



Drinking Water Quality and Compliance
SaskWater Elbow Potable Water Supply System
Station Number SK05HF0220
2016 Notification to Consumers

The Water Security Agency (WSA) requires that, at least once each year, waterworks owners provide notification to consumers of the quality of water produced and supplied as well as information on the performance of the waterworks in submitting samples as required by a Permit to Operate a waterworks. The following is a summary of the SaskWater Elbow Potable Water Supply System water quality and sample submission compliance record for the January 1, 2016 to December 31, 2016 time period. This report was completed on March 20, 2017. Readers should refer to the WSA's Municipal Drinking Water Quality Monitoring Guidelines, October 2012, EPB 202 for more information on minimum sample submission requirements and types of samples. Permit requirements for a specific waterworks may require more sampling than outlined in the Agency's monitoring guidelines. If consumers need to know more about drinking water in Saskatchewan, more detailed information is available from: <http://www.hq-sc.gc.ca/ewh-sem/t/pubs/water-eau/index-eng.php>.

BACTERIOLOGICAL QUALITY

| Parameter | Limit | Regular Samples Required | Regular Samples Submitted | # Positive of Regular Submitted |
|---------------------|----------------------|--------------------------|---------------------------|---------------------------------|
| Total Coliform | 0 Organisms/100 mL | 52 | 52 | 0 |
| E. Coli | 0 Organisms/100 mL | 52 | 52 | 0 |
| Background Bacteria | Less than 200/100 mL | 52 | 52 | 0 |

Analysis is performed on a single sample for all parameters mentioned above. All waterworks are required to submit samples for bacteriological water quality; the frequency of monitoring depends on the population served by the waterworks.

Bacteriological sample was not taken the week of May 30, 2016. EPO was notified and an extra sample was taken the following week. Bacteriological result was negative.

WATER DISINFECTION

Chlorine Residual – From Test Results Submitted with Bacteriological Samples from WTP

| Parameter | Minimum Limit (either/or) | Range (mg/L) | # Tests Required | # Tests Submitted | # Adequate Chlorine |
|----------------|---------------------------|--------------|------------------|-------------------|---------------------|
| Free Chlorine | 0.1 mg/L | 0.64 – 1.43 | 52 | 52 | 52 |
| Total Chlorine | 0.5 mg/L | 0.81 – 1.58 | 52 | 52 | |

A minimum of 0.1 milligrams per litre (mg/L) free chlorine residual OR 0.5 mg/L total chlorine residual is required at all times throughout the distribution system. An adequate chlorine is a result that indicates that the chlorine level is above the regulated minimums. A waterworks is required to submit chlorine residual test results on every bacteriological sample they submit.

Free Chlorine Residual for Water Entering Distribution System

| Parameter | Limit (mg/L) | Range (mg/L) | # Tests Required | # Tests Performed | % Adequate Chlorine |
|---------------|--------------|--------------|------------------|-------------------|---------------------|
| Free Chlorine | At least 0.1 | 0.45 – 2.00 | Continuous | Continuous | 100 |

Minimum 0.1 milligrams per litre (mg/L) free chlorine residual is required for water in a distribution system. Residuals are monitored continuously and tests normally performed on a daily basis by waterworks operators and are to be recorded in operation records.

TURBIDITY

Turbidity – From Test Results Submitted with Bacteriological Samples from the WTP

| Parameter | Limit (NTU) | Range (NTU) | # Tests Required | # Tests Performed | # Exceeding Limit |
|-----------|-------------|-------------|------------------|-------------------|-------------------|
| Turbidity | No standard | 0.10 – 0.17 | 52 | 52 | 0 |

Turbidity for Water Leaving the Filter

| Parameter | Limit (NTU)* | Range (NTU) | 95 th Percentile (NTU) | # Tests Required | # Tests Performed |
|-----------|---|---------------|-----------------------------------|------------------|-------------------|
| Turbidity | < 0.3 – 95% of measurements; never >1.0 | 0.079 – 0.779 | 0.190 | Continuous | Continuous |

Turbidity is a measure of water treatment efficiency. Turbidity measures the “clarity” of the drinking water and is reported in Nephelometric Turbidity Units (NTU). All waterworks are required to monitor turbidity at the water treatment plant.

