Officer of Health (Mike Grace at 613-735-8654 ext 551) by speaking with the Medical Officer of Health. If he is not available speak with a person at the Health Unit Office at 613- 735-8654 or if the office is closed, the person on call at 613-735-9926(General Hospital)
2. Immediately notify the Ministry of Environment by speaking with a person at the Ministry's Spills Action Centre at 1-800-268-6060. **(In all the above, you must speak to that person, don't leave a message on a machine. Also record the name of the person you spoke to)**
3. Implement the required corrective action as follows;
  - A. Resample & Analyze for microbiological parameters including P/A analysis for coliform bacteria.
  - B. The resampling should consist of a minimum of 3 samples; one sample at the affected site, one sample upstream and one sample downstream of the affected site.
  - C. As per sampling procedure, the chlorine residual and time of sampling should be noted at each sampling location.
  - D. Advise the Medical Officer of Health of the free chlorine residual results from the resampling and follow their directions.
4. Within 24 hours of the immediate oral notification of an adverse water quality incident, confirm the verbal notice by providing written notification to the local Medical Officer of Health and the MOE. Written notice is provided by completing **Section 2(a) - Written Notice by Drinking-Water System Owner** and faxing the form to the local Medical Officer of Health at 613-735-3067 and the Ministry's Spills Action Centre at 1-800-268-6061
5. Once the analytical results from the resamples are known, follow-up with the local Medical Officer of Health to confirm the presence or absence of coliform bacteria by P/A analysis or the presence or absence of any other contamination.

6. If the presence of coliform bacteria by P/A analysis is confirmed, steps 1, 2 & 4 are to be repeated. Flush the mains to maintain a minimum free chlorine residual of 0.20 mg/l in the affected parts of the distribution system, and continue to resample and test, until total coliforms are not detected in any of the samples from two consecutive sets of samples taken 24 to 48 hours apart or as otherwise directed by the medical officer of health.
7. **Notice of issue resolution** - within 7 days of resolving the issue, a written notice shall be completed, using **Section 2(b) - Notice of Issue Resolution** and faxing the form along with copies of the Analysis Reports to the local Medical Officer of Health at **613-735-3067** and the Ministry's Spills Action Centre at **1-800-268-6061**

**Standard Operating Procedure -3-  
Adverse Water Quality Notification  
HETEROTROPHIC PLATE COUNT ANALYSIS SHOWS THAT  
DISTRIBUTION SYSTEM SAMPLE CONTAINS MORE THAN 500 COLONIES  
PER ML**

If a distribution system sample contains more than 500 colonies per ml on a heterotrophic plate count (HPC) analysis (also known as Standard Plate Count) the following actions are required; *(It is no longer a requirement to report that a sample has more than 500 colonies per ml on a heterotrophic plate count (HPC) analysis, O.Reg 248/06 amending O.Reg 170/03.)*

1. Implement the required corrective action as follows;
  - A. Resample & Analyze for the HPC analysis at the original sampling location.
  - B. As per sampling procedure, the chlorine residual and time of sampling should be noted.
  
3.
  - A. If the presence of more than 500 colonies per ml on a HPC analysis is confirmed by the resamples, begin a flushing regimen and consult with the local Medical Officer of Health.
  - B. Resample and Analyse for the HPC analysis .The resampling should consist of a minimum of 3 samples; one sample at the affected site, one sample upstream and one sample downstream of the affected site.
  
4. Daily monitor and maintain the free chlorine residual at a minimum of 20 mg/l in the affected parts of the distribution system, and continue to resample and test, until less than 500 colony forming units (CFU) per millilitre are detected in all of the samples from two consecutive sets of samples taken 24 to 48 hours apart or as otherwise directed by the medical officer of health.

**Laurentian Valley Water Works**

**Standard Operating Procedure -4 -  
Adverse Water Quality Notification  
ESCHERICHIA COLI (E. Coli) DETECTED IN DISTRIBUTION SYSTEM  
SAMPLE**

If E. coli is detected in a distribution system sample the following actions are required;

1. Immediately notify the Operations Foreman (Lorne Rathwell at **613-635-3241**) to begin flushing.
2. Immediately notify the local Medical Officer of Health (Mike Grace at 613-735-8654 ext **551**) by speaking with the Medical Officer of Health. If he is not available speak with a person at the Health Unit Office at 613- **735-8654** or if the office is closed, the person on call at **613-735-9926** (General Hospital)
3. Immediately notify the Ministry of Environment by speaking with a person at the Ministry's Spills Action Centre at **1-800-268-6060**. **(In all the above, you must speak to that person, don't leave a message on a machine. Also record the name of the person you spoke to)**
4. Implement the following required corrective action and continue until *E. coli* and fecal coliforms are no longer detected in two consecutive sets of samples, or as instructed by the Medical Officer of Health;
  - A. Increase the chlorine dose and flush the mains to ensure that a free chlorine residual of at least 0.20 mg/l is achieved at all points in the affected part of the distribution system. This may require a call to Curtis Mick at the Water Purification Plant to advise them of the problem; to see if the problem originates in their end and for them to assist in raising the chlorine residual.
  - B. Resample & Analyze for microbiological parameters including the presence of *E. coli* and/or fecal coliform.
  - C. The resampling should consist of a minimum of 3 samples; one sample at the affected site, one sample upstream and one sample downstream of the affected site.
  - D. As per sampling procedure, the chlorine residual and time of sampling should be noted at each sampling location.
  - E. Advise the Medical Officer of Health of the free chlorine residual results from the resampling and follow their directions.
5. Within 24 hours of the immediate oral notification of an adverse water quality incident, confirm the verbal notice by providing written notification to the local Medical Officer of Health and the MOE. Written notice is provided by completing **Section 2(a) - Written Notice by Drinking-Water System Owner** and faxing the form to the local Medical Officer of Health at **613-735-3067** and the Ministry's Spills Action Centre at **1-800-268-6061**

6. Once the analytical results from the resampling are known, follow-up with the local Medical Officer of Health to confirm the presence or absence of *E. coli* and/or fecal coliform or the presence or absence of any other contamination.
7. If the presence of *E. coli* and/or fecal coliform is confirmed, consult with the local Medical Officer of Health. Steps 2,3,4, & 5 are to be repeated.
8. Maintain the free chlorine residual concentration at least 0.20 mg/l in the affected parts of the distribution system, and continue to resample and test, until *Escherichia coli* (*E. coli*) or fecal coliforms are not detected in any of the samples from two consecutive sets of samples taken 24 to 48 hours apart or as otherwise directed by the medical officer of health.
9. **Notice of issue resolution** - within 7 days of resolving the issue, a written notice shall be completed, using **Section 2(b) - Notice of Issue Resolution** and faxing the form to the local Medical Officer of Health at **613-735-3067** and the Ministry's Spills Action Centre at **1-800-268-6061**

**Standard Operating Procedure -5 -  
Adverse Water Quality Notification  
A DISTRIBUTION SYSTEM SAMPLE EXCEEDS 0.01 mg/l of LEAD**

Please refer to the Municipal Lead Sampling Protocol for this information.

**Adverse Water Quality Notification**  
**TRIHALOMETHANES EXCEED 0.10 mg/l IN DISTRIBUTION SYSTEM**  
**SAMPLE**

If Trihalomethane exceeding 0.10 mg/l is detected in a distribution system sample the following actions are required;

1. Immediately calculate the last four quarter average. If the four quarter average is below 0.10 mg/l notify the Pembroke Waterworks by calling the City of Pembroke Water Purification Plant at 613-735-0309, or emailing Curtis Mick. *(The plant needs to be notified because they can alter their procedures to reduce the level of THM's)*
2. If the last four quarter average is greater than 0.10 mg/l do the following;
  - A. At the end of the quarter, notify the local Medical Officer of Health, by written notice *(within 7 days of the end of the quarter)*, Written notice is provided by completing **Section 2(a) - Written Notice by Drinking-Water System Owner** and faxing the form to the Ministry's Spills Action Centre at **1-800-268-6061**, **email a copy to the Health Unit and the MOE Drinking Water Inspector assigned to our system.** (There is no requirement to phone SAC or local Medical Officer of Health)
  - B. Have the watermain flushed, *(THM's are caused by long retention times and increased water temperature)*
3. Resample at the next scheduled date;
  - A. and if the concentration of THM is greater than 0.10 mg/l consult with the Purification Plant and the Medical Officer of Health on the appropriate corrective action and continue as instructed. *(Will usually be to continue a flushing regimen.)*
  - B. If the concentration of THM falls below 0.10 mg/l, and the 4/4 average falls below 0.10 mg/l, issue a **Notice of issue resolution** - within 7 days of resolving the issue, a written notice shall be completed, using **Section 2(b) - Notice of Issue Resolution** and faxing the form to the local Medical Officer of Health at **613-735-3067** and the Ministry's Spills Action Centre at **1-800-268-6061**

Note: Small municipal residential systems and non-municipal year round residential systems that serve designated facilities also must report to the operator of each designated facility served by the system. *(Laurentian Valley currently has no designated facilities - schools, old age homes etc.)*

**Laurentian Valley Water Works**  
**Standard Operating Procedure -6A -**  
**Adverse Water Quality Notification**  
**HALOACETIC ACIDS EXCEED 0.08 mg/l IN DISTRIBUTION SYSTEM**  
**SAMPLE**

**Before January 1, 2020** - The *O.Reg. 169/03* standard (80 µg/L) and the *O.Reg. 170/03* reporting requirements for HAAs come into effect on **January 1, 2020**, as such drinking water system owners/operating authorities are not required to perform the RAA calculation for HAAs until 2020. Owners/operating authorities may wish to perform the calculation to determine if there are elevated levels of HAAs in the drinking water system.

**After January 1, 2020** - If Haloacetic Acids exceeding 0.08 mg/l is detected in a distribution system sample the following actions are required;

1. Immediately calculate the last four quarter average. If the four quarter average is below 0.08 mg/l notify the Pembroke Waterworks by calling the City of Pembroke Water Purification Plant at 613-735-0309, or emailing Curtis Mick. (*The plant needs to be notified because they can alter their procedures to reduce the level of HAA's*)
2. If the last four quarter average is greater than 0.08 mg/l do the following;
  - A. At the end of the quarter, notify the local Medical Officer of Health, by written notice (*within 7 days of the end of the quarter*), Written notice is provided by completing **Section 2(a) - Written Notice by Drinking-Water System Owner** and faxing the form to the Ministry's Spills Action Centre at **1-800-268-6061**, **email a copy to the Health Unit and the MOE Drinking Water Inspector assigned to our system.** (There is no requirement to phone SAC or local Medical Officer of Health)
  - B. Have the watermain flushed, (*HAA's become elevated by long retention times and increased water temperature*)
3. Resample at the next scheduled date;
  - A. and if the concentration of HAA's is greater than 0.08 mg/l consult with the Purification Plant and the Medical Officer of Health on the appropriate corrective action and continue as instructed. (*Will usually be to continue a flushing regimen.*)
  - B. If the concentration of HAA's falls below 0.08 mg/l, and the 4/4 average falls below 0.08 mg/l, issue a **Notice of issue resolution** - within 7 days of resolving the issue, a written notice shall be completed, using **Section 2(b) - Notice of Issue Resolution** and faxing the form to the local Medical Officer of Health at **613-735-3067** and the Ministry's Spills Action Centre at **1-800-268-6061**

Note: Small municipal residential systems and non-municipal year round residential systems that serve designated facilities also must report to the operator of each designated facility served by the system.



**Laurentian Valley Water Works  
Standard Operating Procedure -7 -  
Hydrants, Dead-End & Blow-Off Flushing Procedure**

The fire hydrants, dead-ends and blow-offs are to be flushed twice yearly unless otherwise or elsewhere stated. It is preferable to flush in the spring and the fall when water usage is at its lowest. The homeowners are notified of the flushing dates by inserting a flyer in the water bills indicating the time period the flushing is to occur. Or in the alternate, on the day prior to the scheduled flushing, the homeowners and businesses in the immediate vicinity are to be notified verbally if available or a flyer is to be left indicating that there will be flushing, at what times and precautions the homeowners can take to minimize the disruption. See Flushing Notice in Appendix.

1. Isolate the section to be flushed from the rest of the system. Mark or record any valves closed on a map.
2. Install the gate valve and open the fire hydrant or blow-off valve slowly.
3. Direct the water being flushed with the diffuser and/or hoses away from private property and persons. (Ensure that the flushed water does not enter a surface water source unless there is no chlorine.)
4. The hydrant is to be run fully open for a minimum of 5 minutes to stir up as much loose material in the main as possible. The main should then be flushed for a minimum 15 minutes.
5. The operator is to record the required information in the Flushing Record for each hydrant or blow-off flushed. (*Copy in appendix*) A minimum 2 samples should be taken to determine the clarity of the water and the chlorine residual. The first should be taken immediately after the water clears (*2-3 minutes after the hydrant is opened*) and the second just prior to closing the valve.
6. When the flushing water is clear, slowly close the hydrant or blow-off valve. If the water does not clear, the operator is to contact the Operations Foreman or the Water Quality Analyst for instructions. Leave the hydrant cap off to allow the water to drain back, in the winter months pour (bio)antifreeze into the bowl. Return later to close the cap and mark as such in the report.
7. When a segment of main is completely flushed, open any valves that were closed for the flushing and record or remove the marks on the maps indicating that the valves are closed before moving on to the next section to be flushed.
8. The flushing log is to be completed, indicating whether any follow up service is required.

