City of Maple Ridge
Whonnock Well
Water Quality Report 2017

WHONNOCK WELL
WATER QUALITY REPORT 2017

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City of Maple Ridge
December 2017

1 EXECUTIVE SUMMARY

The City of Maple Ridge provides well water at the Whonnock well site, under permit by the Fraser Health Authority (FHA). It contains a storage tank, two filters, two backflow preventers and an ultraviolet disinfection unit along with a push button dispenser for the user. Whonnock well is a 36m deep well which provides water for citizens living in the 272 Street area. It was drilled in 1981 which means the well is near the end of its useful life. Even though the well is primarily used by the residents in the Whonnock area, the maintenance of the well is paid for by all of the taxpayers. The City is assessing all the possible options available to extend the wells lifespan.

Outside Tap and Push Button

2 INTRODUCTION

This document is the City of Maple Ridge's report on the Whonnock well, located at 10919 272 Street. This report is prepared for public information.

Contents of the report include an outline of the regulatory framework and water quality monitoring data and results for the year 2017.

Ultraviolet Disinfection Unit

3 BACKGROUND

3.1 OUTLINE

Whonnock well is a low-volume water well located at 10919 272 Street. The existing connection is 32mm in diameter with a male pipe thread. An ultraviolet disinfection unit preceded by two filters was added in August of 2001 as part of our water quality improvements work. The maximum discharge is 40 liters per minute (9 gallons/min).

3.2 FACILITY MAINTENANCE

Whonnock well is maintained by the City of Maple Ridge > Public Works & Development Services > Operations Centre. Their duties involve sampling and routine maintenance of the equipment within the Whonnock well structure. The maintenance costs are not recovered from Whonnock residents. In 2010 the outside pipe was relocated to a higher elevation to prevent potential contamination from dogs and other animals.

3.3 WHONNOCK WELL WATER SYSTEM ROUTINE SAMPLING AND EMERGENCY RESPONSE PROTOCOL

These procedures were revised in February 2008 reviewed in 2017 and approved by the FHA.

Routine Water Sampling

Water samples are taken every Tuesday morning by the Waterworks section of the Operations Centre. A courier delivers these samples the same day to the Metro Vancouver Water Department laboratory. The laboratory reports the analysis results via email by Monday of the following week and that email is sent to the following municipal personnel as well as the FHA:

- James Storey – Director of Engineering Operations – 604-463-9581
- Davin Wilson – Superintendent of Waterworks – 604-463-9581
- Aaron Schramm – Supervisor 3 of Waterworks – 604-463-9581
- Mike Gjaltema – Electro/Mechanical Manager – 604-463-9581
- Mitch Stripp – Supervisor of Electrical Mechanical – 604-463-9581
- Bruce Gailling – Electronics Technician – 604-463-9581
- Rob Dyer – Trades Inspector – 604-476-3076

Emergency Response Protocol

As per the Whonnock Well Emergency Response Protocol, in the event of a concern discovered upon analysis the Metro Vancouver Water Department laboratory will email those listed above. Personnel in the Electro-Mechanical section will be the first responders, or alternatively, any of the above-noted personnel. The well will be shut down immediately, the FHA will be notified and a notice will be posted advising the users about alternate sources of water.

All after-hours, weekend or statutory holiday calls will be made to the Operations Centre standby personnel via Surrey Dispatch.

The expected triggers for this Emergency Response Protocol are listed below:

- Unsatisfactory bacterial results.
- A resident's report of bad smell, colour or taste.
- Environmental hazards or spills around the well.
- Motor vehicle accident causing damages to the building or installations.
- Vandalism to the building or installations.
- Pump failure.
- Breach of security.

3.4 CORRECTIVE MEASURES AND MAINTENANCE

The facility is inspected weekly and the filters are changed when they have been in use for three months or if the discharge flow drops to 30 liters a minute.

The ultraviolet lamp used in the disinfection unit is replaced annually.

When dealing with a possible problem with the water quality of the Whonnock well, the following steps are followed by staff:

1. Turn off the system and post outside one of the notifications "Well shut down due to a bad sample" or, "due to maintenance."

2. Inspect the integrity of the system (ensuring that nothing was tampered with or changed).

3. Check the operation of the ultraviolet disinfection, filtration, hoses or any other mechanical components.

4. Once the defective condition has been located and resolved or repaired, the Operations Centre Waterworks section will collect three separate samples on the following Monday, Tuesday and Wednesday to be sent to the Metro Vancouver Water Department laboratory for analysis. If all three analyses return within acceptable limits, FHA will be notified and, with their agreement, the system can be reactivated and the warning signs removed.

