DRINKING WATER SYSTEMS

2016 UTILITY SERVICES ANNUAL REPORT **SUNSHINE COAST REGIONAL DISTRICT**

This report is a requirement of the Vancouver Coastal Health Authority.

Sunshine Coast Water Systems

The Sunshine Coast Regional District (SCRD) provides water supply services to approximately 23,000 residents from Langdale to Earl's Cove, which are located within the traditional territories of the *shíshálh* Nation and *Skwxwú7mesh* First Nations. This includes operations and maintenance of the Langdale, Soames Point, Granthams Landing, Eastbourne (Keats Island), Chapman/Gray Creek including the Chapman Creek Water Treatment Plant, the South Pender Harbour Water Treatment Plant and the North Pender Harbour Water Systems. These water supplies are also used for fire protection, industrial use and irrigation.

Chapman Water System is the largest water system and supplies over 90% of the Sunshine Coast's residents and businesses within the regional water service area. The Chapman Creek watershed is approximately 7150 hectares in size . The creek extends 27 kilometers inland. The surface area of Chapman Lake is approximately 34 hectares. In 1967 the Sunshine Coast Regional District took over the water license from the Union Steamships, that had originally obtained the license in 1929.

North Pender Harbour Water System is an independent system, operated and maintained by the SCRD since assuming ownership in September, 2007. The source for this system is Garden Bay Lake, with Hotel Lake as a secondary supply for emergency use only.

South Pender Harbour Water System is an independent system which has been operated and maintained by the SCRD since assuming ownership on January 31, 2008. The source for the this system is McNeill Lake .

Combined, the **SCRD water systems** consists of over 357 km of watermains (varying in size from 25mm to 750mm), 16 storage reservoirs, 15 pumps stations, 29 pressure reducing valve stations, 1145+ fire hydrants, 10 chlorination stations and approximately 11,475 water connections.

Corporate Strategic Plan

This Drinking Water Systems Annual Report aligns with the SCRD's Strategic Priority to Embed Environmental Leadership through the responsible management of the regions' water supply.

Customer Concerns

Normal concerns and the responses include the following:

High chlorine residual complaints are resolved by explaining to the customer the necessity of chlorination in the drinking water system to prevent the growth of disease causing organisms. In some cases staff will attend a home to test chlorine residuals and possibly flushing. There was no situation where the chlorine residual was found to be out-side standard operating limits.

Dirty water concerns often occur as a result of flushing or due to maintenance and repair work. Routine flushing and maintenance is advertised in advance in order to provide early notification to affected customers.

Pressure concerns are mainly a result of malfunctioning Pressure Reducing Valves (PRV) on the customer side of the service connections, how-ever, they can be indications of leaks or problems with system PRV stations. The system pressure parameters are reviewed and a site visit may be conducted to resolve any issues that arise.

Regional Water Metering and Watermain Upgrade Grants

Adopted in 2013, the Comprehensive Regional Water Plan outlines the plan for increasing water supply in combination with metering, to manage demand. Water metering will help the SCRD and water users improve their leak detection abilities as well as better inform users of their water consumption. Water metering is widely recognized as an industry best practice.

The Sunshine Coast Regional District was successful in its application for grant funding towards a 5,000 connection water metering project within the Electoral Areas of the Sunshine Coast. An application for funding was made under the New Build Canada Fund in April 2015 with an award announcement received in August 2015. The project commenced in the Fall of 2016 and is currently underway with an expected completion date of October 2017. The total grant award was for this project is $3.45M, made up of Federal and Provincial government contributions.

In November 2016 an application for funding under the Clean Water and Wastewater Fund grant program was submitted and it was announced in March 2017 that the SCRD was successful in receiving funding towards watermain upgrade projects in the North and South Pender Harbour water service areas. The total funding awarded was $3.3M. This project is currently underway with an expected completion date of February 2018.

Water Savings

Water meter read data collected in Pender Harbour detected 145 possible private-side leaks. Property owners were notified by mail of their potential leaks. Significant leaks were followed up by SCRD staff via phone calls or in person. An additional 101 leaks were identified and these property owners have been notified. In total, private-side leaks have been detected on 17.5% of the 1,404 accounts in the Pender Harbour area.

