

Sticks Allison Water System

2018 Annual Report

CRD | Drinking Water

Introduction

This report provides a summary of the Sticks Allison Water Service for the year 2018. This report includes a description of the service, summary of the water supply, demand and production, drinking water quality, operations highlights, capital project updates and financial report.

Service Description

The community of Sticks Allison is a rural residential development located on the north side of Galiano Island in the Southern Gulf Islands Electoral Area which was originally serviced by a private water utility. In 1996 the service converted to the Capital Regional District. The Sticks Allison water service (Figure 1) is made up of 39 parcels encompassing a total area of approximately 23 hectares. Of the 39 parcels, 34 were customers to the water system in 2018.

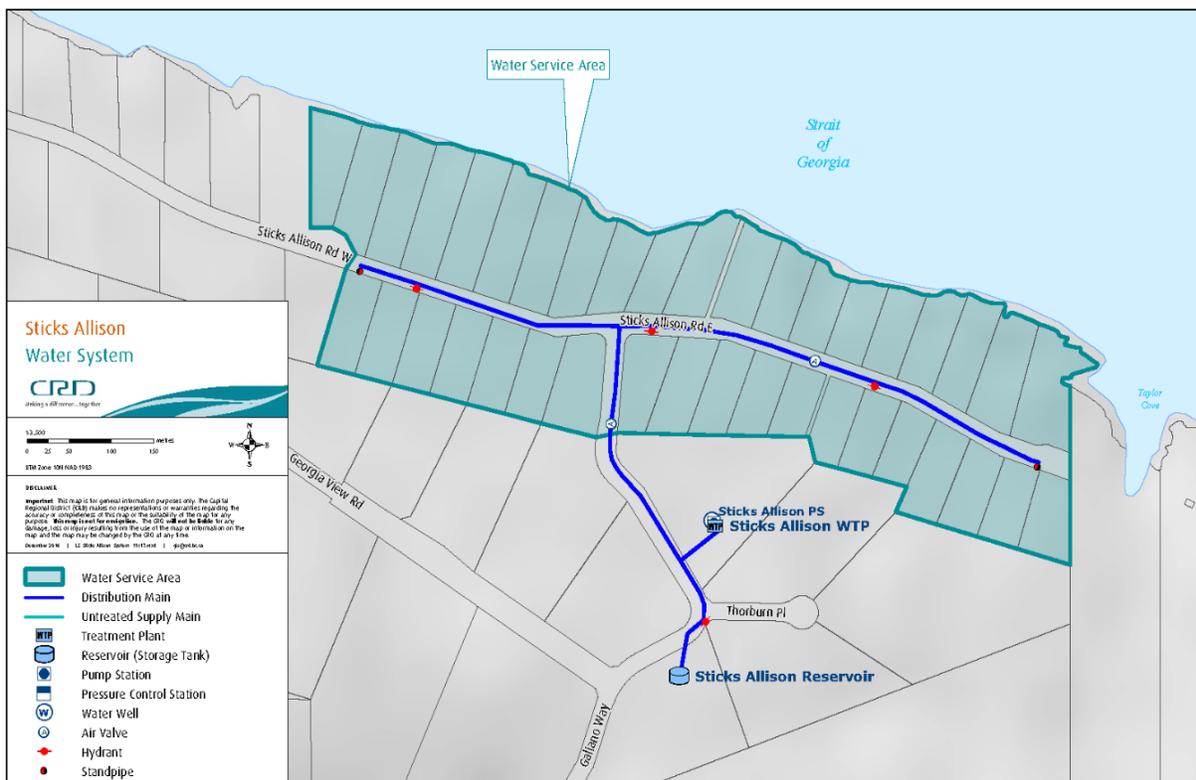


Figure 1: Map of Sticks Allison Water System.

The Sticks Allison water system is primarily comprised of:

- One ground water well, related pumping and control equipment and building.
- Disinfection process equipment (ultraviolet light and chlorine).
- One steel storage tank (total volume is 90 cubic metres).
- Distribution system (1,400 metres of water mains).
- Other water system assets: 34 service connections and meters, 4 hydrants, 2 standpipes, 10 gate valves, SCADA system and auxiliary generator.

