Village of PEMBERTON

REPORT TO COUNCIL

Date: July 26th, 2016

To: Nikki Gilmore, Chief Administrative Officer

From: Tim Harris, Manager of Operations and Development Services

Subject: 2015 Drinking Water System Annual Report

PURPOSE

To present to Council the Village of Pemberton 2015 Drinking Water System Annual Report.

BACKGROUND

The Drinking Water System Annual Report is required by the Provincial *Action Plan for Safe Drinking Water in British Columbia (2002)* and is filed in the first half of the subsequent year with the Vancouver Coastal Health Authority.

DISCUSSION & COMMENTS

For a more thorough comparison the previous six (6) years (2009 – 2014) reports are available on the Village Website http://www.pemberton.ca/residents/health-and-environment/pemberton-water/#reports.

COMMUNICATIONS

The Village continues to educate residents on the importance of conserving water through the notices and information on the Village website, Doorstep Digest, ENEWS and Roundabout Sign. As well, new water restriction signage has been erected at the entrance of the Village and in neighbourhoods around the Village. The signage establishes the four water restriction levels and includes a marker that can be moved as water restrictions are either upgraded or downgraded.

New to the Drinking Water System Annual Report for 2015 is a section on water flushing as recommended by Vancouver Coastal Health (VCH). Section 2.2 states the following:

> Vancouver Coastal Health has recently revised its metals at the tap "Flush" message. They have asked that all water purveyors include the following message in their annual report:
>
> *Anytime the water in a particular faucet has not been used for six hours or longer, "flush" your cold-water pipes by running the water until cold and you notice a change in temperature. (This could take as little as five to thirty*

> *seconds if there has been recent heavy water use such as showering or toilet flushing. Otherwise, it could take two minutes or longer.)*
> *The more time water has been sitting in your home's pipes, the more lead it may contain.*
>
> *Use only water from the cold-tap for drinking, cooking, and especially making baby formula. Hot water is likely to contain higher levels of lead.*
>
> *The two actions recommended above are very important to the health of your family. They will probably be effective in reducing lead levels because most of the lead in household water usually comes from the plumbing in your house, not from the local water supply.*
> *Conserving water is still important. Rather than just running the water down the drain you could use the water for things such as watering your plants* (Zubel, 2014).

If residents have any questions they are encouraged to contact the Vancouver Health's Drinking Water Officer at 604-892-2293.

LEGAL CONSIDERATIONS

There are no legal, legislative or regulatory considerations at this time. Receipt and posting of the 2015 Annual Water Report meetings with the requirements as set out in the Action Plan for Save Drinking Water in British Columbia and those of Vancouver Health Authority.

IMPACT ON BUDGET & STAFFING

The preparation of the 2015 Drinking Water System Annual Report is an annual task of the Department of Operations and Development Services and has been accommodated in the annual departmental workplan.

INTERDEPARTMENTAL IMPACT & APPROVAL

There are no interdepartmental impacts at this time.

IMPACT ON THE REGION OR NEIGHBOURING JURISDICTIONS

This report has no impact on other jurisdictions.

ALTERNATIVE OPTIONS

There are no alternative options for consideration.

POTENTIAL GOVERNANCE CONSIDERATIONS

Providing good quality water and meeting all National and Provincial drinking water regulations and standards meets with Strategic Priority No. 3 – Excellence in Service:

> *The Village is committed to delivering the highest quality of municipal services within the scope of our resources*

RECOMMENDATIONS

THAT Council receives the 2015 Drinking Water System Annual Report for information.

Attachments:

Appendix A: 2015 Drinking Water System Annual Report.

[redacted]

Tim Harris
Manager of Operations and Development services

CHIEF ADMINISTRATIVE OFFICER REVIEW

[redacted]

Nikki Gilmore, Chief Administrative Officer

Village of PEMBERTON

2015 Annual Water Quality Report

Village of Pemberton
Public Works Department
Prepared by: Tim Harris, Manager of Operations & Development Services

Foreword

Under the *British Columbia Drinking Water Protection Act* and the *British Columbia Drinking Water Protection Regulation* (BCDWPA & BCDWPR) the Village of Pemberton is required to conduct water quality monitoring within the Village's water distribution system and to publish the results in an Annual Report. This Report fulfills the requirements as noted above by presenting a summary and discussion of all water quality sampling results for the year 2015. An overview of projects and events as they relate to drinking water in the Village of Pemberton is also provided in this Report.

Please visit the following web sites for further information:

Health Canada
http://www.hc-sc.gc.ca/ewh-semt/water-eau/drink-potab/guide/index-eng.php

Ministry of Health
http://www2.gov.bc.ca/gov/content/environment/air-land-water/water/water-quality/drinking-water-quality

Health Link BC File #56 - Persons with compromised or Weakened Immune Systems
http://www.healthlinkbc.ca/healthfiles/hfile56.stm

Vancouver Coastal Health
Drinking Water Reports site: http://www.healthspace.ca/vch

Village of Pemberton
http://www.pemberton.ca

USEPA
http://www.epa.gov/safewater/mcl.html

World Health Organization
http://www.who.int/water_sanitation_health/publications/2011/dwq_guidelines/en/index.html

Emergency Water Quality Contact Information

Manager of Operations & Development Services

Tim Harris
Phone: 604-894-6135
Cell: [redacted]
E-mail: tharris@pemberton.ca

Public Works Superintendent

Jeff Westlake
Phone: [redacted]

After-Hours Emergency

Phone: 1-855-215-4941

Acronyms

AO:	Aesthetic Objective
ASTTBC:	Applied Science Technicians and Technologists of British Columbia
BCDWPA:	*British Columbia Drinking Water Protection Act*
BCDWPR:	*British Columbia Drinking Water Protection Regulation*
DBP:	Disinfection By-Products
E.coli:	*Escherichia coli*
EOCP:	Environmental Operators Certification Program
GCDWQ:	*Guidelines for Canadian Drinking Water Quality*
HAA:	Haloacetic Acid
HPC:	Heterotrophic Plate Count
MAC:	Maximum Acceptable Concentration
Mg/l:	Milligrams per Liter
NTU:	Nephelometric Turbidity Units PPB: Parts Per Billion
PPM:	Parts Per Million
PRV:	Pressure Regulating Valve
PVC:	Polyvinyl Chloride
SCADA:	Supervisory Control and Data Acquisition
TC	Total Coliform
THM:	Trihalomethane
UDF:	Uni-directional Flushing
WQMRP:	Water Quality Monitoring and Reporting Plan
YTD:	Year-to-Date

Executive Summary

The Village of Pemberton supplies drinking water to residential and commercial customers within Village limits and two (2) out of boundary areas, Pemberton North Water System (PNWS) and sixteen (16) out of boundary properties within the Squamish Lillooet Regional District (SLRD) Electoral Area C. The Village of Pemberton is dedicated to providing high quality, aesthetically pleasing drinking water at a reasonable cost.

The Village collects water samples from the distribution system on a routine basis. This Report includes a summary and discussion of the results of all sampling conducted on the Village 's water distribution system during 2015 as well as a discussion of projects and events affecting water quality within the Village of Pemberton. A complete record of 2015 water quality sampling results can be found in the appendices of this report.

As per the *Water Quality Monitoring and Reporting Plan for Vancouver Coastal Health,* Pemberton collects water samples from the distribution system for Lab analyzes as follows:

Chemical and Physical Parameters

- Metals
- Vinyl chloride
- Temperature
- Free chlorine
- Minerals
- Disinfection by-products
- pH
- Total Coliforms

Bacterial Parameters

- *E.Coli*
- Heterotrophic Plate Count (HPC) (unless exceedance)

All sample results for *E.Coli and Total Coliform* were negative. The results comply with the potable water quality standard of the Drinking Water Protection Regulation (Schedule A) and Heterotrophic Plate Count results (HPC) met the guidelines. Sample results for chemical and physical parameters addressed in the *Guidelines for Canadian Drinking Water Quality* (*GCDWQ)* were well under their respective Maximum Acceptable Concentration (MAC) values.

As part of our commitment to continual improvement, reliable service and high water quality, the Village undertakes and facilitates s operational and capital projects as well as water quality sampling on an ongoing basis. In 2015 the Village completed:

- Routine inspections and maintenance of all water distribution facilities
- SCADA Upgrade (Supervisory Control and Data Acquisition)
- Chlorination Panel Upgrade
- Dead end and uni-directional water main flushing
- Construction and commissioning of the second reservoir
- Installation of a Pressure Reducing Valve (PRV) on the Benchlands subdivision
- Initiated a Water Treatment Assessment Project

1.0 Water Distribution System Data

1.1 System Infrastructure

The tables in this section provide a snapshot of the Village of Pemberton water distribution system. All of the components listed, with the exception of the private hydrants, are operated and maintained by the Village's Public Works Department.

Table #1: Length of Pipe in System

Total Length of all Pipes in Distribution System	7,000 m (approx.)

Table #2: Fire Hydrants

Fire Hydrants	Number
Village Hydrants	125 (approx.)
Private Hydrants	25
Total	150 (approx.)

Table #3: Critical Water System Components

Asset	Number
Pressure Reducing Valves	2
Pump Stations	0
Reservoirs	2
Chlorine Booster Stations and Chlorine Analyzer	1

In addition to the pipe, fire hydrants, and critical components, there are many other smaller components to Pemberton's water distribution system, including:

- Water meters
- Air valves
- End of line blow off valves
- Line valves
- Sampling stations

All of these components work in concert to help the Village deliver safe, reliable drinking water to Village residents and customers.

1.2 Public Response

In 2015 the Village's Public Works Department responded to four (4) water quality related concerns. The most typical customer concerns are related to taste, odor, chlorination and/or water pressure issues.

Current best management practices prescribed by Vancouver Coastal Health (VCH) and the *GCDWQ*, recommend maintaining a minimum **of 0.20mg/l free chlorine** in the water distribution system (Health Canada, 2010). The Village of Pemberton aims to maintain free chlorine residual concentrations between **0.20 mg/l and 1.2 mg/l**. If residents wish to remove chlorine from their water prior to drinking the best way to do so is with an activated carbon filter, such as a Brita, or by filling a jug of water and letting it stand uncovered overnight. A complete record of daily results for Flow and Chlorination is found in **Appendix 1**.

1.3 Staff Certification

The Village of Pemberton water distribution system is classified as a Level II system by the Environmental Operators Certification Program (EOCP). The Village's water system is monitored, operated, and maintained by qualified personnel who are certified by the EOCP and required to maintain certification in good standing. In addition to certification under the EOCP, Village of Pemberton staff have training and certification in Water Distribution, Hypo Chlorination, PRV Maintenance, Hydrant Maintenance, Multi-Utility, and Confined Space.

Table #4 contains a summary of staff qualifications.

Table #4: Operator Certification

Certification Level	# of Staff
EOCP Water Distribution Level I (Operator in Training)	1
EOCP Water Distribution Level II	2
Total Qualified Staff	**3**

2.0 2015 Event Summary

2.1 Planning for the Future

The Village of Pemberton is a growing community within the Sea to Sky Corridor, with a population of 2,446 residents (2015 BCStats). Pemberton's water system currently consists of four (4) pressure zones, two (2) pressure reducing stations, and includes over seven (7) km of water mains. Pemberton receives potable water from two (2) deep well sources with a third well (#1) on stand-by in the event of emergency. Water is pumped via a 250 mm diameter supply line to two (2) reservoirs that supply the water system through a gravity feed system.

The water supply and distribution infrastructure is a key focus of Pemberton's strategic infrastructure priorities and thus the need for Pemberton to have a comprehensive Water Utility Infrastructure Plan is imperative. The safe delivery of potable water to Village residents and customers is also a top priority. As such in 2015 the Village commissioned a Water Treatment Assessment. The Assessment report resulted in several recommendations, including the establishment of a conditioning system to address the low pH levels in the water, which will be implemented in 2016.

Further review of the level of services to existing and future populations by the water utility is planned, which will allow for sufficient monitoring and maintenance of the water utility assets. This will form part of a long-term financial plan with the eventual goal of having a financially sustainable utility.

2.2 "Flush" Message from the Vancouver Health Authority

Vancouver Coastal Health has recently revised its metals at the tap "Flush" message. They have asked that all water purveyors include the following message in their annual report:

> *Anytime the water in a particular faucet has not been used for six hours or longer, "flush" your cold-water pipes by running the water until cold and you notice a change in temperature. (This could take as little as five to thirty seconds if there has been recent heavy water use such as showering or toilet flushing. Otherwise, it could take two minutes or longer.)*
>
> *The more time water has been sitting in your home's pipes, the more lead it may contain.*

Use only water from the cold-tap for drinking, cooking, and especially making baby formula. Hot water is likely to contain higher levels of lead.

The two actions recommended above are very important to the health of your family. They will probably be effective in reducing lead levels because most of the lead in household water usually comes from the plumbing in your house, not from the local water supply.

Conserving water is still important. Rather than just running the water down the drainyou could use the water for things such as watering your plants (Zubel, 2014).

If residents have any questions they are encouraged to contact the Vancouver Coastal Health's Drinking Water Officer at 604-892-2293.

3.0 Water Main Flushing Program

The Village of Pemberton conducts uni-directional and dead end line flushing in order to maintain a high level of water quality in the distribution system. Regularly flushing water mains removes stagnant water and deposits from pipes. Spot flushing is also conducted on an "as required" basis due to complaints or poor water quality that could indicate elevated Heterotrophic Plate Counts (HPC) and/or elevated water temperature combined with depressed free chlorine residuals

4.0 Water Quality Sampling and Testing

As per the Water Quality Monitoring and Reporting Plan for Vancouver Coastal Health sampling and analysis for numerous water quality parameters are conducted on the Village of Pemberton distribution system on a regular basis. Sample schedules for various constituents are broken into sections based on the number of samples recommended by the GCDWQ and/or mandated by the BCDWPR and it is a term and condition of the Operating Permit that the minimum sampling frequency is twenty (20) samples/month.

