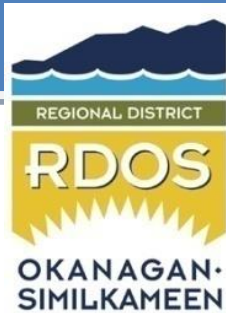


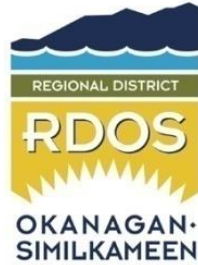
2021

ANNUAL WATER QUALITY MONITORING REPORT GALLAGHER LAKE WATER SYSTEM



Regional District of Okanagan-Similkameen

October, 2022



**2021 ANNUAL WATER QUALITY MONITORING REPORT
GALLAGHER LAKE WATER SYSTEM
GALLAGHER LAKE, B.C.**

Copy prepared for:

INTERIOR HEALTH AUTHORITY (IHA)
Interior Health Drinking Water Program
3090 Skaha Lake Rd.
Penticton, B.C.
V2A 7H2

Attention: Keyana Bjornson, CPHI(C)
Environmental Health Officer
Drinking Water Program

Prepared by:
Regional District of Okanagan-Similkameen
101 Martin St.
Penticton, B.C.
V2A 5J9

Author: Rob Palmer, A.Sc.T.
Environmental Technologist

Contents

1. Introduction.....	1
2. System Description.....	1
3. System Classification and Operator Certifications.....	1
3.1. System Classification.....	1
3.2. Operator Certification.....	1
4. Annual Water Usage.....	2
4.1. Water Conservation.....	2
5. Source Water Quality.....	2
6. Distribution System Water Quality.....	3
6.1. Distribution System Bacteriological Results.....	3
6.2. Distribution System Free Chlorine Residuals.....	4
6.3. Distribution System Water Quality Field Parameters.....	5
6.4. Water Quality Complaints.....	5
7. Water System Notifications.....	5
7.1 Water Quality Advisory (WQA).....	5
7.2 Boil Water Notice (BWN).....	5
7.3 Do Not Consume (DNC).....	6
7.4 Do Not Use (DNU).....	6
8 Program Updates and Status.....	6
8.1 Cross Connection Control Program.....	6
8.2 Emergency Response Plan.....	6
8.3 Capital Works / System Additions.....	6
8.4 Future System Upgrades.....	6
8.5 Water Quality Monitoring Program.....	6
8.6 System Maintenance/Upgrades.....	6
9 Summary.....	7

TABLES

Table 1: RDOS Operator Certifications 2021.....	2
Table 2 Distribution Water Bacteriological Testing 2021 Summary.....	4
Table 3: Distribution Free Chlorine Residuals 2021 Summary.....	4
Table 4: Distribution Water Quality Field Parameter Testing 2021 Summary.....	5

1. Introduction

As the owner and operator of the Gallagher Lake water distribution system, the Regional District Okanagan-Similkameen is responsible for the following Annual Report summarizing the results from the 2021 *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 Gallagher Lake water system is located within Electoral Area C just south of Vaseux Lake. The water system consists of distribution water mains that supply water to properties along Frontage Road and to Deer Park Estates. Treated water is supplied to the RDOS's Gallagher Lake water system through a bulk water purchase agreement with the Osoyoos Indian Band (OIB). The OIB's Senkulmen Utilities treats the water sourced from a deep groundwater well with the addition of chlorine. The OIB's Senkulmen Utilities operates the water treatment system which also supplies domestic, commercial and irrigation water to many properties in the surrounding area including the Senkulmen Business Park and the Correctional Centre.

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 Gallagher Lake distribution system remained as a *Small Water System (SWS)* in 2021.

3.2. Operator Certification

The *British Columbia Environmental Operators Certification Program (BC EOCP)* is responsible for the classification of water systems in BC and 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
8761			X					X
9322		X						X

Table 1: RDOS Operator Certifications 2021

4. Annual Water Usage

The bulk water purchase agreement with the Osoyoos Indian Band does not include metering of water usage in the Gallagher Lake distribution system.

4.1. Water Conservation

The Gallagher Lake water system started under Stage “Normal” water restrictions in 2021. The “Heat Dome” of 2021 was over the Okanagan from late June to mid-July. By the end of July, with the heat continuing, the decision was made to move all RDOS water systems to Stage 1, which limited watering to two days per week.

