Making a difference...together

WILDERNESS MOUNTAIN WATER SERVICE
2014 ANNUAL REPORT
OCTOBER 5, 2015

Purpose of the Annual General Meeting

The agenda for the Annual General Meeting (AGM) is approved by the members of the Commission. The purposes (and hence the agenda items) of the meeting are:

- To have the last year's Annual General Meeting minutes approved (by Commission members), and to present reports on the work of the commission, the past year's operation, maintenance, capital upgrades and financial information of the service to the service residents and owners,

- To nominate members for appointment to the service commission, and

- To enable the public to share comments on subjects which relate to the work of the commission. The commission can identify (under "new business") issues on which it wants feedback at the meeting. Motions are usually not considered from the public at the AGM.

System Overview

The Wilderness Mountain Water Service (WMWS) was established in the early 1980's. The service area consists of 83 parcels, of which 70 have water service connections. The system was operated and maintained by a private company until converted into a Capital Regional District (CRD) service in 2009. Conditional to becoming a CRD service, upgrades to the water system to meet current drinking water quality guidelines were required.

The source of water for the WMWS is Wilfred Reservoir, a small surface water body created by the construction of two dams. Prior to the upgrade works, water drawn from the reservoir was disinfected with chlorine, then the water was pumped into the distribution system which is comprised of a network of polyvinyl chloride (PVC) water mains. Approximately 55,000 imperial gallons of treated water storage is maintained in two tanks located on Ambience Way.

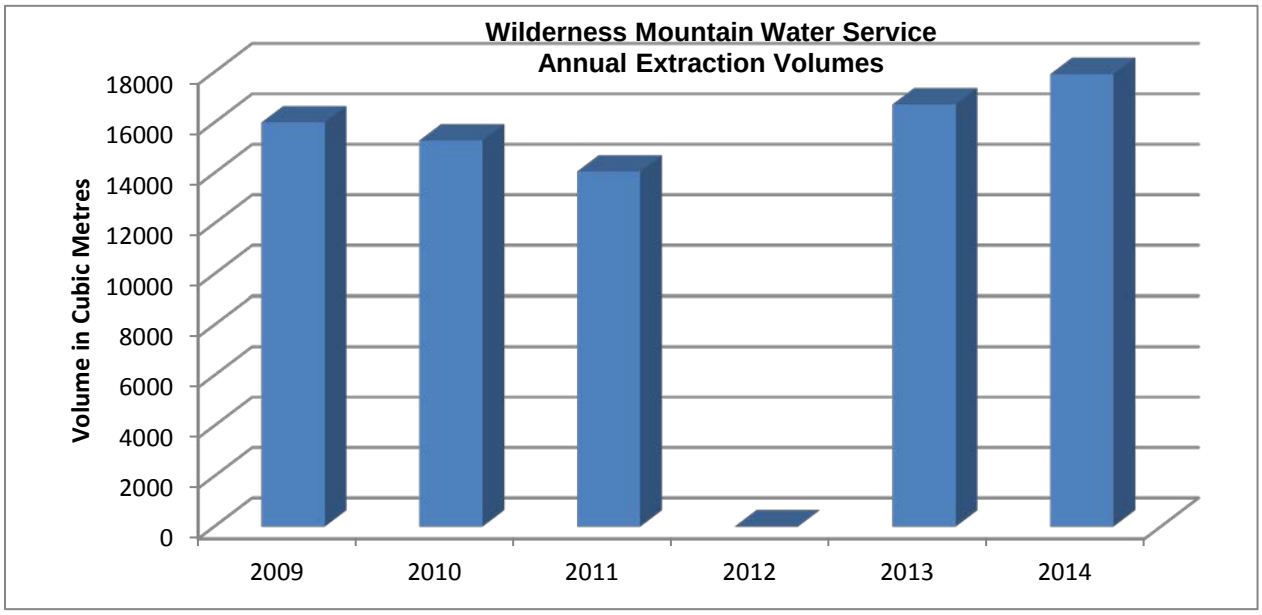
The treatment facility commissioned in 2012, provides a three step treatment process that includes course filtration, ultraviolet radiation and chloramination (ammonia and chlorine) disinfection. Chloramination and the production of chloramines provide a long lasting disinfectant residual in the distribution system, lower chlorinous taste and lower disinfection byproducts (such as trihalomethanes).

