



**Drinking Water Quality and Compliance**  
**SaskWater Wakaw-Humboldt**  
**Potable Water Supply System and Treatment Plant**  
**2022 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 Wakaw-Humboldt Regional Water Supply System (RWSS) and Treatment Plant water quality and sample submission compliance record for the January 1, 2022 to December 31, 2022 time period. This report was completed on February 1, 2023. Readers should refer to the WSA's Municipal Drinking Water Quality Monitoring Guidelines 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.hc-sc.gc.ca/ewh-semt/pubs/water-eau/index-eng.php>.

**BACTERIOLOGICAL QUALITY**

Parameter	Limit	Regular Samples Required	Required Samples Submitted	# of Positive Regular Submitted
Total Coliform	0 Organisms/100 mL	156	156	0
E. Coli	0 Organisms/100 mL	156	156	0
Background Bacteria	Less than 200/100 mL	156	156	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.

**WATER DISINFECTION**

**Chlorine Residual in Distribution System – From Test Results Submitted with Bacteriological Samples**

Parameter	Minimum Limit (either/or)	Range (mg/L)	# Tests Required	# Tests Submitted	# Adequate Chlorine
Free Chlorine	0.10 mg/L	0.51 – 1.90	156	156	156
Total Chlorine	0.50 mg/L	0.60 – 2.09	156	156	

A minimum of 0.10 milligrams per litre (mg/L) free chlorine residual **OR** 0.50 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	1.30	1.35 – 2.01	Continuous	Continuous	100

Residuals are monitored continuously and multiple tests are performed on a daily basis by waterworks operators and are recorded in operation records.

**Wakaw-Humboldt Water Supply System**

**TURBIDITY**

**Turbidity for Water Leaving the Filters**

**Filter #1**

Parameter	Limit (NTU)	Range (NTU)	95 <sup>th</sup> Percentile (NTU)	# Tests Required	# Tests Performed	# months Exceeding Limit
Turbidity	< 0.30 – 95% of time each month; not to be > 0.3 for > 12 consecutive hours; never >1.0	0.043 – 0.488	0.062	Continuous	Continuous	0

**Filter #2**

Parameter	Limit (NTU)	Range (NTU)	95 <sup>th</sup> Percentile (NTU)	# Tests Required	# Tests Performed	# months Exceeding Limit
Turbidity	< 0.30 – 95% of time each month; not to be > 0.3 for > 12 consecutive hours; never >1.0	0.019 – 0.225	0.051	Continuous	Continuous	0

**Filter #3**

Parameter	Limit (NTU)	Range (NTU)	95 <sup>th</sup> Percentile (NTU)	# Tests Required	# Tests Performed	# months Exceeding Limit
Turbidity	< 0.30 – 95% of time each month; not to be > 0.3 for > 12 consecutive hours; never >1.0	0.037 – 0.327	0.072	Continuous	Continuous	0

**Filter #4**

Parameter	Limit (NTU)	Range (NTU)	95 <sup>th</sup> Percentile (NTU)	# Tests Required	# Tests Performed	# months Exceeding Limit
Turbidity	< 0.30 – 95% of time each month; not to be > 0.3 for > 12 consecutive hours; never >1.0	0.036 – 0.265	0.063	Continuous	Continuous	0

**Turbidity in the Distribution System – From Test Results Submitted with Bacteriological Samples**

Parameter	Limit (NTU)	Range (NTU)	# Tests Required	# Tests Performed	# Exceeding Limit
Turbidity	No standard	0.04 – 0.35	156	156	0

## Wakaw-Humboldt Water Supply System

### Turbidity in Water Entering the Distribution System

Parameter	Limit (NTU)	Range (NTU)	Average (NTU)	# Tests Required	# Tests Performed	# Exceeding Limit
Turbidity	No standard	0.035 – 0.322	0.054	730	Continuous	0

Additional testing done for information purposes.

### Turbidity in Raw Water Entering the Water Treatment Plant

Parameter	Limit (NTU)	Range (NTU)	# Tests Required	# Tests Performed	# Exceeding Limit
Turbidity	No standard	0.18 – 86.0	52	726	0

Additional testing done for information purposes.

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. The turbidity is done daily with bench testing instrument, as well as continuously with an on-line analyser.

