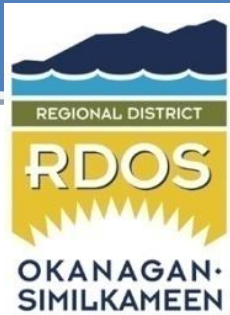


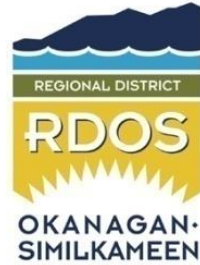
# 2023

## ANNUAL WATER QUALITY MONITORING REPORT MISSEZULA WATER SYSTEM



Regional District of Okanagan-Similkameen

June 2024



**2023 ANNUAL WATER QUALITY MONITORING REPORT  
MISSEZULA WATER SYSTEM  
MISSEZULA, B.C.**

Copy prepared for:  
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## **1. Introduction**

As the owner and operator of the Missezula Lake water system, the Regional District Okanagan-Similkameen is responsible for the following Annual Report summarizing the results from the 2023 *Water Quality Monitoring Program*. The report is a conditional requirement of the *Permit to Operate* issued by the Interior Health Authority (IHA) and the *BC Drinking Water Protection Act and Regulation*.

## **2. System Description**

The Missezula Lake water system ownership was transferred from the Missezula Lake Improvement District to the RDOS in the fall of 2019. The Missezula Lake community is a remote community that is located within Electoral Area H approximately 50 kilometers north of Princeton. The Missezula Lake system draws water from Missezula Lake to supply domestic water to approximately 190 connections consisting of both permanent residents and seasonal use homes. The water from Missezula Lake is chlorinated prior to entering the distribution system.

Interior Health Authority has mandated requirements for the Missezula Lake water system to meet the Provincial 4-3-2-1-0 Treatment Standards. Upgrades to the system will be required to fulfill this requirement.

## **3. System Classification and Operator Certifications**

### **3.1. System Classification**

The *British Columbia Environmental Operators Certification Program (BC EOCP)* is responsible for the classification of potable water systems in BC.

The Missezula Lake system remained classified as a *Small Water System (SWS)* in 2023.

### **3.2. Operator Certification**

The *British Columbia Environmental Operators Certification Program (BC EOCP)* is also responsible for certification of all water system operators. Operators may hold certification(s) in the disciplines of *Water Distribution* and/or *Water Treatment* with four (4) levels of certification achievable within each discipline. RDOS Operators annually attend courses, seminars and complete online training required to maintain their levels of certification. In addition, all operators annually continue to work on augmenting and furthering their levels of certification. All RDOS Operators are certified through the BC EOCP as indicated in the table below.

OPERATOR EOCP CERTIFICATION No.	WATER DISTRIBUTION CERTIFICATION LEVELS				WATER TREATMENT CERTIFICATION LEVELS			
	IV	III	II	I	IV	III	II	I
1162	X						X	
4194			X					
4840			X				X	
4839		X						X
6926		X						X
8266				X				X
8761		X						X
9322		X						X
1000977			X					X

