Scott Point Waterworks District

Calendar Year 2022

Water Quality Report

This report covers the period of January 1, 2022 to December 31, 2022 and is issued in accordance with section 11 of the British Columbia Drinking Water Protection Regulation of the Drinking Water Protection Act, which requires public reporting of quality monitoring within six months of the end of the calendar year. System maintenance and water quality sampling are done by North Salt Spring Waterworks District ("NSSWD") under contract. The Trustees provide oversight of the testing program and provide reporting.

Notice of this report is sent to all residents and it is posted on the District's website at www.scottpointwaterworks.com. The contents of this report are reviewed at the Annual General Meeting held each spring.

SYSTEM DESCRIPTION

Scott Point drinking water is obtained from three groundwater wells. Primary treatment at Well 1 is oxidation filtration, followed by cartridge filtration, and reverse osmosis; Well 3 treatment consists of sand filtration followed by oxidation filtration; and Well 4 treatments is through sand filtration, ion-exchange tannin reduction, oxidation filtration and 5 micron cartridge filtration. Disinfection consists of chlorine, in the form of sodium hypochlorite, injected prior to water being introduced into a common distribution system and the residual chlorine is monitored weekly at the ends of the system. A single reservoir tank located at Well 1 maintains system pressure. The water main consists of 2000 m of NPS 4, AC pipe with a dead end at 2 locations.

OVERSIGHT

The District files an annual Water Quality Testing Plan with Vancouver Island Health Authority ("VIHA"). This Testing Plan specifies the weekly, monthly, quarterly and annual sampling required. In 2022, all samples specified in the plan were completed and the results from a certified laboratory were forwarded to VIHA. Additional information on the Water Quality Testing Plan and testing results are available on the District's website at www.scottpointwaterworks.com/water-quality-2. This Annual Water Quality Report is made available to all residents via email and at the District's AGM.

The District has an Emergency Response Plan. The trustees review and update this plan annually and provide copies to VIHA and NSSWD. The ERP is posted to the

District's website at www.scottpointwaterworks.com/governance/emergency-response/. A summary sheet is also posted at each treatment plant

The District's system is classified as a Small Water System under the Environmental Operators Certification Program ("EOCP"). Routine operation and maintenance tasks on the District's system are provided by NSSWD under contract. The NSSWD operators are all qualified at EOCP Levels I to IV, all of which exceed the requirements of a Small Water System. One trustee is qualified as EOCP Small Water System operator.

The District has completed a source to tap assessment using Ministry of Health guidelines. This formed part of the analysis that resulted in the District completing a physical risk assessment as part of its Long Term Planning process. A copy of the 10 Year Plan and the physical risk assessment are available on the District's website under the Governance tab.

The District also subscribes to the Multi Barrier Approach for Ensuring Safe Water promoted by Health Canada. The details of the District's Multi-Barrier Approach are available at http://www.scottpointwaterworks.com/water-quality-2/

GLOSSARY
CDWQG = Canadian Drinking Water Quality Guidelines set by Health Canada
MAC = Maximum Allowable Concentration
mg/L = milligram per litre – equivalent to parts per million;
µg/l = micrograms per litre – equivalent to parts per billion;
DBP = disinfectant by-product – compounds formed through reaction with chlorine

OPERATING PERMIT

The District operates under a Small Water System Operating Permit issued by Island Health. There are no special conditions attached to the Operating Permit. In 2022, the District received Waiver of a Construction Permit from Island Health for the conversion of Greensand to Filox in the manganese pre-treatment at Wells 1 and 4.

BACTERIALOGICAL TESTING

The chlorine residual level at several locations is tested bi-weekly to ensure levels remain above 0.2 mg/L at the ends of the system, and above 0.8 mg/L in the Reservoir. NSSWD files a monthly report with SPWD confirming chlorine residuals.

Water is sampled monthly at alternating dead-ends of the system and tested for the presence of coliform and non-coliform bacteria and for e-coli. Each quarter all 3 source wells are tested for the presence of bacteria before and after treatment. A summary of all testing results is available at http://www.scottpointwaterworks.com/wp-content/uploads/2022/03/2021-Summary-Bacteria-Testing-Sheet1.pdf /

CHEMICAL TESTING

Product water at each of the three water treatment plants was tested in August for the presence of a number of metals and salts before and after treatment. Results are available on the District's website at www.scottpointwaterworks.com/water-quality-2/testing-reports/ and show water treatment continues to be effective in removing a number of elements.

Results from raw water from wells can exceed the MAC contained in the CDWQG set for Iron, Magnesium, Manganese and Sodium. All results for treated water were below the MAC (including the new lower MAC for manganese of 0.12 mg/L) which indicates the continuing effectiveness of treatment.

Testing for the presence of Disinfectant By-products in the water as a result of chemical reactions between naturally occurring elements and the chlorine used for disinfection, continued in 2022:

- Quarterly testing at the ends of the system indicated that levels of tri-halomethanes did not exceed the CDWQ Guidelines MAC of 100 µg/l. Readings were recorded as: January 23.0 µg/l, April 0 µg/l, July 34.6 µg/l, October 100.0 µg/L.
- Semi-annual sampling for bromate levels in Well 1 treated water were recorded as: January 2.0 µg/l, July 1.44 µg/l; all below the MAC of 10 µg/L.
- October testing results for halo-acetic acids were reported as 'not detected'; against a MAC of 80 µg/L.
- The District tests quarterly for Total Organic Carbon, an indicator of Disinfectant By-Product potenital. TOC is no longer listed in the CDWQG, but the B.C Ministry of Environment recommends a maximum of 4 mg/L for raw water and 2 mg/L for treated water. In 2022, there were 0 readings in excess of these amounts.