Water Supply

Referring to Figure 2 below, ground water supply monthly water levels are highlighted for 2018. Ground water levels for 2018 are within the typical historical range for this service.

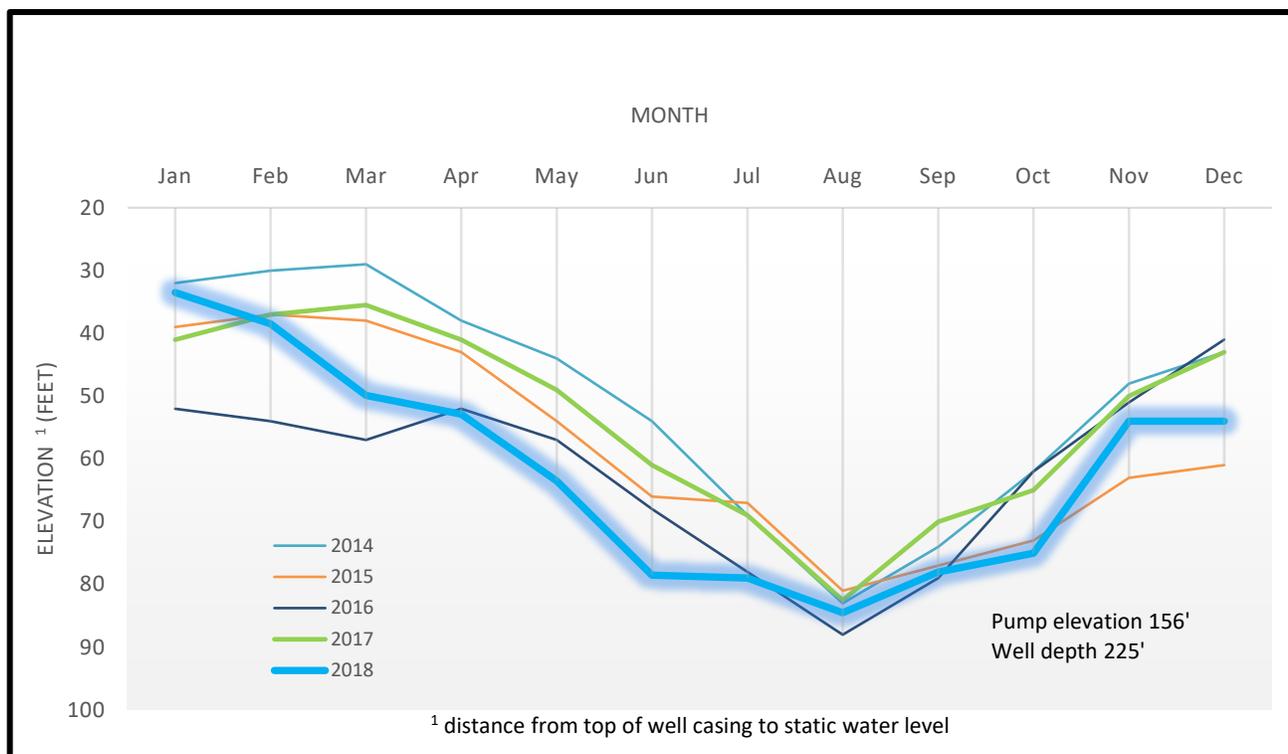


Figure 2: Sticks Allison Monthly Groundwater Water Level

Water Production and Demand

Referring to Figure 3, 6,245 cubic meters of water were extracted (water production) from the ground water source in 2018. This was a 22% increase from the previous year and an 8% increase from the five year average. However, it is important to note that the 22% increase from the previous year is misleading given that the water production meter was under reading due to a malfunction in 2017. Water demand (customer water billing) for the service totaled 5,648 cubic meters of water; a 7% increase from the previous year and a 7% increase from the five year average.