5. If any of the lab results continue to read as unacceptable and no remedial measures are effective, the FHA must be informed.

6. When an isolated report outside of routine water testing occurs (i.e. residents report bad smell, colour, taste or high turbidity), the above protocol will be immediately activated. The Operations Centre Waterworks section will collect a sample to be sent to the Metro Vancouver Water Department laboratory for analysis.

7. No action required in case of power failure: there is no water dispensed when the power is out.

3.5 WATER QUALITY SAMPLING AND MONITORING

Samples are taken weekly by the City of Maple Ridge's Operations Department staff and sent to the Metro Vancouver Water Department laboratory for analysis. The Metro Vancouver Water Department laboratory sends the results to the City of Maple Ridge and the FHA by email (these results are fully tabulated for 2017 in Appendix C).

In addition, an annual water chemical analysis is performed. For this annual analysis, the City of Maple Ridge uses a laboratory that can provide the necessary accuracy in determining the arsenic level. This was necessary after the changes in 2006 in Health Canada's arsenic guidelines and to demonstrate compliance. The test results are attached in Appendix D.

It is important to note that this water quality monitoring program provides a representative picture of drinking water quality in the well system to the well tap. However, it does not provide a definite picture of drinking water quality once the user has obtained the water from the well.

Bacteriological Monitoring

Weekly samples are analyzed for E. Coli, total coliform and heterotrophic plate count (HPC) as shown in Appendix C.

Table 1
BC Drinking Water Protection Regulation Microbiological Standards
(Extracted from Appendix A)

Parameter	Occurrence	Standard
E. Coli	1 sample	Less than 1 fecal coliform per 100mL
Total Coliform	a) 1 sample in a 30 day period	0 total coliform per 100mL
	b) more than 1 sample in a 30 day period.	At least 90% of samples have 0 total coliform per 100mL and no sample has more than 10 total coliform per 100mL

Chemical and Physical Monitoring

A table of the City of Maple Ridge's chemical and physical monitoring schedule is noted in Table 2. The report from Bodycote Testing Group Laboratory can be viewed in Appendix D.

Table 2
Chemical/Physical Monitoring in Municipal Distribution Systems

Parameter	Frequency
Temperature	Weekly
Copper	Annually
Iron	Annually
Lead	Annually
Odour	On Complaint Basis
PH	Annually
Taste	On Complaint Basis
Trihalomethanes	Annually
Turbidity	Weekly, collected with bacteriological samples
Zinc	Annually
E. Coli	Weekly
Aluminum	Annually
Arsenic	Annually
Barium	Annually
Boron	Annually
Cadmium	Annually
Calcium	Annually
Chromium	Annually
Cobalt	Annually
Magnesium	Annually
Manganese	Annually
Sodium	Annually

4 EMERGENCY RESPONSE

4.1 NOTIFICATION REQUIREMENTS

The various agencies would be notified in the situations shown in Table 3.

Table 3
Notification for Unusual Situations Affecting Water Potability

Situation	Notifying Agency	Agency Notified	Time Frame For Notification
E. Coli Positive Sample	Metro Van Laboratory[1]	FHA[2] City of Maple Ridge	Immediate[3]
Chemical Contamination	City of Maple Ridge	FHA	Immediate
Turbidity >5 NTU	Metro Van Laboratory	FHA City of Maple Ridge	Immediate
Disinfection Failure - Source Water (Primary Disinfection)	City of Maple Ridge	FHA	Immediate

4.2 E. COLI POSITIVE SAMPLES – RESPONSE PROCEDURE

If a sample analyzed by the Metro Vancouver Water Department laboratory tests positive for E. Coli, the well will be shut down immediately and will remain out of service until the problem is rectified. **Action**: shut the system down, flush and disinfect with chlorine. Re-sample twice over two days and re-activate the well if no E-coli is present.

5 DRINKING WATER QUALITY MONITORING RESULTS

No samples tested positive for total coliform bacteria in 2017, the same as in previous years. There were no samples testing positive for E. Coli and no samples containing more than 10 total coliform per 100ml, therefore the microbiological standards were met for 2017.

Heterotrophic plate counts (HPC) are also recorded in weekly samples. Although there is no standard for maximum CFU per mls, the US standard is 500 CFU/mls. HPC is a procedure for estimating the number of live heterotrophic bacteria in water and measuring changes during water treatment and distribution. A passage about what HPC counts keep track of is shown below (Heterotrophic Plate Counts and Drinking-water Safety, WHO, 2003):

"Heterotrophs are broadly defined as microorganisms that require organic carbon for growth. They include bacteria, yeasts and moulds. A variety of simple culture-based tests that are intended to recover a wide range of microorganisms from water are collectively referred to as "heterotrophic plate count" or "HPC test" procedures. Accordingly, the terms "heterotroph" and "HPC" are not synonymous. There is no universal "HPC measurement." Although standardized methods have been formalized, HPC test methods involve a wide variety of test conditions that lead to a wide range of quantitative and qualitative results.

