

Drinking-Water Systems Regulation O. Reg. 170/03

Part III Form 2

Section 11. ANNUAL REPORT.

Drinking - Water System Number:	220000460
Drinking - Water System Name:	North Bay Water Treatment Plant/Distribution System
Drinking - Water System Owner:	Corporation of the City of North Bay
Drinking - Water System Category:	Large Municipal Residential
Period being reported:	January 1, 2003 to December 31, 2003

Complete if your Category is Large Municipal Residential or Small Municipal Residential

Does your Drinking - Water System serve more than 10,000 people? Yes No

Is your annual report available to the public at no charge on a web site on the Internet? Yes No

Location where Report required under O. Reg. 170/03 Schedule 22 will be available for inspection.

www.cityofnorthbay.ca

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6th Floor, North Bay City Hall

200 McIntyre Street East

Engineering and Environmental Services Office

Complete for all other Categories.

This Section does not apply to North Bay

Number of Designated Facilities served:

Did you provide a copy of your annual report to all Designated Facilities you serve?

Yes No

Number of Interested Authorities you report to:

Did you provide a copy of your annual report to all Interested Authorities you report to for each Designated Facility?

Yes No

List Drinking - Water Systems, which receive all of their drinking water from your system:

N/A

Did you provide a copy of your annual report to all Drinking - Water System owners that are connected to you and to whom you provide all of its drinking water?

Yes No N/A

Indicate how you notified system users that your annual report is available, and is free of charge.

Public access/notice via the web

Public access/notice via Government Office

Public access/notice via a newspaper

Public access/notice via Public Request

Public access/notice via a Public Library

Public access/notice via other method _____

Describe your Drinking-Water System

Water is withdrawn from Delaney Bay of Trout Lake at a depth of 21.5 meters, 300 meters from shore. Water Treatment takes place at the North Bay Water Treatment Plant located at 248 Lakeside Drive, North Bay. Treatment consists of coarse screening and disinfection using UV irradiation and chlorination. Water pH is adjusted using soda ash and fluoride is added prior to distribution. The North Bay water distribution system has 5 pressure zones and 3 water storage facilities. Storage facilities are Ellendale High Lift Reservoir and Pumping Station (4 MIG), Birchs Road Standpipe (2 MIG) and CFB Reservoir (0.4 MIG). A Valve Chamber located at Judge Avenue separates Pressure Zones 1 and 1A, below the North Bay escarpment. Pumping stations located at Gormanville/College Drive and at the Ellendale High Lift Reservoir pressurize Pressure Zones 2 and 3 located above the North Bay escarpment. Zone 4 located in the vicinity of the North Bay Airport is pressurized by the CFB Reservoir and from residual pressure from Zone 3. The City of North Bay is the owner of the system with treatment, storage and pumping facilities operated by the Ontario Clean Water Agency. The water distribution system is operated and maintained by the City's Public Works Department.

North Bay's water system serves a population of 54,000. North Bay's water taking permit limits withdrawals from Trout Lake to 79,500 m³/day. The North Bay Water Treatment Plant is fully automated and can be run remotely through a Supervisory Control and Data Acquisition (SCADA) system operated by Ontario Clean Water Agency. All key processes are fully alarmed. Raw and treated water turbidity, as well as treated water free chlorine, pH, fluoride and flow are continuously monitored and recorded. Post chlorination occurs at Ellendale High Lift Reservoir, Judge Avenue Valve Chamber, CFB Reservoir and Birches Road Standpipe.

List all water treatment chemicals used over this reporting period

Sodium Hypochlorite (Chlorine), Soda Ash, Hydrofluosilicic Acid (Fluoride)

Were any significant expenses incurred to?

- Install required equipment
- Repair required equipment
- Replace required equipment

Describe

Installed 1000 kW backup generator at Trout Lake Water Treatment Plant	- \$ 280,000
New flushing equipment installed at chronic low chlorine residual sites	- \$ 25,000
New valve actuators and SCADA upgrades at Ellendale HLR (ongoing)	- \$ 72,000
Backup chlorination systems installed at Birchs Road S. P. & Judge Ave. V.C.	- \$ 10,000
Two large pumps repaired at Trout Lake Water Treatment Plant	- \$ 10,000
Several substantial watermain breaks repaired in 2003	- \$ 50,000
200 m of watermain replaced on Whitson Ave (water portion only)	- \$ 125,000
Directional flushing water flow computer model completed in 2003	- \$ 100,000
Water Reaming and Lining Tender called but not let (carried to 2004)	- \$ 150,000
Detailed Design to build new Water Filtration Plant Tendered	- \$1,560,000

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Provide details on the notices submitted in accordance with subsection 18(1) of the Safe Drinking-Water Act or section 16-4 of Schedule 16 of O.Reg.170/03 and reported to Spills Action Centre?