### **Flushing Sequence**

1. Sequence for flushing the Stafford Built-up Area, south of the Indian River;
  - a) Start at Hydrant 1 on Elgin Street, in order to,
  - b) Hydrant #15, on Roy Street,
  - b) then to blow-off valve at the end of Lark Street
  - c) then at Hydrant #18 on Hamilton Street
  
2. Sequence for flushing the Stafford Built-up Area North of the Indian River;  
WQP&P 2019

- a) Start at hydrant #20 on Hamilton Street
  - b) then at hydrant #19 on Hamilton Street
  - c) then at hydrant #21 on Hamilton Street
  - d) then at the blow-off valve at the end of the main on Hamilton Street
  - e) then to hydrants #39 and #68 at Indian Court, notify management at Brum's Dairy - 735-2325
  - f) then at hydrant #47 on Lorne Street
  - g) then at hydrant #57 on Stafford Street
  - h) then at hydrant #48 at the Recreation Center
  - i) then at hydrant #63 on Allen Street
  - j) then at hydrant #67 on Bruham Avenue
  - k) then at the blow-off valve on Bruham Avenue across from hydrant #67 in front of 711 Bruham Avenue
  - l) then at hydrant #31 on Jean Avenue
3. Sequence for flushing the West End Area;
- a) Start at hydrant #221 on Pembroke Street West
  - b) then at hydrant #210 on Butler Chev Olds parking lot, private property - notify management
  - c) then continue up Pembroke Street West to hydrant # 222 at Clouthier Storage.
4. Sequence for flushing the East End Area;
- a) Start at hydrant #102 on Pembroke Street East
  - b) then at hydrant #105 in the Boston Pizza parking lot, private property - notify management
  - c) then at hydrant # 104 in front of Wal-Mart, private property - notify management
  - d) then at hydrant # 103 in front of Canadian Tire, private property - notify management
  - e) then continue up to Home Depot, Hydrant # 112

## **Standard Operating Procedure -8 - Water Main Breaks**

1. **CLASSIFICATION** Shortly after the Operator in Charge is advised that there is a water main break or a suspected leak, he is to attend the site to determine the type and scope of the break. Classification of the break is to be in accordance with the MOE Watermain Disinfection Procedure.

Category 1 - watermain breaks with no evident or suspected contamination; contamination is typically not suspected for circumferential breaks or small leaks, where flow is maintained from the break until an air gap is established, and where the air gap can be maintained during the repair procedure. *(If at any time during the repair, the air gap is lost, positive pressure is lost or contamination is suspected, or evident, the break shall be reclassified to Category 2)*

Category 2 - are large watermain breaks, in which it is suspected or evident that contamination is present in the main, and/or is being directed to our customers. This includes breaks in which there has been a loss in pressure, *(below 20 psi, because there can be backflow from other higher pressure sources)*

2. **NOTIFICATION;** **Category 1** breaks do not require any official notification.

**Category 2** breaks - Immediately notify the local Medical Officer of Health (Mike Grace at 613-735-8654 ext 551) by speaking with the Medical Officer of Health. If he is not available speak with a person at the Health Unit Office at 613- 735-8654 or if the office is closed, the person on call at 613-735-9926 *(General Hospital, leave them your contact information, and wait for the on call person to call you back)*

**If the Health Unit declares a water advisory;** Immediately notify the Ministry of Environment by speaking with a person at the Ministry's Spills Action Centre at 1-800-268-6060. **(In all the above, you must speak to that person, don't leave a message on a machine. Also record the name of the person you spoke to)**

## **Laurentian Valley Water Works Standard Operating Procedure -8A - Category 1 - Water Main Breaks**

3. **NOTIFICATION;** Category 1 breaks do not require any official notification, however, notify homeowners in the vicinity of the break/repair. Use a flyer similar to the one in the Appendix.
4. **DOCUMENTATION;** The Operator in Charge is to begin recording the required information on a Water Distribution System Service & Repair Form *(see appendix)*. It is also requested that the OIC take some pictures of the break when it is exposed, this will assist in the documentation, to show why the break was classified as it was.
5. **SCHEDULING;** a) small category 1 breaks and/or leaks, can be scheduled to repair during regular work hours.  
b) if it is a large category 1 break, the valves on either side are to be shut, one fully and the other by 95% (to keep positive pressure on the pipe), and the repair is to commence as soon as possible. *(The decision on when to complete the repair shall be based on the risk*

*to operators, public safety and the danger of property damage and/or environmental damage.)*

Arrange for the required equipment, material and labour to be on site at the scheduled time.

6. **LOCATES;** Call for locates:  
Ontario One Call - 1-800-400-8876 during regular office hours to schedule locates for service in three days. Call 1-800-400-2255 to request emergency service for immediate locates. **Contractor ID = 03727**
7. **TRAFFIC CONTROL;** Complete and document a traffic control plan, copy in Appendix. Have the appropriate barricades and signage installed. The County requires Occupancy Permits for work undertaken on County Roads that impacts traffic flow (*Bruham Avenue, Jean Avenue and Pembroke Street West*). The Application form is stored in A25/water and copies are kept with the foreman, in his office. Complete the Application, scan & email to the County through their website link.
8. **THE REPAIR;** On-Site;
  - a) Excavate & locate the break
  - b) Excavate & install a sump & pump, to keep piping above standing water (*air gap*)
  - c) complete the repair, continually cleaning the piping with the chlorine cleaning solution, (1% sodium hypochlorite solution)
  - e) alternative procedure is to have a hydro-vac truck on-site, to do the final excavation with high pressure water & vacuum.
  - f) when repairs are complete, prior to backfill, open partially closed valve and flush to other valve as practical,
  - g) shut valve and open other to flush in the other direction if practical
  - h) flush into the consumers building
  - i) backfill & compact over repair area
9. Complete the Water Distribution System Service & Repair Form. Copy form and forward to analysts office and notify analyst that he has the option to include the area for sampling on the next rotation. (Sampling is not required, but is a best/recommended practice)
10. Review inventory of spare parts, order to replace what was utilized, if required.

**Please Note:** if there is a loss of pressure during the break, and/or the free chlorine residual tested below 0.05 mg/l and/or bacterial contamination is detected in a distribution sample taken at the site of the leak/break, that this is reportable as an adverse water quality incident to SAC and RCDHU as per **Standard Operating Procedure -1-**

**Laurentian Valley Water Works  
Standard Operating Procedure -8B -**

## Category 2 - Water Main Breaks

1. **NOTIFICATION;** Category 2 breaks - Immediately notify the local Medical Officer of Health (Mike Grace at 613-735-8654 ext 551) by speaking with the Medical Officer of Health. If he is not available speak with a person at the Health Unit Office at 613- 735-8654 or if the office is closed, the person on call at 613-735-9926 (*General Hospital, leave them your contact information, and wait for the on call person to call you back*)  
**If the Health Unit declares a water advisory;** Immediately notify the Ministry of Environment by speaking with a person at the Ministry's Spills Action Centre at 1-800-268-6060. **(In all the above, you must speak to that person, don't leave a message on a machine. Also record the name of the person you spoke to)**  
Notify homeowners in the vicinity of the break/repair. Use a flyer similar to the one in the Appendix.
2. **DOCUMENTATION;** The Operator in Charge is to begin recording the required information on a Water Distribution System Service & Repair Form (*see appendix*). It is also requested that the OIC take some pictures of the break when it is exposed, this will assist in the documentation, to show why the break was classified as it was.
3. **SCHEDULING;** the repair is to commence as soon as possible. (*The decision on when to complete the repair shall be based on the risk to operator and public safety and the danger of property damage and/or environmental damage.*)  
Arrange for the required equipment, material and labour to be on site at the scheduled time.
4. **LOCATES;** Call for locates:  
Ontario One Call - 1-800-400-8876 during regular office hours to schedule locates for service in three days. Call 1-800-400-2255 to request emergency service for immediate locates. **Contractor ID = 03727**
5. **TRAFFIC CONTROL;** Complete and document a traffic control plan, copy in Appendix. Have the appropriate barricades and signage installed. The County requires Occupancy Permits for work undertaken on County Roads that impacts traffic flow (*Bruham Avenue, Jean Avenue and Pembroke Street West*). The Application form is stored in A25/water and copies are kept with the foreman, in his office. Complete the Application, scan & email to the County through their website link.
6. **THE REPAIR;** On-Site;
  - a) Excavate & locate the break
  - b) Excavate & install a sump & pump, to keep piping above standing water (*air gap*)
  - c) remove any contaminants that may have entered the watermain, either by flushing or swabbing.
  - d) complete the repair, continually cleaning the piping with the chlorine cleaning solution, (1% sodium hypochlorite solution)
  - d) all the surfaces of the pipe and repair parts which will come into contact with drinking water shall be disinfected with the chlorine cleaning solution; if you have to cut out a section of pipe, the interior surfaces of the cut ends shall also be

cleaned, by swabbing or spraying the cleaning solution as far as can be practically reached. (Depending on the nature or severity of the contamination, site specific disinfection procedures may be required, these are to be discussed and agreed upon by the ORO, the QMS Representative and or may be dictated by the RCDHU, these steps may include the disinfection procedures for new watermains as per ANSI/AWWA Standard C 651

- f) when repairs are complete, prior to backfill, open the partially closed valve and flush to other valve through the nearest fire hydrant as practical,
- g) shut valve and open other to flush in the other direction if practical,
- h) flush into the consumers building,
- i) backfill & compact over repair area.

7. Complete the Water Distribution System Service & Repair Form. Copy form and forward to analysts office and notify analyst to include the area for sampling on the next rotation, a minimum of one microbiological sample is required, it is preferable to collect one upstream and one downstream from the break.
8. Review inventory of spare parts, order to replace what was utilized, if required.

**Laurentian Valley Water Works  
Standard Operating Procedure -9 -  
Service Pipe or Connection Leaks or Breaks**

1. Shortly after the Operator in Charge is advised that there is a break or a suspected leak, he is to attend the site to determine the type and scope of the break.
  - a) the location of the leak or break is to be determined first, if the leak is on the Municipal portion (before the curb stop) then SOP -8- is to be followed. The location of the leak can usually be determined by closing the curb stop to the consumer and listening to the pipes.
  - b) if it is a large break to the consumer, the service connection valve is to be immediately shut.
  - c) if it is a small break/leak, the repair can be scheduled during regular hours in conjunction with the consumers plumbers schedule.
2. The Operator in Charge is to begin recording the required information on a Water Distribution System Service & Repair Form (*see appendix*). It is also requested that the OIC take some pictures of the break/leak when it is exposed, this will assist in the documentation, to show why the break was classified as it was.
3. After the consumers plumber has completed the repairs the Operator in Charge shall inspect the connections, confirm the required backflow protection devices are installed and that the water valve in the building is turned off. Then the curb stop valve can be opened and the plumbing system in the building flushed.
4. Complete the Water Distribution System Service & Repair Form. Copy form and forward to analysts office.

**Laurentian Valley Water Works  
Standard Operating Procedure -10-  
Cross Connection**

Laurentian Valley Water Works has a policy that requires dual check valves on all residential connections to the distribution system and double check valves on all ICI connections. The water is not initially turned on until an inspection has been conducted by either the Operations Foreman or the Chief Building Official. However, there are some residential and commercial connections that have been in place before this policy was put in place, they are to be corrected as they are detected by the Building Department.

Cross Connections will be discovered in one of two ways; either it is found during an inspection or there has been a customer complaint received. If the potential for back flow is detected in the plumbing system of the customer during an inspection, the curb stop at the street is to be immediately turned off until the required repairs have been made and/or a proper back flow prevention device has been installed.

Shortly after the Operator in Charge is advised that there is a possible cross contamination of the distribution system he is to attend the site to determine the type and scope of the contamination.

**Laurentian Valley Water Works  
Standard Operating Procedure -11-  
Loss of Service**

Laurentian Valley Water Works receives the drinking water supply from the City of Pembroke under contract. If there is an emergency at the Water Treatment Plant or in their distribution system that puts them in a situation of being unable to continue to supply drinking water they are required to notify us directly.

There will be very little that the Water Works can do in the response phase, other than ensuring that the City's communications to the public include affected Laurentian Valley Water Works customers and that our communication reinforce the City's and the Renfrew County District Health Units message.

