



TSAWWASSEN FIRST NATION  
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# **2019 Drinking Water Quality Monitoring Report**

*Issued May 2020*



## 2019 Drinking Water Quality Report

### Executive Summary

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

A Total of 58 samples were taken from the water distribution system during 2019, including Escherichia Coli (58 samples), and total coliforms (58 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 investments to ensure its continued success.

**Any questions regarding this report of the water system can be directed to Michael Murphy, Utilities Supervisor, at 604.868.3550 or [mmurphy@tsawwassenfirstnation.com](mailto:mmurphy@tsawwassenfirstnation.com).**



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### 1.0 Introduction

The purpose of this report is to provide a summary of the Drinking Water Quality Monitoring Program during the 2019 year for the Tsawwassen First Nations Water Distribution System.

During 2019, the provisions 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. Section 4 of this report includes a summary of test results for 2019.

This document includes a brief introduction to TFN's water distribution system and applicable drinking water quality monitoring and testing program. The remaining parts of this document summarize the results of analyses, water distribution performance, improvements or deficiencies in the system.



### 2.0 Water Distribution System

An overview of the existing TFN water distribution system is available in Section 7.2. 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 five sampling sites throughout the distribution network.

Water is supplied to TFN by Metro Vancouver and the Corporation of Delta. Two primary connections to the Metro Vancouver South Delta 350mm trunk watermain are located along 52 Street, one at 28 Avenue and the other at Canoe Pass Way. Two additional connections to a 450mm trunk main owned by Delta are located on Highway 17.

The connection south of Salish Sea Drive services the Big Splash Waterpark, while the connection at Tsawwassen Drive north of Highway 17 is a back up that is not typically used. There are also two areas where TFN is directly serviced by Delta's water system located at Pacific Drive and Tsawwassen Beach Road. 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.



### 3.0 Testing and Monitoring

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 consists of routine monitoring for the purpose of obtaining an accurate overview of water quality within the distribution system. The program also includes non-routine monitoring for handling complaints and emergency situations. Monitoring includes two components: safe, representative collection of the sample and accurate laboratory analyses.

#### 3.1 Routine Monitoring

The collection of water samples is performed by qualified TFN staff and forwarded to a qualified lab for analyses of the parameters in Table 1, below. All microbiological analyses were conducted by laboratories that have been approved by the 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.

##### 3.1.1 Sampling Parameters

*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, the distribution system is experiencing regrowth or infiltration to the system is occurring. Escherichia coli, one of the species in the fecal coliform group, is a definite indicator of the presence of contamination within the distribution system.

**3.1.2 Sampling Locations**

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 Section 7.2. These locations are described in the table below. Table 5 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. There is now only one “residence” within the sampling program, which is crucial as it is a dead end in the system.

**3.1.3 Sampling Locations**

*Table 2 – Sampling Locations*

Site	Location	Category	Flow Category	Description
W-1	101 Tsatsu Shores, Tsatsu Condo	Strata Residence	Dead End	Outdoor Tap
W-2	1926 Tsawwassen Drive Band Office	TFN Facility	Medium	Lunchroom Tap
W-3	2292 Tsawwassen Drive Plant	TFN Facility	Medium	Plant Lab Tap
W-4	Salish Sea Drive, ONNI Entrance	TFN Sample Point	Medium	Sample Station
W-5	Falcon Way, Lands Office	TFN Facility	Dead End	Kitchen Sink



### 3.1.4 Sampling Frequency

Table 3 – Sampling Frequencies

<b>Monthly Distribution System Sampling</b>	
<b>Parameters: Total Coliforms and E.Coli</b>	
January	W-1, W-2, W-3, W-4, W-5
February	W-1, W-2, W-3, W-4, W-5
March	W-1, W-2, W-3, W-5
April	W-1, W-2, W-3, W-5
May	W-1, W-2, W-3, W-4, W-5
June	W-1, W-2, W-3, W-4, W-5
July	W-1, W-2, W-3, W-4, W-5
August	W-1, W-2, W-3, W-4, W-5
September	W-1, W-2, W-3, W-4, W-5
October	W-1, W-2, W-3, W-4, W-5
November	W-1, W-2, W-3, W-4, W-5
December	W-1, W-2, W-3, W-4, W-5

### 3.2 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 2019 that required emergency sampling.





## 4.0 Sample Analyses Results

There were 58 samples collected from the water distribution system in 2019. No samples exceeded the limits set out in the BC Drinking Water Protection Regulation (BCDWPR) and the GCDWQ. The sample analyses results are summarized in Table 4 below, and some of the parameters worth noting are discussed in this section.