Monitoring of drinking water in the Village's water distribution system is conducted for bacterial, chemical, and physical characteristics and continuous online monitoring of the water disinfection process.

In 2015 a total of 244 bacteriological samples were collected from the Village's distribution system and 167 bacteriological samples from Pemberton North Water Service.

Table #5 represents the locations and descriptions of the eleven (11) sampling stations where Public Works staff collect water quality samples on a weekly basis.

Table #5: Water Sampling Station Inventory

DISTRIBUTION Village of Pemberton	SOURCE WATER WELLS #2 AND #3
Oak St Village Office Health Centre Treatment Plant Pemberton Plateau Industrial Park (Mount Currie Water)	Well #1 (on Stand-By) Wells #2 & #3
Pemberton North Water Service	
Collins Road Pemberton Meadows Road Pemberton Farm Road (West) Urdal Road	

4.1 Chemical / Physical Quality

Water quality sampling for chemical and physical parameters including disinfection by-products and metals is carried out annually at all well sources and throughout the distribution system. A complete record of the 2015 Maxxam Analytics – Chemical/Physical Analysis can be found in **Appendix 2.**

4.1.1 Metals

Metals can enter the drinking water system from either the source wells or the distribution system itself. Historically the Village of Pemberton's drinking water has contained very little metal compounds. The Village of Pemberton monitors the wells and water distribution system for metals. Sampling is conducted annually as per the *WQMRP.*

A summary of relevant health based Maximum Acceptable Concentration (MAC) and Aesthetic Objective (AO) standards for metals in drinking water can be found in Table #6. This table summarizes only those parameters listed in the *GCDWQ* that are captured by the current version of the *WQMRP*. A complete record of the 2015 Maxxam Analytics – Metal Sampling Results can be found in **Appendix 2.**

Table #6: MAC and AO Metals Standards from the Guidelines for Canadian Drinking Water Quality

Parameter	MAC (mg/l)	AO (mg/l)	Year of Approval (Re-affirmation)
Aluminum		[0.1 / 0.2]	1998
Antimony	0.006		1997
Arsenic	0.010		2006
Barium	1.0		1990
Cadmium	0.005		1986 (2005)
Chromium	0.05		1986
Copper		≤1.0	1992
Iron		≤0.3	1978 (2005)
Lead	0.010		1992
Manganese		≤0.05	1987
Mercury	0.001		1986
Selenium	0.01		1992
Sodium		≤200	1992
Zinc		≤5.0	1979 (2005)

4.1.2 Disinfection By-Products

Disinfection By-Product (DBP) formation occurs when chlorine in drinking water reacts with

dissolved organic compounds. These reactions can produce two (2) main groups of DBP compounds, Trihalomethanes (THM) and Haloacetic Acid (HAA). Monitoring for DBP's is conducted on an annual basis as set out by Vancouver Coastal Health. The 2015 THM and HAA sampling results from the Village's water distribution system were well below the respective MAC values.

4.2 Bacteriological Quality

All bacterial samples collected from municipal distribution systems are analyzed for total coliform and *E.coli* bacteria. These samples are also analyzed for the presence of heterotrophic bacteria (HTP). HTP bacteria presence provides an indicator of microbial growth in the distribution system and is used as an early warning to predict where water quality concerns may arise and an indicator of possible contamination within the water system. The Village collects a minimum of eight (8) bacteriological samples per month. Further samples are collected by Public Works Water Operators on an as needed basis in response to water main breaks, operational adjustments, water quality complaints, or where cross-connections are suspected.

The quantity of bacterial samples collected from municipal water distribution systems is based on the population served. Under the *BCDWPR* the Village is required to collect a minimum of four (4) bacteriological samples from the water distribution system per month based on population (under 5,000).

A complete record of 2015 bacteriological water quality sampling results can be found in **Appendix 3**. Results are also posted by VCH on the Health Space website: Drinking Water Reports site: http://www.healthspace.ca/vch

Table #7: Water Quality Standards for Potable Water - Schedule A of the Drinking Water Protection Regulation

Parameter:	Standard:
Fecal coliform bacteria	No detectable fecal coliform bacteria per 100ml
Escherichia coli	No detectable Escherichia coli per 100
Total coliform bacteria	
(a) 1 sample in a 30 day period	No detectable total coliform bacteria per 100 ml
(b) more than 1 sample in a 30 day period	At least 90% of samples have no detectable total coliform bacteria per 100ml and no sample has more than 10 total coliform bacteria per

(Province of British Columbia, 2011)

Table #8: Frequency of Monitoring Samples for Prescribed Water Supply Systems *(Section 8)*

Population Served by the Prescribed Water Supply System:	Number of Samples Per Month:
less than 5,000	4
5,000 to 90,000	1 per 1,000 of population
more than 90,000	90 plus 1 per 10,000 of population in excess of

(Province of British Columbia, 2011)

4.3 Free Residual Chlorine

Water distributed by the Village contains a disinfectant called free chlorine. Maintaining an adequate disinfectant residual in a potable water distribution system is vital to preserving public health. Ensuring that there is disinfectant in the distribution system results in the following:

- Ensures that microorganisms hazardous to public health are inactivated
- Provides an indicator of distribution system upset
- Controls biofilm growth (USEPA, 2007)

A complete record of the 2015 Weekly Chlorine and pH levels can be found in **Appendix 4.**

5.0 Water Distribution System Projects

In the fall of 2015 the Village began a comprehensive Water Treatment Assessment of the water utility. The intent of this work was to review existing information and determine the suitability and challenges of the existing water source including assessment and identification of corrosion potential within the water system.

The next step will be to investigate a Watershed and Aquifer Protection Plan and develop a Cross Connection Control Program with an aim to see this implemented in 2018-19.

5.2 Emergency Response Plan

In the event of an emergency, the Village may enact its Water System Emergency Response Plan. The goals of this plan are as follows:

- Rapidly restore service after an emergency
- Ensure adequate water supply for fire protection
- Minimize loss of service to users
- Protecting the health of the water users: Provide emergency information to public ie. Water Notices
- Re-establish critical operations
- Communication plans with key stakeholders, i.e. Vancouver Coastal Health, and public facilities, of any interruptions in treatment, threats to the water supply, non-potable water results.
- Maintain current list emergency contacts
- Review and update the plan annually (a condition of the Operating Permit).

Conclusion

In 2016 the Public Works staff will continue to improve upon the day to day operations of the water utility and work closely with Vancouver Coastal Health to ensure safe and clean potable water for the Village's residents and consumers.

Every year the Village budgets for the study, maintenance, and replacement of critical components of the water distribution system and 2015 was no exception. The start of the Water Treatment Assessment and implementation of the recommendations coming out of that project as well as the upgrades to the SCADA system and chlorination panel and completion of the second reservoir are all pivotal to maintaining a high level of drinking water quality now and in the coming years.

Works Sited

AWWA. (2000). ANSI/AWWA C651-99 - AWWA Standard for Disinfecting Water Mains. Denver: American Water Works Association.

Health Canada. (2010). *Guidelines for Canadian Drinking Water Quality.* Ottawa: Federal- Provincial-Territorial Committee on Drinking Water of the Federal-Provincial-Territorial Committee on Health and the Environment.

Health Canada. (2009). *Guidelines for Canadian Drinking Water Quality: Guideline Technical Document - Chlorine.* Ottawa: Health Canada.

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Province of British Columbia. (2011). *Drinking Water Protection Regulation.* Victoria: Province of British Columbia.

Province of British Columbia. (2014). *Population Estimates*. Retrieved March 27, 2014, from BC Stats: http://www.bcstats.gov.bc.ca/statisticsbysubject/demography/populationestimates.aspx

USEPA. (2004). *Comprehensive Surface Water Treatment Rules Quick Reference Guide: Unflitered Systems.* Washington DC: US Environmental Protection Agency.

USEPA. (2002). *Effects of Water Age on Distribution System Water Quality.* Washington DC: US Environmental Protection Agency.

USEPA. (2007). *The Effectiveness of Disinfectant Residuals in The Distribution System.* Washington DC: US Environmental Protection Agency.

Daily Flow & Chlorination-2015												
	yesterday total Flow (MG/day)	Avg Flow (G/hr)	Avg Flow (G/min)	Current Pump Flow (gpm)	Hypo Flow (L/hr)	Cl Dose (mg/L)	24 hr Avg Residual (mg/L)	Cl Demand (mg/L)	Well #2 Static Level (m)	Well #3 Static Level (m)	Well #2 Dynamic Level (m)	Well #3 Dynamic Level (m)
Number of Samples	336	364	364	222	210.00	150	223	150	162	129	42.00	85
Minimum												
Maximum												
Average												
January 1, 2015	0.553	23042	384			#DIV/0!		#DIV/0!	well down	well down		
January 2, 2015	0.555	23125	385	781	1.22	0.71	0.25	0.46	well down	well down	11.74	
January 3, 2015		0	0			#DIV/0!		#DIV/0!	well down	well down		
January 4, 2015	0.540	22500	375			#DIV/0!		#DIV/0!	well down	well down	19.84	
January 5, 2015	0.552	23000	383			#DIV/0!		#DIV/0!	well down	well down		
January 6, 2015	0.541	22542	376	2		0.00	0.25	-0.25	well down	well down	19.37	
January 7, 2015	0.549	22875	381			#DIV/0!		#DIV/0!				
January 8, 2015	0.539	22458	374	773	1.21	0.71	0.25	0.46			11.13	
January 9, 2015	0.559	23292	388	773	1.22	0.72	0.27	0.45			11.02	
January 10, 2015	0.550	22917	382			#DIV/0!		#DIV/0!				
January 11, 2015	0.549	22875	381			#DIV/0!		#DIV/0!				
January 12, 2015	0.556	23167	386	776	1.22	0.71	0.25	0.46				11.41
January 13, 2015	0.551	22958	383	0	0.00	#DIV/0!	0.25	#DIV/0!		18.76		
January 14, 2015	0.554	23083	385	0	0.00	#DIV/0!	0.25	#DIV/0!		18.88		
January 15, 2015	0.562	23417	390	775	1.21	0.71	0.24	0.47				11.08
January 16, 2015	0.541	22542	376	777	1.21	0.71	0.25	0.46				11.11
January 17, 2015	0.553	23042	384			#DIV/0!		#DIV/0!				
January 18, 2015	0.546	22750	379			#DIV/0!		#DIV/0!				
January 19, 2015	0.534	22250	371	764	1.21	0.72	0.25	0.47				10.64
January 20, 2015	0.548	22833	381	765	1.20	0.71	0.25	0.46				10.61
January 21, 2015	0.557	23208	387			#DIV/0!		#DIV/0!				
January 22, 2015	0.536	22333	372	762	1.20	0.71	0.24	0.47				10.65
January 23, 2015	0.526	21917	365	762	1.20	0.71	0.21	0.50				10.75
January 24, 2015	0.540	22500	375			#DIV/0!		#DIV/0!				
January 25, 2015	0.560	23333	389			#DIV/0!		#DIV/0!				
January 26, 2015	0.568	23667	394	0	0.00	#DIV/0!	0.19	#DIV/0!		19.75		
January 27, 2015	0.536	22333	372	764	1.20	0.71	0.13	0.58				10.9
January 28, 2015	0.526	21917	365	762	1.20	0.71	0.18	0.53				10.67
January 29, 2015	0.535	22292	372		1.21	#DIV/0!	0.25	#DIV/0!				11
January 30, 2015	0.532	22167	369	766	1.20	0.71	0.26	0.45				10.78
January 31, 2015	0.533	22208	370			#DIV/0!		#DIV/0!				
February 1, 2015	0.541	22542	376			#DIV/0!		#DIV/0!				
February 2, 2015	0.544	22667	378	0	0.00	#DIV/0!	0.26	#DIV/0!		19.50		
February 3, 2015	0.533	22208	370	2	0.00	0.00	0.25	-0.25		19.15		
February 4, 2015	0.514	21417	357	778	1.22	0.71	0.26	0.45				11.28
February 5, 2015	0.528	22000	367	2	0.00	0.00	0.25	-0.25		19.93		
February 6, 2015	0.510	21250	354	761	1.12	0.67	0.25	0.42				10.64
February 7, 2015	0.537	22375	373			#DIV/0!		#DIV/0!				
February 8, 2015	0.527	21958	366			#DIV/0!		#DIV/0!				