Water Supply and Consumption

2014 saw a total metered volume of 17,913 m^3 extracted from the Wilfred Reservoir, a 7% increase over the recorded 2013 volume of 16,715 m^3. Due to only partial recordings, a 2012 total volume is unavailable for comparison. The water supply trend for the Wilderness Mountain

system is shown in **Figure 1**.; however, the noticeable increases shown for 2013 and 2014 may be due to several factors, including but not limited to: a new production flow meter installed in 2012, measuring accurately, replacing the old meter suspected of being inaccurate and reading low; there could be an increase in system losses including leaks, flushing, reservoir cleaning; and an increase in demand.

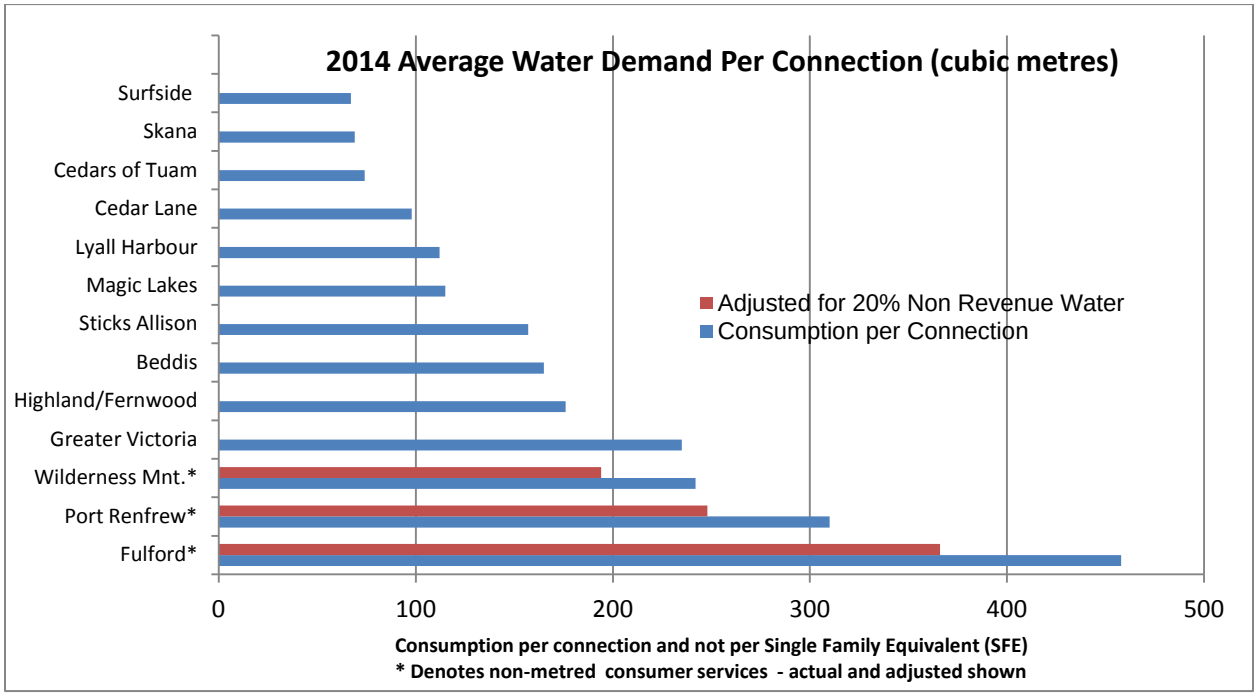
Figure 1. Wilderness Mountain Water Service Annual Extraction Volumes



Although the majority of customer connections are metered (original to subdivision in the 1980's), the meters have not been read regularly because they may not be accurate and are not used for billing. Therefore, since water customer consumption is unknown, the amount of non-revenue water is also unknown. Non-revenue water is typically used for operational and treatment process purposes such as water main flushing, and reservoir cleaning. Non-revenue water also includes water lost to leakage in the distribution system, including private side connections and fire-fighting activities.

