



Drinking Water Quality and Compliance
SaskWater Codette Lake Potable Water Supply System
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 Codette Lake Potable Water Supply System 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 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, 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	# Positive of Regular Submitted
Total Coliform	0 Organisms/100 mL	104	104	0
E. Coli	0 Organisms/100 mL	104	104	0
Background Bacteria	Less than 200/100 mL	104	104	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	1.06 – 2.00	104	104	104
Total Chlorine	0.50 mg/L	1.26 – 2.19	104	104	

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 the Distribution System

Parameter	Minimum Limit (mg/L)	Range (mg/L)	# Tests Required	# Tests Performed	% Adequate Chlorine (%)
Free Chlorine	1.15	1.37 – 2.05	Continuous	Continuous	100

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

Codette Lake Potable Water Supply System

TURBIDITY

Turbidity is a measure of water treatment efficiency. Turbidity measures the “clarity” of the drinking water and is generally reported in Nephelometric Turbidity Units (NTU).

Turbidity for Water Leaving the Filters

Filter 3

Parameter	Limit (NTU)	Range (NTU)	95 th Percentile (NTU)	# Tests Required	# Tests Performed	# months Exceeding Limit
Turbidity	< 0.3 or 0.2 – 95% of measurements each month; not to exceed 0.3 or 0.2 for more than 12 consecutive hours; never >1.0	0.012 – 0.329	0.079	Continuous	Continuous	0

Filter 4

Parameter	Limit (NTU)	Range (NTU)	95 th Percentile (NTU)	# Tests Required	# Tests Performed	# months Exceeding Limit
Turbidity	< 0.3 or 0.2 – 95% of measurements each month; not to exceed 0.3 or 0.2 for more than 12 consecutive hours; never >1.0	0.012 – 0.314	0.068	Continuous	Continuous	0

Filter 5

Parameter	Limit (NTU)	Range (NTU)	95 th Percentile (NTU)	# Tests Required	# Tests Performed	# months Exceeding Limit
Turbidity	< 0.3 or 0.2 – 95% of measurements each month; not to exceed 0.3 or 0.2 for more than 12 consecutive hours; never >1.0	0.012 – 0.409	0.066	Continuous	Continuous	0

Filter 6

Parameter	Limit (NTU)	Range (NTU)	95 th Percentile (NTU)	# Tests Required	# Tests Performed	# months Exceeding Limit
Turbidity	< 0.3 or 0.2 – 95% of measurements each month; not to exceed 0.3 or 0.2 for more than 12 consecutive hours; never >1.0	0.018 – 0.259	0.062	Continuous	Continuous	0

Filter 7

Parameter	Limit (NTU)	Range (NTU)	95 th Percentile (NTU)	# Tests Required	# Tests Performed	# months Exceeding Limit
Turbidity	< 0.3 or 0.2 – 95% of measurements each month; not to exceed 0.3 or 0.2 for more than 12 consecutive hours; never >1.0	0.016 – 0.271	0.065	Continuous	Continuous	0

Turbidity leaving the filters is monitored continuously and multiple tests are normally performed on a daily basis by waterworks operators and are recorded in operation records.

Codette Lake Potable Water Supply System

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	0.05 – 0.20	104	104	0

The turbidity is tested at the same frequency as the bacteriological testing with a bench testing instrument.

Turbidity in Raw Water Entering the Water Treatment Plant

Parameter	Limit (NTU)	Range (NTU)	# Tests Required	# Tests Performed	# Exceeding Limit
Turbidity	No standard	0.91 – 309	52	730	0

Additional testing done for information purposes.

Turbidity in Water Entering the Distribution System

Parameter	Limit (NTU)	Range (NTU)	Average (NTU)	# Tests Required	# Tests Performed	# Exceeding Limit
Turbidity	No standard	0.05 – 0.18	0.08	365	730	0

Additional testing done for information purposes.

FLUORIDE

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	0.65	1.06	365	729	0

Additional testing is done for informational purposes.

Fluoride – From Treated Water at the Water Treatment Plant (off-site testing)

Parameter	Maximum Limit (mg/L)	Average (mg/L)	Maximum (mg/L)	# Samples Required	# Samples Submitted	# Exceeding Limit
Fluoride	1.50	0.48	0.61	52	52	0

Codette Lake Potable Water Supply System

CHEMICAL – HEALTH

SaskWater Codette Lake Potable Water Supply is required to submit Chemical Health once per year. Additional testing is done for informational purposes.