### **Recovery Phase**

It can be assumed that there will be a loss of pressure during the loss of service and therefore there will be a chance of a free chlorine residual below 0.05 mg/l and/or that untreated water and/or contaminated water has entered the distribution system, this is reportable as an adverse water quality incident to SAC and RCDHU

1. Immediately notify the local Medical Officer of Health (Mike Grace at 613-735-8654 ext 535) by speaking with the Medical Officer of Health. If he is not available speak, with a person at the Health Unit Office at 613- 735-8654 ext. 555 or if the office is closed, the person on call at 613-735-9926(General Hospital)
2. Immediately notify the Ministry of Environment by speaking with a person at the Ministry's Spills Action Centre at 1-800-268-6060 **(In all the above, you must speak to that person, don't leave a message on a machine. Also record the time and name of the person you spoke to)**
3. Implement the required corrective actions as instructed by the Renfrew County Health Unit and/or the City of Pembroke. (The corrective actions will all depend on the nature of the original emergency. Flushing can only begin when the City has restored service and has advised the Water Works that they have the capacity for us to begin flushing. The sampling parameters will also be tied to the nature of the original service interruption and the RCDHU will advise what, where and how many they would like done.)
4. When given clearance to begin flushing, follow Standard Operating Procedure -7- for the affected area to maintain a minimum free chlorine residual of 0.20 mg/l in the affected parts of the distribution system, or as otherwise directed by the medical officer of health.
5. Within 24 hours of the immediate oral notification of an adverse water quality incident, confirm the verbal notice by providing written notification to the local Medical Officer of Health and the MOE. Written notice is provided by completing **Section 2(a) - Written Notice by Drinking-Water System Owner** and faxing the form to the local Medical



Officer of Health at **613-735-3067** and the Ministry's Spills Action Centre at **1-800-268-6061**

6. Continue the sampling and resampling until the required parameters sampled conform to the Drinking Water Quality Standard or as otherwise instructed by the Renfrew County District Health Unit.
7. **Notice of issue resolution** - within 7 days of resolving the issue, a written notice shall be completed, using **Section 2(b) - Notice of Issue Resolution** and faxing the form to the local Medical Officer of Health at **613-735-3067** and the Ministry's Spills Action Centre at **1-800-268-6061**

**Laurentian Valley Water Works  
Standard Operating Procedure -12-  
Fire Hydrant Maintenance**

The fire hydrants are to be inspected twice yearly. It is acceptable to inspect the hydrants in the spring and the fall when the dead ends and blow-offs are being flushed. The hydrants should also be inspected after each use, especially in the winter to ensure that the barrel has drained.

1. Inspect for leakage and make necessary repairs.
2. Instal the gate valve and open hydrant fully, checking for ease of operation.
3. Flush hydrant following SOP #7.
4. Remove all nozzle caps and inspect threads for impact damage or cross threading. Clean and lubricate outlet nozzle threads with a dry graphite-base lubricant, and check for ease of operation. Ensure that the outlet nozzle cap gaskets are in good condition and that the chains are in place.
5. Replace caps, tighten with a spanner wrench, then back of the threads slightly so the caps are not excessively tight, but are still tight enough to prevent hand removal.
6. Check for any exterior obstruction that could interfere with hydrant operation during an emergency. (Brush, hedges, fences etc.)
7. Check the dry barrel for proper drainage.
8. Clean and make note if repainting the exterior of hydrant is required. Ensure that the hydrant number is in place.
9. Be sure the auxiliary valve is in the fully opened position.
10. Should the hydrant be inoperable, tag and bag the hydrant and notify the Operations Foreman, who will advise the Fire Department that the hydrant is not in service.
11. Complete the Hydrant Maintenance Report and file with the Operations Foreman and/or the Water Quality Analyst.
12. The Master Hydrant Record will then be completed by the Water Quality Analysts office.

**Everyone working with the fire hydrants is to be aware that when operating a dry-barrel hydrant, it must be fully open so that the drain becomes fully closed. If the hydrant is not fully opened the drain will remain partially open and the water seeping through will saturate the drain field. This could result in the hydrant freezing.**

Further reference material: [AWWA Manual M17, Installation, Field Testing and Maintenance of Fire Hydrants](#)

## **Standard Operating Procedure -13- Dechlorination**

To ensure that any water used in the disinfection of new or repaired water mains, as well as, chlorinated water discharged as the result of flow testing or flushing fire hydrants is not directed to a storm sewer, drain, or any other location that may allow the discharge to enter a water course without prior de chlorination, the operator will ensure that the de chlorination has occurred , or that the water has been redirected to the sanitary sewer.

- 1 The chlorinated water used for hydrant flushing or flow testing which contains the same content of chlorine as the distribution system may be flushed into the waste water collection system, with prior permission of the senior plant operator. This will be accomplished by using proper hoses and connections ,and the use of a proper traffic plan, signs (cone , traffic barrels and or barricades) and competent personal.
- 2 The chlorinated water used for hydrant flushing or flow testing which contains the same content of chlorine as the distribution system and were there is no sewer system available, the water may be discharged into the storm sewer or an open ditch, providing the following conditions exist.
  - (a)The ditch does not empty directly in to a natural habitat
  - (b)The chlorine has time to naturally dissipate before the water could reach a natural habitat.
- 3 In the event that water with a high content of chlorine is to be flushed from the fire hydrants, following the disinfection of repaired water mains or the installation of new water mains, the water shall be de chlorinated, before entering sewers, ditches or storm drains. Using the AWA Standards For Disinfecting Water Mains (ANSI/AWWA C651-05) Appendix C Disposal of Heavily Chlorinated Water as a guide .
- 4 Should chlorinated water accidentally be discharged to the storm sewer and/or water course without being dechlorinated, it is to be verbally reported to SAC and the local MNR office.

## **REHABILITATION, EXPANSION and MODIFICATION OF WATERMAINS AND COMPONENTS OF THE DRINKING WATER SYSTEM**

The condition of the Drinking Water System is assessed annually. Scheduling of upgrades and rehabilitation is co-ordinated with the Works Department road maintenance schedule. Expansion of the distribution system is overseen by the CAO and Planning Department staff. Generally, the developer supplies and installs the infrastructure under the supervision of the Municipal Engineer of Record. The Water Works accepts the installed works after confirmation that the system has been installed as per approved plan and bacteriological samples have been taken and analysed by the WQA.

All parts of the drinking water system in contact with drinking water which are; Added, modified, replaced, extended, or taken out of service for inspection, repair, or other activities that may lead to contamination, shall be disinfected before being put into service in accordance with the provisions of MOE Water Main Disinfection Procedure (*replaced AWWA C651 - Standard for Disinfecting Water Mains in January 2015*).

The design of any watermain addition, modification, replacement or extension shall be:

- A. prepared by a Professional Engineer,
- B. designed only to transmit water and not to treat water,
- C. Satisfy the design criteria set out in the Ministry of the Environment publication “Watermain Design Criteria for Future Alterations Authorized under a Drinking Water Works Permit – March 2009”, as amended from time to time; and
- D. be consistent with or otherwise address, the design objectives contained within the Ministry of the Environment publication “Design Guidelines for Drinking Water Systems, 2008”, as amended from time to time.
- E. all chemicals and materials used or that may come into contact with the water within the system shall meet all applicable standards set by both the AWWA and the ANSI safety criteria standards, NSF/60 and NSF/61 (*this does not apply to water pipe and pipe fittings meeting AWWA specifications made from ductile iron, cast iron, PVC and HDPE. Nor to articles made from glass, HDPE or Teflon.*)

For greater certainty, Sections 2, 3 & 4 of the Drinking Water Works Permit shall be reviewed when considering any additions, modifications or rehabilitation of the distribution system or any of the components of the system.

## UTILITY LOCATING POLICY

We are required to have locates completed by the various utilities we may encounter, when we excavate to expand, repair and or modify our water infrastructure. The Public Works Manager or the Works Foreman are responsible for having the required locates completed. They will complete the Utility Locate Request Form 1 and submit to Ontario One Call by email or by phoning. Ontario One Call - 1-800-400-8876 during regular office hours to schedule locates for service in three days. Call 1-800-400-2255 to request emergency service for immediate locates.

**Contractor ID = 03727**

A copy of the locate documents shall be kept with the excavator working onsite, until the work is completed. After which they should be filed with the Operations Foreman. A copy of the locate documents shall be attached to the Water Distribution System Service & Repair Form, which is filed in the Yearly Log Binder, in the QMS office.

Contractors and other Utilities doing work in Laurentian Valley will also be contacting Ontario One Call for underground locates. Ontario One Call emails these requests to the Public Works Manager and the Operations Foreman. They will print these requests and forward to the Operator assigned to complete the locate, along with a Locate Request Form 2

The Operator assigned to complete the locate will review the documents provided, and using the System Maps, in the Operations Foreman's office, determine if there are water mains, hydrants or service connections in the area designated as the Location of Proposed Work. If there is no water infrastructure shown in the area of the proposed works, the forms provided are to be completed and given to the Operation Foreman or in his absence the Public Works Manager, to be forwarded to the contractor or Ontario One Call.

If there is water infrastructure in the area of the proposed works, the Operator is to locate the area on the Detail Maps and either photocopy the details or transfer the information to the Locate Request Form Provided. *(This step should give the operator enough information to locate the infrastructure in the field.)* Out in the field, the operator is to actually locate and mark the infrastructure in and adjacent to the area of the proposed works. This can be accomplished with the magnetic locator, handheld GPS or the radio detection tool, whichever the operator requires to accomplish the task for the particular locate. Marking is to be completed using blue spray paint to mark the location of the water main, service connection, curb stops etc. **(Just on Municipal Property)** When completed, the forms provided are to be completed and given to the Operations Foreman or in his absence the Public Works Manager, to be forwarded to the contractor and/or Ontario One Call.

## WATER METERS

Laurentian Valley Water Works owns 6 large water meters which measure the water we purchase from the City of Pembroke, and a seventh that measures the water that travels through our west-end main to the Town of Petawawa.

- ME1 Located on Elgin Street, near Boundary Road, 10 inch and a 2" Neptune trident meter
- ME2 Located on Willow Drive, near Boundary Road, 4 inch Neptune compound meter
- ME3 Located on Karen Street, near Boundary Road, 4 inch Neptune compound meter
- ME4 Located on Bruham Avenue, near Boundary Road, 10 inch Neptune meter, & 2" Trident 10
- ME10 Located on Pembroke Street East at City limits, near Angus Campbell Drive, 8 inch Schlumberger meter,
- ME20 Located on Pembroke Street West at City limits, 6 inch Neptune compound meter,
- ME22 Located on Pembroke Street West at MacGregors Hill, 10 inch Neptune meter and a 2" Neptune Trident 10

There are also 38 commercial water meters that are read, the same day as the large water meters.

The water meters are read quarterly, timing is up to the reader, but needs to be as close as possible to the 1<sup>st</sup> of each quarter - because the Municipal software uses the 1<sup>st</sup> day of each quarter for the billing. *(Can be a problem to schedule with stat holidays on January 1, July 1 and end of quarters occasionally ending on weekends)*

Prior to reading the meters the spreadsheets are prepared to enter the information, the last reading is also indicated, this lets the reader know that the meter is working when he is on-site, and any problems can usually be determined quickly with the property owner.

Most of the water meters have remote read buttons, and we currently use a Sensus AR4090 remote reader. It needs to be plugged in to charge for 24hrs before using. The operators have all been around on the meter reading trip at least once and should be somewhat familiar with the location of the buttons and meters. They have also been cautioned about reading the number twice - double checking the number they write down before leaving the property, avoids having to go back if a discrepancy is found later.

At the office, the numbers are inputted into the spreadsheet, I use QuatroPro, but it can be converted to Excel for those who feel more comfortable with that style. You then check for obvious discrepancies - large increases or decreases in consumption. If required, you contact the customer to find out if there is logical reason for the differences, usually was a break or leak at the facility, but could be toilets leaking that are undetected.

The spreadsheet is then passed on to the Accounts Receivable Clerk, they use the Municipal software to calculate and distribute the invoices.

The large (City) meter readings are then scanned and emailed to the City of Pembroke, currently Robin McGregor, at [rmcgregor@pembroke.ca](mailto:rmcgregor@pembroke.ca)

When the invoices come from the City, they are checked/verified, and coded for our Accounts Payable Clerk, and a copy of the West End Invoice is given to the Accounts Receivable Clerk to Invoice the Town of Petawawa.

There are paper files kept in the WQA/QMS Rep's office of the current year on the desk, and past years in the filing cabinet. The electronic files are kept in J:\E - ENVIRONMENTAL SERVICES\E08 - Water Works\Water Meters

With regards to Water Meter Maintenance, they are calibrated every second year, and the remote readers require constant monitoring and repairs when required.

