



TSAWWASSEN FIRST NATION
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Drinking Water Quality Monitoring Report 2018

August 2019

Executive Summary

Tsawwassen First Nation (TFN) provides this report in fulfillment of the Drinking Water Protection Action Section 15b. This report outlines a summary of water quality testing results for the year 2018 as well as system improvement actions and plans.

A total of 69 samples were taken from the water distribution system during 2018, including Escherichia coli (69 samples), and total coliforms (69 samples). No samples exceeded the limits set out in the Drinking Water Protection Act and Regulation and the Guidelines for Canadian Drinking Water Quality. TFN is committed to delivery of water of the highest quality and will continue to make the necessary investment to ensure its continued success.

The supply and installation of fixed base radio read system and water meters for new residential and commercial customers was completed in 2018 as a modification to the water distribution system.

Any questions relating to this report of the water system can be directed to Michael Murphy at 604-868-3550.

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1.0 Introduction

This report's purpose is to provide a summary of the Drinking Water Quality Monitoring Program during the 2018 year for TFN's water distribution system.

During 2018, the provision of drinking water was governed by the Drinking Water Protection Regulation (pursuant to the Drinking Water Protection Act). This regulation requires suppliers of drinking water in BC to:

1. Develop a process to notify the Drinking Water Officer (DWO) of situations or conditions that render or could render the water unfit to drink.
2. Implement a plan for collecting, shipping, and analyzing drinking water samples in compliance with the direction set by the DWO.
3. Implement a plan for reporting monitoring results to the DWO and to water users including the preparation of an annual report.

TFN is required to hold an annual Operating Permit and to monitor the water quality in the distribution system. **Appendix A** includes a summary of test results for 2018.

This document includes a brief introduction to TFN's water distribution system and its drinking water quality monitoring and testing program. The remaining parts of this document summarize the results of analysis from water samples collected in 2018 and evaluates the distribution system's performance in delivering safe drinking water.

Water Distribution System

An overview of the existing TFN water distribution system is available in Figure 1 of **Appendix B**. The system services residential, commercial, and operation sites located on TFN lands. Most of these sites are north of Highway 17. Water quality is monitored at seven sampling sites throughout the distribution network.

Water is supplied to TFN by Metro Vancouver and the Corporation of Delta. Two connections to the Metro Vancouver South Delta Main #1 350mm trunk watermain are located along 52 Street, one at 28 Ave and another at Canoe Pass Way. These connections are the primary sources for TFN's distribution system. Two additional connections to a 450mm trunk main owned by Delta are located on Highway 17.

The connection south of Salish Sea Dr. services the Big Splash Waterpark, while the connection at Tsawwassen Drive north of Highway 17 is a backup that is not typically used. There are also two areas where TFN is directly serviced by Delta's water system located at Pacific Dr. and Tsawwassen Beach Rd. The areas serviced by Delta are not part of this monitoring report as their operation and maintenance is provided by the Corporation of Delta.

The main distribution system is comprised of pipes ranging in size from 150mm diameter to 500mm and consists of PVC and HDPE materials.

2.0 Testing and Monitoring Program

Drinking water quality is a function of source water quality, water treatment, and water quality changes after treatment. As a result, monitoring of the water quality is performed from at the source, during treatment, and after treatment. While Metro Vancouver carries out testing of water at the source and after treatment, TFN’s Drinking Water Quality Monitoring Program is focused on monitoring the water quality within its own water distribution system. No additional water treatment is provided to the water at TFN.

The monitoring and testing program consist of routine monitoring, for obtaining an accurate overview of water quality within the distribution system, and non-routine monitoring, for handling complaint and emergency situations. Monitoring includes two components: collection of the sample and laboratory analysis of the sample.

2.1 Routine Monitoring

The collection of water samples is performed by TFN staff and forwarded to a qualified lab for analysis of the parameters in Table 1, below. All microbiological analyses were conducted by laboratories that are approved by Canadian Association of Environmental Analytical Laboratories or an equivalent certification program for the other tests performed.