North and South Pender Systems

145 properties were notified of possible leaks:

- 50 leaks have been resolved yielding estimated water savings of 258.9 cubic metres per day;
- 18 property owners are in contact with staff and have committed to fixing leaks;
- 77 properties have been notified but continue to have a leak notification on their account.

Water Quality

Sampling

Each month, approximately one hundred water samples are taken from various points throughout the water systems. These samples are tested for total coliforms and E.coli coliforms. Test results are sent to the SCRD Utility Services Division and the Vancouver Coastal Health office. The presence of total coliforms indicates bacterial contamination; E.coli coliforms indicate bacterial contamination from human or animal waste.

2016 Results

In 2016, Vancouver Coastal Health (VCH) conducted annual inspections and the SCRD passed with no violations to the operating permits.

A total of 1,615 total coliform and E.coli samples were collected throughout the Sunshine Coast. In all but one sample, test results for total coliform were negative and all samples collected for E.coli were negative. Following industry guidelines and VCH recommendation, the SCRD resampled the positive sample site and no coliform was found.

The SCRD also collected quarterly water samples for potability, which includes most chemicals, minerals and trihalomethanes. More detailed test results can be found on the SCRD website at www.scrd.ca/quality.

Sample Location	Samples Collected	Coliform Positives	E.coli Positives
Cove Cay	77	1	0
Eastbourne	243	0	0
Egmont	101	0	0
Chapman	594	0	0
Granthams Landing	47	0	0
North Pender Harbour	203	0	0
Soames	77	0	0
South Pender Harbour	178	0	0
Langdale	95	0	0

Watermain Replacement

In 2016, the SCRD installed 1,390 m of new ductile iron (DI) and high density polyethylene (HDPE) water mains in the following locations:

* Highway 101: 530 m of 200 mm DI water main and 110 m of 50 mm HDPE water service line constructed between Selma Park Road and Monkey Tree Lane. This allowed the decommissioning of the 150 mm asbestos cement water main that served this location.

* Soames Point: 250 m of 200 mm DI water main and 350 m of 50 mm HDPE water service line constructed to replace the 70+ year old 75 mm cop-per line serving the Soames Point area. Fire protection was improved for the community through the increased main size and the installation of two additional hydrants.

* Monkey Tree Lane: 150 m of 300 mm DI water main constructed to twin the water main along Monkey Tree Lane. This improved the flow of water through the main supply line to Sechelt .

2016 Water Conservation Efforts

The goal of the SCRD's Water Conservation Program is to reduce the rate of drinking water consumption by promoting water efficient practices and technology thus reducing the impacts on local streams and groundwater aquifers, and deferring both the need for expensive new water supply, storage and treatment infrastructure.

A few characteristics made the summer of 2016 unique:

- This was the summer following the severe drought of 2015.
- Snowpack: a warm spring that brought the spring snow melt a month earlier than normal.
- Precipitation patterns: Summer saw highly localized precipitation events that sometimes missed Chapman Lake but left significant amounts of water at lower altitudes. This weather led to a slower than usual recharge of Chapman Lake.
- The SCRD is working in conjunction with Neptune Technology Group to install water meters to every household on the Regional system.
- Environmental Flows: Summer 2016 saw a significant increase in the volume of water released for environmental flows, following recommendations from an independent biologist consultant.
- Groundwater Systems: Some groundwater fed systems stayed at Stage 2 when the Regional system went to Stage 3.

Communications and Advertising

Effective communication with the community is an important aspect of the SCRD's Drought Management Plan's implementation. At every stage, a media release, the SCRD web-site and social media channels are updated. Three road-side signs are also updated at every stage. At Stage 2, the daily water consumption charts and targets were added to the website and regularly updated. At Stage 3, the daily water consumption charts were also placed in the paper as a weekly ad and five additional sandwich board signs were placed along the highway. Stage 3 also saw a targeted mail-out to the groundwater-fed systems of Langdale, Soames Point, and Granthams Landing that had stayed at Stage 2.

Stakeholders

These communication efforts were accompanied by a variety of calls to specific stakeholders, including the Town of Gibsons, District of Sechelt, SCRD Parks and Recreation, Fire Halls, and large water users.

Did you know?

It may surprise you to learn that in North America only about 1% of domestic water is used for cooking and drinking.

