City of Calgary Glenmore Water Treatment Plant Summary

January 1, 2019 to December 31, 2019

PARAMETER	UNITS	Glenmore Treated Water (Entering the Distribution System)			Maximum Acceptable Concentration or Guideline[1]	Common Source
		Minimum	Maximum	Average		
Alkalinity, Total	mg/L as $CaCO_3$	94	173	143	No Guidelines	Erosion of natural deposits in watershed
Aluminum	mg/L			0.059	0.100 (O) (Annual Average)	Naturally occuring and plant treatment
Ammonia	mg/L as N	<0.05			No Guidelines	Naturally occurring; released from agricultural or industrial wastes
Antimony	mg/L	<0.0005			0.006	Erosion of natural deposits in watershed
Arsenic	mg/L	<0.0005			0.010	Erosion of natural deposits in watershed
Atrazine + metabolites	mg/L	<0.001			0.005	Leaching and/or runoff from agricultural use
Azinphos - methyl	mg/L	<0.001			0.02	Leaching and/or runoff from agricultural use
Barium	mg/L	0.056	0.095	0.067	1.0	Erosion of natural deposits in watershed
Benzene	mg/L	<0.0005			0.005	Releases or spills from industrial use
Benzo[a]pyrene	mg/L	<0.000005			0.00004	Distribution System materials
Beryllium	mg/L	<0.0005			No Guidelines	Contamination from ceramic applications and manufacturing of aerospace, electronics and mechanical industries
Bicarbonate	mg/L as $CaCO_3$	94	173	143	No Guidelines	Erosion of natural deposits in watershed
Boron	mg/L	0.006	0.012	0.009	5	Naturally occurring; leaching or runoff from industrial use
Bromate	mg/L	<0.01			0.01	Possible contamination in hypochlorite solution
Bromoxynil	mg/L	<0.0002			0.005	Leaching and/or runoff from agricultural use
Cadmium	mg/L	<0.0005			0.005	Erosion of natural deposits in watershed
Calcium	mg/L	49	72	55	No Guidelines	Erosion of natural deposits in watershed
Carbaryl	mg/L	<0.002			0.09	Leaching and/or runoff from agricultural use
Carbofuran	mg/L	<0.0005			0.09	Leaching and/or runoff from agricultural use
Carbonate	mg/L as CaCO3	<20			No Guidelines	Erosion of natural deposits in watershed
Carbon Tetrachloride	mg/L	<0.0005			0.002	Industrial effluents and leaching from hazardous waste sites
Chloramines, Total[3]	mg/L	<0.10			3	Formed in the presence of both chlorine and ammonia
Chlorate	mg/L	<0.10			1	Possible contamination in hypochlorite solution
γ-Chlordane	mg/L	<0.00001			No Guidelines	Leaching and/or runoff from agricultural use
Chloride	mg/L	6.3	21	11.1	250 (A)	Naturally occurring, dissolved salt deposits, highway salt
Chlorine, free	mg/L	0.80	1.41	1.09	No Guidelines	Plant treatment
Chlorite	mg/L	<0.10			1	Possible contamination in hypochlorite solution
Chlorpyrifos	mg/L	<0.001			0.09	Leaching and/or runoff from agricultural use
Chromium	mg/L	<0.0005	0.001	<0.0005	0.05	Erosion of natural deposits in watershed

