

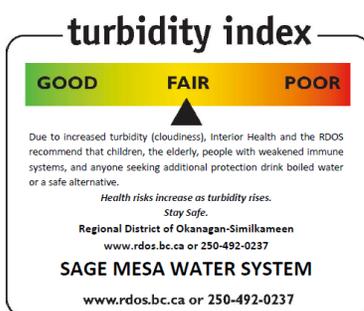
Sage Mesa Water System

2020 Annual Water Quality Report

Regional District of Okanagan - Similkameen Public Works

Water System Notifications - 2020

The permanent *Boil Water Notice (BWN)* issued in 2019 for the Lower Zone of the Sage Mesa system, remained in effect for 2020. This BWN is in response to insufficient contact time between the added chlorine and the source water from Okanagan Lake before the water reaches the first customers in the lower portion of the system. With insufficient contact time there is the potential for inadequate pathogen reduction in the water supplied to the properties in the Lower Zone year round. This *BWN* will remain in effect until the appropriate engineered upgrades are in place to meet the Provincial drinking water treatment standards.



The Upper Zone (Westwood, Sandstone, Husula) required a *Water Quality Advisory (WQA)* on May 8th in response to the turbidity in the Okanagan Lake intake increasing above 1 NTU (Fair). This *WQA* remained in effect until August 26th when turbidity levels decreased below 1 NTU (Good).

There are three main types of pathogens (micro-organisms) that pose risks to human health in drinking water; viruses, bacteria and protozoa. The Sage Mesa system has only one level of treatment, the addition of chlorine. Chlorine can target viruses and bacteria however, with insufficient contact times and increased turbidity these organisms have the potential to remain viable in the water. Protozoa are organisms such as *Giardia* and *Cryptosporidium*. *Giardia* can be partially inactivated by chlorine however, with insufficient contact times and increased turbidity these organisms can also remain viable. *Cryptosporidium* on the other hand cannot be inactivated by chlorine and needs to be removed by filtration or inactivated with additional treatment processes such as ultraviolet light.

Water Storage Reservoirs Inspections

In 2020 both the Upper and Lower water storage reservoirs were cleaned, disinfected and inspected by a Structural Engineer. Both reservoirs are showing signs of deteriorating structural integrity however, the Upper Reservoir is more pronounced. As a result the roof of the Upper Reservoir has been cordoned off to any access. The RDOS will be working with the Province to determine a plan for addressing the concerns identified in the Structural Engineers report.

IHA's Role

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. IHA has four levels of water notifications.

WATER QUALITY ADVISORY (WQA)

There is some level of risk associated with consuming the water, but a boil water notice is not needed. The risk is elevated for people with weakened immune systems.

BOIL WATER NOTICE (BWN)

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

DO NOT CONSUME (DNC)

There are harmful chemicals or other bad things in the water that can make you sick if you consume (swallow) it. You cannot make the water safe by boiling it. You can bath, shower, and water plants and gardens with the water.

DO NOT USE WATER (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.

Coliform Counts

Total Coliforms and *E.coli* are indicator organisms used to assess bacteriological quality of the water (i.e. the effectiveness of the treatment and safety of the water within the distribution system).



Free Chlorine

Free chlorine residuals in the distribution system add a level of protection to the treated water as it moves through the distribution network. Free chlorine residuals are required to be maintained between 0.2 mg/L and 2.0 mg/L free chlorine.

Water Quality Monitoring in the Distribution System

In 2020 a total of **54** treated water samples were drawn from dedicated sample locations throughout the distribution system on a weekly basis and analyzed by an accredited laboratory for Total Coliforms and *Escherichia Coli*. All of the samples drawn in 2020 had no detections for Total Coliforms or *E.coli*.



In addition to the weekly bacteriological samples, field tests are conducted for free chlorine residuals, temperature, pH, conductivity and turbidity. The treated water is re-chlorinated at the Booster Station before the water is pumped to the Upper Zone to ensure adequate residuals in the Upper Zone's distribution system.