5. Source Water Quality

All untreated source water quality parameters are compared to the applicable criteria set out in the *British Columbia Drinking Water Protection Act and Regulation (DWPA)*, the *Guidelines for Canadian Drinking Water Quality (GCDWQ)*, Interior Health Authority programs and Operational Guidelines (OG). The *DWPA* and *GCDWQ* define these parameters and set Aesthetic Objectives (AO) and Maximum Allowable Concentrations (MAC).

In Gallagher Lake, no source water quality monitoring occurred in 2021 as the source water well is the responsibility of the purveyor supplying the bulk water.

6. Distribution System Water Quality

All treated distribution water quality parameters are compared to the applicable criteria set out in the *British Columbia Drinking Water Protection Act and Regulation (DWPA)*, the *Guidelines for Canadian Drinking Water Quality (GCDWQ)*, Interior Health Authority programs and Operational Guidelines (OG). The *DWPA* and *GCDWQ* define these parameters and set Aesthetic Objectives (AO) and Maximum Allowable Concentrations (MAC).

All 2021 accredited laboratory tests were performed by Caro Analytical Services (Kelowna, B.C.).

6.1. Distribution System Bacteriological Results

The following is a summary of the bacteriological laboratory results from the treated water distribution system. The Gallagher Lake distribution system has one dedicated sample station that is sampled bi-weekly. Samples from the 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 2021, all distribution samples had no detections for Total Coliforms or *E.coli*. The following table is a summary of the laboratory bacteriological results from the distribution system.

Analyte	Sampling Location	Unit	Average	Min	Max	Number of Results	Number of Results with Exceedances
Lab Results: Microbiological							
Background bacteria	8360 Frontage Rd.	CFU/100 mL	<1	<1	<1	1	0
	Frontage Rd	CFU/100 mL	<1	1	2	24	0
E. coli (counts)	8360 Frontage Rd.	CFU/100 mL	<1	<1	<1	1	0
	Frontage Rd	CFU/100 mL	<1	<1	<1	25	0
Total coliforms (counts)	8360 Frontage Rd.	CFU/100 mL	<1	<1	<1	1	0
	Frontage Rd	CFU/100 mL	<1	<1	<1	25	0

Table 2 Distribution Water Bacteriological Testing 2021 Summary

6.2. Distribution System Free Chlorine Residuals

The following is a summary of the field free chlorine residual measurements from 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	Avg	Min	Max	Number of Results
Field Results						
Chlorine (free)	8360 Frontage Rd.	mg/L	0.41	0.41	0.41	1
	Frontage Rd	mg/L	0.47	0.30	0.55	25

Table 3: Distribution Free Chlorine Residuals 2021 Summary

6.3. Distribution System Water Quality Field Parameters

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

Analyte	Unit	Average	Minimum	Maximum	Number of Results
Field Results					
Conductivity	µS/cm	284	269	304	15
pH		7.93	7.72	8.06	15
Total dissolved solids	mg/L	202	191	214	15
Temperature	°C	13.0	5.3	18.0	16
Turbidity	NTU	0.18	0.06	0.59	25

Table 4: Distribution Water Quality Field Parameter Testing 2021 Summary

6.4. Water Quality Complaints

None to report for 2021.

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 public 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.

No WQAs issued for 2021.

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 2021.

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 2021.

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 2021.

8 Program Updates and Status

8.1 Cross Connection Control Program

The RDOS continued work in 2021 towards implementing an official Cross Connection Control program and bylaw. On January 21, 2021 the RDOS adopted Bylaw No 2851, 2020 Cross Connection Control. Bylaw 2851 is a Regional bylaw that will be applicable to all RDOS owned and operated water systems.

8.2 Emergency Response Plan

The *Emergency Response Plan* is scheduled to be updated in 2022.

8.3 Capital Works / System Additions

No items of note in 2021.

8.4 Future System Upgrades

No plans for 2022.

8.5 Water Quality Monitoring Program

The *Water Quality Monitoring Program* is scheduled to be updated in 2022.

8.6 System Maintenance/Upgrades

No items of note in 2021.

9 Summary

All tested distribution water parameters from the Gallagher Lake water system met the applicable criteria in 2021. The operation of the Gallagher Lake water system by a team of RDOS *EOCP* certified Operators resulted in the continuous supply of high quality water to the residents connected to the Gallagher Lake water system. The RDOS continues to work on reviewing and upgrading the various programs that support facilitating the highest quality of water possible.