

Water Treatment Plant Permit to Operate Laboratory Report

2023 - YEAR-END SUMMARY

Procedures used are based upon recognized Provincial, Federal or U.S. method compendia such as CCME, APHA, EPA. The results relate only to the items as received or sampled by the laboratory. Unless qualified otherwise, all samples were received in acceptable condition. Estimated uncertainties and additional information provided upon request.

Test methods and data are validated by the laboratory's Quality Assurance Program. Analyses are conducted by ISO/IEC 17025:2017 accredited laboratories for parameters listed on their respective scope. Parameters reported within were performed by Sub-Contracted laboratories, except where indicated as analysed by the City of Saskatoon Water Lab (*COS-WL parameter*).

Interpretation and use of test results are the sole responsibility of the Client/Customer. The retained laboratory is not responsible for the accuracy or any data impacts that result from the information provided by the Client/Customer or their agent.

Results authorized by:

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PHYSICAL CHARACTERISTICS		Drinking Water LIMIT*	Drinking Water	Main Raw Water Intake
Colour, True	CU	15	<5.0	6.5
Conductivity	µS/cm	none applied	441	445
pH	pH	7.0 to 10.5	8.1	8.2
Solids, Total Dissolved (TDS), calculated	mg/L	500	267	268
Solids, Total Suspended (TSS)	mg/L	none applied	<3.0	4.7
Turbidity	NTU	3	0.14	2.64

CHEMICAL - General (Major Ions)		Drinking Water LIMIT*	Drinking Water	Main Raw Water Intake
Alkalinity, Total (as CaCO ₃)	mg/L	500	122	148
Alkalinity, Bicarbonate (HCO ₃)	mg/L	none applied	149	179
Alkalinity, Carbonate (CO ₃)	mg/L	none applied	<1.0	4
Chloride (Cl)	mg/L	250	13.5	11.4
Chlorine (Cl ₂), Total (<i>COS-WL parameter</i>)	mg/L	0.5 - 3.0	1.8	
Fluoride (F)	mg/L	1.5	0.62	0.13
Hardness (Total as CaCO ₃), dissolved	mg/L	800	177	187
Calcium (Ca) - Dissolved	mg/L	none applied	40.9	44.5
Magnesium (Mg) - Dissolved	mg/L	200	18.2	18.4
Potassium (K) - Dissolved	mg/L	none applied	3.2	3.1
Sodium (Na) - Dissolved	mg/L	200	25.4	24.8
Sulfate (SO ₄)	mg/L	500	84.9	70.1

CHEMICAL - Health and Toxicity		Drinking Water LIMIT*	Drinking Water	Main Raw Water Intake
Aluminum (Al) - Total	mg/L	0.1	0.019	0.070
Antimony (Sb) - Total	mg/L	0.006	0.000158	0.000165
Arsenic (As) - Total	mg/L	0.01	0.000315	0.001093
Barium (Ba) - Total	mg/L	1	0.054	0.088
Boron (B) - Total	mg/L	5	0.0265	0.0273
Cadmium (Cd) - Total	mg/L	0.005	<0.0000050	0.0000116
Chromium (Cr) - Total	mg/L	0.05	<0.00050	<0.00050
Copper (Cu) - Total	mg/L	1	0.0017	0.0011
Cyanide (CN) - Total	mg/L	0.2	<0.0050	<0.0050
Iron (Fe) - Total	mg/L	0.3	<0.010	0.100
Lead (Pb) - Total	mg/L	0.005	<0.000050	0.0000833
Manganese (Mn) - Total	mg/L	0.05	0.000175	0.01305
Mercury (Hg) - Total	mg/L	0.001	<0.0000050	<0.0000050
Selenium (Se) - Total	mg/L	0.01	0.00033	0.00040
Silver (Ag) - Total	mg/L	none applied	<0.000010	<0.000010
Uranium (U) - Total	mg/L	0.02	0.0011	0.0012
Zinc (Zn) - Total	mg/L	5	<0.0030	0.0034

OTHER		Drinking Water LIMIT*	Drinking Water	Main Raw Water Intake
Ammonia, Total (as N)	mg/L	none applied	0.290	0.015
Nitrate (as N)	mg/L	10	0.109	0.100
Nitrate + Nitrite (as N)	mg/L	none applied	0.109	0.100
Nitrite (as N)	mg/L	1	<0.010	<0.010
Total Kjeldahl Nitrogen (N)	mg/L	none applied	0.529	0.267
Nitrogen, Total	mg/L	none applied	0.637	0.376
Biochemical Oxygen Demand (5-day)	mg/L	none applied		<2.0
Carbon (TOC) - Total Organic	mg/L	none applied	2.86	3.56
Phenols	mg/L	none applied	<0.0100	<0.0010
Phosphate, Ortho-, Dissolved (as P)	mg/L	none applied	<0.050	<0.050
Phosphorus, Total	mg/L	none applied	0.0033	0.0153

MICROORGANISMS		Drinking Water LIMIT*	Drinking Water	Main Raw Water Intake
Chlorophyll a	µg/L	none applied		2.52
<i>E.coli</i> ** (COS-WL parameter)	MPN/100mL	0		59
Total Coliform (COS-WL parameter)	CFU/100mL	0	0	475
Background Non-Coliform (COS-WL parameter)	CFU/100mL	200	0	2800
<i>Giardia</i>	cysts/100 L	3 log inactivation		6.6
<i>Cryptosporidium</i>	oocysts/100 L	3 log inactivation		1.1
Microcystins***	µg/L	1.5	<0.20	