## FLUORIDE

### From Treated Water at the Water Treatment Plant (on-site testing)

Parameter	Maximum Limit (mg/L)	Average (mg/L)	Maximum (mg/L)	# Samples Required	# Samples Submitted	# Exceeding Limit
Fluoride	1.50	0.62	1.12	365	729	0

Additional testing was done for informational purposes.

### From Water in the Distribution System (off-site testing)

Parameter	Maximum Limit (mg/L)	Average (mg/L)	Maximum (mg/L)	# Samples Required	# Samples Submitted	# Exceeding Limit
Fluoride	1.50	0.54	0.62	52	52	0

## HALOACETIC ACIDS (HAAs)

SaskWater is not required to perform this testing in 2022 as part of the operating permit. The next testing is required in 2023. The 2021 results are shown below for informational purposes.

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. The limit for HAAs is a long term objective based on an annual average of seasonal samples.

Parameter	Maximum Limit (mg/L)	2021 Average (mg/L)	# Samples Required	# Samples Submitted
Haloacetic Acids	0.080	0.050	0	0

**Wakaw-Humboldt Water Supply System**

**TRIHALOMETHANES (THM)**

SaskWater is not required to perform this testing in 2022 as part of the operating permit. The next testing is required in 2023. The 2021 results are shown below for informational purposes.

Trihalomethanes are formed when chlorine reacts with organic matter in water. The four THM compounds are: chloroform, dibromochloromethane, bromodichloromethane (BDCM) 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	Maximum Limit (mg/L)	2021 Average (mg/L)	# Samples Required	# Samples Submitted
Trihalomethane	0.100	0.060	2	2

**CHEMICAL – GENERAL**

SaskWater Wakaw-Humboldt Potable Water Supply System is required to submit water samples for the WSA's General Chemical category once per three months every year.

Parameter	MAC (mg/L)	AO * (mg/L)	Sample Results	# of Samples Required	# of Samples Submitted
Total Alkalinity (mg/L)		500	141	4	4
Bicarbonate (mg/L)		No Objective	172	4	4
Calcium (mg/L)		No Objective	47	4	4
Carbonate (mg/L)		No Objective	<1	4	4
Chloride (mg/L)		250	17	4	4
Fluoride (mg/L)	1.5		0.58	4	4
Total Hardness (mg/L)		800	192	4	4
Hydroxide (mg/L)		No Objective	<1	4	4
Magnesium (mg/L)		200	18	4	4
Nitrate (mg/L)	45		1.4	4	4
pH (pH units)		7.0 – 10.5	7.78	4	4
Potassium (mg/L)		No Objective	3.2	4	4
Sodium (mg/L)		300	27	4	4
Specific Conductivity (µs/cm)		No Objective	505	4	4
Sulphate (mg/L)		500	93	4	4
Sum of Ions		No Objective	285	4	4
Total Dissolved Solids (mg/L)		1500	305	4	4

MAC – Maximum Acceptable Concentration

AO – Aesthetic Objective

**Wakaw-Humboldt Water Supply System**

**CHEMICAL – HEALTH**

SaskWater Wakaw-Humboldt Potable Water Supply System is required to submit water samples for the WSA's Chemical Health category once per three months every year. This is an increase in testing requirements that took effect June 1, 2022, therefore two samples are required for 2022.

Parameter	MAC (mg/L)	IMAC (mg/L)	AO * (mg/L)	Sample Results (mg/L)	# of Samples Required	# of Samples Submitted
Aluminum	No Objective			0.026	2	2
Antimony	0.006			<0.0002	2	2
Arsenic	0.010			0.0002	2	2
Barium	1.0			0.078	2	2
Boron		5.0		0.03	2	2
Cadmium	0.005			<0.00001	2	2
Chromium	0.05			<0.0005	2	2
Copper			1.0	0.0042	2	2
Iron			0.3	0.0015	2	2
Lead	0.01			0.0003	2	2
Manganese			0.05	<0.0005	2	2
Selenium	0.01			0.0003	2	2
Silver	No Objective			<0.00005	2	2
Uranium	0.02			0.0004	2	2
Zinc			5	0.0030	2	2

MAC – Maximum Acceptable Concentrations

AO – Aesthetic Objective

IMAC – Interim Maximum Acceptable Concentrations

**CHEMICAL – PESTICIDES**

SaskWater Wakaw-Humboldt Potable Water Supply System is required to submit water samples for the WSA's Pesticide category once every 2 years. 2022 is a required sampling year.