Sampling Location	Unit	Avg	Min	Max	Number of Results
Booster Station	mg/L	1.19	0.7	1.79	25
Lower Zone	mg/L	1.76	1.52	1.99	2
Sandstone Dr.	mg/L	0.86	0.34	1.5	42
Upper PRV	mg/L	1.66	1.54	1.78	2

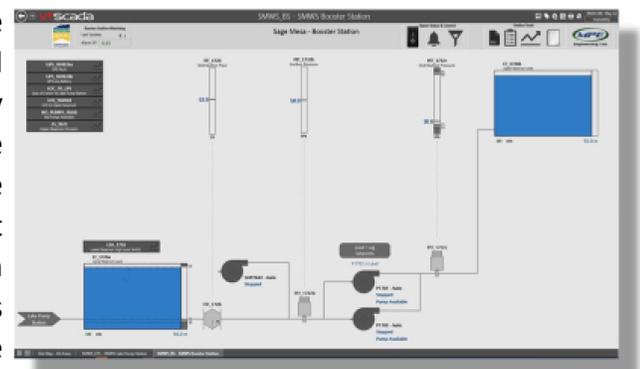
2020—Distribution Free Chlorine Residuals

Supervisory Control and Data Acquisition (SCADA) System Upgrades

In 2020 the aging pump control system for the Sage Mesa system was upgraded to a full SCADA system. This included the replacement of key programmable controllers and the installation of new communications radios, sensors, analyzers and software.

A SCADA system is an integral part of a modern water system. It is comprised of sensors, programmable controllers, communications and network devices installed at pump stations and treatment facilities. The SCADA system controls equipment such as pumps and monitors system operations while storing important data such as intake turbidity levels, pumping flow rates, and storage reservoir levels. The system also provides for efficiencies in operation and the response to system failures.

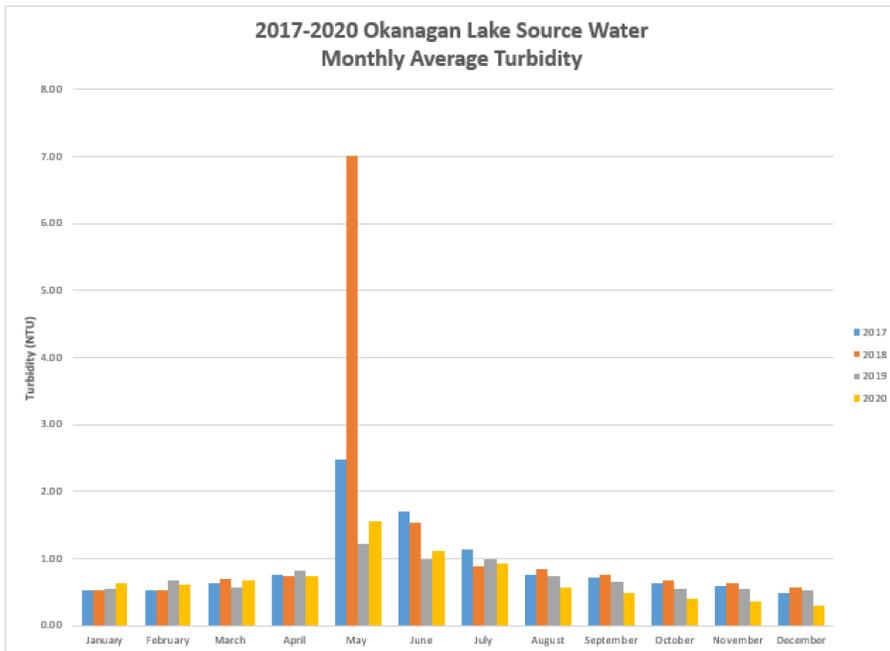
This is achieved by the ability to monitor and view the system remotely through a software package along with the generation of alarms that will notify the system Operators when there is a problem or failure within a system.



