THE CITY OF ROSSLAND

DRINKING WATER ANNUAL REPORT - 2007

Introduction

The City of Rossland is the purveyor of drinking water to users connected to the Rossland Water System. This report is provided to City Council for their information, and in fulfilment of the City's obligations under the Provincial Drinking Water Act and associated regulations, as well as the terms and conditions of the City's Water System Operating Permit. Enforcement of the regulations and issuance of water system permits is the responsibility of the Interior Health Authority's Drinking Water Officer.

Water Consumption

Raw water for the City of Rossland water system is received from three surface water creeks, Topping, Hanna and South Murphy Creeks. From these collection points, water is fed by gravity to the Star Gulch Reservoir, prior to treatment at the adjacent slow sand filtration plant.

The following consumption statistics reflect the total usage in Rossland. Comparisons to 2006 to 2004 are also provided for trending purposes. As shown in the table, overall water use increased significantly in 2006

	2007	2006	Change 2006 to 2007	2005	Change 2005 to 2006	2004	Change 2004 to 2005
Total water produced through the water treatment plant (cubic metres)	918,848	903,967	1.6%	815,903	10.8%	835,100	-2.3%
Total water circulated through equipment and back to beginning of treatment and therefore not used by people(cubic metres)	0	42,623	N/A	40,147	6.2%	35,260	13.8%
Total water to areas other than Red Mountain (cubic metres)	888,165	819,599	8.4%	733,047	11.8%	755,493	-3.0%
Total water to Red Mountain area (cubic metres)	30,683	41,785	-26.6%	42,729	-2.2%	44,347	-3.7%

Maximum daily demand peaked at 6,776 cubic metres on July 17, 2007 while minimum daily demand occurred on December 30th, 2007 at 1,324 cubic metres.

Water consumption in Rossland in 2007 averaged about 278 cubic metres per person per year, which is up (261 cu m in 2006 based on 3300 people), 6.5% from 2006. The average 2007 use

was 761 litres per person in Rossland each and every day of the year. By comparison the average daily consumption in Canada is about 640 litres per person.

These assumptions are using an estimated population of 3300. This population figure does not take into account the seasonal variation due to tourism and the Red Mountain Ski area, therefore it is believed the numbers may be somewhat skewed to the low equivalent population. In addition the data provided for this report does not include the previously subtracted amount of water circulated through the system.

The City of Rossland has been working on Conservation and Leak Detection since 1999 and has reduced consumption from 1,139,131 cubic metres in 1999 to 918,848 cubic metres in 2007. This has been a 24% reduction in water use.

Source Water Quality

The City of Rossland Watershed includes three creeks and their respective catchments. The large size of the watershed as well as the location of the intakes, contributes to ensuring high quality raw water for the City.

The City of Rossland inspects intakes and watersheds within our distribution system on a monthly basis. The watershed is too large to fence and fully restrict access. The approach that the City of Rossland is taking is that people are going to be within the watershed for recreation purposes and if they are aware, by signage, that this area is within the watershed and very sensitive, it will get the caution required. The City of Rossland commissioned raw water quality testing in July of 2008, please find these results attached to this report.

Treatment

Rossland's water system has a dual treatment barrier in place at this time which involves filtration and chlorine disinfection. Prior to water entering the City's distribution system, the water passes through large sand filters and then chlorine gas is injected into the water in a contact chamber at the Water Treatment Plant. Disinfection equipment is capable of providing sufficient dosage to the water at both high and low flow periods to ensure an appropriate, and compliant, level of residual disinfection capability throughout the distribution system. The dual Capital Controls chlorinators can provide 0-9 kg per day during low water flow periods and 0-22 kg per day during high demand.

The chlorine disinfection system is maintained by City staff trained to operate the system and who provide scheduled maintenance/overhaul services, as well as do repair work as required. A stock of extra parts and equipment, as well as quick-connect plumbing and electrical connections ensure complete redundancy of the system at all times, to minimize the chance of extended breakdowns.

Quality Monitoring

Drinking water delivered to users of the City system is subject to a comprehensive and rigorous testing program that ensures quality drinking water. Continuous monitoring of free chlorine residual readings, temperature and pH in the drinking water is accomplished with Hach meters located in the Water Treatment plant (disinfection takes place here). On a daily basis City staff test samples of drinking water from the plant. On a weekly basis City Staff test separate locations for free chlorine residuals (i.e. the presence of chlorine in the water). These tests are conducted with hand-held Hach meters that measure the minute amounts of disinfectant that must be in the drinking water throughout the system to meet regulations. Sample points are located at the start, middle and end of the entire City water distribution system to ensure the effectiveness of the

disinfection program. At least 0.2 milligrams of chlorine must be present in every litre of water to meet these standards.

Over three hundred manual chlorine residual tests were conducted by City staff in 2007 at the 5 locations. The lowest residual reading in the Happy Valley area was 0.76 mg/l on August 8 and the lowest reading in the Red Mountain area was 0.24 mg/l on January 24. Whenever staff determine that the readings may be trending to low they slightly increase the dosage of disinfectant at the Water Treatment Centre and confirm the results during the next day's tests indicating residual levels have increased.