Parameter	MAC (mg/L)	IMAC (mg/L)	Sample Results (mg/L)	# of Samples Required	# of Samples Submitted
Atrazine		0.005	<0.0002	1	1
Bromoxynil		0.005	<0.002	1	1
Carbofuran	0.09		<0.0002	1	1
Chlorpyrifos	0.09		<0.0002	1	1
Dicamba	0.12		<0.001	1	1
2, 4-D		0.10	<0.001	1	1
Diclofop-methyl	0.009		<0.001	1	1
Dimethoate		0.02	<0.005	1	1
Malathion	0.19		<0.0002	1	1
MCPA	0.10		<0.001	1	1
Pentachlorophenol	0.06		<0.0005	1	1
Picloram		0.19	<0.001	1	1
Trifluralin		0.045	<0.0002	1	1

MAC – Maximum Acceptable Concentrations

IMAC – Interim Maximum Acceptable Concentrations

**Wakaw-Humboldt Water Supply System**

**CHEMICAL – ORGANICS**

SaskWater Wakaw-Humboldt Potable Water Supply System is required to submit water samples for the WSA’s Synthetic Organic category once every 2 years. 2022 is a required sampling year.

Parameter	MAC (mg/L)	IMAC (mg/L)	AO* (mg/L)	Sample Results (mg/L)	# of Samples Required	# of Samples Submitted
Benzene	0.005			<0.0005	1	1
Benzo(a)pyrene	0.00001			<0.00001	1	1
Carbon tetrachloride	0.005			<0.002	1	1
Dichlorobenzene 1,2	0.2			<0.0005	1	1
Dichlorobenzene 1,4	0.005			<0.0005	1	1
Dichloroethane 1,2		0.005		<0.0005	1	1
Dichloroethylene 1,1	0.014			<0.0005	1	1
Dichloromethane	0.05			<0.0005	1	1
Dichlorophenol 2,4	0.9			<0.0002	1	1
Ethylbenzene			0.0016	<0.0005	1	1
Monochlorobenzene	0.080			<0.0005	1	1
Tetrachlorophenol 2,3,4,6	0.10			<0.001	1	1
Toluene			0.024	<0.0005	1	1
Trichloroethylene	0.05			<0.0005	1	1
Trichlorophenol 2,4,6	0.005			<0.002	1	1
Vinyl Chloride	0.002			<0.0005	1	1
Xylene			0.02	<0.0005	1	1

MAC – Maximum Acceptable Concentrations

AO – Aesthetic Objective

IMAC – Interim Maximum Acceptable Concentrations

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

**CYANIDE AND MERCURY**

Mercury enters water supplies naturally and as a result of human activities. Cyanide can enter source waters as a result of industrial effluent or spill events. These substances may represent a long-term health risk if the Maximum Acceptable Concentration (MAC) is exceeded.

Parameter	Maximum Limit (mg/L)	Sample Results (mg/L)	# Samples Required	# Samples Submitted
Cyanide	0.2	0.006	1	1
Mercury	0.001	<0.000001	1	1

**Wakaw-Humboldt Water Supply System**

**MICROCYSTIN LR and/or TOTAL MICROCYSTIN TOXINS**

SaskWater Wakaw-Humboldt Potable Water Supply System is required to sample for microcystin once every month from the treated water at the water treatment plant during the algal bloom period.

<b>Parameter</b>	<b>Maximum Limit (mg/L)</b>	<b>Average (mg/L)</b>	<b># Samples Required</b>	<b># Samples Submitted</b>
Microcystin	0.0015	0.0001	4	4

**GIARDIA AND CRYPTOSPORIDIUM (in the raw water)**

SaskWater Wakaw-Humboldt Potable Water Supply System is required to sample from the raw water entering the water treatment plant for giardia & cryptosporidium semi-annually (early spring and fall) and following upsets or significant events that may affect raw water quality.

<b>Parameter</b>	<b>Limit</b>	<b>Average (cysts or oocysts / 100 L)</b>	<b># Samples Required</b>	<b># Samples Submitted</b>
Giardia	No Standard	15.0 (cysts)	2	2
Cryptosporidium	No Standard	0.0 (oocysts)	2	2

**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  
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