

Update on Iron and Manganese

Iron and manganese are present in the Sun Valley well water with concentrations that currently meet the criteria set in the *Guidelines for Canadian Drinking Water Quality* however, iron and manganese continue to create problems within the Sun Valley distribution system.

It is believed that when the iron and manganese in the well water comes in contact with oxygen in the storage reservoir, oxidation of these metals occurs. This results in precipitates of iron and manganese forming reddish/brown sediments. The precipitates settle out in the distribution system piping and form a layer which becomes a medium where bacterial growth can occur. It is suspected that the Total Coliform bacteria that has been reported in a number of samples over the past years are a result of regrowth of bacteria in these sediments. In addition, discolored water and clogging of home filtration systems occurs when these sediments are disturbed and become suspended in the water.

The RDOS continues to closely monitoring the bacteriological quality of the water in the distribution system and responds accordingly with flushing of the system with high velocity water to scour the pipe walls to remove the buildup of iron and manganese precipitates.



Various Stages of Flushing the SV Distribution System

In 2020 the RDOS started to investigate options for sequestering the iron and manganese in a small bench scale test. Sequestering is achieved by the use of a chemical additive to keep the iron and manganese in solution and prevent it from precipitating. The bench scale testing conducted to-date has not provided conclusive results and the RDOS will continue its investigation. Public consultation will occur before moving forward with any implementation plan for treatment.

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

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.

Water Quality Monitoring in the Distribution System



In 2020, total of **27** water samples were drawn from the Sun Valley well along with **44** samples from locations throughout the distribution system. Samples were analyzed by an accredited laboratory for Total Coliforms and *Escherichia coli*. All samples drawn in 2020 had no detections for *E.coli* however, **3** distribution samples were positive for Total Coliforms.

In 2020, total of **27** water samples were drawn from the Sun Valley well along with **44** samples from locations throughout the distribution system. Samples were analyzed by an accredited laboratory for Total Coliforms and *Escherichia coli*. All samples drawn in 2020 had no detections for *E.coli* however, **3** distribution samples were positive for Total Coliforms.

In addition to the bacteriological samples, field tests were conducted for temperature, pH, conductivity and turbidity.

Water System Notices

- September 5, 2020 - A *Boil Water Notice* was issued in response to a loss of system pressure resulting from a utility power outage. System turbidity was also elevated above 5 NTU upon restoration of service. The notice was rescinded September 18, 2020.
- September 23, 2020—A *Boil Water Notice* was issued in response to a loss of system pressure resulting from a utility power outage. System turbidity was also elevated above 5 NTU upon restoration of service. The notice was rescinded September 30, 2020.
- October 10, 2020—A *Boil Water Notice* was issued in response to a loss of system pressure resulting from an electrical issue at the Pump Station. The notice was rescinded October 28, 2020.



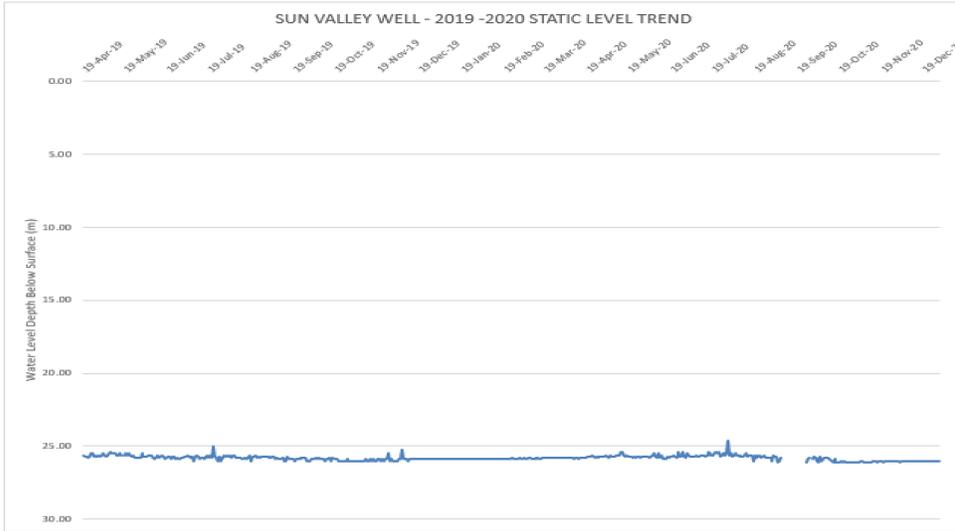
Potable Water – Sun Valley Well

A variety of testing is carried out in the water system on a bi-weekly and annual basis. Annually, the RDOS submits a sample of the untreated well water to an accredited lab for full comprehensive potable water testing. This comprehensive test includes physical parameters (e.g. color, turbidity, temperature, UV transmittance), chemical parameters (e.g. hardness, total metals and nutrients) and bacteriological quality. 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. In 2020, all of the tested parameters for the Sun Valley well, met the applicable potable water standards. The parameters are also trended annually and in 2020 there were no significant changes in the parameters.



