Beaver Falls Waterworks District
Annual Drinking Water Report
2016

Water system: Beaver Falls Waterworks District
Date of report: March 2016
Period of monitoring covered by this report: January 1, 2016 – December 31, 2016
Interior Health Permit to Operate Facility Number: 0210637
IHA Permit: Drinking Water System 1-300 Connections
Connections: 196 active
Location of water supply system: Beaver Falls BC

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Introduction
This annual report provides an overview of the Beaver Falls Waterworks District (BFWD) water system and summarizes the water quality from January 1, 2016 to December 31, 2016. This report also includes a summary of inquiries and complaints; completed and proposed maintenace activities and the Emergency Response Plan. This report is required by Interior Health Authority as part of the Beaver Falls Waterworks District Operating Permit.

Beaver Falls Waterworks System
The community of Beaver Falls lies within the Regional District of Kootenay Boundary (RDKB) in BC and forms a part of the RDKB Electoral Area "A". Beaver Falls is primarily a residential community with some commercial areas. The population is approximately 594 people, with a total land area of about 15 square km.
The Beaver Falls Waterworks (BFWD) originated October 1, 1959 under the provincial Letters Patent.
The water supply distribution system includes the two production wells, 16 fire hydrants, two Imperial gallon reservoirs and approximately 5 km of looped AC(asbestos cement) steel and PVC piping. The storage system is then gravity fed back into the community within the Improvement District. The BFWD provides potable water to 196 active connections. Other private domestic water wells also exist in Beaver Falls Waterworks Improvement District.

The BFWD's potable water supply is currently sourced from Well No. 1 and Well No.2 located approximately 17 m northwest of Beaver Creek. The water comes from an underground aquifer and sourced from groundwater extracted from the two production wells (Wells #1, #2,). The BFWD wells are situated adjacent to Beaver Creek, just outside the southwest municipal boundary of the Village of Fruitvale in the vicinity of Scout Camp, which is accessed from Bluebird road on the east side of Highway 3B. Well No.1, which is located approximately 42 m to the northeast of Well No.2, Wells No.1 and No.3 are located in the same pump house. The pump house is located approximately 37 m north of Beaver Creek. A third production well (Well No.3) was drilled in 2005 (approximately 3 m from Well No.1), with the intention of using it as a replacement Well No. 1 however, it was not put into use.

Well #1
Well No.1 is located inside a locked and secured masonry pump house (Pump house No.1) with a concrete slab around the well. Well No.1 was drilled to a total depth of 20.7 m (68 ft) below ground surface in 1973. The well is completed with 250 mm (10 inch) diameter well casing and nominal 200 mm (8 inch) telescopic, stainless steel well screen. The well screen assembly is approximately 7.6 m (25 ft) in length, and consists of five, 1.5 m (5-ft) lengths of well screen, with slot sizes varying between 60-slot (0.060 inch) and 100-slot (0.100 inch). The largest slot-size well screen (100-slot) is located at the bottom of the assembly and the smallest slot size (60-slot) is at the middle of the assembly. The screen is equipped with a K-packer located at 12.5 m (41 ft) belowground surface. In October 2014, Precision Service & Pumps Inc. performed a well test and concluded that the pumping rate has decreased since the last test in 2010 and well redevelopment is recommended. The pumping rate is currently at 114 US gpm, and Precision Pumps pulled the well and rebuilt the pump. While they were rebuilding the pump, they put a temporary pump in the well so we could still have two wells running. April 2016 Precision Pumps have rehabilitated the well. In September, Westek Controlls Ltd. Installed a Variable Frequency Drive (VFD) to slow down the water when pumping.

Well #2
According to the well record, Well No.2 was drilled to a total depth of 28.1 m (92 ft) below ground surface in 1985. The well is completed with 250 mm (10 inch) diameter well casing and nominal 200 mm (8 inch) telescopic, stainless steel well screen. The well screen assembly is approximately 7.6 m (25 ft) in length, and consists of five, 1.5 m (5-ft) lengths of well screen, with slot sizes varying between 20-slot (0.020 inch) and 120-slot (0.120 inch). The largest slot-size well screen (120-slot) is located at the top of the assembly and the smallest slot size (20-slot) is at the middle of the assembly. The screen is equipped with a K-packer located at 19.9 m (65 ft) below ground surface. In October 2014, Precision Service & Pumps Inc. performed a well test and concluded that this well's performance has not declined and showed it is pumping at 200 US gpm.

Reservoirs
The BFWD has two reservoirs that are located on Deer Road which is on the west side of Hwy 3B. Built in 1966, reservoir #1 holds 545,000 litres and #2 holds 300,000 litres it was built in 1986. Both reservoirs are constructed of steel.