CHEMICAL – GENERAL

All waterworks serving less than 5000 persons from a surface water or blended surface/groundwater source are required to submit water samples for the WSA’s General Chemical category once per three months every second year. 2016 is a required sampling year. The last sample for General Chemical analysis was submitted on October 11, 2016.

| Parameter | MAC | AO * | Sample Results | # of Samples Required | # of Samples Submitted |
|-------------------------------|--------------|-----------|----------------|-----------------------|------------------------|
| Total Alkalinity (mg/L) | | 500 | 165 | 4 | 4 |
| Bicarbonate (mg/L) | No Objective | | 202 | 4 | 4 |
| Calcium (mg/L) | No Objective | | 45 | 4 | 4 |
| Carbonate (mg/L) | No Objective | | <1 | 4 | 4 |
| Chloride (mg/L) | | 250 | 15 | 4 | 4 |
| Fluoride (mg/L) | 1.5 | | 0.22 | 4 | 4 |
| Total Hardness (mg/L) | | 800 | 188 | 4 | 4 |
| Hydroxide (mg/L) | No Objective | | <1 | 4 | 4 |
| Magnesium (mg/L) | | 200 | 19 | 4 | 4 |
| Nitrate (mg/L) | 45 | | 0.32 | 4 | 4 |
| pH (pH units) | | 6.5 – 9.0 | 8.21 | 4 | 4 |
| Potassium (mg/L) | No Objective | | 3.1 | 4 | 4 |
| Sodium (mg/L) | | 300 | 30 | 4 | 4 |
| Specific Conductivity (µs/cm) | No Objective | | 507 | 4 | 4 |
| Sulphate (mg/L) | | 500 | 81 | 4 | 4 |
| Sum of Ions | No Objective | | 394 | 4 | 4 |
| Total Dissolved Solids (mg/L) | | 1500 | 301 | 4 | 4 |

MAC – Maximum Acceptable Concentration

AO – Aesthetic Objective

*Objectives apply to certain characteristics of or substances found in water for human consumptive or hygienic use. The presence of these substances will affect the acceptance of water by consumers and/or interfere with the practice of supplying good quality water. Compliance with drinking water aesthetic objectives is not mandatory as these objectives are in the range where they do not constitute a health hazards. The aesthetic objectives for several parameters (including hardness as CaCO₃, magnesium, sodium and total dissolved solids) consider regional differences in drinking water sources and quality.

CHEMICAL – HEALTH

All waterworks serving less than 5000 persons are required to submit water samples for the WSA's Chemical Health category once every 2 years. 2016 is a required sample year. Additional testing was done for informational purposes only. The last sample for Chemical Health analysis was submitted on July 20, 2016.

| Parameter | MAC (mg/L) | IMAC (mg/L) | AO (mg/L) | Sample Results (mg/L) | # of Samples Required | # of Samples Submitted |
|-----------|--------------|-------------|-----------|-----------------------|-----------------------|------------------------|
| Aluminum | No Objective | | | 0.30 | 1 | 2 |
| Arsenic | 0.010 | | | 0.00095 | 1 | 2 |
| Barium | 1.0 | | | 0.08 | 1 | 2 |
| Boron | | 5.0 | | 0.02 | 1 | 2 |
| Cadmium | 0.005 | | | 0.00001 | 1 | 2 |
| Chromium | 0.05 | | | <0.0005 | 1 | 2 |
| Copper | | | 1.0 | 0.0007 | 1 | 2 |
| Iron | | | 0.3 | 0.0012 | 1 | 2 |
| Lead | 0.01 | | | <0.0001 | 1 | 2 |
| Manganese | | | 0.05 | 0.0005 | 1 | 2 |
| Selenium | 0.01 | | | 0.0005 | 1 | 2 |
| Uranium | 0.02 | | | 0.0013 | 1 | 2 |
| Zinc | | | 5 | 0.0005 | 1 | 2 |

MAC – Maximum Acceptable Concentration IMAC – Interim Maximum Acceptable Concentration
 AO – Aesthetic Objective

CHEMICAL – TRIHALOMETHANES (THM)

Trihalomethanes are formed when chlorine reacts with organic matter in water. The four THM compounds are: chloroform, dibromochloromethane, bromodichloromethane (BCDM) and bromoform. The sum of the concentrations of these four components is referred to as Total Trihalomethanes. The limit for THM is a long term objective based on an annual average of seasonal samples.

| Parameter | Limit (mg/L) | Average (mg/L) | # Samples Required | # Samples Submitted |
|-----------------------|--------------|----------------|--------------------|---------------------|
| Total Trihalomethanes | 0.100 | 0.064 | 4 | 4 |

CHEMICAL – HALOACETIC ACIDS (HAAs)

Haloacetic acids are formed when chlorine reacts with organic matter in water. The five regulated haloacetic acids are: monochloroacetic acid, dichloroacetic acid, trichloroacetic acid, monobromoacetic acid, and dibromoacetic acid. The sum of the concentrations of these five components is referred to as HAA5.

| Parameter | Limit (mg/L) | Average (mg/L) | # Samples Required | # Samples Submitted |
|--------------------|--------------|----------------|--------------------|---------------------|
| Haloacetic Acids 5 | No Standard | 0.039 | 4 | 4 |

More information on water quality and sample submission performance may be obtained from:

SaskWater
 200 - 111 Fairford Street East
 Moose Jaw SK S6H 1C8
 Toll Free: 1-888-230-1111
 Fax: 306-694-3207
 Email: customerservice@saskwater.com