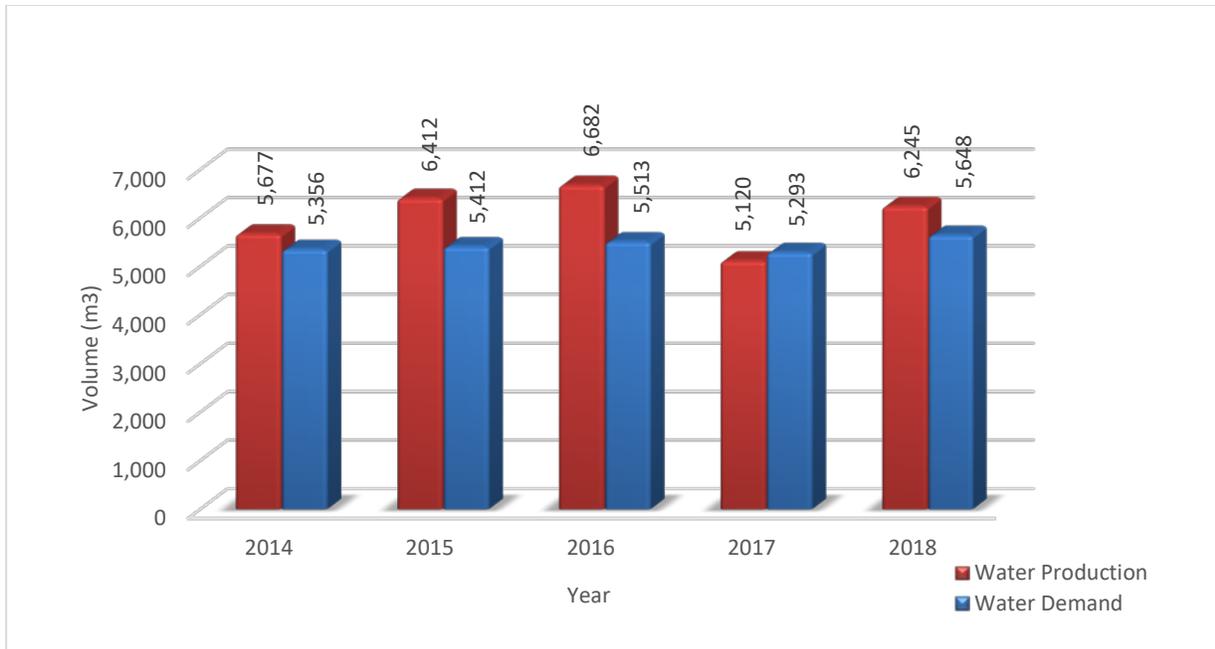


Figure 3: Stick Allison Water Service Annual Water Production and Demand.

The difference between annual water production and annual water demand is referred to as non-revenue water and can include water system leaks, water system maintenance and operational use (e.g. water main flushing, filter system backwashing), potential unauthorized use and fire-fighting use.

The 2018 non-revenue water (597 cubic meters) represents approximately 10% of the total water production for the service area. However, approximately 80 cubic meters can be attributed to operational use resulting in a non-revenue water volume of approximately 8%. This is considered to be acceptable of a small water system.

Figure 4 below illustrates the monthly water production for 2018 along with the historical water production information. The monthly water production trends are typical for small water systems such as the Sticks Allison water system.

It is important to point out that water production was much higher in December 2018 compared to previous years. This is partially the result of a storage tank overflow event that went undetected for a period of approximately four days. It was determined that the well pump was inadvertently left operating and system high level alarms did not alert operational staff to an overflow. This water was dechlorinated at the point of release from the storage tank. This critical alarm monitoring has since been corrected.