### 4.1 Coliform and Escherichia Coli

The BCDWPR requires that (1) no sample should contain fecal coliform and Escherichia coli (E. Coli) and that (2) samples 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 58 samples analysed for microbiological criteria in the year 2019, 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.

#### 4.1.1 Coliform Analyses Results

Table 4 – Coliform Analyses Results

Sample Station	Total Coliform CFU/100mL				E. Coli CFU/100mL				Positive Coliform Tests	Positive E. Coli Tests
	Samples Tested	Low	Average	High	Samples Tested	Low	Average	High		
W-1	12	<1	N/A	<1	12	<1	N/A	<1	None	None
W-2	12	<1	N/A	<1	12	<1	N/A	<1	None	None
W-3	12	<1	N/A	<1	12	<1	N/A	<1	None	None
W-4	10	<1	N/A	<1	10	<1	N/A	<1	None	None
W-5	12	<1	N/A	<1	12	<1	N/A	<1	None	None



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Table 5 – Sample Range and Chlorine Residual Results

<b>W-1 Tsatsu Shores Tsatsu Condo - Outdoor Tap</b>				<b>W-2 1926 Tsawwassen Drive Band Office - Lunchroom Tap</b>			
Date	Total Coliform	E. Coli	Chlorine Residual (ppm) (at time of sample drawn)	Date	Total Coliform	E. Coli	Chlorine Residual (ppm) (at time of sample drawn)
01/15/2019	<1	<1	0.59	01/15/2019	<1	<1	0.7
02/19/2019	<1	<1	0.74	02/19/2019	<1	<1	0.82
03/26/2019	<1	<1	0.44	03/26/2019	<1	<1	0.72
04/08/2019	<1	<1	0.55	04/08/2019	<1	<1	0.48
05/21/2019	<1	<1	0.51	05/21/2019	<1	<1	0.56
06/25/2019	<1	<1	0.28	06/25/2019	<1	<1	0.42
07/23/2019	<1	<1	0.51	07/23/2019	<1	<1	0.58
08/13/2019	<1	<1	0.64	08/13/2019	<1	<1	2.2
09/17/2019	<1	<1	0.55	09/17/2019	<1	<1	0.49
10/22/2019	<1	<1	0.51	10/22/2019	<1	<1	0.57
11/19/2019	<1	<1	0.49	11/19/2019	<1	<1	0.54
12/03/2019	<1	<1	0.56	12/03/2019	<1	<1	0.5
<b>W-3 2292 Tsawwassen Drive Plant - Lab Tap</b>				<b>W-4 Fisherman @ Salish Sea Drive ONNI Entrance - TFN Sample Station</b>			
Date	Total Coliform	E. Coli	Chlorine Residual (ppm) (at time of sample drawn)	Date	Total Coliform	E. Coli	Chlorine Residual (ppm) (at time of sample drawn)
01/15/2019	<1	<1	0.64	01/15/2019	<1	<1	0.25
02/19/2019	<1	<1	0.66	02/19/2019	<1	<1	0.23
03/26/2019	<1	<1	0.79	03/26/2019	<b>x</b>	<b>x</b>	<b>x</b>
04/08/2019	<1	<1	0.75	04/08/2019	<b>x</b>	<b>x</b>	<b>x</b>
05/21/2019	<1	<1	0.66	05/21/2019	<1	<1	0.59
06/25/2019	<1	<1	0.61	06/25/2019	<1	<1	0.71
07/23/2019	<1	<1	0.65	07/23/2019	<1	<1	0.61
08/13/2019	<1	<1	0.67	08/13/2019	<1	<1	0.67
09/17/2019	<1	<1	0.66	09/17/2019	<1	<1	0.45
10/22/2019	<1	<1	0.63	10/22/2019	<1	<1	0.57
11/19/2019	<1	<1	0.77	11/19/2019	<1	<1	0.26
12/03/2019	<1	<1	0.65	12/03/2019	<1	<1	0.59