**Table 1:** RDOS Operator Certifications 2023

**4. Annual Water Usage**

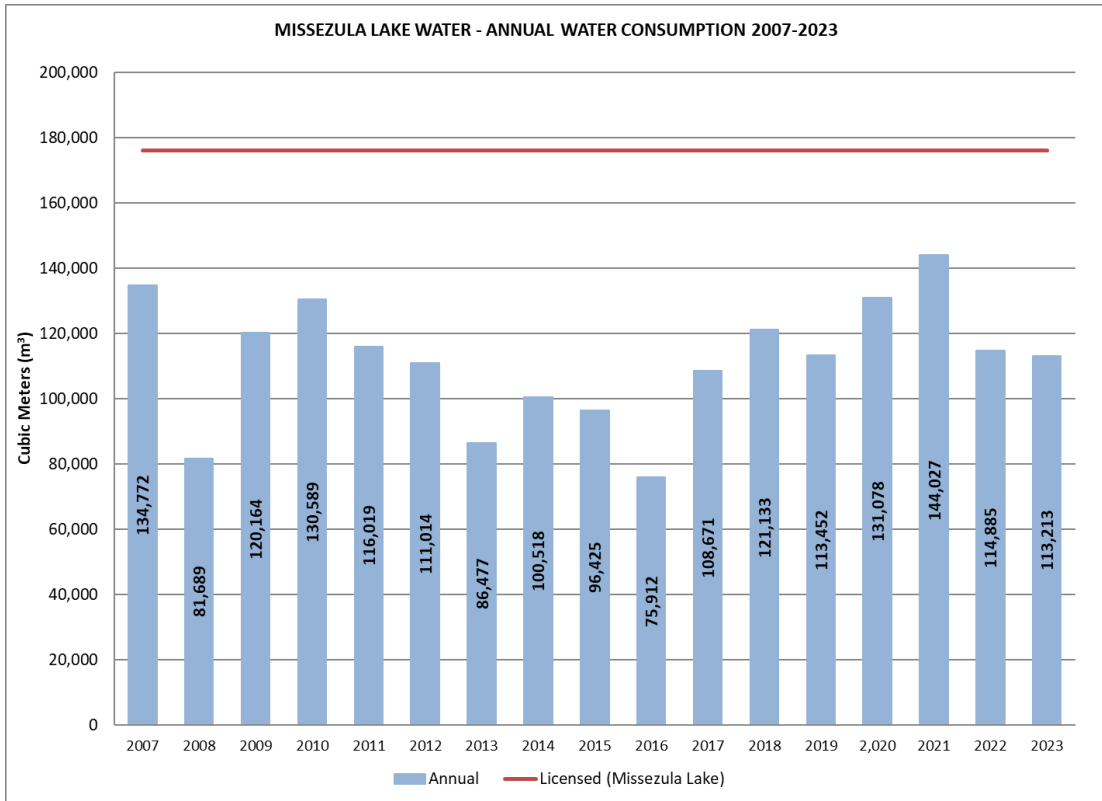
Due to ongoing intermittent issues with the Missezula Lake flow meter which began in late 2022, the instantaneous flow rates are either not accurate or available. The flow totalizer appears to be either minimally affected or completely unaffected, and has been reported below in Table 2.

In 2023, a total of 113,213 m<sup>3</sup> of water was pumped from Missezula Lake, slightly down from 114,885 m<sup>3</sup> in 2022. The annual pumping volumes extracted from the Missezula Lake from 2007 to 2023 is presented below in Figure 1.