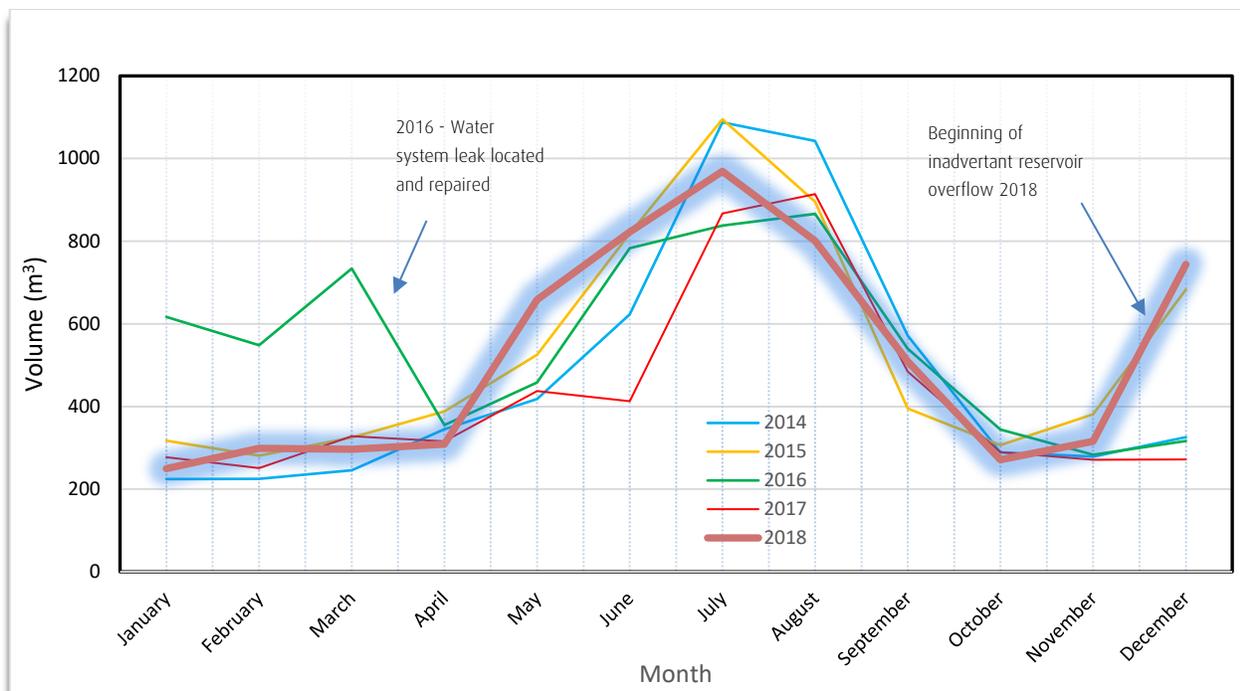


Figure 4: Sticks Allison Water Service Monthly Water Production.

Drinking Water Quality

Staff completed the water quality monitoring program at Sticks Allison based on the regulatory requirements and system specific risks. Samples were collected at regular frequencies from the raw water as well as from a number of sampling stations at the treatment plant and in the distribution system. The samples were shipped for various analyses to CRD's Water Quality Lab or to external laboratories for special analyses, including disinfection by-products or metals.

The water system performed well in 2018 and consistently supplied drinking water of good quality to its customers. The groundwater well produced generally good quality source water with the exception of a few episodes characterized by elevated iron and manganese concentrations. After chlorination, this can lead to brown/yellow water discoloration and become a nuisance for customers. These elevated iron and manganese concentrations, however, have no health implications.

The data below provides a summary of the water quality characteristics in 2018:

Raw Water:

- The Sticks Allison well produced raw water that contained no *E. coli* bacteria and almost no total coliform bacteria.
- The raw water contained iron and manganese at concentrations below the aesthetic objectives in the Guidelines for Canadian Drinking Water. However, iron and manganese concentrations do build up at locations of high water age such as dead end pipe sections with little water demand and then lead to exceedances with coloured water implications for the customers nearby.