A Typical SCADA Screen Display

Okanagan Lake Turbidity

In 2020 turbidity levels in Okanagan Lake exceeded the criteria set in the Interior Health Authority’s Turbidity Index which resulted in a *Water Quality Advisory* being issued for the Upper Zone, in addition to the permanent *Boil Water Notice* in place for the Lower Zone.



Comparison of 2017—2020 Monthly Average Turbidity Levels

Potable Water – Okanagan Lake Source

A variety of tests are carried out in the water system on a daily, weekly, monthly and annual basis. Annually, the RDOS submits an untreated sample from the source, Okanagan Lake, to an accredited lab for full comprehensive potable water testing. The comprehensive test includes physical parameters (e.g. color, turbidity, temperature, UV transmittance), chemical parameters (e.g. total metals and nutrients) and bacteriological quality. Changes in these parameters may result in challenges with the current treatment process, the need for water notifications for customers (i.e. *Boil Water Notice* or *Water Quality Advisory*) or the requirement for additional treatment processes to be implemented. In 2020, all of the tested parameters met the applicable potable water standards with the exception of temperature and turbidity. Temperature exceeded the Aesthetic Objective of 15°C during the months of June to September, with a maximum of 22.5°C recorded from Okanagan Lake. Turbidity exceeded the criteria set in the Interior Health Authority’s Turbidity Index as discussed previously in this report. These parameters are also trended annually and in 2020 there were no significant changes in any parameters.



What is Turbidity

Turbidity is the measurement of the “cloudiness” of water resulting from the suspension of particles such as clay, silt, organics, etc. and is measured in Nephelometric Turbidity Units (NTU). Bacteria, viruses, and parasites such as *Giardia* and *Cryptosporidium* can attach themselves to the suspended particles in turbid water. These particles then interfere with disinfection by shielding contaminants from the disinfectant (UV or chlorine). Interior Health’s Turbidity Index determines the turbidity levels that trigger water system notifications when levels are exceeded. Less than 1 NTU is “Good”, greater than 1NTU and less than 5NTU is “Fair”, with a Water Quality Advisory required and greater than 5 NTU is “Poor”, with a Boil Water Notice required.

Standards for Potable Water

The *British Columbia Drinking Water Protection Act (DWPA)* and supporting Regulation along with the *Federal Guidelines for Canadian Drinking Water Quality (GCDWQ)* define parameters for potable water in BC. These include Aesthetic Objectives (AO) and Maximum Allowable Concentrations (MAC) for numerous water quality parameters.



Certified Water Operators

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

All RDOS Operators are certified through the *BC EOCP*. Operators may hold certification in the disciplines of Water Distribution and/or Water Treatment with 4 levels of certification achievable within each discipline.