Results of the analyses are reported by the Fraser Health Authority.

Table 1 Sampling Parameters

	PARAMETERS
Microbiological	Total Coliforms, Escherichia coli (E. coli)
Chemical and Physical	None
Radiological	None

The significance of the parameters is briefly discussed below. Further details regarding the parameters listed in Table 1 can be found by accessing the supporting documents of the Guidelines for Canadian Drinking Water Quality (GCDWQ) through the following web site, <http://www.hc-sc.gc.ca/ewh-semt/water-eau/drink-potab/guide/index-eng.php>, or by contacting Health Canada at (613) 957-2991.

Total Coliforms and E.Coli

One of the primary concerns in water quality is the growth of coliform bacteria. The presence of total coliforms indicate that treatment is inadequate or that the distribution system is experiencing regrowth or infiltration. Escherichia coli, one of the species in the fecal coliform group, is a definite indicator of the presence of contamination within the distribution system.

2.1.2 Sampling Location

Sampling locations, outlined in Table 2, are found in different areas throughout TFN to obtain an accurate overview of water quality of the distribution system. A system map is available in Appendix B. These locations are described in the table below. Appendix A contains the results of the testing conducted throughout the year.

In 2018, the sampling sites were amended by Fraser Health to reduce the number of residential homes on the sampling program.

Table 2 Sampling Locations

Site	Location	Category	Flow Category	Description
W-1	Cardinal Residence- 3404 Falcon Way	Private residence	Dead End	Kitchen Tap
W-2	STP Plant Lab- 2292 Tsawwassen Dr	TFN Facility	Medium	Plant Lab Tap
W-3	Band Office- 1926 Tsawwassen Dr	TFN Facility	Medium	Lunchroom Tap
W-4	Onni Sales Centre Salish Sea Dr	Developers Temporary sales centre	Dead End	kitchen sink
W-5	Tsatsu Gas Station- 101 Tsawwassen Dr	Private Business	Dead End	Store Sink
W-6	Park Canada- 4761 Nulelum Way	Private Business	Dead End	Store
W-7	Corner House- 1500 blk Tsawwassen Dr	Private Residence	Medium	Outdoor Tap
W-8	Tsatsu Shores Condo 101 Tsatsu Shores	Strata residence	Dead End	Outdoor Tap
W-9	TFN Lands Office 2460 Falcon Way	TFN Facility	Dead End	Kitchen Sink

2.1.3 Sampling Frequency

Sampling frequencies are outlined in Table 3:

Table 3 Sampling Frequencies

Monthly Distribution System	
Frequency:	Monthly
Sites before August 2018	W-1, W-2, W-3, W-5 W-6, W7, W8
Sites after August 2018	W-2, W-3, W-4, W-8, W-9
Parameters:	Total coliforms, E. coli

2.2 Non-Routine Monitoring

Consumer complaints are recorded so that water quality concerns can be tracked and responded to efficiently. The parameters to be sampled for depend on the nature of the complaint. In any emergency, the procedures outlined in the TFN Emergency Response Plan were followed. There were no reported events in 2018 that required emergency sampling.

3.0 Sample Analysis Results

There were 69 samples collected from the water distribution system in 2018. No samples exceeded the limits set out in the BC Drinking Water Protection Regulation (BCDWPR) and the GCDWQ. The sample analysis results are summarized in Table 4 below, and some of the parameters worth noting are discussed in this section.

3.1 Coliform and Escherichia coli

The BCDWPR requires that (1) no sample should contain fecal coliform and Escherichia coli (E. coli) and that (2) no sample should contain more than 10 total coliforms per 100 millilitre or not more than 10% of samples from the distribution system in a given calendar month should show the presence of total coliform Bacteria.