Policy Manual  
Created May 2003  
Claus Trost, WQA

## CONTINUAL IMPROVEMENT REGISTER

Revision Date: January 2009 (Regulation 170 as amended by 248/06 & 399/07)  
February 2009 (DWQMS required sections added; Critical Suppliers Contact Info, Inventory list)  
February 2009 (added SOP's for Service Connection breaks or leaks, Cross Connections, Service Interruption (loss of City supply) also updated flushing sequence for new serviced areas & added hydrants)  
May 2009 - amended & corrected Flushing Sequence  
February 2011 (updated stats, infrastructure, contacts, phone numbers,)  
June 2011 - amended SOP-14 to include documentation requirements of the new Drinking Water Works Permit  
August 2011 - amended to include Drinking Water License information and Drinking Water Works Permit information; #'s and description,  
August 2011 - Morris retired, amended contacts and other required information, to either David or Mark  
August 2011 - amended for CGSB CAR's; System description and the fact that the City of Pembroke samples & tests the water we purchase.  
June 2012 - amended, to add in Mark Behm and Lorne Rathwell, to replace M Schneider and D Saunders.  
Jan 2013 - amended, Valley Spring building closed, alternate sampling location.  
March 2014 - amended, added where to store the documentation of the third party calibration.  
January 2015 - reviewed and updated contacts and phone numbers, change of call service provider, CAR JO5857-2, added text to Measurement & Calibration section, CAR JO5857-1, added footer, MOE change from AWWA document to their new document,  
March 2015 - SOP 14 added a bullet regards NSF/61, developed a Utility Locating Policy SOP 15,  
April 2015 - edited typos, and minor errors found during the Annual Operators Training Meeting  
June 2015 - amended Inventory, to include documentation required.  
December 2015 - amended THM sampling location, expanded/detailed record keeping of the analysis reports, amended SOP #8 to conform to the newly released MOR document Watermain Disinfection Procedure, will now be an SOP 8, 8A & 8B  
April 2016 - amended Utility Locate SOP 15  
August 2016 - amended the THM SOP, to conform to the new reporting requirements of MOE.  
November 2016 - amended the THM SOP again, only report at end of quarter, and start a flushing regimen.

- added a request to take photos of watermain breaks when they are exposed. Will assist in proving classification and be useful for future training.
- January 2018 - added a SOP for HAA's, edited, adjusted Table of Contents, - reviewed & edited the contact lists
- April 26, 2018 Added Approval signature line, documentation that the Public Works Manager approved the changes & updates becomes part of the official document.
- November 2018 edited text on Page 11, sampling schedule, to clarify that the second set of samples must be more than 48 hours after the last of the first set of weekly samples was taken.  
Also noted the change in HAA sampling location following the MOE guidance document received on/or about May 9<sup>th</sup>, 2018
- April 2019 Added page for water meters, to list all the documents, details, procedures and contacts to make it easier for someone to follow me!
- Jan 2020 Reviewed phone numbers & contacts, updated, added County Road Occupancy Permit requirements

\_\_\_\_February 5, 2020\_\_\_\_  
Date

\_\_\_\_*original signed by M Behm*\_\_\_\_  
Public Works Manager

NOTE: This document is not the final authority. The Ministry of Environment and the Medical Officer of Health have the final say in all decisions made after they are advised of the problem. This document is to be reviewed and updated yearly or sooner as regulations are amended or personnel changes are known. Please advise the author (Claus Trost, QMS Rep) when any errors or omissions are detected.



# **Laurentian Valley**

## **Water Works**

### **Water Quality**

# **Policies & Procedures**

# **Manual**



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WQP&P 2019

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## Introduction

Laurentian Valley Waterworks received its **Certificate** as a Water Distribution Plant, Level 1 (WD1) in November of 2000, # **2893**. The Drinking Water Protection Regulation 170/03 as amended introduced by the provincial government in 2003 requires that the Municipality sample and test the water distributed by the Municipality to ensure that clean, safe water is distributed to our customers.

On July 15, 2005 the system was reclassified as Water Distribution Subsystem Class 1 by the Ministry of Environment. The Drinking Water System Information number for Laurentian Valley Water Works is W260007465.

On June 2, 2011 the Corporation of the Township of Laurentian Valley was issued Municipal Drinking Water License # 192-101, Issue #1, as both the Owner and Operating Authority.

May 31, 2011 the Corporation of the Township of Laurentian Valley was issued a Drinking Water Works Permit Number 192-201, Issue #1 for the system described by the system maps as of February 2009 as amended from time to time by Form 1 - Record of Watermains.

Laurentian Valley Water Works purchases treated water from the City of Pembroke and distributes it to 645 homes and businesses through out 14 kilometers of distribution piping. The City of Pembroke owns and operates the Pembroke Drinking Water System (DWIS # 220000941), which consists of the Pembroke Water Purification Plant and distribution system. Sampling, testing and monitoring of the treated water provided to the Laurentian Valley Distribution System is conducted by the City of Pembroke. As owner and operating authority of the Pembroke Drinking Water System, Pembroke must ensure that the water supplied to the Laurentian Valley Distribution System meets the Ontario Drinking Water Quality Standards and has a minimum chlorine residual of at least 0.50 mg/l. Sampling and testing for the Laurentian Valley Distribution System is limited to the distribution system as required by Ontario Regulation 170/03.

Laurentian Valley Water Works is currently managed by the following staff;

- Mark Behm, Manager of Public Works, 613-735-6291, 613-401-3291
- Claus Trost, Water Quality Analyst, QMS Rep 735-6291, 613-639-3385
- Lorne Rathwell, Operations Foreman, 613-735-6291, 613-635-3241

## **Documentation & Communication**

The office for Laurentian Valley Water Works is at 460 Witt Road. All the required documentation is to be kept at this office and be made available to the public at this office. To this end, the Quarterly Water Reports are to be kept in a loose leaf binder complete with the analysis reports from the Laboratory, any correspondence from the Ministry of the Environment and any notes and files of the Analyst, ORO and the Public Works Manager. This binder, known as the yearly log, shall be kept in the WQA office and is available to the public at the front counter. The Annual Water System Report is also to be kept at the Municipal Office. There is a copy of the Laurentian Valley Water Works Distribution System Mapping, to be kept at the Water Works Office. The as built and detail drawings are also kept at the Water Works Office at 460 Witt Road.

The Policy and Procedures Manual, a copy of the regulations and the current quarters results are to be kept in the Analysts office at 460 Witt Road. These documents are available for review by the Ministry and the public at any time. A copy of the Policies and Procedures is also kept at the Operations Foreman Office at 460 Witt Road for the workers to review as required. (*Operators are to be given an up to date copy of the Drinking Water License, the Drinking Water Works Permit, the Policies and Procedures Manual and the Operational Plan each year at the review and training meeting*)

Quarterly Reports are to be completed by the analyst by the 20<sup>th</sup> of the month following the end of the Quarter, (March 31, June 30, Sept 31, and Dec 31.) The Quarterly Reports are available on the internet and at the front counter. The Quarterly Report is to be circulated to members of Council. The Quarterly Reports are also to be made available on the Internet at [www.lvtownship.ca](http://www.lvtownship.ca) .

The Annual Report is required to be completed and submitted to Council by February 28 of each year. A resolution from council, acknowledging the reports submission is required for the satisfaction of the MOE inspector and the accreditation auditor.

## **Emergency Contact Numbers & Addresses**

**Ministry of the Environment:**

- Spills Action Centre Phone: **1-800-268-6060** Fax: **1-800-268-6061**
- Karin Bourgon Phone: **1-800-860-2195** ext 230 Fax: **613-521-5437**

**Renfrew County & District Health Unit:**

- Office Phone: **613-735-8654** Fax: **613-735-3067**
- **after hours - 613-735-9926**
- David Tantalo Phone: **735-8654**, ext 1 569 # dtantalo@rcdhu.com

**Laurentian Valley Water Works:**

- Lorne Rathwell : Work Phone: 613-735-6291  
Cell Phone: 613-635-3241
- Claus Trost: Work Phone: **613-735-6291**  
Cell Phone: 613-639-3385

**Ontario One Call:** **1-800-400-8876** during regular office hours to schedule locates for service in three days. Call **1-800-400-2255** for emergency locates

**City of Pembroke:**

- Curtis Mick, Supervisor Water Distribution & Waste Water Collection  
Office Phone: **613-735-6816 ext 1403**  
Home Phone: 613-646-2964  
Cell Phone: 613-312-0098
- Water Purification Plant: Phone: 735-6821 ext 1491  
Standby #1 Phone: 613-281-2142

**Town of Petawawa:**

- Ontario Clean Water Agency - Sewage Plant 613-687-2141
- - Water Treatment Plant 613-687-7512

**Caduceon Environmental Laboratories Inc.**

- Greg Clarkin Manager Phone: **613-526-0123** Fax: 613-526-1244  
2378 Holly Lane  
Ottawa, Ontario  
K1V 7P1

**Staff:** Waterworks Phone 613-401-8269  
Mark Zadow home 613-735-5357 cell 613-585-7108 - Operator  
Andrew Warren home 613-628-5232 cell 613-635-2124 - Operator  
Todd Grahl home 613-735-6605 cell 613-633-1421 - Operator  
Dave Lewis home 613-735-4543 cell 613-635-3375 - Heavy Equipment  
Cole Hawkins home cell 613-433-0125 - Operator  
Shane Hebert home 613-635-7302 cell 613-585-1177 - Operator

**Critical Products & Services**

<b>Supply/Service</b>	<b>Vendor</b>	<b>Contact, Notes:</b>
Portable Testing Instruments & HACH Kit supplies can be obtained from;	Cleartech : Phone: 1-800-387-7503 Fax: 905-612-0575 7370 Bramalea Road Mississauga, Ontario L5S 1N6	Order DPD Free Chlorine Reagent for 10 ml sample, Cat.# 21055-69. Acct # 63183
HACH - Pocket Colorimeter HACH - pH Meter	Hach Sales & Service Canada Ltd. 3020 Gore Road, London ON N5V 4T7 Phone: 1-800-665-7635 Fax: 1-866-259-0984 infoCanada@hach.com	order online, see Claus for username & password <a href="http://www.hachco.ca">www.hachco.ca</a>  Acct # 40251351
Municipal Engineer	Jp2g Consultants Phone: 613-735-2507 Fax: 613-735-4327	Neil Caldwell P.Eng. Cell 613-282-0283
Water Analysis	Caduceon Laboratories Inc. Phone: 613-526-0123 Fax: 613-526-1244 2378 Holly Lane Ottawa ON K1V 7P1	Greg Clarkin, lab manager Tahir Yapici, lab supervisor Krystyna Pipin, lab supervisor
Emergency & After Hours Contact	The Security Company phone: 613-732-9009 Fax: 613-732-0038	Robert Watt
Water Meters	Neptune Phone: 1-800-667-4387 Fax: 7-905-858-0428	Dwayne McRae all meters are by Neptune, factory service
	Flowmetrix Technical Services Stacey Nichol Sr. Project Manager Flowmetrix Technical Services Inc. 2088 Jetstream Road London, Ontario N5V 3P6	Stacy Nichol, Sr. Project Manager Calibration & repair, of water meters, Hach kits, pH meter. Phone:1-519-870-3569 Fax: 1-519-268-3569
Valves & Hydrants Pipes & Fittings	Crane Supply 225 Paul Martin Drive Phone: 613-732-2857 Fax:	
	Wolseley Mechanical Group 1375 Pembroke Street West Phone: 613-732-1190	Robert Stanizewski Ph: 613-822-3444 Cell: 613-297-7647

	Boone Plumbing 20 Edgewater Street Kanata ON Phone: 1-613-831-6800	
Excavation/Installation & repair	W.W. Siegel Sand & Gravel  Phone: 613-732-8867 Fax: 613-735-6686	Jeff Siegel cell - 613-732-6653
	Splinter Forest Products Ltd. 39 Forest Valley Lane Laurentian Valley ON Phone: 613-732-3382	Don - 613-633-6190 Greg -
Hydro Vac Trucks	Crawl	613-646-7595 613-635-3854
	Exite Pembroke ON	613-621-0020
Municipal Contacts  for emergency supply of pipes & fittings	City of Pembroke Distribution  standby # 613-281-2140	Curtis Mick cell:613-312-0098
	White Water Region - OCWA Greg Davidson & Shane Severin common cell phones passed to duty operators	Greg - 613-633-6515 Shane - 613-633-0349 Ron - 613-633-0649
County Roads require permits to work on Pembroke Street West, Bruham Avenue & Jean Avenue.	County Road Occupancy Application is stored in A25/water email to - link on County Site	after hours emergency 1-866-353- 6374 Regular office hours 613-732-4353

## Water Sampling Schedule & Procedure

Laurentian Valley Water Works is required to take at least seven distribution samples each week for chlorine residual readings. We use the 4/3 option allowed under O.Reg. 170/03. The location of these readings are to be rotated through the four areas, twice each week;

Pembroke Street East Main  
Pembroke Street West Main  
Stafford Built up Area  
Willow Drive Main

At least four of the samples must be taken on Monday (*Tuesday, if Monday is a Holiday*) and the other three are to be taken on Thursday or Friday of the same week. (Care must be taken that the second set is taken, not less than 48 hours after the last of the first set of samples was taken, *so if Monday is a holiday, the second set cannot be taken before Friday*)

Laurentian Valley Water Works is required to take two samples weekly for microbiological testing, and collect a minimum 9 samples per month.