[1] Metro Vancouver for samples being processed by Metro Vancouver Water Department laboratory.
[2] BCDWPR requires the laboratory to notify public health.
[3] See Section 4.2

Temperatures employed range from around 20°C to 40°C, incubation times from a few hours to seven days or a few weeks and nutrient conditions from low to high. The test itself does not specify the organisms that are detected. Only a small proportion of the metabolically active microorganisms present in a water sample may grow and be detected under any given set of HPC test conditions and the population recovered will differ significantly according to the method used. The actual organisms recovered in HPC testing can also vary widely between locations, between seasons and between consecutive samples at a single location. Microorganisms recovered through HPC tests generally include those that are part of the natural (typically non-hazardous) microbiota of water; in some instances, they may also include organisms derived from diverse pollutant sources."

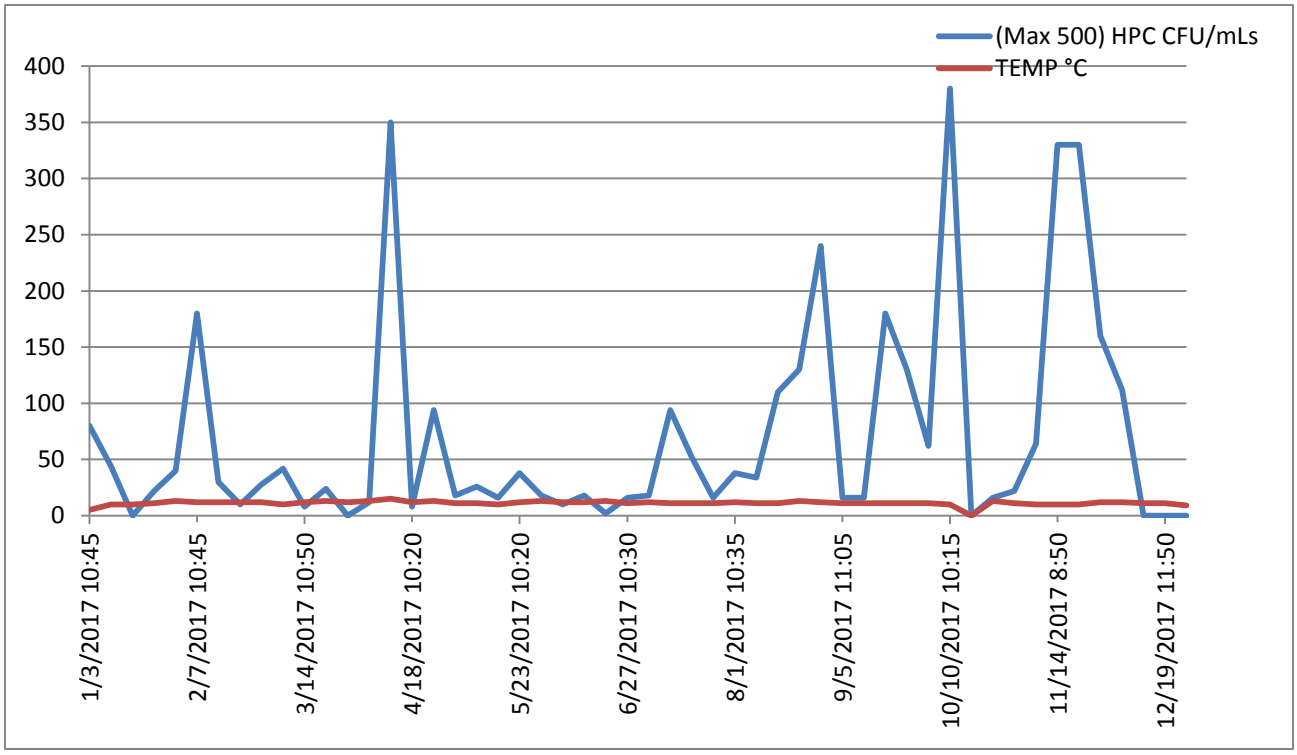
In 2017, only 2 out of 52 tests had readings above 500 HPC [CFU/mls]. The average count was 29 HPC [CFU/mls] for that site.

A sign has been permanently posted that advises users to run the water for 15 seconds before filling up, in order to remove stagnant water within the pipe.