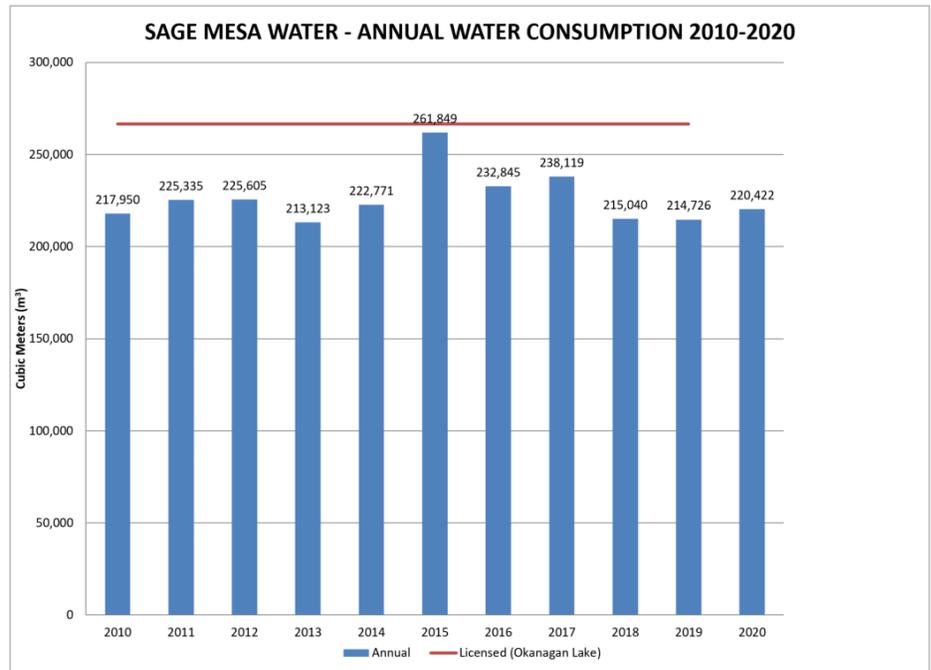
Annually, RDOS Operators attend courses and seminars and complete online training required to maintain and augment their levels of certification.

System Management and Operations Structure

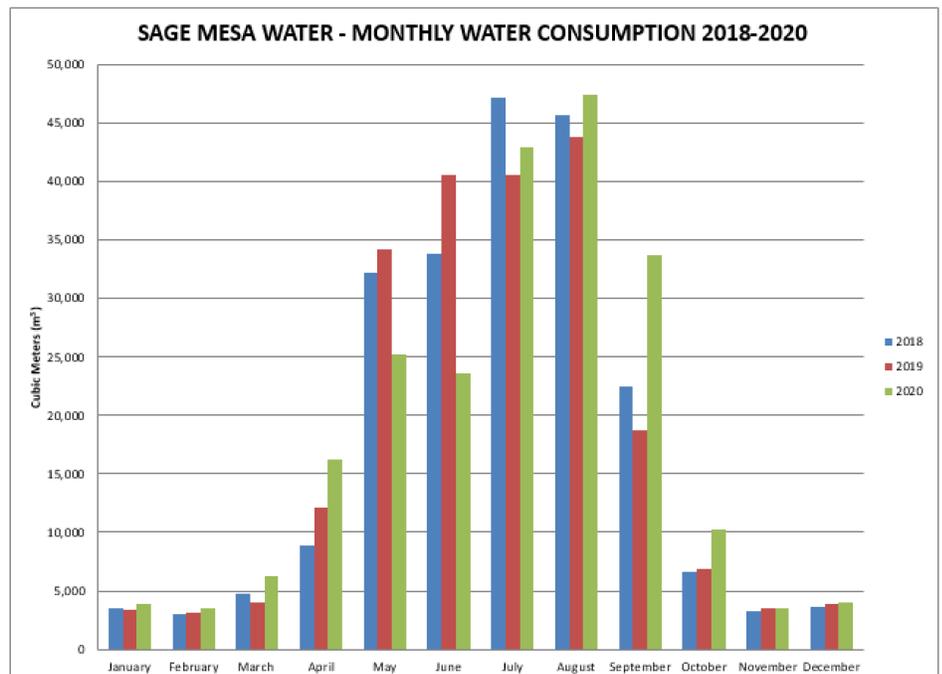
The Sage Mesa system is a privately owned water utility currently under the management of the British Columbia, *Ministry of Forest Lands and Natural Resource Operations and Rural Development (FLNRORD)*. The RDOS provides Operation and Maintenance for the Sage Mesa system under a contract agreement with the *FLNRORD*.

Water Consumption—2020

In the Sage Mesa water system, water for domestic and commercial (golf course irrigation) uses is sourced entirely from Okanagan Lake.