Month/yr ¹	#	Address	Detection Date	Description	Comments	Action Taken	Date Resolved
Jan/03	1	TLPS²	Jan 3/03	Turbidity = 3.36 NTU	Unknown Cause³	None	N/A
	2	TLPS	Jan 31/03	Turbidity = 6.0 NTU	Meter Maintenance	None	N/A
Feb/03	3	TLPS	Feb 4/02	Turbidity = 1.13 NTU	Meter Maintenance	None	N/A
	4	TLPS	Feb 11/03	Turbidity = 6.0 NTU	Meter Maintenance	None	N/A
	5	TLPS	Feb 24/03	Turbidity = 2.60 NTU	Meter Maintenance	None	N/A
Mar/03	6	200 First Ave W	Mar 6/03	GBP >200 CFU	Sample Contamination	Resample	Mar 7/03
	7	55 Aviation Ave	Mar 10/03	Free Cl ₂ = 0.01 mg/L	MOE Inspection	Flushed	Mar 12/03
	8	78 Gibson	Mar 13/03	Free Cl ₂ = 0.02 mg/L	MOE Inspection	Flushed	Mar 13/03
	9	TLPS	Mar 13/03	Free Cl ₂ = 0.021 mg/L	Equipment Failure	NBS ⁴ /SWW ⁵	Mar 13/03
	10	TLPS	Mar 20/03	Turbidity = 1.46 NTU	Pump Startup	None	N/A
	11	TLPS	Mar 21/03	Turbidity = 1.90 NTU	Pump Startup	None	N/A
	12	TLPS	Mar 21/03	Fluoride = 2.71 mg/L	Equipment Failure	None	N/A
	13	TLPS	Mar 22/03	Fluoride = 1.82 mg/L	Equipment Failure	Fluoride shut off	Mar 22/03
	14	78 Gibson	Mar 25/03	Free Cl ₂ = 0.04 mg/L	Follow up to Mar 13	Flushed	Mar 25/03
	15	TLPS	Mar 28/03	Turbidity = 1.92 NTU	Power Bump/Pump Startup	None	N/A
	16	TLPS	Mar 28/03	Free Cl ₂ = 0.36 mg/L	Non Reportable	None	N/A
Apr/03	17	TLPS	Apr 15/03	Turbidity = 5.64 NTU	Pump Startup	None	N/A
May/03	18	78 Gibson	May 7/03	Free Cl ₂ = 0.04 mg/L	Follow up to Mar 25	Flushed	May 7/03
	19	TLPS	May 11/03	Turbidity = 2.82 NTU	Pump Startup	None	N/A
	20	TLPS	May 13/03	Turbidity = 1.30 NTU	Pump Startup	None	N/A
	21	6 Airport Way	May 27/03	Free Cl ₂ = 0.04 mg/L	Random Detection	Flushed	May 28/03
	22	TLPS	May 29/03	Fluoride = 4.0 mg/L	Meter Calibration	None	N/A
June/03	23	TLPS	Jun 8/03	Free Cl ₂ = 0.00 mg/L	Equipment Failure	SSD ⁶ /SWW	Jun 8/03
	24	TLPS	Jun 26/02	Free Cl ₂ = 0.00 mg/L	Cl ₂ decay in intake	SWW	Jun 26/03
July/03	25	141 Regina	Jul 8/03	Free Cl ₂ = 0.02 mg/L	Random Detection	Flushed	Jul 8/03
Sept/03	26	25 Mapleview	Sep 4/03	GBP >200 CFU	Sample Contamination	Resample	Sept 5/03
	27	Canadore PS	Sep 18/03	GBP >200 CFU	Sample Contamination	Resample	Sept 19/03
Nov/03	28	495 Bunting	Nov 7/03	TC = 2 CFU	Sample Contamination	Resample	Nov 8/03
	29	390 Lakeshore	Nov 7/03	GBP >200 CFU	Sample Contamination	Resample	Nov 8/03
	30	450 Landsdowne	Nov 25/03	Free Cl ₂ = 0.02 mg/L	Follow up sampling	Flushed	Nov 25/03
	31	198 Progress	Nov 25/03	Free Cl ₂ = 0.02 mg/L	Follow up sampling	Flushed	Nov 25/03
Dec/03	32	3501 Trout Lake Rd	Dec 16/03	Free Cl ₂ = 0.03 mg/L	Random Detection	Flushed	Dec 16/03
	33	TLPS	Dec 30/03	Fluoride = 2.18 mg/L	Pump Stop/Start ⁷	Software Fixed	Dec 30/03