February 9, 2015	0.519	21625	360			#DIV/0!		#DIV/0!			
February 10, 2015	0.508	21167	353	763	1.12	0.67	0.23	0.44			10.89
February 11, 2015	0.502	20917	349	1076	1.59	0.67	0.24	0.43		19.38	15.31
February 12, 2015	0.520	21667	361	763	1.13	0.67	0.22	0.45			17.05	10.73
February 13, 2015	0.511	21292	355	766	1.13	0.67	0.21	0.46			17.27	10.95
February 14, 2015	0.524	21833	364			#DIV/0!		#DIV/0!				
February 15, 2015	0.524	21833	364			#DIV/0!		#DIV/0!				
February 16, 2015	0.534	22250	371	0	0.00	#DIV/0!	0.20	#DIV/0!	18.13	20.32		
February 17, 2015	0.524	21833	364	2	0.00	0.00	0.19	-0.19	17.46	19.62		
February 18, 2015	0.511	21292	355	1072	1.58	0.67	0.19	0.48		19.14	15.31	
February 19, 2015	0.530	22083	368	1062	0.00	0.00	0.19	-0.19		18.67	14.69	
February 20, 2015	0.518	21583	360	0	0.00	#DIV/0!	0.19	#DIV/0!	17.80	19.98		
February 21, 2015	0.522	21750	363			#DIV/0!		#DIV/0!				
February 22, 2015	0.514	21417	357			#DIV/0!		#DIV/0!				
February 23, 2015	0.533	22208	370	762	1.13	0.67	0.18	0.49	16.76			10.6
February 24, 2015	0.515	21458	358	0	0.00	#DIV/0!	0.18	#DIV/0!	17.27	19.41		
February 25, 2015	0.527	21958	366	0	0.00	#DIV/0!	0.18	#DIV/0!	17.01	19.15		
February 26, 2015	0.519	21625	360	0	0.00	#DIV/0!	0.18	#DIV/0!	17.24	19.41		
February 27, 2015	0.515	21458	358	762	1.13	0.67	0.17	0.50	16.60			10.48
February 28, 2015	0.538	22417	374			#DIV/0!		#DIV/0!				
March 1, 2015	0.535	22292	372			#DIV/0!		#DIV/0!				
March 2, 2015		0	0			#DIV/0!		#DIV/0!				
March 3, 2015	0.546	22750	379	760	1.12	0.67	0.17	0.50	16.51			10.45
March 4, 2015	0.527	21958	366	0	0.00	#DIV/0!	0.17	#DIV/0!	16.49	18.67		
March 5, 2015	0.520	21667	361	1051	1.55	0.67	0.17	0.50		18.32	14.32	
March 6, 2015	0.516	21500	358	0	0.00	#DIV/0!	0.17	#DIV/0!	17.48	19.65		
March 7, 2015		0	0			#DIV/0!		#DIV/0!				
March 8, 2015		0	0			#DIV/0!		#DIV/0!				
March 9, 2015		0	0			#DIV/0!		#DIV/0!				
March 10, 2015	0.568	23667	394	758	1.12	0.67	0.28	0.39	16.28			10.25
March 11, 2015	0.555	23125	385	2	0.00	0.00	0.29	-0.29	17.18	19.35		
March 12, 2015	0.529	22042	367	762	1.13	0.67	0.31	0.36	16.55			10.54
March 13, 2015	0.518	21583	360	0	0.00	#DIV/0!	0.31	#DIV/0!	17.23	19.41		
March 14, 2015	0.549	22875	381			#DIV/0!		#DIV/0!				
March 15, 2015	0.560	23333	389			#DIV/0!		#DIV/0!				
March 16, 2015	0.556	23167	386	774	1.14	0.67	0.30	0.37	16.94			10.86
March 17, 2015	0.553	23042	384	764	1.12	0.66	0.30	0.36	16.51			10.52
March 18, 2015	0.553	23042	384	764	1.05	0.62	0.30	0.32	16.36			10.38
March 19, 2015	0.544	22667	378	759	1.05	0.63	0.29	0.34	16.28			10.33
March 20, 2015	0.582	24250	404	762	1.06	0.63	0.29	0.34	16.50			10.56
March 21, 2015	0.577	24042	401			#DIV/0!		#DIV/0!				
March 22, 2015	0.558	23250	388			#DIV/0!		#DIV/0!				
March 23, 2015	0.561	23375	390	0	0.00	#DIV/0!	0.29	#DIV/0!	17.34	19.52		
March 24, 2015	0.549	22875	381	762	1.06	0.63	0.30	0.33	16.37			10.43
March 25, 2015	0.546	22750	379	764	1.06	0.63	0.31	0.32	16.46			10.54
March 26, 2015	0.554	23083	385	763	1.05	0.62	0.30	0.32	16.48			10.56
March 27, 2015	0.546	22750	379	2	0.00	0.00	0.29	-0.29	17.40	19.70		
March 28, 2015	0.544	22667	378			#DIV/0!		#DIV/0!				

March 29, 2015	0.533	22208	370			#DIV/0!		#DIV/0!				
March 30, 2015	0.531	22125	369	770	1.46	0.86	0.20	0.66	14.82	18.72		
March 31, 2015	0.519	21625	360	0	0.00	#DIV/0!	0.08	#DIV/0!	17.81	20.01		
April 1, 2015	0.514	21417	357	0	0.00	#DIV/0!	0.26	#DIV/0!	17.84	20.03		
April 2, 2015	0.520	21667	361	0	0.00	#DIV/0!	0.27	#DIV/0!	17.40	19.55		
April 3, 2015	0.521	21708	362			#DIV/0!		#DIV/0!				
April 4, 2015	0.536	22333	372			#DIV/0!		#DIV/0!				
April 5, 2015	0.534	22250	371			#DIV/0!		#DIV/0!				
April 6, 2015	0.554	23083	385			#DIV/0!		#DIV/0!				
April 7, 2015	0.559	23292	388	0	0.00	#DIV/0!	0.29	#DIV/0!	17.28	19.45		
April 8, 2015	0.537	22375	373	1034	1.44	0.63	0.29	0.34		18.40	14.31	
April 9, 2015	0.520	21667	361	769	1.06	0.63	0.29	0.34	16.66			10.76
April 10, 2015	0.527	21958	366	764	1.05	0.62	0.28	0.34	16.31			10.45
April 11, 2015	0.529	22042	367			#DIV/0!		#DIV/0!				
April 12, 2015	0.521	21708	362			#DIV/0!		#DIV/0!				
April 13, 2015	0.548	22833	381	0	0.00	#DIV/0!	0.28	#DIV/0!	17.10	19.27		
April 14, 2015	0.547	22792	380	0	0.00	#DIV/0!	0.30	#DIV/0!	16.58	18.78		
April 15, 2015	0.502	20917	349	0	0.00	#DIV/0!	0.29	#DIV/0!	17.40	19.57		
April 16, 2015	0.529	22042	367	1044	1.44	0.63	0.31	0.32	14.90	18.98		
April 17, 2015	0.529	22042	367	0	0.00	#DIV/0!	0.29	#DIV/0!	16.99	19.14		
April 18, 2015	0.547	22792	380			#DIV/0!		#DIV/0!				
April 19, 2015	0.541	22542	376			#DIV/0!		#DIV/0!				
April 20, 2015	0.571	23792	397	1048	1.45	0.63	0.29	0.34		19.16	15.14	
April 21, 2015	0.560	23333	389	2	0.00	0.00	0.30	-0.30	17.03	19.19		
April 22, 2015	0.562	23417	390	796	1.08	0.62	0.28	0.34	17.19			11.23
April 23, 2015	0.530	22083	368	2	0.00	0.00	0.28	-0.28	17.14	19.31		
April 24, 2015	0.540	22500	375	2	0.00	0.00	0.29	-0.29	17.28	19.45		
April 25, 2015	0.538	22417	374			#DIV/0!		#DIV/0!				
April 26, 2015	0.542	22583	376			#DIV/0!		#DIV/0!				
April 27, 2015	0.557	23208	387	762	1.06	0.63	0.30	0.33	16.16			10.32
April 28, 2015	0.524	21833	364	0	0.00	#DIV/0!	0.30	#DIV/0!	17.37	19.55		
April 29, 2015	0.531	22125	369	0	0.00	#DIV/0!	0.29	#DIV/0!	16.89	19.03		
April 30, 2015	0.535	22292	372	770	1.06	0.62	0.29	0.33	16.24			10.45
May 1, 2015	0.538	22417	374	764	1.05	0.62	0.29	0.33	16.21			10.43
May 2, 2015	0.555	23125	385			#DIV/0!		#DIV/0!				
May 3, 2015	0.548	22833	381			#DIV/0!		#DIV/0!				
May 4, 2015		0	0			#DIV/0!		#DIV/0!				
May 5, 2015		0	0			#DIV/0!		#DIV/0!				
May 6, 2015		0	0			#DIV/0!		#DIV/0!				
May 7, 2015		0	0			#DIV/0!		#DIV/0!				
May 8, 2015	0.605	25208	420	2	0.00	0.00	0.30	-0.30	15.85	18.01		
May 9, 2015		0	0			#DIV/0!		#DIV/0!				
May 10, 2015		0	0			#DIV/0!		#DIV/0!				
May 11, 2015	0.860	35833	597	2	1.43	324.32	0.25	324.07		18.72	15.11	
May 12, 2015	0.675	28125	469	1021	1.41	0.63	0.29	0.34		18.15	13.98	
May 13, 2015	0.700	29167	486	764	1.05	0.62	0.28	0.34	15.78			9.97
May 14, 2015	0.733	30542	509	759	1.06	0.63	0.30	0.33	16.05			10.3
May 15, 2015	0.645	26875	448	0		#DIV/0!	0.31	#DIV/0!	17.05	19.22		

May 16, 2015	0.645	26875	448			#DIV/0!		#DIV/0!				
May 17, 2015	0.635	26458	441			#DIV/0!		#DIV/0!				
May 18, 2015	0.645	26875	448			#DIV/0!		#DIV/0!				
May 19, 2015	0.681	28375	473	773	1.07	0.63	0.30	0.33	16.41			10.63
May 20, 2015	0.697	29042	484	769	1.06	0.63	0.31	0.32	16.02			10.25
May 21, 2015	0.684	28500	475	0	0.00	#DIV/0!	0.32	#DIV/0!	16.47	18.69		
May 22, 2015	0.820	34167	569	1004	1.39	0.63	0.28	0.35		17.27	13.11	
May 23, 2015	0.884	36833	614			#DIV/0!		#DIV/0!				
May 24, 2015	0.803	33458	558			#DIV/0!		#DIV/0!				
May 25, 2015	0.800	33333	556	755	1.05	0.63	0.32	0.31	15.11			9.43
May 26, 2015	0.773	32208	537	1004	1.39	0.63	0.33	0.30		17.32	13.19	
May 27, 2015	0.770	32083	535	1006	1.40	0.63	0.35	0.28		17.33	13.17	
May 28, 2015	1.030	42917	715			#DIV/0!		#DIV/0!				
May 29, 2015	1.050	43750	729	758	0.98	0.59	0.35	0.24	15.01			9.31
May 30, 2015		0	0			#DIV/0!		#DIV/0!				
May 31, 2015		0	0			#DIV/0!		#DIV/0!				
June 1, 2015	0.933	38875	648	755	0.98	0.59	0.29	0.30	15.01			9.33
June 2, 2015	0.881	36708	612	0	0.00	#DIV/0!	0.33	#DIV/0!	16.15	18.29		
June 3, 2015	0.769	32042	534	0	0.00	#DIV/0!	0.32	#DIV/0!	16.61	18.76		
June 4, 2015	0.814	33917	565	10	1.30	58.38	0.25	58.13		17.72	13.59	
June 5, 2015	0.914	38083	635	10	1.77	79.34	0.25	79.09		16.63	12.58	
June 6, 2015	1.200	50000	833			#DIV/0!		#DIV/0!				
June 7, 2015	1.000	41667	694			#DIV/0!		#DIV/0!				
June 8, 2015	1.020	42500	708	758	0.98	0.59	0.34	0.25	14.69			9
June 9, 2015	1.110	46250	771			#DIV/0!		#DIV/0!				
June 10, 2015	1.080	45000	750	996	1.29	0.59	0.28	0.31		16.31	12.24	
June 11, 2015	1.060	44167	736			#DIV/0!		#DIV/0!				
June 12, 2015	1.050	43750	729	753	0.98	0.59	0.25	0.34	14.60			8.99
June 13, 2015		0	0			#DIV/0!		#DIV/0!				
June 14, 2015		0	0			#DIV/0!		#DIV/0!				
June 15, 2015	0.968	40333	672	751	0.97	0.59	0.29	0.30	14.50			8.86
June 16, 2015	1.005	41875	698	1003	1.29	0.58	0.30	0.28		16.31	12.42	
June 17, 2015	1.010	42083	701	1003	1.29	0.58	0.28	0.30		16.28	12.37	
June 18, 2015	1.010	42083	701	752	0.97	0.59	0.29	0.30	14.37			8.72
June 19, 2015	1.000	41667	694	1003	1.29	0.58	0.24	0.34		16.29	12.40	
June 20, 2015	0.827	34458	574			#DIV/0!		#DIV/0!				
June 21, 2015	0.847	35292	588			#DIV/0!		#DIV/0!				
June 22, 2015	0.876	36500	608	754	0.97	0.58	0.28	0.30	14.36			8.69
June 23, 2015	0.993	41375	690			#DIV/0!		#DIV/0!				
June 24, 2015	1.021	42542	709	751	0.97	0.59	0.26	0.33	14.16			8.47
June 25, 2015	1.010	42083	701	746	0.96	0.58	0.26	0.32	14.12			8.46
June 26, 2015	0.942	39250	654	1001	1.29	0.58	0.28	0.30		16.11	12.25	
June 27, 2015	1.030	42917	715			#DIV/0!		#DIV/0!				
June 28, 2015	1.000	41667	694			#DIV/0!		#DIV/0!				
June 29, 2015	0.100	4167	69	750		0.00		0.00				
June 30, 2015	0.891	37125	619		0.96	#DIV/0!	0.23	#DIV/0!	14.21			8.47
July 1, 2015	0.855	35625	594			#DIV/0!		#DIV/0!				
July 2, 2015	1.000	41667	694	11	1.29	53.19	0.31	52.88		12.07	12.11	