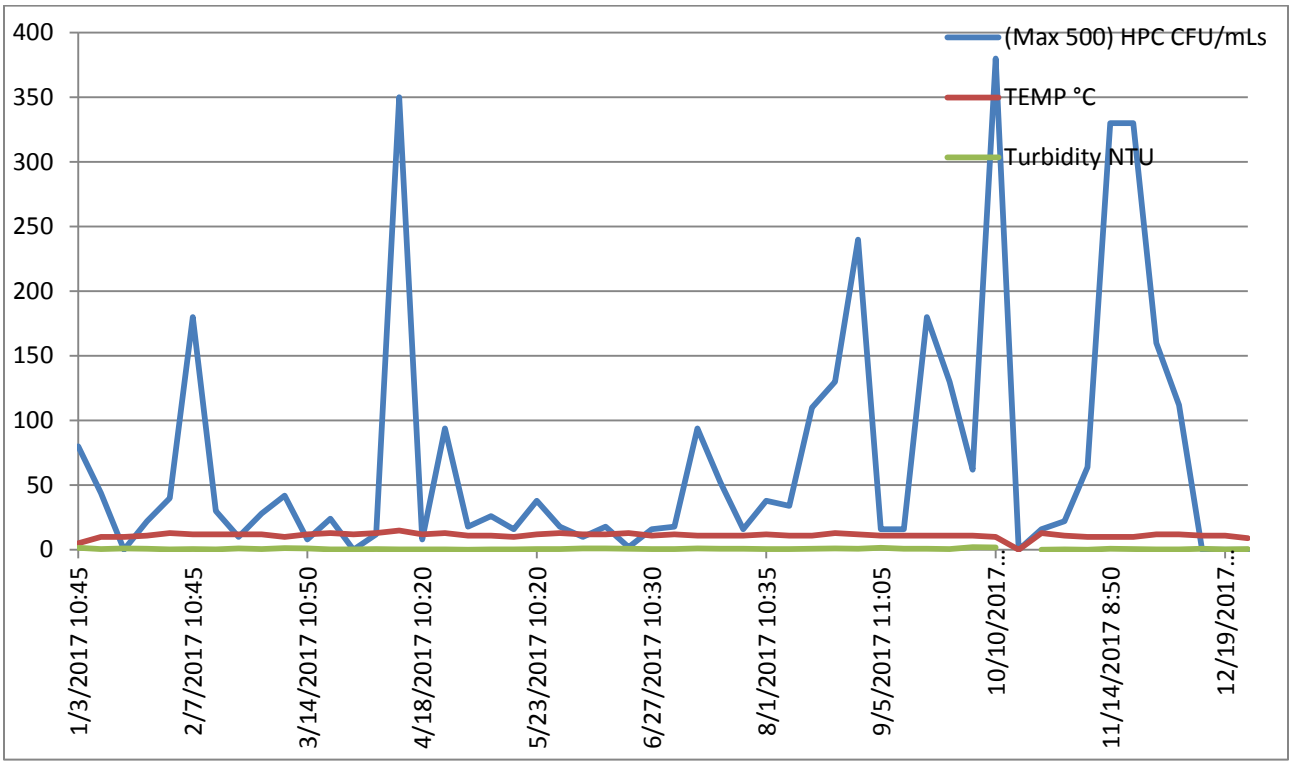
6 CONCLUSION

This report provides an outline of the water quality of the Whonnock well, as well as the initiatives and program being performed by the City of Maple Ridge.