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Cobalt	mg/L	<0.0005			No Guidelines	Erosion of natural deposits in watershed
Coliforms, *E.coli*	MPN/100mL	<1	<1	<1	0	Domestic animals, wildlife and human waste
Coliforms, Total	MPN/100mL	<1	<1	<1	0	Soil, domestic animals and wildlife.
Color	TCU	<2			15 (A)	Erosion of natural deposits in watershed
Conductivity at 25°C	uS/cm	363	531	443	No Guidelines	Leaching and/or runoff from agricultural use
Copper	mg/L	<0.0005	0.022	0.0011	2 1.0 (A)	Erosion of natural deposits in watershed
Cryptosporidium	oocysts/100L	Not Tested			Treatment Goal	Domestic animals, wildlife and human waste
Cryptosporidium, Min. Log Reduction Ratio[3]	no units	1.33			Treatment Goal	Domestic animals, wildlife and human waste
Cyanazine	mg/L	<0.001			No Guidelines	Run off from agricultural or other uses
Cyanide	mg/L	<0.002			0.2	Industrial and mining effluents; Release from organic compounds
Cyanobacterial toxins – total microcystin	mg/L	0.00014	0.00016	0.00015	0.0015	Naturally occurring; released from blooms of blue-green algae
Diazinon	mg/L	<0.001			0.02	Run off from agricultural or other uses
Dicamba	mg/L	<0.0002			0.12	Leaching and/or runoff from agricultural use
1,2-Dichlorobenzene	mg/L	<0.0005			0.2	Releases or spills from industrial use
1,4-Dichlorobenzene	mg/L	<0.0005			0.005	Releases or spills from industrial use
2,4-DDT	mg/L	<0.00001			No Guidelines	Leaching and/or runoff from agricultural use
4,4'-DDT	mg/L	<0.00001			No Guidelines	Leaching and/or runoff from agricultural use
1,1-Dichloroethylene	mg/L	<0.0005			0.014	Releases or spills from industrial use
1,2-Dichloroethane	mg/L	<0.0005			0.005	Releases or spills from industrial use
Dichloromethane	mg/L	<0.005			0.05	Industrial and municipal wastewater discharges
2,4-Dichlorophenol	mg/L	<0.0005			0.9	By-product of chlorination
2,4-D	mg/L	<0.0002			0.1	Leaching and/or runoff from use as a weed controller
Diclofop-methyl	mg/L	<0.0001			0.009	Leaching and/or runoff from use as a weed controller
Dimethoate	mg/L	<0.001			0.02	Leaching and/or runoff from agricultural use
Diquat	mg/L	<0.007			0.07	Leaching and/or runoff from agricultural use
Diuron	mg/L	<0.001			0.15	Leaching and/or runoff from use in controlling vegetation
Endrin	mg/L	<0.00001			No Guidelines	Leaching and/or runoff from agricultural use

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		Minimum	Maximum	Average		
Ethylbenzene	mg/L	<0.0005			0.14 0.0016 (A)	Emissions, effluents or spills from petroleum and chemical industries
Extractable Hydrocarbons	mg/L	<0.01			No Guidelines	Releases or spills from industrial use
Fluoride	mg/L	0.10	0.27	0.20	1.5	Erosion of natural deposits in watershed[2]
Giardia	cysts/100L	Not Tested			Treatment Goal	Domestic animals, wildlife and human waste
Giardia, Min. Log Reduction Ratio[3]	no units	1.98	9.83	3.87	Treatment Goal	Domestic animals, wildlife and human waste
Glyphosate	mg/L	<0.005			0.28	Leaching and/or runoff from use as a weed controller
Gross Alpha	Bq/L	<0.20			0.5	Naturally occurring; emissions from nuclear reactors
Gross Beta	Bq/L	<0.11	0.12	<0.11	1.0	Naturally occurring; emissions from nuclear reactors
Haloacetic Acids, Total	mg/L			0.0179	0.08 (Annual Average)	By-product of chlorination
Hardness	mg/L as CaCO3	174	267	214	No Guidelines	Erosion of natural deposits in watershed
Heptachlor + heptachlor epoxide	mg/L	<0.0001			No Guidelines	Leaching and/or runoff from agricultural use
Iron	mg/L	<0.010	0.013	<0.010	0.3 (A)	Erosion of natural deposits in watershed.
Lead	mg/L	<0.0005			0.005	Leaching from plumbing (pipes, solders, brass fittings, and lead service lines)
Lindane	mg/L	<0.00001			No Guidelines	Leaching and/or runoff from agricultural use
Lithium	mg/L	0.0030	0.0049	0.0040	No Guidelines	Releases or spills from industrial use
Magnesium	mg/L	12.3	21.2	16.1	No Guidelines	Erosion of natural deposits in watershed
Malathion	mg/L	<0.001			0.19	Leaching and/or runoff from agricultural and other uses
Manganese	mg/L	<0.0005	0.0019	<0.0005	0.12 0.02 (A)	Erosion of natural deposits in watershed.
MCPA (2-methyl-4-chlorophenoxyacetic acid)	mg/L	<0.00002			0.1	Leaching and/or runoff from agricultural and other uses
MCPP (methylchlorophenoxy propionic acid)	mg/L	<0.00008			0.015 (A)	Leaching and/or runoff from agricultural and other uses
Mercury	mg/L	<0.000002			0.001	Erosion of natural deposits in watershed
Methyl parathion	mg/L	<0.001			No Guidelines	Leaching and/or runoff from agricultural use
Methoxychlor	**mg/L**	<0.00001			No Guidelines	Leaching and/or runoff from agricultural and other uses
Metolachlor	mg/L	<0.001			0.05	Leaching and/or runoff from agricultural and other uses
Metribuzin	mg/L	<0.001			0.08	Leaching and/or runoff from agricultural use