July 3, 2015	1.040	43333	722	10	1.26	58.44	0.24	58.20		15.49	11.50	
July 4, 2015		0	0			#DIV/0!		#DIV/0!				
July 5, 2015		0	0			#DIV/0!		#DIV/0!				
July 6, 2015	1.018	42417	707	744	0.96	0.59	0.18	0.41	13.89			8.15
July 7, 2015	1.060	44167	736	2	0.00	0.00	0.20	-0.20	14.28	16.44		
July 8, 2015	0.878	36583	610	746	0.97	0.59	0.21	0.38	13.95			8.15
July 9, 2015	0.989	41208	687	744	1.03	0.63	0.55	0.08	13.85			8.07
July 10, 2015	0.946	39417	657	745	1.03	0.63	0.23	0.40	13.97			8.08
July 11, 2015	0.895	37292	622			#DIV/0!		#DIV/0!				
July 12, 2015	0.948	39500	658			#DIV/0!		#DIV/0!				
July 13, 2015	0.895	37292	622	746	1.10	0.67	0.28	0.39	14.34			8.94
July 14, 2015	0.833	34708	578	986	1.37	0.63	0.34	0.29		16.15	12.19	
July 15, 2015	0.834	34750	579			#DIV/0!	0.23	#DIV/0!				
July 16, 2015	0.959	39958	666	976	1.62	0.75	0.28	0.47		15.15	11.21	
July 17, 2015	0.951	39625	660	741	1.37	0.84	0.26	0.58	13.77			7.86
July 18, 2015	0.969	40375	673			#DIV/0!	0.28	#DIV/0!				
July 19, 2015	1.060	44167	736			#DIV/0!	0.28	#DIV/0!				
July 20, 2015	1.060	44167	736	740	1.23	0.75	0.30	0.45	13.50	17.19		7.6
July 21, 2015	0.986	41083	685	2	0.00	0.00	0.32	-0.32	15.10	17.14		
July 22, 2015	0.840	35000	583	2	1.16	263.09	0.30	262.79	15.06			7.77
July 23, 2015	0.859	35792	597	738		0.00	0.29	-0.29	13.68			
July 24, 2015	0.785	32708	545	2	0.00	0.00	0.29	-0.29	15.33	17.44		
July 25, 2015	0.682	28417	474			#DIV/0!		#DIV/0!				
July 26, 2015	0.771	32125	535			#DIV/0!		#DIV/0!				
July 27, 2015	0.700	29167	486	0	0.00	#DIV/0!	0.17	#DIV/0!	14.00	16.06		
July 28, 2015	0.628	26167	436	777	1.34	0.78	0.18	0.60	14.51			9.21
July 29, 2015	0.686	28583	476	991	1.73	0.79	0.21	0.58	15.32	15.47	11.68	
July 30, 2015	0.811	33792	563	744	1.30	0.79	0.25	0.54				8.12
July 31, 2015	0.815	33958	566	745	1.24	0.75	0.30	0.45	14.95			8.93
August 1, 2015	0.771	32125	535			#DIV/0!		#DIV/0!	14.40			
August 2, 2015	0.823	34292	572			#DIV/0!		#DIV/0!				
August 3, 2015	0.807	33625	560			#DIV/0!		#DIV/0!				
August 4, 2015	0.761	31708	528			#DIV/0!		#DIV/0!				
August 5, 2015	0.725	30208	503	990	1.69	0.77	0.26	0.51		16.08	12.20	
August 6, 2015	0.769	32042	534	0	0.00	#DIV/0!	0.20	#DIV/0!	15.05	17.11		
August 7, 2015	0.668	27833	464	743	1.29	0.79	0.23	0.56	14.12			8.17
August 8, 2015		0	0			#DIV/0!		#DIV/0!				
August 9, 2015		0	0			#DIV/0!		#DIV/0!				
August 10, 2015	0.678	28250	471	743	1.23	0.75	0.28	0.47	14.07			8.12
August 11, 2015		0	0			#DIV/0!		#DIV/0!				
August 12, 2015		0	0			#DIV/0!		#DIV/0!				
August 13, 2015		0	0	740		0.00	0.30	-0.30	13.92	15.81	17.35	
August 14, 2015		0	0	2		0.00	0.27	-0.27	15.29			
August 15, 2015		0	0			#DIV/0!		#DIV/0!				
August 16, 2015		0	0			#DIV/0!	0.24	#DIV/0!				
August 17, 2015	0.640	26667	444	2		0.00	0.27	-0.27	14.51	16.53		
August 18, 2015	0.653	27208	453			#DIV/0!	0.22	#DIV/0!	14.10	16.94		
August 19, 2015	0.674	28083	468	741	1.23	0.75	0.24	0.51	13.53			7.5

August 20, 2015	0.754	31417	524	738		0.00	0.22	-0.22	13.41			7.43
August 21, 2015	0.747	31125	519	0		#DIV/0!		#DIV/0!	14.40	16.44		
August 22, 2015	0.698	29083	485			#DIV/0!		#DIV/0!				
August 23, 2015	0.761	31708	528			#DIV/0!		#DIV/0!				
August 24, 2015	0.736	30667	511	0	0.00	#DIV/0!	0.23	#DIV/0!	14.49	16.51		
August 25, 2015	0.674	28083	468	2	0.00	0.00	0.21	-0.21	14.57	16.61		
August 26, 2015	0.660	27500	458	66	0.00	0.00	0.26	-0.26	13.46	15.41		
August 27, 2015	0.751	31292	522	0	0.00	#DIV/0!	0.25	#DIV/0!	14.29	16.28		
August 28, 2015	0.705	29375	490	0	0.00	#DIV/0!	0.24	#DIV/0!	14.53	16.58		
August 29, 2015	0.598	24917	415			#DIV/0!		#DIV/0!				
August 30, 2015	0.585	24375	406			#DIV/0!		#DIV/0!				
August 31, 2015	0.597	24875	415	987	1.69	0.78	0.20	0.58		16.14	12.30	
September 1, 2015	0.549	22875	381	0	0.00	#DIV/0!	0.19	#DIV/0!	15.88	17.93		
September 2, 2015	0.634	26417	440	0	0.00	#DIV/0!	0.18	#DIV/0!	14.69	16.79		
September 3, 2015	0.941	39208	653	749	1.31	0.79	0.18	0.61	14.70			8.61
September 4, 2015	0.519	21625	360	765	1.34	0.79	0.18	0.61	14.85			10.47
September 5, 2015	0.490	20417	340			#DIV/0!		#DIV/0!				
September 6, 2015	0.552	23000	383			#DIV/0!		#DIV/0!				
September 7, 2015	0.547	22792	380			#DIV/0!		#DIV/0!				
September 8, 2015	0.536	22333	372			#DIV/0!		#DIV/0!				
September 9, 2015	0.511	21292	355	0	0.00	#DIV/0!	0.22	#DIV/0!	15.76			
September 10, 2015	0.526	21917	365	0	0.00	#DIV/0!	0.23	#DIV/0!	14.46			
September 11, 2015	0.552	23000	383	773	1.35	0.79	0.26	0.53	15.42			10.74
September 12, 2015	0.531	22125	369			#DIV/0!		#DIV/0!				
September 13, 2015	0.567	23625	394			#DIV/0!		#DIV/0!				
September 14, 2015	0.552	23000	383	758	1.33	0.80	0.29	0.51	14.89			10.21
September 15, 2015	0.515	21458	358	754	1.32	0.79	0.22	0.57	14.42			9.77
September 16, 2015	0.512	21333	356	0	0.00	#DIV/0!	0.22	#DIV/0!	14.93	16.98		
September 17, 2015	0.549	22875	381	0	0.00	#DIV/0!	0.23	#DIV/0!	15.37	17.45		
September 18, 2015	0.526	21917	365	2	0.00	0.00	0.22	-0.22	15.49	17.54		
September 19, 2015	0.513	21375	356			#DIV/0!		#DIV/0!				
September 20, 2015	0.540	22500	375			#DIV/0!		#DIV/0!				
September 21, 2015	0.480	20000	333	995	1.74	0.79	0.20	0.59		17.27	13.39	
September 22, 2015	0.497	20708	345	0	0.00	#DIV/0!	0.20	#DIV/0!	16.68	18.79		
September 23, 2015	0.446	18583	310	765	1.34	0.79	0.20	0.59	15.46			10.65
September 24, 2015	0.469	19542	326	1002	1.76	0.80	0.25	0.55		17.79	13.85	
September 25, 2015	0.449	18708	312	0	0.00	#DIV/0!	0.22	#DIV/0!	16.63	18.74		
September 26, 2015	0.466	19417	324			#DIV/0!		#DIV/0!				
September 27, 2015	0.455	18958	316			#DIV/0!		#DIV/0!				
September 28, 2015	0.454	18917	315	774	1.35	0.79	0.25	0.54	16.25			11.29
September 29, 2015	0.429	17875	298	0	0.00	#DIV/0!	0.22	#DIV/0!	17.46	19.61		
September 30, 2015	0.414	17250	288	0	0.00	#DIV/0!	0.25	#DIV/0!	17.07	19.23		
October 1, 2015	0.418	17417	290	0	0.00	#DIV/0!	0.21	#DIV/0!	17.67	19.83		
October 2, 2015	0.414	17250	288	784	1.37	0.79	0.21	0.58	16.99			11.94
October 3, 2015	0.411	17125	285			#DIV/0!		#DIV/0!				
October 4, 2015	0.420	17500	292			#DIV/0!		#DIV/0!				
October 5, 2015	0.405	16875	281			#DIV/0!		#DIV/0!				
October 6, 2015	0.409	17042	284			#DIV/0!		#DIV/0!				

October 7, 2015	0.406	16917	282	0	0.00	#DIV/0!	0.24	#DIV/0!	17.85	20.02		
October 8, 2015	0.409	17042	284	770		0.00	0.27	-0.27				
October 9, 2015	0.409	17042	284		1.36	#DIV/0!		#DIV/0!	16.28			11.24
October 10, 2015	0.446	18583	310			#DIV/0!		#DIV/0!				
October 11, 2015	0.411	17125	285			#DIV/0!		#DIV/0!				
October 12, 2015	0.407	16958	283			#DIV/0!		#DIV/0!				
October 13, 2015	0.408	17000	283	0	0.00	#DIV/0!	0.24	#DIV/0!	17.80	19.97		
October 14, 2015	0.398	16583	276	0	0.00	#DIV/0!	0.25	#DIV/0!	17.66	19.80		
October 15, 2015	0.393	16375	273	782	1.37	0.79	0.22	0.57	17.14			11.95
October 16, 2015	0.388	16167	269	749	1.37	0.83	0.25	0.58	17.02			11.82
October 17, 2015	0.390	16250	271			#DIV/0!		#DIV/0!				
October 18, 2015	0.406	16917	282			#DIV/0!		#DIV/0!				
October 19, 2015	0.405	16875	281	0	0.00	#DIV/0!	0.23	#DIV/0!	17.33	19.48		
October 20, 2015	0.392	16333	272	0	0.00	#DIV/0!	0.24	#DIV/0!	17.40	19.57		
October 21, 2015	0.384	16000	267	0	0.00	#DIV/0!	0.23	#DIV/0!	17.50	19.65		
October 22, 2015	0.380	15833	264	0	0.00	#DIV/0!	0.26	#DIV/0!	17.23	19.38		
October 23, 2015	0.391	16292	272	774	1.36	0.80	0.26	0.54	16.92			11.72
October 24, 2015	0.381	15875	265			#DIV/0!		#DIV/0!				
October 25, 2015	0.366	15250	254			#DIV/0!		#DIV/0!				
October 26, 2015	0.382	15917	265	0	0.00	#DIV/0!	0.29	#DIV/0!	16.85	18.96		
October 27, 2015	0.401	16708	278	0	0.00	#DIV/0!	0.24	#DIV/0!	17.60	19.76		
October 28, 2015	0.395	16458	274	0	0.00	#DIV/0!	0.25	#DIV/0!	17.48	19.64		
October 29, 2015	0.377	15708	262	0	0.00	#DIV/0!	0.26	#DIV/0!	17.61	19.77		
October 30, 2015	0.391	16292	272	788	1.38	0.79	0.24	0.55	17.36			12.08
October 31, 2015	0.377	15708	262			#DIV/0!		#DIV/0!				
November 1, 2015	0.369	15375	256			#DIV/0!		#DIV/0!				
November 2, 2015		0	0			#DIV/0!		#DIV/0!				
November 3, 2015	0.362	15083	251	0	0.00	#DIV/0!	0.32	#DIV/0!	16.48	18.53		
November 4, 2015	0.372	15500	258	0	0.00	#DIV/0!	0.32	#DIV/0!	17.53	19.80		
November 5, 2015	0.392	16333	272	0	0.00	#DIV/0!	0.31	#DIV/0!	17.11	19.23		
November 6, 2015	0.386	16083	268	775	1.29	0.76	0.29	0.47	16.84			11.55
November 7, 2015	0.374	15583	260			#DIV/0!		#DIV/0!				
November 8, 2015	0.364	15167	253			#DIV/0!		#DIV/0!				
November 9, 2015	0.382	15917	265	0	0.00	#DIV/0!	0.29	#DIV/0!	17.22	19.32		
November 10, 2015	0.402	16750	279	0	0.00	#DIV/0!	0.27	#DIV/0!	17.53	19.66		
November 11, 2015	0.393	16375	273			#DIV/0!		#DIV/0!				
November 12, 2015	0.377	15708	262	0	0.00	#DIV/0!	0.27	#DIV/0!	17.93	20.10		
November 13, 2015	0.353	14708	245	1009	1.68	0.76	0.26	0.50		19.31	15.23	
November 14, 2015	0.365	15208	253			#DIV/0!		#DIV/0!				
November 15, 2015	0.393	16375	273			#DIV/0!		#DIV/0!				
November 16, 2015	0.395	16458	274	0	0.00	#DIV/0!	0.29	#DIV/0!		20.01		
November 17, 2015	0.387	16125	269	0	0.00	#DIV/0!	0.29	#DIV/0!		19.97		
November 18, 2015	0.385	16042	267	0	0.00	#DIV/0!	0.31	#DIV/0!		20.09		
November 19, 2015	0.378	15750	263	1001	1.66	0.75	0.35	0.40		19.16	15.08	
November 20, 2015	0.362	15083	251	1002	1.67	0.76	0.22	0.54		19.20	15.10	
November 21, 2015	0.367	15292	255			#DIV/0!		#DIV/0!				
November 22, 2015	0.399	16625	277			#DIV/0!		#DIV/0!				
November 23, 2015	0.407	16958	283	0	0.00	#DIV/0!	0.22	#DIV/0!	17.18	19.27		