Week One: one sample from Brum's Dairy, either the Lab or the Dairy Bar  
: one sample from Home Depot, *until the main is extended.*

Week Two: one sample from the Firehall and the other from Stafford Bingo Country.

In any month with only 4 Tuesdays the extra sample is to be taken from the Willow Drive Main, (*at the Hamilton Street Pumping Station*) on the Week Two schedule. The aim is to collect one sample each week from the Stafford Built-up Area and to alternate weeks on the East and West End Mains.

All the samples collected are to be analyzed for Total Coliforms and E. Coli. At minimum, the first three samples each month are also to be analyzed for general bacteria population expressed as colony counts on a heterotrophic plate count.

Please note, during the Christmas Holiday period, Laboratory and Courier services are reduced. The sampler may have to reschedule the sampling to suit the days available for delivery and analyses of the samples. The sampler is to call the Laboratory to confirm receipt of the samples the following afternoon. (*This will increase the time available to resample should there be a delivery problem or a problem with the samples submitted.*)

Once every quarter a sample for Trihalomethane and Haloacetic Acids is required. These samples are to be taken from the Home Depot sampling location. This location will take in water that has spent some time in the Bell Street Water Tower, and is therefore the longest in the distribution system. (*2018 - following guidance from the MOE, the HAA sampling site is to be relocated after 4 quarters, with results that are below the threshold, in response, we have moved the HAA sampling location to Brum's Dairy in the fourth quarter of 2018, if the 4/4 results at Brum's Dairy are below .004mg/l we will move to a third location; Bingo Country, in the fourth quarter of 2019. In 2021 we will choose the location with the highest 4/4 average as the permanent sampling location*)

In 2007 the Province of Ontario amended O.Reg 170/03 with O.Reg. 399/07 Community Drinking Water Lead Testing. Because of the complexity and timeliness of the lead sampling and reporting requirements and the fact that the law is fluid (*subject to amendments*) the Municipal Lead Sampling Protocol has been separated from this manual. Please refer to the Municipal Lead



Sampling Protocol Binder for this information. *The current Drinking Water License only required two rounds of plumbing & ICI samples until the License expires in 2021.*

The sampling equipment and forms are kept in the Analysts Office at 460 Witt Road. The equipment consists of a HACH Kit, Sampling Bottles, Coolers, Chlorine Residual Log and the Submission Forms.

Chlorine Residual Log Books are to be hard cover with bound spines and numbered pages.

The microbiological samples are normally taken on Tuesday mornings, after which the bottles are packed in the cooler with ice packs and the Submission Form, shipped via Purolator Courier to Caduceon in Ottawa. *(No ice packs in winter when the temperature is below minus 15 degrees Celsius, samples will freeze! The courier trucks are not heated.)*

When chlorine sampling, the chlorine residual reading is to be entered into the Log Book. If the residual is below 0.05 mg/l the bacterial sample should be taken and submitted. The **Standard Operating Procedure -1-** for Low Chlorine (page 10) should be followed.

When microbiological sampling, the tap is to be checked for cleanliness and turned on, medium flow for 5 to 10 minutes prior to taking the chlorine residual reading and the bacterial sample. This time can be used to label the sampling bottle, enter the required information in the Chlorine Residual Log and complete the Analysis Submission Form.

The chlorine residual reading is to be entered into the Log and on the Submission Form. If the residual is below 0.05 mg/l the bacterial sample should be taken and submitted. The **Standard Operating Procedure -1-** for Low Chlorine (page 12) should be followed.

The results of each weeks test are usually received by email the Friday of the week taken. This Certificate of Analysis is to be printed and placed in the current years "Log Book" binder, and the electronic copy is stored in E14, on the global drive, the email is stored in the waterworks folder for the current year.

The above sampling can only be conducted by a certified operator or the water quality analyst. Only the certified operator and the water quality analyst can make the log book entries. Any qualified person making an entry in the Log Book must have their name printed in the front of the Log Book next to their initial so that their entries can be identified.

### **Measurement and Recording Equipment Calibration and Maintenance**

HACH - Pocket Colorimeter factory calibrated, because there are two, they can be verified against each other quarterly and documented in the log book or they can also be tested by third parties using control samples, once per year. The documentation of the calibration is to be filed in the yearly log. The best before dates of the DPD pillows need to be checked before they are placed in the kits, each time they are restocked.

HACH - pH Meter, calibrated prior to each lead sampling schedule, by the method detailed in the owners manual, by the WQA. The Owners Manual and calibrating reagents are stored in the

Municipal storeroom. This meter can also be tested by third parties using control samples, once per year.

The reagents used for calibration are to be checked that they are not used after their best before dates prior to use and the third party contractor is to document the best before date of the reagents they use, on their forms submitted.

## Inventory

The following distribution system pipes & fittings are kept in stock for routine unplanned maintenance activities. Stock used in a repair is to be replaced as soon as possible, so that at minimum, there is always the stock as shown on the following table. Stock is to be ordered ahead for planned maintenance activities.

When purchasing stock, the operator is to ensure that all chemicals and materials used or that may come into contact with the water within the system shall meet all applicable standards set by both the AWWA and the ANSI safety criteria standards NSF/60 and NSF/61 (*this does not apply to water pipe and pipe fittings meeting AWWA specifications made from ductile iron, cast iron, PVC and HDPE. Nor to articles made from glass, HDPE or Teflon.*)

This is to be documented by getting the Technical Data Sheet and/or the Submittal Information from the supplier and attaching it to the Invoice. The Invoice is to also provide enough information (product code/id) to verify that they are the same as listed on the Technical Data Sheet and/or the Submittal Information. In the alternate, the required parts can be researched on the Internet and documented, and the required part purchased from a supplier, as long as the documentation is attached to the invoice and the invoice is detailed enough to verify that they are the same product. This requirement has been stipulated in person by the Operations Foreman to the Managers at Crane and Wolsley.

Item description	Minimum # in stock	comment
12" Royal PVC PR160 pipe	1	Only require that a length
10" Royal PVC PR160 pipe	1	greater than 4 feet, be kept in
8" Royal PVC PR160 pipe	1	stock,
6" Royal PVC PR160 pipe	1	"
4" Royal PVC PR160 pipe	1	"
property shut off box - 7' long	1	
1" X 1" coupler	1	
3/4" to 3/4" coupler	5	
3/4" to 1/2" coupler	3	
3/4" to 5/8" coupler	3	
5/8" to 1/2" coupler	2	
5/8" to 5/8" coupler	4	

<b>3/4" to 3/4" curb stop (property shut off valve)</b>	<b>4</b>	
<b>3/4" main stop valve</b>	<b>5</b>	
<b>4" to 3/4" saddle</b>	<b>1</b>	
<b>6" to 3/4" saddle</b>	<b>2</b>	
<b>8" to 3/4" saddle</b>	<b>1</b>	
<b>10" to 3/4 saddle</b>	<b>2</b>	
<b>12" to 3/4" saddle</b>	<b>1</b>	
<b>4" rubber clamp</b>	<b>2</b>	
<b>6" rubber clamp</b>	<b>2</b>	
<b>8" rubber clamp</b>	<b>2</b>	
<b>10" rubber clamp</b>	<b>2</b>	
<b>12" rubber clamp</b>	<b>2</b>	
<b>water main shut off box</b>	<b>1</b>	

**Laurentian Valley Water Works  
Standard Operating Procedure -1-  
Adverse Water Quality Notification**

**CHLORINE RESIDUAL BELOW 0.05 mg/l or UNTREATED WATER ENTERS THE  
DISTRIBUTION SYSTEM**

If a distribution system sample contains less than 0.05 mg/l or untreated water has entered the distribution system the following actions are required;

1. Immediately notify the Operations Foreman (Lorne Rathwell at **613- 635-3241**) to begin flushing.
2. Immediately notify the local Medical Officer of Health (Mike Grace at **613-735-8654** ext **551**) by speaking with the Medical Officer of Health. If he is not available speak, with a person at the Health Unit Office at **613- 735-8654** or if the office is closed, the person on call at **613-735-9926** (General Hospital)
3. Immediately notify the Ministry of Environment by speaking with a person at the Ministry's Spills Action Centre at **1-800-268-6060** (**In all the above, you must speak to that person, don't leave a message on a machine. Also record the time and name of the person you spoke to**)
4. Implement the required corrective action as follows;
  - A. Flush the mains in the affected area to bring the free chlorine residual to a minimum of 0.20 mg/l.
  - B. Resample & Analyze for chlorine residual. The resampling should consist of a minimum of 3 samples; one sample at the affected site, one sample upstream and one sample downstream of the affected site.
  - C. Advise the Medical Officer of Health of the results from the flushing and resampling and follow their directions.
5. Within 24 hours of the immediate oral notification of an adverse water quality incident, confirm the verbal notice by providing written notification to the local Medical Officer of Health and the MOE. Written notice is provided by completing **Section 2(a) - Written Notice by Drinking-Water System Owner** and faxing the form to the local Medical Officer of Health at **613-735-3067** and the Ministry's Spills Action Centre at **1-800-268-6061**
6. **Notice of issue resolution** - within 7 days of resolving the issue, a written notice shall be completed, using **Section 2(b) - Notice of Issue Resolution** and faxing the form to the local Medical Officer of Health at **613-735-3067** and the Ministry's Spills Action Centre at **1-800-268-6061**

**Laurentian Valley Water Works  
Standard Operating Procedure -2-  
Adverse Water Quality Notification  
DISTRIBUTION SYSTEM SAMPLE SHOWS A PRESENCE OF COLIFORM  
BACTERIA**

If a distribution system sample analysis tests positive for coliform bacteria the following actions are required;

1. Immediately notify the local Medical Officer of Health (Mike Grace at 613-735-8654 ext 551) by speaking with the Medical Officer of Health. If he is not available speak with a person at the Health Unit Office at 613- 735-8654 or if the office is closed, the person on call at 613-735-9926(General Hospital)
2. Immediately notify the Ministry of Environment by speaking with a person at the Ministry's Spills Action Centre at 1-800-268-6060. **(In all the above, you must speak to that person, don't leave a message on a machine. Also record the name of the person you spoke to)**
3. Implement the required corrective action as follows;
  - A. Resample & Analyze for microbiological parameters including P/A analysis for coliform bacteria.
  - B. The resampling should consist of a minimum of 3 samples; one sample at the affected site, one sample upstream and one sample downstream of the affected site.
  - C. As per sampling procedure, the chlorine residual and time of sampling should be noted at each sampling location.
  - D. Advise the Medical Officer of Health of the free chlorine residual results from the resampling and follow their directions.
4. Within 24 hours of the immediate oral notification of an adverse water quality incident, confirm the verbal notice by providing written notification to the local Medical Officer of Health and the MOE. Written notice is provided by completing **Section 2(a) - Written Notice by Drinking-Water System Owner** and faxing the form to the local Medical Officer of Health at 613-735-3067 and the Ministry's Spills Action Centre at 1-800-268-6061
5. Once the analytical results from the resamples are known, follow-up with the local Medical Officer of Health to confirm the presence or absence of coliform bacteria by P/A analysis or the presence or absence of any other contamination.

6. If the presence of coliform bacteria by P/A analysis is confirmed, steps 1, 2 & 4 are to be repeated. Flush the mains to maintain a minimum free chlorine residual of 0.20 mg/l in the affected parts of the distribution system, and continue to resample and test, until total coliforms are not detected in any of the samples from two consecutive sets of samples taken 24 to 48 hours apart or as otherwise directed by the medical officer of health.
7. **Notice of issue resolution** - within 7 days of resolving the issue, a written notice shall be completed, using **Section 2(b) - Notice of Issue Resolution** and faxing the form along with copies of the Analysis Reports to the local Medical Officer of Health at **613-735-3067** and the Ministry's Spills Action Centre at **1-800-268-6061**

**Standard Operating Procedure -3-  
Adverse Water Quality Notification  
HETEROTROPHIC PLATE COUNT ANALYSIS SHOWS THAT  
DISTRIBUTION SYSTEM SAMPLE CONTAINS MORE THAN 500 COLONIES  
PER ML**

If a distribution system sample contains more than 500 colonies per ml on a heterotrophic plate count (HPC) analysis (also known as Standard Plate Count) the following actions are required; *(It is no longer a requirement to report that a sample has more than 500 colonies per ml on a heterotrophic plate count (HPC) analysis, O.Reg 248/06 amending O.Reg 170/03.)*

1. Implement the required corrective action as follows;
  - A. Resample & Analyze for the HPC analysis at the original sampling location.
  - B. As per sampling procedure, the chlorine residual and time of sampling should be noted.
  