Sun Valley Well Level Monitoring

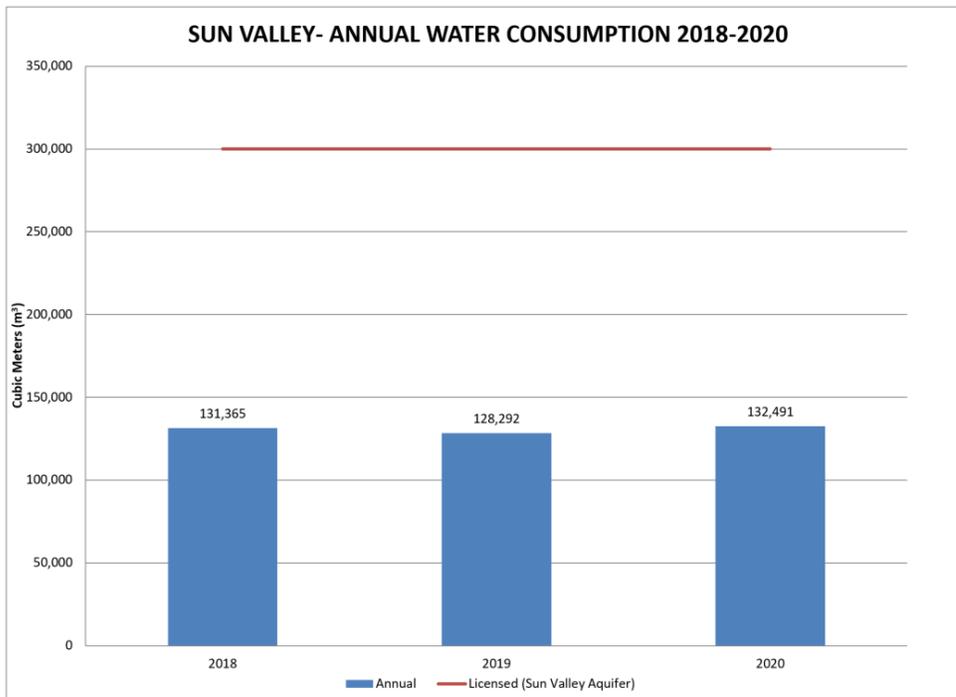
The Supervisory Control and Data Acquisition (SCADA) system that was installed in 2018 monitors the Sun Valley well and aquifer level on a continuous basis. The Sun Valley aquifer has seen minimal change over the last two years.



Sun Valley Well Level Trend—2019-2020

Sun Valley Water Usage

The RDOS started trending the monthly and annual pumping volumes extracted from the Sun Valley aquifer in 2019 with the installation of a flow meter. In 2020 a total of 132,491 cubic meters of water was pumped from the Sun Valley well, up from 128,292 cubic meters in 2019.



Annual Water Consumption 2018-2020

BC Groundwater Protection Regulation

The Ground Water Protection Regulation (GWPR) falls under the *British Columbia Water Sustainability Act*. The GWPR sets standards for the construction, maintenance and deactivation and decommissioning of wells in BC. The GWPR also requires well drillers and pump installers be registered to work in BC.

Well Level Monitoring

Well level monitoring is one important aspect in determining the “health” of an aquifer. From a water supplier’s perspective, the water level in an aquifer is very important. If the aquifer level drops too much the well may not be able to provide water to the system. The interactions between surface water and groundwater are continually being better understood. For example, an increase in the pumping rate of a well can affect the flow in a nearby creek just as the removal of water from a stream for irrigation could affect the level in a nearby aquifer. Such interactions can add to the complexity of recharge of water to an aquifer. Recharge can occur quickly or could take a number of years before a change is observed in the aquifer level.

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 Conservation

New for 2021

RESIDENTIAL
Outdoor Water Use Restrictions

NO WATERING (any water) any day
NO SPRINKLING between 10am and 6pm

NORMAL

3 Days / Week

MAKE WATER WORK for you!

- Water plants not pavement
- Low water plants save you money
- Wash the car on the lawn

www.rdos.bc.ca/restrictions
For more info, call Public Works
250.492.0237

WATER USE REGULATIONS in all RDOS water systems year round unless notified

Hand held garden hose up to Stage 2 any day, anytime

NO watering on Mondays

STAGE NORMAL WATERING SCHEDULE:

EVEN numbered civic address: **TUE THU SAT** 6-10am & 6-10pm

ODD numbered civic address: **WED FRI SUN** 6-10am & 6-10pm

AUTOMATIC residential irrigation: 12:01am to 6am on your watering day

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

RESIDENTIAL
Outdoor Water Use Restrictions

NO WATERING (any water) any day
NO SPRINKLING between 10am and 6pm

NORMAL

3 Days / Week

MAKE WATER WORK for you!

See reverse for sprinkling regulations

- Water plants not pavement
- Low water plants save you money
- Wash the car on the lawn

www.rdos.bc.ca/restrictions



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

Water Quality Complaints

If you have a water quality complaint or 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



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](#)

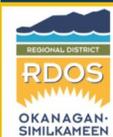
Water Connections

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

Be Safe—Be Informed—Be Involved In Your Community

SIGN UP TO RECEIVE IMPORTANT RDOS WATER SYSTEM NOTIFICATIONS



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

After-Hours Water Emergencies

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

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