1. All events reported in 2003 are indicated above. Unbolded events relate to meter calibration or maintenance work on monitoring equipment that was required to be reported under the Safe Drinking Water Act in 2003. This legislation was altered for the second half of the year.
2. TLPS – Trout Lake Pumping Station (North Bay Water Treatment Plant)
3. Brief spike possibly caused by organics sloughing off from the inside of the water intake and may be associated with a new intake bell chamber chlorination system that was permanently placed into operation in December 2002).
4. NBS- Neighbourhood Bacteriological Sampling carried out
5. SWW- Spike Wet Well with Cl₂
6. SSD – System Shut Down
7. It was discovered that a recurring short duration fluoride spike was occurring when one pump shut down and the next pump started. A programming change was made to shut the fluoride dosing at the beginning of a pump shut down and to restart dosing again when the next pump was fully operational was completed by the end of the year.

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Microbiological testing done under section 8 (2) during this reporting period

	Number of Samples	Range of E.Coli or Fecal Results (#-#)	Range of Total Coliform Results (#-#)	Number of HPC Samples	Range of HPC Results (#-#)
Raw	53	0 - 6 CFU	0 – 83 CFU	53	0->200 CFU
Treated	57	0	0	57	0-142 CFU
Distribution	872	0	0 – 2 CFU	872	0-450 CFU

Operational testing done under Schedule 7, 8 or 9 during the period covered by this Annual Report.

	Number of Grab Samples	Range of Results (#-#)
Turbidity Raw	Continuously Monitored	0.26 - 3.36 NTU
Chlorine Treated - Free	Continuously Monitored	0 – 2.0* mg/L
Fluoride Treated – North Bay provides Fluoridation	Continuously Monitored	0 – 2.18 mg/L

*maximum range of analyzer (high spikes were experienced in 2003 when hand spiking wet well)

Summary of additional testing and sampling carried out in accordance with the requirement of an approval or order.

Date of order or C of A	Parameter	Date Sampled	Result	Unit of Measure
N/A				

Summary of Inorganic parameters tested during this reporting period or most recent

Parameter	Sample Date	Result Value	Unit of Measure	Exceedance
Antimony	August 1/2003	>0.0005 (BDL ¹)	mg/L	No
Arsenic	Feb 12/2003	>0.001 (BDL ¹)	mg/L	No
Barium	Feb 12/2003	0.016	mg/L	No
Boron	Feb 12/2003	>0.011 (BDL ¹)	mg/L	No
Cadmium	Feb 12/2003	>0.001 (BDL ¹)	mg/L	No
Chromium	Feb 12/2003	0.003	mg/L	No
Lead	Feb 12/2003	0.002 ²	mg/L	No
Mercury	Feb 12/2003	>0.0001 (BDL ¹)	mg/L	No
Selenium	Feb 12/2003	>0.003 (BDL ¹)	mg/L	No
Uranium	Feb 12/2003	>0.001 (BDL ¹)	mg/L	No
Fluoride	Feb 12/2003	0.8 ³	mg/L	No
Nitrite	Feb 12, May 14, Aug 1, Dec 2, 2003	>0.1(BDL ¹) (2003 average)	mg/L	No
Nitrate	Feb 12, May 14, Aug 1, Dec 2, 2003	0.25 (2003 average)	mg/L	No