November 24, 2015	0.398	16583	276	0	0.00	#DIV/0!	0.22	#DIV/0!	17.59	19.75		
November 25, 2015	0.383	15958	266	0	0.00	#DIV/0!	0.22	#DIV/0!	17.28	19.44		
November 26, 2015	0.399	16625	277	0	0.00	#DIV/0!	0.21	#DIV/0!	17.58	19.72		
November 27, 2015	0.391	16292	272	1016	1.78	0.79	0.21	0.58		19.90	15.89	
November 28, 2015	0.397	16542	276			#DIV/0!		#DIV/0!				
November 29, 2015	0.404	16833	281			#DIV/0!		#DIV/0!				
November 30, 2015	0.408	17000	283	0	0.00	#DIV/0!	0.21	#DIV/0!	17.63	19.80		
December 1, 2015	0.387	16125	269	0	0.00	#DIV/0!	0.20	#DIV/0!	17.33	19.48		
December 2, 2015	0.408	17000	283	777	1.37	0.80	0.20	0.60	17.01			11.74
December 3, 2015	0.406	16917	282	2	0.00	0.00	0.35	-0.35	17.96	20.13		
December 4, 2015	0.404	16833	281	772	1.29	0.76	0.34	0.42	16.61			11.36
December 5, 2015	0.389	16208	270			#DIV/0!		#DIV/0!				
December 6, 2015	0.426	17750	296			#DIV/0!		#DIV/0!				
December 7, 2015	0.424	17667	294		1.31	#DIV/0!		#DIV/0!				
December 8, 2015	0.416	17333	289	787	1.67	0.96		0.96	17.67			12.34
December 9, 2015	0.411	17125	285	1004	1.67	0.75		0.75			15.27	
December 10, 2015	0.404	16833	281	1006	0.00	0.00		0.00			15.44	
December 11, 2015	0.392	16333	272	2		0.00		0.00	18.10			
December 12, 2015	0.399	16625	277			#DIV/0!		#DIV/0!				
December 13, 2015	0.408	17000	283			#DIV/0!		#DIV/0!				
December 14, 2015	0.402	16750	279	2		0.00	0.30	-0.30	18.28	20.45		
December 15, 2015	0.388	16167	269	2		0.00	0.30	-0.30	17.64	19.92		
December 16, 2015	0.400	16667	278	780		0.00	0.31	-0.31	17.40			12.07
December 17, 2015	0.393	16375	273	2		0.00	0.32	-0.32	17.93	20.07		
December 18, 2015	0.410	17083	285	2		0.00	0.32	-0.32	17.72	19.89		
December 19, 2015		0	0			#DIV/0!		#DIV/0!				
December 20, 2015		0	0			#DIV/0!		#DIV/0!				
December 21, 2015	0.277	11542	192	0	0.00	#DIV/0!	0.35	#DIV/0!	17.62	19.76		
December 22, 2015	0.277	11542	192	2	0.00	0.00	0.35	-0.35	17.61	19.76		
December 23, 2015	0.270	11250	188	0	0.00	#DIV/0!	0.34	#DIV/0!	17.23	19.31		
December 24, 2015	0.422	17583	293	779	1.30	0.76	0.34	0.42	17.27			11.93
December 25, 2015	0.417	17375	290			#DIV/0!		#DIV/0!				
December 26, 2015	0.408	17000	283			#DIV/0!		#DIV/0!				
December 27, 2015	0.398	16583	276			#DIV/0!		#DIV/0!				
December 28, 2015	0.406	16917	282			#DIV/0!		#DIV/0!				
December 29, 2015	0.413	17208	287	992	1.55	0.71	0.31	0.40		18.66	14.60	
December 30, 2015	0.452	18833	314	775	1.22	0.71	0.31	0.40	16.58			11.33
December 31, 2015	0.428	17833	297	2	0.00	0.00	0.30	-0.30	17.53	19.67		

Village of Pemberton
Maxxam Job Number: B594214
Report Date: 2015/11/02

CSR VOC + VPH IN WATER (DRINKING WATER)

Maxxam ID				NL7035	NL7036	NL7037		NL7038		NL7039		
Sampling Date				2015/10/22 09:00	2015/10/22 08:35	2015/10/22 08:45		2015/10/22 08:15		2015/10/22 09:15		
COC Number				g108613	g108613	g108613		g108613		g108613		
	UNITS	**MAC**	**AO**	**WELL#1**	**WELL#2**	**WELL#3**	**RDL**	**INDUSTRIAL PARK**	**RDL**	**OAK STREET**	**RDL**	**QC Batch**
Volatiles												
VPH (VH6 to 10 - BTEX)	ug/L	-	-	<300	<300	<300	300	<300	300	<300	300	8086239
Chloromethane	ug/L	-	-	<1.0	<1.0	<1.0	1.0	<1.0	1.0	<1.0	1.0	8086511
Vinyl chloride	ug/L	**2**	-	<0.50	<0.50	<0.50	0.50	<0.50	0.50	<0.50	0.50	8086511
Chloroethane	ug/L	-	-	<1.0	<1.0	<1.0	1.0	<1.4 (1)	1.4	<1.0	1.0	8086511
Trichlorofluoromethane	ug/L	-	-	<4.0	<4.0	<4.0	4.0	<4.0	4.0	<4.0	4.0	8086511
1,1,2Trichloro-1,2,2Trifluoroethane	ug/L	-	-	<2.0	<2.0	<2.0	2.0	<2.0	2.0	<2.0	2.0	8086511
Dichlorodifluoromethane	ug/L	-	-	<2.0	<2.0	<2.0	2.0	<2.0	2.0	<2.0	2.0	8086511
1,1-dichloroethene	ug/L	**14**	-	<0.50	<0.50	<0.50	0.50	<0.50	0.50	<0.50	0.50	8086511
Dichloromethane	ug/L	**50**	-	<2.0	<2.0	<2.0	2.0	<2.0	2.0	<2.0	2.0	8086511
trans-1,2-dichloroethene	ug/L	-	-	<1.0	<1.0	<1.0	1.0	<1.0	1.0	<1.0	1.0	8086511
1,1-dichloroethane	ug/L	-	-	<0.50	<0.50	<0.50	0.50	<0.50	0.50	<0.50	0.50	8086511
cis-1,2-dichloroethene	ug/L	-	-	<1.0	<1.0	<1.0	1.0	<1.0	1.0	<1.0	1.0	8086511
Chloroform	ug/L	-	-	<1.0	<1.0	<1.0	1.0	<1.0	1.0	<1.0	1.0	8086511
1,1,1-trichloroethane	ug/L	-	-	<0.50	<0.50	<0.50	0.50	<0.50	0.50	<0.50	0.50	8086511
1,2-dichloroethane	ug/L	**5**	-	<0.50	<0.50	<0.50	0.50	<0.50	0.50	<0.50	0.50	8086511
Carbon tetrachloride	ug/L	**2**	-	<0.50	<0.50	<0.50	0.50	<0.50	0.50	<0.50	0.50	8086511
Benzene	ug/L	**5**	-	<0.40	<0.40	<0.40	0.40	<0.40	0.40	<0.40	0.40	8086511
Methyl-tert-butylether (MTBE)	ug/L	-	15	<4.0	<4.0	<4.0	4.0	<4.0	4.0	<4.0	4.0	8086511
1,2-dichloropropane	ug/L	-	-	<0.50	<0.50	<0.50	0.50	<0.50	0.50	<0.50	0.50	8086511
cis-1,3-dichloropropene	ug/L	-	-	<1.0	<1.0	<1.0	1.0	<1.0	1.0	<1.0	1.0	8086511
trans-1,3-dichloropropene	ug/L	-	-	<1.0	<1.0	<1.0	1.0	<1.0	1.0	<1.0	1.0	8086511
Bromomethane	ug/L	-	-	<1.0	<1.0	<1.0	1.0	<1.0	1.0	<1.0	1.0	8086511
1,1,2-trichloroethane	ug/L	-	-	<0.50	<0.50	<0.50	0.50	<0.50	0.50	<0.50	0.50	8086511
Trichloroethene	ug/L	**5**	-	<0.50	<0.50	<0.50	0.50	<0.50	0.50	<0.50	0.50	8086511
Chlorodibromomethane	ug/L	-	-	<1.0	<1.0	<1.0	1.0	<1.0	1.0	1.8	1.0	8086511
1,3-Butadiene	ug/L	-	-	<5.0	<5.0	<5.0	5.0	<5.0	5.0	<5.0	5.0	8086511
Tetrachloroethene	ug/L	**30**	-	<0.50	<0.50	<0.50	0.50	<0.50	0.50	<0.50	0.50	8086511
Bromodichloromethane	ug/L	**16**	-	<1.0	<1.0	<1.0	1.0	<1.0	1.0	<1.0 (1)	1.0	8086511
Toluene	ug/L	**60**	24	<0.40	<0.40	<0.40	0.40	<0.40	0.40	<0.40	0.40	8086511
Ethylbenzene	ug/L	**140**	1.6	<0.40	<0.40	<0.40	0.40	<0.40	0.40	<0.40	0.40	8086511
m & p-Xylene	ug/L	-	-	1.6	<0.40	<0.40	0.40	<0.40	0.40	<0.40	0.40	8086511
Bromoform	ug/L	-	-	<1.0	<1.0	<1.0	1.0	<1.0	1.0	<1.0	1.0	8086511
Styrene	ug/L	-	-	<0.50	<0.50	<0.50	0.50	<0.50	0.50	<0.50	0.50	8086511
o-Xylene	ug/L	-	-	1.2	<0.40	<0.40	0.40	<0.40	0.40	<0.40	0.40	8086511
Xylenes (Total)	ug/L	**90**	20	2.8	<0.40	<0.40	0.40	<0.40	0.40	<0.40	0.40	8086511
1,1,1,2-tetrachloroethane	ug/L	-	-	<0.50	<0.50	<0.50	0.50	<0.50	0.50	<0.50	0.50	8086511
1,1,2,2-tetrachloroethane	ug/L	-	-	<0.50	<0.50	<0.50	0.50	<0.50	0.50	<0.50	0.50	8086511
1,2-dichlorobenzene	ug/L	**200**	3	<0.50	<0.50	<0.50	0.50	<0.50	0.50	<0.50	0.50	8086511
1,3-dichlorobenzene	ug/L	-	-	<0.50	<0.50	<0.50	0.50	<0.50	0.50	<0.50	0.50	8086511
1,4-dichlorobenzene	ug/L	**5**	1	<0.50	<0.50	<0.50	0.50	<0.50	0.50	<0.50	0.50	8086511
Chlorobenzene	ug/L	**80**	30	<0.50	<0.50	<0.50	0.50	<0.50	0.50	<0.50	0.50	8086511
Dibromomethane	ug/L	-	-	<0.90	<0.90	<0.90	0.90	<0.90	0.90	<0.90	0.90	8086511
Bromobenzene	ug/L	-	-	<2.0	<2.0	<2.0	2.0	<2.0	2.0	<2.0	2.0	8086511
VH C6-C10	ug/L	-	-	<300	<300	<300	300	<300	300	<300	300	8086511
Surrogate Recovery (%)												
1,4-Difluorobenzene (sur.)	%	-	-	101	102	101		101		101		8086511
4-Bromofluorobenzene (sur.)	%	-	-	97	97	95		97		96		8086511
D4-1,2-Dichloroethane (sur.)	%	-	-	96	98	96		96		97		8086511

RDL = Reportable Detection Limit
(1) Detection limits raised due to matrix interference.

Results relate only to the items tested.

Success Through Science®

Your C.O.C. #: g108613

Attention:Jeff Westlake

VILLAGE OF PEMBERTON
Box 100
7400 Prospect St
Pemberton, BC
CANADA V0N 2L0

Report Date: 2015/11/02
Report #: R2069653
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B594214
Received: 2015/10/23, 09:35

Sample Matrix: DRINKING WATER
Samples Received: 5

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Alkalinity - Water	4	2015/10/26	2015/10/26	BBY6SOP-00026	SM 22 2320 B m
Chloride by Automated Colourimetry	4	N/A	2015/10/26	BBY6SOP-00011	SM 22 4500-Cl- G m
Colour (True) by Kone Lab	4	N/A	2015/10/24	BBY6SOP-00057	SM 22 2120 C m
Conductance - water	4	N/A	2015/10/26	BBY6SOP-00026	SM 22 2510 B m
Fluoride	4	N/A	2015/10/26	BBY6SOP-00048	SM 22 4500-F C m
Hardness Total (calculated as CaCO3)	4	N/A	2015/10/27	BBY7SOP-00002	EPA 6020a R1 m
Mercury (Total) by CVAF	4	2015/11/02	2015/11/02	BBY7SOP-00015	BCMOE BCLM Oct2013 m
Na, K, Ca, Mg, S by CRC ICPMS (total)	4	N/A	2015/10/27	BBY7SOP-00002	EPA 6020A R1 m
Elements by CRC ICPMS (total)	4	N/A	2015/10/27	BBY7SOP-00002	EPA 6020A R1 m
Nitrate + Nitrite (N)	4	N/A	2015/10/24	BBY6SOP-00010	SM 22 4500-NO3- I m
Nitrite (N) by CFA	4	N/A	2015/10/24	BBY6SOP-00010	SM 22 4500-NO3- I m
Nitrogen - Nitrate (as N)	4	N/A	2015/10/24	BBY6SOP-00010	SM 22 4500-NO3 I m
pH Water (1)	4	N/A	2015/10/26	BBY6SOP-00026	SM 22 4500-H+ B m
Sulphate by Automated Colourimetry	3	N/A	2015/10/26	BBY6SOP-00017	SM 22 4500-SO42- E m
Sulphate by Automated Colourimetry	1	N/A	2015/10/27	BBY6SOP-00017	SM 22 4500-SO42- E m
Total Dissolved Solids (Filt. Residue)	4	2015/10/27	2015/10/28	BBY6SOP-00033	SM 22 2540 C m
Turbidity	4	N/A	2015/10/24	BBY6SOP-00027	SM 22 2130 B m
VOCs, VH, F1, LH in Water by HS GC/MS	5	2015/10/23	2015/10/25	BBY8SOP-00009	EPA 8260c R3 m
Volatile HC-BTEX	5	N/A	2015/10/26	BBY WI-00033	Auto Calc

Reference Method suffix “m” indicates test methods incorporate validated modifications from specific reference methods to improve performance.