The average annual consumption per connection is estimated to be 17,913 m^3 divided by 70 connections which equals 256 m^3 per connection. However, deducting an amount for system losses, (say 20%), the estimated annual consumption per connection is closer to 200 m^3.

For comparison the following graphic illustrates the 2014 average water demand per connection for a variety of CRD water services including Wilderness Mountain.



Drinking Water Quality

In 2014, bacteriological samples were collected once every two weeks with the results summarized below. Additional samples for a variety of other water quality parameters were collected and analyzed at appropriate frequencies ranging from bi-weekly to annually. In general, the Wilderness Mountain Water System consistently provided drinking water of good quality to its customers. There have been a few episodes of elevated turbidity (slightly over 1 NTU) or organic particles appearing in the distribution system due to natural processes taking place in the source lake. Almost all of these short lived episodes occurred during the peak demand summer season. New instrumentation is being installed in 2015/16 that will enable improved water quality monitoring.

Typical Wilderness Mountain Water System water quality characteristics for 2014 include:

Raw Water Entering the Treatment Plant

Bacteriological results:

- The total coliform bacteria median of 212 colony forming units (CFU) per 100 mL and a range from 21 to 2400 CFU/100 mL is higher than in previous years, however within the expected range for a lake such as Wilfred Reservoir.

- *E. coli* bacteria median of 0 CFU/100 mL and ranging from ‘Not Detectable” to 11 CFU/100 mL, easily meeting the US Environmental Protection Agency limit of 20 *E coli* in at least 90% of the samples to remain an unfiltered surface water supply.

- Source water turbidity (cloudiness) was usually below the limit of 1 NTU (median of 0.91 and ranged from 0.62 to 1.80 NTU). The times when the raw water turbidity exceeded 1 NTU were typically characterized by either algal blooms in the summer or heavy rainfall and runoff events in late fall.

- Total organic carbon was moderate at 3-4 milligrams per litre (mg/L).

- In one of two samples a very low concentration of *Giardia* cysts was detected. No sample contained any *Cryptosporidium* parasites.

- The lake water has naturally high iron and manganese concentrations (may cause aesthetic issues but no health concerns).

Treated Water in the Distribution System

- The treated water in the distribution system was bacteriologically safe to drink. There were two positive total coliform samples, each with a concentration of 1 CFU/100 ml. However, the resamples tested negative for total coliforms.

- 13 distribution system samples exhibited a slightly elevated turbidity between 1 and 2 NTU. Most of these samples were collected in July 2014 and the higher than normal turbidity was likely due to an algal bloom in Wilfred Reservoir. Without additional budget for lake monitoring, it is difficult to determine the actual cause of these events.

- Disinfection by-products (total trihalomethanes and haloacetic acids) in the distribution system remained well below the permissible limits in 2014.