3.
  - A. If the presence of more than 500 colonies per ml on a HPC analysis is confirmed by the resamples, begin a flushing regimen and consult with the local Medical Officer of Health.
  - B. Resample and Analyse for the HPC analysis .The resampling should consist of a minimum of 3 samples; one sample at the affected site, one sample upstream and one sample downstream of the affected site.
  
4. Daily monitor and maintain the free chlorine residual at a minimum of 20 mg/l in the affected parts of the distribution system, and continue to resample and test, until less than 500 colony forming units (CFU) per millilitre are detected in all of the samples from two consecutive sets of samples taken 24 to 48 hours apart or as otherwise directed by the medical officer of health.

**Standard Operating Procedure -4 -  
Adverse Water Quality Notification  
ESCHERICHIA COLI (E. Coli) DETECTED IN DISTRIBUTION SYSTEM  
SAMPLE**

If E. coli is detected in a distribution system sample the following actions are required;

1. Immediately notify the Operations Foreman (Lorne Rathwell at **613-635-3241**) to begin flushing.
2. Immediately notify the local Medical Officer of Health (Mike Grace at 613-735-8654 ext **551**) by speaking with the Medical Officer of Health. If he is not available speak with a person at the Health Unit Office at 613- **735-8654** or if the office is closed, the person on call at **613-735-9926** (General Hospital)
3. Immediately notify the Ministry of Environment by speaking with a person at the Ministry's Spills Action Centre at **1-800-268-6060**. **(In all the above, you must speak to that person, don't leave a message on a machine. Also record the name of the person you spoke to)**
4. Implement the following required corrective action and continue until *E. coli* and fecal coliforms are no longer detected in two consecutive sets of samples, or as instructed by the Medical Officer of Health;
  - A. Increase the chlorine dose and flush the mains to ensure that a free chlorine residual of at least 0.20 mg/l is achieved at all points in the affected part of the distribution system. This may require a call to Curtis Mick at the Water Purification Plant to advise them of the problem; to see if the problem originates in their end and for them to assist in raising the chlorine residual.
  - B. Resample & Analyze for microbiological parameters including the presence of *E. coli* and/or fecal coliform.
  - C. The resampling should consist of a minimum of 3 samples; one sample at the affected site, one sample upstream and one sample downstream of the affected site.
  - D. As per sampling procedure, the chlorine residual and time of sampling should be noted at each sampling location.
  - E. Advise the Medical Officer of Health of the free chlorine residual results from the resampling and follow their directions.
5. Within 24 hours of the immediate oral notification of an adverse water quality incident, confirm the verbal notice by providing written notification to the local Medical Officer of Health and the MOE. Written notice is provided by completing **Section 2(a) - Written Notice by Drinking-Water System Owner** and faxing the form to the local Medical Officer of Health at **613-735-3067** and the Ministry's Spills Action Centre at **1-800-268-6061**



6. Once the analytical results from the resampling are known, follow-up with the local Medical Officer of Health to confirm the presence or absence of *E. coli* and/or fecal coliform or the presence or absence of any other contamination.
7. If the presence of *E. coli* and/or fecal coliform is confirmed, consult with the local Medical Officer of Health. Steps 2,3,4, & 5 are to be repeated.
8. Maintain the free chlorine residual concentration at least 0.20 mg/l in the affected parts of the distribution system, and continue to resample and test, until *Escherichia coli* (*E. coli*) or fecal coliforms are not detected in any of the samples from two consecutive sets of samples taken 24 to 48 hours apart or as otherwise directed by the medical officer of health.
9. **Notice of issue resolution** - within 7 days of resolving the issue, a written notice shall be completed, using **Section 2(b) - Notice of Issue Resolution** and faxing the form to the local Medical Officer of Health at **613-735-3067** and the Ministry's Spills Action Centre at **1-800-268-6061**

**Standard Operating Procedure -5 -  
Adverse Water Quality Notification  
A DISTRIBUTION SYSTEM SAMPLE EXCEEDS 0.01 mg/l of LEAD**

Please refer to the Municipal Lead Sampling Protocol for this information.

**Adverse Water Quality Notification**  
**TRIHALOMETHANES EXCEED 0.10 mg/l IN DISTRIBUTION SYSTEM**  
**SAMPLE**

If Trihalomethane exceeding 0.10 mg/l is detected in a distribution system sample the following actions are required;

1. Immediately calculate the last four quarter average. If the four quarter average is below 0.10 mg/l notify the Pembroke Waterworks by calling the City of Pembroke Water Purification Plant at 613-735-0309, or emailing Curtis Mick. *(The plant needs to be notified because they can alter their procedures to reduce the level of THM's)*
2. If the last four quarter average is greater than 0.10 mg/l do the following;
  - A. At the end of the quarter, notify the local Medical Officer of Health, by written notice *(within 7 days of the end of the quarter)*, Written notice is provided by completing **Section 2(a) - Written Notice by Drinking-Water System Owner** and faxing the form to the Ministry's Spills Action Centre at **1-800-268-6061**, **email a copy to the Health Unit and the MOE Drinking Water Inspector assigned to our system.** (There is no requirement to phone SAC or local Medical Officer of Health)
  - B. Have the watermain flushed, *(THM's are caused by long retention times and increased water temperature)*
3. Resample at the next scheduled date;
  - A. and if the concentration of THM is greater than 0.10 mg/l consult with the Purification Plant and the Medical Officer of Health on the appropriate corrective action and continue as instructed. *(Will usually be to continue a flushing regimen.)*
  - B. If the concentration of THM falls below 0.10 mg/l, and the 4/4 average falls below 0.10 mg/l, issue a **Notice of issue resolution** - within 7 days of resolving the issue, a written notice shall be completed, using **Section 2(b) - Notice of Issue Resolution** and faxing the form to the local Medical Officer of Health at **613-735-3067** and the Ministry's Spills Action Centre at **1-800-268-6061**

Note: Small municipal residential systems and non-municipal year round residential systems that serve designated facilities also must report to the operator of each designated facility served by the system. *(Laurentian Valley currently has no designated facilities - schools, old age homes etc.)*

**Laurentian Valley Water Works**  
**Standard Operating Procedure -6A -**  
**Adverse Water Quality Notification**  
**HALOACETIC ACIDS EXCEED 0.08 mg/l IN DISTRIBUTION SYSTEM**  
**SAMPLE**

**Before January 1, 2020** - The *O.Reg. 169/03* standard (80 µg/L) and the *O.Reg. 170/03* reporting requirements for HAAs come into effect on **January 1, 2020**, as such drinking water system owners/operating authorities are not required to perform the RAA calculation for HAAs until 2020. Owners/operating authorities may wish to perform the calculation to determine if there are elevated levels of HAAs in the drinking water system.

**After January 1, 2020** - If Haloacetic Acids exceeding 0.08 mg/l is detected in a distribution system sample the following actions are required;

1. Immediately calculate the last four quarter average. If the four quarter average is below 0.08 mg/l notify the Pembroke Waterworks by calling the City of Pembroke Water Purification Plant at 613-735-0309, or emailing Curtis Mick. (*The plant needs to be notified because they can alter their procedures to reduce the level of HAA's*)
2. If the last four quarter average is greater than 0.08 mg/l do the following;
  - A. At the end of the quarter, notify the local Medical Officer of Health, by written notice (*within 7 days of the end of the quarter*), Written notice is provided by completing **Section 2(a) - Written Notice by Drinking-Water System Owner** and faxing the form to the Ministry's Spills Action Centre at **1-800-268-6061**, **email a copy to the Health Unit and the MOE Drinking Water Inspector assigned to our system.** (There is no requirement to phone SAC or local Medical Officer of Health)
  - B. Have the watermain flushed, (*HAA's become elevated by long retention times and increased water temperature*)
3. Resample at the next scheduled date;
  - A. and if the concentration of HAA's is greater than 0.08 mg/l consult with the Purification Plant and the Medical Officer of Health on the appropriate corrective action and continue as instructed. (*Will usually be to continue a flushing regimen.*)
  - B. If the concentration of HAA's falls below 0.08 mg/l, and the 4/4 average falls below 0.08 mg/l, issue a **Notice of issue resolution** - within 7 days of resolving the issue, a written notice shall be completed, using **Section 2(b) - Notice of Issue Resolution** and faxing the form to the local Medical Officer of Health at **613-735-3067** and the Ministry's Spills Action Centre at **1-800-268-6061**

Note: Small municipal residential systems and non-municipal year round residential systems that serve designated facilities also must report to the operator of each designated facility served by the system.

**Laurentian Valley Water Works  
Standard Operating Procedure -7 -  
Hydrants, Dead-End & Blow-Off Flushing Procedure**

The fire hydrants, dead-ends and blow-offs are to be flushed twice yearly unless otherwise or elsewhere stated. It is preferable to flush in the spring and the fall when water usage is at its lowest. The homeowners are notified of the flushing dates by inserting a flyer in the water bills indicating the time period the flushing is to occur. Or in the alternate, on the day prior to the scheduled flushing, the homeowners and businesses in the immediate vicinity are to be notified verbally if available or a flyer is to be left indicating that there will be flushing, at what times and precautions the homeowners can take to minimize the disruption. See Flushing Notice in Appendix.

1. Isolate the section to be flushed from the rest of the system. Mark or record any valves closed on a map.
2. Install the gate valve and open the fire hydrant or blow-off valve slowly.
3. Direct the water being flushed with the diffuser and/or hoses away from private property and persons. (Ensure that the flushed water does not enter a surface water source unless there is no chlorine.)
4. The hydrant is to be run fully open for a minimum of 5 minutes to stir up as much loose material in the main as possible. The main should then be flushed for a minimum 15 minutes.
5. The operator is to record the required information in the Flushing Record for each hydrant or blow-off flushed. (*Copy in appendix*) A minimum 2 samples should be taken to determine the clarity of the water and the chlorine residual. The first should be taken immediately after the water clears (*2-3 minutes after the hydrant is opened*) and the second just prior to closing the valve.
6. When the flushing water is clear, slowly close the hydrant or blow-off valve. If the water does not clear, the operator is to contact the Operations Foreman or the Water Quality Analyst for instructions. Leave the hydrant cap off to allow the water to drain back, in the winter months pour (bio)antifreeze into the bowl. Return later to close the cap and mark as such in the report.
7. When a segment of main is completely flushed, open any valves that were closed for the flushing and record or remove the marks on the maps indicating that the valves are closed before moving on to the next section to be flushed.
8. The flushing log is to be completed, indicating whether any follow up service is required.

### **Flushing Sequence**

1. Sequence for flushing the Stafford Built-up Area, south of the Indian River;
  - a) Start at Hydrant 1 on Elgin Street, in order to,
  - b) Hydrant #15, on Roy Street,
  - b) then to blow-off valve at the end of Lark Street
  - c) then at Hydrant #18 on Hamilton Street
  
2. Sequence for flushing the Stafford Built-up Area North of the Indian River;  
WQP&P 2019

- a) Start at hydrant #20 on Hamilton Street
  - b) then at hydrant #19 on Hamilton Street
  - c) then at hydrant #21 on Hamilton Street
  - d) then at the blow-off valve at the end of the main on Hamilton Street
  - e) then to hydrants #39 and #68 at Indian Court, notify management at Brum's Dairy - 735-2325
  - f) then at hydrant #47 on Lorne Street
  - g) then at hydrant #57 on Stafford Street
  - h) then at hydrant #48 at the Recreation Center
  - i) then at hydrant #63 on Allen Street
  - j) then at hydrant #67 on Bruham Avenue
  - k) then at the blow-off valve on Bruham Avenue across from hydrant #67 in front of 711 Bruham Avenue
  - l) then at hydrant #31 on Jean Avenue
3. Sequence for flushing the West End Area;
- a) Start at hydrant #221 on Pembroke Street West
  - b) then at hydrant #210 on Butler Chev Olds parking lot, private property - notify management
  - c) then continue up Pembroke Street West to hydrant # 222 at Clouthier Storage.
4. Sequence for flushing the East End Area;
- a) Start at hydrant #102 on Pembroke Street East
  - b) then at hydrant #105 in the Boston Pizza parking lot, private property - notify management
  - c) then at hydrant # 104 in front of Wal-Mart, private property - notify management
  - d) then at hydrant # 103 in front of Canadian Tire, private property - notify management
  - e) then continue up to Home Depot, Hydrant # 112

## **Standard Operating Procedure -8 - Water Main Breaks**

1. **CLASSIFICATION** Shortly after the Operator in Charge is advised that there is a water main break or a suspected leak, he is to attend the site to determine the type and scope of the break. Classification of the break is to be in accordance with the MOE Watermain Disinfection Procedure.

Category 1 - watermain breaks with no evident or suspected contamination; contamination is typically not suspected for circumferential breaks or small leaks, where flow is maintained from the break until an air gap is established, and where the air gap can be maintained during the repair procedure. *(If at any time during the repair, the air gap is lost, positive pressure is lost or contamination is suspected, or evident, the break shall be reclassified to Category 2)*

Category 2 - are large watermain breaks, in which it is suspected or evident that contamination is present in the main, and/or is being directed to our customers. This includes breaks in which there has been a loss in pressure, *(below 20 psi, because there can be backflow from other higher pressure sources)*

2. **NOTIFICATION;** **Category 1** breaks do not require any official notification.