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

(1) The BC-MOE and APHA Standard Method require pH to be analysed within 15 minutes of sampling and therefore field analysis is required for compliance. All Laboratory pH analyses in this report are reported past the BC-MOE/APHA Standard Method holding time.

Maxxam Analytics International Corporation o/a Maxxam Analytics Burnaby: 4606 Canada Way V5G 1K5 Telephone(604) 734-7276 Fax(604) 731-2386

Maxxam Job #: B594214
Report Date: 2015/11/02

VILLAGE OF PEMBERTON

DRINKING WATER PACKAGE (DRINKING WATER)

Maxxam ID					NL7035	NL7036		NL7037		
Sampling Date					2015/10/22 09:00	2015/10/22 08:35		2015/10/22 08:45		
COC Number					g108613	g108613		g108613		
	UNITS	MAC	AO	OG	WELL#1	WELL#2	QC Batch	WELL#3	RDL	QC Batch
ANIONS										
Nitrite (N)	mg/L	**1**	-	-	0.0089	<0.0050	8087769	<0.0050	0.0050	8087769
Calculated Parameters										
Total Hardness (CaCO3)	mg/L	-	-	-	39.0	61.1	8085725	20.8	0.50	8085725
Nitrate (N)	mg/L	**10**	-	-	<0.020	0.081	8085990	0.069	0.020	8085990
Misc. Inorganics										
Fluoride (F)	mg/L	**1.5**	-	-	0.012	0.017	8089681	0.014	0.010	8089681
Alkalinity (Total as CaCO3)	mg/L	-	-	-	27.4	31.0	8089599	11.9	0.50	8089599
Alkalinity (PP as CaCO3)	mg/L	-	-	-	<0.50	<0.50	8089599	<0.50	0.50	8089599
Bicarbonate (HCO3)	mg/L	-	-	-	33.5	37.8	8089599	14.5	0.50	8089599
Carbonate (CO3)	mg/L	-	-	-	<0.50	<0.50	8089599	<0.50	0.50	8089599
Hydroxide (OH)	mg/L	-	-	-	<0.50	<0.50	8089599	<0.50	0.50	8089599
Anions										
Dissolved Sulphate (SO4)	mg/L	-	500	-	7.55	14.4	8089641	7.79	0.50	8091728
Dissolved Chloride (Cl)	mg/L	-	250	-	11	22	8089637	2.5	0.50	8089637
MISCELLANEOUS										
True Colour	Col. Unit	-	15	-	<5.0	<5.0	8087593	<5.0	5.0	8087593
Nutrients										
Nitrate plus Nitrite (N)	mg/L	-	-	-	<0.020	0.081	8087768	0.069	0.020	8087768
Physical Properties										
Conductivity	uS/cm	-	-	-	120	180	8089602	56.7	1.0	8089602
pH	pH	-	6.5:8.5	-	7.23	7.50	8089601	7.25	N/A	8089601
Physical Properties										
Total Dissolved Solids	mg/L	-	500	-	76	96	8090392	34	10	8090392
Turbidity	NTU	**see remark**	see remark	see remark	18.8	0.44	8087539	0.15	0.10	8087539
Elements										
Total Mercury (Hg)	ug/L	**1**	-	-	<0.010	<0.010	8098273	<0.010	0.010	8098273
Total Metals by ICPMS										
Total Aluminum (Al)	ug/L	-	-	100	7.4	8.5	8089442	11.4	3.0	8089442
Total Antimony (Sb)	ug/L	**6**	-	-	<0.50	<0.50	8089442	<0.50	0.50	8089442
Total Arsenic (As)	ug/L	**10**	-	-	<0.10	0.21	8089442	<0.10	0.10	8089442
Total Barium (Ba)	ug/L	**1000**	-	-	37.0	38.6	8089442	12.7	1.0	8089442
Total Boron (B)	ug/L	**5000**	-	-	<50	66	8089442	<50	50	8089442
Total Cadmium (Cd)	ug/L	**5**	-	-	<0.010	0.020	8089442	0.016	0.010	8089442
Total Chromium (Cr)	ug/L	**50**	-	-	<1.0	<1.0	8089442	<1.0	1.0	8089442
Total Cobalt (Co)	ug/L	-	-	-	0.51	0.60	8089442	<0.50	0.50	8089442
Total Copper (Cu)	ug/L	-	1000	-	0.63	1.19	8089442	2.61	0.20	8089442

RDL = Reportable Detection Limit
N/A = Not Applicable

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Maxxam Job #: B594214
Report Date: 2015/11/02

VILLAGE OF PEMBERTON

DRINKING WATER PACKAGE (DRINKING WATER)

Maxxam ID					NL7035	NL7036		NL7037		
Sampling Date					2015/10/22 09:00	2015/10/22 08:35		2015/10/22 08:45		
COC Number					g108613	g108613		g108613		
	UNITS	**MAC**	**AO**	**OG**	**WELL#1**	**WELL#2**	**QC Batch**	**WELL#3**	**RDL**	**QC Batch**
Total Iron (Fe)	ug/L	-	300	-	15600	314	8089442	8.3	5.0	8089442
Total Lead (Pb)	ug/L	**10**	-	-	<0.20	0.47	8089442	0.41	0.20	8089442
Total Manganese (Mn)	ug/L	-	50	-	313	172	8089442	3.6	1.0	8089442
Total Molybdenum (Mo)	ug/L	-	-	-	<1.0	1.2	8089442	<1.0	1.0	8089442
Total Nickel (Ni)	ug/L	-	-	-	<1.0	<1.0	8089442	<1.0	1.0	8089442
Total Selenium (Se)	ug/L	**50**	-	-	<0.10	<0.10	8089442	<0.10	0.10	8089442
Total Silver (Ag)	ug/L	-	-	-	<0.020	<0.020	8089442	<0.020	0.020	8089442
Total Uranium (U)	ug/L	**20**	-	-	<0.10	<0.10	8089442	<0.10	0.10	8089442
Total Vanadium (V)	ug/L	-	-	-	<5.0	<5.0	8089442	<5.0	5.0	8089442
Total Zinc (Zn)	ug/L	-	5000	-	6.6	11.6	8089442	<5.0	5.0	8089442
Total Calcium (Ca)	mg/L	-	-	-	14.5	22.4	8086350	7.70	0.050	8086350
Total Magnesium (Mg)	mg/L	-	-	-	0.700	1.26	8086350	0.372	0.050	8086350
Total Potassium (K)	mg/L	-	-	-	1.51	1.77	8086350	0.734	0.050	8086350
Total Sodium (Na)	mg/L	-	200	-	6.34	8.63	8086350	2.31	0.050	8086350
Total Sulphur (S)	mg/L	-	-	-	3.5	6.1	8086350	<3.0	3.0	8086350
RDL = Reportable Detection Limit										

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Maxxam Job #: B594214
Report Date: 2015/11/02

VILLAGE OF PEMBERTON

DRINKING WATER PACKAGE (DRINKING WATER)

Maxxam ID					NL7038		
Sampling Date					2015/10/22 08:15		
COC Number					g108613		
	UNITS	MAC	AO	OG	INDUSTRIAL PARK	RDL	QC Batch
ANIONS							
Nitrite (N)	mg/L	**1**	-	-	<0.0050	0.0050	8087769
Calculated Parameters							
Total Hardness (CaCO3)	mg/L	-	-	-	25.3	0.50	8085725
Nitrate (N)	mg/L	**10**	-	-	0.044	0.020	8085990
Misc. Inorganics							
Fluoride (F)	mg/L	**1.5**	-	-	0.023	0.010	8089681
Alkalinity (Total as CaCO3)	mg/L	-	-	-	21.2	0.50	8089599
Alkalinity (PP as CaCO3)	mg/L	-	-	-	<0.50	0.50	8089599
Bicarbonate (HCO3)	mg/L	-	-	-	25.8	0.50	8089599
Carbonate (CO3)	mg/L	-	-	-	<0.50	0.50	8089599
Hydroxide (OH)	mg/L	-	-	-	<0.50	0.50	8089599
Anions							
Dissolved Sulphate (SO4)	mg/L	-	500	-	6.19	0.50	8089641
Dissolved Chloride (Cl)	mg/L	-	250	-	0.74	0.50	8089637
MISCELLANEOUS							
True Colour	Col. Unit	-	15	-	<5.0	5.0	8087593
Nutrients							
Nitrate plus Nitrite (N)	mg/L	-	-	-	0.044	0.020	8087768
Physical Properties							
Conductivity	uS/cm	-	-	-	58.5	1.0	8089602
pH	pH	-	6.5:8.5	-	7.42	N/A	8089601
Physical Properties							
Total Dissolved Solids	mg/L	-	500	-	40	10	8090392
Turbidity	NTU	**see remark**	see remark	see remark	0.13	0.10	8087539
Elements							
Total Mercury (Hg)	ug/L	**1**	-	-	<0.010	0.010	8098273
Total Metals by ICPMS							
Total Aluminum (Al)	ug/L	-	-	100	4.2	3.0	8089442
Total Antimony (Sb)	ug/L	**6**	-	-	<0.50	0.50	8089442
Total Arsenic (As)	ug/L	**10**	-	-	0.14	0.10	8089442
Total Barium (Ba)	ug/L	**1000**	-	-	6.2	1.0	8089442
Total Boron (B)	ug/L	**5000**	-	-	<50	50	8089442
Total Cadmium (Cd)	ug/L	**5**	-	-	<0.010	0.010	8089442
Total Chromium (Cr)	ug/L	**50**	-	-	<1.0	1.0	8089442
Total Cobalt (Co)	ug/L	-	-	-	<0.50	0.50	8089442
Total Copper (Cu)	ug/L	-	1000	-	3.46	0.20	8089442

RDL = Reportable Detection Limit
N/A = Not Applicable

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Maxxam Job #: B594214
Report Date: 2015/11/02

VILLAGE OF PEMBERTON

DRINKING WATER PACKAGE (DRINKING WATER)

Maxxam ID					NL7038		
Sampling Date					2015/10/22 08:15		
COC Number					g108613		
	UNITS	MAC	AO	OG	INDUSTRIAL PARK	RDL	QC Batch
Total Iron (Fe)	ug/L	-	300	-	6.5	5.0	8089442
Total Lead (Pb)	ug/L	**10**	-	-	0.27	0.20	8089442
Total Manganese (Mn)	ug/L	-	50	-	<1.0	1.0	8089442
Total Molybdenum (Mo)	ug/L	-	-	-	<1.0	1.0	8089442
Total Nickel (Ni)	ug/L	-	-	-	<1.0	1.0	8089442
Total Selenium (Se)	ug/L	**50**	-	-	<0.10	0.10	8089442
Total Silver (Ag)	ug/L	-	-	-	<0.020	0.020	8089442
Total Uranium (U)	ug/L	**20**	-	-	<0.10	0.10	8089442
Total Vanadium (V)	ug/L	-	-	-	<5.0	5.0	8089442
Total Zinc (Zn)	ug/L	-	5000	-	<5.0	5.0	8089442
Total Calcium (Ca)	mg/L	-	-	-	8.97	0.050	8086350
Total Magnesium (Mg)	mg/L	-	-	-	0.712	0.050	8086350
Total Potassium (K)	mg/L	-	-	-	0.582	0.050	8086350
Total Sodium (Na)	mg/L	-	200	-	1.35	0.050	8086350
Total Sulphur (S)	mg/L	-	-	-	<3.0	3.0	8086350
RDL = Reportable Detection Limit							

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Maxxam Job #: B594214
Report Date: 2015/11/02

VILLAGE OF PEMBERTON

CSR VOC + VPH IN WATER (DRINKING WATER)

