

# **2008 Summary Report for Municipalities**

*(As per Schedule 22 of O. Reg. 170/03)*

**The Onaping Potable Water System - #220003519**

**Certificate of Approval**

**1414-0696HD3**

**0014-6MQQFQ** *(as of April 5<sup>th</sup>, 2008)*

**Prepared by:**

**Jean-Marc Joliat**

**Operator with Overall Responsibility**

**Xstrata Nickel**

**February 27, 2009**

**Summary of the “2008 Summary Report for the Onaping Potable Water Supply”**

The intent of this report is to provide any interested parties with the opportunity to review the operation of the Onaping Potable Water Supply for 2008. The year in summary is provided below. Definitions and detailed explanations are attached.

The recommended chlorine level of 0.7 mg/l was achieved for all treated water samples entering the distribution system.

All the treated water turbidity readings were well below the maximum acceptable concentration of 1.0 NTU

All counts of *E.coli* and Total Coliforms were zero for the treated water. All other water quality parameters were within permitted levels for 2008.

## **2008 Summary Report for the Onaping Water Supply**

### **Introduction**

The Sudbury Operations Mines/Mill presents the following Onaping Water Supply Report for the 2008 calendar year. The province's Drinking Water Protection Regulation (O. Reg. 170/03) requires that we provide this report for your information. Here you will find the water quality data and other information that we were required to collect for the period of January 1, 2008 through December 31, 2008.

Questions or comments regarding the Onaping Water Supply System or this report should be directed to Environment & Occupational Hygiene Services at (705) 966-3411 Ext: 6426.

In the event of an emergency regarding the operation of the system the Chief Operating Engineer (Operator with Overall Responsibility), Jean-Marc Joliat, can be contacted at (705) 966-3411, ext. 6353.

The Onaping Water Supply System was constructed in 1971. This system uses chlorine gas injection for disinfecting. The operators of the water supply system are licensed Water Distribution System Level III Operators. The water is distributed throughout Onaping and to two Xstrata Nickel mines, Onaping mine and Craig mine. A 1000 cubic metre storage tank, located in the Townsite of Onaping is used to maintain water pressure throughout the system and store sufficient water for use during peak demand hours.

### **Water Source**

Potable water for Onaping is collected from two wells, each at a total depth of approximately 29 m below ground surface. The pumps operate automatically to maintain a minimum level in the potable water storage tank. The water supply is constant and of excellent quality. Chlorine gas is injected into the pipes at a metered rate sufficient to maintain the required level of residual chlorine throughout the distribution system.

### **Compliance with Act, Regulations, Certificate of Approval - Terms and Conditions**

All operating and physical conditions satisfied and adhered to the requirements of the "Ontario Drinking Water Standards," Ontario Regulation 170/03 and the Certificate of Approval aside from the following incidents:

On October 29/08 a distribution sample taken at Craig mine had a Coliform reading of 1 CFU/100mL, re-sample was taken on that day and reading was 0 CFU/100mL.

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As per the regulations, samples are taken at intervals and analyzed for specific parameters. The sampling frequency can depend on the variability or sensitivity of a particular parameter. For example, chlorine and turbidity measurements are conducted continuously and on a daily basis as these can be completed on-site and are important qualifiers for the safety of the drinking water. Certain inorganic are sampled only on an annual basis, while microbiological parameters are sampled and analyzed weekly. Testmark Laboratory conducted the microbiological analysis, while all other analyses were completed at SGS-Lakefield Research, both of which are accredited laboratories.

***All water quality parameters were within permitted levels for 2008 with exception of the following. Including corrective actions taken, they are:***

1. Sodium levels are below the Aesthetic Objective of 200 mg/L. However, the local Medical Officer of Health has been notified as the sodium levels from the Onaping Water Supply are above 20 mg/L. This information is then passed on to local physicians in order to warn patients on sodium-reduced diets.
2. On October 29/08 a distribution sample taken at Craig mine had a Coliform reading of 1 CFU/100mL, flushing was initiated and a re-sample was taken on that day and reading from the lab was 0 CFU/100mL.

**Comparison of Summary (Appendices A) to the rated capacity and flow rates approved in the system Certificate of Approval**

***For details of Water consumption, flow rates and chemical consumption see Appendices "A"***

## **DEFINITIONS**

### ***DDW***

Distribution Drinking Water. Water delivered to the consumer at a point significantly beyond the point at which it is treated and enters the distribution system i.e. tap water.

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**MAC**

Maximum Acceptable Concentration. This is a health-related Ontario drinking water standard established for contaminants that have known or suspected adverse health effects when above a certain concentration. The length of time the MAC can be exceeded without injury to health will depend on the nature and concentration of the parameter.

**IMAC**

Interim Maximum Acceptable Concentration. This is a health-related Ontario drinking water standard established for contaminants when there are insufficient toxicological data to establish a MAC with reasonable certainty, or when it is not practical to establish a MAC at the desired level.

**AO**

Aesthetic Objective. Established for parameters that may impair the taste, odour or colour of water or which may interfere with good water quality control practices.

**OG**

Operational Guideline. Established for parameters that need to be controlled to ensure efficient and effective treatment and distribution of the water.

