

SUMMARY REPORT FOR THE NORTH BAY WATER TREATMENT SYSTEM

2011 Report

This report is a summary of water quality information for the North Bay Water Treatment System, published in accordance with Schedule 22 of Ontario's Drinking-Water Systems Regulation for the reporting period of January 1, 2011 to December 31, 2011. This report is based on all information received within the stated reporting period and items that remained outstanding in the last reporting periods that have been carried forward.

The North Bay Water Treatment System is categorized as a Large Municipal Residential Drinking Water System.

The Ontario Clean Water Agency was the Operating Authority for the WTP and water distribution facilities until June 30, 2011 at which point the City of North Bay took over operations. The City of North Bay has been Operating Authority for the WTP and water distribution facilities since June 30, 2011 at 16:00.

The following table lists the requirements that the system failed to meet and the measures taken to correct the failure:

Drinking Water Legislation	List the requirement(s) the system failed to meet	Specify the duration of the failure (i.e. date(s))	Describe the measure taken to correct the failure	Status (complete or outstanding)
Exceedance with MDWL & the standards prescribed in O.Reg. 169/03 (ODWQS)	The following is a list of the adverse sampling results from the North Bay WTP & DS over the year of 2011.		Adverse Sample Notifications were made to the MOE and Health Unit as required and corrective actions were taken by the operations staff	Complete
	Hexachlorocyclopentadiene found present in annual organic sample	07 Mar 2011	Reported to the MOE and MOH as required. Re-sample collected and submitted on 23 Mar 2011. Instructions given by the MOH on 01 April 2011 that concentrations of less than 1 ug/L are considered by-products of chlorine disinfection and therefore no further actions required. AWQI #100270	Complete
	Hexachlorocyclopentadiene found present in annual organic re-sample	23 Mar 2011	Reported to the MOE and MOH as required. Instructions given by the MOH on 01 April 2011 that concentrations of less than 1 ug/L	Complete

			are considered by-products of chlorine disinfection and therefore no further actions required. AWQI #100397	
	Failure of SCADA DATA Collection/Trending	10 May 2011	This incident was not a true adverse water quality incident however a non-compliance notification to the MOE was made through MOE SAC. MOE SAC issued an AWQI# when notification was made to them. The SCADA system failed upon rebooting following some new programming. Additional reboots were required to reactivate the data recording and trending. A gap in data collection/trending resulted for the period from 10:18hrs to 11:00hrs on 10 May 2011. Notification made to the MOE as required. AWQI#100818	Complete
	Total Coliforms	17 June 2011	Reported to the MOE and MOH as required. Health unit recommendation to flush the watermain on Circle lake Rd and re-sample (1 upstream and 1 downstream). Flushing and re-sampling was completed June 17, 2011. Re-sample results met Ontario Drinking Water Quality Standards. AWQI# 101462	Complete
	Lead	30 Aug 2011	Reported to MOE and MOH as required on date sample results received 06-Sept-11. Flushed and re-sampled on 07-Sept-11. Re-sample results met Ontario Drinking Water Quality Standards. AWQI #103155	Complete
	E-coli, Total Coliforms	13 Oct 2011	Reported to the MOE and MOH as required. Chlorine trending and online CT calculations show CT of 35.58 mg.min/L at time of sampling. Chlorine residual at time of sampling 1.32 free chlorine, 1.5 total chlorine. It is suspected that the raw sample was labeled as treated POE. Re-sample taken 13-Oct-2011 at 14:36. Re-sample results meet the Ontario Drinking Water Quality Standards AWQI#103796	Complete

The North Bay Water Treatment Plant (WTP) has the design capacity of 79,500 cubic meters of water per day. The WTP is a SCADA controlled membrane filtration system with ultraviolet and chlorine disinfection systems. The plant also includes fluoride addition along with caustic pH adjustment prior to delivery to the distribution. The WTP meets the Ontario Drinking Water Standards requirements for the removal/disinfection of 2-log *Cryptosporidium* oocysts, 3-log *Giardia* cysts, and 4-log Viruses.

The North Bay WTP achieves the above performance criteria using membrane filtration (0.1 micron pore size), ultraviolet (UV) inactivation and chlorine disinfection.

The filtration process meets the criteria listed in the Procedure for Disinfection of Drinking Water in Ontario for membrane filtration, including;

1. Maintain effective backwash procedures, including filter-to-waste or an equivalent procedure, to ensure that the effluent turbidity requirements are met at all times;
2. Monitor integrity of the membrane by continuous particle counting or equivalent effective means (e.g., intermittent pressure decay measurements) (Note: intermittent pressure decay monitored at the North Bay WTP).
3. Continuously monitor filtrate turbidity; and,
4. Meet the performance criterion for filtered water turbidity of less than or equal to 0.1 NTU in 99% of the measurements each month.

The following is a breakdown of the pathogen removal credits for the North Bay WTP:

- Membrane filtration provides 3.0 log removal of *Giardia*, 2-log removal of *Cryptosporidium*
- UV inactivation provides 0.5-log removal of *Giardia* and 0.5-log removal of *Cryptosporidium*
- Chlorine disinfection provides 4-log removal of viruses

All of the filter rack effluent lines are equipped with continuously monitored, recorded and alarmed turbidity analyzers which will shut down the respective rack if a reading exceeds 0.1 NTU.

Filtered water is directed through the UV disinfection units prior to entering the contact chambers. The two chlorine contact tanks can be operated separately or in sequence and still provide the required 4 log disinfection. This facility is equipped with continuously monitored, recorded and alarmed CT calculation. The SCADA system also automatically takes data from several sources (flow, temperature, free chlorine residual, pH, water depth in contact tanks, and which contact tank is in service) and calculates the log removal credits achieved for *Giardia* & Viruses.

The following information presents the Annual Record of Water Taking for the North Bay Water Treatment Plant and the treated water consumption.

Raw Water Taking

In overview some 12,713,539 cubic meters of water were taken from Trout Lake during the year of 2011. The average water taking for 2011 was 34,925 cubic meters per day. The maximum water taking

per day was 51,870 cubic meters in July and this was 65% of the maximum 79,500 cubic meters per day allowed under the Permit to Take Water.

Raw Water Taking	Total Taking (m3/d)	Average Day (m3/d)	Max Day (m3/d)	Max Day % of PTTW allowable (79,500 m3/d)
2011	12,752,104	34,925	51,870	65%
2010	12,736,244	34,894	51,139	64%
2009	12,341,188	33,496	51,339	65%
2008	12,503,512	34,161	54,123	68%
2007	13,928,611	38,161	54,684	70%

The 2011 total raw water taking was up by 0.1% from 2010

Treated Water

In overview some 12,563,903 cubic meters of water were delivered to the distribution system during the year 2011. The average treated water delivered to the distribution system was 34,408 cubic metres per day for 2011. The maximum water delivered to the distribution system per day during 2011 was 51,450 cubic meters in July and this was 65% of the 78,700 cubic meters per day rated capacity of the plant.

Treated Water Taking	Total Taking (m3/d)	Average Day (m3/d)	Max Day (m3/d)	Max Day % of PTTW allowable (78,700 m3/d)
2011	12,563,903	34,408	51,450	65%
2010	12,584,670	34,479	50,820	65%
2009	12,341,188	33,496	51,339	65%
2008	12,503,512	34,161	54,123	68%
2007	13,928,611	38,161	54,684	70%

The 2011 total treated water volume delivered into the distribution system was down by 0.2% from 2010

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