2012 Annual Report

Drinking-Water System Number:	**210002263**
Drinking-Water System Name:	**Vars Well System**
Drinking-Water System Owner:	**City of Ottawa**
Drinking-Water System Category:	**Large Municipal Residential**
Period being reported:	**January 1st – December 31st 2012**

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

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

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

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

Britannia Water Purification Plant
2731 Cassels St., Ottawa Ontario
K2B 1A8
Telephone: 613-828-2727

Complete for all other Categories.

Number of Designated Facilities served:

N/A

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

N/A

Number of Interested Authorities you report to:

N/A

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

N/A

List all Drinking-Water Systems (if any), 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?
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

The Vars water system draws from either of two wells located approximately 15 meters apart at the treatment facility. Both wellheads are about 0.5 meter above ground surface and there is minimal potential for contamination from surface water. The source water is high in organic carbon, colour, iron and manganese.

A series of treatment steps successively remove undesirable substances such as iron, manganese, organic carbon, colour, bacteria, and viruses from the water. The treatment process in Vars consists of the following steps:

- greensand filtration – (using potassium permanganate to oxidize iron and manganese)
- granular activated carbon filtration (for organic carbon removal)
- primary disinfection (free chlorine – applied as sodium hypochlorite)
- storage (disinfection contact time & hydraulic storage)

This treatment process results in water that is clear and safe to drink.

Treated water is then pumped through the distribution network to reach water customers in Vars. All treatment, pumping, and storage systems are controlled by a dedicated SCADA computer system and monitored by certified water treatment operators 24 hours per day. On-line analyzers are used to measure chlorine residual and turbidity of the treated water. In addition, a certified operator visits the well system twice per week to collect water samples and conduct on-site water quality tests.

List all water treatment chemicals used over this reporting period

Sodium Hypochlorite (liquid – 6%)
Potassium Permanganate ($KMnO_4$ saturated solution)

Were any significant expenses incurred to?

[√] Install required equipment
[√] Repair required equipment
[√] Replace required equipment

Please provide a brief description and a breakdown of monetary expenses incurred

1. Granular Activated Carbon (GAC) replacement: Removed and replaced the filter media that is used in the filtration step in the treatment process (approximate cost $25,000)
2. Sludge Disposal – From green-sand filter backwash effluent, a sludge containing iron, manganese, and organic carbon accumulates in the holding cell. This liquid waste needs to be trucked for disposal—approximate cost of $30,000

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

Table 1 Adverse Water Quality events for the Vars Well System

Incident Date	Test Parameter and Location	Result	Unit of Measure	Corrective Action	Date of Resolution
3-Apr-12 AWQI# 105535	Total Coliform bacteria >0 Vars Public School	Positive	Presence/ Absence	Flush and resample	4-Apr-12
9-Jul-12 AWQI# 106968	Sodium > 20 mg/L Vars well system treated & Distribution	Treated= 24.6 Distribution =24.4	mg/L	5 yr reporting	9-Jul-12

Table 2 Microbiological testing done under Schedule 10, 11 or 12 of Regulation 170/03, during this reporting period.

	Number of Samples	**Range of E.Coli Or Fecal Results (min - max)**	**Range of Total Coliform Results (min - max)**	**Number of HPC Samples**	**Range of HPC Results (min - max)**
Raw	208	0	0	206	<10 - 40
Treated	106	0	0	104	<10 - 40
Distribution	204	0	0 - Positive	200	<10 - 70

Table 3 Operational testing for treated water done under Schedule 7, 8 or 9 of Regulation 170/03 during this reporting period.

	Number of Grab Samples	Results (min - max)
Turbidity	106 + continuous	0.38 – 0.96 NTU
Chlorine	107 + continuous	0.94 – 1.70 mg/L
Fluoride (If the DWS provides fluoridation)	10	0.14 – 0.21 mg/L (naturally occurring in well water)

Table 4 Summary of additional testing and sampling carried out in accordance with requirement of approval, order or other legal instruments.

Date of legal instrument issued	Parameter	Date Sampled	Result	Unit of Measure

Table 5 Summary of Inorganic parameters tested in treated water during this reporting period or the most recent sample results.

Parameter	Sample Date*	Result Value	Unit of Measure	Exceedance**
Antimony	Jan – Dec 2012	ND	mg/L	No
Arsenic	Jan – Dec 2012	ND	mg/L	No
Barium	Jan – Dec 2012	0.2927	mg/L	No
Boron	Jan – Dec 2012	0.0572	mg/L	No
Cadmium	Jan – Dec 2012	ND	mg/L	No
Chromium	Jan – Dec 2012	0.0002	mg/L	No
Lead	Jan – Dec 2012	0.0009	mg/L	No
Mercury	Jan – Dec 2012	ND	mg/L	No
Selenium	Jan – Dec 2012	ND	mg/L	No
Sodium	Jan – Dec 2012	25.7	mg/L	Yes - Advisory***
Uranium	Jan – Dec 2012	ND	mg/L	No
Fluoride	Jan – Dec 2012	0.16	mg/L	No
Nitrate	Jan – Dec 2012	ND	mg/L	No
Nitrite	Jan – Dec 2012	ND	mg/L	No

ND denotes non-detectable results

NOTE*: Inorganic parameters are tested monthly. The values in the table represent annual average values.
NOTE**: The determination of exceedances are based on all results in the data set.
NOTE***: Sodium concentration is above the advisory limit of 20.0 mg/L for treated water. Notification of the sodium exceedance was made to the MOE and Public Health Department on July 09, 2012 for this water system (notification is required every 60 months).