APPENDIX A – HPC VS TEMPERATURE GRAPH



APPENDIX B – HPC VS TEMPERATURE & TURBIDITY GRAPH



APPENDIX C – WEEKLY SAMPLE

Sampling Point	Sample Type	Sample Reported Name	Sampled Date	Fcoli MPN/100 mLs	(Max 500) HPC CFU/mLs	TEMP ◦C	Tcoli MPN/100 mLs	Turbility NTU
MPR-WP1	GRAB	Whonnock Well Tank	1/3/2017 10:45	<1	80	5	<12	1.5
MPR-WP1	GRAB	Whonnock Well Tank	1/10/2017 11:30	<1	44	10	<1	0.54
MPR-WP1	GRAB	Whonnock Well Tank	1/17/2017 11:30		<1	10	LA	1.1
MPR-WP1	GRAB	Whonnock Well Tank	1/24/2017 11:25	<1	22	11	<1	0.83
MPR-WP1	GRAB	Whonnock Well Tank	1/31/2017 11:10	<1	40	13	<1	0.32
MPR-WP1	GRAB	Whonnock Well Tank	2/7/2017 10:45	<1	180	12	<1	0.46
MPR-WP1	GRAB	Whonnock Well Tank	2/14/2017 11:07	<1	30	12	<1	0.42
MPR-WP1	GRAB	Whonnock Well Tank	2/21/2017 11:00	<1	10	12	<1	0.99
MPR-WP1	GRAB	Whonnock Well Tank	2/28/2017 11:05	<1	28	12	<1	0.48
MPR-WP1	GRAB	Whonnock Well Tank	3/7/2017 10:10	<1	42	10	<1	1.4
MPR-WP1	GRAB	Whonnock Well Tank	3/14/2017 10:50	<1	8	12	<1	0.99
MPR-WP1	GRAB	Whonnock Well Tank	3/21/2017 10:20	<1	24	13	<1	0.37
MPR-WP1	GRAB	Whonnock Well Tank	3/28/2017 9:10	<1	<2	12	<1	0.43
MPR-WP1	GRAB	Whonnock Well Tank	4/4/2017 11:10	<1	12	13	<1	0.45
MPR-WP1	GRAB	Whonnock Well Tank	4/11/2017 11:30	<1	350	15	<1	0.25
MPR-WP1	GRAB	Whonnock Well Tank	4/18/2017 10:20	<1	8	12	<1	0.41
MPR-WP1	GRAB	Whonnock Well Tank	4/25/2017 10:10	<1	94	13	<1	0.24

Sampling Point	Sample Type	Sample Reported Name	Sampled Date	Fcoli MPN/100 mLs	(Max 500) HPC CFU/mLs	TEMP °C	Tcoli MPN/100 mLs	Turbility NTU
MPR-WP1	GRAB	Whonnock Well Tank	5/2/2017 10:25	<1	18	11	<1	0.17
MPR-WP1	GRAB	Whonnock Well Tank	5/9/2017 10:55	<1	26	11	<1	0.3
MPR-WP1	GRAB	Whonnock Well Tank	5/16/2017 10:35	<1	16	10	<1	0.27
MPR-WP1	GRAB	Whonnock Well Tank	5/23/2017 10:20	<1	38	12	<1	0.52
MPR-WP1	GRAB	Whonnock Well Tank	5/30/2017 10:45	<1	18	13	<1	0.61
MPR-WP1	GRAB	Whonnock Well Tank	6/6/2017 10:25	<1	10	12	<1	1
MPR-WP1	GRAB	Whonnock Well Tank	6/13/2017 10:20	<1	18	12	<1	1.1
MPR-WP1	GRAB	Whonnock Well Tank	6/20/2017 10:25	<1	2	13	<1	0.87
MPR-WP1	GRAB	Whonnock Well Tank	6/27/2017 10:30	<1	16	11	<1	0.45
MPR-WP1	GRAB	Whonnock Well Tank	7/4/2017 10:35	<1	18	12	<1	0.64
MPR-WP1	GRAB	Whonnock Well Tank	7/11/2017 11:35	<1	94	11	<1	0.99
MPR-WP1	GRAB	Whonnock Well Tank	7/18/2017 10:45	<1	52	11	<1	0.87
MPR-WP1	GRAB	Whonnock Well Tank	7/25/2017 10:20	<1	16	11	<1	0.82
MPR-WP1	GRAB	Whonnock Well Tank	8/1/2017 10:35	<1	38	12	<1	0.59
MPR-WP1	GRAB	Whonnock Well Tank	8/8/2017 10:20	<1	34	11	<1	0.54
MPR-WP1	GRAB	Whonnock Well Tank	8/15/2017 8:05	<1	110	11	<1	0.7
MPR-WP1	GRAB	Whonnock Well Tank	8/22/2017 10:55	<1	130	13	<1	1.1
MPR-WP1	GRAB	Whonnock Well Tank	8/29/2017 10:20	<1	240	12	<1	0.74
MPR-WP1	GRAB	Whonnock Well Tank	9/5/2017 11:05	<1	16	11	<1	1.6