Maxxam ID				NL7035	NL7036	NL7037		NL7038		
Sampling Date				2015/10/22 09:00	2015/10/22 08:35	2015/10/22 08:45		2015/10/22 08:15		
COC Number				g108613	g108613	g108613		g108613		
	UNITS	MAC	AO	WELL#1	WELL#2	WELL#3	RDL	INDUSTRIAL PARK	RDL	QC Batch
Volatiles										
VPH (VH6 to 10 - BTEX)	ug/L	-	-	<300	<300	<300	300	<300	300	8086239
Chloromethane	ug/L	-	-	<1.0	<1.0	<1.0	1.0	<1.0	1.0	8086511
Vinyl chloride	ug/L	**2**	-	<0.50	<0.50	<0.50	0.50	<0.50	0.50	8086511
Chloroethane	ug/L	-	-	<1.0	<1.0	<1.0	1.0	<1.4 (1)	1.4	8086511
Trichlorofluoromethane	ug/L	-	-	<4.0	<4.0	<4.0	4.0	<4.0	4.0	8086511
1,1,2Trichloro-1,2,2Trifluoroethane	ug/L	-	-	<2.0	<2.0	<2.0	2.0	<2.0	2.0	8086511
Dichlorodifluoromethane	ug/L	-	-	<2.0	<2.0	<2.0	2.0	<2.0	2.0	8086511
1,1-dichloroethene	ug/L	**14**	-	<0.50	<0.50	<0.50	0.50	<0.50	0.50	8086511
Dichloromethane	ug/L	**50**	-	<2.0	<2.0	<2.0	2.0	<2.0	2.0	8086511
trans-1,2-dichloroethene	ug/L	-	-	<1.0	<1.0	<1.0	1.0	<1.0	1.0	8086511
1,1-dichloroethane	ug/L	-	-	<0.50	<0.50	<0.50	0.50	<0.50	0.50	8086511
cis-1,2-dichloroethene	ug/L	-	-	<1.0	<1.0	<1.0	1.0	<1.0	1.0	8086511
Chloroform	ug/L	-	-	<1.0	<1.0	<1.0	1.0	<1.0	1.0	8086511
1,1,1-trichloroethane	ug/L	-	-	<0.50	<0.50	<0.50	0.50	<0.50	0.50	8086511
1,2-dichloroethane	ug/L	**5**	-	<0.50	<0.50	<0.50	0.50	<0.50	0.50	8086511
Carbon tetrachloride	ug/L	**2**	-	<0.50	<0.50	<0.50	0.50	<0.50	0.50	8086511
Benzene	ug/L	**5**	-	<0.40	<0.40	<0.40	0.40	<0.40	0.40	8086511
Methyl-tert-butylether (MTBE)	ug/L	-	15	<4.0	<4.0	<4.0	4.0	<4.0	4.0	8086511
1,2-dichloropropane	ug/L	-	-	<0.50	<0.50	<0.50	0.50	<0.50	0.50	8086511
cis-1,3-dichloropropene	ug/L	-	-	<1.0	<1.0	<1.0	1.0	<1.0	1.0	8086511
trans-1,3-dichloropropene	ug/L	-	-	<1.0	<1.0	<1.0	1.0	<1.0	1.0	8086511
Bromomethane	ug/L	-	-	<1.0	<1.0	<1.0	1.0	<1.0	1.0	8086511
1,1,2-trichloroethane	ug/L	-	-	<0.50	<0.50	<0.50	0.50	<0.50	0.50	8086511
Trichloroethene	ug/L	**5**	-	<0.50	<0.50	<0.50	0.50	<0.50	0.50	8086511
Chlorodibromomethane	ug/L	-	-	<1.0	<1.0	<1.0	1.0	<1.0	1.0	8086511
1,3-Butadiene	ug/L	-	-	<5.0	<5.0	<5.0	5.0	<5.0	5.0	8086511
Tetrachloroethene	ug/L	**30**	-	<0.50	<0.50	<0.50	0.50	<0.50	0.50	8086511
Bromodichloromethane	ug/L	**16**	-	<1.0	<1.0	<1.0	1.0	<1.0	1.0	8086511
Toluene	ug/L	**60**	24	<0.40	<0.40	<0.40	0.40	<0.40	0.40	8086511
Ethylbenzene	ug/L	**140**	1.6	<0.40	<0.40	<0.40	0.40	<0.40	0.40	8086511
m & p-Xylene	ug/L	-	-	1.6	<0.40	<0.40	0.40	<0.40	0.40	8086511
Bromoform	ug/L	-	-	<1.0	<1.0	<1.0	1.0	<1.0	1.0	8086511
Styrene	ug/L	-	-	<0.50	<0.50	<0.50	0.50	<0.50	0.50	8086511
o-Xylene	ug/L	-	-	1.2	<0.40	<0.40	0.40	<0.40	0.40	8086511
Xylenes (Total)	ug/L	**90**	20	2.8	<0.40	<0.40	0.40	<0.40	0.40	8086511
1,1,1,2-tetrachloroethane	ug/L	-	-	<0.50	<0.50	<0.50	0.50	<0.50	0.50	8086511

RDL = Reportable Detection Limit
(1) Detection limits raised due to matrix interference.

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Maxxam Job #: B594214
Report Date: 2015/11/02

VILLAGE OF PEMBERTON

CSR VOC + VPH IN WATER (DRINKING WATER)

Maxxam ID				NL7035	NL7036	NL7037		NL7038		
Sampling Date				2015/10/22 09:00	2015/10/22 08:35	2015/10/22 08:45		2015/10/22 08:15		
COC Number				g108613	g108613	g108613		g108613		
	UNITS	MAC	AO	WELL#1	WELL#2	WELL#3	RDL	INDUSTRIAL PARK	RDL	QC Batch
1,1,2,2-tetrachloroethane	ug/L	-	-	<0.50	<0.50	<0.50	0.50	<0.50	0.50	8086511
1,2-dichlorobenzene	ug/L	**200**	3	<0.50	<0.50	<0.50	0.50	<0.50	0.50	8086511
1,3-dichlorobenzene	ug/L	-	-	<0.50	<0.50	<0.50	0.50	<0.50	0.50	8086511
1,4-dichlorobenzene	ug/L	**5**	1	<0.50	<0.50	<0.50	0.50	<0.50	0.50	8086511
Chlorobenzene	ug/L	**80**	30	<0.50	<0.50	<0.50	0.50	<0.50	0.50	8086511
Dibromomethane	ug/L	-	-	<0.90	<0.90	<0.90	0.90	<0.90	0.90	8086511
Bromobenzene	ug/L	-	-	<2.0	<2.0	<2.0	2.0	<2.0	2.0	8086511
VH C6-C10	ug/L	-	-	<300	<300	<300	300	<300	300	8086511
Surrogate Recovery (%)										
1,4-Difluorobenzene (sur.)	%	-	-	101	102	101		101		8086511
4-Bromofluorobenzene (sur.)	%	-	-	97	97	95		97		8086511
D4-1,2-Dichloroethane (sur.)	%	-	-	96	98	96		96		8086511
RDL = Reportable Detection Limit										

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CSR VOC + VPH IN WATER (DRINKING WATER)

Maxxam ID				NL7039		
Sampling Date				2015/10/22 09:15		
COC Number				g108613		
	UNITS	MAC	AO	OAK STREET	RDL	QC Batch
Volatiles						
VPH (VH6 to 10 - BTEX)	ug/L	-	-	<300	300	8086239
Chloromethane	ug/L	-	-	<1.0	1.0	8086511
Vinyl chloride	ug/L	**2**	-	<0.50	0.50	8086511
Chloroethane	ug/L	-	-	<1.0	1.0	8086511
Trichlorofluoromethane	ug/L	-	-	<4.0	4.0	8086511
1,1,2Trichloro-1,2,2Trifluoroethane	ug/L	-	-	<2.0	2.0	8086511
Dichlorodifluoromethane	ug/L	-	-	<2.0	2.0	8086511
1,1-dichloroethene	ug/L	**14**	-	<0.50	0.50	8086511
Dichloromethane	ug/L	**50**	-	<2.0	2.0	8086511
trans-1,2-dichloroethene	ug/L	-	-	<1.0	1.0	8086511
1,1-dichloroethane	ug/L	-	-	<0.50	0.50	8086511
cis-1,2-dichloroethene	ug/L	-	-	<1.0	1.0	8086511
Chloroform	ug/L	-	-	<1.0	1.0	8086511
1,1,1-trichloroethane	ug/L	-	-	<0.50	0.50	8086511
1,2-dichloroethane	ug/L	**5**	-	<0.50	0.50	8086511
Carbon tetrachloride	ug/L	**2**	-	<0.50	0.50	8086511
Benzene	ug/L	**5**	-	<0.40	0.40	8086511
Methyl-tert-butylether (MTBE)	ug/L	-	15	<4.0	4.0	8086511
1,2-dichloropropane	ug/L	-	-	<0.50	0.50	8086511
cis-1,3-dichloropropene	ug/L	-	-	<1.0	1.0	8086511
trans-1,3-dichloropropene	ug/L	-	-	<1.0	1.0	8086511
Bromomethane	ug/L	-	-	<1.0	1.0	8086511
1,1,2-trichloroethane	ug/L	-	-	<0.50	0.50	8086511
Trichloroethene	ug/L	**5**	-	<0.50	0.50	8086511
Chlorodibromomethane	ug/L	-	-	1.8	1.0	8086511
1,3-Butadiene	ug/L	-	-	<5.0	5.0	8086511
Tetrachloroethene	ug/L	**30**	-	<0.50	0.50	8086511
Bromodichloromethane	ug/L	**16**	-	<1.0 (1)	1.0	8086511
Toluene	ug/L	**60**	24	<0.40	0.40	8086511
Ethylbenzene	ug/L	**140**	1.6	<0.40	0.40	8086511
m & p-Xylene	ug/L	-	-	<0.40	0.40	8086511
Bromoform	ug/L	-	-	<1.0	1.0	8086511
Styrene	ug/L	-	-	<0.50	0.50	8086511
o-Xylene	ug/L	-	-	<0.40	0.40	8086511
Xylenes (Total)	ug/L	**90**	20	<0.40	0.40	8086511
1,1,1,2-tetrachloroethane	ug/L	-	-	<0.50	0.50	8086511

RDL = Reportable Detection Limit
(1) Detection limits raised due to matrix interference.

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Maxxam Job #: B594214
Report Date: 2015/11/02

VILLAGE OF PEMBERTON

CSR VOC + VPH IN WATER (DRINKING WATER)

Maxxam ID				NL7039		
Sampling Date				2015/10/22 09:15		
COC Number				g108613		
	UNITS	MAC	AO	OAK STREET	RDL	QC Batch
1,1,2,2-tetrachloroethane	ug/L	-	-	<0.50	0.50	8086511
1,2-dichlorobenzene	ug/L	**200**	3	<0.50	0.50	8086511
1,3-dichlorobenzene	ug/L	-	-	<0.50	0.50	8086511
1,4-dichlorobenzene	ug/L	**5**	1	<0.50	0.50	8086511
Chlorobenzene	ug/L	**80**	30	<0.50	0.50	8086511
Dibromomethane	ug/L	-	-	<0.90	0.90	8086511
Bromobenzene	ug/L	-	-	<2.0	2.0	8086511
VH C6-C10	ug/L	-	-	<300	300	8086511
Surrogate Recovery (%)						
1,4-Difluorobenzene (sur.)	%	-	-	101		8086511
4-Bromofluorobenzene (sur.)	%	-	-	96		8086511
D4-1,2-Dichloroethane (sur.)	%	-	-	97		8086511
RDL = Reportable Detection Limit						

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Maxxam Job #: B594214
Report Date: 2015/11/02

VILLAGE OF PEMBERTON

GENERAL COMMENTS

MAC,AO,OG: The guidelines that have been included in this report have been taken from the Canadian Drinking Water Quality Summary Table, October 2014.

Criteria A = Maximum Acceptable Concentration (MAC) / Criteria B = Aesthetic Objectives (AO) / Criteria C = Operational Guidance Values (OG)
It is recommended to consult these guidelines when interpreting your data since there are non-numerical guidelines that are not included on this report.

Turbidity Guidelines:
1. Chemically assisted filtration: less than or equal to 0.3 NTU in 95% of the measurements or 95% of the time each month. Shall not exceed 1.0 NTU at any time.
2. Slow sand / diatomaceous earth filtration: less than or equal to 1.0 NTU in 95% of the measurements or 95% of the time each month. Shall not exceed 3.0 NTU at any time.
3. Membrane filtration: less than or equal to 0.1 NTU in 99% of the measurements made or at least 99% of the time each calendar month. Shall not exceed 0.3 NTU at any time.

Results relate only to the items tested.

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Maxxam Job #: B594214
Report Date: 2015/11/02

QUALITY ASSURANCE REPORT

VILLAGE OF PEMBERTON

			Matrix Spike		Spiked Blank		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
8086511	1,4-Difluorobenzene (sur.)	2015/10/23	100	70 - 130	99	70 - 130	101	%		
8086511	4-Bromofluorobenzene (sur.)	2015/10/23	107	70 - 130	107	70 - 130	97	%		
8086511	D4-1,2-Dichloroethane (sur.)	2015/10/23	103	70 - 130	103	70 - 130	96	%		
8086511	1,1,1,2-tetrachloroethane	2015/10/23	99	70 - 130	92	70 - 130	<0.50	ug/L	NC	30
8086511	1,1,1-trichloroethane	2015/10/23	103	70 - 130	94	70 - 130	<0.50	ug/L	NC	30
8086511	1,1,2,2-tetrachloroethane	2015/10/23	99	70 - 130	91	70 - 130	<0.50	ug/L	NC	30
8086511	1,1,2Trichloro-1,2,2Trifluoroethane	2015/10/23					<2.0	ug/L	NC	30
8086511	1,1,2-trichloroethane	2015/10/23	97	70 - 130	90	70 - 130	<0.50	ug/L	NC	30
8086511	1,1-dichloroethane	2015/10/23	97	70 - 130	88	70 - 130	<0.50	ug/L	NC	30
8086511	1,1-dichloroethene	2015/10/23	103	70 - 130	93	70 - 130	<0.50	ug/L	NC	30
8086511	1,2-dichlorobenzene	2015/10/23	100	70 - 130	93	70 - 130	<0.50	ug/L	NC	30
8086511	1,2-dichloroethane	2015/10/23	99	70 - 130	93	70 - 130	<0.50	ug/L	NC	30
8086511	1,2-dichloropropane	2015/10/23	97	70 - 130	91	70 - 130	<0.50	ug/L	NC	30
8086511	1,3-Butadiene	2015/10/23					<5.0	ug/L		
8086511	1,3-dichlorobenzene	2015/10/23	101	70 - 130	94	70 - 130	<0.50	ug/L	NC	30
8086511	1,4-dichlorobenzene	2015/10/23	100	70 - 130	93	70 - 130	<0.50	ug/L	NC	30
8086511	Benzene	2015/10/23	100	70 - 130	92	70 - 130	<0.40	ug/L	NC	30
8086511	Bromobenzene	2015/10/23	97	70 - 130	90	70 - 130	<2.0	ug/L		
8086511	Bromodichloromethane	2015/10/23	101	70 - 130	91	70 - 130	<1.0	ug/L	NC	30
8086511	Bromoform	2015/10/23	95	70 - 130	87	70 - 130	<1.0	ug/L	NC	30
8086511	Bromomethane	2015/10/23	105	60 - 140	94	60 - 140	<1.0	ug/L	NC	30
8086511	Carbon tetrachloride	2015/10/23	102	70 - 130	92	70 - 130	<0.50	ug/L	NC	30
8086511	Chlorobenzene	2015/10/23	98	70 - 130	88	70 - 130	<0.50	ug/L	NC	30
8086511	Chlorodibromomethane	2015/10/23	97	70 - 130	88	70 - 130	<1.0	ug/L	NC	30
8086511	Chloroethane	2015/10/23	95	60 - 140	87	60 - 140	<1.0	ug/L	NC	30
8086511	Chloroform	2015/10/23	102	70 - 130	95	70 - 130	<1.0	ug/L	NC	30
8086511	Chloromethane	2015/10/23	102	60 - 140	89	60 - 140	<1.0	ug/L	NC	30
8086511	cis-1,2-dichloroethene	2015/10/23	103	70 - 130	95	70 - 130	<1.0	ug/L	NC	30
8086511	cis-1,3-dichloropropene	2015/10/23	113	70 - 130	98	70 - 130	<1.0	ug/L	NC	30
8086511	Dibromomethane	2015/10/23	99	70 - 130	90	70 - 130	<0.90	ug/L		
8086511	Dichlorodifluoromethane	2015/10/23	108	60 - 140	95	60 - 140	<2.0	ug/L	NC	30
8086511	Dichloromethane	2015/10/23	109	70 - 130	100	70 - 130	<2.0	ug/L	NC	30