**x** – no samples collected



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<b>W-5 Falcon Way Lands Office - Lunchroom Tap</b>			
Date	Total Coliform	E. Coli	Chlorine Residual (ppn) (at time of sample drawn)
01/15/2019	<1	<1	0.59
02/19/2019	<1	<1	0.49
03/26/2019	<1	<1	0.66
04/08/2019	<1	<1	0.62
05/21/2019	<1	<1	0.68
06/25/2019	<1	<1	0.74
07/23/2019	<1	<1	0.69
08/13/2019	<1	<1	0.68
09/17/2019	<1	<1	0.49
10/22/2019	<1	<1	0.51
11/19/2019	<1	<1	0.63
12/03/2019	<1	<1	0.53



## 5.0 Flow Data

The total annual flow for 2019 to TFN was 328, 989m3. There are two flow meters along 52<sup>nd</sup> Avenue which indicate total flow received from Metro Vancouver.

### 5.1 Flow Data

*Table 6 – Monthly flow totals for 2019*

Month	52nd Street/Connector Road Flow Volume (m3)	52nd Street/28th Avenue Flow Volume (m3)	52nd Street/Connector Daily Average	52nd/28 Avenue Daily Average	Total Volume (m3)
January	2, 484	7, 694	86	265	10, 178
February	2, 429	7, 722	87	276	10, 151
March	3, 118	7, 192	111	257	10, 310
April	8, 043	9, 109	230	260	17, 152
May	16, 323	7, 718	583	276	24, 041
June	31, 414	12, 729	1, 122	455	44, 143
July	49, 490	13, 761	1, 414	393	63, 251
August	42, 852	11, 630	1, 530	415	54, 482
September	34, 650	9, 811	990	280	44, 461
October	14, 351	3, 958	513	141	18, 309
November	11, 932	2, 775	426	99	14, 707
December	14, 419	3, 294	412	94	17, 713



### 6.0 Upgrades and Improvements

In 2019 various projects were undertaken which have contributed to improved water quality within TFN. The watermain along Fisherman Way became looped from a dead end from Salish Sea Drive to Tsawwassen Drive and a designated sample station was installed here as well eliminating sample collection from a residence.

Construction of townhome, apartment, and detached home developments have brought greater population and increased demand to areas which have been otherwise low water use zones. This has aided in ensuring water quality eliminating stagnant sections of watermain.

Two Utility Operators were hired in 2019, also, which has aided in the implementation and roll-out of a new maintenance program, Lucity. While still in the development phases, procedures have been put forth through Lucity, including dead end flushing on a bi-annual basis and sample collection work orders. Safe Operating Procedures for dealing with customer complaints, representative sample collection, and effective flushing have been developed as well and will ensure water quality within TFN is of the highest standard.

### 7.0 References

#### 7.1 Document References

1. British Columbia Drinking Water Protection Act
2. British Columbia Drinking Water Regulation
3. Water Quality Monitoring and Reporting Plan for the GVRD and Member Municipalities
4. Guidelines for Canadian Drinking Water Quality (October 2014)





### 8.0 Summary

Tsawwassen First Nation (TFN) provides this report in fulfillment of the Drinking Water Protection Act. This report outlines a summary of water quality testing, monitoring, and improvements for ensuring water quality for the 2019 year.

58 samples were taken from the water distribution system in 2019, all of which were compliant in that none exceeded the limits set out in the Drinking Water Protection Regulation Sections 2 and 9, Schedule A and Section 8, Schedule B. The minimum number of required samples (i.e., 4 samples per month throughout the distribution system) were collected each month of the annual collection period, however, 5 samples were taken most months during 2019.

Improvements to the TFN water distribution system in 2019 will aid in maintaining water quality. Administrative and operations measures, controls and procedures have also been implemented to maintain compliance, exceed regulatory requirements, and ensure clean and safe drinking water is delivered to all consumers within Tsawwassen First Nations' water distribution system.