**Category 2** breaks - Immediately notify the local Medical Officer of Health (Mike Grace at 613-735-8654 ext 551) by speaking with the Medical Officer of Health. If he is not available speak with a person at the Health Unit Office at 613- 735-8654 or if the office is closed, the person on call at 613-735-9926 *(General Hospital, leave them your contact information, and wait for the on call person to call you back)*

**If the Health Unit declares a water advisory;** Immediately notify the Ministry of Environment by speaking with a person at the Ministry's Spills Action Centre at 1-800-268-6060. **(In all the above, you must speak to that person, don't leave a message on a machine. Also record the name of the person you spoke to)**

## **Laurentian Valley Water Works Standard Operating Procedure -8A - Category 1 - Water Main Breaks**

3. **NOTIFICATION;** Category 1 breaks do not require any official notification, however, notify homeowners in the vicinity of the break/repair. Use a flyer similar to the one in the Appendix.
4. **DOCUMENTATION;** The Operator in Charge is to begin recording the required information on a Water Distribution System Service & Repair Form *(see appendix)*. It is also requested that the OIC take some pictures of the break when it is exposed, this will assist in the documentation, to show why the break was classified as it was.
5. **SCHEDULING;** a) small category 1 breaks and/or leaks, can be scheduled to repair during regular work hours.  
b) if it is a large category 1 break, the valves on either side are to be shut, one fully and the other by 95% (to keep positive pressure on the pipe), and the repair is to commence as soon as possible. *(The decision on when to complete the repair shall be based on the risk*

*to operators, public safety and the danger of property damage and/or environmental damage.)*

Arrange for the required equipment, material and labour to be on site at the scheduled time.

6. **LOCATES;** Call for locates:  
Ontario One Call - 1-800-400-8876 during regular office hours to schedule locates for service in three days. Call 1-800-400-2255 to request emergency service for immediate locates. **Contractor ID = 03727**
7. **TRAFFIC CONTROL;** Complete and document a traffic control plan, copy in Appendix. Have the appropriate barricades and signage installed. The County requires Occupancy Permits for work undertaken on County Roads that impacts traffic flow (*Bruham Avenue, Jean Avenue and Pembroke Street West*). The Application form is stored in A25/water and copies are kept with the foreman, in his office. Complete the Application, scan & email to the County through their website link.
8. **THE REPAIR;** On-Site;
  - a) Excavate & locate the break
  - b) Excavate & install a sump & pump, to keep piping above standing water (*air gap*)
  - c) complete the repair, continually cleaning the piping with the chlorine cleaning solution, (1% sodium hypochlorite solution)
  - e) alternative procedure is to have a hydro-vac truck on-site, to do the final excavation with high pressure water & vacuum.
  - f) when repairs are complete, prior to backfill, open partially closed valve and flush to other valve as practical,
  - g) shut valve and open other to flush in the other direction if practical
  - h) flush into the consumers building
  - i) backfill & compact over repair area
9. Complete the Water Distribution System Service & Repair Form. Copy form and forward to analysts office and notify analyst that he has the option to include the area for sampling on the next rotation. (Sampling is not required, but is a best/recommended practice)
10. Review inventory of spare parts, order to replace what was utilized, if required.

**Please Note:** if there is a loss of pressure during the break, and/or the free chlorine residual tested below 0.05 mg/l and/or bacterial contamination is detected in a distribution sample taken at the site of the leak/break, that this is reportable as an adverse water quality incident to SAC and RCDHU as per **Standard Operating Procedure -1-**

**Laurentian Valley Water Works  
Standard Operating Procedure -8B -**



## Category 2 - Water Main Breaks

1. **NOTIFICATION;** Category 2 breaks - Immediately notify the local Medical Officer of Health (Mike Grace at 613-735-8654 ext 551) by speaking with the Medical Officer of Health. If he is not available speak with a person at the Health Unit Office at 613- 735-8654 or if the office is closed, the person on call at 613-735-9926 (*General Hospital, leave them your contact information, and wait for the on call person to call you back*)  
**If the Health Unit declares a water advisory;** Immediately notify the Ministry of Environment by speaking with a person at the Ministry's Spills Action Centre at 1-800-268-6060. **(In all the above, you must speak to that person, don't leave a message on a machine. Also record the name of the person you spoke to)**  
Notify homeowners in the vicinity of the break/repair. Use a flyer similar to the one in the Appendix.
2. **DOCUMENTATION;** The Operator in Charge is to begin recording the required information on a Water Distribution System Service & Repair Form (*see appendix*). It is also requested that the OIC take some pictures of the break when it is exposed, this will assist in the documentation, to show why the break was classified as it was.
3. **SCHEDULING;** the repair is to commence as soon as possible. (*The decision on when to complete the repair shall be based on the risk to operator and public safety and the danger of property damage and/or environmental damage.*)  
Arrange for the required equipment, material and labour to be on site at the scheduled time.
4. **LOCATES;** Call for locates:  
Ontario One Call - 1-800-400-8876 during regular office hours to schedule locates for service in three days. Call 1-800-400-2255 to request emergency service for immediate locates. **Contractor ID = 03727**
5. **TRAFFIC CONTROL;** Complete and document a traffic control plan, copy in Appendix. Have the appropriate barricades and signage installed. The County requires Occupancy Permits for work undertaken on County Roads that impacts traffic flow (*Bruham Avenue, Jean Avenue and Pembroke Street West*). The Application form is stored in A25/water and copies are kept with the foreman, in his office. Complete the Application, scan & email to the County through their website link.
6. **THE REPAIR;** On-Site;
  - a) Excavate & locate the break
  - b) Excavate & install a sump & pump, to keep piping above standing water (*air gap*)
  - c) remove any contaminants that may have entered the watermain, either by flushing or swabbing.
  - d) complete the repair, continually cleaning the piping with the chlorine cleaning solution, (1% sodium hypochlorite solution)
  - d) all the surfaces of the pipe and repair parts which will come into contact with drinking water shall be disinfected with the chlorine cleaning solution; if you have to cut out a section of pipe, the interior surfaces of the cut ends shall also be

cleaned, by swabbing or spraying the cleaning solution as far as can be practically reached. (Depending on the nature or severity of the contamination, site specific disinfection procedures may be required, these are to be discussed and agreed upon by the ORO, the QMS Representative and or may be dictated by the RCDHU, these steps may include the disinfection procedures for new watermains as per ANSI/AWWA Standard C 651

f) when repairs are complete, prior to backfill, open the partially closed valve and flush to other valve through the nearest fire hydrant as practical,

g) shut valve and open other to flush in the other direction if practical,

h) flush into the consumers building,

i) backfill & compact over repair area.

7. Complete the Water Distribution System Service & Repair Form. Copy form and forward to analysts office and notify analyst to include the area for sampling on the next rotation, a minimum of one microbiological sample is required, it is preferable to collect one upstream and one downstream from the break.

8. Review inventory of spare parts, order to replace what was utilized, if required.

**Laurentian Valley Water Works  
Standard Operating Procedure -9 -  
Service Pipe or Connection Leaks or Breaks**

1. Shortly after the Operator in Charge is advised that there is a break or a suspected leak, he is to attend the site to determine the type and scope of the break.
  - a) the location of the leak or break is to be determined first, if the leak is on the Municipal portion (before the curb stop) then SOP -8- is to be followed. The location of the leak can usually be determined by closing the curb stop to the consumer and listening to the pipes.
  - b) if it is a large break to the consumer, the service connection valve is to be immediately shut.
  - c) if it is a small break/leak, the repair can be scheduled during regular hours in conjunction with the consumers plumbers schedule.
2. The Operator in Charge is to begin recording the required information on a Water Distribution System Service & Repair Form (*see appendix*). It is also requested that the OIC take some pictures of the break/leak when it is exposed, this will assist in the documentation, to show why the break was classified as it was.
3. After the consumers plumber has completed the repairs the Operator in Charge shall inspect the connections, confirm the required backflow protection devices are installed and that the water valve in the building is turned off. Then the curb stop valve can be opened and the plumbing system in the building flushed.
4. Complete the Water Distribution System Service & Repair Form. Copy form and forward to analysts office.

**Laurentian Valley Water Works  
Standard Operating Procedure -10-  
Cross Connection**

Laurentian Valley Water Works has a policy that requires dual check valves on all residential connections to the distribution system and double check valves on all ICI connections. The water is not initially turned on until an inspection has been conducted by either the Operations Foreman or the Chief Building Official. However, there are some residential and commercial connections that have been in place before this policy was put in place, they are to be corrected as they are detected by the Building Department.

Cross Connections will be discovered in one of two ways; either it is found during an inspection or there has been a customer complaint received. If the potential for back flow is detected in the plumbing system of the customer during an inspection, the curb stop at the street is to be immediately turned off until the required repairs have been made and/or a proper back flow prevention device has been installed.

Shortly after the Operator in Charge is advised that there is a possible cross contamination of the distribution system he is to attend the site to determine the type and scope of the contamination.

**Laurentian Valley Water Works  
Standard Operating Procedure -11-  
Loss of Service**

Laurentian Valley Water Works receives the drinking water supply from the City of Pembroke under contract. If there is an emergency at the Water Treatment Plant or in their distribution system that puts them in a situation of being unable to continue to supply drinking water they are required to notify us directly.

There will be very little that the Water Works can do in the response phase, other than ensuring that the City's communications to the public include affected Laurentian Valley Water Works customers and that our communication reinforce the City's and the Renfrew County District Health Units message.

### **Recovery Phase**

It can be assumed that there will be a loss of pressure during the loss of service and therefore there will be a chance of a free chlorine residual below 0.05 mg/l and/or that untreated water and/or contaminated water has entered the distribution system, this is reportable as an adverse water quality incident to SAC and RCDHU

1. Immediately notify the local Medical Officer of Health (Mike Grace at 613-735-8654 ext 535) by speaking with the Medical Officer of Health. If he is not available speak, with a person at the Health Unit Office at 613- 735-8654 ext. 555 or if the office is closed, the person on call at 613-735-9926(General Hospital)
2. Immediately notify the Ministry of Environment by speaking with a person at the Ministry's Spills Action Centre at 1-800-268-6060 **(In all the above, you must speak to that person, don't leave a message on a machine. Also record the time and name of the person you spoke to)**
3. Implement the required corrective actions as instructed by the Renfrew County Health Unit and/or the City of Pembroke. (The corrective actions will all depend on the nature of the original emergency. Flushing can only begin when the City has restored service and has advised the Water Works that they have the capacity for us to begin flushing. The sampling parameters will also be tied to the nature of the original service interruption and the RCDHU will advise what, where and how many they would like done.)
4. When given clearance to begin flushing, follow Standard Operating Procedure -7- for the affected area to maintain a minimum free chlorine residual of 0.20 mg/l in the affected parts of the distribution system, or as otherwise directed by the medical officer of health.
5. Within 24 hours of the immediate oral notification of an adverse water quality incident, confirm the verbal notice by providing written notification to the local Medical Officer of Health and the MOE. Written notice is provided by completing **Section 2(a) - Written Notice by Drinking-Water System Owner** and faxing the form to the local Medical

Officer of Health at **613-735-3067** and the Ministry's Spills Action Centre at **1-800-268-6061**

6. Continue the sampling and resampling until the required parameters sampled conform to the Drinking Water Quality Standard or as otherwise instructed by the Renfrew County District Health Unit.
7. **Notice of issue resolution** - within 7 days of resolving the issue, a written notice shall be completed, using **Section 2(b) - Notice of Issue Resolution** and faxing the form to the local Medical Officer of Health at **613-735-3067** and the Ministry's Spills Action Centre at **1-800-268-6061**

**Laurentian Valley Water Works  
Standard Operating Procedure -12-  
Fire Hydrant Maintenance**

The fire hydrants are to be inspected twice yearly. It is acceptable to inspect the hydrants in the spring and the fall when the dead ends and blow-offs are being flushed. The hydrants should also be inspected after each use, especially in the winter to ensure that the barrel has drained.

1. Inspect for leakage and make necessary repairs.
2. Instal the gate valve and open hydrant fully, checking for ease of operation.
3. Flush hydrant following SOP #7.
4. Remove all nozzle caps and inspect threads for impact damage or cross threading. Clean and lubricate outlet nozzle threads with a dry graphite-base lubricant, and check for ease of operation. Ensure that the outlet nozzle cap gaskets are in good condition and that the chains are in place.
5. Replace caps, tighten with a spanner wrench, then back of the threads slightly so the caps are not excessively tight, but are still tight enough to prevent hand removal.
6. Check for any exterior obstruction that could interfere with hydrant operation during an emergency. (Brush, hedges, fences etc.)
7. Check the dry barrel for proper drainage.
8. Clean and make note if repainting the exterior of hydrant is required. Ensure that the hydrant number is in place.
9. Be sure the auxiliary valve is in the fully opened position.
10. Should the hydrant be inoperable, tag and bag the hydrant and notify the Operations Foreman, who will advise the Fire Department that the hydrant is not in service.
11. Complete the Hydrant Maintenance Report and file with the Operations Foreman and/or the Water Quality Analyst.
12. The Master Hydrant Record will then be completed by the Water Quality Analysts office.