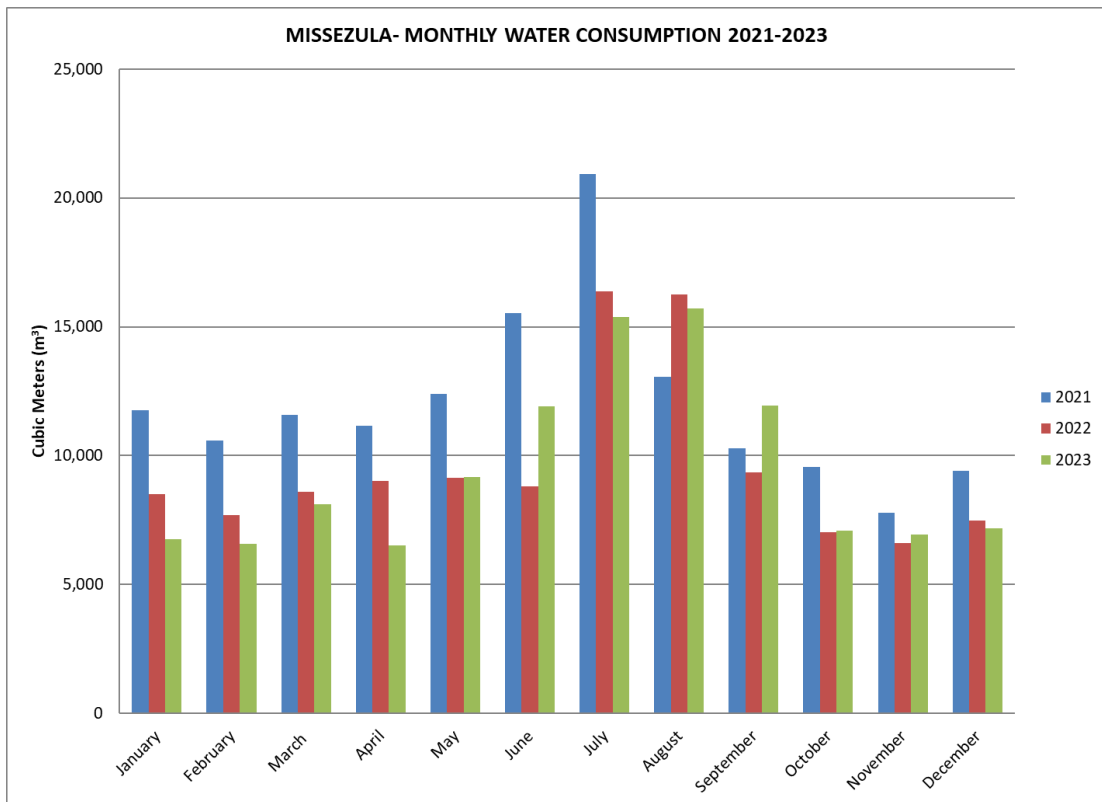
**4.1. Consumption Records**

	Cubic Meters (m <sup>3</sup> )	US Gallons	Date
<b>Annual Total Usage</b>	113,213	28,125,411	
<b>Minimum Daily Flow</b>	n/a	n/a	n/a
<b>Maximum Daily Flow</b>	n/a	n/a	n/a

**Table 2:** Missezula Annual Water Consumption 2023



**Figure 1: Annual Water Consumption 2007 to 2023**



**Figure 2: Monthly Water Consumption 2021 to 2023**

#### **4.2. Water Conservation**

On July 13, 2023 the Missezula Lake water system moved from Stage “Normal” to Stage 1 water restrictions. Stage 1 restrictions are intended to reduce total and peak use by 10%. On July 21, 2023 the Missezula restrictions were further elevated from Stage 1 to Stage 2. Stage 2 restrictions are intended to reduce total and peak use by 20%. On October 16<sup>th</sup> the RDOS returned all systems to Stage “Normal”.

#### **4.3. Missezula Lake Level Monitoring**

The RDOS monitors the level in Missezula Lake closely. The dam on Missezula Lake is operated by the Ministry of Water, Land and Resource Stewardship (WLARS) with both downstream water licenses and environmental flow needs (EFNs) factoring into the decisions on releases from the Lake. If the level in Missezula Lake drops too low it will impact the ability of the distribution pumps to supply water to the system. During times of high usage and extreme heat, water conservation and communications with WLARS are important in order to maintain a constant supply of water to the Missezula Lake water system.

### **5. Source Water Quality**

All untreated source water quality parameters are compared to the *British Columbia Drinking Water Protection Act and Regulation (DWPA)* and the *Guidelines for Canadian Drinking Water Quality (GCDWQ)* unless otherwise noted, which could be indicated as an Operational Guideline (OG). The *DWPA* and *GCDWQ* define these parameters and set Aesthetic Objectives (AO) and Maximum Acceptable Concentrations (MAC).

All accredited laboratory tests in 2023 were performed by Caro Analytical Services (Kelowna, B.C.)

#### **5.1. Source Water Bi-Weekly Monitoring**

Bi-weekly monitoring of the Missezula Lake includes grab samples for bacteriological testing and general water potability parameters and field measured parameters using field kits. Samples from Missezula Lake were analyzed for Total Coliforms and *Escherichia coli (E.coli)*, Alkalinity, Total Organic Carbon, Colour, Hardness, Total Suspended Solids and UV Transmittance at 254 nm. The table below summaries the laboratory results and the field measured parameters from the Missezula Lake.