TRIHALOMETHANES		Drinking Water LIMIT*	Drinking Water	East Distribution	West Distribution
• Bromodichloromethane	µg/L	none applied	5.6	7.3	7.1
• Bromoform	µg/L	none applied	<1.0	<1.0	<1.0
• Chloroform	µg/L	none applied	22.2	27.0	26.2
• Dibromochloromomethane	µg/L	none applied	1.1	1.4	1.4
Total Trihalomethanes (calc)	µg/L	100	28.6	35.7	34.6

HALOACETIC ACIDS		Drinking Water LIMIT*	Drinking Water	East Distribution	West Distribution
• Bromochloroacetic Acid	µg/L	none applied	1.7	2.0	2.0
• Dibromoacetic Acid	µg/L	none applied	<1.0	<1.0	<1.0
• Dichloroacetic Acid	µg/L	none applied	8.2	10.7	10.3
• Monobromoacetic Acid	µg/L	none applied	<1.0	<1.0	<1.0
• Monochloroacetic Acid	µg/L	none applied	<1.0	1.1	1.1
• Trichloroacetic Acid	µg/L	none applied	6.6	8.3	8.1
Halo Acetic Acids 5, Total (calc)	µg/L	80	14.7	22.1	21.5

SPECIAL ORGANICS		Drinking Water LIMIT*	Drinking Water	Main Raw Water Intake
Benzene	µg/L	5	<0.50	<0.50
Benzo(a)pyrene	µg/L	0.010	<0.0050	<0.0050
Carbon Tetrachloride	µg/L	5	<0.50	<0.50
Dichlorobenzene, 1,2-	µg/L	200	<0.50	<0.50
Dichlorobenzene, 1,4-	µg/L	5	<0.50	<0.50
Dichloroethane, 1,2-	µg/L	5	<0.50	<0.50
Dichloroethylene, 1,1-	µg/L	14	<0.50	<0.50
Dichloromethane	µg/L	50	<1.0	<1.0
Dichlorophenol, 2,4-	µg/L	900	<0.20	<0.20
Ethylbenzene	µg/L	140	<0.50	<0.50
Monochlorobenzene	µg/L	80	<0.50	<0.50
Perfluorooctane Sulfonate (PFOS)	µg/L	0.60	<0.010	<0.010
Perfluorooctanoic Acid (PFOA)	µg/L	0.20	<0.010	<0.010
Tetrachloroethylene	µg/L	10	<0.50	<0.50
Tetrachlorophenol, 2,3,4,6-	µg/L	100	<0.50	<0.50
Toluene	µg/L	60	<0.50	<0.50
Trichloroethylene	µg/L	50	<0.25	<0.25
Trichlorophenol, 2,4,6-	µg/L	5	<0.50	<0.50
Vinyl Chloride	µg/L	2	<0.50	<0.50
Xylene (Total)	µg/L	90	<0.5	<0.5

RADIOCHEMICALS		Drinking Water LIMIT*	Drinking Water	Main Raw Water Intake
Gross Alpha	Bq/L	0.5	0.24 ± 0.11	0.16 ± 0.09
Gross Beta	Bq/L	1.0	0.20 ± 0.04	0.17 ± 0.04
Cesium-137	Bq/L	10	<0.2	<0.1
Iodine-131	Bq/L	6	<0.2	<0.2
Lead-210	Bq/L	0.2	<0.02	<0.02
Potassium-40		none applied	<5	<5
Radium-226	Bq/L	0.5	<0.005	0.007
Radon-222	Bq/L	none applied	<2	<3
Strontium-90	Bq/L	5	<0.05	<0.05
Tritium	Bq/L	7000	<40	<40

PESTICIDES and HERBICIDES		Drinking Water LIMIT*	Drinking Water	Main Raw Water Intake
Atrazine	µg/L	5	<0.10	<0.10
Bromoxynil	µg/L	5	<0.0100	<0.0100
Carbofuran	µg/L	90	<0.20	<0.20
Chlorpyrifos	µg/L	90	<0.10	<0.10
Dicamba	µg/L	120	<0.100	<0.100
Dichlorophenoxyacetic Acid (2,4-D)	µg/L	100	0.0395	0.0334
Diclofop-methyl	µg/L	9	<0.10	<0.10
Dimethoate	µg/L	20	<0.10	<0.10
Glyphosate	µg/L	280	<0.20	<0.20
Malathion	µg/L	190	<0.10	<0.10
MCPA	µg/L	100	<0.010	<0.010
Pentachlorophenol (PCP)	µg/L	60	<0.50	<0.50
Picloram	µg/L	190	<0.020	<0.020
Trifluralin	µg/L	45	<0.10	<0.10

*Drinking Water Limit: This is the Limit for the parameter specified, as determined by Health Canada and/or the City of Saskatoon *Permit to Operate a Waterworks* issued by the Water Security Agency under the jurisdiction of the Saskatchewan Minister of Environment. Limits may be a MAC (Maximum Acceptable Concentration), Interim or Guideline MAC (MAC has yet to be determined) or AO (Aesthetic Objective - may affect acceptance of water by consumers but are not a health-based limit. Compliance within this range is not mandatory). Further information can be obtained by consulting the Health Canada document *Guidelines for Canadian Drinking Water Quality*.

**Analyzed only if indicated by a Total Coliform sample ≥ 1 cfu/100mL.

***Analyzed May to October only

Symbol of "<" means "less than" and indicates that the analyte was not detected above the stated level.

- END REPORT -