SCADA (Supervisory Control and Data Acquisition)
The SCADA system is used to monitor and control the wells and reservoir. The SCADA system was installed in September of 2014 replacing the circular chart recorder.

Routine Maintenance Program
Fire Hydrants are flushed every spring along with pressure testing and removal of winter markers. In the fall, they are inspected, pressure tested, winter markers are placed on hydrants and any worn parts are replaced. Easy access to hydrants is maintained throughout the year; during winter months, hydrants are cleared of snow and during summer months, grass is cut.
Chlorination at the reservoir and system flush is completed twice per year, once in the spring and once in the fall.
Inventory and equipment count is done yearly at the beginning of January.
Water usage is monitored through the SCADA system.
We are the process of updating our mapping to show water lines, valves etc.
Valve exercising to ensure valves are in proper working condition.

Water Quality Complaints
There have been no water complaints for 2016. In July and November of 2016, testing indicated that there were some Total Coliform counts in the water, but these were due to a testing error.

2016 Improvements
Replaced the roof on small pumphouse in April 2016.
Pump #1 rehabilitation completed by Precision Pumps April 2016.
Repair of pitting inside the reservoirs was completed July 2016.
Westek Controls installed a VFD in pump #2 completed September 2016.
Removal of scrap metal and burning of trees at the pumphouses completed December 2016.
Ongoing maintenance work for residential upgrades to isolation valves.

2017 Proposed Improvements
Increased pressure for Christie Rd residents.
Complete the extension of the water line on Columbia Gardens Rd.
Continuing with residential valve upgrades.
Continue painting hydrants.

Water Consumption
In 2016, the BFWD total water consumption was 101,245 cubic meters. The minimum daily demand in January was 117 gallons per day per household and the maximum daily demand in August was 690.

Emergency Response Plan
The BFWD has an Emergency Response Plan (ERP) in place. The plan is reviewed and updated each year. The BFWD ERP can be viewed on our website at www.beaverfallswaterworksdistrict.myruralwater.com .The Plan identifies potential emergencies and action plans. A copy of this report is submitted to Interior Health drinking water officer.

Water Sampling and Testing
As required by the Interior Health Authority (IHA), the Beaver Falls Waterworks District (BFWD) Water System Operator takes water samples for the purpose of testing of Total Coliforms and e-Coli. The samples are sent to Caro Analytical Services in Kelowna, results are emailed back to the BFWD and to Interior Health. There are eight sampling sites used with one sample taken weekly and alternating between sites.

2016 Water Sample Reports for Beaver Falls Waterworks District

Date	Site	Coliforms, Total CFU/ 100ml	E.Coli CFU/100ml	
Jan-14	Well #1	<1	<1	
Jan 14	Well #2	<1	<1	
Jan 20	Well #1	<1	<1	
Jan 20	Well #2	<1	<1	
Feb 4	Hydrant 16	<1	<1	
Feb 4	Hydrant 1	<1	<1	
Feb 18	Well #1	<1	<1	
Feb 18	Well #2	<1	<1	
March 3	Hydrant 16	<1	<1	
March 3	Hydrant 4	<1	<1	
March 17	Well #1	<1	<1	
March 17	Well #2	<1	<1	
April 7	Well #1	<1	<1	
April 7	Well #2	<1	<1	
April 21	Hydrant 16	<1	<1	
April 21	Hydrant 1	<1	<1	
May 5	Well #1	<1	<1	
May 5	Well #2	<1	<1	
May 18	Hydrant 16	<1	<1	
May 18	Hydrant 4	<1	<1	
June 8	Well #1	<1	<1	
June 8	Well #2	<1	<1	
June 22	Hydrant 16	<1	<1	
June 22	Hydrant 1	<1	<1	
July 7	Well #1	<1	<1	
July 7	Well #2	<1	<1	
July 27	Fox Rd	<1	<1	
July 27	Christie Rd	1	<1	Testing Error
August 8	Well #1	<1	<1	
August 8	Well #2	<1	<1	
August 17	Hydrant 16	<1	<1	
August 17	Hydrant 4	<1	<1	
Sept 22	Well #1	<1	<1	
Sept 22	Well #2	<1	<1	
October 7	Well #1	<1	<1	
October 7	Well #2	<1	<1	
October 26	Hydrant 16	<1	<1	
October 26	Hydrant 1	<1	<1	
November 2	Well #1	<1	<1	
November 2	Well #2	<1	<1	
November 16	Hydrant 1	1	<1	Testing Error
November 16	Hydrant 16	<1	<1	

Date	Site	Coliforms, Total CFU/ 100ml	E.Coli CFU/100ml
December 8	Well #1	<1	<1
December 8	Well #2	<1	<1
December 21	Well #1	<1	<1
December 21	Well #2	<1	<1