**Sampling Location: Raw Water**

Analyte	Unit	Avg	Min	Max	Number of Results
<b>Field Results</b>					
Conductivity	µS/cm	369	327	711	17
pH		7.66	7.33	7.93	17
Total dissolved solids	mg/L	260	233	504	17
Temperature	°C	5.5	3	7.4	17
Turbidity	NTU	0.87	0.28	1.21	18
<b>Lab Results</b>					
<b>General</b>					
Alkalinity (total, as CaCO <sub>3</sub> )	mg/L	153	134	181	18
Total organic carbon	mg/L	5.6	4.22	7.42	18
Colour	CU	4.8	<5.0	8.5	18
Hardness (as CaCO <sub>3</sub> ), from total Ca/Mg	mg/L	151	118	159	18
Total suspended solids	mg/L	1.3	2	2.6	18
UV transmittance at 254 nm - filtered	%	81.2	79.4	96.5	18
UV transmittance at 254 nm - unfiltered	%	79.4	78.4	80.8	18
<b>Microbiological</b>					
Total coliforms (counts)	CFU/100 mL	15	15	15	1
Total coliforms (MPN)	MPN/100 mL	3	1	14	15
E. coli (counts)	CFU/100 mL	<1	<1	<1	1
E. coli (MPN)	MPN/100 mL	1	1	1	15

**Table 3:** Missezula Lake Bi-Weekly Monitoring 2023 Summary

## 5.2. Source Water Potable Water Testing

Annually, the RDOS submits a sample of the untreated well water to an accredited lab for comprehensive potable water testing. The results of these test are compared against the *Guidelines for Canadian Drinking Water Quality*. The *GCDWQ* establishes Maximum Allowable Concentration (MAC), Interim Maximum Acceptable Concentrations (IMAC) and Aesthetic Objectives (AO) for parameters if applicable.

This comprehensive test includes physical parameters (e.g. color, turbidity, temperature, ultraviolet transmittance), chemical parameters (e.g. hardness, total metals and nutrients). Changes in these parameters may result in the need for water notifications for customers (i.e. Boil Water Notice or Water Quality Advisory) or the requirement for treatment processes to be implemented. The following tables display the results for the respective comprehensive potable water tests.

All tested source water parameters from Missezula Lake met the applicable guidelines in 2023 with no notable increasing or decreasing trends.

### 5.2.1. Source Water General Potability Parameters

Analyte	Unit	Guideline		Raw Water	Raw Water
		GCDWQ MAC	GCDWQ AO	28-Sep- 22	3-Oct- 23
				Date Sampled	
<b>Lab Results</b>					
<b>General</b>					
Alkalinity (total, as CaCO <sub>3</sub> )	mg/L	NG	NG	175	181
Total organic carbon	mg/L	NG	NG	4.28	4.22
Chloride	mg/L	NG	250	9.2	8.67
Colour	CU	NG	15	7.1	6.3
Conductivity	µS/cm	NG	NG	310	308
Total cyanide	mg/L	0.2 <sup>1.1</sup>	NG	<0.0020	<0.0020
Fluoride	mg/L	1.5	NG	<0.10	<0.10
Hardness (as CaCO <sub>3</sub> ), from total Ca/Mg	mg/L	NG	NG	145	158
Langelier Index		NG	NG	0.3	0.2
pH		NG	7.0 - 10.5 <sup>2.1</sup>	7.96	7.86
Total suspended solids	mg/L	NG	NG		<2.0
Sulphate	mg/L	NG	500 <sup>2.2</sup>	11.4	10.4
Sulphide (total, as S)	mg/L	NG	0.047 <sup>2.3</sup>	<0.020	<0.020
Turbidity	NTU	N <sup>1.2</sup>	NG	0.56	0.41
UV transmittance at 254 nm - filtered	%	NG	NG	79.9	96.5
UV transmittance at 254 nm - unfiltered	%	NG	NG		80.8
<b>Nutrients</b>					
Ammonia (total, as N)	mg/L	NG	NG	0.061	<0.050
Nitrate (as N)	mg/L	10	NG	<0.010	0.03
Nitrite (as N)	mg/L	1	NG	<0.010	<0.010
Potassium (total)	mg/L	NG	NG	1.32	1.45

See Guideline Notes in Section 5.2.2

**Table 4:** Missezula Lake General Potability Parameters 2022 to 2023

## 5.2.2. Guideline Notes for General Potability Parameters

### 1. Notes for Guidelines for Canadian Drinking Water Quality - Maximum Acceptable Concentrations (GCDWQ MAC)

#### **Note 1.1 for Total cyanide:**

The MAC for free cyanide is 0.2 mg/L. A maximum of 0.2 mg/L was used, in this report, to identify exceedances for total cyanide as means for determining the potential for exceeding the free cyanide guideline.