Of the 69 samples analysed for microbiological criteria in the year 2018, no E. coli or total coliforms were detected. All colony forming units (CFU) were reported as <1 CFU/100mL. Therefore, all samples met the water quality requirements of the BCDWPR.

Table 4 Coliform Analysis Results

Sample Station	Total Coliform CFU/100mL			E. coli CFU/100mL				Positive Coliform Tests	Positive E. Coli Tests	
	Sample Tested	Low	Average	High	Sample Tested	Low	Average			High
W-1	9	< 1	n/a	< 1	9	< 1	n/a	< 1	None	None
W-2	13	< 1	n/a	< 1	13	< 1	n/a	< 1	None	None
W-3	15	< 1	n/a	< 1	15	< 1	n/a	< 1	None	None
W-4	3	< 1	n/a	< 1	3	< 1	n/a	< 1	None	None
W-5	2	< 1	n/a	< 1	2	< 1	n/a	< 1	None	None
W-6	4	< 1	n/a	< 1	4	< 1	n/a	< 1	None	None
W-7	3	< 1	n/a	< 1	3	< 1	n/a	< 1	None	None
W-8	15	< 1	n/a	< 1	15	< 1	n/a	< 1	None	None
W-9	5	< 1	n/a	< 1	5	< 1	n/a	< 1	None	None

4.0 Summary

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TFN is committed to delivery of water of the highest quality and will continue to make the necessary investment to ensure its continued success.

All microbiological samples collected were reported <1 CFU/100 mL. The minimum required number of samples (i.e., 4 samples throughout the distribution system) was not collected in two months of the annual collection period. It is recommended to collect at least the required 4 samples per month during the year subject to revision based on updated discussions with Fraser Health.

Any questions relating to this report of the water system can be directed to Michael Murphy at 604-868-3550.

5.0 References

1. British Columbia Drinking Water Protection Act and Regulation
2. Guidelines for Canadian Drinking Water Quality (October 2014)
3. Standard Methods for the Examination of Water and Wastewater 22 Edition
4. Guidance Manual for Maintaining Distribution System Water Quality, AWWA Research Foundation
5. Maintaining Water Quality in Finished Water Storage Facilities, AWWA Research Foundation
6. Water Quality Monitoring and Reporting Plan for the GVRD and Member Municipalities
7. Simplified Procedures for Water Examination, AWWA Manual of Water Supply Practices
8. Guidelines for the Approval of Waterworks, Coast Garibaldi Health

APPENDIX A
Sample Analysis Results

Tsawwassen First Nation – Drinking Water Quality Monitoring Report 2018

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Sample Range Report

Facility Name: TFN Water System
Date Range: Jan 1 2018 to Dec 31 2018

Operator Michael Murphy
 1926 Tsawwassen Dr
 Delta, BC V4M 4G2

Sampling Site	Date Collected	Total Coliform	E. Coli	Fecal Coliform
<u>W1-Cardinal</u>				
<u>Residence - Kitchen</u>				
<u>Tap, 3404 Falcon</u>				
<u>Way</u>				
	1-18-2018	L1	L1	
	2-15-2018	L1	L1	
	3-22-2018	L1	L1	
	4-10-2018	L1	L1	
	5-8-2018	L1	L1	
	6-22-2018	L1	L1	
	7-12-2018	L1	L1	
	7-24-2018	L1	L1	
	8-7-2018	<u>L1</u>	<u>L1</u>	
	Total Positive:	0	0	0
<u>W2-Plant Lab Tap, 2292</u>				
<u>Tsawwassen Dr</u>				
	1-23-2018	L1	L1	
	2-26-2018	L1	L1	
	4-24-2018	L1	L1	
	6-22-2018	L1	L1	
	7-12-2018	L1	L1	
	7-24-2018	L1	L1	
	8-7-2018	L1	L1	
	8-21-2018	L1	L1	
	9-4-2018	L1	L1	
	9-18-2018	L1	L1	
	10-30-2018	L1	L1	
	11-21-2018	L1	L1	
	12-11-2018	<u>L1</u>	<u>L1</u>	
	Total Positive:	0	0	0
<u>W3-Band Office -</u>				
<u>Lunchroom Tap,</u>				
<u>1926 Tsawwassen</u>				
<u>Dr</u>				
	1-18-2018			
		L1	L1	
	2-15-2018	L1	L1	
	3-6-2018	L1	L1	
	4-10-2018	L1	L1	