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QUALITY ASSURANCE REPORT(CONT'D)

VILLAGE OF PEMBERTON

			Matrix Spike		Spiked Blank		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
8086511	Ethylbenzene	2015/10/23	100	70 - 130	92	70 - 130	<0.40	ug/L	NC	30
8086511	m & p-Xylene	2015/10/23	103	70 - 130	95	70 - 130	<0.40	ug/L	NC	30
8086511	Methyl-tert-butylether (MTBE)	2015/10/23	98	70 - 130	90	70 - 130	<4.0	ug/L	NC	30
8086511	o-Xylene	2015/10/23	100	70 - 130	92	70 - 130	<0.40	ug/L	NC	30
8086511	Styrene	2015/10/23	99	70 - 130	90	70 - 130	<0.50	ug/L	NC	30
8086511	Tetrachloroethene	2015/10/23	100	70 - 130	94	70 - 130	<0.50	ug/L	NC	30
8086511	Toluene	2015/10/23	98	70 - 130	90	70 - 130	<0.40	ug/L	NC	30
8086511	trans-1,2-dichloroethene	2015/10/23	102	70 - 130	91	70 - 130	<1.0	ug/L	NC	30
8086511	trans-1,3-dichloropropene	2015/10/23	105	70 - 130	92	70 - 130	<1.0	ug/L	NC	30
8086511	Trichloroethene	2015/10/23	102	70 - 130	94	70 - 130	<0.50	ug/L	NC	30
8086511	Trichlorofluoromethane	2015/10/23	117	60 - 140	111	60 - 140	<4.0	ug/L	NC	30
8086511	VH C6-C10	2015/10/23			108	70 - 130	<300	ug/L		
8086511	Vinyl chloride	2015/10/23	105	60 - 140	92	60 - 140	<0.50	ug/L	NC	30
8086511	Xylenes (Total)	2015/10/23					<0.40	ug/L	NC	30
8087539	Turbidity	2015/10/24			103	80 - 120	<0.10	NTU	NC	20
8087593	True Colour	2015/10/24			105	80 - 120	<5.0	Col. Unit	NC	20
8087768	Nitrate plus Nitrite (N)	2015/10/24	100	80 - 120	97	80 - 120	<0.020	mg/L	NC	25
8087769	Nitrite (N)	2015/10/24	93	80 - 120	91	80 - 120	<0.0050	mg/L	NC	20
8089442	Total Aluminum (Al)	2015/10/27	105	80 - 120	107	80 - 120	<3.0	ug/L	NC	20
8089442	Total Antimony (Sb)	2015/10/27	109	80 - 120	107	80 - 120	<0.50	ug/L	NC	20
8089442	Total Arsenic (As)	2015/10/27	100	80 - 120	98	80 - 120	<0.10	ug/L	8.3	20
8089442	Total Barium (Ba)	2015/10/27	NC	80 - 120	104	80 - 120	<1.0	ug/L	0.33	20
8089442	Total Boron (B)	2015/10/27					<50	ug/L	NC	20
8089442	Total Cadmium (Cd)	2015/10/27	103	80 - 120	104	80 - 120	<0.010	ug/L	NC	20
8089442	Total Chromium (Cr)	2015/10/27	101	80 - 120	101	80 - 120	<1.0	ug/L	NC	20
8089442	Total Cobalt (Co)	2015/10/27	98	80 - 120	101	80 - 120	<0.50	ug/L	NC	20
8089442	Total Copper (Cu)	2015/10/27	93	80 - 120	100	80 - 120	<0.20	ug/L	NC	20
8089442	Total Iron (Fe)	2015/10/27	NC	80 - 120	117	80 - 120	<5.0	ug/L	2.8	20
8089442	Total Lead (Pb)	2015/10/27	105	80 - 120	103	80 - 120	<0.20	ug/L	NC	20
8089442	Total Manganese (Mn)	2015/10/27	NC	80 - 120	104	80 - 120	<1.0	ug/L	1.2	20
8089442	Total Molybdenum (Mo)	2015/10/27	NC	80 - 120	108	80 - 120	<1.0	ug/L	NC	20
8089442	Total Nickel (Ni)	2015/10/27	95	80 - 120	100	80 - 120	<1.0	ug/L	NC	20

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QUALITY ASSURANCE REPORT(CONT'D)

VILLAGE OF PEMBERTON

			Matrix Spike		Spiked Blank		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
8089442	Total Selenium (Se)	2015/10/27	96	80 - 120	98	80 - 120	<0.10	ug/L	NC	20
8089442	Total Silver (Ag)	2015/10/27	102	80 - 120	105	80 - 120	<0.020	ug/L	NC	20
8089442	Total Uranium (U)	2015/10/27	116	80 - 120	105	80 - 120	<0.10	ug/L	2.4	20
8089442	Total Vanadium (V)	2015/10/27	106	80 - 120	102	80 - 120	<5.0	ug/L	NC	20
8089442	Total Zinc (Zn)	2015/10/27	97	80 - 120	106	80 - 120	<5.0	ug/L	NC	20
8089599	Alkalinity (PP as CaCO3)	2015/10/26					<0.50	mg/L	NC	20
8089599	Alkalinity (Total as CaCO3)	2015/10/26	NC	80 - 120	96	80 - 120	<0.50	mg/L	0.17	20
8089599	Bicarbonate (HCO3)	2015/10/26					<0.50	mg/L	0.17	20
8089599	Carbonate (CO3)	2015/10/26					<0.50	mg/L	NC	20
8089599	Hydroxide (OH)	2015/10/26					<0.50	mg/L	NC	20
8089601	pH	2015/10/26			101	97 - 103			0.36	N/A
8089602	Conductivity	2015/10/26			100	80 - 120	<1.0	uS/cm	0.32	20
8089637	Dissolved Chloride (Cl)	2015/10/26	90	80 - 120	102	80 - 120	<0.50	mg/L	0.018	20
8089641	Dissolved Sulphate (SO4)	2015/10/26	NC	80 - 120	94	80 - 120	0.59, RDL=0.50	mg/L	0.78	20
8089681	Fluoride (F)	2015/10/26	98	80 - 120	100	80 - 120	<0.010	mg/L	1.6	20
8090392	Total Dissolved Solids	2015/10/28	NC	80 - 120	102	80 - 120	<10	mg/L	3.4	20
8091728	Dissolved Sulphate (SO4)	2015/10/27	NC	80 - 120	93	80 - 120	<0.50	mg/L		
8098273	Total Mercury (Hg)	2015/11/02	89	80 - 120	94	80 - 120	<0.010	ug/L	NC	20

N/A = Not Applicable

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spiked amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than 2x that of the native sample concentration).

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (one or both samples < 5x RDL).

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G108613

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CHAIN OF CUSTODY RECORD

BBY FCD-00077/05

Burnaby: 4606 Canada Way, Burnaby, BC V5G 1K5. Toll Free (800) 665-8566

COC #:

Page _____ of _____

Invoice Information	Report Information (if differs from invoice)	Project Information (where applicable)	Turnaround Time (TAT) Required
Company Name: VILLAGE OF PEMBERTON	Company Name:	Quotation #:	☐ Regular TAT 5 days (Most analyses)
Contact Name: JEFF WESTLAKE	Contact Name:	P.O. #/ AFE#:	PLEASE PROVIDE ADVANCE NOTICE FOR RUSH PROJECTS
Address: 7400 PROSPECT ST	Address:	Project #:	Rush TAT (Surcharges will be applied)
PEMBERTON BC PC: V0N 2L0	PC:	Site Location:	☐ Same Day ☐ 2 Days ☐ 1 Day ☐ 3 Days
Phone: [redacted]	Phone:	Site #:	
Email: jwestlake@pemberton.ca	Email:	Sampled By:	Date Required:

Regulatory Criteria	Special Instructions
☐ BC CSR Soil ☐ BC CSR Water	☐ Return Cooler
☐ CCME (Specify) ☐ Other (Specify)	☐ Ship Sample Bottles (Please Specify)
☑ Drinking Water ☐ BC Water Quality	

SAMPLES MUST BE KEPT COOL (< 10 °C) FROM TIME OF SAMPLING UNTIL DELIVERY TO MAXXAM

Rush Confirmation #:

LABORATORY USE ONLY

CUSTODY SEAL Y / N (N) — Present / Intact

COOLER TEMPERATURES: 5.6, 6

COOLING MEDIA PRESENT Y / N (N)

	Sample Identification	Lab Identification	Date Sampled (YYYY/MM/DD)	Time Sampled (HH:MM)	Matrix	Analysis Requested: BTEX/VPH ☐ MTBE ☐ VOC/VPH ☐	EP-4 ☐ TEH ☐	PAH ☐ LEPH/HEPH ☐	CCME-PHC BTEX/ F1 ☐ F2 - F4 ☐	Dissolved Metals Filtered? ☐ Preserved? ☐	Dissolved Mercury Filtered? ☐ Preserved? ☐	Total Metals Field Preserved? ☑	Total Mercury Field Preserved? ☑	Chloride ☐ Fluoride ☐ Sulphate ☐	TSS ☐ TDS ☐ BOD ☐ COD ☐	pH ☐ Conductivity ☐ Alkalinity ☐	Nitrite ☐ Nitrate ☐ Ammonia ☐	DRINKING WATER CHEMISTRY (NO MICRO)	THM / VOC			# OF CONTAINERS SUBMITTED	HOLD - DO NOT ANALYZE
1	Well #1	NL7035	15/10/22	9:00 am								X	X					X	X				
2	Well #2	NL7036	15/10/22	8:35 am								X	X					X	X				
3	Well #3	NL7037	15/10/22	8:45 am								X	X					X	X				
4																							
5	INDUSTRIAL PARK	NL7038	15/10/22	8:15 am								X	X					X	X				
6																							
7	OAK STREET	NL7039	15/10/22	9:15 am															X				
8																							
9																							
10																							

B594214

RELINQUISHED BY: (Signature/Print)	DATE: (YYYY/MM/DD)	TIME: (HH:MM)	RECEIVED BY: (Signature/Print)	DATE: (YYYY/MM/DD)	TIME: (HH:MM)	MAXXAM JOB #
[redacted]	2015/10/22	9:45 am	[redacted]	2015/10/23	09:35	B594214

COC-1020

Village of Pemberton - Water Sample Range Report

Range Report Information:

Date range: Jan 1 2015 to Dec 31 2015
Total number of samples: 244

Water Sample Details:

Samples that contain coliform:	0	(0% of total)
Samples that contain fecal coliform:	0	(0% of total)
Samples that contain e. coli	0	(0% of total)
Number of consecutive samples that contain total coliform:	0	(0% of total)
Number of samples that contain total coliform in last 30 days:	0	(0% of total)

For more information regarding bacteriological quality guidlines please refer to the Guidelines for Canadian Drinking Water Quality.

Village of Pemberton - Inspection Report

Inspection Information:

Facility Type: WS1A
Inspection type: Routine
Inspection date: March 17, 2016
Follow-up Required: No

This facility was given a **low** hazard rating.
- More information on hazard ratings.

Violations:
No violations were found during the inspection

Actions Taken:

☑ Information Exchanged
The 2014 Annual Report was provided.

, ☑ Information Exchanged
The 2015 sample summary results indicate the water supply met the Drinking Water Protection Act Regulation potable water quality standards for Total Coliforms and e. Coli. Sampling frequency was conducted in accordance with the Permit to Operate.

, ☑ Information Exchanged
Comprehensive chemical and physical analysis was conducted for all 3 well source; results meet the Maximum Acceptable Concentration limits and Aesthetic Objectives of the Guidelines for Canadian Drinking Water Quality with the exception of Iron and Manganese in wells #1 and #2. Iron and Manganese in water supplies are not considered a health hazard, they may however impart taste and odors and cause staining of appliances.Well #1 is off line (not connected to the system). The operator reports that they taken corrective actions to reduce the iron and manganese in well #2.

, ☑ Information Exchanged
The Operator reported the following improvements and upgrades in 2015:

, ☑ Information Exchanged
* the new reservoir was constructed and commissioned

, ☑ Information Exchanged
* new Scada system for chlorine residual analysers installed

, ☑ Information Exchanged
* a budget set for pursuing options and quotes to determine centralized pH conditioning treatment works design for continual conformance with the aesthetic objectives of the Guidelines for Canadian Drinking Water Quality.

, ☑ Information Exchanged
* the aquifer recharge study is ongoing.

, ☑ Information Exchanged
* a water conservation bylaw was adopted

, ☑ Information Exchanged
* a cross connection control bylaw was drafted.

, ☑ Information Exchanged
Please confirm if the wellhead protection plan document and recommendations (prepared in 2013) has been adopted.

, ☑ Information Exchanged
VCH recommends future zoning bylaw amendments consider wording that specifically protects water aquifers

, ☑ Information Exchanged
VCH recommends that the cross connection control bylaw include assembly check frequencies, and as a minimum to focus on Industrial, Commercial and Institutional building systems.

, ☑ Information Exchanged
VCH requires a Construction Permit be obtained for the proposed pH conditioning treatment works.

Comments:
This is a 2015 year end water inspection report for the Village of Pemberton Water Supply System.