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Mirex	mg/L	<0.00001			No Guidelines	Leaching and/or runoff from agricultural use
Molybdenum	mg/L	0.0006	0.0011	0.0007	No Guidelines	Leaching and/or runoff from industrial, agricultural and other uses
Monochlorobenzene	mg/L	<0.0005			0.08	Releases or spills from industrial effluents
MTBE (methyl tertiary-butyl ether)	mg/L	<0.0005			0.015 (A)	Spills from gasoline refineries, filling stations and gasoline powered boats; seepage into groundwater from leaking storage tanks
Nickel	mg/L	<0.0005	0.0046	<0.0005	No Guidelines	Leaching from plumbing (pipes, solders, and brass fittings)
Nitrate	mg/L as N	<0.005	0.23	0.09	10	Erosion of natural deposits in watershed
Nitrite	mg/L as N	<0.005			1	Erosion of natural deposits in watershed
Nitrilotriacetic acid (NTA)	mg/L	<0.0002			0.4	Sewage contamination
N-Nitrosodimethylamine (NDMA)	mg/L	<0.0000022			0.00004	By-product of chlorination; industrial and sewage treatment plant
Nitrogen, total (TKN)	mg/L	<0.10	0.25	<0.10	No Guidelines	Erosion of natural deposits in watershed
Odour	Scale = 0-12	6	11	10	Inoffensive	Biological, industrial, or treatment disinfection sources
Paraquat	mg/L	<0.001			0.01	Leaching and/or runoff from agricultural and other uses
Parathion	mg/L	<0.002			0.05	Leaching and/or runoff from agricultural use
Pentachlorophenol	mg/L	<0.0005			0.06	By-product of chlorination
Perfluorooctane Sulfonate (PFOS)	mg/L	<0.00001			0.0006	Synthetic chemical used in consumer products and fire-fighting foams for their water and oil repellant properties
Perfluorooactanoic Acid (PFOA)	mg/L	<0.00001			0.0002	Synthetic chemical used in consumer products and fire-fighting foams for their water and oil repellant properties
Pesticides, total	mg/L	<0.01			No Guidelines	Leaching and/or runoff from agricultural use
pH	pH units	7.1	8.0	7.6	7.0 - 10.5 (O) 6.5-8.5 (AEP)	Influenced by the dissolved minerals in the water, temperature and water treatment processes
Phorate	mg/L	<0.0005			0.002	Leaching and/or runoff from agricultural and other uses
Phosphorus, Total	mg/L	<0.001	0.005	0.002	No Guidelines	Leaching and/or runoff from agricultural and other uses
Phthalate Esters	mg/L	<0.01			No Guidelines	Industrial effluents or spills
Picloram	mg/L	<0.0002			0.19	Leaching and/or runoff from agricultural and other uses
Potassium	mg/L	0.7	2.2	1.1	No Guidelines	Erosion of natural deposits in watershed
Polycyclic Aromatic Hydrocarbons[3] (PAH)	mg/L	<0.0001			No Guidelines	Industrial sources