**mg/L**

Milligrams per litre. This is a measure of the concentration of a parameter in water, sometimes called parts per million (ppm).

**µg/L**

Micrograms per litre. This is a measure of smaller concentrations of a parameter in water, sometimes called parts per billion (ppb) i.e. 1000 times less than mg/L.

**NTU**

Nephelometric Turbidity Unit. Unit of measure for turbidity in a water sample.

**Total Coliform** (microbiological): The coliform group of bacteria has been the most commonly used indicator of water quality. The coliform group consists of all aerobic and facultatively anaerobic, gram-negative, oxidize-negative, non-spore forming, rod-shaped bacteria that ferment lactose in a broth medium with gas formation within 48 hours at 35 degrees Celsius. Most coliforms also produce the enzyme beta-D galactosidase which can be detected with a color forming reagent. The group generally comprises the genera *Escherichia*, *Klebsiella*, *Enterobacter* and *Citrobacter*. The presence of these bacteria in drinking water is indicative of inadequate filtration/disinfection or in the distribution system a continuing loss of the chlorine residual.

***Escherichia coli*** (microbiological): *Escherichia coli* should not be detected/present in any drinking water sample. *Escherichia coli* is a fecal coliform and is detected using methods such as membrane filtration. Since *Escherichia coli* is present in fecal matter and prevalent in sewage, but is rapidly destroyed by chlorine, it is a strong indicator of recent fecal pollution. Contamination with sewage as shown by positive *E. coli* tests would strongly suggest presence of pathogenic bacteria and viruses, as well as more chlorine resistant pathogens such as *Giardia* and *Cryptosporidium*, which are much more difficult to detect.

***Background Bacteria*** (microbiological): General bacteria population expressed as background colony counts developed along with the total coliform membrane filter is a lab culture method of measuring the viable aerobic bacterial content in water. Samples are incubated for 48 hours on a lactose nutrient at 35 degrees Celsius. Background bacteria testing can be used to monitor disinfection efficiency at water treatment plants and to measure water quality deterioration in distribution systems and in reservoirs.

***Heterotrophic Plate Count*** (Microbiological): Heterotrophic Plate Count (HPC) is a method for determining General Bacteria Population in water. Samples are incubated for 48 hours on a selected nutrient at 35 degrees Celsius. HPC testing is used to monitor disinfection efficiency at water treatment plants and to measure water quality deterioration in distribution systems and in reservoirs.

### ***What is in your water?***

Some parameters may be present in source water before we treat it. Here is a description of the various groups of parameters.

***Microbiological parameters*** such as bacteria may come from sewage plants, livestock operations, septic systems and wildlife. Microbiological quality is the most important aspect of drinking water quality because of its association with dangerous water-borne diseases that can strike quickly.

***Inorganic parameters*** such as salts and metals can be naturally occurring or as a result of urban storm runoff, industrial or domestic wastewater discharges mining or agriculture. Some may also be as a result of treatment and distribution of water.

***Organic parameters*** can be naturally occurring, but most organics of concern are synthetic. They originate from industrial discharges, urban storm runoff and other sources. Included in this group are pesticides that originate from both rural and urban areas. Some may originate from treatment of drinking water. For example trihalomethanes may be present as a result of chlorinating water containing organics.

Appendix "A"

**SUMMARY of WATER QUANTITY SUPPLIED from HARDY #3 and #4 WELLS**

**Legend**

- Water Supplied** - Includes total water supplied to Craig, McCreedy West and Townsite.
- Max Design Flow** - 205 m<sup>3</sup>/hour x 24 hours x Days in the Month.
- Peak Flows** - Maximum flow capacity of both pumps operating at the same time.  
 - One pump operating delivers 109 m<sup>3</sup>/hour.  
 - Two pumps operating delivers 205 m<sup>3</sup>/hour.
- Observed Max daily flow** - Maximum average hourly flow reading observed by operator in month
- Max Daily Flow** - Observed maximum hourly reading x number of hours that pump or pumps were operating.
- Monthly Average Flow** - The monthly total water supplied divided by the number of hours in that month.

2008	Water Supplied (m <sup>3</sup> )	Max Design Flow (m <sup>3</sup> )	Observed Max. daily Flow (avg. m <sup>3</sup> /hr)	Max Daily Flow (m <sup>3</sup> /day)	Monthly Avg Flow (m <sup>3</sup> /hr)	Total Cl <sub>2</sub> Usage (lbs.)
January	77,869	152,520	116	2436	104.7	185
February	64,752	137,760	107	3565	96.4	151
March	85,473	152,520	112	3499	109.0	187
April	88,868	147,600	111	2682	113.4	130
May	66,483	152,520	102	2632	89.4	114
June	64,610	147,600	103	2229	89.7	134
July	60,406	152,520	103	2539	81.2	141
August	54,134	152,520	114	2740	72.8	139
September	84,513	147,600	114	2599	113.6	169
October	67,254	152,520	113	2567	90.4	167
November	69,632	147,600	138	2786	96.7	145
December	62,434	152,520	116	2543	83.9	138
<b>Total Year</b>	<b>846,428</b>				<b>95.1</b>	<b>1800</b>

*Attach details of pump system failures and/or anomalies (chlorination, power failures, etc) for the year.*

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