Sampling Point	Sample Type	Sample Reported Name	Sampled Date	Fcoli MPN/100 mLs	(Max 500) HPC CFU/mLs	TEMP ◦C	Tcoli MPN/100 mLs	Turbility NTU
MPR-WP1	GRAB	Whonnock Well Tank	9/12/2017 10:12	<1	16	11	<1	0.86
MPR-WP1	GRAB	Whonnock Well Tank	9/19/2017 10:30	<1	180	11	<1	0.76
MPR-WP1	GRAB	Whonnock Well Tank	9/26/2017 10:35	<1	130	11	<1	0.64
MPR-WP1	GRAB	Whonnock Well Tank	10/3/2017 10:45	<1	6200	11	<1	2.1
MPR-WP1	GRAB	Whonnock Well Tank	10/10/2017 10:15	<1	380	10	<1	1.8
MPR-WP1	GRAB	Whonnock Well Tank	10/172017					
MPR-WP1	GRAB	Whonnock Well Tank	10/24/2017 11:05	<1	16	13	<1	0.14
MPR-WP1	GRAB	Whonnock Well Tank	10/31/2017 10:50	<1	22	11	<1	0.38
MPR-WP1	GRAB	Whonnock Well Tank	11/7/2017 11:35	<1	64	10	<1	0.17
MPR-WP1	GRAB	Whonnock Well Tank	11/14/2017 8:50	<1	330	10	<1	0.74
MPR-WP1	GRAB	Whonnock Well Tank	11/21/2017 11:20	<1	330	10	<1	0.44
MPR-WP1	GRAB	Whonnock Well Tank	11/28/2017 12:10	<1	160	12	<1	0.41
MPR-WP1	GRAB	Whonnock Well Tank	12/5/2017 11:45	<1	112	12	<1	0.41
MPR-WP1	GRAB	Whonnock Well Tank	12/12/2017 11:25	<1	LA	11	<1	0.82
MPR-WP1	GRAB	Whonnock Well Tank	12/19/2017 11:50	<1	NA	11	<1	0.43
MPR-WP1	GRAB	Whonnock Well Tank	12/27/2017 11:35	<1	NA	9	<1	0.66

METRO VANCOUVER WATER DEPARTMENT LABORATORY RESULTS
APPENDIX D – ANNUAL MATERIAL ANALYSIS

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Report Transmission Cover Page

Bill To:	City of Maple Ridge 11995 Haney Place Maple Ridge, BC, Canada V2X 6A9	Project: ID: Name: Location:	
Attn:	Andrew McAusland	LSD:	
Sampled By:		P.O.:	
Company:		Acct code:	

Lot ID:	**1203596**
Control Number:	
Date Received:	May 23, 2017
Date Reported:	May 26, 2017
Report Number:	2192300

Contact & Affiliation	Address	Delivery Commitments
Andrew McAusland City of Maple Ridge	11995 Haney Place Maple Ridge, British Columbia V2X 6A9 Phone: (604) 463-5221 Fax: (604) 467-7403 Email: amcausland@mapleridge.ca	On [Lot Verification] send (COA) by Email - Single Report On [Report Approval] send (Test Report) by Email - Single Report On [Lot Approval and Final Test Report Approval] send (Invoice) by Email - Single Report

Notes To Clients:

- The analysis of water samples 1203596-1 to -4 are below Maximum Acceptable Concentrations for the chemical and bacteriological health related guidelines specified by the February 2017 Guidelines for Canadian Drinking Water Quality for the parameters tested.
- Sample 1203596-1; 5723276 Reduction of analytical volume was necessary for nitrate due to matrix effects in sample 1203596-1, 1203596-2, 1203596-3 and 1203596-4. Detection limits are adjusted accordingly.

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Analytical Report

Bill To: City of Maple Ridge
11995 Haney Place
Maple Ridge, BC, Canada
V2X 6A9
Attn: Andrew McAusland
Sampled By:
Company:

Project:
ID:
Name:
Location:
LSD:
P.O.:
Acct code:

Lot ID: **1203596**
Control Number:
Date Received: May 23, 2017
Date Reported: May 26, 2017
Report Number: 2192300

Reference Number	1203596-2
Sample Date	May 23, 2017
Sample Time	09:45
Sample Location	
Sample Description	272 M23 / 2.4 °C
Sample Matrix	Drinking Water