Water samples are sent, on a weekly basis, to the *Caro Environmental Services* laboratories to be tested for the presence/absence e-coli and total coliform bacteria. City staff draws these samples and sends them to the Kelowna laboratory. Results are returned to the City within a week. The standard protocol when a water sample is found to contain the presence of coliforms, however minute, is to resample the water immediately at the same location and resubmit for testing. The provincial Drinking Water Officer will determine if any action by the purveyor is necessary only after a second test also shows the presence of coliforms.

In 2007 the City submitted 130 samples for ecoli and coliform testing and none came back positive for either ecoli or coliforms.

Turbidity is monitored continuously after filtration with the highest reading at 0.17 on October 12 and the lowest reading of 0.07 on January 22.

Records

The City uses SCADA (*System Control and Data Acquisition)* to continuously monitor water quality, flow, pressure and storage. This system assists City staff to maintain a safe drinking water supply by advising when dosage or residual disinfectant levels are outside of set parameters (either high or low) for the system. The SCADA system will alert staff by cell phone or computer message to ensure that corrections can be made before water quality can be adversely affected.

This data is stored at the Water Treatment plant. This data is forwarded on a monthly basis and is used to provide information to the provincial Drinking Water Officer, including the completion of this annual report.

Flow records are taken daily to determine the volume of treated water being produced and distributed. Future upgrades of this system would include the installation of further flow meters for raw water and treated water at key points in the distribution system.

Staff

Trained, certified City staff work to maintain the 24 hour per day supply of safe drinking water to users in Rossland. This is accomplished by ensuring that staff is on call every day of the year and that the previously mentioned surveillance, operating and control system (SCADA) is operating continuously. Water distribution work is also done by staff certified for their tasks: water main replacement, water service installation, fire hydrant and valve maintenance. Special tasks such as reservoir cleaning and leak detection are undertaken by qualified staff with the proper equipment and experience to complete the work.

The City has one Water Treatment – Level 1 and one Water Treatment – Level 2 Operator, one

Water Distribution Level 2 and one Water Distribution Level 3 Operator, and three operators trained in Chlorine Handling. The City will consider a second Water Treatment Level 2 Operator with consideration of them being in place in 2009 or 2010. The City will consider a second Water Distribution Level 3 Operator with consideration of them being in place in 2009 or 2010.

Initiatives – 2007

City staff continued with some water line replacement program to go along with our road upgrade program. This program will, over time, upgrade the present distribution system with proper looping and valve control. In 2007 the City of Rossland replaced water mains and service connections on Cook Avenue, a total length of approximately 150 metres.

The City checked and flushed all fire hydrants. Further, known water valves that are inoperable are repaired as budget permits, on average 6 to 8 are repaired annually. In the future, a program will be implemented to target areas of most concern.

The City is presently in the construction stage of the Ophir Creek reservoir project that will increase the amount of stored raw water within our community for safety, wildfires, and to allow future expansion of the community. This reservoir will hold approximately 160,000 cubic meters of addition water, predominately drawn from the creeks during the Spring Freshet.

The water system had 1 main line failures and 15 minor failures (service connections, leaking valves). Further, the entire system was flushed in the spring and fall and known problem water mains are flushed an additional one or two times throughout the year.

The City has started gathering information to expand the water treatment facility in the future, however, with the introduction of a demand management program it is expected that the construction of additional filtration can be delayed for a number of years.

The cross connection control program has not been initiated due to availability for staff to be trained by a BCWWA accredited course. This program has been budgeted for 2008 and 2009.

Future Water Quality

The City has been advised by the Drinking Water Officer to include compliance with the new Drinking Water Regulation standards in any future capital works plans. Replacement or expansion of major parts of the City's water system will have to include provisions to ensure that standards of treatment required by current regulation are achieved. Future planning work within our distribution system will include pipe replacement and sizing, water main looping, and improvements to creek intakes.

Funding from senior government programs has been received for the construction of Ophir Reservoir. Grant applications are in place for upgrades to all our intakes. Further, a grant application is in place for reviewing Columbia Avenue infrastructure prior to MoT repaving Highway 33.

The City also collects money from developers through development cost charges, set as follows for 2007. These charges are under review in 2008.

Land Use	Unit charged	Charge
Single Detached Dwelling	Per Parcel	$1,791
Duplex Use	Per Parcel	$3,582
Townhouse	Per Townhouse	$1,182
Apartment greater than or equal to 50 sq. m. gross floor area	Per Apartment	$1,182
Apartment less than 50 sq. m. gross floor area	Per Apartment	$591
Hotel or Motel Unit	Per Unit	$591
Commercial	Per m2 gross floor area	$8.96

Developers are also required to expand and upgrade existing infrastructure if it is unable to deliver the required potable water and fire flows.

Conclusion

This 2007 City of Rossland Water System Report is presented to the public, by way of posting on the City of Rossland website, as required by the British Columbia Drinking Water Protection Act and Regulations, as well as to meet the terms and conditions of the City's Water System Operating Permit CITYRO 950 issued by the Interior Health Drinking Water Officer.

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17 October 2008