#### **Note 1.2 for Turbidity:**

"Waterworks systems that use a surface water source or a groundwater source under the direct influence of surface water should filter the source water to meet health-based turbidity limits, as defined for specific treatment **technologies**. Where possible, filtration systems should be designed and operated to reduce turbidity levels as low as possible, with a treated water turbidity target of less than 0.1 NTU at all times. Where this is not achievable, the treated water turbidity levels from individual filters should meet the requirements described in **GCDWQ**.

For systems that use groundwater that is not under the direct influence of surface water, which are considered less vulnerable to faecal contamination, turbidity should generally be below 1.0 NTU.

For effective operation of the distribution system, it is good practice to ensure that water entering the distribution system has turbidity levels below 1.0 NTU."

### 2. Notes for Guidelines for Canadian Drinking Water Quality - Aesthetic Objectives (GCDWQ AO)

#### **Note 2.1 for pH:**

The operational guideline for pH is a range of 7.0 to 10.5 in finished drinking water.

#### **Note 2.2 for Sulphate:**

There may be a laxative effect in some individuals when sulphate levels exceed 500 mg/L. Health authorities should be notified of drinking water sources containing above 500 mg/L.

#### **Note 2.3 for Sulphide (total, as S):**

The aesthetic objective for sulphide (as H<sub>2</sub>S) is 0.05 mg/L. This is equivalent to 0.047 mg/L sulphide (as S).

### 5.2.3. Source Water Total Metals

Analyte	Unit	Sampling Location Date Sampled		Raw Water 28-Sep-22	Raw Water 3-Oct-23
		Guideline			
		GCDWQ MAC	GCDWQ AO		
<b>Lab Results</b>					
<b>Total Metals</b>					
Aluminum (total)	mg/L	2.9 <sup>1.1</sup>	0.100 <sup>2.1</sup>	<0.0050	<0.0050
Antimony (total)	mg/L	0.006	NG	<0.00020	<0.00020
Arsenic (total)	mg/L	0.010 <sup>1.2</sup>	NG	0.00066	0.00056
Barium (total)	mg/L	2.0 <sup>1.3</sup>	NG	0.0386	0.0378
Boron (total)	mg/L	5	NG	<0.0500	<0.0500
Cadmium (total)	mg/L	0.007 <sup>1.4</sup>	NG	<0.000010	<0.000010
Calcium (total)	mg/L	NG	NG	41.2	45.1
Chromium (total)	mg/L	0.05	NG	<0.00050	<0.00050
Cobalt (total)	mg/L	NG	NG	<0.00010	<0.00010
Copper (total)	mg/L	2 <sup>1.5</sup>	1	0.00194	0.00206
Iron (total)	mg/L	NG	0.3	<0.010	<0.010
Lead (total)	mg/L	0.005 <sup>1.6</sup>	NG	<0.00020	<0.00020
Magnesium (total)	mg/L	NG	NG	10.3	10.9
Manganese (total)	mg/L	0.12 <sup>1.7</sup>	0.02 <sup>2.2</sup>	0.00446	0.00286
Mercury (total)	mg/L	0.001	NG	<0.000010	<0.000010
Molybdenum (total)	mg/L	NG	NG	0.00076	0.00077
Nickel (total)	mg/L	NG	NG	<0.00040	<0.00040
Selenium (total)	mg/L	0.05	NG	<0.00050	<0.00050
Sodium (total)	mg/L	NG	200	8.61	8.98
Strontium (total)	mg/L	7.0 <sup>1.8</sup>	NG	0.2	0.207
Uranium (total)	mg/L	0.02	NG	0.000229	0.000219
Zinc (total)	mg/L	NG	5.0	<0.0040	<0.0040