Analyte		Units	Result	Nominal Detection Limit	Guideline Limit	Guideline Comments
Metals Extractable						
Aluminum	Extractable	mg/L	0.003	0.001	0.1	Below OG
Antimony	Extractable	mg/L	0.000045	0.00002	0.006	Below MAC
Arsenic	Extractable	mg/L	0.0005	0.0001	0.010	Below MAC
Barium	Extractable	mg/L	0.0031	0.0001	1	Below MAC
Boron	Extractable	mg/L	0.005	0.002	5	Below MAC
Cadmium	Extractable	mg/L	0.000026	0.00001	0.005	Below MAC
Chromium	Extractable	mg/L	<0.000050	0.00005	0.05	Below MAC
Copper	Extractable	mg/L	0.0011	0.0005	1.0	Below AO
Lead	Extractable	mg/L	0.000035	0.00001	0.01	Below MAC
Selenium	Extractable	mg/L	<0.0002	0.0002	0.05	Below MAC
Uranium	Extractable	mg/L	0.000013	0.00001	0.02	Below MAC
Vanadium	Extractable	mg/L	0.000255	0.00005		
Zinc	Extractable	mg/L	0.0221	0.0005	5.0	Below AO
Microbiological Analysis						
Total Coliforms	Enzyme Substrate Test	MPN/100 mL	<1.0	1.0	0 per 100 mL	Below MAC
Escherichia coli	Enzyme Substrate Test	MPN/100 mL	<1.0	1.0	0 per 100 mL	Below MAC
Physical and Aggregate Properties						
Colour	True	Colour units	5	5		
Turbidity		NTU	0.48	0.02		
Routine Water						
pH - Holding Time			Exceeded			
pH	at 25 °C		7.40		7.0-10.5	Within Range
Electrical Conductivity		µS/cm at 25 °C	109	1		
Calcium	Extractable	mg/L	12	0.01		
Iron	Extractable	mg/L	0.23	0.004	0.3	Below AO
Magnesium	Extractable	mg/L	2.4	0.02		
Manganese	Extractable	mg/L	0.090	0.001	0.05	Above AO
Potassium	Extractable	mg/L	1.5	0.04		
Silicon	Extractable	mg/L	9.0	0.005		
Sodium	Extractable	mg/L	5.8	0.1	200	Below AO
T-Alkalinity	as CaCO3	mg/L	58	5		
Chloride	Dissolved	mg/L	1.50	0.05	250	Below AO
Fluoride	Dissolved	mg/L	0.0973	0.01	1.5	Below MAC
Nitrate - N	Dissolved	mg/L	<0.10	0.01	10	Below MAC

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Analytical Report

Bill To:	City of Maple Ridge	Project:	
	11995 Haney Place	ID:	
	Maple Ridge, BC, Canada	Name:	
	V2X 6A9	Location:	
Attn:	Andrew McAusland	LSD:	
Sampled By:		P.O.:	
Company:		Acct code:	

Lot ID:	**1203596**
Control Number:	
Date Received:	May 23, 2017
Date Reported:	May 26, 2017
Report Number:	2192300

Reference Number	1203596-2
Sample Date	May 23, 2017
Sample Time	09:45
Sample Location	
Sample Description	272 M23 / 2.4 °C
Sample Matrix	Drinking Water

Analyte		Units	Result	Nominal Detection Limit	Guideline Limit	Guideline Comments
Routine Water - Continued						
Nitrite - N	Dissolved	mg/L	<0.010	0.01	1	Below MAC
Sulfate (SO4)	Dissolved	mg/L	<0.1	0.1	500	Below AO
Hardness	as CaCO3 (extractable)	mg/L	39	1		
Total Dissolved Solids	Extractable	mg/L	82	1		

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Analytical Report

Bill To:	City of Maple Ridge	Project:	
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	Maple Ridge, BC, Canada	Name:	
	V2X 6A9	Location:	
Attn:	Andrew McAusland	LSD:	
Sampled By:		P.O.:	
Company:		Acct code:	

Lot ID:	1203596
Control Number:	
Date Received:	May 23, 2017
Date Reported:	May 26, 2017
Report Number:	2192300

Reference Number	1203596-3
Sample Date	May 23, 2017
Sample Time	09:55
Sample Location	
Sample Description	Firehall #2 / 2.4 °C
Sample Matrix	Drinking Water

Analyte		Units	Result	Nominal Detection Limit	Guideline Limit	Guideline Comments
Routine Water - Continued						
Nitrite - N	Dissolved	mg/L	<0.010	0.01	1	Below MAC
Sulfate (SO4)	Dissolved	mg/L	1.7	0.1	500	Below AO
Hardness	as CaCO3 (extractable)	mg/L	38	1		
Total Dissolved Solids	Extractable	mg/L	77	1		

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Methodology and Notes

Bill To:	City of Maple Ridge	Project:	
	11995 Haney Place	ID:	
	Maple Ridge, BC, Canada	Name:	
	V2X 6A9	Location:	
Attn:	Andrew McAusland	LSD:	
Sampled By:		P.O.:	
Company:		Acct code:	

Lot ID:	**1203596**
Control Number:	
Date Received:	May 23, 2017
Date Reported:	May 26, 2017
Report Number:	2192300