The rest of our beautifully treated water is used for bathing, flushing toilets, washing clothes, watering lawns and gardens and many other uses.

www.espwaterproducts.com/water-facts/

Operations and Compliance

Operation and Maintenance

The Chapman Creek Water Treatment Plant is operated and maintained by operators certified under the Environmental Operator Certification Program. Scheduled inspections are completed by a certified operator utilizing a Supervisory Control and Data Acquisition (SCADA) software system. The SCADA system records trends and status of equipment continuously 24 hours per day. This data is reviewed and the system is monitored daily. The SCADA system will notify the on-call operator in the event that any parameter goes outside of the set operating range. The SCRD has personnel on-call 24 hrs per day 7 days per week including weekends and holidays. Annual maintenance includes equipment servicing, reservoir cleaning and inspections, PRV maintenance, hydrant servicing and line flushing. There is a detailed Emergency Response Plan (ERP) for this system. Paper copies of the ERP are kept at the SCRD Field Road office and Mason Road Works Yard building, and one copy is kept by Vancouver Coastal Health. The ERP is reviewed and updated by staff every January and paper copies are updated.

Vancouver Coastal Health Operating Permit

The SCRD is in compliance with the conditions of the operating permits. These include;

- Review and update the Emergency Response Plan annually.
- Minimum bacteriological sampling frequency is semi-monthly sampling from 25 sites for a total of 594 samples per year.
- Provide and make public, within six months of the end of the calendar year, an Annual Report.
- Well Protection Plan for each system.

Well Protection Plan

Well Protection Plans are a specified requirement in the SCRD's Operating Permits as issued by Vancouver Coastal Health Authority. In October, 2016 the SCRD's contracted a consultant to develop a Well Protection Plan for all well sources operated by the SCRD.

The overall goal of the Well Protection Plan is to improve the safety of the drinking water systems for Langdale, Chaster, Soames, Granthams, and Eastbourne (Keats Island) water supply sources. The purpose of developing a Well Protection Plan is to identify the hazards that may threaten the quality of the groundwater supply source, rank the hazards according to risk, and develop an action to either reduce the chances that the hazards will occur, or mitigate the risk from the hazards if unavoidable.

Supplemental Water Sources and Treatment

There are three alternate water sources available to supplement the Regional Water System:

Gray Creek is a surface water supply. It has a screened creek intake, sedimentation box, and chlorination station. This system is used only to supplement the Regional Water Distribution System. Water from Gray Creek flows by gravity into a contact chamber where it is disinfected with sodium hypochlorite before entering the Gray Creek Reservoir. This water is used to supply the areas of Sandy Hook and Tuwanek. In 2016 this source was in service from August through September and produced 40,000 cubic meters of water.

The Chaster Well Pump Station is located in Gibsons and can be used to supply 700 cubic meters of groundwater to the system each day. The water from this source is of excellent quality. The only treatment required is the addition of 0.4 mg/l of sodium hypochlorite to maintain a chlorine residual in the system. In 2016 this source was used from July until October and produced 71,000 cubic meters of water.

Trout Lake raw water feeds into a filter building at the Trout Lake re-chlorination station. The raw water from Trout Lake can be filtered and chlorinated at this station. Due to it's quality this source is considered an emergency backup and is not normally used. In 2016 this source was not used.

Exploring Water Supply Options

The SCRD is working on additional water supply options for the dry summer months with these projects:

1. ***Chapman Lake Supply Expansion***
2. ***Groundwater Exploration***
3. ***Engineered Storage Lake***

Contact Us

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Major Upgrades

South Pender Pressure Reducing Valve (PRV) Station – Due to age and ongoing maintenance issues, the existing PRVs and plumbing were removed and new 200 mm and 150 mm PRVs were installed along with the accompanying valves and screening systems.

McNeill Lake Dam Retrofit – Rock anchors were added to the existing McNeill Lake Dam structure to improve resistance to seismic loading.

South Pender Water Treatment Plant Air release System – An air extraction system was installed at the South Pender Harbour Water Treatment Plant to remove air buildup in the plant supply line from McNeill Lake.

Soames Chlorination Project—completion of watermain work is scheduled for May 2017. Location of chlorination station is still to be determined, contingent on results of the Well Protection Plan and Groundwater Investigation.