ORDERS

The District received no orders from regulatory authorities in 2022.

OPERATIONAL PROBLEMS

There was one noted malfunction of disinfection equipment in 2022. During bi-weekly checks in October, the contract operator noticed the chlorine residual coming from Well 3 was below minimums. The water line was back-flushed until a residual was detected and the malfunctioning chlorine injection pump was replaced.

It was discovered that naturally occurring manganese was not being effectively removed during pre-treatment and ended up clogging the Well 1 reverse osmosis membranes. The membranes were replaced in August. After further investigation

and further clogging, it was decided to change the pre-treatment filter media from Greensand to a more expensive Filox, and new vessels with better distribution were added. After being offline waiting for parts and approvals, the RO membranes were cleaned and the RO treatment has been operating fine since mid-December.

Some residents are reporting a "lime-scale" built up in their glassware, kettles and showerheads. The District believes this is coming from water hardness, particularly the "very hard" water produced at Well 4 and is monitoring the impact of hardness and pH levels. The current plan is to re-process 50% of the treated water from Well 4 through reverse osmosis treatment with the other 50% used to blend water with minerals and higher pH into the RO permeate which is "soft" and has few minerals and low pH. While the new media and membrane cleaning at Well 1 was in planning, the reverse osmosis was offline for 8 weeks and residents reported a noticeable increase in limescale. After returning the RO to service in December, it is expected that the impact will reduce. The District is also investigating the installation of Template Assisted Crystallization at its Well 3

The long-standing issue of seawater intrusion into Well 1 continues to be a concern and is being managed through monitoring and adjustments of water sourcing during periods of high demand.

MAJOR UPGRADES AND REPAIRS

As noted above, the Reverse Osmosis treatment at Well 1 experienced a severe deterioration in performance due to manganese fouling, and all 8 membranes were replaced after only 1 year. The pre-filtration at Well 1 and Well 4 was switched to Filox, a media consisting of more than 85% MnO catalyst, compared to previous media with <10%. Along with new filter vessels to improve distribution, this new set-up allowed the District to discontinue the use of Potassium Permanganate to regenerate the catalyst, but which was also responsible for incidents of manganese precipitation.

There were no repairs to the water main and its components during 2021.

PROGRAMS

Each spring the District has NSSWD conduct the annual water main flushing from the reservoir to each end of the system to remove sediment build up.

Cross connections are locations where it is possible for water to enter the system from water users' systems and pose a risk of contamination. The District has installed back-flow prevention devices at each service location. The last cross connection survey of residents was done in 2019 and a number of premises have since installed pressure systems with the potential for contamination. A new survey is planned for 2023 to confirm that all premises either have no cross-connection, or have appropriate back-flow prevention devices or air gaps in place.

In 2020, the District commenced a multi-year plan to replace/repair meter sets and/or services lines to meet current standards. In 2022, two meters were reset above the water table.

COMPLAINTS

Inquiries were received from 2 residences regarding the impact of limescale on their polished surfaces. The response is described above.
One resident sent a complaint about the taste of the water, indicating they noticed a "chemical" smell. They were informed that taste is very objective aesthetic and it was indicated that it likely is from the residual chlorine in the water, the level being higher at that location to ensure minimums were maintained at the ends of the system. The resident was directed to the Advisory on Chlorine noted below. No other residents indicated any similar issues, including trustees who live close.

One resident noted discolouration of water in their bath-tub. Occasionally between times of annual flushing of the water main, small amounts of colloidal manganese are released during tank cleaning or from the biofilm inside pipes. Upon advice from the District, the water cleared up very quickly after running an outside tap.

ADVISORIES

No temporary advisories were issued in 2022.

PERMANENT ADVISORIES

The following Permanent Advisories are highlighted for attention:

Sodium: Sodium chloride occurs naturally. The sodium levels of water are within CDWQ Guideline limit of 200 mg/L but at times exceed the alert level for people on sodium-restricted diets of 20 mg/L (This is a permanent alert which the district has previously mailed to property owners). The August routine testing indicated sodium levels in product water at Well #1 – 102 mg/L, Well #3 – 19 mg/L and Well #4 – 139 mg/L.

It is recommended people on sodium restricted diets use an alternative source for drinking water.

Chlorine: Chlorine is used for disinfection and is a key component of the multi-barrier approach to ensuring water quality. However, chlorine can react with naturally occurring compounds to form disinfectant by-products which have a health concern. In the past 3 years levels of DBPs, particularly Tri-halomethane compounds have not exceeded the MAC and the District lifted the permanent advisory in 2021.

It is still recommended that people concerned about chlorine and chlorine by-products compounds should consider point-of-use treatment with NSF approved activated carbon, changed in accordance with manufacturer's recommendations.