2013 ANNUAL REPORT - FINAL

Drinking-Water System Number:	220001254
Drinking-Water System Name:	James W. King Water Treatment Plant
Drinking-Water System Owner:	Separated Town of Gananoque
Drinking-Water System Category:	Large Municipal Residential
Period being reported:	January 1, 2013 to December 31, 2013

The Town of Gananoque owns and operates a Large Municipal Residential Water System. The annual report is available to the public at The Public Works Office at 665 Charles Street North, Gananoque between 7 AM and 3 PM and on the Town's website. Notification that this report is available for the public is achieved through the Town's website and Radio Station

Description of Gananoque's Drinking-Water System

The raw water source is the St. Lawrence River. Water enters the water plant via a 600 mm intake pipe which extends along the river bottom for 416 meters and terminates at depth of about 6 meters below the water surface. Chlorine is added at the intake or low lift wet well for zebra mussel control and disinfection.

Chlorinated raw water passes through two removable stationary screens into a wet well where one of three vertical turbine pumps, each having a capacity of 60 L/sec., pumps water into a rapid mix tank.

Water and alum are mixed together in the rapid mix chamber. Alum is a coagulant used to join suspended particles in the water into floc. Water then flows into the flocculation tanks where it is stirred gently to allow the particles of floc and suspended particles to join and create larger floc.

Two dual media filters each containing 750 mm of filter GAC over 250 mm of silica sand receives water from the flocculation tanks. The GAC media has eliminated the need for PAC addition seasonally for taste and odour control. These filters remove the floc as water passes through the dual media into clearwells.

Filtered water flows into the clearwells, storage reservoir and high left well. A total of 3,144 m3 of treated water can be stored. Chlorine is added to the water as it first enters the clearwells to provide sufficient chlorine contact time and adequate free chlorine residual is maintained to ensure the water is safe for consumption.

For filter cleaning, called backwashing, air is forced backwards through the filter media to loosen the floc caught during filtration, and then treated water is pumped through the media in a reverse direction, to wash loosened floc and sediment into the backwash tanks. Each tank has a pump which discharges backwash water into the sanitary sewer system.
There are four high lift pumps: two 100 HP pumps in normal rotating operation and two 200 HP fire pumps, which move water to the distribution system and elevated water storage tank. Up to 1,327 m3 of treated water is stored in the elevated water tank which supplies water to

the distribution system when the high lift pumps are off. A 400 KVA diesel-driven standby generator provides enough power to run the water plant.

There are approximately 48 km of water mains; they range in size from 75 mm to 350 mm, and they supplied an average of 2,322 m3 of water daily to the residents, businesses, and industries in Gananoque in 2013. There are approximately 230 fire hydrants connected to the distribution system.

The water plant provides multiple barriers against bacteriological contamination. Water samples are collected from the distribution system, raw water, and treated water weekly, quarterly and annually. Samples are sent to an accredited laboratory for analysis, satisfying the regulated sampling requirements. Chlorine levels in the distribution system are checked daily and at the time of sampling. Chlorine residual and turbidity of the treated water is monitored continuously to ensure safe water leaving the plant.

Chemicals used over this reporting period include:

- Aluminum Sulfate
- Gaseous Chlorine

Significant expenses incurred throughout the year:

John St Reconstruction (water portion - complete) $145,180
Highlift Pump/Motor Rehabilitation $21,578
Utility Truck (Water Portion) $21,625
Hydrant Replacement/Installation $28,017

Microbiological testing done during this reporting period (Schedule 10 of ON reg. 170/03):

	Number of Samples	Range of E.Coli Results (min #)-(max #) Limit = 0 in finished water	Range of Total Coliform Results (min #)-(max #) Limit = 0 in finished water	Range of HPC Results (min #)-(max #) Limit = 500 cfu/ mL in finished water
Raw	53	0 - 1	0 - >400	NA
Treated*	53	0 - 0	0 - 0	<10 - 20
Distribution*	185	0 - 0	0 - 0	<10 - 30

Operational testing done under Schedule 7 of Regulation 170/03 during the period covered by this Annual Report:

	Number of Grab Samples	Range of Results (min #) - (max #)
Turbidity(Filters)	8760	0.015 – 0.242 NTU
Chlorine(Treated)	8760	1.48 – 2.94 mg/l
Distribution Chlorine	498	0.09 – 2.28 mg/l

***NOTE**: For continuous monitors use 8760 as the number of samples.*

Summary of Inorganic parameters tested during this reporting period or the most recent sample results:

Parameter	Sample Date	Result Value	Unit of Measure	Limit
Antimony	Jan. 15/13	0.0002	mg/L	0.006
Arsenic	Jan. 15/13	0.0007	mg/L	0.025
Barium	Jan. 15/13	0.022	mg/L	1.0
Boron	Jan. 15/13	<0.005	mg/L	5.0
Cadmium	Jan. 15/13	<0.00002	mg/L	0.005
Chromium	Jan. 15/13	<0.002	mg/L	0.05
*Lead (For Systems Testing Under Sch. 15.2)	Jan. 15/13	0.00019	mg/L	0.01
Mercury	Jan. 15/13	<0.00002	mg/L	0.001
Selenium	Jan. 15/13	<0.001	mg/L	0.01
Sodium	Jan. 11/11	12.4	mg/L	20
Uranium	Jan. 15/13	0.00024	mg/L	0.02
Fluoride	Jan. 11/11	0.1	mg/L	1.5
Nitrite	Oct. 8/13	<0.1	mg/L	1.0
Nitrate	Oct. 8/13	0.2	mg/L	10.0

Summary of lead testing under Schedule 15.1 during this reporting period:

Location Type	Number of Samples (Locations)	Lead Results (mg/L) (min#) - (max#)	Number of Exceedances >0.01 mg/L (Individual Bottles)	Alkalinity (ppm) (min#) – (max #)
Distribution	8	<0.00002-0.00337	0	80
Residential	36	<0.00002-0.0194	5	Not tested
Non-Residential	4	0.0001-0.00279	0	Not tested

Note: The Town of Gananoque was granted relief from schedule 15.1 Community Lead Testing as follows under Certificate of Approval #PB220001254RR-01, dated July 27,2010: 1 distribution sample per sampling period taken and tested for lead concentration in exchange for relief from the standard requirement of 40 residential, 4 non-residential, and 8 distribution samples per sampling period. This relief remained in effect through the sampling period ending April 15, 2013. Unfortunately, the 40 required residential samples for the sampling period ending on Oct. 15, 2013 were not completed, falling 4 sites short. The Town has applied for reduced sampling but confirmation from the MOE is still outstanding.

Summary of Organic parameters sampled during this reporting period or the most recent sample results:

Parameter	Sample Date	Result Value	Unit of Measure	Limit
Alachlor	Jan. 15/13	<0.3	ug/L	5
Aldicarb	Jan. 15/13	<3	ug/L	9
Aldrin + Dieldrin	Jan. 15/13	<0.02	ug/L	0.7
Atrazine + N-dealkylated metobolites	Jan. 15/13	<0.5	ug/L	5
Azinphos-methyl	Jan. 15/13	<1	ug/L	20
Bendiocarb	Jan. 15/13	<3	ug/L	40
Benzene	Jan. 15/13	<0.5	ug/L	5
Benzo(a)pyrene	Jan. 15/13	<0.005	ug/L	0.01
Bromoxynil	Jan. 15/13	<0.3	ug/L	5
Carbaryl	Jan. 15/13	<3	ug/L	90
Carbofuran	Jan. 15/13	<1	ug/L	90
Carbon Tetrachloride	Jan. 15/13	<0.2	ug/L	5
Chlordane (Total)	Jan. 15/13	<0.04	ug/L	7
Chlorpyrifos	Jan. 15/13	<0.5	ug/L	90
Cyanazine	Jan. 15/13	<0.5	ug/L	10
Diazinon	Jan. 15/13	<1	ug/L	20
Dicamba	Jan. 15/13	<5	ug/L	120
1,2-Dichlorobenzene	Jan. 15/13	<0.1	ug/L	200
1,4-Dichlorobenzene	Jan. 15/13	<0.2	ug/L	5
Dichlorodiphenyltrichloroethane (DDT) + metabolites	Jan. 15/13	<0.01	ug/L	30
1,2-Dichloroethane	Jan. 15/13	<0.1	ug/L	5
1,1-Dichloroethene (vinylidene chloride)	Jan. 15/13	<0.1	ug/L	14
Dichloromethane	Jan. 15/13	<0.3	ug/L	50
2-4 Dichlorophenol	Jan. 15/13	<0.1	ug/L	900
2,4-Dichlorophenoxy acetic acid (2,4-D)	Jan. 15/13	<5	ug/L	100
Diclofop-methyl	Jan. 15/13	<0.5	ug/L	9
Dimethoate	Jan. 15/13	<1	ug/L	20
Dinoseb	Jan. 15/13	<0.5	ug/L	10
Diquat	Jan. 15/13	<5	ug/L	70
Diuron	Jan. 15/13	<5	ug/L	150
Glyphosate	Jan. 15/13	<25	ug/L	280