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Selenium	mg/L	<0.0005	0.0009	<0.0005	0.05	Naturally occurring (erosion and weathering of rocks and soils) and release from coal ash from coal-fired power plants and mining, refining of copper and other metals
Silicon, dissolved	mg/L	0.87	2.37	1.78	No Guidelines	Erosion of natural deposits in watershed
Silver	mg/L	<0.001			No Guidelines	Naturally occurring (erosion and weathering of rocks and soils)
Simazine	mg/L	<0.001			0.01	Leaching and/or runoff from agricultural and other uses
Sodium	mg/L	5.7	14.2	8.5	200 (A)	Erosion of natural deposits in watershed
Strontium	mg/L	0.286	0.495	0.395	7.0	Erosion of natural deposits in watershed
Sulphate	mg/L	56	95	74	500 (A)	Erosion of natural deposits in watershed
Sulphide	mg/L as H_2S	<0.002			0.05 (A)	Can occur in the distribution system from the reduction of sulphates by sulphate-reducing bacteria; industrial wastes
Taste	mg/L	Not Tested			Inoffensive (A)	Biological or industrial sources
Temperature	°C	4.0	20.7	10.1	15 (A)	Surface water temperature
Terbufos	mg/L	<0.0005			0.001	Leaching and/or runoff from agricultural and other uses
Tetrachloroethylene	mg/L	<0.0005			0.01	Industrial effluents or spills
2,3,4,6-Tetrachlorophenol	mg/L	<0.0005			0.1	By-product of chlorination; industrial effluents and use of pesticides
Thallium	mg/L	<0.0005			No Guidelines	Erosion of natural deposits in watershed.
Tin	mg/L	<0.0005			No Guidelines	Industrial effluents or spills
Titanium	mg/L	<0.0005			No Guidelines	Industrial effluents or spills
Toluene	mg/L	<0.0005			0.06	Emissions, effluents or spills from petroleum and chemical industries
Total Dissolved Solids	mg/L	231	317	266	500 (A)	Erosion of natural deposits in watershed
Total Organic Carbon	mg/L	0.6	3.0	1.4	No Guidelines	Erosion of natural deposits in watershed
Triallate	mg/L	<0.001			No Guidelines	Leaching and/or runoff from agricultural and other uses
Trichloroethylene	mg/L	<0.0005			0.005	Industrial effluents and spills from improper disposals
2,4,6-Trichlorophenol	mg/L	<0.0005			0.005 0.002 (A)	By-product of chlorination; industrial effluents and spills
2,4,5-T	mg/L	<0.0002			No Guidelines	Leaching and/or runoff from agricultural and other uses
Trichlorophenoxypropionic Acid (2,4,5-TP)	mg/L	<0.0002			No Guidelines	Leaching and/or runoff from use in controlling vegetation
Trifluralin	mg/L	<0.001			0.045	Runoff from agricultural uses

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Total Trihalomethanes[3] (TTHMs)	mg/L			0.0167	0.1 (Annual Average)	By-product of chlorination
Turbidity	NTU	<0.05	0.08	<0.05	0.15	Suspended particles in solution
Uranium	mg/L	<0.0005	0.0006	<0.0005	0.02	Industrial effluents or spills
Vanadium	mg/L	<0.0005	0.0007	<0.0005	No Guideline	Naturally occurring (erosion and weathering of rocks and soils)
Vinyl Chloride	mg/L	<0.0005			0.002	Industrial effluents; degradation product from organic solvents in groundwater; leaching from polyvinyl chloride pipes
Virus, Min. Log Reduction Ratio[3]	no units	1.5			Treatment Goal	Domestic animals, wildlife and human waste
Xylenes, total[3]	mg/L	<0.001			0.09 0.02 (A)	Emissions, effluents or spills from petroleum and chemical industries
Zinc	mg/L	<0.003	0.005	<0.003	5.0 (A)	Erosion of natural deposits in watershed. Leaching may occur from galvanized pipes, hot water tanks and brass fittings

Legend

[1] Maximum acceptable concentrations and

Information hyperlinks

Health Canada Guidelines for Canadian Drinking

Health Canada Water Quality - Reports and

Alberta Environment & Parks

[2] The City of Calgary ceased fluoridation of its drinking water on May 19, 2011.

[3] Calculated parameter based on individual analytes

(O) Operating guidance as determined by Health Canada

(A) Aesthetic Objective as determined by Health Canada

(AEP) Alberta Environment and Parks provincial guidance

< Indicates not detected above the specified value

Bq/L = Becquerel per litre

mg/L = milligrams per litre, or parts per million (ppm)

MPN = Most-Probable Number

NTU = Nephelometric Turbidity Units

TCU = True Colour Units

Treatment Goal = Calculated log removals are health based treatment goals for enteric protozoa and viruses as determined by Health Canada.