1. BDL – Below Detection Limit
2. Lead measured in the Distribution System, at the Clarion Inn Resort, Pinewood Parkway Drive were >0.002 mg/L (BDL¹) on Feb 2, >0.0011 mg/L (BDL¹) on May 14, 2003, and measured 0.0021 mg/L on Aug 2, 2003 and 0.0016 mg/L on December 2, 2003.
3. Fluoride is continuously monitored at the North Bay Water Treatment Plant and data ranges for 2003 are reported above.
4. Provincial Standards, pursuant to O. Reg 169/03 can be accessed at: http://www.e-laws.gov.on.ca/DBLaws/Regs/English/030169_e.htm

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Summary of Organic parameters sampled during this reporting period or most recent

Parameter	Sample Date	Result Value	Unit of Measure	Exceedance
Alachlor	Feb 12/2003 ¹	>0.0005 (BDL ²)	mg/L	No
Aldicarb	Feb 12/2003	>0.008 (BDL ²)	mg/L	No
Aldrin + Dieldrin	Feb 12/2003	>0.000012 (BDL ²)	mg/L	No
Atrazine + N-dealkylated metabolites	Feb 12/2003	>0.001 (BDL ²)	mg/L	No
Azinphos-methyl	Feb 12/2003	>0.002 (BDL ²)	mg/L	No
Bendiocarb	Feb 12/2003	>0.002 (BDL ²)	mg/L	No
Benzene	Feb 12/2003	>0.0005 (BDL ²)	mg/L	No
Benzo(a)pyrene	Aug 1/2003	>0.00001 (BDL ²)	mg/L	No
Bromoxynil	Feb 12/2003	>0.0005 (BDL ²)	mg/L	No
Carbaryl	Feb 12/2003	>0.005 (BDL ²)	mg/L	No
Carbofuran	Feb 12/2003	>0.005 (BDL ²)	mg/L	No
Carbon Tetrachloride	Feb 12/2003	>0.0005 (BDL ²)	mg/L	No
Chlordane (Total)	Feb 12/2003	>0.000012 (BDL ²)	mg/L	No
Chlorpyrifos	Feb 12/2003	>0.001 (BDL ²)	mg/L	No
Cyanazine	Feb 12/2003	>0.001 (BDL ²)	mg/L	No
Diazinon	Feb 12/2003	>0.001 (BDL ²)	mg/L	No
Dicamba	Feb 12/2003	>0.001 (BDL ²)	mg/L	No
1,2-Dichlorobenzene	Feb 12/2003	>0.0005 (BDL ²)	mg/L	No
1,4-Dichlorobenzene	Feb 12/2003	>0.0005 (BDL ²)	mg/L	No
Dichlorodiphenyltrichloroethane (DDT) + metabolites	Feb 12/2003	0.000024(BDL ²)	mg/L	No
1,2-Dichloroethane	Feb 12/2003	>0.0005 (BDL ²)	mg/L	No
1,1-Dichloroethylene (vinylidene chloride)	Feb 12/2003	>0.0005 (BDL ²)	mg/L	No
Dichloromethane	Feb 12/2003	>0.001 (BDL ²)	mg/L	No
2,4 Dichlorophenol	Feb 12/2003	>0.0005 (BDL ²)	mg/L	No
2,4-Dichlorophenoxy acetic acid (2,4-D)	Feb 12/2003	>0.001 (BDL ²)	mg/L	No
Diclofop-methyl	Feb 12/2003	>0.0009 (BDL ²)	mg/L	No
Dimethoate	Feb 12/2003	>0.0025 (BDL ²)	mg/L	No
Dinoseb	Feb 12/2003	>0.001 (BDL ²)	mg/L	No
Diquat	Feb 12/2003	>0.007 (BDL ²)	mg/L	No
Diuron	Feb 12/2003	>0.01 (BDL ²)	mg/L	No
Glyphosate	Feb 12/2003	>0.01 (BDL ²)	mg/L	No
Heptachlor + Heptachlor Epoxide	Feb 12/2003	>0.000012 (BDL ²)	mg/L	No
Linadane (Total)	Feb 12/2003	>0.000005 (BDL ²)	mg/L	No
Malathion	Feb 12/2003	>0.005 (BDL ²)	mg/L	No
Methoxychlor	Feb 12/2003	>0.000024 (BDL ²)	mg/L	No
Metolachlor	Feb 12/2003	>0.0005 (BDL ²)	mg/L	No
Metribuzin	Feb 12/2003	>0.005 (BDL ²)	mg/L	No
Monochlorobenzene	Feb 12/2003	>0.0005 (BDL ²)	mg/L	No
Paraquat	Feb 12/2003	>0.001 (BDL ²)	mg/L	No
Parathion	Feb 12/2003	>0.001 (BDL ²)	mg/L	No
Pentachlorophenol	Feb 12/2003	>0.0005 (BDL ²)	mg/L	No
Phorate	Feb 12/2003	>0.0005 (BDL ²)	mg/L	No
Picloram	Feb 12/2003	>0.005 (BDL ²)	mg/L	No
Polychlorinated Biphenyls(PCB)	Feb 12/2003	>0.00005 (BDL ²)	mg/L	No
Prometryne	Feb 12/2003	>0.00025 (BDL ²)	mg/L	No
Simazine	Feb 12/2003	>0.001 (BDL ²)	mg/L	No
THM (NOTE: show latest quarterly average) Treated	Feb 12/2003	0.013³	mg/L	No
Temphos	Feb 12/2003	>0.01 (BDL ²)	mg/L	No
Terbufos	Feb 12/2003	>0.0007 (BDL ²)	mg/L	No
Tetrachloroethylene	Feb 12/2003	>0.0005 (BDL ²)	mg/L	No
2,3,4,6-Tetrachlorophenol	Feb 12/2003	>0.0005 (BDL ²)	mg/L	No
Triallate	Feb 12/2003	>0.001 (BDL ²)	mg/L	No
Trichloroethylene	Feb 12/2003	>0.0005 (BDL ²)	mg/L	No
2,4,6-Trichlorophenol	Feb 12/2003	>0.0005 (BDL ²)	mg/L	No
2,4,5-Trichlorophenoxy acetic acid (2,4,5-T)	Feb 12/2003	>0.001 (BDL ²)	mg/L	No