Table 6 Summary of lead testing under Schedule 15.1 during this reporting period.

Location Type	Number of Samples	Range of Lead Results (min#) – (max #)	Number of Exceedances
Distribution	3	0.05 - 1.10 ppb	0

Table 7 Summary of Organic parameters in treated water sampled during this reporting period or the most recent sample results.

Parameter	Sample Date	Result Value	Unit of Measure	Exceedance*
Alachlor	Mar 27, 2012	ND	mg/L	No
Aldicarb	Mar 27, 2012	ND	mg/L	No
Aldrin + Dieldrin	Mar 27, 2012	ND	mg/L	No
Atrazine + N-dealkylated metobolites	Mar 27, 2012	ND	mg/L	No
Azinphos-methyl	Mar 27, 2012	ND	mg/L	No
Bendiocarb	Mar 27, 2012	ND	mg/L	No
Benzene	Mar 27, 2012	ND	mg/L	No
Benzo(a)pyrene	Mar 27, 2012	ND	mg/L	No
Bromoxynil	Mar 27, 2012	ND	mg/L	No
Carbaryl	Mar 27, 2012	ND	mg/L	No
Carbofuran	Mar 27, 2012	ND	mg/L	No
Carbon Tetrachloride	Mar 27, 2012	ND	mg/L	No
Chlordane (Total)	Mar 27, 2012	ND	mg/L	No
Chlorpyrifos	Mar 27, 2012	ND	mg/L	No
Cyanazine	Mar 27, 2012	ND	mg/L	No
Diazinon	Mar 27, 2012	ND	mg/L	No
Dicamba	Mar 27, 2012	ND	mg/L	No
1,2-Dichlorobenzene	Mar 27, 2012	ND	mg/L	No
1,4-Dichlorobenzene	Mar 27, 2012	ND	mg/L	No
Dichlorodiphenyltrichloroethane (DDT) + metabolites	Mar 27, 2012	ND	mg/L	No
1,2-Dichloroethane	Mar 27, 2012	ND	mg/L	No
1,1-Dichloroethylene	Mar 27, 2012	ND	mg/L	No

Parameter	Sample Date	Result Value	Unit of Measure	Exceedance*
Dichloromethane	Mar 27, 2012	ND	mg/L	No
2-4 Dichlorophenol	Mar 27, 2012	ND	mg/L	No
2,4-Dichlorophenoxy acetic acid (2,4-D)	Mar 27, 2012	ND	mg/L	No
Diclofop-methyl	Mar 27, 2012	ND	mg/L	No
Dimethoate	Mar 27, 2012	ND	mg/L	No
Dinoseb	Mar 27, 2012	ND	mg/L	No
Diquat	Mar 27, 2012	ND	mg/L	No
Diuron	Mar 27, 2012	ND	mg/L	No
Glyphosate	Mar 27, 2012	ND	mg/L	No
Heptachlor + Heptachlor Epoxide	Mar 27, 2012	ND	mg/L	No
Lindane (Total)	Mar 27, 2012	ND	mg/L	No
Malathion	Mar 27, 2012	ND	mg/L	No
Methoxychlor	Mar 27, 2012	ND	mg/L	No
Metolachlor	Mar 27, 2012	ND	mg/L	No
Metribuzin	Mar 27, 2012	ND	mg/L	No
Monochlorobenzene	Mar 27, 2012	ND	mg/L	No
Paraquat	Mar 27, 2012	ND	mg/L	No
Parathion	Mar 27, 2012	ND	mg/L	No
Pentachlorophenol	Mar 27, 2012	ND	mg/L	No
Phorate	Mar 27, 2012	ND	mg/L	No
Picloram	Mar 27, 2012	ND	mg/L	No
Polychlorinated Biphenyls(PCB)	Mar 27, 2012	ND	mg/L	No
Prometryne	Mar 27, 2012	ND	mg/L	No
Simazine	Mar 27, 2012	ND	mg/L	No
Trihalomethanes**	Jan – Dec, 2012	0.023	mg/L	No
Temephos	Mar 27, 2012	ND	mg/L	No
Terbufos	Mar 27, 2012	ND	mg/L	No
Tetrachloroethylene	Mar 27, 2012	ND	mg/L	No
2,3,4,6-Tetrachlorophenol	Mar 27, 2012	ND	mg/L	No
Triallate	Mar 27, 2012	ND	mg/L	No
Trichloroethylene	Mar 27, 2012	ND	mg/L	No
2,4,6-Trichlorophenol	Mar 27, 2012	ND	mg/L	No
2,4,5-Trichlorophenoxy acetic acid (2,4,5-T)	Mar 27, 2012	ND	mg/L	No
Trifluralin	Mar 27, 2012	ND	mg/L	No
Vinyl Chloride	Mar 27, 2012	ND	mg/L	No

ND denotes non-detectable results

NOTE*: The determination of exceedances are based on all results in the data set.

NOTE**: The reported THM result is an annual average of the maximum value observed in each quarter.

Table 8 Inorganic or Organic parameters that exceeded half the standard prescribed in Schedule 2 of Ontario Drinking Water Quality Standards.

Parameter	Result Value	Unit of Measure	Date of Sample