Annual Water Consumption 2010-2020



Monthly Water Consumption 2018-2020



Water Conservation

New for 2021

4 x 6 Magnet

These handy little reminders were provided to all property owners in RDOS owned or operated water systems. The hanger can be attached to exterior hose bibs, and the magnets to any metal surface like fridges, filing cabinets, or metal garage doors. If your property is a rental, please insure they are delivered to tenants, and all outdoor irrigation is set to align with regulations.

MAKE WATER WORK FOR YOU

2 x 3 outdoor faucet (hose bib) hanger



For the complete Water Use Restriction Stages visit: [Water Restrictions](http://www.rdos.bc.ca/restrictions)
For more water wise tips visit : www.makewaterwork.ca

Provincial Drought Levels vs. Water Restrictions

It can be confusing when Provincial Drought Levels are circulated in the media and appear to contradict local Water Restriction Stages. They are two different rating systems.

Provincial Drought Levels are based on 'environmental flow needs' in creeks and rivers. BC River's Forecast Centre monitors volumes of water and water levels in order to insure water levels are adequate to support fish as they move through their life cycle. Fish are indicators of the overall health of the creek ecosystem, especially in times of increasing water scarcity during a drought. The Province developed a system to rate Drought Levels, and the response actions required at each incremental stage.

Regional Water (sprinkling) Restrictions relate to the capacity of each individual water system to provide potable water to users. Restrictions are required in times of heavy use or water scarcity (drought) and may not be at the same stage for all water systems.

The RDOS's *Regional Water Use Regulation Bylaw* and *Regional Water Conservation Strategy* are used to regulate the water use within the nine water systems that the RDOS owns/operates.

Restrictions begin at *Stage Normal* which represents normal (average) conditions for a local area and are in effect year round unless a higher stage (Stages 1 to 4) are in effect.

Water Quality Complaints

If you have a water quality complaint, concern or would like to request further information regarding any of the RDOS water systems please contact the following:

Public Works Department
RDOS Environmental Technologist
Toll Free: 1-877-610-3737
Phone: 250-490-4106
Email: info@rdos.bc.ca

Water Connections

During regular business hours water related emergencies, questions regarding applications for water service and water service turn on/off requests can be directed to the following:

Public Works Department
Administrative Assistant
Toll Free: 1-877-610-3737
Phone: 250-490-4135
Email: info@rdos.bc.ca

AFTER-HOURS WATER EMERGENCIES

For all after-hours water related emergencies please call:
Regional Dispatch
250-490-4141



Additional Resources

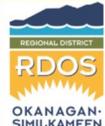
RDOS Water System Home Page
[Water Systems | RDOS](#)

Interior Health Authority Drinking Water Homepage
[Home \(interiorhealth.ca\)](#)

Federal Guidelines for Drinking Water Quality
[Water Quality - Reports and Publications - Canada.ca](#)

Be Safe—Be Informed—Be Involved In Your Community

SIGN UP TO RECEIVE IMPORTANT RDOS WATER SYSTEM NOTIFICATIONS



OKANAGAN-SIMILKAMEEN

To ensure the residents and property owners of the Regional District of Okanagan-Similkameen are safe, informed and up-to-date with community activities, the RDOS has implemented a mass communication service called *CivicReady*. This system allows the RDOS to communicate out routine and emergency messages through email, text and/or phone call.

To sign up and or learn more about *CivicReady* go to: www.rdos.bc.ca & look for the alarm button or sign up link on the right-hand side

Routine Notifications:

- Community Events
- Water & Sewer System Alerts
- Curbside Pick Up & Landfill Hours
- Regional Recreation
- Land Use Changes
- And More...

Emergency Notifications:

- EOC Updates
- Sandbag Pick-Up Locations
- ESS Locations
- Wildfire Updates
- Dangerous Animals in the Area

Regional District of Okanagan-Similkameen
101 Martin St, Penticton,
BC V2A 5J9

T- 250.492.0237 TF- 1.877.610.3737
Web Site - www.rdos.bc.ca