Method of Analysis

Method Name	Reference		Method	Date Analysis Started	Location
Alk, pH, EC, Turb in water (Surrey)	APHA	*	Alkalinity - Titration Method, 2320 B	23-May-17	Exova Surrey
Alk, pH, EC, Turb in water (Surrey)	APHA	*	Conductivity, 2510 B	23-May-17	Exova Surrey
Alk, pH, EC, Turb in water (Surrey)	APHA	*	pH - Electrometric Method, 4500-H+ B	23-May-17	Exova Surrey
Anions by IEC in water (Surrey)	APHA	*	Ion Chromatography with Chemical Suppression of Eluent Cond., 4110 B	23-May-17	Exova Surrey
Metals SemiTrace (Extractable) in water (Surrey)	US EPA	*	Metals & Trace Elements by ICP-AES, 6010C	23-May-17	Exova Surrey
Total and E-Coli - Colilert - DW (Surrey)	APHA		Enzyme Substrate Test, APHA 9223 B	23-May-17	Exova Surrey
Trace Metals (extractable) in Water (Surrey)	US EPA	*	Determination of Trace Elements in Waters and Wastes by ICP-MS, 200.8	23-May-17	Exova Surrey
True Color in water (Surrey)	APHA	*	Spectrophotometric - Single Wavelength Method, 2120 C	24-May-17	Exova Surrey
Turbidity - Water (Surrey)	APHA	*	Turbidity - Nephelometric Method, 2130 B	24-May-17	Exova Surrey

** Reference Method Modified*

References

APHA	Standard Methods for the Examination of Water and Wastewater
US EPA	US Environmental Protection Agency Test Methods

Guidelines

Guideline Description	Health Canada GCDWQ
Guideline Source	Guidelines for Canadian Drinking Water Quality, Health Canada, February 2017
Guideline Comments	MAC = Maximum Acceptable Concentration AO = Aesthetic Objective OG = Operational Guideline for Water Treatment Plants Refer to Health Canada GCDWQ for complete guidelines and additional drinking water information at www.hc-sc.gc.ca

Comments:

- The analysis of water samples 1203596-1 to -4 are below Maximum Acceptable Concentrations for the chemical and bacteriological health related guidelines specified by the February 2017 Guidelines for Canadian Drinking Water Quality for the parameters tested.
- Sample 1203596-1; 5723276 Reduction of analytical volume was necessary for nitrate due to matrix effects in sample 1203596-1, 1203596-2, 1203596-3 and 1203596-4. Detection limits are adjusted accordingly.

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Methodology and Notes

Bill To:	City of Maple Ridge 11995 Haney Place Maple Ridge, BC, Canada V2X 6A9	Project: ID: Name: Location:	
Attn:	Andrew McAusland	LSD:	
Sampled By:		P.O.:	
Company:		Acct code:	

Lot ID:	1203596
Control Number:	
Date Received:	May 23, 2017
Date Reported:	May 26, 2017
Report Number:	2192300

The comparison of test results to guideline limits is provided for information purposes only. This is not to be taken as a statement of conformance / nonconformance to any guideline, regulation or limit. The data user is responsible for all conclusions drawn with respect to the data and is advised to consult official regulatory references when evaluating compliance.

Please direct any inquiries regarding this report to our Client Services group.

Results relate only to samples as submitted.

DRINKING WATER SYSTEM ANNUAL REPORT

Reporting Period: JAN 1 January 1st to December 31st, 2017 (year)

Water System Whonnock well 272 st.

Water System Owner City of Maple Ridge

Primary Contact Name (Operator or Manager) Michael Gjaltema

Phone Number (Operator or Manager) 604-467-9581

E-mail (Operator or Manager) mgjaltema@mapleridge.ca

DESCRIBE YOUR WATER SUPPLY SYSTEM

What is the Source(s) of Raw Water?

☑ Deep Well ☐ Shallow Well ☐ Surface Water ☐ Other

If other, specify details:

Does the Drinking Water System have Primary Disinfection? ☑ Yes ☐ No

☐ Chlorination ☑ Ultraviolet Light ☐ Ozone ☐ Other

If other, specify details:

Does the Drinking Water System have Secondary Disinfection? ☐ Yes ☑ No

☐ Chlorination ☐ Other

If other, specify details:

Does the Drinking Water System have Filtration? ☑ Yes ☐ No

Check all boxes that apply

☑ Cartridge Filter(s) ☐ Carbon Filter ☐ Sand Filtration ☐ Reverse Osmosis ☐ Other

If other, specify details:

PUBLIC REPORTING

Emergency Response & Contingency Plan (ERCP)

Is your ERCP up to Date? ☑ Yes ☐ No

How do you Inform the System Users of the ERCP?

☐ Hand Delivered ☐ Bulletin Board ☐ Newspaper ☐ Utility Bill Insert ☑ Website

☐ Other (specify details)

Drinking Water System Annual Report

How do you Inform the System Users of the Annual Report?

☐ Hand Delivered ☐ Bulletin Board ☐ Newspaper ☐ Utility Bill Insert ☑ Website

☐ Other (specify details)