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4-24-2018	L1	L1	
5-8-2018	L1	L1	
6-22-2018	L1	L1	
7-12-2018	L1	L1	
7-24-2018	L1	L1	
8-21-2018	L1	L1	
9-4-2018	L1	L1	
9-18-2018	L1	L1	
10-30-2018	L1	L1	
11-21-2018	L1	L1	
12-11-2018	<u>L1</u>	<u>L1</u>	
Total Positive:	0	0	0

W4-ONNI Entrance,
Salish Sea Dr.

9-18-2018	L1	L1	
11-21-2018	L1	L1	
12-11-2018	<u>L1</u>	<u>L1</u>	
Total Positive:	0	0	0

W5-TSATSU Gas
Station - Store Sink,
101 Tsawwassen Dr

1-17-2018	L1	L1	
2-15-2018	<u>L1</u>	<u>L1</u>	
Total Positive:	0	0	0

W6-Park Canada -
Store, 4761 Nulelum
Way

1-23-2018	L1	L1	
2-26-2018	L1	L1	
3-22-2018	L1	L1	
4-24-2018	<u>L1</u>	<u>L1</u>	
Total Positive:	0	0	0

W7-Corner house at
entrance - Outdoor
Tap, 1500 blk
Tsawwassen Dr

3-6-2018	L1	L1	
8-7-2018	L1	L1	
9-4-2018	<u>L1</u>	<u>L1</u>	
Total Positive:	0	0	0

W8-Tsa-Tsu
Shores Condo -
Outdoor Tap, 101
TSATSU Shores

1-23-2018	L1	L1	
2-26-2018	L1	L1	

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3-6-2018	L1	L1	
3-21-2018	L1	L1	
4-10-2018	L1	L1	
5-8-2018	L1	L1	
7-12-2018	L1	L1	
7-24-2018	L1	L1	
8-7-2018	L1	L1	
8-21-2018	L1	L1	
9-4-2018	L1	L1	
9-18-2018	L1	L1	
10-30-2018	L1	L1	
11-21-2018	L1	L1	
12-11-2018	<u>L1</u>	<u>L1</u>	
Total Positive:	0	0	0