Heptachlor + Heptachlor Epoxide	Jan. 15/13	<0.1	ug/L	3
Lindane (Total)	Jan. 15/13	<0.1	ug/L	4
Malathion	Jan. 15/13	<5	ug/L	190
Methoxychlor	Jan. 15/13	<0.1	ug/L	900
Metolachlor	Jan. 15/13	<3	ug/L	50
Metribuzin	Jan. 15/13	<3	ug/L	80
Monochlorobenzene	Jan. 15/13	<0.2	ug/L	80
Paraquat	Jan. 15/13	<1	ug/L	10
Parathion	Jan. 15/13	<3	ug/L	50
Pentachlorophenol	Jan. 15/13	<0.1	ug/L	60
Phorate	Jan. 15/13	<0.3	ug/L	2
Picloram	Jan. 15/13	<5	ug/L	190
Polychlorinated Biphenyls(PCB)	Jan. 15/13	<0.05	ug/L	3
Prometryne	Jan. 15/13	<0.1	ug/L	1
Simazine	Jan. 15/13	<0.5	ug/L	10
THM (NOTE: show latest annual average)	Jan. 15, April 9, July 9, Oct.8/13	31.4	ug/L	100
Temephos	Jan. 15/13	<10	ug/L	280
Terbufos	Jan. 15/13	<0.3	ug/L	1
Tetrachloroethylene	Jan. 15/13	<0.2	ug/L	30
2,3,4,6-Tetrachlorophenol	Jan. 15/13	<0.1	ug/L	100
Triallate	Jan. 15/13	<10	ug/L	230
Trichloroethylene	Jan. 15/13	<0.1	ug/L	5
2,4,6-Trichlorophenol	Jan. 15/13	<0.1	ug/L	5
2,4,5-Trichlorophenoxy acetic acid (2,4,5-T)	Jan. 15/13	<10	ug/L	280
Trifluralin	Jan. 15/13	<0.5	ug/L	45
Vinyl Chloride	Jan. 15/13	<0.2	ug/L	2

2013 In-House Lab Results:

Daily in-house lab work is performed; values are compared to on-line analyzers for accuracy. Note: Turbidity off-the-filters is also tested in-house, this is included in the main body of the report within minimum and maximum values. In-house tested post chlorine residuals are also included within the continuous monitoring minimum and maximum values.

	Raw Water			Treated Water		
Monthly Average	Turbidity N.T.U.	pH	Temperature ◦ Celsius	pH	Temperature ◦ Celsius	Aluminum mg/L ECR Al
Jan.	0.304	8.12	4.4	7.51	4.1	0.082
Feb.	0.211	8.16	3.0	7.53	3.3	0.038
March	0.370	8.21	3.7	7.54	3.2	0.051
April	0.505	8.35	7.8	7.56	6.2	0.080
May	0.300	8.23	12.6	7.45	10.1	0.098
June	0.494	8.15	16.1	7.42	15.0	0.102
July	0.703	8.14	19.6	7.44	19.1	0.107
August	0.572	8.34	22.8	7.48	22.2	0.176
Sept.	0.802	8.38	20.5	7.47	20.6	0.176
Oct.	0.591	8.25	17.2	7.50	17.1	0.150
Nov.	0.273	8.17	11.3	7.51	10.7	0.075
Dec.	0.274	8.17	5.4	7.54	5.6	0.096