See Guideline Notes in Section 5.2.4

**Table 5:** Missezula Lake Total Metals Potability 2021 to 2023

### 5.2.4. Guideline Notes for Total Metals Potability

1. Notes for Guidelines for Canadian Drinking Water Quality - Maximum Acceptable Concentrations (GCDWQ MAC)

**Note 1.1 for Aluminum (total):** The maximum acceptable concentration (MAC) for total aluminum in drinking water is 2.9 mg/L (2 900 µg/L) based on a locational running annual average of a minimum of quarterly samples taken in the distribution system. (Update March 5, 2021)

**Note 1.2 for Arsenic (total):** Every effort should be made to maintain arsenic levels in drinking water as low as reasonably achievable.

**Note 1.3 for Barium (total):** Update January 24, 2020. The MAC was revised from 1.0 mg/L to 2.0 mg/L.

**Note 1.4 for Cadmium (total):** A maximum acceptable concentration (MAC) of 0.007 mg/L (7 µg/L) is established for total cadmium in drinking water, based on a sample of water taken at the tap. (Update July 14, 2020)

**Note 1.5 for Copper (total):** A maximum acceptable concentration (MAC) of 2 mg/L is established for total copper in drinking water, based on a sample of water taken at the tap. Guidelines for Canadian Drinking Water Quality - Guideline Technical Document on Copper, June 2019.

**Note 1.6 for Lead (total):** The maximum acceptable concentration (MAC) for total lead in drinking water is 0.005 mg/L (5 µg/L), based on a sample of water taken at the tap and using the appropriate protocol for the type of building being sampled. Every effort should be made to maintain lead levels in drinking water as low as reasonably achievable (or ALARA). (GCDWQ: Guideline Technical Document; March, 2019)

**Note 1.7 for Manganese (total):** Guidelines for Canadian Drinking Water Quality - Guideline Technical Document on manganese, May 2019.

**Note 1.8 for Strontium (total):** Guidelines for Canadian Drinking Water Quality - Guideline Technical Document on strontium, May 2019.

## 2. Notes for Guidelines for Canadian Drinking Water Quality - Aesthetic Objectives (GCDWQ AO)

**Note 2.1 for Aluminum (total):** The operational guidance (OG) value for total aluminum in drinking water is 0.100 mg/L (100 µg/L) to optimize water treatment and distribution system operations. This value is based on a locational running annual average. The sampling frequency required to calculate the locational running annual average will vary based on the type of treatment facility and the sampling location. (Update March 5, 2021)

**Note 2.2 for Manganese (total):** Guidelines for Canadian Drinking Water Quality - Guideline Technical Document on manganese, May 2019.

**6. Distribution System Water Quality**

All treated distribution system water quality parameters are compared to the *British Columbia Drinking Water Protection Act and Regulation (DWPA)* and the *Guidelines for Canadian Drinking Water Quality (GCDWQ)* unless otherwise noted, which could be indicated as an operational guideline (OG). The *DWPA* and *GCDWQ* define these parameters and set Aesthetic Objectives (AO) and Maximum Acceptable Concentrations (MAC).

All accredited laboratory tests in 2023 were performed by Caro Analytical Services (Kelowna, B.C.)

**6.1. Distribution System Bacteriological Results**

The Missezula Lake Pumphouse Discharge and two distribution system sample stations were sampled bi-weekly. A third distribution sample station was sampled periodically. Samples from the Pumphouse Discharge and distribution system were analyzed for Total Coliforms and *Escherichia coli (E.coli)*. Schedule A of the *BC Drinking Water Protection Regulation* provides bacteriological testing criteria as given below.

**Schedule A**  
**Water Quality Standards for Potable Water**  
*(sections 2 and 9)*

Parameter:	Standard:
Fecal coliform bacteria	No detectable fecal coliform bacteria per 100 ml
<i>Escherichia coli</i>	No detectable <i>Escherichia coli</i> per 100 ml
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 100 ml and no sample has more than 10 total coliform bacteria per 100 ml

In 2023, there were two (2) samples that had results for Total Coliforms. One positive sample was taken at the Pumphouse discharge sample point on July 19<sup>th</sup>, and the other at the Gate sample station on September 14<sup>th</sup>. Each point was resampled, and the subsequent sample results in both cases reported <1 CFU per 100mL. There were no positive samples for *E. coli*. The following is a summary of the laboratory bacteriological results from the treated water distribution system.