**Everyone working with the fire hydrants is to be aware that when operating a dry-barrel hydrant, it must be fully open so that the drain becomes fully closed. If the hydrant is not fully opened the drain will remain partially open and the water seeping through will saturate the drain field. This could result in the hydrant freezing.**

Further reference material: [AWWA Manual M17, Installation, Field Testing and Maintenance of Fire Hydrants](#)

## **Standard Operating Procedure -13- Dechlorination**

To ensure that any water used in the disinfection of new or repaired water mains, as well as, chlorinated water discharged as the result of flow testing or flushing fire hydrants is not directed to a storm sewer, drain, or any other location that may allow the discharge to enter a water course without prior de chlorination, the operator will ensure that the de chlorination has occurred , or that the water has been redirected to the sanitary sewer.

- 1 The chlorinated water used for hydrant flushing or flow testing which contains the same content of chlorine as the distribution system may be flushed into the waste water collection system, with prior permission of the senior plant operator. This will be accomplished by using proper hoses and connections ,and the use of a proper traffic plan, signs (cone , traffic barrels and or barricades) and competent personal.
- 2 The chlorinated water used for hydrant flushing or flow testing which contains the same content of chlorine as the distribution system and were there is no sewer system available, the water may be discharged into the storm sewer or an open ditch, providing the following conditions exist.
  - (a)The ditch does not empty directly in to a natural habitat
  - (b)The chlorine has time to naturally dissipate before the water could reach a natural habitat.
- 3 In the event that water with a high content of chlorine is to be flushed from the fire hydrants, following the disinfection of repaired water mains or the installation of new water mains, the water shall be de chlorinated, before entering sewers, ditches or storm drains. Using the AWA Standards For Disinfecting Water Mains (ANSI/AWWA C651-05) Appendix C Disposal of Heavily Chlorinated Water as a guide .
- 4 Should chlorinated water accidentally be discharged to the storm sewer and/or water course without being dechlorinated, it is to be verbally reported to SAC and the local MNR office.

## **REHABILITATION, EXPANSION and MODIFICATION OF WATERMAINS AND COMPONENTS OF THE DRINKING WATER SYSTEM**

The condition of the Drinking Water System is assessed annually. Scheduling of upgrades and rehabilitation is co-ordinated with the Works Department road maintenance schedule. Expansion of the distribution system is overseen by the CAO and Planning Department staff. Generally, the developer supplies and installs the infrastructure under the supervision of the Municipal Engineer of Record. The Water Works accepts the installed works after confirmation that the system has been installed as per approved plan and bacteriological samples have been taken and analysed by the WQA.

All parts of the drinking water system in contact with drinking water which are; Added, modified, replaced, extended, or taken out of service for inspection, repair, or other activities that may lead to contamination, shall be disinfected before being put into service in accordance with the provisions of MOE Water Main Disinfection Procedure (*replaced AWWA C651 - Standard for Disinfecting Water Mains in January 2015*).

The design of any watermain addition, modification, replacement or extension shall be:

- A. prepared by a Professional Engineer,
- B. designed only to transmit water and not to treat water,
- C. Satisfy the design criteria set out in the Ministry of the Environment publication “Watermain Design Criteria for Future Alterations Authorized under a Drinking Water Works Permit – March 2009”, as amended from time to time; and
- D. be consistent with or otherwise address, the design objectives contained within the Ministry of the Environment publication “Design Guidelines for Drinking Water Systems, 2008”, as amended from time to time.
- E. all chemicals and materials used or that may come into contact with the water within the system shall meet all applicable standards set by both the AWWA and the ANSI safety criteria standards, NSF/60 and NSF/61 (*this does not apply to water pipe and pipe fittings meeting AWWA specifications made from ductile iron, cast iron, PVC and HDPE. Nor to articles made from glass, HDPE or Teflon.*)

For greater certainty, Sections 2, 3 & 4 of the Drinking Water Works Permit shall be reviewed when considering any additions, modifications or rehabilitation of the distribution system or any of the components of the system.



## UTILITY LOCATING POLICY

We are required to have locates completed by the various utilities we may encounter, when we excavate to expand, repair and or modify our water infrastructure. The Public Works Manager or the Works Foreman are responsible for having the required locates completed. They will complete the Utility Locate Request Form 1 and submit to Ontario One Call by email or by phoning. Ontario One Call - 1-800-400-8876 during regular office hours to schedule locates for service in three days. Call 1-800-400-2255 to request emergency service for immediate locates. **Contractor ID = 03727**

A copy of the locate documents shall be kept with the excavator working onsite, until the work is completed. After which they should be filed with the Operations Foreman. A copy of the locate documents shall be attached to the Water Distribution System Service & Repair Form, which is filed in the Yearly Log Binder, in the QMS office.

Contractors and other Utilities doing work in Laurentian Valley will also be contacting Ontario One Call for underground locates. Ontario One Call emails these requests to the Public Works Manager and the Operations Foreman. They will print these requests and forward to the Operator assigned to complete the locate, along with a Locate Request Form 2

The Operator assigned to complete the locate will review the documents provided, and using the System Maps, in the Operations Foreman's office, determine if there are water mains, hydrants or service connections in the area designated as the Location of Proposed Work. If there is no water infrastructure shown in the area of the proposed works, the forms provided are to be completed and given to the Operation Foreman or in his absence the Public Works Manager, to be forwarded to the contractor or Ontario One Call.

If there is water infrastructure in the area of the proposed works, the Operator is to locate the area on the Detail Maps and either photocopy the details or transfer the information to the Locate Request Form Provided. *(This step should give the operator enough information to locate the infrastructure in the field.)* Out in the field, the operator is to actually locate and mark the infrastructure in and adjacent to the area of the proposed works. This can be accomplished with the magnetic locator, handheld GPS or the radio detection tool, whichever the operator requires to accomplish the task for the particular locate. Marking is to be completed using blue spray paint to mark the location of the water main, service connection, curb stops etc. **(Just on Municipal Property)** When completed, the forms provided are to be completed and given to the Operations Foreman or in his absence the Public Works Manager, to be forwarded to the contractor and/or Ontario One Call.

## WATER METERS

Laurentian Valley Water Works owns 6 large water meters which measure the water we purchase from the City of Pembroke, and a seventh that measures the water that travels through our west-end main to the Town of Petawawa.

- ME1 Located on Elgin Street, near Boundary Road, 10 inch and a 2" Neptune trident meter
- ME2 Located on Willow Drive, near Boundary Road, 4 inch Neptune compound meter
- ME3 Located on Karen Street, near Boundary Road, 4 inch Neptune compound meter
- ME4 Located on Bruham Avenue, near Boundary Road, 10 inch Neptune meter, & 2" Trident 10
- ME10 Located on Pembroke Street East at City limits, near Angus Campbell Drive, 8 inch Schlumberger meter,
- ME20 Located on Pembroke Street West at City limits, 6 inch Neptune compound meter,
- ME22 Located on Pembroke Street West at MacGregors Hill, 10 inch Neptune meter and a 2" Neptune Trident 10

There are also 38 commercial water meters that are read, the same day as the large water meters.

The water meters are read quarterly, timing is up to the reader, but needs to be as close as possible to the 1<sup>st</sup> of each quarter - because the Municipal software uses the 1<sup>st</sup> day of each quarter for the billing. *(Can be a problem to schedule with stat holidays on January 1, July 1 and end of quarters occasionally ending on weekends)*

Prior to reading the meters the spreadsheets are prepared to enter the information, the last reading is also indicated, this lets the reader know that the meter is working when he is on-site, and any problems can usually be determined quickly with the property owner.

Most of the water meters have remote read buttons, and we currently use a Sensus AR4090 remote reader. It needs to be plugged in to charge for 24hrs before using. The operators have all been around on the meter reading trip at least once and should be somewhat familiar with the location of the buttons and meters. They have also been cautioned about reading the number twice - double checking the number they write down before leaving the property, avoids having to go back if a discrepancy is found later.

At the office, the numbers are inputted into the spreadsheet, I use QuatroPro, but it can be converted to Excel for those who feel more comfortable with that style. You then check for obvious discrepancies - large increases or decreases in consumption. If required, you contact the customer to find out if there is logical reason for the differences, usually was a break or leak at the facility, but could be toilets leaking that are undetected.

The spreadsheet is then passed on to the Accounts Receivable Clerk, they use the Municipal software to calculate and distribute the invoices.

The large (City) meter readings are then scanned and emailed to the City of Pembroke, currently Robin McGregor, at [rmcgregor@pembroke.ca](mailto:rmcgregor@pembroke.ca)

When the invoices come from the City, they are checked/verified, and coded for our Accounts Payable Clerk, and a copy of the West End Invoice is given to the Accounts Receivable Clerk to Invoice the Town of Petawawa.

There are paper files kept in the WQA/QMS Rep's office of the current year on the desk, and past years in the filing cabinet. The electronic files are kept in J:\E - ENVIRONMENTAL SERVICES\E08 - Water Works\Water Meters

With regards to Water Meter Maintenance, they are calibrated every second year, and the remote readers require constant monitoring and repairs when required.

Policy Manual  
Created May 2003  
Claus Trost, WQA

## CONTINUAL IMPROVEMENT REGISTER

Revision Date: January 2009 (Regulation 170 as amended by 248/06 & 399/07)  
February 2009 (DWQMS required sections added; Critical Suppliers Contact Info, Inventory list)  
February 2009 (added SOP's for Service Connection breaks or leaks, Cross Connections, Service Interruption (loss of City supply) also updated flushing sequence for new serviced areas & added hydrants)  
May 2009 - amended & corrected Flushing Sequence  
February 2011 (updated stats, infrastructure, contacts, phone numbers,)  
June 2011 - amended SOP-14 to include documentation requirements of the new Drinking Water Works Permit  
August 2011 - amended to include Drinking Water License information and Drinking Water Works Permit information; #'s and description,  
August 2011 - Morris retired, amended contacts and other required information, to either David or Mark  
August 2011 - amended for CGSB CAR's; System description and the fact that the City of Pembroke samples & tests the water we purchase.  
June 2012 - amended, to add in Mark Behm and Lorne Rathwell, to replace M Schneider and D Saunders.  
Jan 2013 - amended, Valley Spring building closed, alternate sampling location.  
March 2014 - amended, added where to store the documentation of the third party calibration.  
January 2015 - reviewed and updated contacts and phone numbers, change of call service provider, CAR JO5857-2, added text to Measurement & Calibration section, CAR JO5857-1, added footer, MOE change from AWWA document to their new document,  
March 2015 - SOP 14 added a bullet regards NSF/61, developed a Utility Locating Policy SOP 15,  
April 2015 - edited typos, and minor errors found during the Annual Operators Training Meeting  
June 2015 - amended Inventory, to include documentation required.  
December 2015 - amended THM sampling location, expanded/detailed record keeping of the analysis reports, amended SOP #8 to conform to the newly released MOR document Watermain Disinfection Procedure, will now be an SOP 8, 8A & 8B  
April 2016 - amended Utility Locate SOP 15  
August 2016 - amended the THM SOP, to conform to the new reporting requirements of MOE.  
November 2016 - amended the THM SOP again, only report at end of quarter, and start a flushing regimen.

- added a request to take photos of watermain breaks when they are exposed. Will assist in proving classification and be useful for future training.
- January 2018 - added a SOP for HAA's, edited, adjusted Table of Contents, - reviewed & edited the contact lists
- April 26, 2018 Added Approval signature line, documentation that the Public Works Manager approved the changes & updates becomes part of the official document.
- November 2018 edited text on Page 11, sampling schedule, to clarify that the second set of samples must be more than 48 hours after the last of the first set of weekly samples was taken.  
Also noted the change in HAA sampling location following the MOE guidance document received on/or about May 9<sup>th</sup>, 2018
- April 2019 Added page for water meters, to list all the documents, details, procedures and contacts to make it easier for someone to follow me!
- Jan 2020 Reviewed phone numbers & contacts, updated, added County Road Occupancy Permit requirements

\_\_\_\_February 5, 2020\_\_\_\_  
Date

\_\_\_\_*original signed by M Behm*\_\_\_\_  
Public Works Manager

NOTE: This document is not the final authority. The Ministry of Environment and the Medical Officer of Health have the final say in all decisions made after they are advised of the problem. This document is to be reviewed and updated yearly or sooner as regulations are amended or personnel changes are known. Please advise the author (Claus Trost, QMS Rep) when any errors or omissions are detected.