Parameter	MAC (mg/L)	IMAC (mg/L)	AO* (mg/L)	Sample Results (mg/L)	# of Samples Required	# of Samples Submitted
Aluminum	No Objective			0.016	1	5
Antimony	0.006			<0.0002	1	1
Arsenic	0.010			0.0002	1	1
Barium	1.0			0.062	1	1
Boron		5.0		0.02	1	1
Cadmium	0.005			0.00001	1	1
Chromium	0.050			<0.0005	1	1
Copper			1.0	0.0063	1	1
Iron			0.3	0.0024	1	1
Lead	0.010			<0.0001	1	1
Manganese			0.05	0.0007	1	1
Selenium	0.010			0.0002	1	1
Silver	No Objective			<0.00005	1	1
Uranium	0.020			<0.0001	1	1
Zinc			5	0.0060	1	1

MAC – Maximum Acceptable Concentrations

AO – Aesthetic Objective

IMAC – Interim Maximum Acceptable Concentrations

CHEMICAL – GENERAL

SaskWater Codette Lake Potable Water Supply is required to submit General Chemical once per quarter.

Parameter	MAC	AO*	Sample Results	# Of Samples Required	# Of Samples Submitted
Total Alkalinity (mg/L)		500	119	4	4
Bicarbonate (mg/L)	No Objective		145	4	4
Calcium (mg/L)	No Objective		49	4	4
Carbonate (mg/L)	No Objective		<1	4	4
Chloride (mg/L)		250	16	4	4
Fluoride (mg/L)	1.5		0.47	4	4
Total Hardness (mg/L)		800	191	4	4
Hydroxide (mg/L)	No Objective		<1	4	4
Magnesium (mg/L)		200	17	4	4
Nitrate (mg/L)	45.0		1.0	4	4
pH (pH units)		7.0 – 10.5	7.58	4	4
Potassium (mg/L)	No Objective		3.3	4	4
Sodium (mg/L)		300	20	4	4
Specific Conductivity (µs/cm)	No Objective		473	4	4
Sulphate (mg/L)		500	101	4	4
Sum of Ions	No Objective		351	4	4
Total Dissolved Solids (mg/L)		1500	294	4	4

MAC – Maximum Acceptable Concentrations

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.

Codette Lake Potable Water Supply System

CHEMICAL – 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 (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	Maximum Limit (mg/L)	2021 Average (mg/L)	# Samples Required	# Samples Submitted
Total Trihalomethanes	0.100	0.027	0	0

CHEMICAL – 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 HAA5 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 5	0.080	0.020	0	0

CHEMICAL – PESTICIDES

SaskWater Codette Lake Potable Water Supply System is required to submit water samples for the WSA's Pesticide category once every second year. 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

Codette Lake Potable Water Supply System

CHEMICAL – ORGANICS

SaskWater Codette Lake Potable Water Supply System is required to submit water samples for the WSA’s Organic category once every second year. 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	0.200			<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	0.050			<0.0005	1	1
Dichlorophenol 2,4	0.900			<0.0002	1	1
Ethylbenzene			0.0016	<0.0005	1	1
Monochlorobenzene	0.080			<0.0005	1	1
Perfluorooctanesulfonate	0.0006			<0.000010	1	1
Perfluorooctanoic Acid	0.0002			<0.00010	1	1
Tetrachloroethylene	0.05			<0.0005	1	1
Tetrachlorophenol 2,3,4,6	0.100			<0.001	1	1
Toluene			0.024	<0.0005	1	1
Trichloroethylene	0.050			<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

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. Additional testing was done for informational purposes.

Parameter	Maximum Limit (mg/L)	Average (mg/L)	# Samples Required	# Samples Submitted
Microcystin	0.0015	0.00012	4	5

RADIOLOGICAL

Gross alpha and beta activity is a measure of radioactivity within water. The activity is the frequency of release of alpha and beta particles after the nuclear decay of radionuclides. Should gross alpha or beta activity exceed a particular standard, further testing is required to identify the specific radionuclides present in water. Radionuclides can enter water from both natural sources and human activities.

Parameter	Maximum Limit (Bq/L)	Result (Bq/L)	# Samples Required	# Samples Submitted
Gross alpha	0.5	<0.13	1	1
Gross beta	1.0	0.17 +/- 0.03	1	1

Codette Lake Potable Water Supply System

CHEMICAL – CYANIDE AND MERCURY

SaskWater Codette Lake Potable Water Supply System is required to submit water samples for the WSA's Cyanide and Mercury category once every year.

Parameter	Maximum Limit (mg/L)	Sample Results (mg/L)	# Samples Required	# Samples Submitted
Cyanide	0.200	<0.001	1	1
Mercury	0.001	0.000002	1	1

GIARDIA AND CRYPTOSPORIDIUM – RAW WATER

SaskWater Codette 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.

Parameter	Limit	Average (cysts or oocysts / 100 L)	# Samples Required	# Samples Submitted
Giardia	No Standard	0.0 (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
Fax: 306-694-3207
Email: customerservice@saskwater.com