



## **2011 ANNUAL REPORT**

### **WATER SUPPLY**

The Town of The Pas draws its raw water from the Saskatchewan River that is gravity fed to a well. The water is pumped from the well into the water treatment plant.

### **TREATMENT PROCESS**

At the well potassium permanganate is introduced to the raw water for taste and odor control.

When the water enters the plant Aluminum sulphate and a coagulant are added. The water is then sent to two mixing chambers. In the mixing chambers another coagulant aid is introduced. The raw water and additives are then mixed. After this point, the water is sent to four (4) dual media filters before the finished water is sent into clear wells for storage. Chlorine is added as a disinfectant and fluoride for dental health.

### **WATER DISTRIBUTION SYSTEM**

The treated water is pumped from the water treatment plant to the consumers via a system of underground pipes. The water is metered for consumption and is billed accordingly.

### **WATER TESTING**

- Raw water is tested daily for turbidity, temperature & p.h.
- Treated or finished water is tested daily for turbidity, chlorine residual, temperature and fluoride.
- Water is tested 4 times per year for THM's and HAA's.
- Water is tested yearly for total water chemistries.

## **BACTERIOLOGICAL TESTING**

Samples of raw water, treated water and points in the distribution system are tested bi-weekly for coliforms and E.Coli. The results of these tests are shown in the table below:

BACETERIOLOGICAL MONITORING AND REPORTING	Regulatory Requirement	PWS Performance
Number of raw/incoming water samples	26	26
Number of treated water samples	26	26
Number of distribution water samples ( 2 sampling locations )	26	26
Frequency of testing	Bi-weekly	100%
Total coli form present in water samples	0 TC per 100 mL	96%
E.coli present in water samples	0 EC per 100 mL	96%
<b>COMMENTS:</b> One test was positive. As per regulations a re-test was done and it was negative meeting requirements.		

## **TURBIDITY TESTING**

Turbidity is a measurement of water clarity. This test is used as a benchmark on how the treatment process is working. Facilities are obligated to meet regulatory requirements on the filtering process and the treated water that is sent to consumers. The results of these tests are shown in the table below:

Turbidity Standards	Regulatory Requirement	PWS Performance
Chemically assisted, rapid gravity filtration process	≤ 0.3 NTU in at least 95% of the samples taken per month	100%
	Not to exceed 0.3 NTU for more than 12 continuous hours	100%
	Not to exceed 1.0 NTU at anytime	100%
Frequency of testing	Daily	98.4%

## **DISINFECTION TESTING & MONITORING**

This testing is done to ensure that the water is safe for the consumer and to meet the regulatory requirements. The results of these tests are shown in the table illustrated below:

<b>Chlorine Requirements</b>	<b>Regulatory Requirement</b>	<b>PWS Performance</b>
(A) Free chlorine residual entering the distribution system	$\geq 0.5$ mg/L	100%
(B) Free chlorine residual in the distribution system	$\geq 0.1$ mg/L	71%
(C) Frequency of testing	Daily for A	100%
	Bi Weekly for B	100%
(D) Report submissions	Monthly	100%

## **FLOURIDE**

A fluoride content test is done to the treated water to determine mg/L of fluoride in the treated water and to meet regulatory requirements. The results of these tests are show in the table below:

	Daily Samples Passed	Composite Samples Taken	Composite Samples Passed
Number of fluoride samples	Daily	26	26
Flouride less than 1.5 mg/L as per CDWG.	100%	100%	100%

## **DISINFECTION BY-PRODUCTS MONITORING & REPORTING**

These tests are done to meet Regulatory requirements. The results of these tests are shown on the following table:

<b>DISINFECTION BY –PRODUCTS MONITORING AND REPORTING</b>	Regulatory Requirement	PWS Performance
A) Trihalomethane sampling requirements	4 times per year	100%
B) Total Trihalomethane Standard	0.1 mg/L	0.16 mg/L
C) Bromodichloromethane sampling requirements	4 times per year	100%
D) Bromodichloromethane Standard	0.016 mg/L	0.011 mg/L

THM and HAA results were higher than usual. This was likely caused by the flood like conditions from spring to early fall. The organic content of the water was increased and additional chlorine was required to properly disinfect the water. This phenomenon increased

THM and HAA production. Additionally it was more difficult to maintain chlorine residuals in the extremities of the distribution system.

### **WATER CHEMISTRY ANALYSIS**

Chemical analysis tests were done on the raw and treated water on July 23, 2011. The treated water met all the G.C.D WQ maximum-acceptable concentrations for health-based parameters.

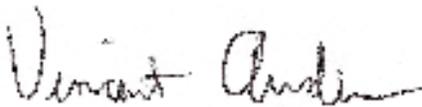
### **EMERGENCY-COMPLIANCE ISSUES-2011**

- There were 28 water main breaks in 2011. This is a increase of 17% over 2010. The main reason for the increase is that the winter of 2010 had more snow fall and was warmer. This result was more frost and ground movement.
- One out standing non-compliance issue that has to deal with low chlorine residuals in the distribution system; this issue is being address with a number of solutions being implemented. Corrosion control practices are one of the measures being investigated.
- THM generation was increased as a result of the increased free chlorine concentrations when water leaves the plant. The Town will be exploring options to reduce corrosion and chlorine consumption in the distribution mains in the 2012.

### **EXPENSES & UPGRADES**

- A major upgrade to the water treatment plant was finished in 2011.
- Among the major items included in the project were improved safety, a backup power generator, UV disinfection and the installation of variable frequency drives on the distribution pumps.
- The total project cost was approximately \$2.5 million.

For general questions during regular business hours call the Engineering Dept. at 1-204-627-1125. For emergency calls please phone 1-204-623-2330



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