Analyte	Sampling Location	Unit	Avg	Min	Max	Number of Results	Number of Results with Exceedances
<b>Lab Results: Microbiological</b>							
Background bacteria	Pump House Discharge	CFU/ 100 mL	<1	<1	5	25	0
	The Bridge	CFU/ 100 mL	<1	<1	<1	7	0
	The Gate	CFU/ 100 mL	<1	1	1	22	0
	Tower	CFU/ 100 mL	<1	<1	<1	20	0
E. coli (counts)	Pump House Discharge	CFU/ 100 mL	<1	<1	<1	27	0
	The Bridge	CFU/ 100 mL	<1	<1	<1	8	0
	The Gate	CFU/ 100 mL	<1	<1	<1	24	0
	Tower	CFU/ 100 mL	<1	<1	<1	21	0
Total coliforms (counts)	Pump House Discharge	CFU/ 100 mL	<1	1	1	27	1
	The Bridge	CFU/ 100 mL	<1	<1	<1	8	0
	The Gate	CFU/ 100 mL	2	<1	41	24	1
	Tower	CFU/ 100 mL	<1	<1	<1	21	0

**Table 6:** Distribution Water Bacteriological Testing 2023 Summary



**6.2. Distribution System Free Chlorine Residuals**

The following is a summary of the free chlorine residual measurements from the pump house discharge and the distribution system. Free chlorine is measured with bacteriological samples. Free chlorine residuals are required to be maintained between 0.2 mg/L and 2.0 mg/L of free chlorine.

Analyte	Sampling Location	Unit	Average	Minimum	Maximum	Number of Results
<b>Field Results</b>						
Chlorine (free)	Pump House Discharge	mg/L	0.79	0.16	1.51	29
	The Bridge	mg/L	0.72	0.13	1.53	9
	The Gate	mg/L	0.6	0.12	1.01	26
	Tower	mg/L	0.42	0.06	0.97	23

**Table 7:** Distribution System Free Chlorine Residuals 2023 Summary

**6.3. Distribution System Water Quality Field Parameters**

The following is a summary of the field parameters that are measured routinely at the Pumphouse discharge and in the distribution system.

Analyte	Unit	Average	Minimum	Maximum	Number of Results	Number of Results with Exceedances
<b>Field Results</b>						
Conductivity	µS/cm	357	329	400	45	0
pH		7.77	7.11	8.08	45	0
Total dissolved solids	mg/L	253	234	284	45	0
Temperature	°C	5.6	2.1	11.8	45	0
Turbidity	NTU	0.42	0.2	0.96	52	0

**Table 8:** Distribution System Field Measured Parameters 2023 Summary

**6.4. Water Quality Complaints**

None to report for 2023.

## **7. Water System Notifications**

The Interior Health Authority's team of drinking water officers are responsible for providing the oversight to ensure compliance and drinking water safety. The IHA is responsible for issuing Permits to Operate to drinking water systems. The Interior Health Authority has four types of water notifications to inform users of negative impacts to water quality.

### **7.1. Water Quality Advisory (WQA)**

There is some level of risk associated with consuming the drinking water but a Boil Water Notice is not needed. The risk is elevated for people with weakened immune systems, the elderly and infants and young children.

There were two (2) WQAs issued in 2023. One was issued on June 6<sup>th</sup> and rescinded on July 27<sup>th</sup>, and the other was issued on August 18<sup>th</sup> and rescinded on September 6<sup>th</sup>. Both WQAs were put in place due to increased levels of turbidity in the source water from Missezula Lake.

### **7.2. Boil Water Notice (BWN)**

There are organisms in the water that can make you sick. To safely consume (swallow) the water, you must bring it to a rolling boil for at least 60 seconds, or use a safe alternate source of water.

No BWNs issued in 2023.

