

Shoal Lake

Water for the City of Winnipeg comes from Shoal Lake, which is part of the Lake of the Woods. Our staff test Shoal Lake and the intake at Indian Bay (where the water enters the aqueduct) as part of our routine water quality testing program. We take samples at the intake every week during the open water season and every two weeks during the rest of the year. We also take samples from the Shoal Lake watershed from May to October.

We test these samples for

- ▶ Routine water chemistry
- ▶ Taste and odour compounds
- ▶ Metals
- ▶ Disinfection by-products
- ▶ Bacteria and protozoa
- ▶ Toxins produced by algae

By taking these samples, we track seasonal changes in water quality and determine the effects (if any) of human activity within the Shoal Lake watershed.

The intake for the aqueduct is at the west end of Indian Bay. Water entering the intake passes through bar screens and a coarse filter before being disinfected by chlorine. We add sufficient chlorine to maintain a free chlorine residual of 0.3 mg/L in the water in the aqueduct when it enters Deacon Reservoir.



What is Being Measured	How it's Measured	Guideline or Regulation	Shoal Lake Average	Shoal Lake Range	Comments
Odour	odour number	inoffensive	110	70 to more than 200	Raw water - guideline does not apply
Geosmin	parts per trillion	no guideline	2	<1 to 5	Common taste and odour compound
IPMP - 2-isopropyl-3-methoxypyrazine	parts per trillion	no guideline	<2	<2	Common taste and odour compound
IBMP - 2-isobutyl-3-methoxypyrazine	parts per trillion	no guideline	<2	<2	Common taste and odour compound
MIB - 2-methylisoborneol	parts per trillion	no guideline	<10	<10	Common taste and odour compound
246 TCA - 2,4,6-trichloroanisole	parts per trillion	no guideline	<2	<2	Common taste and odour compound
236 TCA - 2,3,6-trichloroanisole	parts per trillion	no guideline	<2	<2	Common taste and odour compound
345 TCV - 3,4,5-trichloroveratrole	parts per trillion	no guideline	<2	<2	Common taste and odour compound
246 TCP - 2,4,6-trichlorophenol	parts per trillion	no guideline	<10	<10	Common taste and odour compound
236 TCP - 2,3,6-trichlorophenol	parts per trillion	no guideline	<10	<10	Common taste and odour compound
Plankton (algae) count	cells per millilitre	no guideline	63,900	5500 to 609,300	Algae contribute to odours and may cause filter clogging
Chlorophyll-a	parts per billion	no guideline	8.4	2.8 to 17	Chlorophyll is found in algae
Microcystin LR	parts per billion	no more than 1.5	<0.5	<0.5	Raw water - guideline does not apply
Cryptosporidium	oocysts per 100 litres	no guideline	<0.9	<0.5 to <2.3	13 samples taken in 2002 - no positive results
Giardia	cysts per 100 litres	no guideline	<0.9	<0.5 to <2.3	13 samples taken in 2002 - no positive results
Turbidity (clearness)	units	no more than 1.0	1	0.35 to 2.5	Raw water - guideline does not apply
Colour, Apparent	units	no guideline	11	5 to 20	Coloured water may be offensive
Total Dissolved Solids	parts per million	no more than 500	97	76 to 114	Raw water - guideline does not apply
Conductivity	microsiemens per centimetre	no guideline	156	132 to 180	Another measure of dissolved solids
pH	units	between 6.5 and 8.5	8	7.5 to 8.6	Raw water - guideline does not apply
Total Alkalinity	parts per million as calcium carbonate	no guideline	79	71 to 91	–
Total Hardness	parts per million as calcium carbonate	no guideline	78	69 to 91	80 to 100 parts per million is recommended
Total Organic Carbon	parts per million	no guideline	10	9 to 11	–
Soluble Organic Carbon	parts per million	no guideline	9	8 to 11	–
Total Kjeldahl Nitrogen (TKN)	parts per million	no guideline	0.54	0.23 to 0.71	TKN is a combination of ammonia and organic nitrogen
Total Phosphorus	parts per million	no guideline	0.02	0.012 to 0.026	Phosphorus can contribute to algae growth
Total Soluble Phosphorus	parts per million	no guideline	<0.002	<0.002	–
Fluoride	parts per million	no more than 1.5	0.07	0.06 to 0.08	Naturally occurring fluoride in Shoal Lake
Nitrate	parts per million	no more than 10	0.07	0.04 to 0.12	Raw water - guideline does not apply
Chloride	parts per million	no more than 250	<5	<5	Raw water - guideline does not apply
Sulfate	parts per million	no more than 500	<10	<10	Raw water - guideline does not apply
Trihalomethanes	parts per billion	no more than 100	<0.5	<0.5	No Trihalomethanes in raw water
Haloacetic acids	parts per billion	no guideline	<2	<2	No Haloacetic acids in raw water

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Calcium	parts per million	no guideline	19.9	19.4 to 20.5	Contributes to hardness
Magnesium	parts per million	no guideline	5.7	5.5 to 5.8	Contributes to hardness
Sodium	parts per million	no more than 200	1.9	1.80 to 2.10	Raw water - guideline does not apply
Potassium	parts per million	no guideline	1.2	1.2	–
Iron	parts per million	no more than 0.30	0.05	0.03 to 0.06	Raw water - guideline does not apply
Copper	parts per million	no more than 1.0	<0.05	<0.05	Raw water - guideline does not apply
Lead	parts per million	no more than 0.010	<0.002	<0.002	Raw water - guideline does not apply
Aluminum	parts per million	no guideline	<0.02	<0.02	–
Arsenic	parts per million	no more than 0.025	<0.002	<0.002	Raw water - guideline does not apply
Chromium	parts per million	no more than 0.05	<0.0003	<0.0003 to <0.0005	Raw water - guideline does not apply
Nickel	parts per million	no guideline	<0.0010	<0.0010	–
Cadmium	parts per million	no more than 0.005	<0.00005	<0.00005	Raw water - guideline does not apply
Manganese	parts per million	no more than 0.05	<0.05	<0.05	Raw water - guideline does not apply
Zinc	parts per million	no more than 5.0	<0.05	<0.05	Raw water - guideline does not apply

Guidelines from 'Summary of Guidelines for Canadian Drinking Water Quality' by Health Canada, March 2001