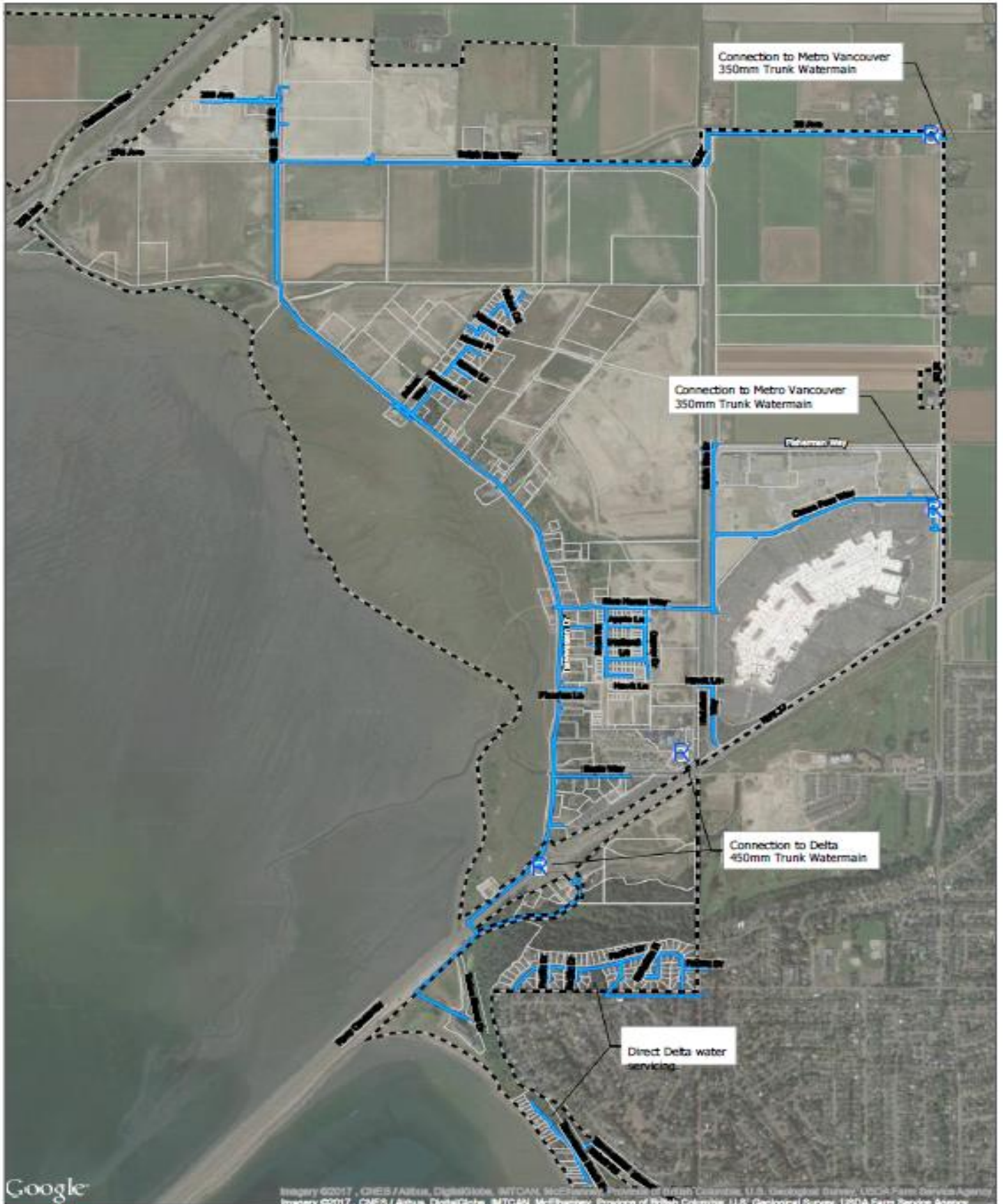
W9-Lands Office,
Falcon Way



8-21-2018	L1	L1	
9-18-2018	L1	L1	
10-30-2018	L1	L1	
11-21-2018	L1	L1	
12-11-2018	<u>L1</u>	<u>L1</u>	
Total Positive:	0	0	<u>0</u>

Result Values:	E - estimated	L - less than	G - greater than
Samples that contain total coliform:	0		0.00% of total
Samples that contain e. coli:	0		0.00% of total
Samples that contain fecal coliform:	0		0.00% of total
Number of consecutive samples that contain total coliform:	0		
Number of samples that contain total coliform in last 30 days:	0/0		
Total number of samples:	69		

APPENDIX B
TFN Distribution System Map

Tsawwassen First Nation – Drinking Water Quality Monitoring Report 2018



 <p>Project #: 2177.0000.01 Author: [Signature] Checked: KM Status: -DRAFT- 2017 5/</p>	<p>200 300 400 Metres</p> <p>(When plotted at 11"x17") Scale: 1:12500</p> <p>Legend  Water Meter  Existing Watermain  Community Boundary</p>	 <p>Water Quality Monitoring Program</p> <p>17</p>
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