### **7.3. Do Not Consume (DNC)**

There are harmful chemicals or other bad things in the water that can make you sick. You cannot make the water safe by boiling. The water can make you sick if you consume (swallow) it. You cannot use the water for drinking, brushing teeth, washing/preparing/cooking food or pet's drinking water. You can bath, shower and water plants and gardens with the water.

No DNCs issued in 2023.

### **7.4. Do Not Use (DNU)**

There are known microbial, chemical or radiological contaminants in the water and that any contact with the water with the skin, lungs or eyes can be dangerous. Do not turn on your tap for any reason and do not use your water. You CANNOT make the water safe by boiling it.

No DNUs issued in 2023.

## **8. Program Updates and Status**

### **8.1. Cross Connection Control Program**

A cross connection is any actual or potential connection between the drinking water (potable) system and a non-potable substance (contaminant). Backflow is when the flow of water in a pipe reverses from the normal direction. When a cross connection and backflow occur simultaneously often the result is a contaminant entering the drinking water system.

Cross connection in plumbing systems require backflow preventers corresponding to the degree of hazard as indicated by the CSA B64.10, “Manual for the Selection and Installation of Backflow Preventers”, as referenced in the BC Plumbing Code, or as determined by a CCC hazard assessment survey.

The RDOS adopted a Regional CCC Bylaw, No.2851, in 2020 to address cross connection and backflow prevention applicable to all agricultural, industrial, commercial and institutional properties. These property uses are required to have a suitable backflow protection device installed.

In February, 2023 the RDOS started implementation of its Regional Cross Connection Control program with MTS Inc. (Vernon, B.C.) contracted as the program administrator.

### **8.2. Capital Works / System Additions**

None of note in 2023.

### **8.3. Emergency Response Plan**

The *Emergency Response Plan* is scheduled to be updated in 2024.

### **8.4. Future System Upgrades**

As mandated by the Interior Health Authority, the Missezula Lake water system is required to meet the Provincial 4-3-2-1-0 Treatment Standards if it is to continue using Missezula Lake as a water source. The Regional District applied for Federal/Provincial grant funding in 2020 and was notified in late 2021 that the grant application was successful.

The RDOS initiated the source water upgrade project for the Missezula Lake water system in 2022. In anticipation of the upgrades Larratt Aquatic (Kelowna, B.C.) was contracted in 2020 to begin an assessment of the Missezula Lake Intake. This report was completed in early 2022. Again in 2023, Larratt Aquatic was contracted to conduct one (1) sampling event on Missezula Lake in 2023 in response to the elevated lake turbidity levels.

In 2022 the RDOS had an exploratory well drilled adjacent to the Missezula Lake Pump Station. This well unfortunately did not meet the requirements to move forward as a production well for the community. In 2023 the RDOS hired Associated Engineering (Kelowna, B.C.) to explore

options for supplying the community with treated water. In an attempt to find a groundwater source that would require less treatment than the Lake source, it was decided that a second well be drilled and water samples analyzed. Unfortunately, the water quality results were not favourable from this well due to elevated manganese above the maximum allowable concentration (MAC) of 0.12 mg/L as set by the *Guidelines for Canadian Drinking Water Quality*, which would require treatment. Further investigation of this second well along with options to treat the Lake supply were scheduled to be explored in 2024.

**8.5. Supervisory Control and Data Acquisition (SCADA System)**

No items of note in 2023.

**8.6. System Maintenance/Upgrades**

No items of note in 2023.

**8.7. Water Quality Monitoring Program**

The *Water Quality Monitoring Program* is scheduled to be updated in 2024.

**9. Summary**

All tested water parameters from the Missezula Lake water system met applicable criteria in 2023 with the exception of two distribution bacteriological samples that reported Total Coliform counts. Two *Water Quality Advisories* were issued in the summer due to increased turbidity from Missezula Lake. The operation of the Missezula Lake water system by a team of RDOS *EOCP* certified Operators resulted in the supply of the highest quality water possible to the community of Missezula Lake. The RDOS continues to work on reviewing and upgrading the various programs that support facilitating the highest quality of water possible. In addition, the RDOS will continue work on the Missezula Lake Upgrade Project in 2024 to meet the Provincial 4-3-2-1-0 Treatment Standards.