Treated Water:

- The treated water was safe to drink with no confirmed *E. coli* or total coliform bacteria concentrations in any samples. One total coliform positive result on April 10, 2018 at the east end of Sticks Allison Road could not be confirmed by a subsequent resample.
- The treated water turbidity was very low with a median of 0.27 NTU.
- The iron and manganese concentrations in the distribution system were generally below the aesthetic limits according to the Guidelines for Canadian Drinking Water Quality but regularly exceeded the limits at the east end of Sticks Allison Road. No customer complaints were received. However, periodic flushing of standpipe at this far end of the system would ensure that elevated iron and manganese concentrations do not accumulate in the pipes and reach levels in exceedance of the guidelines limits.
- The annual average levels of the disinfection by-product total trihalomethanes were well below the maximum allowable concentration.
- The free chlorine residual concentrations in the distribution system ranged from 0.02 to 1.44 mg/L with a median of 0.35 mg/L indicating sufficient secondary disinfection.

Water quality data collected from this drinking water system can be reviewed on the CRD website:

<https://www.crd.bc.ca/about/data/drinking-water-quality-reports>

Operational Highlights

The following is a summary of the major operational issues that were addressed by CRD Integrated Water Services staff:

- Emergency water distribution system flushing activities due to elevated levels of iron and manganese.
- Reservoir communications battery replacement.
- UV equipment corrective maintenance.
- Relocate electrical wires due to safety concerns.

No Capital Projects were completed in 2018

Financial Report

Please refer to the attached Statement of Operations. *Revenue* includes parcel taxes (*Transfers from Government*), fixed user fees (*User Charges*), interest on savings (*Interest Earnings*), a transfer from the maintenance reserve account, and miscellaneous revenue such as late payment charges (*Other Revenue*).

Expenses includes all costs of providing the service. *General Government Services* includes budget preparation, financial management, utility billing and risk management services. *CRD Labour and Operating Costs* includes CRD staff time as well as the costs of equipment, tools and vehicles. *Debt servicing costs* are interest and principal payments on long term debt. *Other Expenses* includes all other costs to administer and operate the water system, including insurance, supplies, water testing and electricity.

The difference between *Revenue* and *Expenses* is reported as *Net Revenue (expenses)*. Any transfers to or from capital or reserve accounts for the service (*Transfers to Own Funds*) are deducted from this amount and it is then added to any surplus or deficit carry forward from the prior year, yielding an *Accumulated Surplus* (or deficit) that is carried forward to the following year.

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Attachment: 2018 Financial Summary (Statement of Operations)

CAPITAL REGIONAL DISTRICT
STICKS ALLISON WATER
Statement of Operations (Unaudited)
For the Year Ended December 31, 2018

	2018	2017
Revenue		
Transfers from government	5,000	5,000
User Charges	43,345	40,561
Other revenue from own sources:		
Interest earnings	102	2
Other revenue	1,001	392
Trf from Operating Reserve	1,317	-
Total revenue	50,765	45,955
Expenses		
General government services	2,465	2,320
CRD Labour and Operating costs	38,503	31,857
Debt Servicing Costs	-	-
Other expenses	6,797	8,267
Total expenses	47,765	42,445
Net revenue (expenses)	3,000	3,510
Transfers to own funds:		
Capital Reserve Fund	-	-
Operating Reserve Fund	3,000	3,510
Annual surplus (deficit)	-	0
Accumulated surplus, beginning of year	-	-
Accumulated surplus, end of year	\$ -	0

CAPITAL REGIONAL DISTRICT

STICKS ALLISON WATER Statement of Reserve Balances (Unaudited) For the Year Ended December 31, 2018

	Capital Reserve	
	2018	2017
Beginning Balance	14,420	18,228
Transfer from Operating Budget	-	1,510
Transfers from completed capital projects	2,067	2,478
Interest Income	352	203
Transfer to Capital Projects	-	(8,000)
Ending Balance	<u>16,839</u>	<u>14,420</u>

	Operating Reserve	
	2018	2017
Beginning Balance	6,004	2,014
Transfer from/(to) Operating Budget	1,683	3,872
Interest Income	186	118
Ending Balance	<u>7,873</u>	<u>6,004</u>