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Trifluralin	Feb 12/2003	>0.001 (BDL ²)	mg/L	No
Vinyl Chloride	Feb 12/2003	>0.0002 (BDL ²)	mg/L	No

1. All parameters that show a sampling date of February 12, 2003 were also sampled on May 14th, 2003 with all results being the same for both sampling dates. Under Reg 459/00 these parameters were sampled quarterly, but under Reg 170/03, which came into force on June 1, 2003, these parameters, with the exception of THM's are now only required to be sampled annually unless half the standard is measured.
2. BDL – Below Detection Limit
3. Trihalomethanes are measured within the Distribution System, at the Clarion Inn Resort, Pinewood Parkway Drive (the most distant point). In 2003 results were **0.052** mg/L on Feb 2, **0.073** mg/L on May 14, 2003, **0.078** mg/L on Sep 4, and **0.078** mg/L on December 2, 2003. The 4 quarter average for 2003 is **0.07025** mg/L at the Clarion Resort sampling site which is below the provincial standard of 0.1 mg/L. The City is re-analyzing the Clarion Resort as the appropriate distribution sampling point, based on changes in the regulations that apply to distribution THM sampling, by undertaking multiple THM samples within the distribution system. The City may alter this sampling point in the future based on further sample results.

List any Inorganic or Organic parameter(s) that exceeded half the standard prescribed in Schedule 2 of Ontario Drinking Water Quality Standards.

Parameter	Result Value	Unit of Measure	Date of Sample
N/A			

(Only if category is large municipal residential, small municipal residential, large municipal non residential, small municipal non residential, large non municipal non residential)

For More Information Please Contact:

John Simmonds, P Eng
 City Engineer
 City of North Bay
 Box 360 North Bay, On
 P1B 8H8
 1-705-474-0400 ext 308

Peter Bullock
 Manager of Environmental Services
 City of North Bay
 Box 360 North Bay, On
 P1B 8H8
 1-705-474-0400 ext 309

After March 31, 2004 a Summary Report, which will elaborate on the above information, as prepared under Schedule 22 of O. Reg. 170/03 will be available for viewing at:

**6th Floor, North Bay City Hall
 200 McIntyre Street East
 North Bay, Ontario
 Engineering and Environmental Services Office**