Routine water quality data is posted on the CRD website at:

https://www.crd.bc.ca/about/data/drinking-water-quality-reports/juan-de-fuca-water-quality-reports/wilderness-mountain-water-quality-reports

Operations

The WMWS operated reliably in 2014. Operation and maintenance activities in 2014 and to date include:

- Annual flushing and exercising of distribution system isolation valves
- Routine water sampling
- Periodic security checks of the reservoirs
- Calibration of turbidity meter
- Leak checks and repair – various
- Twice weekly filter maintenance and replacement as required
- Twice weekly disinfectant chemical addition
- Twice weekly maintenance of UV system and disinfectant chemical feed pumps
- Weekly sampling of raw and disinfected water at various sampling locations
- Recording of reservoir levels
- Twice weekly recording of disinfectant residual values at various sampling locations
- Responding to customer issues
- Daily remote monitoring of water production through disinfection plant

Capital Improvements

In 2014 there were no capital improvements made to the water system; however in 2015 several capital projects were implemented including:

Supervisor Control and Data Acquisition Equipment (SCADA), Phase 1 - SCADA equipment was installed to monitor the storage tank volume and power-fail alarm which will report remotely 24/7 to the CRD operating staff. Other 2015 capital upgrades to the system include construction of stairs at the Wilfred North Dam, work related to the outlet valve operation, removal of trees on the downstream dam face and the updating of the Operation, Maintenance and Surveillance manual and Emergency Preparedness Plan manual related to compliance with the Dam Safety Regulation (Water Act of BC).

In addition, a new antenna at the pump house was installed and "No Trespassing" signs at strategic locations.

The draft Strategic Asset Management Plan was delivered to the Commission at its meeting of July, 31, 2015 and several capital projects were identified and subsequently added to the 2016 capital budget, including:

1. SCADA Upgrade, Phase 2 ($36,250)
   In 2015 the WMWSC approved Phase 1 SCADA upgrades and this work was completed. It is proposed to complete the balance of the improvements in order for the operators to receive field information from onsite instrumentation and alarms. It was noted at the March 31, 2015 commission meeting, that the SCADA equipment may result in lower operational costs of approximately $2,000 per year ($3,000 savings less SCADA servicing cost estimate of $1,000 per year) associated with performing routine maintenance monitoring and/or call-out for items that could be addressed by accessing information from the water disinfection facility remotely at the Japan Gulch water treatment plant that is operated full time.

2. Undertake Improvement to Intake Pump ($2,500)
   The raw water supply pump at Wilfred Reservoir piping is repaired and it is now proposed to install pipe fittings to allow the operators to remove and inspect the pump and motor with less difficulty.

3. Chemical Metering Pump ($2,000)
   The existing water treatment plant includes a chemical metering pump which operates frequently and is critical for chemical dosing. It is proposed to purchase a spare pump as an energy backup should the existing pump fail.

4. Installation of a flushing saddle assembly ($4,000)
   The water main on Ambience Place lacks a means to purge water from the distribution water main and therefore, it is proposed to install a water main flushing saddle assembly, which will allow flushing of this main.

5. William Brook Reservoir – Transfer Agreement ($2,500)
   The William Brook reservoir was determined to be surplus to the needs of the water service and it is proposed to transfer the ownership and operation of the dam and reservoir to another party. This expenditure relates to the CRD staff and legal effort to complete the transfer.

Financial Report

Revenue includes parcel taxes (*Transfers from government*) and user fees (*Sale of services*), and small amounts for interest on savings and miscellaneous revenue such as connection charges and late payment charges (*Other revenue*). *Expenses* include all costs of providing the service. *General government services* include budget preparation, financial management, utility billing, and risk management services. *Other expenses* include all other costs to administer and operate the water system, and the principal and interest payments on borrowing to finance capital projects. *Other fiscal services* include administration costs for loans.

The difference between *revenue* and *expenses* is reported as *Net revenue (or 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.

The 2014 revenue of $118,250 included $63,243 in parcel tax, $54,776 in sale of service and $231 of other revenue. The total expenses were $82,525 for operation and administration of the service, including all operating expenses and insurance.

The difference between revenue and expenses in 2014 amounted to a net revenue of $35,725 which when applied against debt charges of $23,675 created an overall surplus of $12,050 which was carried forward in its entirety to the 2015 Operating Budget.

As of December 31, 2014, the Capital Reserve Fund balance was $61,340.

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